

ROAD MANAGEMENT PLAN

(SHORT TO MEDIUM TERM)

RN4763 MAIN SOUTH ROAD

(Tatachilla Road to Sellicks Beach Road)

MARCH 2015

FINAL



Government of South Australia

Department of Planning,
Transport and Infrastructure

Date	Revisions	Amended by
April 2013	Update data from 2006-2010 to 2008-2012 crash statistics and feedback from City of Onkaparinga Council. Inclusion and exclusion of junctions/intersections and midblock analysis.	Amendment 1 Kylie Tully
August 2014	Crash Data updated to 2009-2013. Community & Council feedback added. General updates to current status.	Tim Bruecher
March 2015	Road Management Plan finalised	Derek Lee

TABLE OF CONTENTS

- 1 OVERVIEW- 1 -**
- 2 EXISTING ROAD ENVIRONMENT - 3 -**
 - 2.1 GENERAL DESCRIPTION - 3 -
 - 2.2 TRAFFIC BEHAVIOUR AND LAND USE - 5 -
 - 2.3 ROAD CROSS SECTION AND FEATURES - 8 -
 - Section 1 - Tatachilla Road to Little Road..... - 8 -*
 - Section 2 - Little Road to Aldinga Beach Road..... - 9 -*
 - Section 3 - Aldinga Beach Road to Sellicks Beach Road..... - 9 -*
 - 2.4 PARKING PROVISION - 10 -
 - 2.5 PUBLIC TRANSPORT - 10 -
 - 2.6 METROPOLITAN AREA ROAD WIDENING PLAN (MARWP) - 12 -
 - 2.7 ASSET SUSTAINMENT (ASSET MANAGEMENT) - 15 -
 - 2.7.1 Routine Maintenance..... - 15 -
 - 2.7.2 Pavement Marking and Delineation..... - 15 -
 - 2.7.3 Road Pavement - 15 -
 - 2.7.4 Road Lighting..... - 15 -
 - 2.7.5 Structures - 16 -
- 3 ROAD ROLE AND FUNCTION - 17 -**
 - 3.1 ROAD FUNCTION - 17 -
 - 3.2 ROAD FUNCTIONAL OBJECTIVES - 17 -
- 4 ROAD SAFETY - 19 -**
 - 4.1 CRASH ANALYSIS - 19 -
 - 4.2 CRASH TYPES - 19 -
 - 4.3 INTERSECTION CRASHES..... - 20 -
 - 4.4 MID-BLOCK CRASHES - 22 -
 - 4.5 SPEED ENVIRONMENT - 22 -
 - 4.6 PEDESTRIANS..... - 23 -
 - 4.7 BICYCLE LANES..... - 23 -
- 5 ROAD CAPACITY - 24 -**
- 6 DISCUSSION AND RECOMMENDATIONS - 26 -**
 - 6.1 RECOMMENDATIONS FOR INTERSECTIONS/ JUNCTIONS - 26 -
 - 6.1.1 Main South Road / Tatachilla Road / Maslin Beach Road..... - 26 -
 - 6.1.2 Main South Road / Sherriff Road / Communication Road..... - 30 -
 - 6.1.3 Main South Road / Thomas Road / Branson Road..... - 34 -
 - 6.1.4 Main South Road / Malpas Road..... - 36 -
 - 6.1.5 Main South Road / Little Road..... - 39 -
 - 6.1.6 Main South Road / Port Road..... - 41 -
 - 6.1.7 Main South Road / Old Coach Road..... - 44 -
 - 6.1.8 Main South Road / Stonehouse Lane (formerly Plains Road)..... - 47 -

- 6.1.9 *Main South Road / Aldinga Road (formerly Biscay Road)*..... - 49 -
- 6.1.10 *Main South Road / Aldinga Beach Road*..... - 52 -
- 6.1.11 *Main South Road / Colville Road / Hart Road* - 55 -
- 6.1.12 *Main South Road / Hahn Road / Cox Road*..... - 57 -
- 6.1.13 *Main South Road / Rogers Road / Norman Road*..... - 59 -
- 6.1.14 *Main South Road / Perth Street*..... - 62 -
- 6.1.15 *Main South Road / Sellicks Beach Road / Old Sellicks Hill Road*..... - 63 -
- 6.2 RECOMMENDATION FOR MID-BLOCK SECTIONS - 66 -
 - 6.2.1 *Sherriff Road to Thomas Road*..... - 66 -
 - 6.2.2 *Malpas Road to Little Road*..... - 66 -
 - 6.2.3 *Port Road to Aldinga Road (Biscay Road)*..... - 67 -
 - 6.2.4 *Aldinga Beach Road to Hart Road*..... - 68 -
 - 6.2.5 *Hart Road to Hahn Road*..... - 68 -
 - 6.2.6 *Hahn Road to Rogers Road*..... - 69 -
 - 6.2.7 *Rogers Road to Perth Street*..... - 69 -
- 6.3 RECOMMENDATIONS FOR SPEED LIMITS..... - 71 -
- OTHER TRAFFIC MANAGEMENT/ COMMUNITY CONCERNS..... - 72 -
- 7 TREATMENT SUMMARY** - 73 -
 - 7.1 INTERSECTION/ JUNCTION TREATMENTS - 73 -
 - 7.2 MID-BLOCK TREATMENTS - 74 -
 - 7.3 SPEED LIMIT CHANGES - 75 -
- 8 CONCLUSION** - 76 -
- APPENDIX A – INTERSECTION CRASH DATA**..... - 77 -
- APPENDIX B – MID-BLOCK CRASH DATA**..... - 78 -
- APPENDIX C – COMMUNITY & COUNCIL FEEDBACK**..... - 79 -

GLOSSARY

AADT	Average Annual Daily Traffic – The number of axle pairs crossing at a specific site per year and dividing this number by 365
DPTI	Department for Planning, Transport and Infrastructure
Intersection	Place where two or more roads cross
Junction	Place where two or more roads meet
MARWP	Metropolitan Area Road Widening Plan
PDO	Property damage only
RMP	Road Management Plan

1 OVERVIEW

This Road Management Plan (RMP) provides an overall view of the existing operational and safety issues and provides recommendations for traffic management improvements on Main South Road between Tatachilla Road and Sellicks Beach Road, an arterial road in the outer southern suburbs of Adelaide.

One of the major reasons for the development of this RMP has been the current population growth in the area, particularly in Aldinga, which is driving further demand for more efficient and safe transport infrastructure. The increased demands in the future will play a role in the determination of longer term treatments and proposals. One such example is the major development of the Nan Hai Pu Tuo Buddhist Temple on Cactus Canyon Road, Sellicks Beach. This development is expected to increase traffic volumes by 400 vehicles per day on special event days and 120 vehicles per day on typical days.

The current priorities for major road projects in the longer term in South Australia are detailed within the 'Strategic Infrastructure Plan for South Australia'. The plan identifies the major projects and initiatives that are being pursued to develop our transport system, and importantly identifies road improvement priorities in both metropolitan and rural areas. The plan can be viewed at: http://www.infrastructure.sa.gov.au/strategic_infrastructure_plan.

This section of Main South Road has sufficient capacity to cater for the current and estimated future traffic volumes for the foreseeable future and therefore investment in major road works, such as the potential duplication and additional overtaking lanes are considered to be a low priority at this time. The Department is nevertheless reserving the potential for this road to be duplicated in the longer term, should such improvement be justified, by way of retaining ownership of land and including the road on the Metropolitan Adelaide Road Widening Plan."

It should be noted that this RMP is not intended to address potential longer term and major road improvement needs (e.g. the addition of extra travel lanes or duplication) resulting from future residential, tourist and industrial development. The RMP instead focuses on identifying potential short to medium term road improvement needs to improve safety and traffic operations of the existing roads.

The process undertaken to identify existing traffic management issues included:-

- Research of historical transport investigation records
- Site auditing and observations
- Analysis of recorded crash data and traffic flow statistics
- Preliminary discussions with council officers and key stakeholders
- Information gained from the local community through communications with the department

By looking at a road on a route basis, traffic management improvements can be developed to take into account a range of factors including:-

- Broader transport objectives
- Role and function of the road
- Needs of all modes of transport including, freight and cars, buses, bicycles and pedestrians
- Community and stakeholder needs and expectations
- Ensuring that any treatments are consistent with known longer term plans for the road or area

- Application of appropriate standards and guidelines to ensure safety, consistency and effectiveness of any proposed treatments

This RMP has been presented to Onkaparinga City Council, the local community, and the Royal Automobile Association of South Australia (RAA). Their views and feedback have been received and considered in the finalised RMP.

Funding for any improvements will need to be considered against other state wide priorities in future financial years. This approach ensures that the funds available each year are allocated to the projects where the greatest benefit can be provided to the community as a whole.

2 EXISTING ROAD ENVIRONMENT

2.1 GENERAL DESCRIPTION

This report focuses on a section of Main South Road (from Tatachilla Road to Sellicks Beach Road) which is a high speed rural arterial road located in the outer southern suburbs of Adelaide and runs exclusively through the Onkaparinga City Council.

Main South Road forms part of the B23 route that runs from Old Noarlunga to Cape Jervis and is one of the main arterial corridors to the Fleurieu Peninsula. It is predominantly a two-lane, two-way road with significant crests, sags and bends which traverses rural and semi-urban land use, providing access to southern coastal communities and the major tourist destination of Kangaroo Island. This road carries significant traffic between Adelaide and the tourist centres to the south and is a major commuter route for the rapidly expanding residential area of Aldinga.

The section of Main South Road investigated in this Road Management Plan is currently gazetted as a B-Double route. Only two intersecting roads within this section are B-double gazetted, which are Tatachilla Road and Aldinga Road (formerly known as Biscay Road).

For the purposes of the report, the road has been divided into three sections of similar cross section and road conditions (refer to Figure 2-1).

Section 1: Main South Road between Tatachilla Road and Little Road

Section 2: Main South Road between Little Road and Aldinga Beach Road

Section 3: Main South Road between Aldinga Beach Road and Sellicks Beach Road

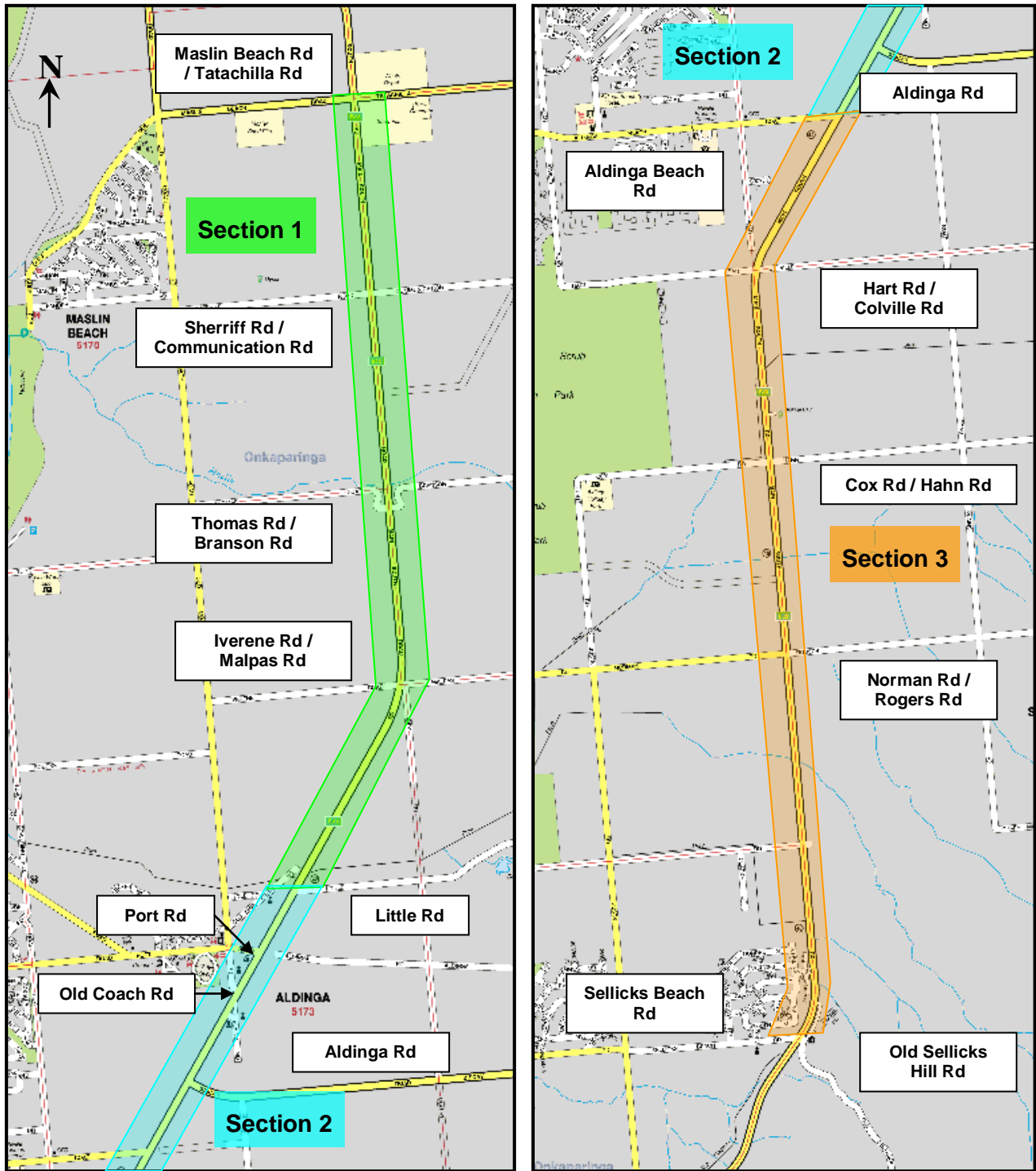


Figure 2-1 – Sections of Main South Road covered in the RMP

2.2 TRAFFIC BEHAVIOUR AND LAND USE

Traffic volumes vary greatly along the length of road under investigation. Two-way Average Annual Daily Traffic (AADT) volumes for different road sections range from 6600 – 15500 vehicles as shown in Figure 2-2. For the extents of this study Main South Road runs for approximately 12.5 km through the Onkaparinga region and the abutting land use varies along the length of the road (refer Figure 2-3).

Section 1 between Tatachilla Road and Little Road has AADT volumes of 14200 vehicles and is principally agricultural and horticultural with some property accesses off of Main South Road. Traffic is generated from vehicles commuting between the outer southern suburbs and Adelaide City, as well as vehicles heading further south to townships in the Onkaparinga district or further south to the Fleurieu Peninsula.

Section 2 between Little Road and Aldinga Beach Road has AADT ranging from 10700 to 15500 vehicles and is an important connection which provides access to Aldinga, Port Willunga and Aldinga Beach townships. This is not only for north-south travel but also provides links to east-west routes in the region, particularly to Willunga for access to services. Traffic is also generated locally by the nearby community areas, schools and places of worship.

Section 3 between Aldinga Beach Road and Sellicks Beach Road has AADT volumes ranging from 6600 to 8500 vehicles and carries freight and tourist traffic accessing Sellicks Beach or the Fleurieu Peninsula and Kangaroo Island. Other traffic generators in the area are the Aldinga Aerodrome and the Victory Hotel at Sellicks Beach.

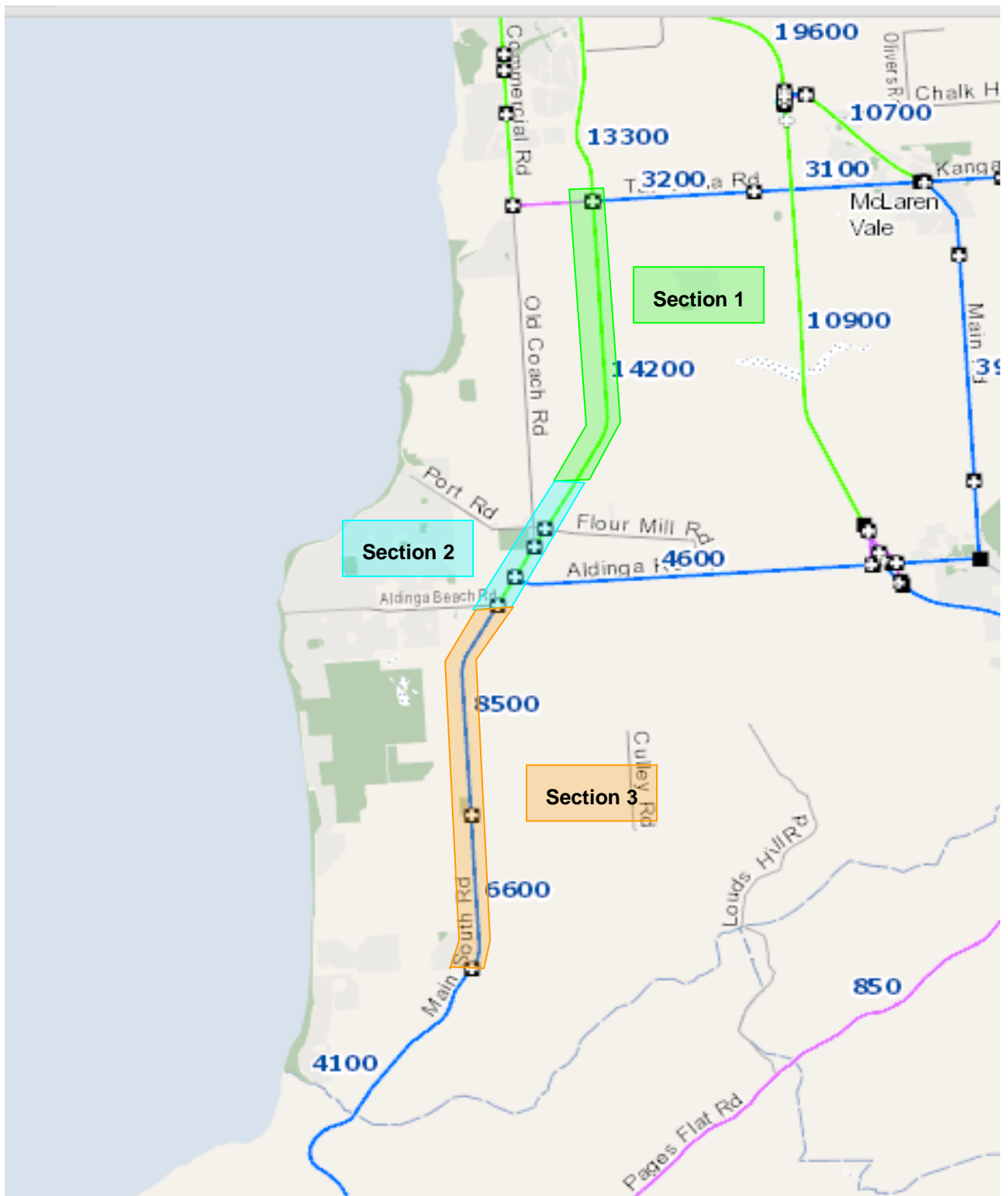


Figure 2-2—Average Annual Daily Traffic (AADT) (2015)

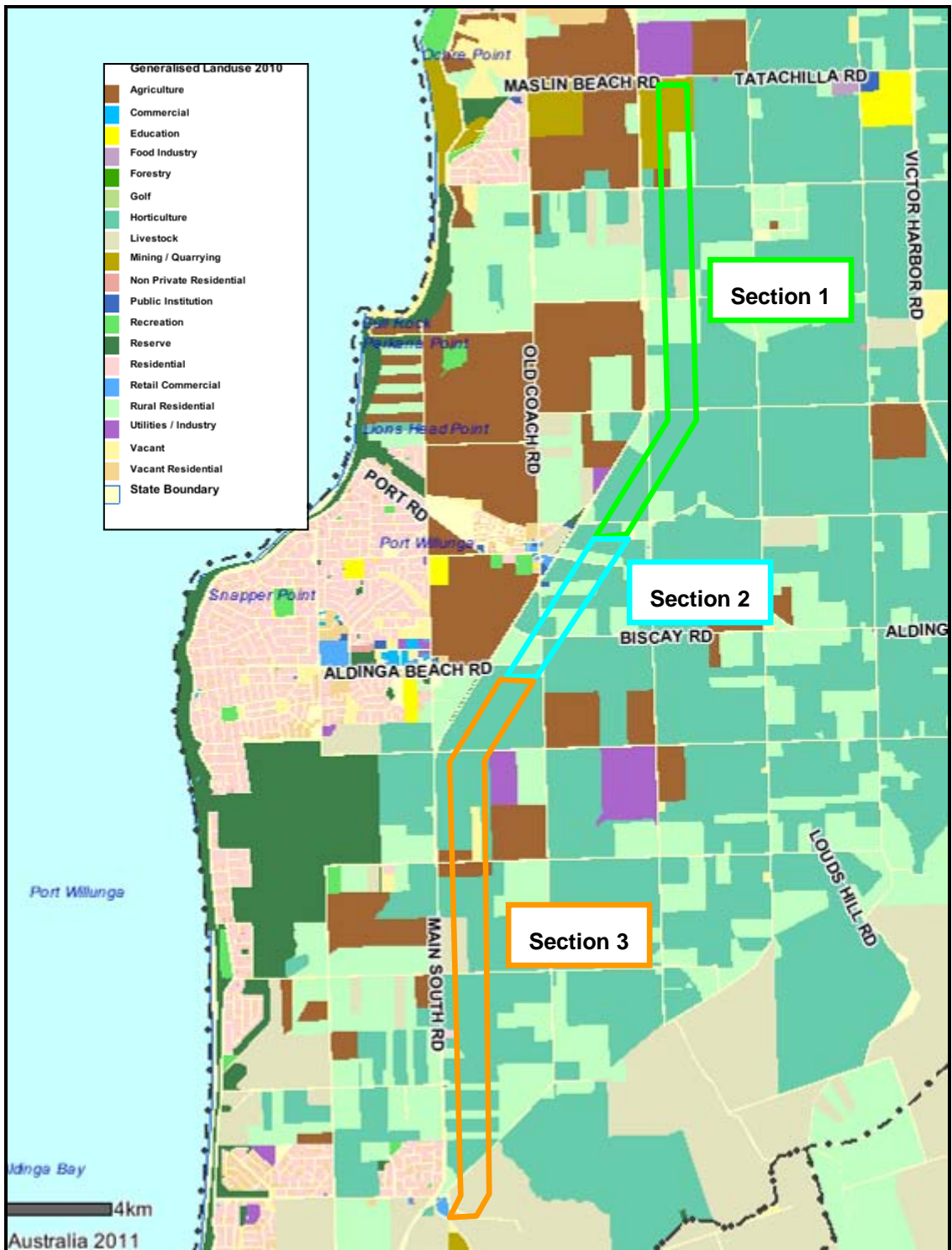


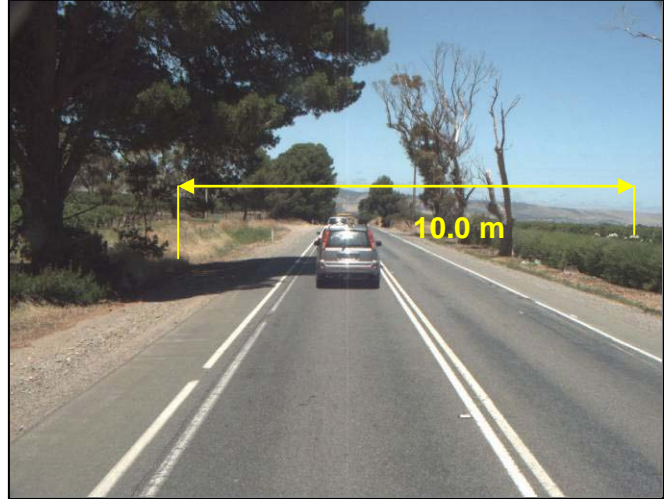
Figure 2-3—Land Use in region adjacent to area of study (Atlas of South Australia 2010)

2.3 ROAD CROSS SECTION AND FEATURES

Main South Road through the length of this study is typically two lanes wide, with no painted or raised median and partially sealed shoulders. The road is not kerbed and bike lanes are not present. More detailed information about the cross sections for each section of the road is given below.

Section 1 - Tatachilla Road to Little Road

- Single lane in each direction
- 10 m wide pavement: 3.5 m wide lanes with 1.5 m wide sealed shoulder on both sides (no kerbing)
- No bicycle lanes
- No formalised parking but wide shoulders enable vehicles to pull off the road
- No median and no pedestrian facilities
- Typically no road lighting
- Road reserve width approximately 18 metres
- 100 km/h speed limit
- Overtaking typically banned outside of overtaking lanes by installation of double white lines
- Two portions of Section 1 have overtaking lanes installed.
 - Southbound overtaking lane between Tatachilla Road and Branson Road
 - Northbound overtaking lane between Malpas Road and Little Road.
 - These sections have 1.5 m sealed shoulders and 3.5 m wide lanes.



Section 2 - Little Road to Aldinga Beach Road

- Single lane in each direction
- 13.5 m wide pavement: 3.5 m lanes, 3.5 m median, 1.5 m sealed shoulders on both sides
- Some kerbing provided at Old Coach Road and Stonehouse Lane intersections
- Typically wide painted median to separate opposing through lanes and right turn vehicles from through lane vehicles
- No pedestrian facilities
- No formalised parking
- No bicycle lanes
- Road lighting of appropriate standard (V3) provided for most of this section, with the exception of the 250 m section immediately south of Little Road
- Road reserve width approximately 23 metres
- 80 km/h speed limit



Section 3 - Aldinga Beach Road to Sellicks Beach Road

- Single lane in each direction
- 10 m wide pavement: 3.5 m lanes with 1.5 m wide sealed shoulders on both sides (no kerbing)
- No bicycle lanes
- No formalised parking but shoulders enable vehicles to pull off the road
- No median and no pedestrian facilities
- Typically no road lighting
- Road reserve width approximately 18 metres
- 100km/h speed limit
- Overtaking typically allowed
- Southbound overtaking lane located between Rogers Road and Perth Street with 1.5 m sealed shoulders and 3.5 m wide lanes.
- Section 3 is generally similar in cross section and conditions to Section 1 but currently caters for a much lower volume of traffic and traverses through flatter terrain.



2.4 PARKING PROVISION

No formal on road parking is provided along Main South Road for the length of this study corridor. Given that the road runs through a principally agricultural and horticultural region there is very little demand for on road parking facilities. Vehicles needing to stop in an emergency are allowed to stop along the road shoulder as there are no parking restrictions in place, although it is recognised that this practice is undesirable due to the high speed environment. There are currently no rest areas or pull off areas along this section of Main South Road. The provision of rest areas is considered a low priority compared to the other safety upgrades proposed in this RMP.

2.5 PUBLIC TRANSPORT

This section of Main South Road within the study corridor is not a major public transport route. There are no bus stops on Main South Road itself and only one service per day (each way) travels on Main South Road between Aldinga and Seaford. Most north-south public transport links through this region are conducted via the adjacent Old Coach Road to the west and Main Road to the east. Both of these roads travel through more heavily populated areas and as a result have multiple bus routes. A map of the routes along Main South Road is shown in Figure 2-4.

At present, there are three different bus routes that use Main South for short distances to provide the following:

- East-West access between Aldinga and Willunga via Aldinga Road (formerly Biscay Road)

Buses experience some delays turning left onto Main South Road from Aldinga Beach Road and Aldinga (Biscay) Road due to the Main South Road traffic volumes and the speed environment. Furthermore, the frequency of buses travelling on these routes is likely to increase in the future as the region grows.

Given the relatively low use of this section of Main South Road for public transport services, improvements for public transport are not considered a high priority at this time. However, any possible upgrades to improve access for buses along current and potential future bus routes on Main South Road have been considered as part of any intersection improvement recommendations made in this RMP.



Figure 24— Bus Routes on Main South Road in the Study Corridor (as of July 2014)

2.6 METROPOLITAN AREA ROAD WIDENING PLAN (MARWP)

The Metropolitan Area Road Widening Plan (MARWP) Act was developed in 1972 as a means to control building development so that land would be available for the expansion of arterial roads and intersections to minimise disruption to abutting land uses, should the need arise in the future.

Sections 1, 2, and 3 of Main South Road have a 30 m wide corridor of land reserved on both sides of the road (Refer Figure 2-5). The 30 m setback is in recognition that the road currently plays an important strategic function and that in some time in the long term future (date unknown) there will be a need to expand the capacity of the road (i.e. add lanes) to accommodate future travel demands.

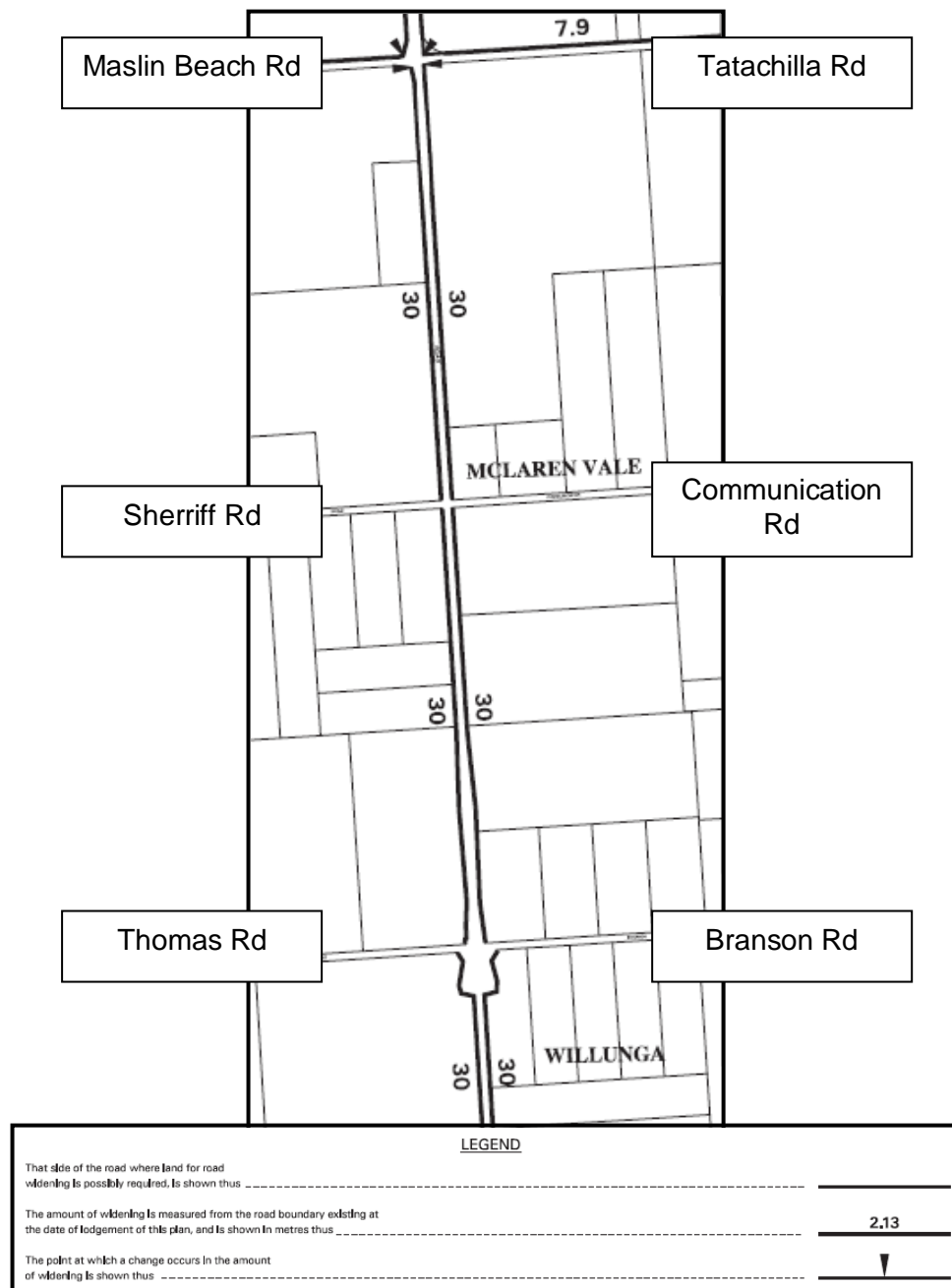
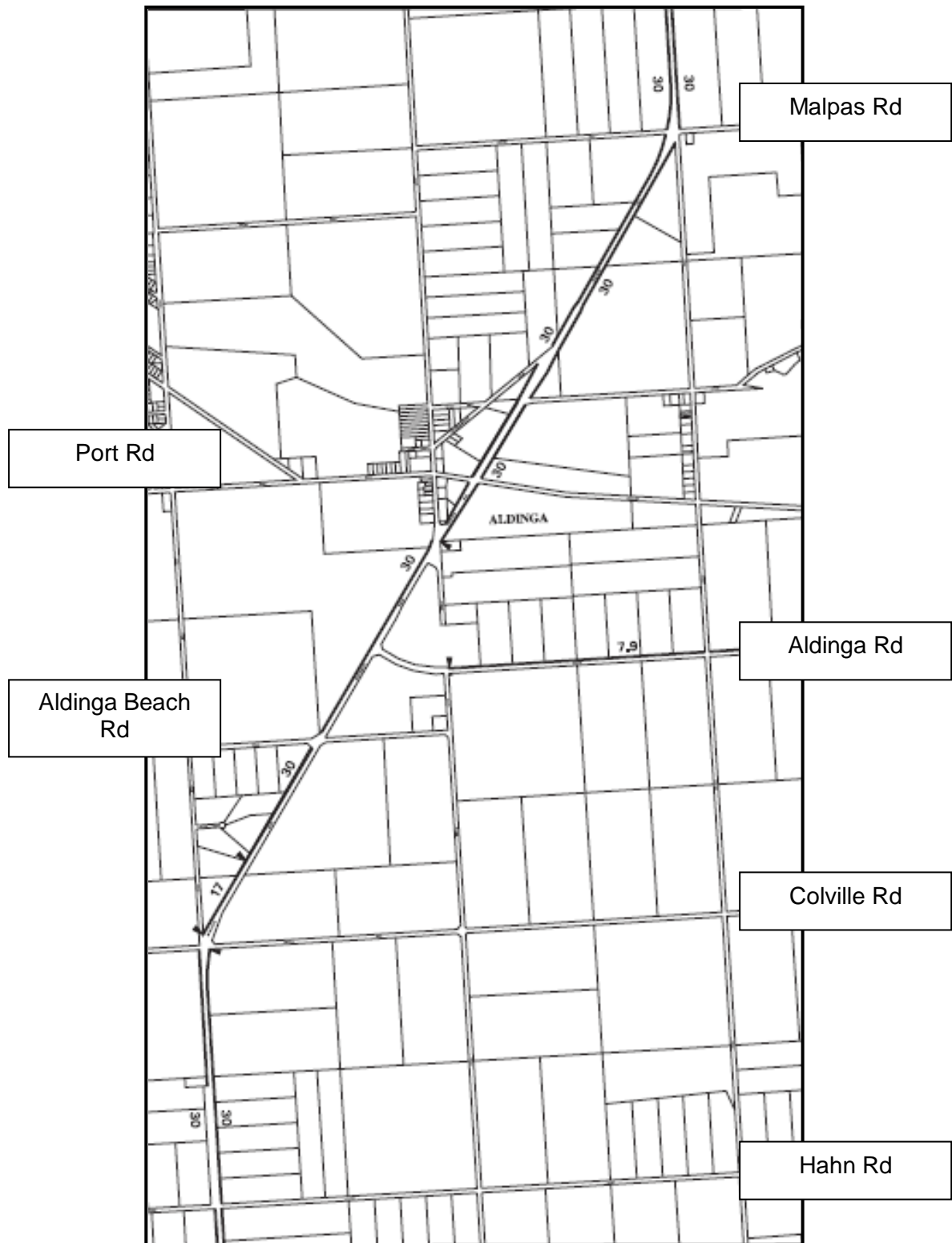


Figure 2-5(a): Metropolitan Adelaide Road Widening Plan (MARWP) Requirements on Main South Road



LEGEND

That side of the road where land for road widening is possibly required, is shown thus	-----
The amount of widening is measured from the road boundary existing at the date of lodgement of this plan, and is shown in metres thus	----- 2.13 -----
The point at which a change occurs in the amount of widening is shown thus	----- ▼ -----

Figure 25(b): Metropolitan Adelaide Road Widening Plan (MARWP) Requirements on Main South Road

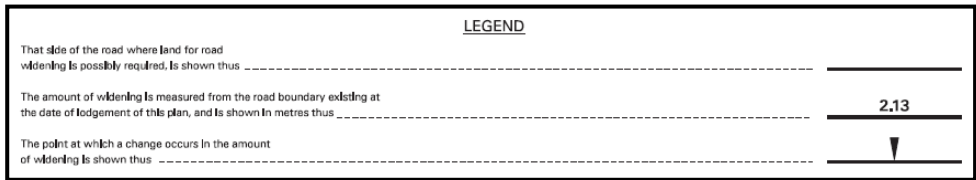
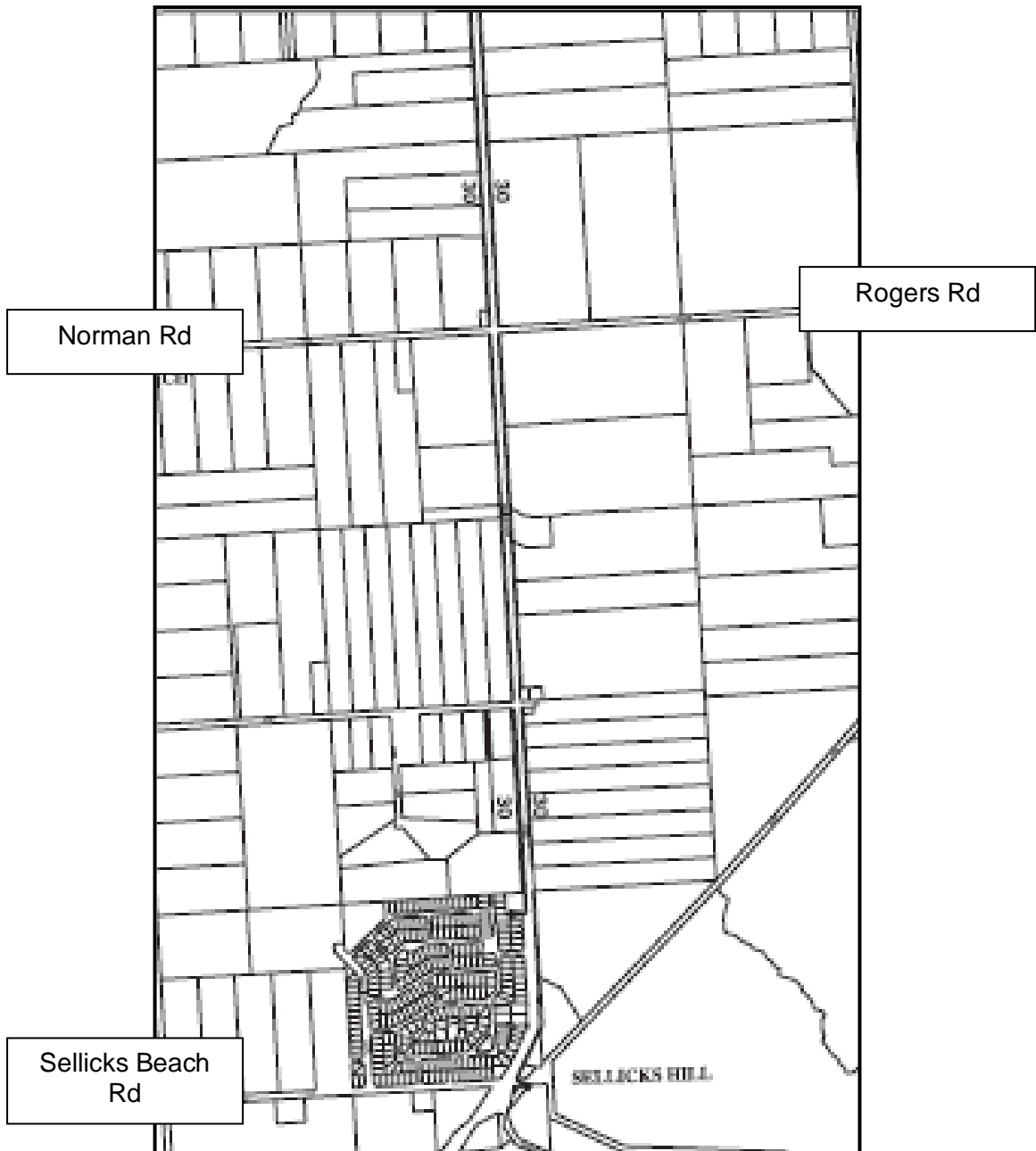


Figure 25(c): Metropolitan Adelaide Road Widening Plan (MARWP) Requirements on Main South Road

2.7 ASSET SUSTAINMENT (ASSET MANAGEMENT)

DPTI undertakes a number of asset sustainment activities across the road network, including the following.

2.7.1 Routine Maintenance

Routine maintenance activities on this section of road are typically carried out by DPTI or by an external contractor.

The activities undertaken as part of routine maintenance are:

- Routine inspection of the road (every two weeks)
- Preparing a prioritised maintenance defects register and works program
- Undertaking the repair of defects (immediate or programmed works)

2.7.2 Pavement Marking and Delineation

Pavement marking on Main South Road is re-painted regularly, with the last maintenance taking place in January 2011. The entire pavement marking was re-painted including edge lines, lane lines, and medians. Transverse markings (such as stop lines and give way lines) have anti-skid properties and longitudinal markings have glass beads to enhance their visibility at night. Subject to the availability of funding, the pavement marking on this section of Main South Road is repainted annually.

Raised Reflective Pavement Markers (RRPMs) are typically installed where painted pavement marking exists. These markers provide the benefit of improving delineation of the lanes and edge lines particularly in night time conditions. DPTI has a program to replace the RRPMs on Main South Road; however this is subject to prioritising the need for replacement of the RRPMs on roads around the state. The targeted replacement cycle is typically 5 years. The existing RRPMs on Main South Road were installed in 2007. Maintenance of the RRPMs is scheduled for the 2014/15 financial year.

2.7.3 Road Pavement

The majority of the road pavement throughout the study corridor was constructed in 1967, with some sections being rehabilitated in recent years (from 2003 – 2009). The only sections that have been fully rehabilitated in the last ten years are from Aldinga Beach Road to Hahn Road (rehabilitated in 2013) and for the length of the overtaking lane north of Little Road.

The existing road pavement condition is variable with some sections presenting an undulating surface. This is principally due to the reactive soils in the region causing the road pavement to shift unevenly over time.

The undulations are particularly obvious in the sections between Malpas Road to Port Road and Aldinga Beach Road to Hahn Road. These sections are repaired by DPTI every two years. This type of periodic treatment is necessary due to underlying soil type which constantly causes defects to the quality of pavement over time. The section from Hahn Road to Sellicks Beach Road is considered to be in suitable condition at the present time.

2.7.4 Road Lighting

Road lighting along Main South Road is either mounted on SA Power Network (formerly ETSA) stobie poles or in some cases fixed on DPTI tubular light poles. DPTI's current standard for rural arterial roads such as Main South Road is to provide road lighting at key intersections to the appropriate arterial road standard (V3) as described in the Australian Standards (AS1158). Under AS1158, flag lighting (the provision of one or two light poles to indicate the presence of an intersection) at minor rural intersections is considered appropriate.

The majority of Main South Road does not have any road lighting. Road lighting is principally provided only in Section 2 from Port Road to Aldinga Beach Road with the exception of a 250 m section immediately south of Little Road that has no road lighting. The current lighting configuration in this section consists of High Pressure Sodium lights installed on DPTI poles spaced approximately 50 m apart. This lighting was installed in 1992 and is considered to meet the appropriate V3 standard.

Flag lighting is also installed at several intersections in Section 3. The intersections of Sellicks Beach Road, Perth Street and Rogers Road all have luminaries installed on SA Power Network poles which provide road lighting.

Analysis of the crash data for the last five years along this length of road suggests that approximately 20% all crashes occurred at night time. Analysis of the individual locations in Section 6 gives consideration to the role that improved lighting may have on reducing crashes.

Providing road lighting on Main South Road needs to be prioritised to determine where lighting or upgrades to lighting is justified taking into account the quality of lighting, crash history and traffic volumes. The provision of lighting on Main South Road for its whole length is not considered to be a priority at this time.

It should be noted that the street lighting mounted on SA Power Network stobbies is owned by SA Power Network, with DPTI paying a tariff to ensure the lighting is maintained and in this section of road Council also pays a share of the tariff on many of the lights.

Road lighting assets are regularly audited and any identified maintenance is undertaken as required.

2.7.5 Structures

There are six existing drainage structures that intersect the study corridor. Their properties are summarised in Table 2-1.

Table 2-1 – Summary of Structures on Main South Road and their Properties

Location	Type	Span	Length (m)	Width (m)	Last Inspected	Reported Condition	Next Inspection
0.72 km south of Maslin Beach Road / Tatchilla Road	Culvert	Single	2.76	15.0	Oct 2013	GOOD	Oct 2017
2.34 km south of Maslin Beach Road / Tatchilla Road	Bridge & Culvert	Double	6.0	29.8	Sept 2013	GOOD	Sept 2017
4.83 km south of Maslin Beach Road / Tatchilla Road	Corrugated Metal	Double	6.0	24.5	May 2013	GOOD	May 2017
1.68 km south of Aldinga Beach Road	Culvert	Double	9.0	32.3	March 2011	GOOD	March 2015
2.84 km south of Aldinga Beach Road	Culvert	Double	6.0	14.6	Sept 2013	GOOD	Sept 2017
4.07 km south of Aldinga Beach Road	Concrete Pipe	Double	4.0	21.0	May 2013	GOOD	May 2017

None of these structures have required any major maintenance work over the last 5 years, nor is there any major maintenance work identified for the next 5 years.

In summary, there are no immediate concerns regarding any structures within the scope of this report.

Minor works at these sites are conducted by DPTI maintenance crews eg sweeping / delineation / guideposts / weepholes / signs / graffiti / litter etc.

3 ROAD ROLE AND FUNCTION

Main South Road is an important rural/semi-rural arterial link in the outer southern suburbs of Adelaide. It provides the principal road link for residents of Maslin Beach, Aldinga, Port Willunga and Sellicks Beach. Additionally, it is the principle road link for much of the Fleurieu Peninsula as well as Kangaroo Island.

The broader role and function of these roads is set out below:

- Provide North-South travel route for commuters in the greater southern area
- Provide a link further south to the Fleurieu Peninsula and Kangaroo Island
- Provide access to a number of residential, commercial, educational and other precincts of cultural and social activity
- Provide a link to the educational locations in the area
- Provide reasonably long, regional connections and access to key cycle trip generators (e.g. local shopping, schools and other places of social activity)

3.1 ROAD FUNCTION

In 2012 DPTI released the document *A Functional Hierarchy for South Australia's Land Transport Network*. This document defines the function of all transport corridors within South Australia.

The function of Main South Road has been identified as:

- A Major Traffic and Freight Route
- a Major Cycling Route

While not defined as a Public Transport Route, this function will still be given consideration within this RMP.

3.2 ROAD FUNCTIONAL OBJECTIVES

The functional objectives for the study corridor define safety and operational benchmarks to assist in defining traffic management measures that should exist to support the current role of the road.

A framework of how Main South Road, between Tatchilla Road and Sellicks Beach Road should function and operate has been developed, as described in Table 3-1.

Table 3-1 - Functional Objectives and recommended Traffic Management Measures for Main South Road

Road Element	Functional Objectives	Traffic Management Requirements
CAPACITY / LANES	<ul style="list-style-type: none"> • Provide adequate road space and number of lanes to ensure safe and efficient operation • Cater for bicycles 	<ul style="list-style-type: none"> • One lane in each direction to facilitate tidal AM and PM peak traffic volumes • Lane widths of 3.5 m lanes or greater • Sealed shoulder to aid the separation of cyclists and vehicular traffic

Road Element	Functional Objectives	Traffic Management Requirements
ACCESS AND TURNING TRAFFIC	<ul style="list-style-type: none"> • Turning traffic should not interfere with the flow of through traffic • Limit direct access to provide safety and efficiency on Main South Road 	<ul style="list-style-type: none"> • Right turn storage lanes at key intersections or at busy access points • Left turn deceleration lanes at key intersections or at busy access points • Painted median to separate opposing through traffic movements
SPEED LIMITS	<ul style="list-style-type: none"> • Speed limits to provide safe and efficient travel on Main South Road 	<ul style="list-style-type: none"> • Lower speed limits where there is significant side road interaction with Main South Road traffic • 100 km/h rural default speed limit where there is little or no side road interaction with Main South Road traffic
SAFETY AT INTERSECTIONS	<ul style="list-style-type: none"> • Minimise conflict points at busy intersections to reduce crashes 	<ul style="list-style-type: none"> • Active control (e.g. roundabouts) at major intersections if warranted and ensure that intersections/junctions are designed to current design and safety standards
LANDSCAPING AND ROADSIDE FURNITURE	<ul style="list-style-type: none"> • Remove or protect roadside hazards 	<ul style="list-style-type: none"> • Trim or remove vegetation where necessary for road safety • Remove unprotected roadside obstacles or drop offs (e.g. exposed surface drainage/culverts) • Ensure new landscaping / urban design elements do not create a new hazard
ROAD LIGHTING	<ul style="list-style-type: none"> • Provide road lighting at key intersections 	<ul style="list-style-type: none"> • Road lighting to V3 standard at key intersections

4 ROAD SAFETY

4.1 CRASH ANALYSIS

Crash analysis is used to identify current safety issues at intersections and mid-block sections. It enables the department to focus its attention to locations which are most in need of safety improvements. The department primarily focuses on casualty crashes, however for the purposes of this RMP, property damage only (PDO) crashes (where the value of the damage exceeds \$3000) will be considered when required.

It should be noted that the Department prioritises the importance of treating specific crash sites using a ranking system aligned to the criteria used to determine the eligibility for funding of projects under the Black Spot programs (Nation Building and State). The ranking is reviewed each year.

Black Spot funding is limited to road safety improvements at intersections and mid blocks road sections of less than 3 km. The minimum eligibility criterion is a history of at least three reported casualty crashes in the last five years at the site. These criteria will be used in the analysis of locations in this RMP.

The crash analysis contained within this Road Management Plan spans a five year period between 2009 and 2013.

Crash analysis has been conducted for all intersections and junctions along the study corridor. Crash analysis has been conducted for mid-block sections with a total of four or more crashes over the five year period (including PDO and casualty crashes).

4.2 CRASH TYPES

The crash types referred to in this Road Management Plan are right angle, right turn, rear end, hit fixed object, side swipe, head on, and left road (out of control).

Right angle crashes occur at intersections and junctions and involve vehicles from adjacent approaches. In simpler terms, it means a vehicle on one road crashing into a vehicle from an intersecting road.

Right turn crashes also occur at intersections and junctions but involve vehicles from opposing directions. Typically, this type of crash involves a vehicle intending to turn right failing to select an appropriate gap in the oncoming traffic stream and getting hit as a result.

Rear end crashes are the most common type of crashes and involve vehicles crashing into the vehicle immediately in front of them. This type of crash is typically caused by a trailing vehicle failing to keep a safe distance from the vehicle in front.

Side swipe crashes occur when vehicles travelling in the same direction collide with each other, typically associated with lane changing manoeuvres.

Head on collisions occur when opposing vehicles collide directly head on with each other. This is more likely on undivided carriageways which are one lane in each direction.

Left road crashes occur when a vehicle leaves the carriageway in an uncontrolled way.

Hit fixed object crashes occur when a vehicle leaves the carriageway in an uncontrolled way and collides with a fixed object.

The various crash types are illustrated in Figure 4-1.

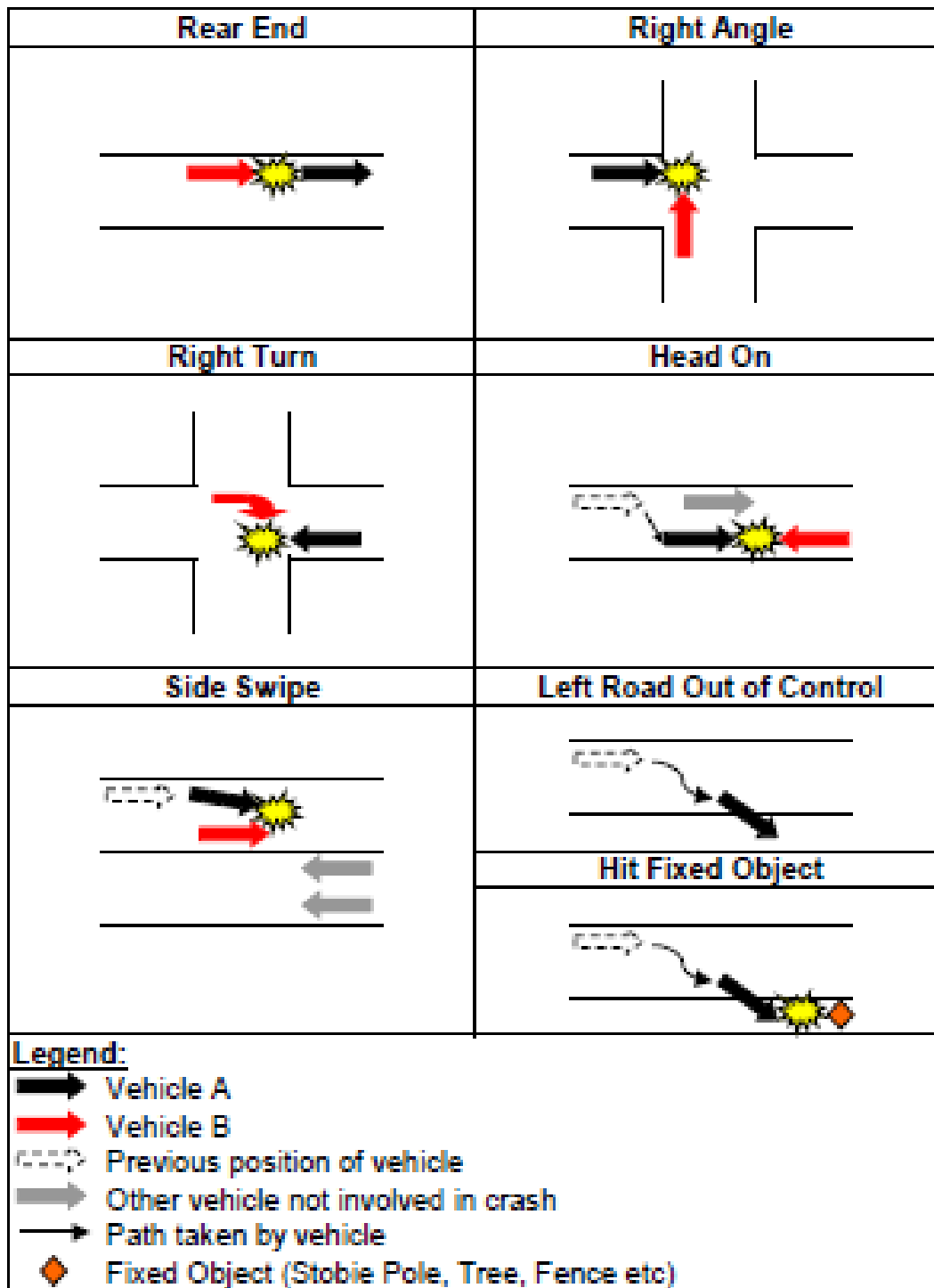


Figure 4-1 – Typical Crash Types

4.3 INTERSECTION CRASHES

The five year crash history (2009 to 2013) for all intersections along the study corridor is listed in Table 4-1. The ranking of each intersection compared against all unsignalised intersections within the Adelaide metropolitan area by casualty crashes has also been included. Analysis of these sites and recommendations are made in Section 6. A more detailed crash history table is listed in Appendix A.

Table 4-1 - Intersection Crashes 2009-2013

Section	Intersection	Crash Type	PDO +\$3000	Casualty	Total	Metropolitan area-wide Ranking
1	Maslin Beach Road / Tatachilla Road	Hit Fixed Object	1	0	1	=38
		Rear End	0	1	1	
		Right Angle	6	7	13	
		Right Turn	2	1	3	
		Hit Animal	1	0	1	
Total	10	9	19			
1	Sheriff Rd / Communication Road	Right Angle	2	3	5	=401
		Hit Fixed Object	2	0	2	
		Total	4	3	7	
1	Thomas Road / Branson Road	Rear End	0	2	2	=671
		Side Swipe	1	0	1	
		Hit Fixed Object	1	0	1	
		Total	2	2	4	
1	Malpas Road	Rear End	0	1	1	=401
		Right Angle	0	1	1	
		Head On	0	1	1	
		Hit Fixed Object	1	0	1	
		Total	1	3	4	
1	Little Road	Rear End	3	5	8	=167
		Total	3	5	8	
2	Port Road	Rear End	24	6	30	=67
		Right Angle	1	1	2	
		Total	25	7	32	
2	Old Coach Road	Right Angle	11	5	16	=167
		Hit Fixed Object	1	0	1	
		Total	12	5	17	
2	Aldinga Road (Biscay Road)	Rear End	7	4	11	=167
		Right Angle	4	1	5	
		Right Turn	4	0	4	
		Total	15	5	20	
2	Aldinga Beach Road	Hit Fixed Object	0	1	1	=67
		Right Turn	3	2	5	
		Rear End	2	1	3	
		Right Angle	2	3	5	
		Total	7	7	14	
3	Hart Road / Colville Road	Hit Fixed Object	1	0	1	Not ranked
		Hit Animal	1	0	1	
		Total	2	0	2	
3	Hahn Road / Cox Road	Hit Fixed Object	1	0	1	=67
		Rear End	1	2	3	
		Right Angle	0	2	2	
		Side Swipe	1	1	2	
		Right Turn	0	1	1	
		Head On	0	1	1	
		Total	3	7	10	
3	Norman Road / Rogers Road	Head On	1	0	1	=167
		Hit Fixed Object	1	0	1	
		Rear End	1	0	1	
		Right Angle	1	2	3	
		Hit Animal	0	1	1	
		Side Swipe	0	1	1	
		Right Turn	0	1	1	
Total	4	5	9			
3	Perth Street	<No Crashes>	0	0	0	Not ranked
		Total	0	0	0	
3	Sellicks Beach Road / Old Sellicks Hill Road	Rear End	5	0	5	=1175
		Right Angle	1	1	2	
		Total	6	1	7	

* '=' indicates that an intersection is jointly ranked

4.4 MID-BLOCK CRASHES

The five year crash history (2009 to 2013) for mid-block sections with four or more total crashes (PDO and casualty) along the study corridor is listed in Table 4-2 below. Analysis of these sites and recommendations are made in Section 6. A more detailed crash table including all mid-block sections is listed in Appendix B.

Table 4-2 Key Mid-Block Crashes for 2009–2013

Section	Intersection	Crash Type	PDO +\$3000	Casualty	Total	Length of Section (km)	Casualty Crashes/km
1	Sherriff Road – Thomas Road	Hit Animal	1	0	1	1.25	1.60
		Hit Fixed Object	2	0	2		
		Roll Over	1	0	1		
		Side Swipe	0	1	1		
		Rear End	0	1	1		
		Total	4	2	6		
1	Malpas Road – Little Road	Head On	1	2	3	1.37	5.11
		Rear End	0	4	4		
		Hit Animal	1	0	1		
		Hit Object On Road	2	0	2		
		Hit Fixed Object	0	1	1		
		Total	4	7	11		
2	Port Road - Aldinga Road (Biscay Road)	Head On	0	1	1	0.88	1.14
		Hit Fixed Object	2	0	2		
		Other	1	0	1		
		Total	3	1	4		
3	Aldinga Beach Rd - Hart Road	Left Road Out of Control	2	0	2	1.04	0.96
		Hit Animal	1	0	1		
		Head On	0	1	1		
		Rear End	1	0	1		
		Total	4	1	5		
3	Hart Road – Hahn Road	Rear End	2	1	3	0.73	2.74
		Side Swipe	0	1	1		
		Total	2	2	4		
3	Hahn Road – Rogers Road	Rear End	1	1	2	1.17	1.71
		Left Road Out of Control	1	0	1		
		Hit Fixed Object	0	1	1		
		Total	2	2	4		
3	Rogers Road – Perth Street	Hit Fixed Object	2	0	2	2.36	1.69
		Hit Animal	1	0	1		
		Head On	0	2	2		
		Rear End	0	2	2		
		Roll Over	1	0	1		
		Total	4	4	8		

4.5 SPEED ENVIRONMENT

The roadside environment along South Road is predominantly agricultural / rural for which the 100 km/h default speed limit is generally appropriate and would normally apply on such a strategic functional route. The existing speed limit for Sections 1 and 3 is 100 km/h. The speed limit for Section 2 was lowered from 100 km/h to 80 km/h in 2002 taking into consideration the high number of cross road movements between side roads on opposite sides of the main road in close proximity of each other. Community concerns have been raised about the safety at some intersections and the need for lower speed limits, particularly in Section 2 and in the Sellicks Beach region. Further discussion regarding speed limits can be found in Section 6.3.

4.6 PEDESTRIANS

Sections 1, 2, and 3 of Main South Road do not have kerbing, except for small sections near the Old Coach Road and Stonehouse Lane intersections. There are currently no footpaths along the length of the road for pedestrian access, due principally to the nature of the land use in the area and the low demand for pedestrian access. An analysis of the crash data showed that there were no crashes involving vehicles hitting pedestrians in the last five years. However, DPTI will work with council to address any future pedestrian needs along Main South Road.

4.7 BICYCLE LANES

There are currently no bicycle lanes provided along the length of this section of Main South Road. Existing cycling facilities in the immediate area include a sealed shoulder along the section of Main South Road north of Tatachilla Road and the Coast to Vines off-road bicycle path which connects to the section of Main South Road north of Tatachilla Road and provides access to the McLaren Vale and Willunga townships.

Main South Road within the study corridor is classified as a Major Cycling route. The installation of formal cycling facilities would require further shoulder widening; and while this would be beneficial, given the low density of properties, the distance from the city and the speed limits on these roads the installation of cycling facilities is not considered a priority at this time. However, given the potential for growth in the area, it is recognised that a need for cycling facilities may be identified in the future, at which time DPTI will consider provision of on-road bicycle lanes or off-road cycling paths.

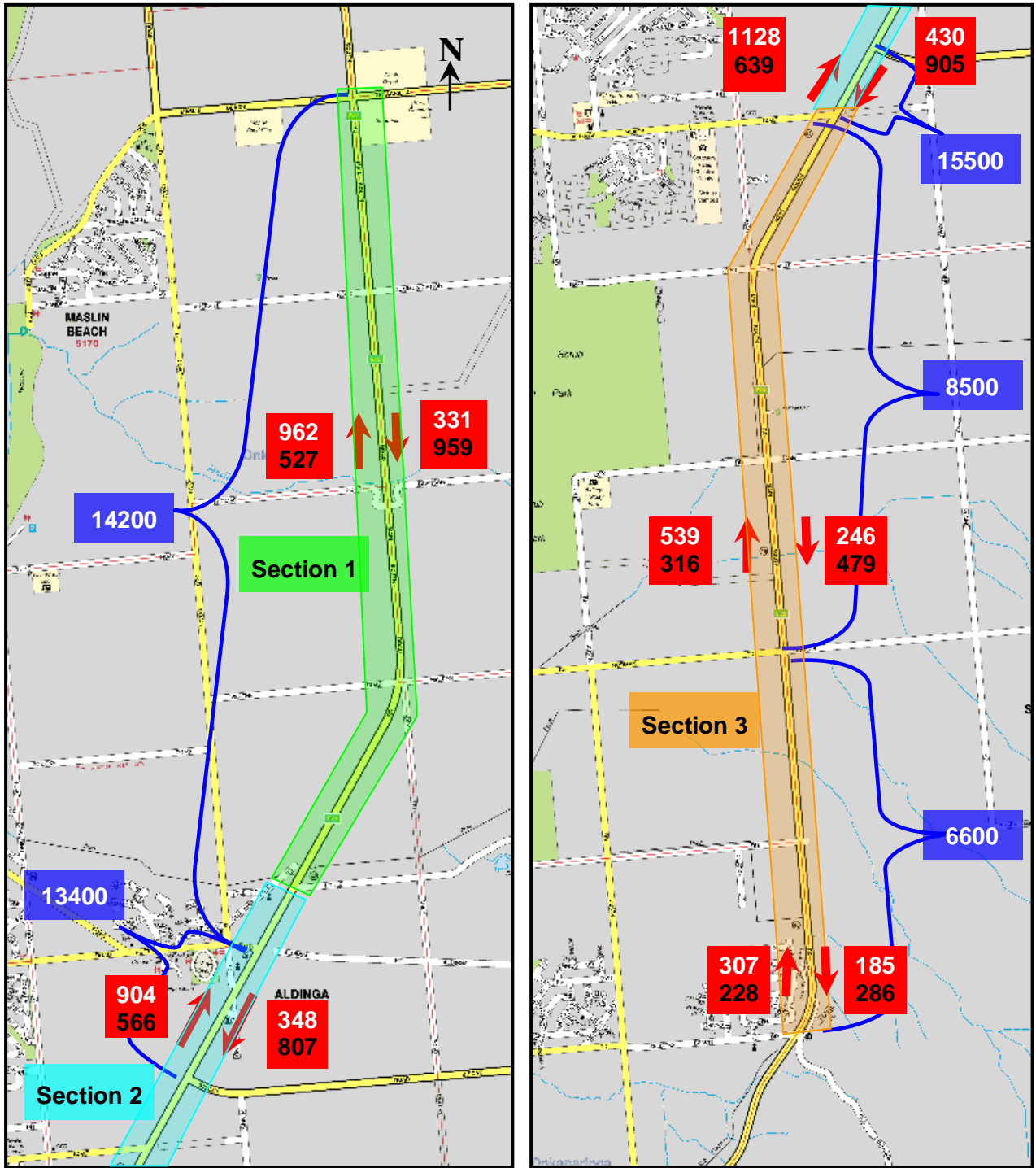
5 ROAD CAPACITY

The two-way Annual Average Daily Traffic (AADT) volumes for the road sections in this report vary from 6600 in the Sellicks Beach area to 15500 vehicles in the Aldinga Beach area. Figure 5-1 shows the distribution of AADT volumes.

Main South Road consists of one through lane in each direction along its length with two overtaking lanes provided in the northern section and one in the southern section. It should be noted that a single clear lane of traffic has the capacity to cater for 1200 to 1800 vehicles per hour, depending on the number and frequency of side roads and other factors which influence the smooth progression of traffic along a road. (Austroads, Guide to Traffic Management, Part 3, Traffic Studies and Analysis – Section 5.2.1).

Currently, the existing lane configuration of the road is adequately capable of supporting the recorded traffic volumes along the roads covered in this RMP.

Figure 5-1 demonstrates the variance in the daily traffic flow numbers across the length of the road, which indicates a high number of vehicles turning on and off the road, particularly in the northern section and in the short section between Aldinga (Biscay) Road and Aldinga Beach Road. The change in traffic volumes and turning movements necessitates a review of the existing intersections to ensure that they are able to adequately manage the current traffic volumes and movements.



LEGEND

→ AM: 1250
PM: 1350

Indicates one way, one hour, peak flows

11,200

Indicates Estimated Two-Way Average Annual Daily Traffic (AADT) for this section highlighted

Figure 5-1 – Two-Way Average Annual Daily Traffic (AADT) (2015) and one way peak hour flows (2012-2013)

6 DISCUSSION AND RECOMMENDATIONS

6.1 RECOMMENDATIONS FOR INTERSECTIONS/ JUNCTIONS

6.1.1 Main South Road / Tatachilla Road / Maslin Beach Road



Figure 6-1 Existing Layout of Main South Road/Tatachilla Road/Maslin Beach Road Intersection

SITE DESCRIPTION

This intersection is a typical four-way unsignalised intersection with one lane in each direction, with stop line and signs on the east and west approaches. The speed limit on Main South Road is 100 km/h while the speed limit on the side roads is 80 km/h. Separated right turn lanes are provided on Main South Road for traffic turning into the side roads and an acceleration lane is provided for vehicles turning left out of Maslin Beach Road.

Roadside hazards around this intersection include stobie poles on the north western and south eastern corners and an unprotected culvert on the south western corner.

The intersection is currently flag lit by a single luminaire mounted on a stobie pole.

ACCESS

Maslin Beach Road (to the west) provides access to a sand quarry and the Maslin Beach community whilst Tatachilla Road (to the east) provides access to the Tatachilla Lutheran College and also the town centre of McLaren Vale. There is also a quarry located on the south east corner of the intersection which has two access points; one from Main South Road and one from Tatachilla Road. Both of these access points are located within close proximity to the intersection.

CRASH HISTORY & ANALYSIS

There were 19 reported crashes (nine casualties + ten PDO) at the intersection of Main South Road, Tatachilla Road and Maslin Beach Road between the years of 2009 to 2013. Of these crashes, 13 were right angle crashes and three were right turn crashes. 50% of these side impact type crashes resulted in injury to vehicle occupants. The proportion of casualty crashes is high and the severity of crashes is indicative of the speed of the road. This intersection is ranked 38th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-1 below summarises the crash history at this location over the past five years.

Table 6-1-Summary of crashes at Tatachilla Road/Maslin Beach Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Tatachilla Road / Maslin Beach Road	Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	0	1	0	0	0	1	0	1
		Right Angle	6	7	4	2	4	2	1	13
		Right Turn	2	1	1	0	1	0	1	3
		Hit Animal	1	0	0	0	0	0	1	1
		Total	10	9	5	3	5	3	3	19

Some of the factors contributing to crashes include the high speed environment, the number of vehicles accessing this intersection and the number of vehicular conflict points. Analysis of incident reports indicate that the high number of right angle crashes were caused by vehicles attempting to turn right out from Tatachilla Road and Maslin Beach Road and those attempting to cross from Tatachilla Road to Maslin Beach Road or vice versa. One factor that may be contributing to these crashes is the crest located to the south of the intersection which reduces sight distance for vehicles waiting in the side roads. Another factor in these crashes may be drivers selecting inappropriate gaps in the oncoming traffic after experiencing frustration at having to wait at the intersection for a considerable amount of time. A graphical representation of the right angle crashes is shown in Figure 6-2.

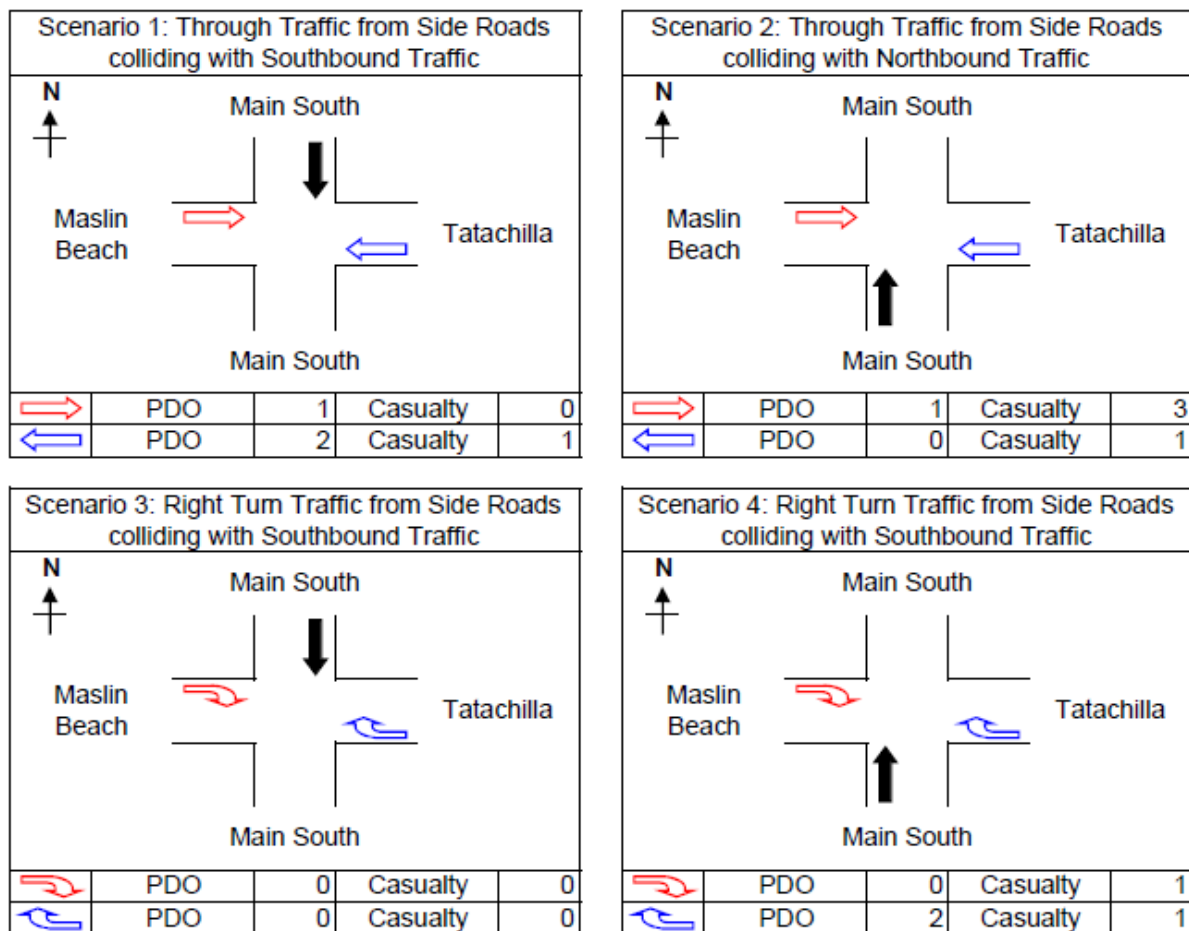


Figure 6-2 Right Angle Crashes at Main South Road/Tatachilla Road/Maslin Beach Road Intersection (2009-2013)

TREATMENTS

There are various treatments that could be implemented to address the high number of Right Angle crashes at this intersection; such as road closures or staggering the legs of the intersection. Traffic signals are more appropriate for urban environments rather than rural environments and are therefore not considered appropriate at this location. Closing one of the approaches at the intersection is also not appropriate given the importance of both Tatachilla Road and Maslin Beach Road.

The option of staggering the approaches to the intersection was also considered. Staggering approaches removes the possibility of vehicles from the side roads travelling straight across an intersection and instead requires them to perform either a left turn followed by a right turn or a right turn followed by a left turn. The former arrangement (left turn, right turn) is the safer option as it only requires vehicles to cross one stream of traffic at a time. However, it is difficult to implement this type of arrangement at this location as it would require realigning either Maslin Beach Road to the south or Tatachilla Road to the north. Shifting either of these roads closer to the crests to the north and south would result in poor sight distance. Reducing the grade of either of these crests would remove the sight distance concerns but would likely incur high costs. The same issues would apply to the 'right turn, left turn' option as well as the added safety concerns of vehicles having to select a safe gap to cross two streams of traffic when they turn right out of the side roads.

The most appropriate option is to install a single lane roundabout. This treatment would address the issue of right angle crashes by separating conflict points, simplify judging gaps in traffic and will give all of the approaches equal priority. It is recognised that in periods of high traffic on Main South Road, side road traffic will have less opportunity to enter the

roundabout. As vehicles on all approaches will be required to slow down at the roundabout, the severity of any crash, should it occur, would also be reduced. The proposed solution would include the installation of road lighting to the appropriate arterial road standard (V3) to enhance the visibility of the intersection at night.

It should be noted that whilst a roundabout will improve the efficiency for vehicles from the minor approaches, it will slightly decrease the efficiency for vehicles travelling straight through on Main South Road as these vehicles would have to slow down or stop to give way to traffic from the right.

Speed restrictions will be applied to Main South Road in conjunction with implementing the roundabout to reduce approach speeds to 80 km/h before traffic is required to negotiate the roundabout. The concept for this roundabout is shown in Figure 6-3.

This roundabout was nominated for Black Spot Program funding in 2010/2011, however it was unsuccessful due to the high cost involved. The department will continue to pursue other funding avenues for this proposal.

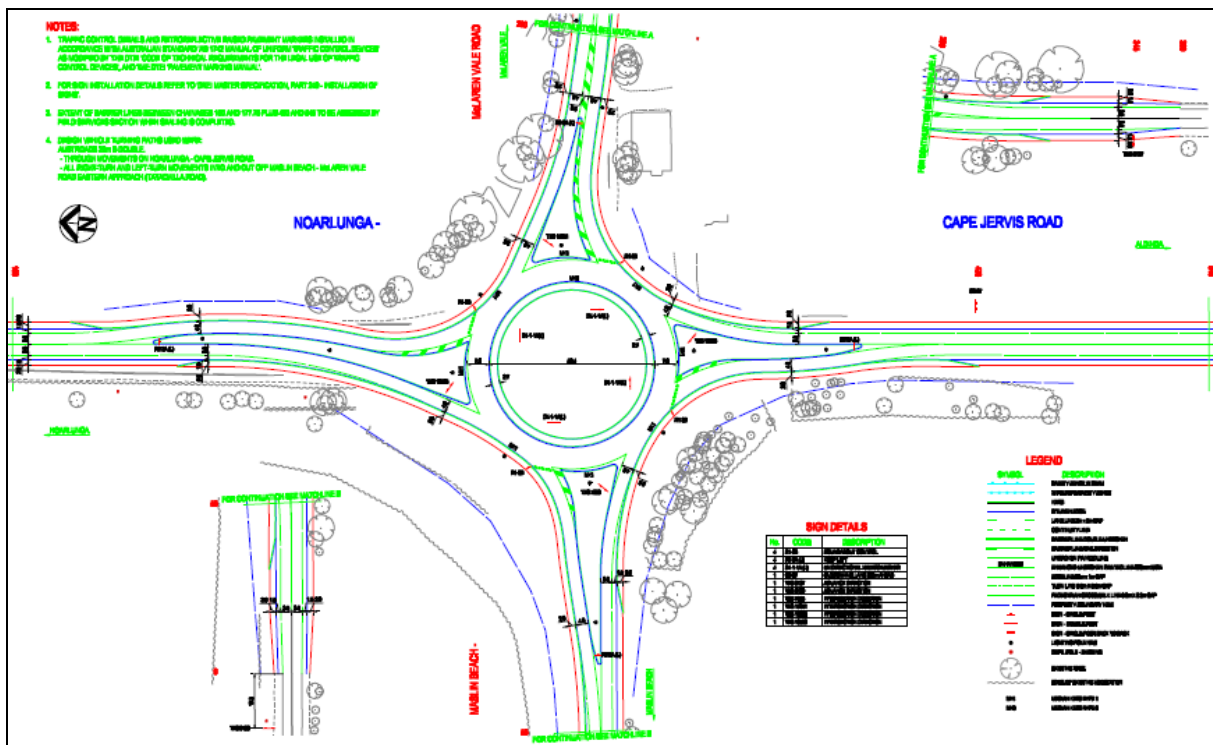


Figure 6-3 Proposed Upgrades for Main South Road/Tatachilla Road/Maslin Beach Road Intersection: Roundabout

6.1.2 Main South Road / Sherriff Road / Communication Road



Figure 6-4 Existing Layout of Main South Road / Sherriff Road / Communication Road Intersection

SITE DESCRIPTION

This intersection is a four-way unsignalised intersection with give-way control on the east and west approaches. The speed limit on Main South Road through this intersection is 100 km/h while both side roads have a posted speed limit of 80 km/h. There are separated right turn lanes on Main South Road to facilitate safe turning opportunities into both side roads. There is also a southbound overtaking lane that runs through the intersection. The current configuration with separated short right turn lanes and southbound overtaking lane was established in 2006 as a part of the Department’s Overtaking Lanes program. The overtaking lane was strategically located at this location as the next southbound overtaking lane along Main South Road is located 850 m south of Norman Road / Rogers Road intersection (about 9.8 km south of Sherriff Road / Communication Road).

There is an unprotected culvert on the north eastern corner which may present a roadside hazard.

In 2012, a minor safety improvement was implemented at the intersection which involved separating the left turning vehicles from the through and right turning vehicles on the side roads with a painted island. This ensures that through and right turning vehicles from Sherriff Road and Communication Road perform their manoeuvres from the individual lanes. In addition, left turning vehicles will be correctly positioned to ensure that their view of oncoming Main South Road traffic is not obscured by vehicles in the adjacent lane.

There is no road lighting present at this intersection.

ACCESS

Communication Road (to the east) is the primary access road to the Tatachilla community and Sherriff Road (to the west) is a secondary access to Maslin Beach. Access into these roads was maintained at Council's request during the implementation of the overtaking lane as these roads provide important links to Maslin Beach to the west and McLaren Vale to the east.

CRASH HISTORY & ANALYSIS

There were seven recorded crashes at this site in the period from 2009 to 2013, three of which resulted in casualties as a result of right angle crashes. This intersection is ranked joint 401st among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-2 details the years in which these crashes occurred.

Table 6-2- Summary of crashes at Sherriff Road/Communication Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Sherriffs Road / Communication Road	Right Angle	2	3	1	1	1	0	2	5
		Hit Fixed Object	2	0	0	0	0	2	0	2
		Total	4	3	1	1	1	2	2	7

The existing configuration of the intersection requires vehicles from the side roads to negotiate a wide section of road to perform through and right turn out movements. Observations revealed vehicles were storing side by side to cross the intersection and to turn right out of Communication & Sherriff Roads.

Detailed assessment of the crash data indicates that factors contributing to crashes include the high speed environment, the number of vehicles and number of vehicular conflict points. Sight distance at the intersection is considered adequate. All five of the right angle crashes were caused by vehicles from Communication Road attempting to cross over to Sherriff Road and vice versa. The two other crashes were caused by driver inattention whilst travelling on Main South Road resulting in crashes into a fence. A possible factor in these crashes is that left turning vehicles into the side roads may be obscuring vehicles behind them that are continuing along Main South Road. In addition, four of the seven crashes at this intersection occurred at night, suggesting that night time visibility at the intersection may have been a contributing factor and another crash occurred when there were wet conditions. Figure 6-5 shows the types of right angle crashes that have occurred at the intersection.

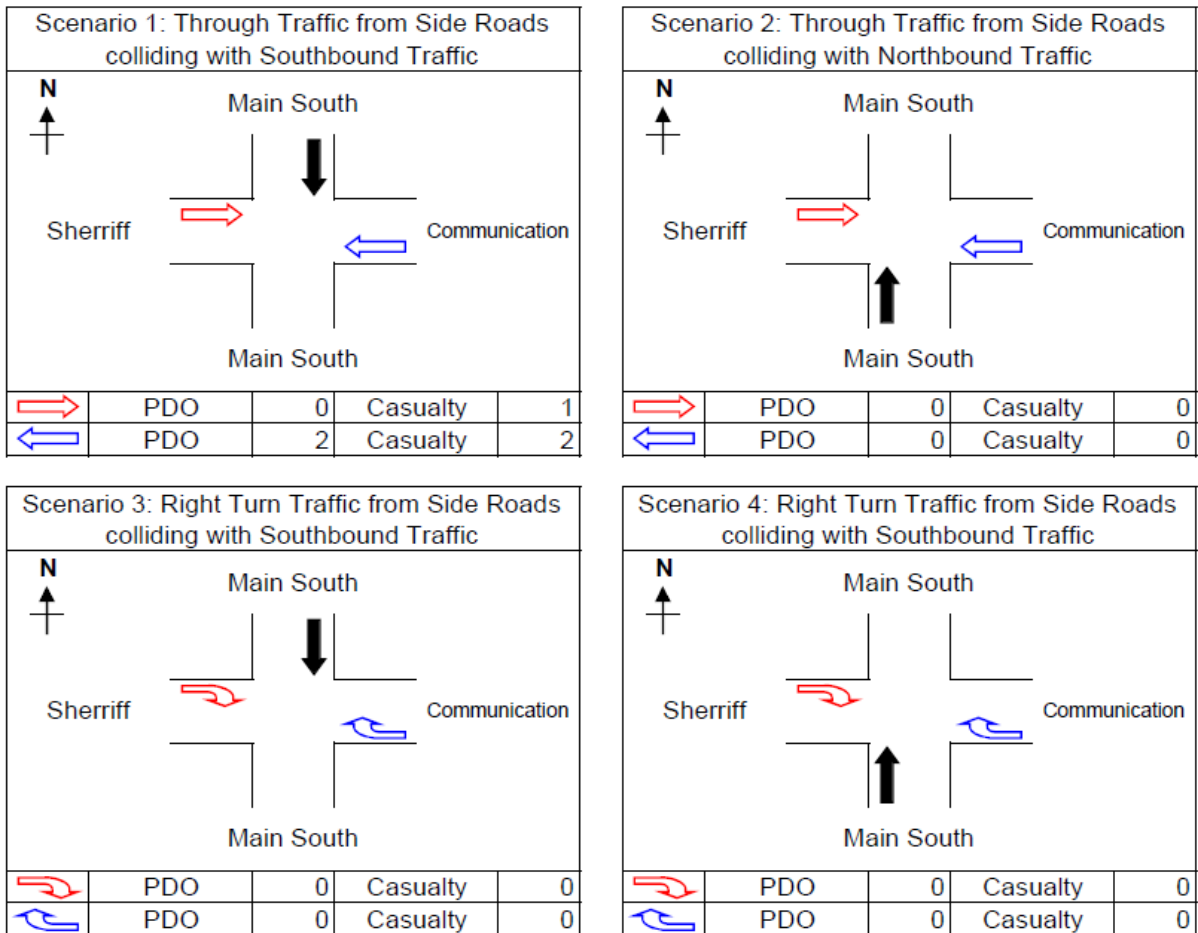


Figure 6-5 Right Angle Crashes at Main South Road/Sherriff Road/Communication Road Intersection (2009-2013)

TREATMENTS

One of the options considered for this intersection was the installation of a roundabout, as the main crash type at this intersection is similar to the intersection of Main South Road / Tatchilla Road / Maslin Beach Road (i.e. Right Angle crashes). However, while this option would reduce the possibility of right angle crashes it would also require removal of the southbound overtaking lane. The removal of the overtaking lane would increase the possibility of drivers attempting unsafe overtaking manoeuvres at other unsafe locations along Main South Road, and was therefore considered an inappropriate treatment.

Another option considered was the closing of access into Communication Road from Main South Road, given that most of the right angle crashes were caused by vehicles on this approach. The benefit of this treatment is that it improves safety by reducing the 4-way intersection into a T-junction, thus reducing the possibility of Right Angle type crashes from occurring. This treatment also allows the existing overtaking lane to be retained. However, Communication Road is the only road in the Tatchilla area that provides a direct link between Main South Road and Victor Harbor Road and no suitable alternatives exist if access into Communication Road is closed. Therefore this treatment was considered inappropriate.

A further option considered at this intersection is the installation of deceleration lanes on Main South Road for vehicles turning left into the side roads (refer Figure 6-6). The advantages of this option are that it provides left turning traffic from Main South Road with a separate lane to safely decelerate and it will also address the possibility of left turn vehicles obscuring the through vehicles behind them. Additionally, this treatment allows the overtaking lane to be retained as well as maintaining access into both side roads. This is the recommended option for this intersection.

A further recommendation is to provide an appropriate standard of lighting at this intersection, given the incidence of night time crashes.



Figure 6-6 Proposed Upgrades for Main South Road/ Sheriff Road/ Communication Road Intersection

6.1.3 Main South Road / Thomas Road / Branson Road



Figure 6-7 Existing Layout of Main South Road/Thomas Road/Branson Road Intersection

SITE DESCRIPTION

This intersection is a four-way unsignalised intersection with Thomas Road and Branson Road approaching Main South Road on back-to-back curve. The intersection is situated at a low point of a vertical sag curve. The speed limit on Main South Road through this intersection is 100 km/h. Thomas Road has a short length of sealed apron and Branson Road has a slightly longer sealed apron (approximately 25 m). There are no turning lanes at this intersection.

There are unprotected culvert headwalls on both sides of Branson Road and Thomas Road which present roadside hazards close to the intersection.

There is currently no road lighting present at this intersection.

ACCESS

Both side roads provide unsealed access to local properties. Branson Road has an 8-tonne bridge load limit.

CRASH HISTORY & ANALYSIS

Four crashes were recorded at this unsignalised intersection in the five year period from 2009 to 2013. This intersection is ranked joint 671st among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-3 below details all of the crashes and the years that they occurred.

Table 6-3 - Summary of crashes at Thomas Road / Branson Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Thomas Road / Branson Road	Rear End	0	2	1	0	0	0	1	2
		Side Swipe	1	0	0	0	0	1	0	1
		Hit Fixed Object	1	0	0	0	0	1	0	1
		Total	2	2	1	0	0	2	1	4

TREATMENTS

Safety at the intersection could be improved by providing channelised right turn lanes into the side roads and installing road lighting. However, given the low crash statistics at this location as well as the low traffic volumes on Thomas Road and Branson Road it is considered that any upgrade to the intersection would be a low priority.

Instead, it is recommended that interim treatments such as sealing the apron of Thomas Road, re-painting the “Give Way” lines on the side road approaches and installing Reflective Raised Pavement Markers (RRPMs) to improve the visibility of the intersection are implemented instead.



Figure 6-8 Proposed Upgrades for Thomas Road / Branson Road Intersection

6.1.4 Main South Road / Malpas Road

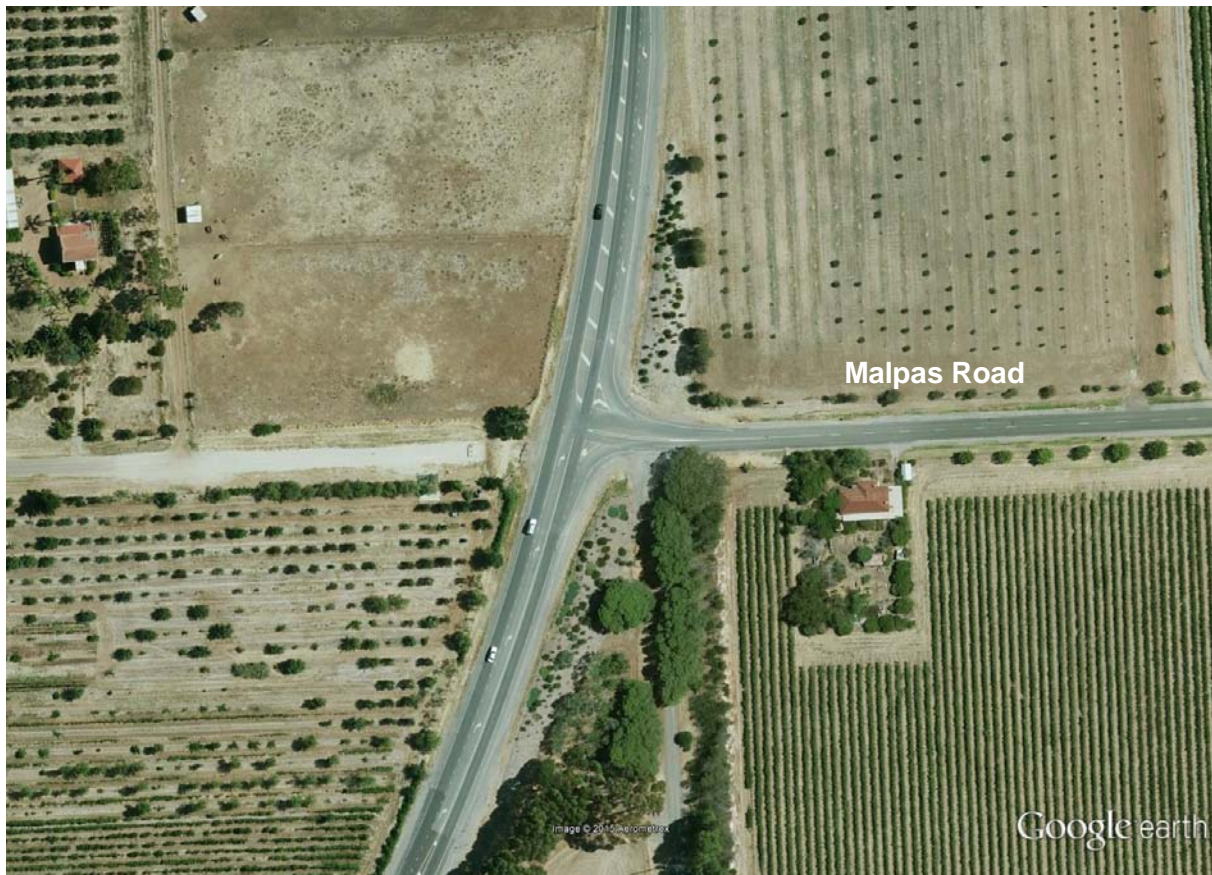


Figure 6-9 Existing Layout of Main South Road / Malpas Road Intersection

SITE DESCRIPTION

This intersection is an unsignalised T-junction with Malpas Road meeting Main South Road from the east. It is situated on the outside of a superelevated curve and is located within the section of Main South Road with a posted speed limit of 100 km/h. The intersection was previously a four-way unsignalised intersection which was converted into a T-junction in 2006 by closing off the access to Iverene Road on the western side. This was done because of the poor visibility of the intersection from Main South Road and the poor crash history at the four-way intersection. Prior to the upgrade there were a total of nine crashes and six of those crashes resulted in casualties. A right turn lane and left turn deceleration lane into Malpas Road were installed as part of the access closure, as well as the realignment of Malpas Road. Reflective Raised Pavement Markers (RRPMs) were installed in 2010 to further improve delineation.

There is currently no road lighting present at this intersection.

ACCESS

Malpas Road overpasses Victor Harbor Road to the east and provides indirect access to Willunga and McLaren Vale via Main Road.

CRASH HISTORY & ANALYSIS

There were four crashes recorded at this unsignalised intersection in the five year period from 2009 to 2013. This intersection is ranked joint 401st among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-4 below details all of the crashes and the years that they occurred.

Table 6-4 - Summary of crashes at Malpas Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Malpas Road	Rear End	0	1	0	1	0	0	0	1
		Right Angle	0	1	0	0	1	0	0	1
		Head On	0	1	0	0	0	0	1	1
		Hit Fixed Object	1	0	0	0	0	1	0	1
		Total	1	3	0	1	1	1	1	1

The hit fixed object crash was a result of inattention and the right angle casualty crash was a result of a vehicle failing to give way when turning left out of Malpas Road and colliding with a vehicle travelling south on Main South Road. The rear end crash was a result of inattention when a vehicle was travelling west on Malpas Road. The head on crash was the result of a southbound vehicle driving too quickly in wet conditions that aquaplaned over a puddle and crossed onto the wrong side of the road before colliding with a northbound vehicle.

TREATMENTS

The geometry of the intersection could be upgraded by providing a further separated left turn lane into the side roads to enhance sight distance. This is shown in Figure 6.10.

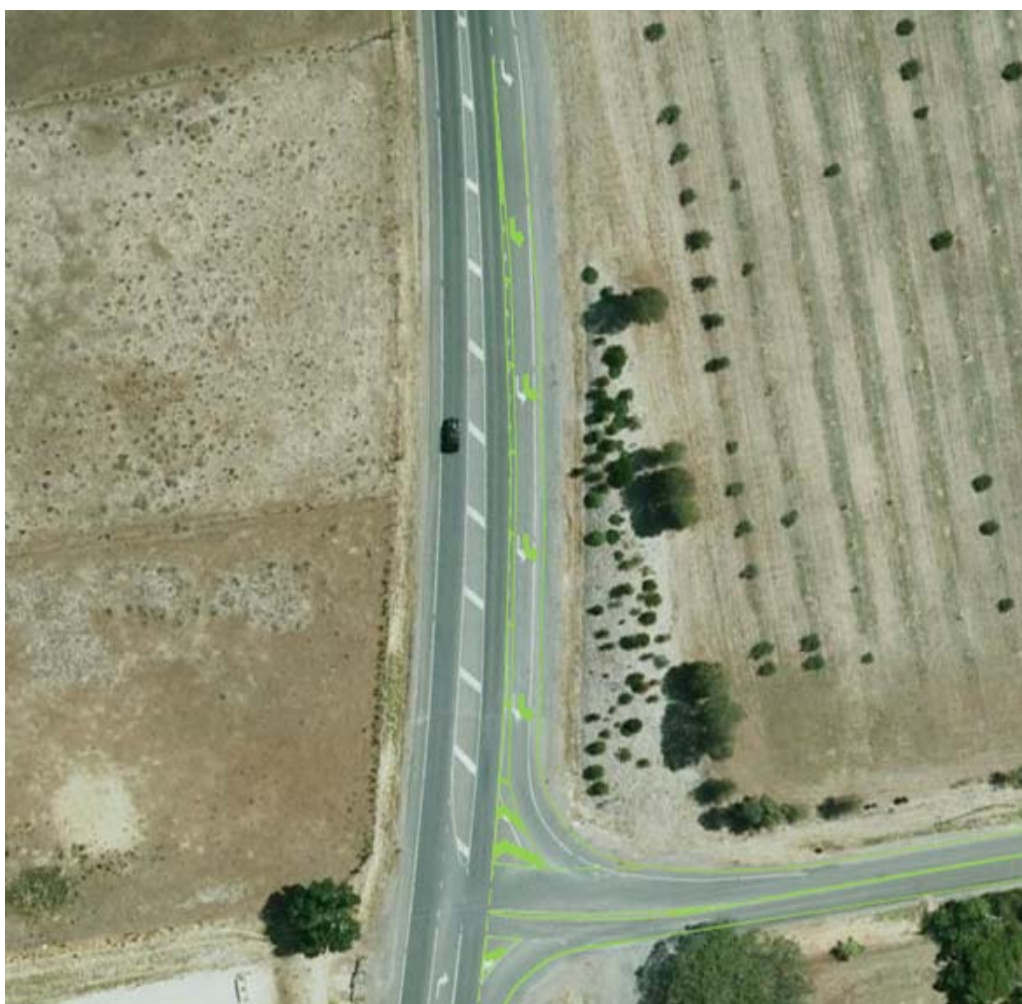


Figure 6-10 Proposed Upgrades for Main South Road / Malpas Road Intersection

In 2014, the Motor Accident Commission (MAC) approached the department with potential funding for road safety improvements along Main South Road, specifically targeting locations with a history of fatal and serious injury crashes. The department undertook further investigations and developed a proposal for the installation of a median wire rope safety

barrier along Main South Road between Malpas Road and Port Road, where two fatal crashes have occurred (refer to Section 6.2.2).

Due to the right turn restrictions imposed by the proposed median wire rope safety barrier, a U-turn facility is proposed at the Malpas Road intersection. This facility would allow northbound vehicles to turn around and head southbound before turning left into properties or side roads that will no longer be accessible by right turns. The same function will be performed by a proposed roundabout at the Port Road intersection at the southern end of the median wire rope (refer Section 6.1.6).

6.1.5 Main South Road / Little Road

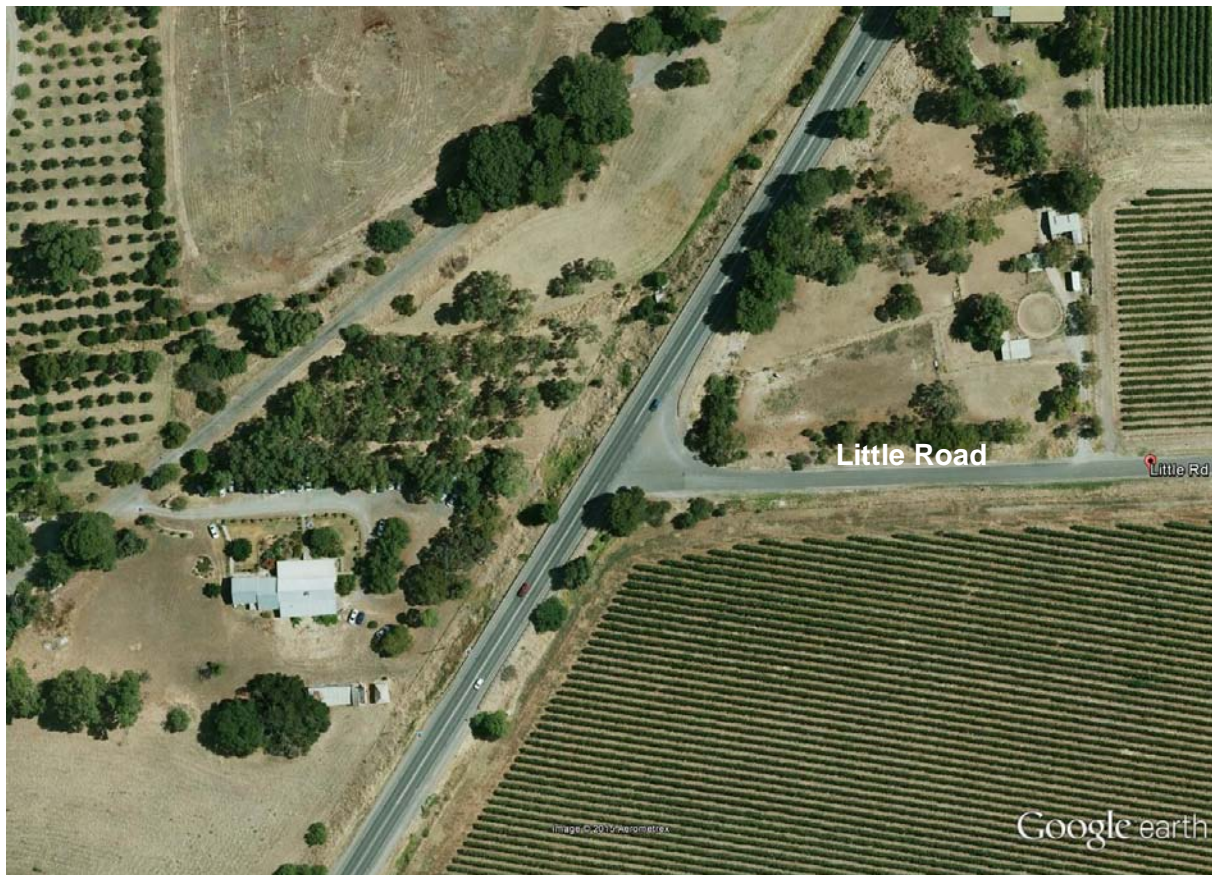


Figure 6-11 Existing Layout of Main South Road / Little Road Intersection

SITE DESCRIPTION

This intersection is an unsignalised T-junction with Little Road meeting Main South Road from the east at a 45 degree angle. The intersection is within the section of Main South Road with a posted speed limit of 100 km/h and is situated in a vertical sag curve. There are no turning lanes provided at the intersection.

Safety barriers are installed on both sides of Main South Road due to the presence of steep fill batters and vegetation along the side of the road.

There is currently no road lighting present at this intersection.

ACCESS

Little Road is a collector road servicing local properties in the area.

CRASH HISTORY & ANALYSIS

There were eight crashes recorded at this intersection in the five year period from 2009 to 2013; all of which were rear end crashes. Five of these crashes resulted in casualties. This intersection is ranked joint 167th among unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-5 below details the years in which the crashes occurred.

Table 65 - Summary of Crashes at Little Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Little Road	Rear End	3	5	2	1	1	0	4	8
		Total	3	5	2	1	1	0	4	8

All eight of the rear end crashes occurred at this intersection when northbound vehicles on Main South Road collided with vehicles that stopped to turn right into Little Road. In some of these crashes, there are reports of vehicles slowing down suddenly to turn right without indicating. This suggests that some drivers wanting to turn right are not expecting the intersection when they reach it and have to brake suddenly.

TREATMENTS

One option considered is to provide additional signage on the southern approach leading up to the intersection which will help increase driver awareness of the intersection. Additionally, the installation of a separated right turn lane into Little Road would help reduce the possibility of rear ends occurring. However, road widening to achieve this may be difficult given the steep batters on the side of the road. Line marking on Little Road to help drivers position themselves correctly to turn onto Main South Road would also provide some benefit.

However, the preferred treatment is to limit access into Little Road by banning the right turn from the south. In 2014, the Motor Accident Commission (MAC) approached the department with potential funding for road safety improvements along Main South Road, specifically targeting locations with a history of fatal and serious injury crashes. The department undertook further investigations and developed a proposal for the installation of a median wire rope safety barrier along Main South Road between Malpas Road and Port Road, where two fatal crashes have occurred (refer Section 6.2.2).

The proposed median wire rope safety barrier would require banning right turns into Little Road, which would solve the rear end crash problem at this intersection. A U-turn facility is proposed at the Malpas Road intersection (refer Section 6.1.4) which would allow northbound vehicles to turn around and head southbound before turning left into Little Road. At the southern end of the wire rope barrier, a proposed roundabout at the Port Road intersection will allow southbound vehicles to turn around to head north (refer Section 6.1.6).

6.1.6 Main South Road / Port Road



Figure 6-12 Existing Layout of Main South Road / Port Road Intersection

SITE DESCRIPTION

This intersection was previously a four-way unsignalised intersection; however the eastern approach of Flour Mill Road (formerly Aldinga Road) was closed to form a T-junction. Port Road meets Main South Road at an angle and is controlled by a stop sign. The posted speed limit on Main South Road at this location is 80 km/h, while the speed limit on Port Road is 60 km/h. In late 2003, several improvements were made to the intersection including the installation of a channelised right turn lane from Main South Road into Port Road and widening on the south western corner to improve the turning speed for left turn vehicles into Port Road and to allow partial separation between left turn and through vehicles. In March 2004, a stop bar and stop sign were added to the Port Road approach.

Road lighting is provided at this intersection and is considered to meet the appropriate arterial road standard (V3).

ACCESS

Port Road forms part of the principal link to Aldinga and Port Willunga to the west.

CRASH HISTORY & ANALYSIS

The Main South Road / Port Road intersection experienced 32 crashes in the period from 2009 to 2013 of which there were seven casualty crashes. This intersection is ranked joint 67th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Table 6-6 below details all of the crashes and the years that they occurred.

Table 6-6- Summary of Crashes at Port Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Port Road	Rear End	24	6	5	7	6	11	1	30
		Right Angle	1	1	0	2	0	0	0	2
		Total	25	7	5	9	6	11	1	32

Rear end crashes are the predominant crash type at this intersection. Analysis of crash data shows that all crashes of this type involved vehicles attempting to turn left or right out of Port Road. Drivers have seen the vehicle in front of them move forward and have assumed that the vehicle will continue to turn onto Main South Road. Instead, the front vehicle has stopped suddenly and the trailing vehicle has moved forward and collided with the rear of the front vehicle.

Two right angle crashes have also occurred at this intersection which involved vehicles turning right out of Port Road being hit by northbound vehicles on Main South Road. One of these crashes resulted in a fatality.

The angle at which Port Road meets Main South Road is likely a contributing factor to the crashes as it makes it difficult for motorists to look right for any oncoming northbound vehicles on Main South Road.

TREATMENTS

To improve safety at the intersection, two options were considered as a staged approach. The first short term treatment (Option 1 – refer Figure 6.13) is a combination of a number of treatments including:

An acceleration lane for left turning traffic from Port Road which will partially address rear end crashes when entering the intersection. The acceleration lane will allow left turn traffic to enter Main South Road at an appropriate speed to judge appropriate gaps in the Main South Road traffic. This will reduce delays for motorists heading north on Main South Road from Port Road.

A deceleration lane for left turning traffic into Port Road, which will separate the left turn traffic from the through traffic on Main South Road to prevent left turners obscuring trailing northbound through traffic which causes stop-start manoeuvres (causing rear ends) on the side road as motorists are unaware of the trailing vehicle.

Modifying the angle of the right turn from Port Road, which will improve all of the visibility at this location.

The second medium term treatment considered (Option 2) for this location is to install a roundabout at the intersection of these roads. This treatment would cater for future development in the area and provides safety benefits of preventing right angle type crashes and reducing the severity of any crashes that may occur by forcing vehicles to slow down on approach to the intersection. This will also enable left and right turners from Port Road to exit the intersection with less hesitancy. The disadvantages of the roundabout are that it would incur high construction and land acquisition costs. A concept design of the roundabout is shown in Figure 6-14.

In 2014, the Motor Accident Commission (MAC) approached the department with potential funding for road safety improvements along Main South Road, specifically targeting locations with a history of fatal and serious injury crashes. The department undertook further investigations and developed a proposal for the installation of a median wire rope safety barrier along Main South Road between Malpas Road and Port Road, where two fatal crashes have occurred (refer Section 6.2.2). The proposal also includes the installation of the roundabout at Port Rd intersection (Option 2) for the aforementioned safety reasons. As right

turn restrictions into properties will be imposed by the proposed median wire rope safety barrier, the roundabout will also provide a U-turn facility to allow southbound vehicles to turn around and then turn left into properties on the western side of Main South Road. A U-turn facility is also proposed at the northern end of the wire rope barrier near Malpas Road (refer Section 6.1.4)

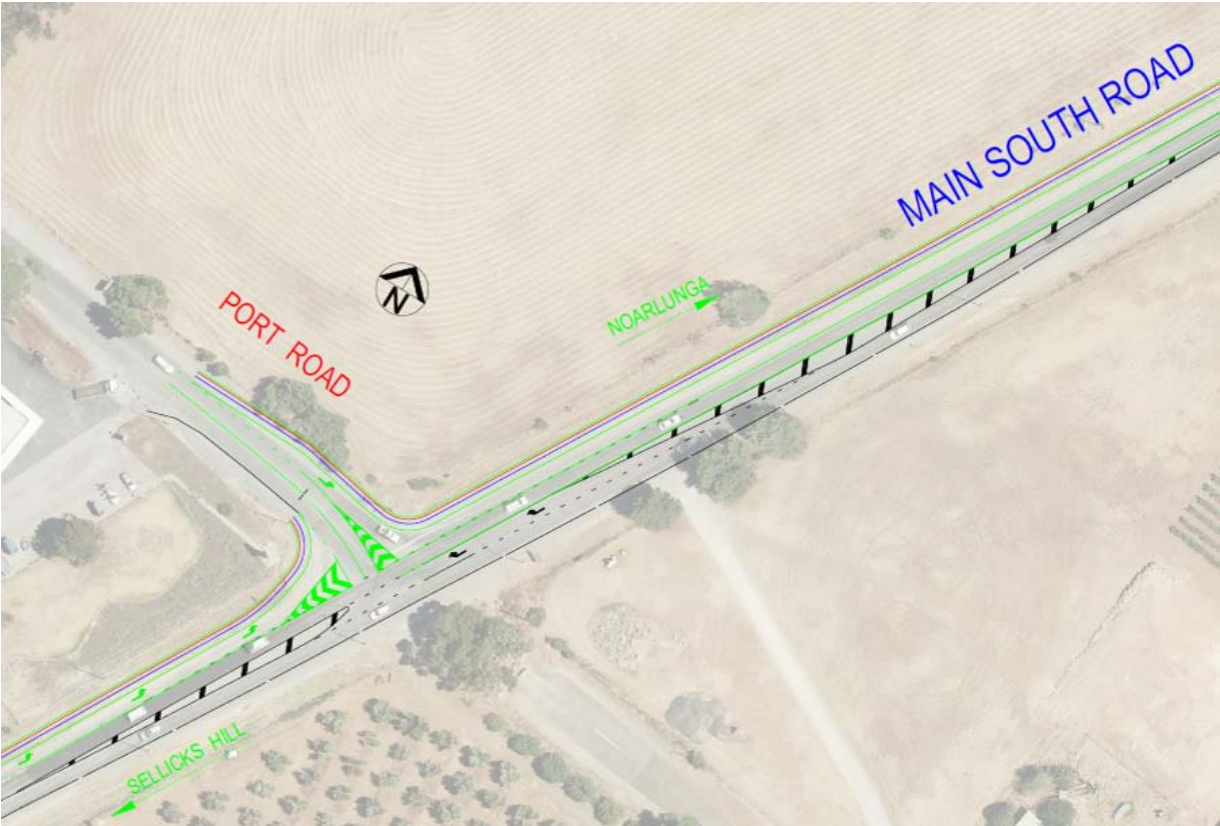


Figure 6-13 Proposed Upgrades for Port Road Intersection: Option 1 - Realignment & Improved Left Turn Facilities

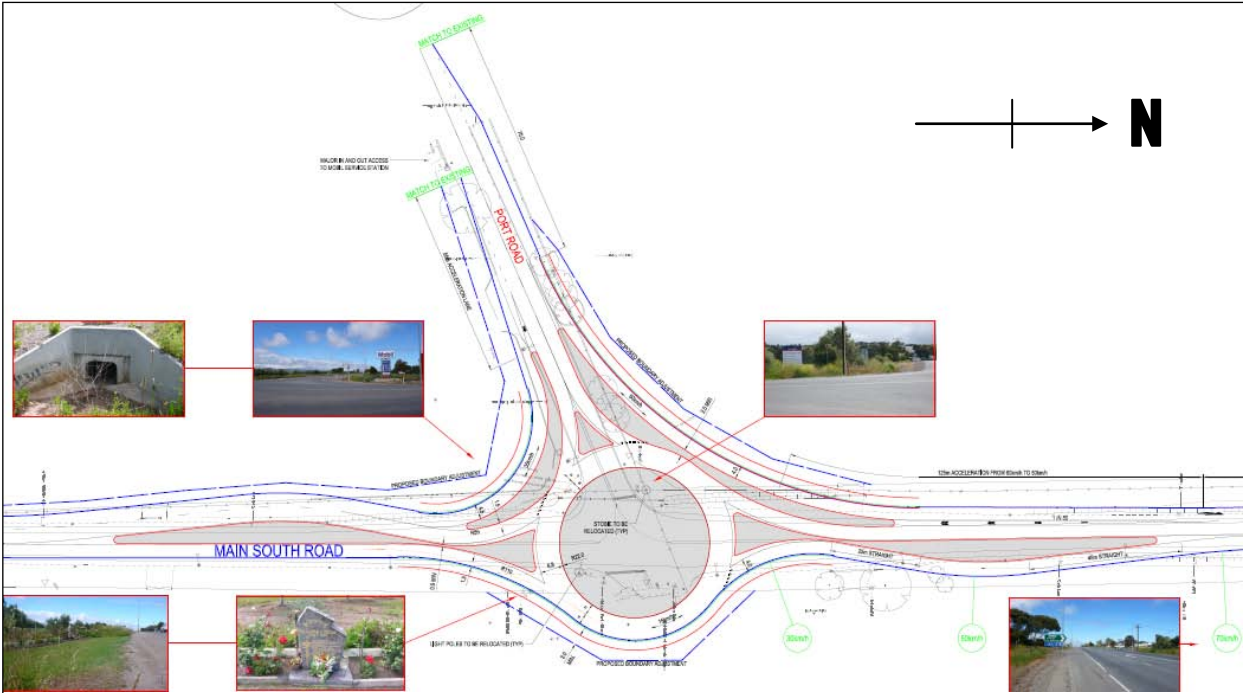


Figure 6-14 Proposed Upgrades for Port Road Intersection: Option 2 - Roundabout

6.1.7 Main South Road / Old Coach Road



Figure 6-15 Layout of Main South Road/Old Coach Road Intersection Prior to 2012 Upgrade

SITE DESCRIPTION

This intersection is an unsignalised T-junction, with both left and right turn movements out of Old Coach Road permitted while the right turn movement into Old Coach Road from Main South Road is prohibited by the application of signage and side road splitter island configuration. The posted speed limit on Main South Road through this intersection is 80 km/h.

This intersection was upgraded in 2012 by separating the left turn deceleration lane on Main South Road by a further 3.0 m and modifying the shape of the side road splitter island to provide better physical prevention of right turn manoeuvres from Main South Road (north) into Old Coach Road. A concept of this upgrade is shown in Figure 6.16.

There are stobie poles on the north western corner and on the eastern side of the road just south of the intersection. These present hazards for any vehicles that might make a mistake and leave the road.

Road lighting is provided at this intersection and is considered to meet the appropriate arterial road standard (V3).

ACCESS

Old Coach Road is an important connector for the Aldinga area and connects with Maslin Beach and Seaford to the north.

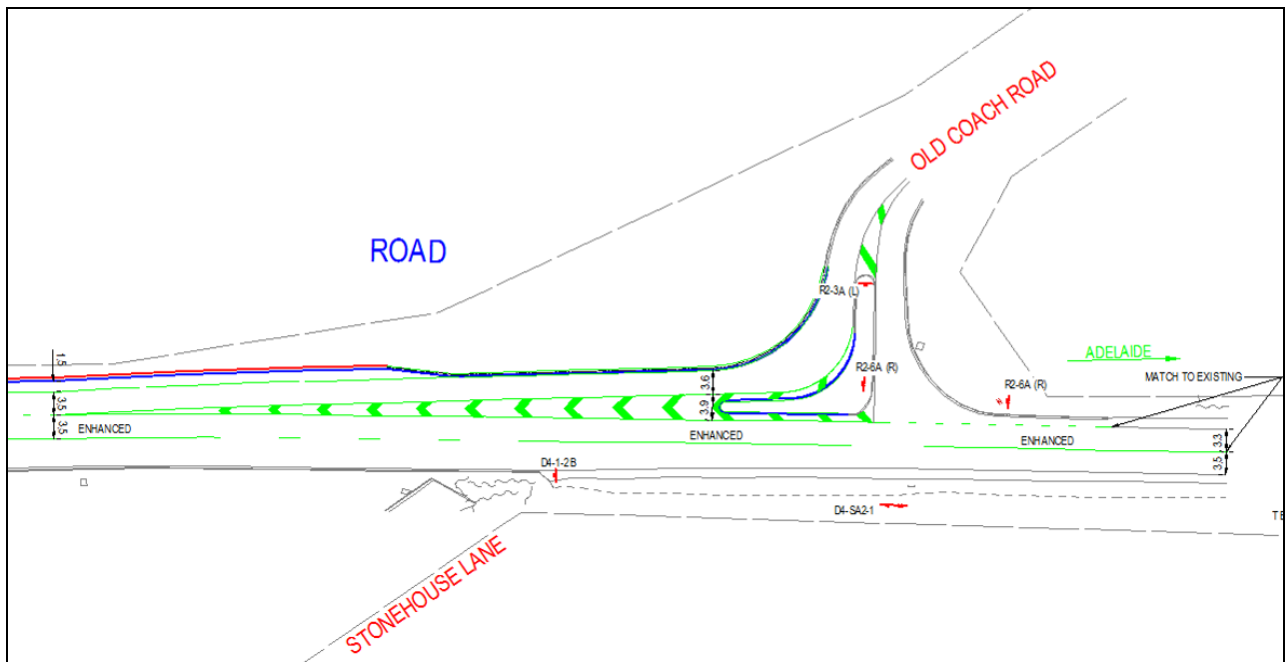


Figure 6-16 Upgrade of Old Coach Road Intersection: Separated Left Turn Lane and Modified Splitter Island on Main South Road

CRASH HISTORY & ANALYSIS

There were 17 crashes at this intersection between 2009 and 2013, the majority of which were right angle crashes. Of these right angle crashes, five were casualty crashes. This intersection is ranked joint 167th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. A breakdown of the crash type and severity of crashes is shown in Table 6-7 below.

Table 6-7 - Summary of crashes at Old Coach Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Old Coach Road	Right Angle	11	5	1	6	7	1	1	16
		Hit Fixed Object	1	0	0	0	0	0	1	1
		Total	12	5	1	6	7	1	2	17

There is a high proportion of right angle crashes at this location. Analysis of the crash data indicates that the majority of these crashes occurred when vehicles attempting to turn right out of Old Coach Road collided with northbound traffic.

TREATMENTS

This intersection was upgraded in 2012 by separating the left turn deceleration lane on Main South Road by a further 3.0 m and changing the shape of the side road splitter island to provide better physical prevention of right turn manoeuvres from Main South Road (north) into Old Coach Road. This upgrade was undertaken to improve safety for vehicles turning out of Old Coach Road. When looking to the right (facing south), they now have better sight lines and are able to differentiate vehicles turning left from the vehicles continuing straight through the intersection. Since the implementation of this upgrade, the incidence of right angle crashes appears to have reduced (one crash in 2012 and one crash in 2013). This suggests that the upgrade has been effective. However, it should also be noted that right angle crashes can still occur, and given the speed environment through this area, there is still a reasonable chance that these crashes will result in casualties if they occur.

In 2014, the Motor Accident Commission (MAC) approached the department with potential funding for road safety improvements along Main South Road, specifically targeting locations with a history of fatal and serious injury crashes. The department undertook further

investigations and developed a proposal for the installation of a median wire rope safety barrier along Main South Road between Malpas Road and Port Road, where two fatal crashes have occurred (refer Section 6.2.2). As right turn restrictions into properties will be imposed by the proposed median wire rope safety barrier, a U-turn facility is proposed at the Malpas Road intersection (refer Section 6.1.4) which would allow northbound vehicles to turn around and head southbound before turning left into Little Road. At the southern end of the wire rope barrier, a proposed roundabout at the Port Road intersection will allow southbound vehicles to turn around to head north (refer Section 6.1.6). With the installation of the roundabout at Port Road, it is proposed that right turns out of Old Coach Road be banned and performed at Port Road instead as the risk and severity of right angle crashes is significantly reduced with a roundabout.

6.1.8 Main South Road / Stonehouse Lane (formerly Plains Road)



Figure 6-17: Existing Layout of Main South Road/Stonehouse Lane (formerly Plains Road) intersection

SITE DESCRIPTION

This intersection is an unsignalised T-junction with a give way holding line on Stonehouse Lane. The road was previously known as Plains Road and provided dual access to Main South Road. The northern access formed a Y-junction that has since been closed by the City of Onkaparinga in 2004. The remaining access road connecting at 90 degrees was renamed Stonehouse Lane and intersects with Plains Road. The deceleration lane (into Old Coach Road) on Main South Road opposite the intersection enables a through vehicle to pass a vehicle waiting to turn right into Stonehouse Lane. The speed limit on this section of Main South Road is 80 km/h.

The section of Main South Road at this intersection has road lighting which meets the desired standard.

ACCESS

Stonehouse Lane is a minor road that provides access to St. Ann's Anglican Church and other dwellings. Stonehouse Lane has been closed off to prevent direct access onto Biscay Road further south.

CRASH HISTORY & ANALYSIS

There have been no crashes at the intersection of Main South Road and Stonehouse Lane in the years 2009 to 2013. Consequently, this intersection is not ranked against other intersections in the metropolitan area.

Table 68 - Summary of crashes at Stonehouse Lane intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Stonehouse Lane	<No Crashes>	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0

A vehicle turning movement survey was undertaken on Tuesday 12 October 2010 and estimated that the annual average daily traffic on Stonehouse Lane was 70 vehicles per day. Only 12 vehicles were observed to turn right into Stonehouse Lane from Main South Road during the survey period. Whilst it is acknowledged that there may be additional right turning traffic when services are being conducted at the church, traffic flows are insufficient to justify the installation of a sheltered right turn lane. Only eight vehicles were recorded undertaking the left turn into Plains Road during the 11 hour survey period.

TREATMENTS

No treatments are recommended for this intersection as it is operating sufficiently for its level of usage and there have been no crashes at this location in the last five years (2009 to 2013).

6.1.9 Main South Road / Aldinga Road (formerly Biscay Road)

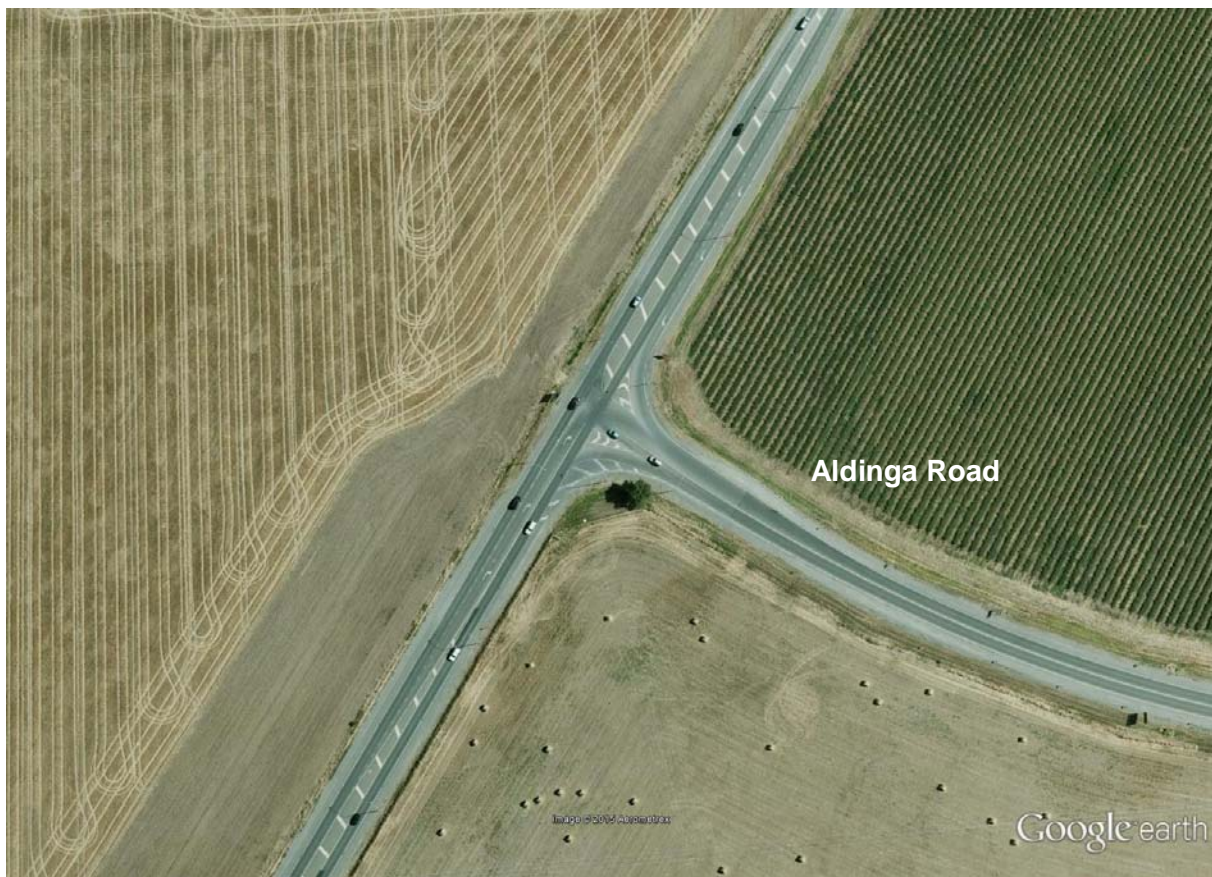


Figure 6-18: Existing Layout of Main South Road/Aldinga Road (formerly Biscay Road) intersection

SITE DESCRIPTION

This intersection is an unsignalised T-junction formed by Aldinga Road (previously known as Biscay Road) meeting Main South Road from the east. Aldinga Road is the one of the few side roads in the area under the care and control of DPTI. The posted speed limit on Main South Road through this area is 80 km/h.

The intersection was upgraded in 2004 as a part of the State Black Spot Program which involved enhancing the line marking of the intersection, reducing the radius of the left turn slip lane on Aldinga Road to reduce entry speeds, improving sight distance and shortening the right turn lane on Main South Road. The shortening of the right turn lane was carried out to prevent unsafe manoeuvres by drivers from Aldinga Beach Road intending to continue east along Aldinga Road. It was previously observed that drivers would attempt unsafe movements across Main South Road directly into the Aldinga Road right turn lane. There are no raised islands or Stop or Give Way signs on the Aldinga Road approach.

Road lighting is provided at this intersection and is considered to meet the appropriate arterial road standard (V3).

ACCESS

Aldinga Road carries 4600 vehicles per day and provides access to Willunga to the east. It is also the principal access to the Aldinga Aerodrome. In conjunction with Aldinga Beach Road, it forms an important east-west connection between the suburbs of Aldinga Beach and Willunga.

CRASH HISTORY & ANALYSIS

There were 20 crashes in the past five years at this intersection (2009-2013), of which five were casualty crashes. There have been 11 rear end crashes, five right angle crashes, and four right turn crashes. This intersection is ranked joint 167th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. A full listing of all the crashes and when they occurred is shown in Table 6-8.

Table 6-9- Summary of crashes at Aldinga Road (Biscay Road) intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Aldinga Road (formerly Biscay Road)	Rear End	7	4	3	3	1	0	4	11
		Right Angle	4	1	1	1	2	0	1	5
		Right Turn	4	0	2	1	0	1	0	4
		Total	15	5	6	5	3	1	5	20

Analysis of the crash data indicates that the crashes were primarily caused by right turning vehicles (into and from Aldinga Road) or vehicles coming from Aldinga Road being rear ended. Crash reports suggest that these rear end crashes occurred due to vehicles on Aldinga Road approaching the intersection at the posted speed (80 km/h) and failing to slow down in time at the intersection. Sight distance and advanced directional signage for vehicles on Aldinga Road is considered adequate and there is also appropriate advanced directional signage on Main South Road leading up to the intersection.

TREATMENTS

Two options have been considered for this intersection.

Option 1 is a rural roundabout similar to that considered for the intersection of Main South Road / Port Road and would be considered a midterm treatment and would account for future development in the area. This treatment would address both the right angle and right turn type crashes but would not treat rear end type crashes. It changes priority at the intersection as vehicles travelling north on Main South Road would need to give way to vehicles entering the intersection from Aldinga Road. Furthermore, the installation of a roundabout would incur high construction and land acquisition costs.

Option 2 is the installation of a ‘seagull’ treatment and would be considered a short term treatment. This option involves installing a raised island at the intersection to provide additional channelisation for the right turn movements out of Aldinga Road; allowing motorists to conduct a two-stage turning movement. This is a simpler option compared to the roundabout, but does not provide the same benefits of physically preventing right angle and right turn crashes or reducing speeds on the approach to the intersection. The seagull treatment includes a central acceleration lane for right turning vehicles as shown in Figure 6-20. The acceleration lane allows vehicles to accelerate up to speed to choose appropriate gaps in the traffic to safely merge. To further enhance this treatment, raised side road splitter islands can be installed to slow traffic down on the approach to the intersection.

The recommended treatment for this location is the interim ‘seagull treatment’ (Option 2). As another short term treatment, the existing line marking at the intersection could be re-painted to enhance delineation. The installation of Raised Reflective Pavement Markers (RRPM) could also be considered to further enhance visibility.

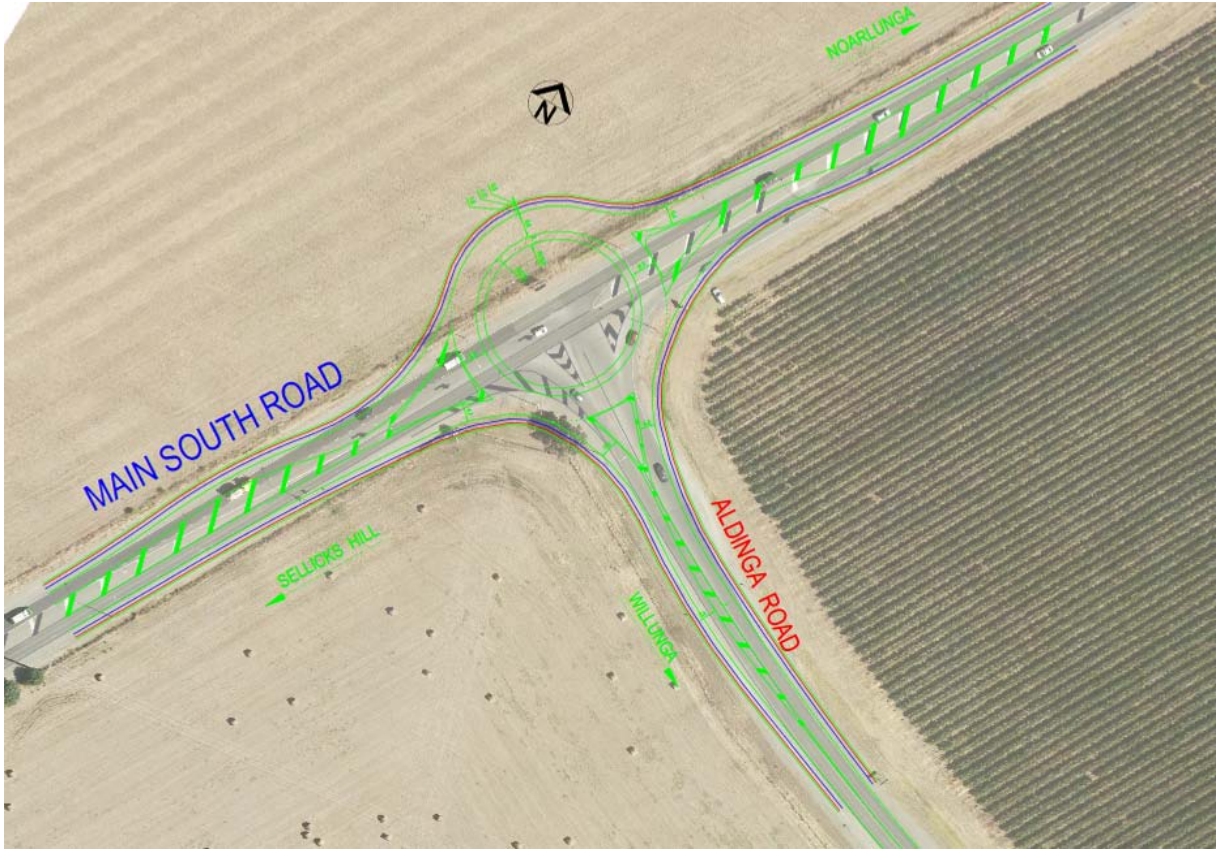


Figure 6-19: Proposed Upgrades for Aldinga Road Intersection: Option 1 Roundabout

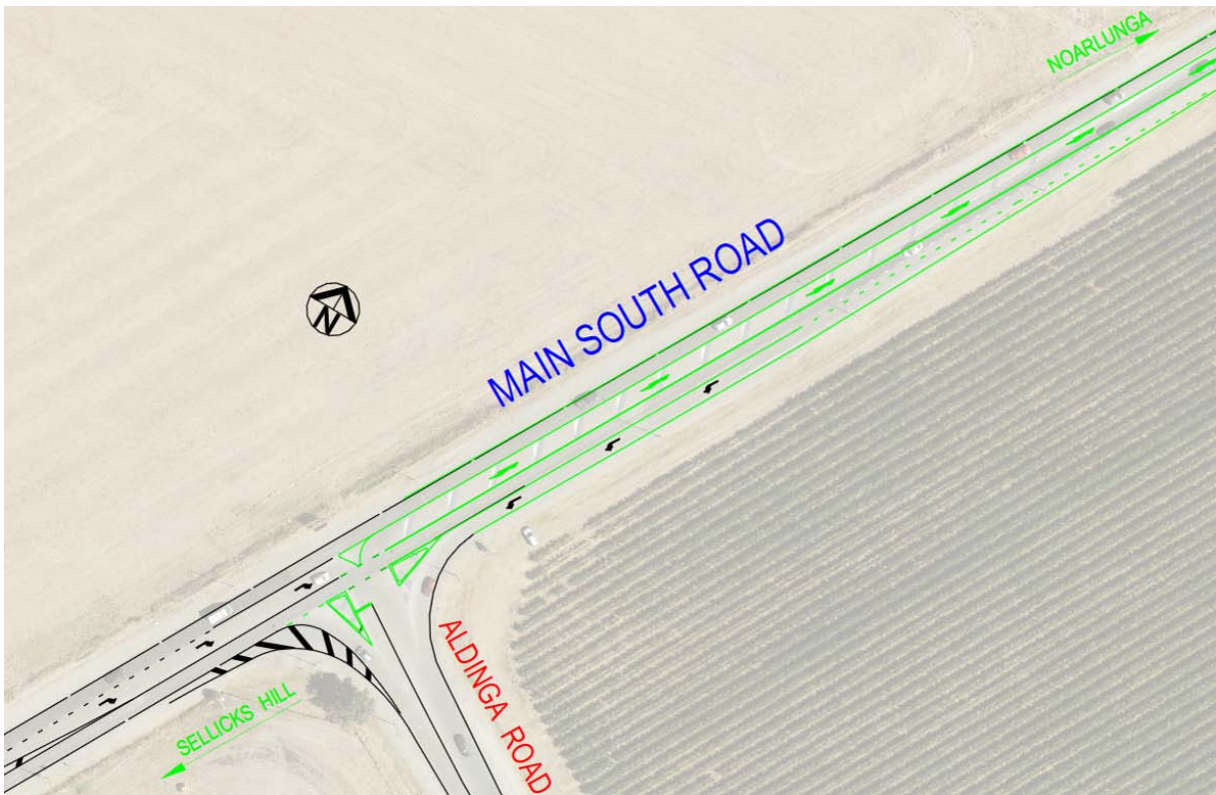


Figure 6-20: Proposed Upgrades for Aldinga Road Intersection: Option 2 Seagull with Central Acceleration Lane and Side Road Splitter Islands (Recommended Treatment)

6.1.10 Main South Road / Aldinga Beach Road

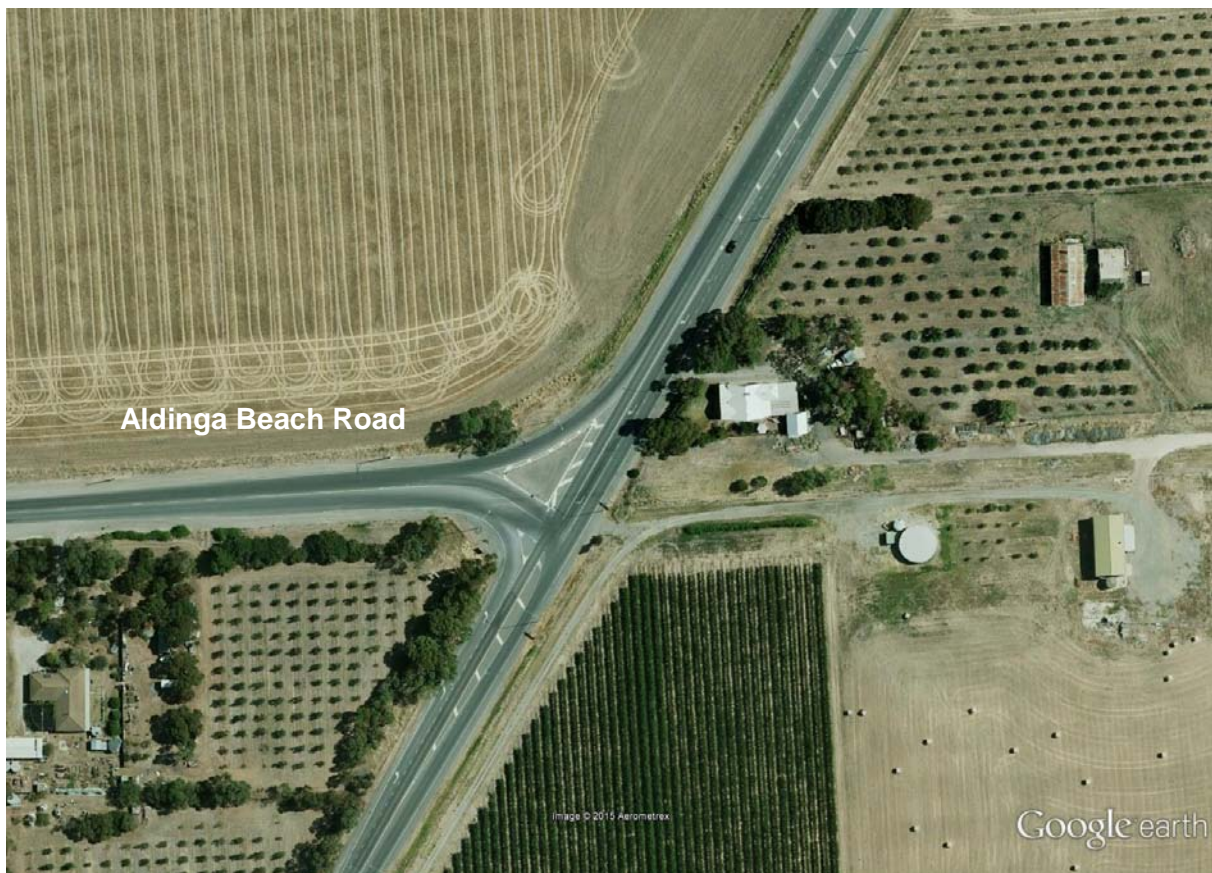


Figure 6-21: Existing Layout of Main South Road/Aldinga Beach Road Intersection

SITE DESCRIPTION

This intersection is an unsignalised T-junction formed by Aldinga Beach Road meeting Main South Road from the west. The speed limit on Main South Road at this intersection is 80 km/h, while the speed limit on Aldinga Beach Road is 60 km/h. The predominant movement out of Aldinga Beach Road is the left turn, which is catered for by an acceleration lane. A separated left turning lane is provided to separate vehicles turning into Aldinga Beach Road from the northbound through traffic on Main South Road. The right turn out of Aldinga Beach Road is controlled by a stop sign.

Due to new development west of Main South Road, Aldinga Beach Road has similar traffic volumes to Main South Road. A traffic count conducted in 2013 indicates that over an eleven hour period approximately 3500 vehicles turn left onto Main South Road from Aldinga Beach Road, 2700 vehicles travel north and 2400 vehicles travel south on Main South Road and 3100 vehicles turn right onto Aldinga Beach Road from Main South Road.

There are stobie poles present on the northern side of Aldinga Beach Road close to the intersection which may present hazards for road users.

Road lighting is provided at this intersection and is considered to meet the appropriate arterial road standard (V3).

ACCESS

Aldinga Beach Road is the principal access to the growing Aldinga Beach community to the west. In conjunction with Aldinga Road, it forms an important east-west connection between the suburbs of Aldinga Beach and Willunga.

CRASH HISTORY & ANALYSIS

There were 14 crashes recorded at this unsignalised intersection in the five year period from 2009 to 2013; seven of which resulted in a casualty. This intersection is ranked joint 67th among unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years.

Table 6-10 Summary of crashes at Aldinga Beach Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Aldinga Beach Road	Hit Fixed Object	0	1	0	0	0	1	0	1
		Right Turn	3	2	0	0	1	3	1	5
		Rear End	2	1	0	1	1	1	0	3
		Right Angle	2	3	0	1	2	2	0	5
		Total	7	7	0	2	4	7	1	14

The crash types that have occurred here are predominantly side impact type crashes (right turn and right angle), which account for 10 of the 14 crashes. There have also been three rear end crashes in the five year period. A full listing of the type of crashes and when they occurred is shown in Table 6-10.

TREATMENTS

This location was upgraded in 2004 as a part of the State Black Spot Program to include many of the features mentioned above. It was again modified in 2007 to include further signage and a raised island to prevent drivers from cutting the corner when turning right into Aldinga Beach Road.

The treatment considered for this location is to install a roundabout at the intersection of these roads. The roundabout provides the benefits of addressing right angle and right turn type crashes and reducing the severity of any crashes that may occur by forcing vehicles to slow down on approach to the intersection. The disadvantage of the roundabout is that it would incur high construction and land acquisition costs. A concept design of the roundabout is shown in Figure 6-22.

This proposal will be considered for any future upgrades at this location. As a short term treatment, the existing line marking at the intersection could be re-painted to enhance delineation. The installation of Raised Reflective Pavement Markers (RRPM) could also be considered to further enhance visibility.



Figure 6-22: Proposed Upgrades for Aldinga Beach Road Intersection

6.1.11 Main South Road / Colville Road / Hart Road

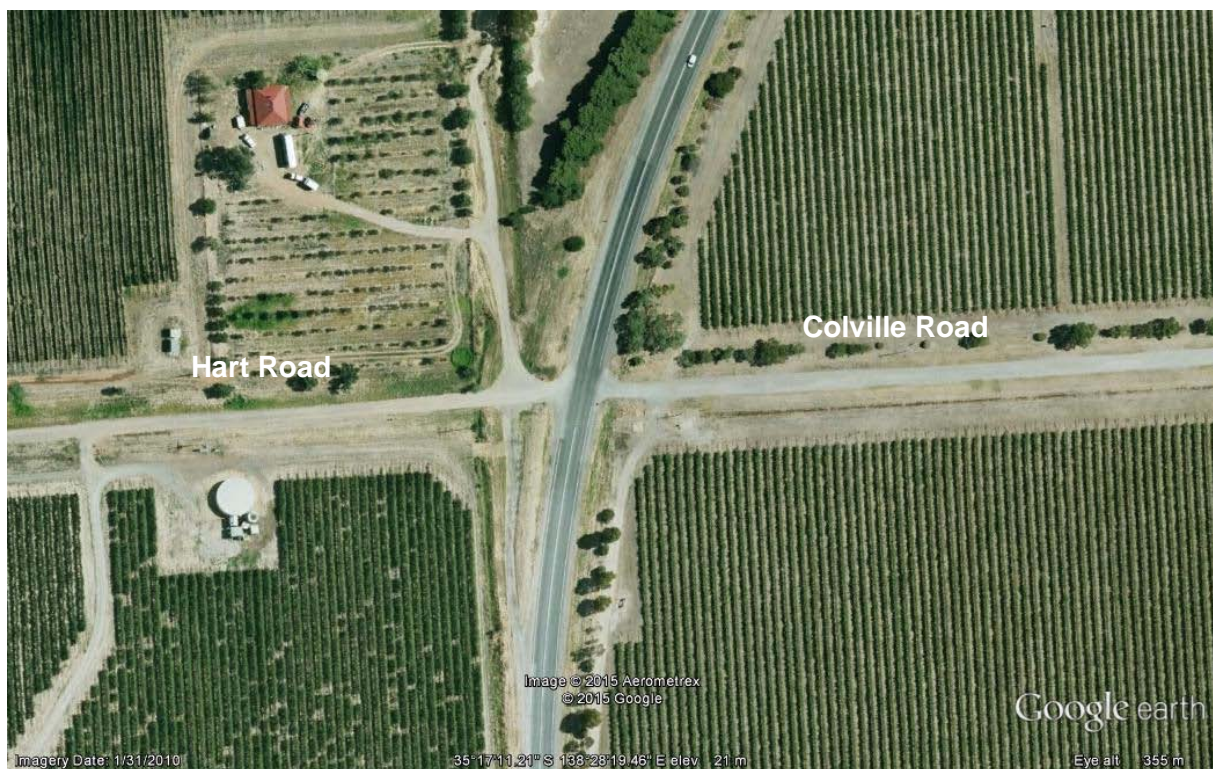


Figure 6-23: Existing Layout of Main South Road/Hart Road/Colville Road Intersection

SITE DESCRIPTION

Hart Road and Colville Road form an unsignalised intersection with Main South Road at the apex of a curve. Both roads are unsealed with only a short sealed apron at the intersection with Main South Road. The intersection is controlled by 'Give Way' signs on both side roads and the posted speed limit on Main South Road at this intersection is 100 km/h. It is considered that there is an appropriate level of advanced directional signage on Main South Road on the approaches to the intersection, as well as clear intersection direction signage.

There is currently no road lighting at this location.

ACCESS

Colville Road services local properties and continues east to just prior to Victor Harbor Road. Hart Road provides access from Main South Road to the Aldinga Scrub Conservation Park as well as the Hart Road Wetland.

CRASH HISTORY & ANALYSIS

There were two crashes recorded at this unsignalised intersection in the five year period from 2009 to 2013. This intersection is currently unranked as there have been zero casualty crashes in the past five years. A full listing of the type of crashes and when they occurred is shown in Table 6-11.

Table 6-11 Summary of crashes at Colville Road/Hart Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Colville Road / Hart Road	Hit Fixed Object	1	0	0	0	1	0	0	1
		Hit Animal	1	0	0	0	1	0	0	1
		Total	2	0	0	0	2	0	0	2

A review of the crash reports does not indicate any consistent trends or issues that are causing crashes to occur at this intersection.

TREATMENTS

Given the low traffic volumes on Colville Road it is recommended that access into this road is removed to form a T-junction. This reduces the number of conflict points at the intersection and prevents cross movements from side road to side road. Alternative access exists south of the intersection via Hahn Road which is a sealed road. Prior to any road closures being implemented, the department will undertake community consultation and traffic studies to determine the impacts of this closure.

Alternatively, should the intersection remain as a four-way intersection, there are still some safety improvements that could be considered. A cost effective option to improve safety at the intersection is to seal the side road aprons and mark "Give Way" lines on the side road approaches. This is shown in Figure 6.24.

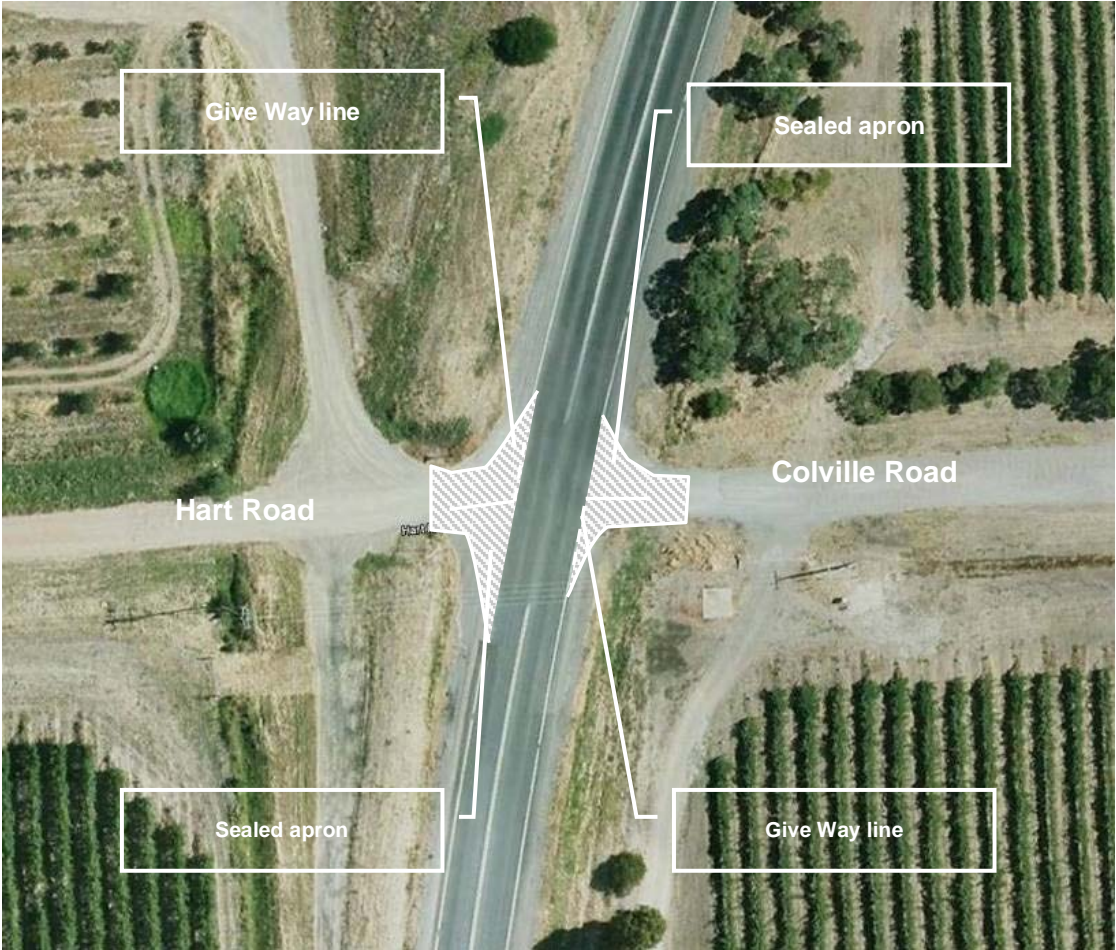


Figure 6-24: Proposed Upgrades for Hart Road/Colville Road Intersection: – Sealed aprons and Give Way lines

6.1.12 Main South Road / Hahn Road / Cox Road



Figure 6-25: Existing Layout of Main South Road/Hahn Road/Cox Road Intersection

SITE DESCRIPTION

This intersection is a four way unsignalised intersection with Cox Road to the west and Hahn Road to the east. The intersection is controlled by 'Give Way' signs on both side roads and the posted speed limit on Main South Road at this intersection is 100 km/h. There are no separated left or right turn lanes provided at the intersection. Advance street name signs alert drivers on Main South Road to the approaching intersection.

There are several possible roadside hazards in the vicinity of the intersection including culvert headwalls on the north eastern and north western corners and a stobie pole on the south eastern corner.

There is currently no road lighting at this location.

ACCESS

Cox Road is the only road providing access to the Aldinga Holiday Park from Main South Road and also provides access the Aldinga Scrub Conservation Park.

CRASH HISTORY & ANALYSIS

There were 10 crashes recorded at this intersection in the period from 2009 to 2013; seven of which resulted in casualties. This intersection is ranked joint 67th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. A breakdown of the number and type of crashes and the year that they occurred is shown in Table 6-12.

Table 6-12- Summary of crashes at Hahn Road / Cox Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Hahn Road / Cox Road	Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	1	2	1	0	0	1	1	3
		Side Swipe	1	1	1	1	0	0	0	2
		Right Turn	0	1	0	0	0	1	0	1
		Head On	0	1	0	0	1	0	0	1
		Right Angle	0	2	0	0	0	0	2	2
		Total	3	7	2	2	1	2	3	10

Six different crash types were recorded at this intersection. Detailed assessment of the crash data indicates that the side swipe and rear end crashes involved vehicles that have stopped on Main South Road to turn right into the side roads. These collisions resulted from a trailing vehicle either failing to slow down in time (rear end) or attempting to overtake the turning vehicles (side swipe). Right angle crashes involved vehicles from Cox Road failing to give way and travelling across the intersection and colliding with vehicles on Main South Road. There is sufficient sight distance on the approach to the intersection from Cox Road; however the lack of delineation through more obvious line marking may be a contributing factor to these crashes.

TREATMENTS

To reduce the possibility of crashes, separated right turn lanes could be installed on Main South Road to separate the right turning vehicles from the through traffic. A concept of the proposal is shown below in Figure 6-26. The provision of right turn lanes would also provide important improvements should the proposed closures of Colville Road (refer to Section 6.1.11) and Rogers Road (refer to Section 6.1.13) be implemented. This proposal could be further enhanced by repainting the existing line marking and installing Raised Reflective Pavement Markers (RRPM) at the intersection to enhance delineation.



Figure 6-26: Proposed Upgrades for Hahn Road / Cox Road Intersection: – Separated Right Turn Lanes

6.1.13 Main South Road / Rogers Road / Norman Road



Figure 6-27: Existing Layout of Main South Road / Norman Road / Rogers Road Intersection

SITE DESCRIPTION

The intersection is a four way unsignalised intersection, with a stop sign and line marking on both Norman Road (western approach) and Rogers Road (eastern approach). Rogers Road is a low-trafficked, unsealed road. The posted speed limit on Main South Road through this intersection is 100 km/h. There is appropriate sight distance from the side roads. There is a separated right turn lane into Norman Road but not into Rogers Road; however the length of the right turn lane is insufficient.

Roadside hazards within the vicinity of the intersection include stobie poles on the north western corner and on the eastern side of Main South Road. There are also unprotected culvert headwalls on the north eastern and south western corners as well as a junction box on the south eastern corner.

Flag lighting is provided at this intersection and is considered appropriate for this rural intersection.

ACCESS

Norman Road provides vehicular access onto Aldinga Beach and services residential properties on either side. Rogers Road provides access to local properties.

CRASH HISTORY & ANALYSIS

There were a total of nine crashes recorded at this intersection in the period from 2009 to 2013; five of which were casualty crashes. This intersection is ranked joint 167th among all unsignalised intersections in the Adelaide metropolitan area based on the number of casualty

crashes occurring in the last five years. Details of the number of crashes and their type are provided in Table 6-13 below.

Table 6-13- Summary of crashes at Rogers Road / Norman Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Rogers Road / Norman Road	Head On	1	0	0	1	0	0	0	1
		Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	1	0	0	0	0	0	0	1
		Right Angle	1	2	1	0	1	1	0	3
		Side Swipe	0	1	0	0	1	0	0	1
		Right Turn	0	1	0	1	0	0	0	1
		Hit Animal	0	1	0	0	0	0	0	1
		Total	4	5	1	3	2	1	2	9

Analysis of the crash data indicated that the right turn crash involved a vehicle turning right into Norman Road. The three right angle crashes occurred as a result of vehicles travelling straight through from the side roads without stopping. Approach sight distance is met on all approaches, however drivers still appear to have difficulty seeing the intersection and slowing down in time.

TREATMENTS

Given the low traffic volumes on Rogers Road it is recommended that access into this road is removed to form a T-junction. This reduces the number of conflict points at the intersection and prevents cross movements from side road to side road. Alternative access exists north of the intersection via Hahn Road which is a sealed road. Prior to any road closures being implemented, the department will undertake community consultation and traffic studies to determine the impacts of this closure. The safety for right turning vehicles into Norman Road could also be improved by extending the existing right turn lane to provide greater deceleration length.

Alternatively, should the intersection remain as a four-way intersection, there are still some safety improvements that could be considered. The installation of a right turn lane into Rogers Road would improve safety at the intersection by providing safe storage for turning vehicles and allowing the trailing northbound traffic to continue unimpeded. However given the low traffic volumes on this road, it is considered that the installation of the right turn lane is a low priority.

A cost effective interim treatment is to seal the apron of Rogers Road and mark a ‘Give Way’ line. The installation of RRPMS at the intersection could also be considered to enhance visibility and delineation. This is shown in Figure 6.28.

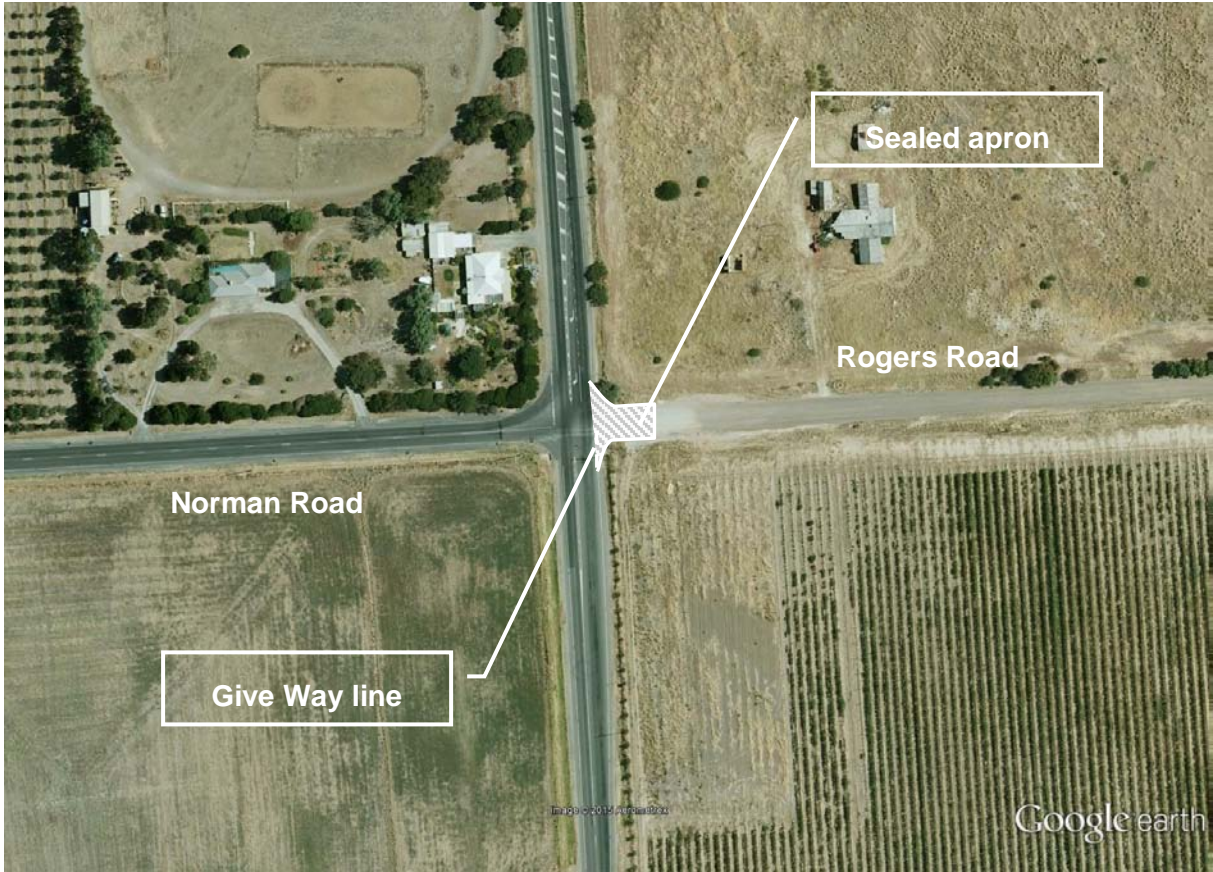


Figure 6-28: Proposed Upgrades for Norman Road/Rogers Road Intersection: Sealed apron and Give Way line

6.1.14 Main South Road / Perth Street



Figure 6-29: Existing Layout of Main South Road / Perth Street Intersection

SITE DESCRIPTION

This intersection is a stop-controlled T-junction with separated right and left turn lanes for traffic turning into Perth Street. The speed limit on Main South Road is 100 km/h. Flag lighting is present at the intersection, which is considered appropriate for this location.

ACCESS

Perth Street is one of two direct accesses from Main South Road to the Sellicks Beach residential area, with Sellicks Beach Road being the other.

CRASH HISTORY & ANALYSIS

There have been no crashes at the intersection of Main South Road and Perth Street in the years 2009 to 2013. Consequently, this intersection is not ranked against other intersections in the metropolitan area.

Table 6-14- Summary of crashes at Perth Street intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Perth Street	<No Crashes>	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0

TREATMENTS

Given the low crash statistics, no treatment is recommended at this location beyond continued monitoring of its performance.

6.1.15 Main South Road / Sellicks Beach Road / Old Sellicks Hill Road



Figure 6-30: Existing Layout of Main South Road / Sellicks Beach Road / Old Sellicks Hill Road Intersection

SITE DESCRIPTION

This intersection consists of two slightly staggered T-junctions with Sellicks Beach Road to the west and Old Sellicks Hill Road to the east. Both side roads are controlled by 'give way' signs and intersect with Main South Road at an angle. No left or right turning lanes are provided at this intersection.

Flag road lighting mounted on SA Power Network stobie poles is provided.

ACCESS

Sellicks Beach Road extends to the esplanade of Sellicks Beach to the west while Old Sellicks Hill Road is the eastern access road to the Victory Hotel.

CRASH HISTORY & ANALYSIS

There were a total of seven crashes at this unsignalised intersection in the period from 2009 to 2013, only one of which was a casualty crash. This intersection is ranked joint 1175th among unsignalised intersections in the Adelaide metropolitan area based on the number of casualty crashes occurring in the last five years. Details of the number of crashes are provided in Table 6-15 below.

Table 6-15- Summary of crashes at Sellicks Beach Road/Old Sellicks Hill Road intersection 2009-2013

Sect.	Intersection	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Sellicks Beach Road / Old Sellicks Hill Road	Rear End	5	0	1	2	1	0	1	5
		Right Angle	1	1	1	0	1	0	0	2
		Total	6	1	2	2	2	0	1	7

The local community has regularly raised concerns about safety at the intersection, particularly in relation to the high speed environment and restricted sight distance from the side roads.

TREATMENTS

While this intersection does not have a high number of casualty crashes, it is nevertheless considered a priority for an upgrade because of the restricted sight distance from the side roads and the high speed environment. Therefore a number of recommendations are proposed for this intersection.

These recommendations include:

1. **squaring up the side road approaches** (Sellicks Beach Road and both the northern and southern accesses to the Victory Hotel) to form 90 degree angles with Main South Road. This will help vehicles position themselves correctly at the intersection which then improves sight distance enabling vehicles to perform safer turning movements.
2. **installing separated right turn lanes** into Sellicks Beach Road and the southern access to the hotel. This will help reduce the possibility of rear end and side swipe crashes on Main South Road.
3. **restricting the northern hotel access to a 'left in, left out only' operation** whereby right turns into and out of the access are prohibited. This reduces the number of conflict points at the access and simplifies movements for vehicles. Right turns into the Victory Hotel can still be performed at the southern access, where a separated right turn lane is proposed.
4. **installing an acceleration lane** for left turning traffic out of Sellicks Beach Road to reduce the possibility of rear end crashes. This will allow vehicles to turn onto Main South Road without having to stop before merging with through traffic further up the road
5. **installing deceleration lanes** for left turning traffic into both hotel accesses to reduce the possibility of rear end crashes. This will separate the vehicles slowing down to turn left from the traffic travelling straight through along Main South Road at higher speeds.

A concept design showing these recommendations is shown in Figure 6-31.

This proposal was previously submitted for funding under the Black Spot Program in both 2011/12 and 2012/13 but was unsuccessful in both years due to the high cost involved. The department will continue to pursue other funding avenues for this proposal.



Figure 6-31: Proposed Upgrade for Sellicks Beach Road / Old Sellicks Hill Road Intersection: Realignment of Approaches and Improved Turning Facilities

6.2 RECOMMENDATION FOR MID-BLOCK SECTIONS

6.2.1 Sherriff Road to Thomas Road

This section of Main South Road is located within Section 1 of the study corridor and varies from between 10.0 m wide to 13.7 m wide, with the northern half of this section having a southbound overtaking lane. Overtaking is also permitted for southbound traffic in a short section south of the overtaking lane. Overtaking is not permitted for northbound traffic throughout this section. The posted speed limit through this section is 100 km/h.

There are several properties along this length of road that have access directly to and from Main South Road. There is about 200 m of guard fence installed on both sides of Main South Road north of Thomas Road intersection to protect vehicles from collisions with vegetation on either side.

There have been six crashes in this section of road between 2009 and 2013; two of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-16- Summary of crashes at mid-block section between Sherriff Road and Thomas Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Sherriffs Road & Thomas Road	Hit Animal	1	0	0	0	1	0	0	1
		Hit Fixed Object	2	0	0	0	0	2	0	2
		Roll Over	1	0	0	0	0	0	1	1
		Side Swipe	0	1	0	0	1	0	0	1
		Rear End	0	1	1	0	0	0	0	1
		Total	4	2	1	0	2	2	1	6

The crash reports do not suggest a trend or common issue between the crashes. Rather, the crashes that have occurred appear to be singular in nature as a result of animals crossing the road or driver error (tailgating or attempting U-turns without due care).

One concern identified within this road section is that, given the road runs partially through hilly terrain in some parts, sight distance is restricted and does not provide drivers with the necessary level of confidence that they can safely manoeuvre off Main South Road as they slow down or store on the road, especially considering the high speed of passing vehicles (100 km/h).

Shoulder widening at the accesses to properties (where possible) is recommended for this section to provide vehicles with some space off the main road to slow down before turning left into properties.

6.2.2 Malpas Road to Little Road

This section of Main South Road is located within Section 1 of the study corridor and is typically 13.7 m wide. This greater width is due to this section having a northbound overtaking lane for most of its length. Southbound overtaking is not permitted throughout this section. The posted speed limit through this section is 100 km/h.

There are several properties along this length of road that have access directly onto Main South Road. Guard fence is installed at the intersection with Little Road to protect vehicles from dropping off the side of the road as well as from trees on both sides.

This section of road has surface undulations caused by the reactive soil underlying the pavement and it was resealed on the 14th of February 2013. It is considered a high priority for rehabilitation and subject to the availability of funding will be upgraded when required.

There have been eleven crashes in this section of road between 2009 and 2013; seven of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-17 - Summary of crashes at mid-block section between Malpas Road and Little Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
1	Malpas Road & Little Road	Head On	1	2	0	2	0	1	0	3
		Rear End	0	4	1	1	0	0	2	4
		Hit Animal	1	0	1	0	0	0	0	1
		Hit Object On Road	2	0	2	0	0	0	0	2
		Hit Fixed Object	0	1	0	0	0	0	1	1
		Total	4	7	4	3	0	1	3	11

Detailed assessment of the crashes within this section revealed that six of the crashes occurred at night time and driver error (tailgating, crossing the centreline) was the primary cause for most of the casualty crashes. The other crashes are considered to be isolated incidents and not part of a trend.

There have been three head on crashes along this section, two of which resulted in fatalities. In both of the fatal crashes, a northbound vehicle on Main South Road crossed over onto the wrong side of the road and collided with an oncoming southbound vehicle. The other head on crash resulted in property damage only and involved a southbound vehicle crossing the road into the path of an oncoming northbound vehicle. All three of these crashes occurred just south of the Malpas Road intersection. The slight curve in the road at this location may be a contributing factor to these crashes. Furthermore, all three crashes occurred at night, which suggests that poor visibility in the dark may be another factor.

In 2014, the Motor Accident Commission (MAC) approached the department with potential funding for road safety improvements along Main South Road, specifically targeting locations with a history of fatal and serious injury crashes. The department undertook further investigations and developed a proposal for the installation of a median wire rope safety barrier along this section, extending down to the Port Road intersection.

The proposed median wire rope safety barrier would require banning right turns into Little Road. A U-turn facility is proposed at the Malpas Road intersection (refer Section 6.1.4) which would allow northbound vehicles to turn around and head southbound before turning left into Little Road. At the southern end of the wire rope barrier, a proposed roundabout at the Port Road intersection will allow southbound vehicles to turn around to head north (refer Section 6.1.6).

In order to achieve consistency with the other mid-block sections, it is also recommended that the road shoulders are widened for vehicles to slow down or wait on Main South Road safely outside of the travel path of the main traffic flow.

This section also has one stobie pole on the western side just north of the Little Road intersection which is located about 4.5 m off the side of the road. Consideration will be given to providing some form of hazard protection at this location.

6.2.3 Port Road to Aldinga Road (Biscay Road)

This section of Main South Road is located within Section 2 of the study corridor and is 13.5 m wide for the most part. There is road lighting present for most of this section that is of the required standard. The posted speed limit through this section is 80 km/h.

There have been four crashes in this section of road between 2009 and 2013; one of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-18- Summary of crashes at mid-block section between Port Road and Aldinga Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
2	Port Road & Aldinga Road	Head On	0	1	0	1	0	0	0	1
		Hit Fixed Object	2	0	0	0	1	0	1	2
		Other	1	0	0	0	1	0	0	1
		Total	3	1	0	1	2	0	1	4

The head on and hit fixed object crashes resulted from vehicles crossing onto the wrong side of the road. Consideration should be given to providing a median wire rope safety barrier along this section, although as this road section is fairly straight and has a posted speed limit of 80 km/h, this would be a lower priority compared to the section between Malpas Road and Little Road.

6.2.4 Aldinga Beach Road to Hart Road

This section of Main South Road is located within Section 3 of the study corridor and is typically 10 m wide. Overtaking for northbound traffic is allowed for most of this section with the exception of the section immediately north of the Hart Road / Colville Road intersection where overtaking in both directions is prohibited by a double white line. Overtaking for southbound traffic is allowed in the northern half of this section and is prohibited in the southern half by a solid white line. The speed limit through this section is 100 km/h.

There is only one property along this length of road that has direct access onto Main South Road; on the western side just north of Hart Road. This section of road suffers from road surface undulations caused by the reactive soil underlying the pavement. The condition of the road is being managed through periodic treatments.

There have been five crashes in this section of road between 2009 and 2013; one of which resulted in a casualty. The types of crashes and the years they occurred in are shown in the table below.

Table 6-19- Summary of crashes at mid-block section between Aldinga Beach Road and Hart Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Aldinga Beach Road & Hart Road	Left Road Out of Control	2	0	1	1	0	0	0	2
		Hit Animal	1	0	0	0	0	1	0	1
		Head On	0	1	0	0	0	1	0	1
		Rear End	1	0	0	0	1	0	0	1
		Total	4	1	1	1	1	1	2	0

Two of the crashes (one left road out of control and one head on) appear to be caused by vehicles losing control while navigating the slight curve in the road near the Hart Road / Colville Road intersection. The proposed speed limit reduction from 100 km/h to 90 km/h (refer to Section 6.3) may help address this issue by requiring vehicles to travel at lower speeds where they are less likely to lose control.

Consideration should also be given to shoulder widening at the access to the property within this section, per the recommendation for previous sections.

6.2.5 Hart Road to Hahn Road

This section of Main South Road is located within Section 3 of the study corridor and is typically 10 m wide. Overtaking in both directions is allowed for most of this section, except on approach to the intersections of Hart Road / Colville Road and Hahn Road / Cox Road. There are several properties along this length of road that have access directly to and from Main South Road. The speed limit through this section is 100 km/h.

There have been four crashes in this section of road between 2009 and 2013; two of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-20- Summary of crashes at mid-block section between Hart Road and Hahn Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Hart Road & Hahn Road	Rear End	2	1	2	0	1	0	0	3
		Side Swipe	0	1	0	1	0	0	0	1
		Total	2	2	2	1	1	0	0	4

A review of the crashes along this section did not indicate any consistent trends or common factors that may have caused the crashes. The three rear end crashes occurred in different circumstances: one was the result of a vehicle slowing down to turn right into a property, one was the result of a vehicle slowing down due to road works, and the other was the result of a drunk driver experiencing road rage and intentionally tailgating a vehicle that had overtaken him.

To be consistent with earlier recommendations for other sections, shoulder widening at the accesses to properties should be considered for this section.

6.2.6 Hahn Road to Rogers Road

This straight section of Main South Road is located within Section 3 of the study corridor and is typically 13.0 m wide. Overtaking in both directions is allowed for most of this section, except within the vicinity of the intersections at either end. There are a few property entrances with direct access onto Main South Road within this section. The speed limit through this section is 100 km/h.

There have been four crashes in this section of road between 2009 and 2013; two of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-21- Summary of crashes at mid-block section between Hahn Road and Rogers Road 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Hahn Road & Rogers Road	Rear End	1	1	0	1	1	0	0	2
		Left Road Out of Control	1	0	1	0	0	0	0	1
		Hit Fixed Object	0	1	0	0	0	0	1	1
		Total	2	2	1	1	1	0	1	4

Two of the crashes (one left road out of control and one hit fixed object) were the result of vehicles crossing over onto the wrong side of the road. The proposed speed limit reduction from 100 km/h to 90 km/h (refer to Section 6.3) may help address this issue by requiring vehicles to travel at lower speeds where they are less likely to lose control.

There are stobie poles present on the eastern side of the road, however given that these poles are a fair distance from the carriageway and the road is mainly straight in this section, providing hazard protection is not considered to be an urgent requirement.

Consideration should be given to shoulder widening at the access to the property within this section, per the recommendation for previous sections.

6.2.7 Rogers Road to Perth Street

This section of Main South Road is located within Section 3 of the study corridor and is typically 13.7 m wide. This section of road has a southbound overtaking lane along most of

its length. Further north of this overtaking lane, the road is narrower and overtaking is not restricted. The speed limit through this section is 100 km/h.

The surrounding land use through this section of road is agricultural and there are several properties that have direct access onto Main South Road. The road is straight and flat and the surface is in good condition. The overtaking lane in this section was installed in 2007 which was undertaken in conjunction with an upgrade to the pavement surface.

There have been eight crashes in this section of road between 2009 and 2013; four of which resulted in casualties. The types of crashes and the years they occurred in are shown in the table below.

Table 6-22- Summary of crashes at mid-block section between Rogers Road and Perth Street 2009-2013

Sect.	Between	Crash Type	PDO \$3000+	Casualty	2009	2010	2011	2012	2013	Total
3	Rogers Road & Perth Street	Hit Fixed Object	2	0	0	1	0	1	0	2
		Hit Animal	1	0	0	0	0	0	1	1
		Head On	0	2	0	0	1	1	0	2
		Rear End	0	2	0	0	0	0	2	2
		Roll Over	1	0	0	0	1	0	0	1
		Total	4	4	0	1	2	2	3	8

Detailed assessment of the crash data revealed no noticeable trend of crashes. One of the head on crashes involved a driver who was driving under the influence and the other involved driver inattention. The road environment did not appear to be a factor in either of these crashes. Other crashes were either isolated incidents or caused by driver behaviour such as tailgating or driving at high speed. However one of the rear end crashes involved a vehicle stopped to turn right into a property, which is a common issue along Main South Road.

There are a number of stobie poles along the road in this section, primarily on the eastern side of the road. Some of these stobie poles are offset from the side of the road by only 4.0 m. The provision of some hazard protection at these locations will be considered.

6.3 RECOMMENDATIONS FOR SPEED LIMITS

The 100 km/h default speed limit is generally appropriate for a strategic route where the roadside environment is agricultural / rural.

The existing speed limit on Main South Road between Seaford Rise and Sellicks Hill has been reviewed as part of the development of this RMP. The review of Sections 1 and 3 took into account the increasing traffic volumes, the frequency and number of intersections generating conflicting movements and the crash history. It is considered that lowering the speed limit from 100 km/h to 90 km/h for both these sections would be appropriate and provide improved safety benefits over the 13 kilometres of road involved. It is not considered that the frequency of locations where drivers on Main South Road may encounter conflicting vehicle movements is at a level to warrant a lower speed limit of 80 km/h.

At isolated intersections with a high crash history e.g. Maslin Beach Road / Tatachilla Road and Sherriff Road / Communication Road and also at the Sellicks Beach Road intersection where sight distance is limited, the lower 90 km/h speed limit will improve safety and further safety improvements at these sites would be better addressed through physical improvements to the traffic layout.

The review of the speed limit for Section 2 considered the close proximity of intersections with high turning movements, high crash rates and pending improvements at the Old Coach Road intersection. It is considered that lowering the speed limit from 80 km/h to 70 km/h would be appropriate and provide improved safety for road users.

The reduction of the speed limit by 10km/h along all three sections (approximately 13km in length) would result in a reduction in travel time of approximately 1 minute (this assumes that motorists drive at the posted speed limit and not below it).

The reduction in speed limits and proposed intersection/junction treatments set out in this RMP will provide a combined approach to address road safety and improve driver opportunities exiting the side roads and improving the ability to judge gaps in the traffic stream. The initiatives will be complimentary and allow a staged approach with speed limits being addressed first. The lower speed limits will also assist in midblock safety.

OTHER TRAFFIC MANAGEMENT/ COMMUNITY CONCERNS

The community has raised concerns with regards to road safety or operational issues with DPTI or Council. Issues relating to the roads in this RMP have been identified from DPTI records and are listed below.

No.	Concerns	Action
1	<ul style="list-style-type: none"> • Property accesses north of Thomas Road 	Propose local widening at property accesses to allow vehicles to pull off the road to turn into properties
2	<ul style="list-style-type: none"> • Speed limits along length of Main South Road 	<p>Tatachilla Road – Little Road: 100 km/h speed limit has been reviewed; reduction to 90 km/h considered appropriate</p> <p>Little Road – Aldinga Beach Road: 80 km/h speed limit has been reviewed; reduction to 70 km/h considered appropriate</p> <p>Aldinga Beach Road – Sellicks Beach Road: 100 km/h speed limit has been reviewed; reduction to 90 km/h considered appropriate</p>
3	<ul style="list-style-type: none"> • Level of investment in roads in the area given increase in population 	<p>DPTI recognises the growth that has occurred / will occur in the area.</p> <p>The RMP will be used as a tool to identify projects to improve Main South Road that can be submitted for funding.</p>
4	<ul style="list-style-type: none"> • Safety concerns at Sellicks Beach Road intersection 	DPTI has investigated concepts for improving safety at the intersection and will seek funding for the recommended proposal
5	<ul style="list-style-type: none"> • Safety concerns at Tatachilla Road / Maslin Beach Road intersection 	DPTI has investigated concepts for the installation of a roundabout and will seek funding for the proposal

7 TREATMENT SUMMARY

A number of traffic management and road maintenance improvements have been recommended in this report. Recommendations are summarised in the following tables, included in the table is a priority rating for each recommendation. The priority of treatments has been made by experienced practitioners within DPTI.

Three levels of priority are indicated – High (RED), Medium (ORANGE) and Low (YELLOW). The priority of treatments has been determined based on:

- safety benefits
- benefit/cost appraisal of treatment

7.1 INTERSECTION/ JUNCTION TREATMENTS

INTERSECTION	RECOMMENDED TREATMENT	PRIORITY	RANKING
Tatachilla Road / Maslin Beach Road	Installation of Roundabout & Upgrade Lighting	High	38
Sherriff Road / Communication Road	Installation of Left Turn Deceleration lanes & Upgrade Lighting	Low	401
Thomas Road / Branson Road	Sealing of apron, re-painting "Give Way" sign and installing RRPM's	Low	671
Malpas Road	Separation of Left Turn Deceleration Lane	Low	401
Little Road	Banning of Right Turn into Little Road	Low	167
Port Road	Installation of Roundabout	High	67
Aldinga Road (Biscay Road)	Installation of Seagull Treatment with Central Acceleration Lane and Raised Islands on Aldinga Road approach	Medium	67
Aldinga Beach Road	Installation of Roundabout	Medium	67
Hart Road / Colville Road	Remove access into and from Colville Road to form a T-junction	Low	2377
Hahn Road / Cox Road	Installation of Separated Right Turn Lanes	Low	67

INTERSECTION	RECOMMENDED TREATMENT	PRIORITY	RANKING
Rogers Road / Norman Road	Remove access into and from Rogers Road to form a T-junction Extend right turn lane into Norman Road	Low	167
Sellicks Beach Road / Old Sellicks Hill Road	Realign Approaches and Improve Facilities for Turning Movements	Medium	1175

7.2 MID-BLOCK TREATMENTS

ROAD SECTION	RECOMMENDED TREATMENT	PRIORITY
All sections	Install signage to promote good driver behaviour	Low
Sherriffs Road – Thomas Road	Local widening at property accesses	Low
Malpas Road – Little Road	Local widening at property accesses	Low
	Hazard protection of stobie poles	Medium
Malpas Road – Port Road	Install median wire rope safety barrier	High
Port Road – Aldinga Road (Biscay Road)	Install median wire rope safety barrier	Low
Aldinga Beach Road – Hart Road	Local widening at property access	Low
Hart Road – Hahn Road	Local widening at property access	Low
Hahn Road – Rogers Road	Local widening at property access	Low
	Hazard protection of stobie poles	
Rogers Road – Perth Street	Hazard protection of stobie poles	Medium

7.3 SPEED LIMIT CHANGES

ROAD SECTION	RECOMMENDATION	PRIORITY
Section 1 Tatachilla Road – Little Road	Reduction of speed limit from 100 km/h to 90 km/h (to be undertaken in conjunction with speed limit reductions for Section 2 & 3)	High
Section 2 Little Road – Aldinga Road	Reduction of speed limit from 80 km/h to 70 km/h (to be undertaken in conjunction with speed limit reductions for Section 1 & 3)	High
Section 3 Aldinga Road – Sellicks Beach Road	Reduction of speed limit from 100 km/h to 90 km/h (to be undertaken in conjunction with speed limit reductions for Section 1 & 2)	High

8 CONCLUSION

This Road Management Plan has made a number of recommendations to address the operational and safety issues that have been identified.

All of the proposed recommendations are conceptual only and are not funded. Further design development will include consultation with the relevant councils and the community.

Importantly, the RMP process does not consider the exact costs associated with the recommendations and further planning will be required to establish potential costs of the recommendations. Further, funding commitments to the initiatives detailed in this plan shall be subject to normal budgetary processes whereby all proposals will be prioritised against other state wide projects. This approach ensures that the funds available each year are allocated to the projects where the greatest benefit can be provided to the community as a whole.

When a project proposed in the RMP becomes funded; DPTI will inform local property owners, tenants and other key stakeholders about the project prior to undertaking any construction work. Information may be provided in the form of letters to owners, tenants and key stakeholders, media release, internet and social media information and through advertising in the local newspaper. DPTI will evaluate each project in terms of the level of information or engagement required.

APPENDIX A – INTERSECTION CRASH DATA

Section	Intersection	Crash Type	PDO +\$3000	Casualty	2009	2010	2011	2012	2013	Total
1	Maslin Beach Road / Tatachilla Road	Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	0	1	0	0	0	1	0	1
		Right Angle	6	7	4	2	4	2	1	13
		Right Turn	2	1	1	0	1	0	1	3
		Hit Animal	1	0	0	0	0	0	1	1
		Total	10	9	5	3	5	3	3	19
1	Sheriffs Rd / Communication Road	Right Angle	2	3	1	1	1	0	2	5
		Hit Fixed Object	2	0	0	0	0	2	0	2
		Total	4	3	1	1	1	2	2	7
1	Thomas Road / Branson Road	Rear End	0	2	1	0	0	0	1	2
		Side Swipe	1	0	0	0	0	1	0	1
		Hit Fixed Object	1	0	0	0	0	1	0	1
		Total	2	2	1	0	0	2	1	4
1	Malpas Road	Rear End	0	1	0	1	0	0	0	1
		Right Angle	0	1	0	0	1	0	0	1
		Head On	0	1	0	0	0	0	1	1
		Hit Fixed Object	1	0	0	0	0	1	0	1
		Total	1	3	0	1	1	1	1	4
1	Little Road	Rear End	3	5	2	1	1	0	4	8
		Total	3	5	2	1	1	0	4	8
2	Port Road	Rear End	24	6	5	7	6	11	1	30
		Right Angle	1	1	0	2	0	0	0	2
		Total	25	7	5	9	6	11	1	32
2	Old Coach Road	Right Angle	11	5	1	6	7	1	1	16
		Hit Fixed Object	1	0	0	0	0	0	1	1
		Total	12	5	1	6	7	1	2	17
2	Aldinga Road (Biscay Road)	Rear End	7	4	3	3	1	0	4	11
		Right Angle	4	1	1	1	2	0	1	5
		Right Turn	4	0	2	1	0	1	0	4
		Total	15	5	6	5	3	1	5	20
2	Aldinga Beach Road	Hit Fixed Object	0	1	0	0	0	1	0	1
		Right Turn	3	2	0	0	1	3	1	5
		Rear End	2	1	0	1	1	1	0	3
		Right Angle	2	3	0	1	2	2	0	5
		Total	7	7	0	2	4	7	1	14
3	Hart Road / Colville Road	Hit Fixed Object	1	0	0	0	1	0	0	1
		Hit Animal	1	0	0	0	1	0	0	1
		Total	2	0	0	0	2	0	0	2
3	Hahn Road / Cox Road	Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	1	2	1	0	0	1	1	3
		Side Swipe	1	1	1	1	0	0	0	2
		Right Turn	0	1	0	0	0	1	0	1
		Head On	0	1	0	0	1	0	0	1
		Right Angle	0	2	0	0	0	0	2	2
		Total	3	7	2	2	1	2	3	10
3	Norman Road / Rogers Road	Head On	1	0	0	1	0	0	0	1
		Hit Fixed Object	1	0	0	1	0	0	0	1
		Rear End	1	0	0	0	0	0	1	1
		Right Angle	1	2	1	0	1	1	0	3
		Side Swipe	0	1	0	0	1	0	0	1
		Right Turn	0	1	0	1	0	0	0	1
		Hit Animal	0	1	0	0	0	0	1	1
		Total	4	5	1	3	2	1	2	9
3	Perth Street	<No Crashes>	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0
3	Sellicks Beach Road / Old Sellicks Hill Road	Rear End	5	0	1	2	1	0	1	5
		Right Angle	1	1	1	0	1	0	0	2
		Total	6	1	2	2	2	0	1	7

APPENDIX B – MID-BLOCK CRASH DATA

Section	Intersection	Crash Type	PDO +\$3000	Casualty	2009	2010	2011	2012	2013	Total
1	Sherriff Road – Thomas Road	Hit Animal	1	0	0	0	1	0	0	1
		Hit Fixed Object	2	0	0	0	0	2	0	2
		Roll Over	1	0	0	0	0	0	1	1
		Side Swipe	0	1	0	0	1	0	0	1
		Rear End	0	1	1	0	0	0	0	1
		Total	4	2	1	0	2	2	1	6
1	Thomas Road – Malpas Road	Rear End	0	1	0	1	0	0	0	1
		Total	0	1	0	0	1	0	0	1
1	Malpas Road – Little Road	Head On	1	2	0	2	0	1	0	3
		Rear End	0	4	1	1	0	0	2	4
		Hit Animal	1	0	1	0	0	0	0	1
		Hit Object On Road	2	0	2	0	0	0	0	2
		Hit Fixed Object	0	1	0	0	0	0	1	1
		Total	4	7	4	3	0	1	3	11
2	Little Road – Port Road	Other	1	0	0	1	0	0	0	1
		Total	1	0	0	1	0	0	0	1
2	Port Road - Aldinga Road (Biscay Road)	Head On	0	1	0	1	0	0	0	1
		Hit Fixed Object	2	0	0	0	1	0	1	2
		Other	1	0	0	0	1	0	0	1
		Total	3	1	0	1	2	0	1	4
2	Aldinga Road (Biscay Road) – Aldinga Beach Road	<No crashes>	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0
3	Aldinga Beach Rd - Hart Road	Left Road Out of Control	2	0	1	1	0	0	0	2
		Hit Animal	1	0	0	0	0	1	0	1
		Head On	0	1	0	0	0	1	0	1
		Rear End	1	0	0	0	1	0	0	1
		Total	4	1	1	1	1	2	0	5
3	Hart Road – Hahn Road	Rear End	2	1	2	0	1	0	0	3
		Side Swipe	0	1	0	1	0	0	0	1
		Total	2	2	2	1	1	0	0	4
3	Hahn Road – Rogers Road	Rear End	1	1	0	1	1	0	0	2
		Left Road Out of Control	1	0	1	0	0	0	0	1
		Hit Fixed Object	0	1	0	0	0	0	1	1
		Total	2	2	1	1	1	0	1	4
3	Rogers Road – Perth Street	Hit Fixed Object	2	0	0	1	0	1	0	2
		Hit Animal	1	0	0	0	0	0	1	1
		Head On	0	2	0	0	1	1	0	2
		Rear End	0	2	0	0	0	0	2	2
		Roll Over	1	0	0	0	1	0	0	1
		Total	4	4	0	1	2	2	3	8
3	Perth Street – Sellicks Beach Road	Hit Fixed Object	0	1	0	0	0	1	0	1
		Rear End	0	1	0	0	0	0	1	1
		Total	0	2	0	0	0	1	1	2

Note: Mid-block crash data does not include crashes at intersections or junctions

APPENDIX C – COMMUNITY & COUNCIL FEEDBACK

FEEDBACK ID NUMBER	COMMENTS	DPTI RESPONSE
SECTION 1		
C04	<p>Tatachilla Road / Maslin Beach Road Intersection:</p> <p>I do not believe a roundabout would effectively solve the traffic conflict points because:</p> <ul style="list-style-type: none"> • The problem is the crests at both intersection approaches on south road – even reduced to 80km an hour coming over a crest only to be presented with stationary traffic will definitely cause a large number of high speed rear end accidents • There will still be a large buildup of traffic, especially west bound post school, at the intersection leading to driver pressure and therefore still contribute to accidents • At early times (6am to about 7:30am) and later in the day (5 till 6:30pm) the constant flow of predominately commuter traffic along south road will be stopped while a single vehicle on an intersecting road starts moving and enters the roundabout. This will lead to buildup of stationary south road traffic close to crests and potentially increase accidents, driver fatigue and frustration • Quarry trucks are slow to get going from standstill and will occupy the roundabout for significant periods of time and slow traffic flow dramatically. <p>I believe a better solution would be an overpass over Tatachilla Road.</p> <p>A roundabout will just slow traffic flow down, not effectively address the conflict problems and create some new ones.</p>	<p>The proposed roundabout will be designed taking into consideration the vertical alignment to ensure this risk of rear end crashes is mitigated.</p> <p>A roundabout would increase some delays; however these delays are expected to be within acceptable limits. Furthermore, by physically reducing vehicle speeds the risk and severity of side impact crashes is significantly reduced.</p> <p>Grade separation has not been considered in the RMP as this a long term type upgrade and is outside the scope of the RMP. A roundabout is the most effective at-grade option for reducing conflict points at intersections.</p>

<p>OTH01</p>	<p>Tatachilla Road / Maslin Beach Road Intersection:</p> <p>Generally support the application of the roundabout treatment; however, since this option requires a higher level of funding, it is less likely to be implemented in the foreseeable future.</p> <p>Would be interested in learning the cost to benefit ratio of the two options. The staggered intersection, while potentially offering less safety benefits than the roundabout, may be considered for the short to medium term and would continue to improve safety while maintaining efficiency on South Road. Additionally the costs to construct a staggered intersection may not preclude the project from black spot funding and therefore make the project more achievable in the short to medium term.</p> <p>If implementing a roundabout, we do not consider an 80km/h approach speed appropriate and would suggest a two stage approach speed with the final speed of 60km/h.</p>	<p>Refer to Section 6.1.1 for further discussion on staggered intersection option.</p> <p>Should funding for a roundabout be secured in the future, it will be designed according to standards and to ensure that vehicles enter the roundabout at an appropriate safe speed</p>
<p>C10</p>	<p>Tatachilla Road / Maslin Beach Road Intersection:</p> <p>The Plan indicates a preference of a roundabout at the intersection of Maslins Beach and Main South Roads. We agree that this would be a much improved intersection than that exists currently and its construction will greatly improve the interface of private vehicles and trucks hauling from the adjacent sand mines. Impact on the mine resource should be of some consideration to the DPTI's design options and we would be pleased to assist in the preliminary planning to develop a mutually agreeable outcome</p>	<p>Noted</p>
<p>SBRA4</p>	<p>Tatachilla Road / Maslin Beach Road Intersection:</p> <p>We believe that Main South Road is not suitable for roundabouts. With the volume of traffic in peak hours they would cause major traffic congestions and hold ups and long delays. An increase of minor accidents could also ensue. There should be turning lanes for left hand turns installed on both sides of South Road with merging lane on South Road for vehicles turning onto South Road from</p>	<p>A roundabout would increase some delays; however these delays are expected to be within acceptable limits. Furthermore, by physically reducing vehicle speeds the risk and severity of side impact crashes is significantly reduced.</p> <p>While there would be some benefit in providing left turn deceleration and acceleration lanes, this treatment would not provide any reduction in the severity of any crashes that may</p>

	Tatachilla Road. We also think that the proposal for two different T intersections would create more problems than exist at present.	occur. Refer to Section 6.1.1 for further discussion on staggered intersection option.
C14	Tatachilla Road / Maslin Beach Road Intersection: I think roundabouts are a good solution to some of the major intersections especially at Tatachilla RD and Aldinga, living here for over 5 years these intersections are much safer now the roads are 80KM/hr in some parts but still they a very dangerous.	Noted
OTH01	Sherriff Road / Communication Road Intersection : We support DPTI's recommendations for the left turn protected lanes and increased illumination at the intersection. We believe the illumination of the intersection would however offer disproportionate benefit to the protected turn lanes and suggest that funding of the street lighting should not hold the rest of the work from taking place. If insufficient funds are available for the complete project, lighting should be provided at a later date.	Noted
OTH01	Midblock from Sherriff Road to Thomas Road: We support shoulder widening as the proposed treatment	Noted
OTH01	Thomas Road / Branson Road Intersection: We support DPTI's proposal to seal the Apron on Thomas Road, re-mark the "Give Way" lines and provide Reflective Raised Pavement Markers (RRPMs).	Noted

OTH01	<p>Malpas Road Intersection:</p> <p>We support DPTI's recommendation to install a protected left turn lane onto the side roads but agree that this is a low priority treatment. We welcome the improvements that DPTI have introduced at the intersection in 2006 and 2010 that have resulted in a noticeable reduction in the crash rate.</p>	Noted
OTH01	<p>Midblock from Malpas Road to Little Road:</p> <p>We support the recommendation to install a wire rope barrier or wide painted median treatment to reduce the instances of head-on collisions. Shoulder widening is also supported and it is recommended that the Stobie Pole is protected with a barrier</p>	Noted
OTH01	<p>Little Road Intersection:</p> <p>Given the relatively low frequency of rear end crashes, we would only support the closure of the intersection with Little Road if the crash trend continued and the volume of right turn vehicles was shown to be significantly lower than those at the alternative access. As half of the crashes that have occurred are thought to be a result of drivers not clearly sighting the intersection, we are of the view that in the first instance and certainly as a low cost interim measure, advance signs for the intersection are provided on Main South Road.</p>	Right turn bans are part of the median wire rope barrier proposal through this intersection; however a U-turn facility at the northern end of the wire rope barrier is also proposed to maintain access to Little Road.
SECTION 2		
SBRA4	<p>Port Road Intersection:</p> <p>We believe traffic lights will solve the problem. A roundabout will cause congestion and impede traffic flow and for same reasons stated for Tatachilla Road intersection.</p>	<p>Traffic signals not considered appropriate for high-speed rural environment like this.</p> <p>A roundabout provides better safety benefits and modelling undertaken indicates the traffic impacts are within acceptable limits</p>

OTH01	<p>We support DPTI's recommendation for Option One as a short term solution but believe that in the longer term, the roundabout would be a more appropriate solution. The roundabout should however be subject to a two-step speed reduction on the Main South Road approaches. We also suggest that for the short to medium term, the carriageway is widened in the southbound direction to accommodate a central acceleration lane for vehicles turning southbound from Port Road given the high frequency of rear end collisions.</p>	<p>Noted – roundabout is now the recommended treatment following another review.</p>
C11	<p>I am writing about the Main South Road/Port Road junction (and its effect on the Main South Road/Aldinga Beach Road junction. Your suggested treatments (p. 39) would certainly do something to improve road safety at the Port Road junction, but as the greatest problem to users in the morning at that point is the heavy flow of traffic from the south, vehicles trying to join Main South Road there will be in the same situation as at present. The build-up of traffic there at certain times is very frustrating, and a number of people including myself tend to drive in a big loop to join Main South Road at Aldinga Beach Road to avoid being caught in the congestion at Port Road. In this way of course we add to the congestion at Port Road. Your plan, while looking at safety, does nothing to solve the problem of how to access South Road from Port Road, a problem which has increased with the increase of population in the area. Much as I hate unnecessary traffic lights, I believe that the only way we can assist access to South Road from Port Road, and reduce the frustration that leads to inappropriate risk-taking, is to install lights there. This would ensure that people trying to enter South Road from Aldinga would be assured of an opportunity, and reduce the number of people circumventing the problem by entering South Road from Aldinga Beach Road.</p>	

OTH01	<p>Old Coach Road Intersection:</p> <p>We support the modifications that DPTI have implemented at the Old Coach Intersection and agree that post implementation monitoring should be carried out to measure the project's success.</p>	Noted
OTH01	<p>Stonehouse Lane Intersection:</p> <p>We support DPTI's conclusion that no upgrade work is required at this intersection.</p>	Noted
C07	<p>Stonehouse Lane Intersection:</p> <p>St Ann's Church has very difficult access to South Road, especially on busy Sunday mornings with lots of south-bound traffic, but also at other times. Some older people have stopped coming to church because of difficulties with traffic, either by car or walking. It would need an expert to suggest a helpful solution to this problem.</p>	Noted
OTH01	<p>Aldinga Road Intersection:</p> <p>We support DPTI's recommendation of the "Seagull Treatment" in the short term and recommend that a roundabout may be considered in the long term. Additionally, we recommend a reduced speed limit on approach to the intersection on Aldinga Road. Lane rumble strips may also be considered on Aldinga Road on its own or in combination with a speed reduction to make drivers aware of their speed on approach to the intersection.</p>	Support for the recommendations is noted. Consideration will be given to providing rumble strips on Aldinga Road. Speed limit reductions for this section are proposed in the RMP. DPTI do not typically reduce speed limits in isolation for intersections.
SECTION 3		
OTH01	<p>Aldinga Beach Road Intersection:</p> <p>We support DPTI's proposal for a roundabout at this location, subject to the previously described speed restrictions on approach to the roundabout. We also support the short term measure of the application of line marking and RRPMs until the roundabout is constructed.</p>	Noted. Any proposed roundabout will be designed to ensure that the safe approach speeds are adopted.

OTH01	<p>Midblock from Aldinga Beach Road to Hart Road:</p> <p>We support DPTI's recommendation that shoulder widening be considered for this section</p>	Noted
OTH01	<p>Midblock from Rogers Road to Perth Street:</p> <p>We support DPTI's recommendation that no treatment is required at this intersection.</p>	Noted
OTH01	<p>Hart Road / Colville Road Intersection:</p> <p>We do not support DPTI's recommendation to close Colville Road as there is no crash data to support this treatment. RAA would prefer that sealed aprons are provided on each side to provide motorists with better grip when turning into or from these side roads.</p>	While the intersection does not have a high crash history, DPTI aims to reduce the number of four-way intersections along Main South Road for safety reasons. Given the low number of vehicles using this side road and the alternative access available, it is considered that the road closure would help achieve better safety along Main South Road
SBRA5	<p>Hart Road / Colville Road Intersection:</p> <p>We believe that Colville Road should be closed off at intersection of South Road.</p>	Noted
C15	<p>Hahn Road / Cox Road Intersection:</p> <p>We have heard emergency services sirens which have stopped at that intersection numerous times to attend accidents and feel that the accident statistics represented in the plan are tremendously understated. Not sure what criteria are applied for an accident to be included in your statistics but there have been far more crashes at that intersection than is represented in the plan.</p> <p>I personally will NOT sit on Main South Road waiting to turn right onto our road, especially with my horses in my horse float on behind our vehicle. I divert around that intersection, either by Biscay / Plains Roads or Rogers / Plains Roads in order to avoid sitting at that</p>	<p>Crashes captured in the department's database are those that have been reported to the police. It is possible that other crashes have occurred but if these were not reported then we do not have the details to be able to include them in our investigations.</p> <p>Overtaking across an intersection is illegal and the enforcement of laws against this behaviour is the responsibility of SAPOL.</p> <p>The proposed treatment of installing separated right turn lanes will help address safety concerns with waiting on Main South Road to turn right into the side roads.</p>

	<p>intersection.</p> <p>Crossing Main South Road onto Cox Road from Hahn Road. While waiting to enter the Main South Road carriageway (in either direction), it is frighteningly frequent that vehicles will cross the intersection on the wrong side of the road at very high speeds in the endeavour to overtake slower vehicles travelling in the same direction.</p> <p>When my partner is waiting to turn onto Cox Road from Main South Road, people often overtake his vehicle on the left, moving over well onto the shoulder, without slowing down. They veer off the shoulder at the last possible moment and this means that any following vehicles have reduced notice of our vehicle sitting in the middle of the road ahead. It is very alarming the speeds at which cars overtake on the outside while you are sitting there.</p>	
C16	<p>Hahn Road / Cox Road Intersection:</p> <p>We note that your plan indicates that the intersection of Cox / Hahn Roads with Main South Road is "low" priority and implore you to reconsider the priority ranking. We remind you that this intersection is the only access point to the caravan park on Cox Road and at holiday times (school holidays and long weekends) there is significantly increased traffic on Cox Road with high numbers of vehicles towing caravans and campers having to negotiate the traffic at that intersection. It is a very popular caravan park and not all caravan users are experienced and confident to deal with fast and aggressive traffic: hesitation by drivers can exacerbate the underlying problems. Further, we recommend:- lighting of the intersection to make it more visible at night, implementation of right turning lanes for both directions of traffic from Main South Road, barrier strip separation of the lanes in opposite directions to prevent overtaking through this intersection on the wrong side of the road, STOP signs on Cox and Hahn Roads instead of GIVEWAY signs - People really need to stop at this intersection.</p>	<p>Concerns are noted; however priority is determined based on the greatest need for investment. Compared to other intersections along Main South Road, this one is a low priority at this time.</p>

OTH01	<p>Hahn Road / Cox Road Intersection:</p> <p>We support both of DPTI's proposals, firstly to remark the existing line marking at the intersection and secondly to introduce protected right turn lanes for both side roads.</p>	Noted
OTH01	<p>Midblock from Hahn Road to Rogers Road:</p> <p>We support DPTI's recommendation that shoulder widening be considered for this section.</p>	Noted
OTH01	<p>Midblock from Rogers Road to Perth Street:</p> <p>We recommend that hazard protection for the Stobie Poles is considered but agree that no other treatments are required.</p>	Hazard protection for the stobie poles has been recommended in the RMP.
OTH01	<p>Rogers Road / Norman Road Intersection:</p> <p>We do not support DPTI's recommendation to close Rogers Road. All casualties that have occurred were associated with Norman Road therefore this course of action is not justified. We would support the recommendation of providing a sealed apron and line marking on Rogers Road and, if funds permit in the future, the addition of a protected right turn lane We agree this should be low priority given the low volumes of traffic turning onto Rogers Road.</p>	While the crash history associated with Rogers Road is not high, DPTI aims to reduce the number of four-way intersections along Main South Road for safety reasons. Given the low number of vehicles using this side road and the alternative access available, it is considered that the road closure would help achieve better safety along Main South Road
SBRA6	<p>Rogers Road / Norman Road Intersection:</p> <p>Norman Road right hand turn lane needs to be longer heading south also a left hand turning lane is needed when travelling north also merging lane needs to be installed for vehicles turning left from Norman Road onto South Road heading north.</p>	Recommendation updated to include extension of right turn lane.

	<p>Sellicks Beach Road / Old Sellicks Hill Road Intersection:</p> <p>We support DPTI's recommendation to square the intersection and provide protected turn lanes into the side roads. We acknowledge that due to project costs, the project is unlikely to receive black spot funding in the future, therefore any funding will need to be drawn from other budgets. Given the frequency of right angle crashes, this will be low priority.</p>	<p>Given the community concerns at this intersection, priority has been changed to Medium</p>
	<p>Sellicks Beach Road / Old Sellicks Hill Road Intersection:</p> <p>Remove crest from top of hill and flatten cut intersection 80 kms limit. Right and left hand turning lanes in both directions also merging lanes in both directions. Whole problem would be solved with major upgrade of South Road from Seaford to Cactus Canyon with dual lane highway.</p>	<p>Duplication of Main South Road is not within the scope of the RMP as it is a long term upgrade</p>
SPEED LIMITS		
C14	<p>I applaud the concept of slowing down the traffic, I think it should be 80KM/HR and then at the intersections at Maslins, Aldinga and Sellicks it should be 60KM/HR I believe 90 & 70 KM/hr limits seriously won't change much and will only anger residents, too many changes. Currently within 2 KM in Aldinga we have 100/80/60/50 & 25KM/hr (School) zones... Now you are suggesting 100/90/80/70/60/50 & 25KM/hr zones within a few Kilometres of each other? this needs to be simplified, getting rid of all the 60KM/hr zones and making all roads 50KM/hr off south rd, will go towards this.</p>	<p>The department does not reduce speed limits at intersections in isolation. Assessments are undertaken over the length of a road to determine the most appropriate speed limit.</p> <p>Research has shown that even a 10 km/h reduction in vehicle speed can lead to significant reductions in the risk and severity of crashes.</p> <p>The speed limits on most of the side roads are the responsibility of council.</p>
C03	<p>I have read through the proposed plans, and am mostly in favour of the changes except for the speed limit changes. Speed limit reduction only really impacts the severity of a crash as the crash would occur at a lower speed. Changes should be aiming to eliminate road conditions that could result in a crash. i.e. solve root causes. If we reduced speed limits it also has a negative financial impact on the community as commute times will be longer and</p>	<p>The reduction of the speed limit by 10km/h along all three sections (approximately 13km in length) would result in a reduction in travel time of approximately 1 minute (this assumes that motorists drive at the posted speed limit and not below it).</p>

	hence road users will spend much more on petrol, wear and tear on their car as well as increase driver fatigue. The proposed changes would also increase congestion, especially given the forecast increase in number of users of the road. My view is 1 minute increase mentioned in the report is a significant underestimate of increase in travel time. Perhaps saving up over next few years and duplicating the road would be a better long term solution.	
C17	I am generally supportive of the measures proposed at intersections to improve safety at these locations. I do feel that the existing 80km/h speed zone in section 2 has been installed as a result of poor road surface and pavement conditions. I am not supportive of the general lowering of the speed limits along the road particularly along section 3 which is a straight rural road with low traffic volumes. If lowering of speed zones is to occur it should only be the lowering of the speed zone of section 1 from 100 km/h to 90 km/h	The lower speed limit in section 2 is the result of it having more adjacent development and therefore increased traffic accessing and leaving the road. Research has shown that even a 10 km/h reduction in vehicle speed can lead to significant reductions in the risk and severity of crashes.
SBRA2	We propose a change in speed limit to 70km/h through Aldinga to the existing sign posts (80km/h).	Noted
C16	We are not convinced that lowering the speed limit will achieve greater safety as we believe people will not obey the reduced speed limit. Having said that, we welcome any introduced safety measures.	Any speed limit reduction will also require collaboration with SAPOL to ensure that these new limits are regularly enforced.
SBRA6	Perth Street section of South Road limit should be 80 km/h to past Southern Quarries	Noted
C02	I do not support the recommendation to reduce the speed limit along all three sections (section 6.3 of the plan). The recommendation does not address the issue of poor road quality and the community's safety concerns. Additionally, lowering the speed limit increases travelling time and if population growth is experienced there will be more vehicles on the roads, further adding to travel time. This deters people from living and visiting the area which then affects business and tourism.	The reduction of the speed limit by 10km/h along all three sections (approximately 13km in length) would result in a reduction in travel time of approximately 1 minute (this assumes that motorists drive at the posted speed limit and not below it).

OTH01	We do not believe a strong case has been presented for lowering the speed limits. Certainly in the case of section two, we do not support lowering the speed from 80 km/h to 70 km/h and do not believe that lowering the speed limit to 90 km/h elsewhere will have a significant impact on the crash rates compared to the proposed countermeasures.	Research has shown that even a 10 km/h reduction in vehicle speed can lead to significant reductions in the risk and severity of crashes.
C05	The proposal to change the speed limits on South Road between Aldinga and Sellicks is completely illogical. I believe this is a "smoke and mirrors" attempt to disguise the fact that absolutely NO maintenance has been carried out on this stretch of road for many years. The amount of traffic using the road is now possibly greater than the usage of the Victor Harbor Road, yet the road surface has been allowed to deteriorate greatly. This is the main connection between the city of Adelaide and access to Kangaroo Island, used by not only Sealink Coaches but also private vehicles, many driven by tourists. Add to that the huge number of trucks carrying freight plus the heavy trucks from the quarry at Sellicks then you have a vast number of vehicles daily traveling on this highway. I use the road several times a week from my home in Normanville and have seen the deterioration first hand over the past year. In my opinion the Government need to allot sufficient funding to attend to maintenance on the stretch of South Road between Seaford Rise and Sellicks with great urgency. It is NOT necessary to lower the speed limit. Accidents are caused by the inferior road surface	<p>Periodic maintenance is undertaken on the road surface approximately every 2 years to mitigate the effects of the underlying soil. Extensive pavement rehabilitation or reconstruction is not possible at this time due to the lack of funding for such an exercise. It must be noted that funding for pavement rehabilitation is limited and has to be properly prioritised and allocated across the state.</p> <p>Speed may not be a factor in all of the crashes however reduced speeds will have an effect in reducing the risk and severity of crashes.</p>
SBRA1	We all agreed after advice from the SES that the 100km/h speed limit remain unchanged. It isn't the speed limit causing accidents, it's driver error, and when speed was a factor the vehicles involved were well over the limit.	Speed may not be a factor in all of the crashes however reduced speeds will have an effect in reducing the risk and severity of crashes.
ROAD CONDITION		
C13	I'm writing to ask what if anything will be done to Main South Road between Aldinga and Sellicks Beach as the road is breaking up and will soon be enormous potholes which are hard to navigate as well	Periodic maintenance is undertaken on the road surface approximately every 2 years to mitigate the effects of the underlying soil. Extensive pavement rehabilitation or

	as keep your eyes on the road at the same time. It's getting very dangerous	reconstruction is not possible at this time due to the lack of funding for such an exercise. It must be noted that funding for pavement rehabilitation is limited and has to be properly prioritised and allocated across the state.
C15	The pavement (road surface) on Main South Road between Aldinga Beach Road and Cox / Hahn Roads intersection is appalling and responsible for significant wear and tear on tyres. When we travel this section of road we tend to keep far left (onto the shoulder) in order to avoid tyre damage. The current state of the surface has been terrible for at least 6 months and continues to deteriorate unchecked. It is also very undulating and I avoid this section when I have my horse float on behind our vehicle, using secondary roads in preference.	See above
C16	Rip up the section of Main South Road between Aldinga Beach Road and Cox / Hahn Roads intersection, and rebuilding the road from scratch as the numerous attempts to resurface have been inadequate and ineffective.	Extensive pavement rehabilitation or reconstruction is not possible at this time due to the lack of funding for such an exercise. It must be noted that funding for pavement rehabilitation is limited and has to be properly prioritised and allocated across the state
OTHER		
SBRA3	We propose a change in speed limit to 80km/h from the overtaking lanes on Sellicks Hill to just past the entrance to South Quarries. Just approved Buddhist temple on South Road needs to be upgraded with right hand turning lane to temple into Cactus Canyon Road and merging lanes on Southern & Northern sides of South Road.	Not within the scope of the RMP, but comment will be noted and considered as part of any investigations for this section of Main South Road.
C02	Regardless of the speed limit, roads should have adequate space and clear line markings, roadside hazards should be removed and there should be proper lighting. As a long-term solution, in addition to improving the quality of roads and making them wider, I would support 'sitting' lanes in the middle for cars turning right on roads as is likely to reduce the crash risk for cars crossing two lanes of traffic at once.	Lighting on this section of Main South Road is not considered a high priority when compared against other roads across the state.

OTH01	The Main South Road Management Plan shows no intended improvement in cycling safety in proposed works. With cycling growing in popularity and the identified area an active recreational ride and Tour Down Under region it is disappointing no additional cycling infrastructure. Safety of cyclists is the single biggest reason people don't ride, we support improving cycling infrastructure with this providing an ideal opportunity on this section of road.	This route is considered a Major Cycling Route and has sealed shoulders provided for the majority of the section. While it is desirable to provide wider sealed shoulders, it is not considered a high priority at this time compared to the other proposed safety upgrades in the RMP.
OTH01	We notes line marking is to be carried out annually, subject to budgets. We are of the opinion funding should be sought to provide higher quality materials for line marking that would result in better wet weather and low light performance while not requiring the lines to be renewed so frequently. While the capital costs of this are higher, it is likely to save maintenance costs in the longer term.	Noted
OTH01	We note there are currently no rest stops provided within the corridor and would recommend that some layby provision is made in both directions that allow motorists to park at a safe distance from the traffic	The provision of rest areas is not considered a high priority at this time compared to the proposed safety upgrades in the RMP.