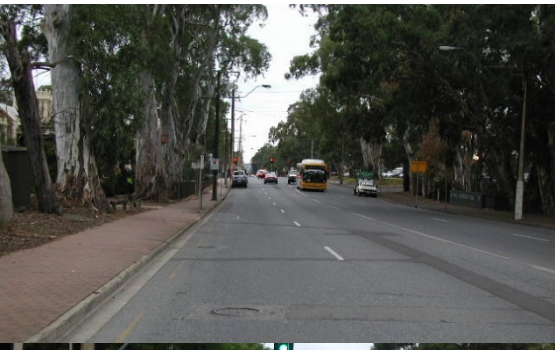

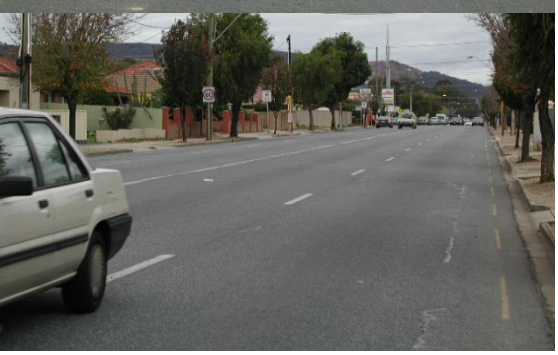

Government of South Australia

Department of Planning, Transport and Infrastructure

Penfold Road
St Bernards Road
Newton Road
Darley Road

ROAD MANAGEMENT PLAN

Date	Revisions	Amended by
May 2011	Revisions identified as part of Consultation with Burnside Council Elected Members 26 May 2011. Inclusion of maintenance activities Review of priority of Section 1 projects Change in cross-section of midblock treatments Review of proposed treatments	R Timmings
Oct 2011	Revisions identified as part of Consultation with Campbelltown Council Elected Members 8 August 2011. Inclusion of maintenance activities Review of priority of Section 2 & 3 projects Review of proposed treatments	R Timmings
Dec 2012	RMP updated after Community Feedback (Appendix C added)	P Hurley
Nov 2014	Crash Data & recommended treatments updated to reflect 2009 to 2013 crashes.	K Aryan
Sept. 2017	Crash Data updated to reflect crashes from 2012 to 2016. Traffic volumes and maps updated with latest available information.	V Varricchio
Mar 2018	Final edits / updates	P McBride

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GLOSSARY

AADT	Average Annual Daily Traffic – The number of axle pairs crossing at a specific site per year and dividing this number by 365
DDA	Disability Discrimination Act 1992
DPTI	Department of Planning, Transport and Infrastructure
GoZone	Public transport services with a frequency of every 15 minutes between 7.30 am and 6.30 pm Monday to Friday and every 30 minutes at night and on weekends and public holidays along sections of specific routes.
Intersection	Place where two or more roads cross
Junction	Place where two or more roads meet
Level of Service	A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. Generally 6 levels of service, designated A to F, with a level of service A representing the best operating condition (i.e. free flow)
MARWP	Metropolitan Area Road Widening Plan
Traffic Operations	DPTI section of the Safety and Service Division which is responsible for the operation and management of the arterial road network across the state for all users
NEXY	Northern Expressway
Pedestrian Refuge	An island in a carriageway set aside for the exclusive use of pedestrians
PDO	Property damage only (relating to the severity of a vehicle crash)
Right Angle Crash:	A crash involving two vehicles travelling on different roads colliding at right angles
Right Turn Crash	A crash involving two vehicles travelling on the same road but in opposite directions. One vehicle is travelling straight ahead and the other executes a right turn or U turn across its path
RMP	Road Management Plan
PAC	Pedestrian Activated Crossing

1 OVERVIEW

This Road Management Plan (RMP) provides an overall view of existing operational and safety issues and provides recommendations for traffic management improvements on the following sections of the arterial road network in the eastern suburbs of Adelaide:

- Penfold Road, between Kensington Road and Magill Road
- St Bernards Road, between Magill Road and Montacute Road
- Newton Road, between Montacute Road and Gorge Road
- Darley Road, between Gorge Road and Lower North East Road

The RMP is not intended to address potential longer term major road improvement needs (e.g. the addition of extra lanes) should they be required resulting from future residential and industrial development or other identified need. Major road improvements that would significantly change the operation of the road corridor are highlighted where known, however extensive investigations of any major improvements are outside the scope of this document.

This document is focussed on identifying potential short to medium term road improvement needs to improve safety and operation of the existing roads. Longer term infrastructure improvements across South Australia are considered in the *Strategic Infrastructure Plan for South Australia* which can be viewed at http://infrastructure.sa.gov.au/strategic_infrastructure_plan.

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

- Analysis of recorded crash data and traffic flow statistics
- Research of historical transport investigation records
- Site auditing and observations
- Preliminary discussions with council officers and through information gained from the local community and officers of Traffic Operations, DPTI

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, buses, bicycles and pedestrians
- Community needs and expectations
- Ensuring that any treatments are consistent with longer term plans for the road or area where these are known
- Application of appropriate standards and guidelines to ensure consistency and effectiveness of any proposed treatments

This RMP forms the basis for discussion and comment with the city councils and the community along the length of the route with a view to further development and eventual implementation of the plan. Note that whilst the RMP proposes a number of recommended treatments, the proposals are presently not funded. 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

The section of Penfold Road, St Bernards Road, Newton Road and Darley Road that is the subject of this plan is located in the eastern suburbs of Adelaide. The road runs through both the City of Burnside and the Campbelltown City Council. It is an urban arterial road, which provides access to the community in the area and provides connectivity to the north eastern suburbs.

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: Penfold Road between Kensington Road and Magill Road

Section 2: St Bernards Road between Magill Road and Montacute Road and then also Newton Road between Montacute and Andrea Ave.

Section 3: Newton Road from Andrea Ave to Gorge Road and then also Darley Road between Gorge Road and Lower North East Road

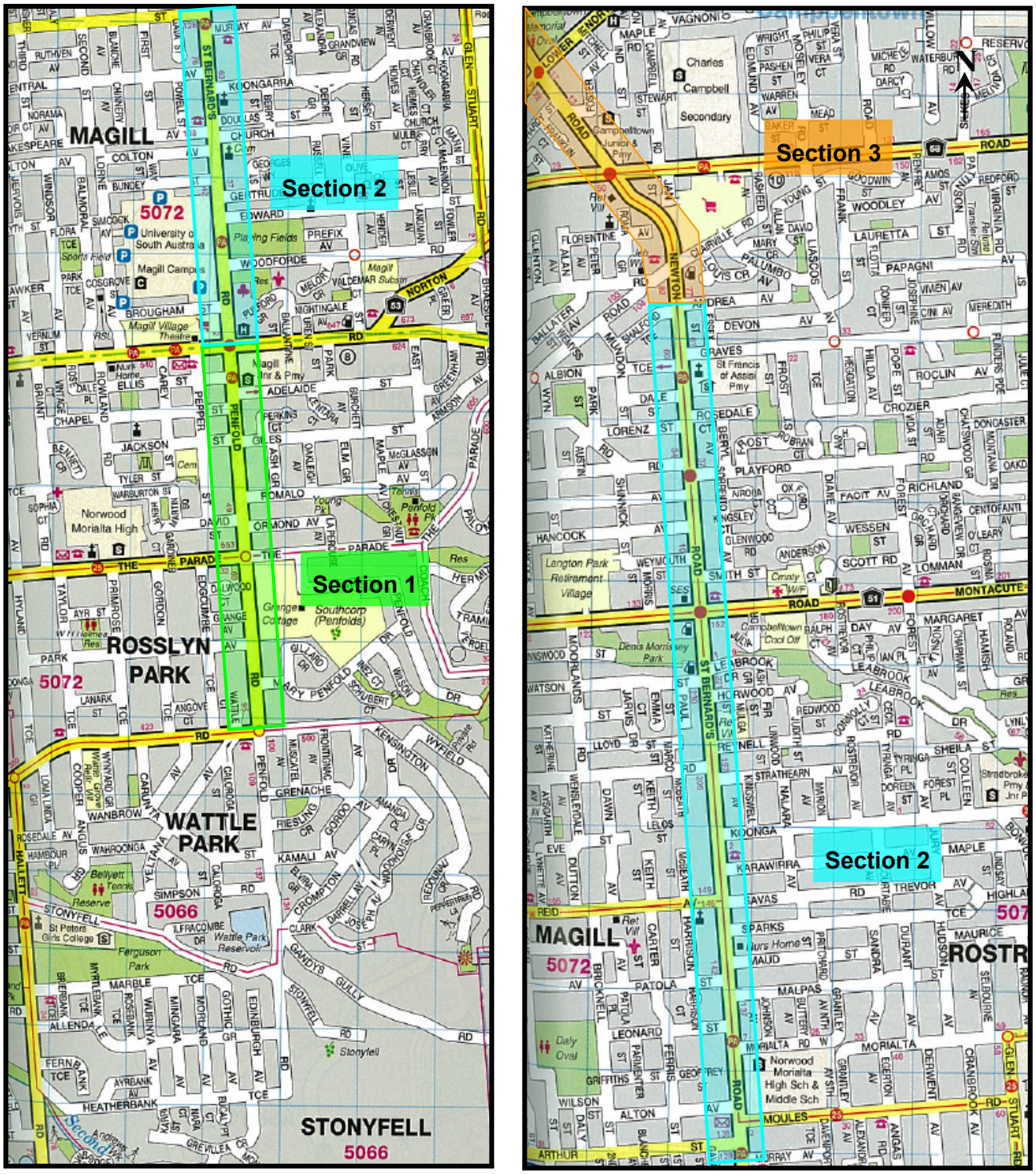

Figure 2-1 – Length of study along Penfold Road, St Bernards Road, Newton Road and Darley Road from Wattle Park to Paradise and reference road sections

2.2 BEHAVIOUR OF TRAFFIC AND LAND USE

Traffic volumes vary greatly along the length of road discussed in this RMP. Average Annual Daily Traffic (AADT) for different road sections are depicted in Figure 2.2 below. Penfold Road, St. Bernards Road, Newton Road and Darley Road all form one continual road link, with varying forms of land use abutting the road over its length. All road sections are predominantly surrounded by residential, commercial and educational developments (refer Figure 2-3).

Penfold Road between Kensington Road and Magill Road is principally residential with some retail and commercial type businesses as well as a winery on Penfold Road. Traffic is generated from the suburbs of Rosslyn Park, Auldana, Magill and Woodforde.

St Bernards Road between Magill Road and Montacute Road also carries mainly residential traffic and traffic generated due to the shopping centres, local business and educational institutions.

Newton Road between Andrea Avenue and Gorge Road carries traffic generated by the shopping centre and residential developments surrounding this road section. The shopping centre at the intersection of Gorge Road and Newton Road also generates pedestrian movements to and from the shopping precinct.

Darley Road between Lower North East Road and Gorge Road is surrounded by residential developments on the north-western side whereas the south-eastern portion consists mainly of child health services and schools.

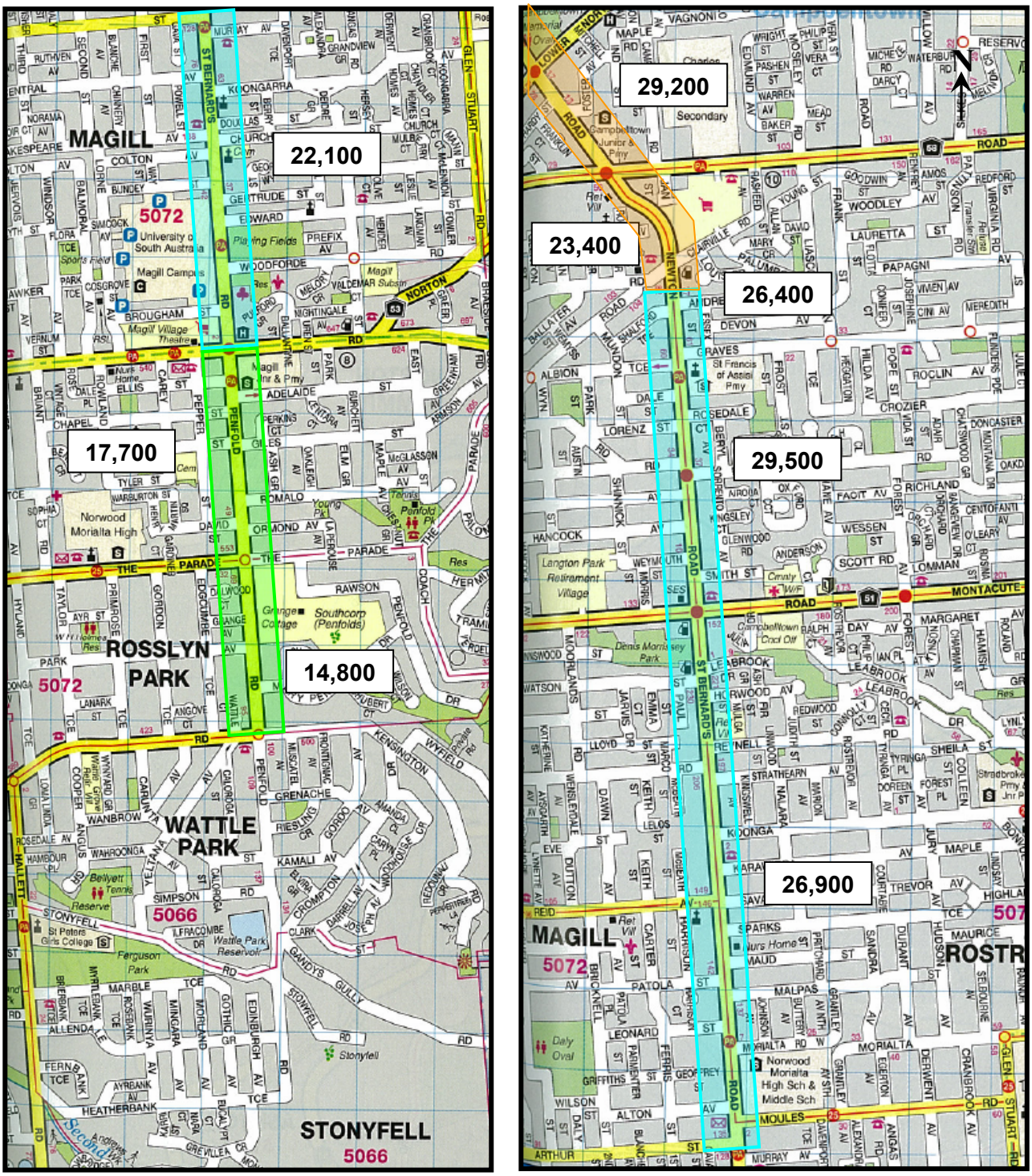

Figure 2-2 – Average Annual Daily Traffic (AADT)

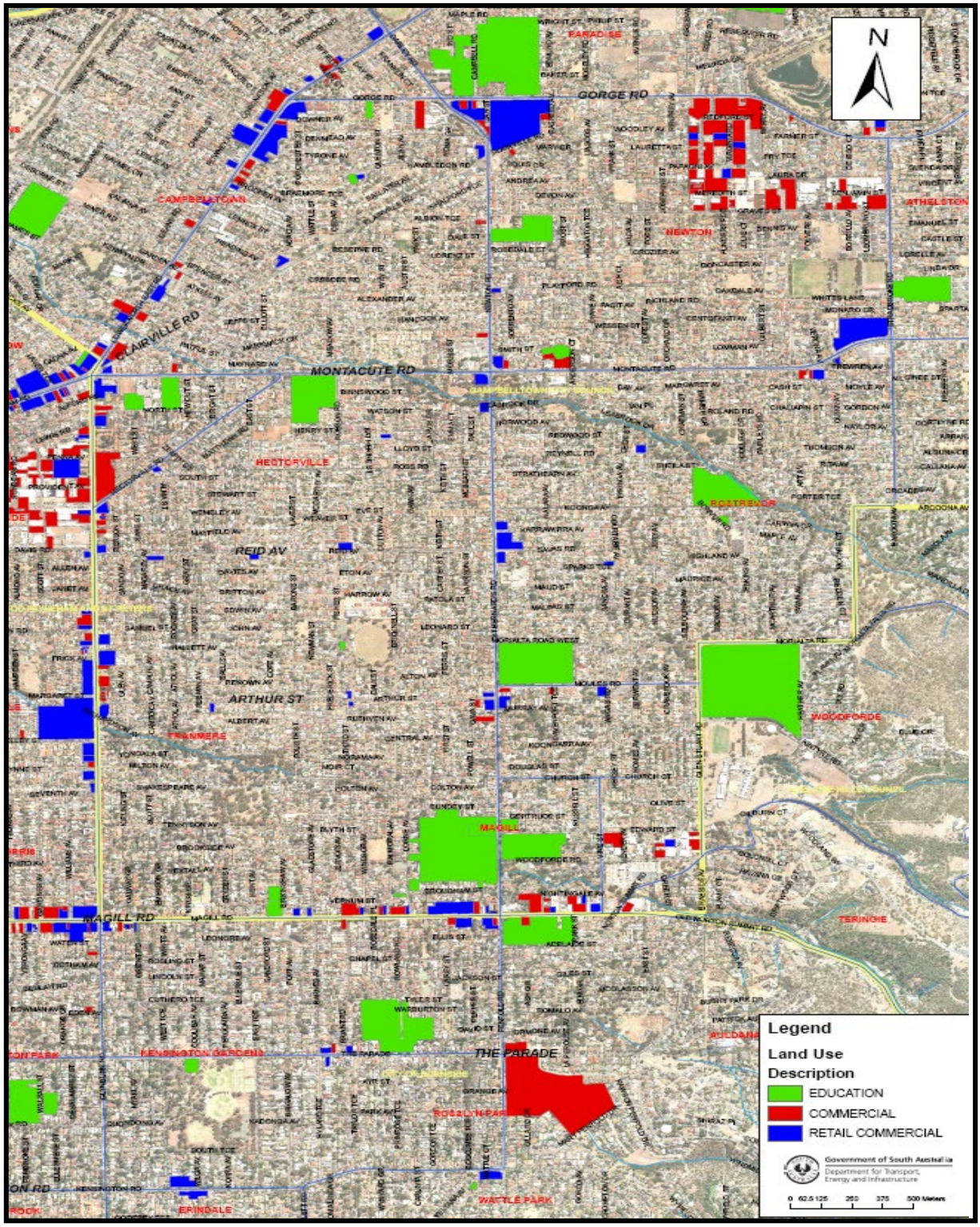

Figure 2-3 – Land Use in region adjacent to study area

2.3 ROAD CROSS SECTION

The arterial roads along the length of this study vary between two lanes with no median to six lanes with a narrow raised median. Bike lanes are not present and all of the roads are kerbed. More detailed information about the cross sections for each section of the road is provided below.

2.3.1 Section 1

Kensington Road to Magill Road:

- 13m wide pavement
- Single lane in each direction
- Bus route
- Kerbing on both sides
- No dedicated on road bicycle facilities
- No formalised parking but on road parking is permitted at all times
- No median and limited pedestrian facilities
- Substandard road lighting
- Stobie poles located on both sides of the road, with High Voltage infrastructure on the western side in the section from Magill Road to The Parade, after which the stobie poles are located only on the western side
- Road reserve width approximately 21 metres

2.3.2 Section 2

Magill Road to Montacute Road

- 14m wide pavement
- Two lanes in each direction
- Bus route
- Kerbing on both sides
- No median
- Pedestrian refuges and PAC's located at individual locations
- Parking on both sides of road controlled by clearways
- No dedicated on road bicycle facilities
- Substandard road lighting
- Stobie poles located on both sides of the road, with High Voltage infrastructure on the western side
- Road reserve width approximately 20 metres

Montacute Road to Andrea Avenue

- 14m wide pavement
- Two lanes in each direction
- Bus route
- No median
- No dedicated on road bicycle facilities
- Parking on both sides of road controlled by clearways
- Limited pedestrian facilities, PAC located near St Francis of Assisi Primary School
- Substandard Road Lighting
- Stobie poles located on both sides of the road, with High Voltage infrastructure on the western side
- Road Reserve width approximately 19 metres

2.3.3 Section 3

Andrea Road to Gorge Road

- 20m wide pavement
- Two lanes in each direction
- Bus route
- Wide raised median
- No dedicated on road bicycle facilities
- No parking allowed on both sides of the road
- Multiple pedestrian crossing points provided within raised median
- Substandard Road Lighting
- Generally stobie poles located on western side at southern end of this section – includes High Voltage infrastructure
- Large commercial development in the area
- Road Reserve width approximately 25.5 metres

Gorge Road to Lower North East Road

- 19m wide pavement
- Varying lane numbers and allocations
- Bus route
- Narrow raised median provided
- No dedicated on road bicycle facilities
- No parking allowed on both sides of the road
- Limited pedestrian facilities provided
- Substandard Road Lighting
- Stobie poles located both sides of the road, generally at back of kerb
- Road Reserve width approximately 24.5 metres

2.4 PARKING PROVISION

On street parking is provided along most of the arterial roads within the scope of this study.

Section 1 has no designated parking areas but the wide road width is able to accommodate on street parking on both sides of the road.

Section 2 typically has on street parking along its length but is restricted by clearways in the morning peak on the eastern side of the road from 7:30am to 9:00am and in the afternoon peak on the western side of the road from 4:00pm to 6:00pm.

Parking in Section 3 is banned due to the higher volumes of traffic and proximity to traffic signals.

Parking bans do apply in specific areas of these sections due to proximity of intersections, schools and other facilities.

At locations where it is proposed to install a painted median, or at locations where right turn lanes are proposed, either part time or full time parking bans will be required to implement these treatments.

Proposed AM peak ban on eastern side of Penfold and St Bernards Roads from 7:00am – 10:00am

Proposed PM peak ban on western side of Penfold and St Bernards Roads from 3:00pm – 7:00pm

Proposed AM & PM peak bans on both sides of Newton Road from 7:00am – 10:00am and 3:00pm – 7:00pm

Council will need to consider the provision of additional off street parking in the commercial and retail areas. Opportunities may arise when assessing future development proposals to expand or create new facilities to ensure appropriate levels of parking and access are provided within the development site.

2.5 PUBLIC TRANSPORT

The section of road from Kensington Road through to Lower North East Road serves as an important connection for public transport, principally buses. Whilst this north - south corridor is some distance from the city and is only a Go-Zone over a very small section it services several different functions along its length.

At present, there are 14 different bus routes using these roads and multiple others crossing the road. The principle services provided are:

- Access to UniSA Magill Campus via Magill Road and St Bernards Road (This is the only GoZone along the route)
- Providing access to connecting routes from the Eastern Suburbs into the city
- Servicing the many schools in and around the area
- Providing a route for eastern suburbs residents to access the O-Bahn Paradise Interchange. Ten of the bus routes that operate on these roads terminate at the Paradise Interchange on Darley Road which is an important connection to the O-Bahn and hence city bound traffic.

Figure 2-5 shows all of the bus routes in the area that this study is focussed on. Due to the large number of schools in the area there are several dedicated bus services operating in the area.

In general, Sections 2 and 3 do not have indented bus bays to separate stopped buses from other vehicles moving along the arterial road. This causes congestion issues along the road length, particularly in the peak commuter periods.

Bus operators have raised concerns with accessibility and safety, particularly for east - west movements across or onto the arterial road. Specific locations identified by the bus operators include:

- Graves Street - right turn out access
- Arthur Street / Moules Road - cater for east west movement
- Gorge Road & Lower North East Road intersections – improvements for left turn movements

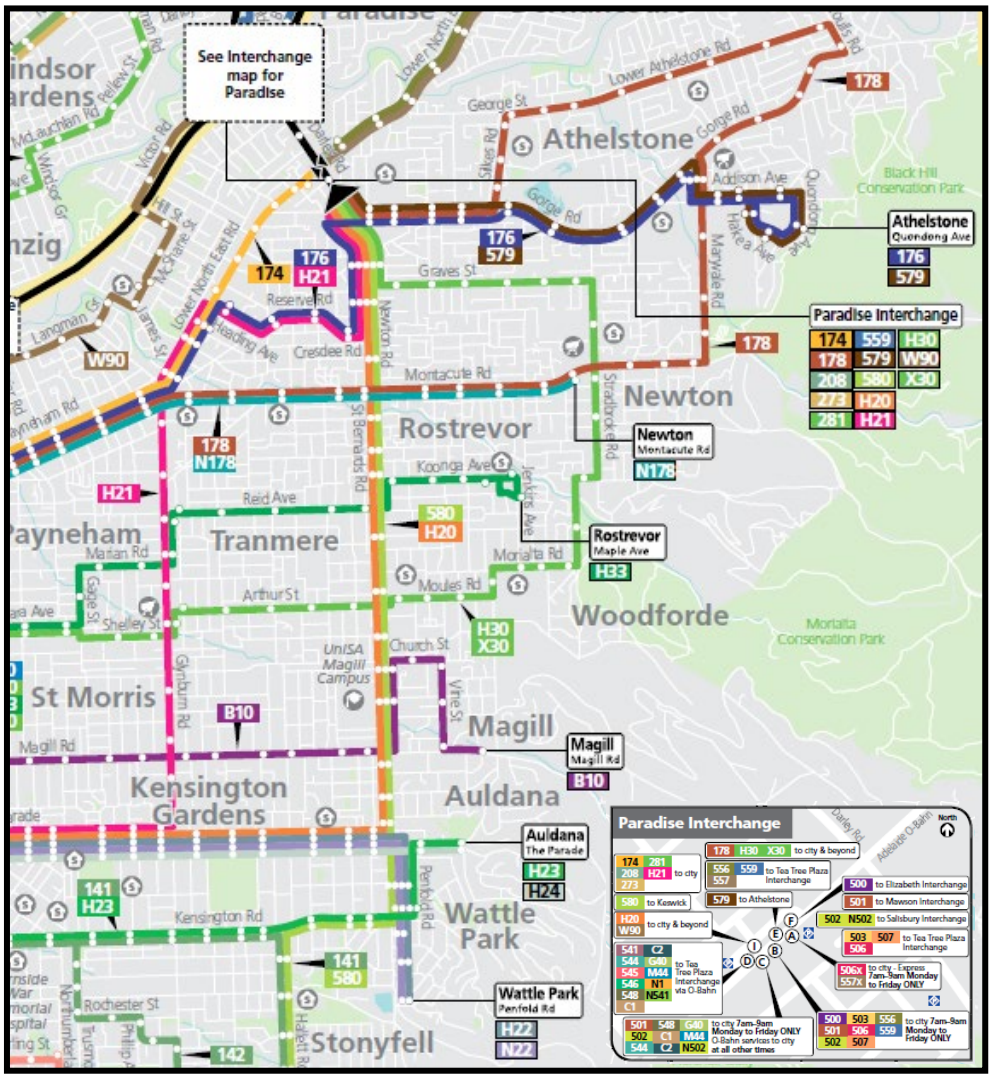

Figure 2-5 – Map of Bus Routes through study area (December 2017)

2.6 METROPOLITAN AREA ROAD WIDENING PLAN (MARWP)

The MARWP Act was developed in 1972 as means to control building development so that land would be available for the widening of existing and construction of future arterial roads with minimum disruption to abutting property, should this need arise in the future.

For the arterial roads included in this RMP the following four intersections are identified as having MARWP requirements:

- Lower North-East Road / Darley Road
- Gorge Road / Darley Road / Newton Road
- Montacute Road / Newton Road / St Bernards Road
- Magill Road / St Bernards Road / Penfold Road

The road improvement projects identified within this RMP are generally intended to be implemented within the existing road reserve to eliminate or minimise the need to undertake land acquisition from adjacent properties. The cost of land acquisition can significantly impact on the total project cost, and therefore also influence the benefit / cost ratio of a project.

Benefit / cost ratios are one method used by DPTI to prioritise projects across the state.

2.7 ASSET SUSTAINMENT

DPTI undertake a number of asset sustainment activities across the road network, including those detailed below.

2.7.1 Road Pavement

Pavement rehabilitation works that have been undertaken or are proposed along the length of the study area.

Sect.	Section	Financial Year
3	Gorge Road – Andrea Avenue	2016/17
3	Andrea Avenue – Karawirra Avenue	2016/17
2	Karawirra Avenue – Morialta Road West	2017/18
2	Morialta Road West – Magill Road	2019/20

Table 2-1 – Pavement rehabilitation works within the study area

2.7.2 Structures

Three existing major drainage structures are identified within the roads in this RMP:

- Culvert 140m south of Montacute Road – Fourth Creek

  The culvert consists of two spans with a total length of 7m and width of 11.4m. The structure was last inspected in April 2017 and its condition was rated as "good". At this time, the suggested reconstruction would be no sooner than the year 2039. This culvert has not required any major maintenance work over the last 5 years, nor are there any planned works in the next 5 years.

- Culvert 910m south of Moules Road – Third Creek

  This culvert is a single span structure with a total length of 4m and overall width of 19.2m. The culvert was last inspected in March 2014 and its condition rated as "good". At this time, the suggested reconstruction would be no sooner than the year 2036. This culvert has not required any major maintenance work over the last 5 years, nor are there any planned works in the next 5 years.

- Concrete pipe 900m south of Moules Road – Third Creek

  This concrete pipe is single span structure with total length of 2m and overall width of 41.48m. The structure was last inspected in March 2014 and its condition rated as “good”. The suggested reconstruction would be no sooner than year 2071.

2.7.3 Electrical Assets

Road Lighting

The majority of road lighting on Penfold Road, St Bernards Road, Newton Road and Darley Road does not meet the current road lighting standards. This is due to the national standards having been reviewed and amended over time, while the asset itself has not been upgraded to reflect these new standards.

In some sections of road, the current lighting configuration consists of Low Pressure Sodium lights spaced approximately 35m apart. This type of lighting configuration is no longer installed by DPTI, with some of the lighting likely to be as much as 50 years old.

It should be noted that the street lighting mounted on SAPN stobie poles is owned by SAPN Utilities, with DPTI paying a tariff to ensure the lighting is maintained and in some sections of the road, Council also pay a tariff on many of the lights.

At present, DPTI Road and Marine Assets Section (RAMA) is undertaking a project to evaluate the condition of lighting across the network to determine a priority ranking for upgrades. This priority is based on the quality of the lighting, night time crash rates and traffic volumes. When this is complete the costs and likely timeframes for any upgrade will be prioritised. DPTI will need to work with SAPN to negotiate a program of works to upgrade the existing lighting to the latest standards, however, there will be a high cost associated with this work. Any projects identified within this RMP that are implemented will need to consider improvements to road lighting as part of the scope of the project.

Road lighting assets are regularly audited and required maintenance undertaken.

Traffic Signals

Traffic signals and Pedestrian Actuated Crossings (PAC) are installed at the following locations:

Traffic Signals	Pedestrian Actuated Crossings
Magill Road (TS079)	Near Adelaide Street (PC090)
Montacute Road (TS173)	Near Arthur Street (PC024)
Playford Road (TS480)	Near Morialta Road West (PC078)
Gorge Road (TS281)	Near Albion Terrace (PC122)
Lower North East Road (TS265)	Adjacent to UniSA Magill Campus (PC001)

Table 2.2 – Signalised intersections and pedestrian crossings within the study area

Traffic signal and PAC assets are subject to a routine maintenance program.

2.7.4 Routine Maintenance

Routine Maintenance activities are coordinated by RAMA and is typically carried out by DPTI or an external contractor in accordance with the department's specifications for maintenance.

2.7.5 Pavement Marking and Delineation

Pavement marking on this section of road is re-painted regularly as part of routine maintenance. All pavement marking is re-painted including edge lines, lane lines, and medians. Transverse markings with anti-skid properties and longitudinal markings with glass beads are used.

Raised Retroreflective Pavement Markers (RRPMs) can be installed where painted pavement marking exists. These markers provide the benefit of improving delineation particularly at night and in wet conditions where the paint may not be completely visible. DPTI aims to replace the RRPMs every five years; however this is subject to prioritising the need for replacement of the RRPMs on roads around the state.

3 ROAD ROLE AND FUNCTION

Penfold Road, St Bernards Road, Newton Road and Darley Road all form an important arterial link in the eastern suburbs of Adelaide. They provide a link from the eastern suburbs to the north and north eastern suburbs and provide access to the many schools and other facilities in the region. In the context of the 30 Year Plan for Greater Adelaide none of these roads have been identified as a Strategic, Freight, Cycling (except the section between Gorge Road and Lower North East Road – Secondary Arterial Road Cycling route) or Public Transport Routes. However it is still an important road link and consideration needs to be given for all road users.

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

- Provide a north-south travel route for commuters in the greater eastern suburbs
- Providing 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 particularly the Magill Campus of the University of South Australia
- Provide reasonably long, inter-suburban connections and access to key cycle trip generators (e.g. local shopping, schools and other places of social activity)
- Sections of these roads are areas of high pedestrian activity associated with concentrated areas of commercial, business, educational or entertainment activity (e.g. schools, shopping centres, businesses) and need to be catered for.

Providing a safe, DDA compliant and pedestrian friendly road layout is a key consideration in identifying improvement needs to meet the above functions.

3.1 FUNCTIONAL OUTCOMES

Functional outcomes are safety and operational objectives to assist in the selection of traffic management components such as traffic lanes, access control, traffic signals, roadside environment and pedestrian facilities.

A functional outcomes analysis has been used to develop an overall plan of how the arterial roads considered in this RMP should look and operate.

Recommended design and operational requirements for these roads are shown in Table 3-1.

Table 3-1 - Functional Outcomes and recommended design and operational requirements

System Management Components	Functional Outcomes	Recommended Design and Operational Requirements
CAPACITY / LANES	• Provide adequate road space and number of lanes to ensure safe and efficient operation • Cater for bicycles	• Provide an adequate number of lanes to cater for peak flow volumes in both directions • Remove conflict where possible by indenting bus bays • Lane widths of 3.5m or greater needed on single lane roads • Provide cycle lane, or wider kerb lane to accommodate bicycles

System Management Components	Functional Outcomes	Recommended Design and Operational Requirements
TURNING TRAFFIC	• Traffic turning right or U turning, should not interfere with the flow of through traffic	• Provide right turn storage lanes at key intersections or at busy access points • Median to be provided where possible to separate the through movements • Raised median to be used at critical locations • Ban U turns and Right turns at critical junctions
ACCESS	• In general, maintain existing level of access to local areas. • Limit direct access where safety or efficiency takes precedence	• Use painted medians to provide safe access to adjacent property • Provide raised medians to prevent undesirable movements / access.
SPEED LIMITS	• Speed limits appropriate to road environment and adjacent development	• Maintain existing speed limits in short to medium term • Consider review of speed limits in future
TRAFFIC MANAGEMENT AND SAFETY AT INTERSECTIONS	• Minimise conflict points at busy intersections to reduce crashes	• Provide active control (e.g. traffic signals, roundabouts) at major intersections if warranted and ensure that current locations are optimised • Where possible, minimise conflict points at uncontrolled intersections to improve safety (e.g. ban turn or cross movements) • Use raised medians at intersections where clearer traffic control is needed
PEDESTRIANS AMENITY AND SAFETY	• Ensure a safe accessible road environment for pedestrians • Consider needs of more vulnerable user groups (e.g. children, older pedestrians)	• Provide raised medians / walk throughs at busy pedestrian crossing points • Provide kerb ramps or cut outs at all road crossing points • Provide appropriately designed footpaths with appropriate clear width and height clearances (Council) • Reduce traffic speeds where appropriate • Provide road lighting to appropriate standards • All pedestrian facilities to be DDA compliant
LANDSCAPING AND ROADSIDE FURNITURE	• Remove or protect roadside hazards	• Trim or remove vegetation where necessary for road safety • Remove unprotected roadside obstacles or drop offs (e.g. exposed surface drainage/culverts, stobie poles (low voltage)) • Ensure new landscaping / urban design elements do not create a new hazard

Table 3-2 - Functional Outcomes and recommended design and operational requirements (cont.)

4 ROAD SAFETY

4.1 INTERSECTION CRASHES

Analysis of the crash data includes only those recorded events that resulted in casualties (i.e. personal injuries or fatalities) or property damage where the estimated value of damage was greater than $5000.

Intersections with higher crash rates (i.e. more than 12 crashes in 5 years) are listed in Table 4-1, including intersection location and crash type. Analysis of these sites and recommendations are made in Section 6. All other crashes are listed in Appendix A.

Table 4-1 - Key Intersection Crashes 2012-2016

Section	Intersection	Crash Type	PDO $5000+	Casualty			Total	Traffic Volumes
				Minor Injury	Serious Injury	Fatality		
1	The Parade							16,300
		Right Angle	7	6	2		15	
		Rear End	1	3			4	
		Hit Fixed Object	1				1	
		Total	**9**	**9**	**2**		**20**	
2	Arthur Street / Moules Road							22,100
		Side Swipe	4				4	
		Right Angle	5	4			9	
		Right Turn	4	4	1		9	
		Rear End	4	1			5	
		Hit Parked Vehicle	1				1	
		Total	**18**	**9**	**1**		**28**	
2	Montacute Road							28,200
		Rear End	12	9			21	
		Right Angle	4	1			5	
		Right Turn	8	4			12	
		Side Swipe	2				2	
		Roll Over	1				1	
		Hit Fixed Object	1				1	
		Total	**28**	**14**			**42**	
2	Graves Street							28,000
		Rear End	2	3			5	
		Side Swipe			1		1	
		Right Angle	7	1			8	
		Hit Pedestrian		1			1	
		Other		1			1	
		Total	**9**	**6**	**1**		**16**	
3	Gorge Road							26,300
		Rear End	12	5			17	
		Right Angle	6	2			8	
		Right Turn	12	13	1		26	
		Hit Fixed Object	1				1	
		Hit Pedestrian		2			2	
		Other	1				1	
		Total	**32**	**22**	**1**		**55**	

Section	Intersection	Crash Type	PDO $5000+	Casualty			Total	Traffic Volumes
				Minor Injury	Serious Injury	Fatality		
3	Lower North East Road							33,400
		Rear End	21	9			30	
		Hit Fixed Object	2	2			4	
		Side Swipe	4				4	
		Right Angle	5				5	
		Right Turn	9	6		1	16	
		Total	**41**	**17**		**1**	**59**	

Table 4-2 - Key Intersection Crashes 2012-2016 (cont.)

'Traffic Volumes' refers to the latest AADT information available to DPTI.

It should be noted that, in general terms, the department prioritises the importance of treating specific crash sites using a ranking system aligned to the criteria to determine a 'Black Spot'. The ranking of both signalised and unsignalised intersections is reviewed each year.

Eligible road safety works are those designed to treat sites with a recorded history of casualty crashes in accordance with Black Spot criteria. The Black Spot criteria states that for discrete sites (e.g. an intersection, mid-block or short road section less than 3 km), the minimum eligibility criterion will be a history of at least three reported casualty crashes in the last five years at the site.

4.2 Speed Environment

The existing speed limit on all of these arterial roads is 60km/h. There has been some confusion expressed by residents about the reduction in speed limits on adjacent minor local roads, such as Arthur Street and Moules Road, but the speed limits are consistent with those in the greater metropolitan road network. At present, DPTI considers the posted speed limits are appropriate to the current road environment.

4.3 Bicycle Lanes

None of the roads along the length of this study have dedicated bicycle lanes installed or any other type of cycling facility. The 30 Year Plan for Greater Adelaide indicates that these roads are not classified as either Primary or Secondary cycling routes, apart from a section between Gorge Road and Lower North East Road which is identified as a secondary cycling route.

DPTI consider that this road is not currently a priority for the installation of bicycle lanes. However, it is a priority of the state government to consider the installation of bicycle facilities as a part of any road upgrade. Installation of formal cycling lanes would be difficult to achieve between existing kerb lines due to the narrow road width. Figure 4-3 shows the existing bicycle lane network in the area.

Preliminary consultation with the City of Burnside has identified that the installation of bicycle lanes along Penfold Road, from Kensington Road to Chapel Street would link in with new Bike Direct Route which enters Penfold Road from Chapel Street.

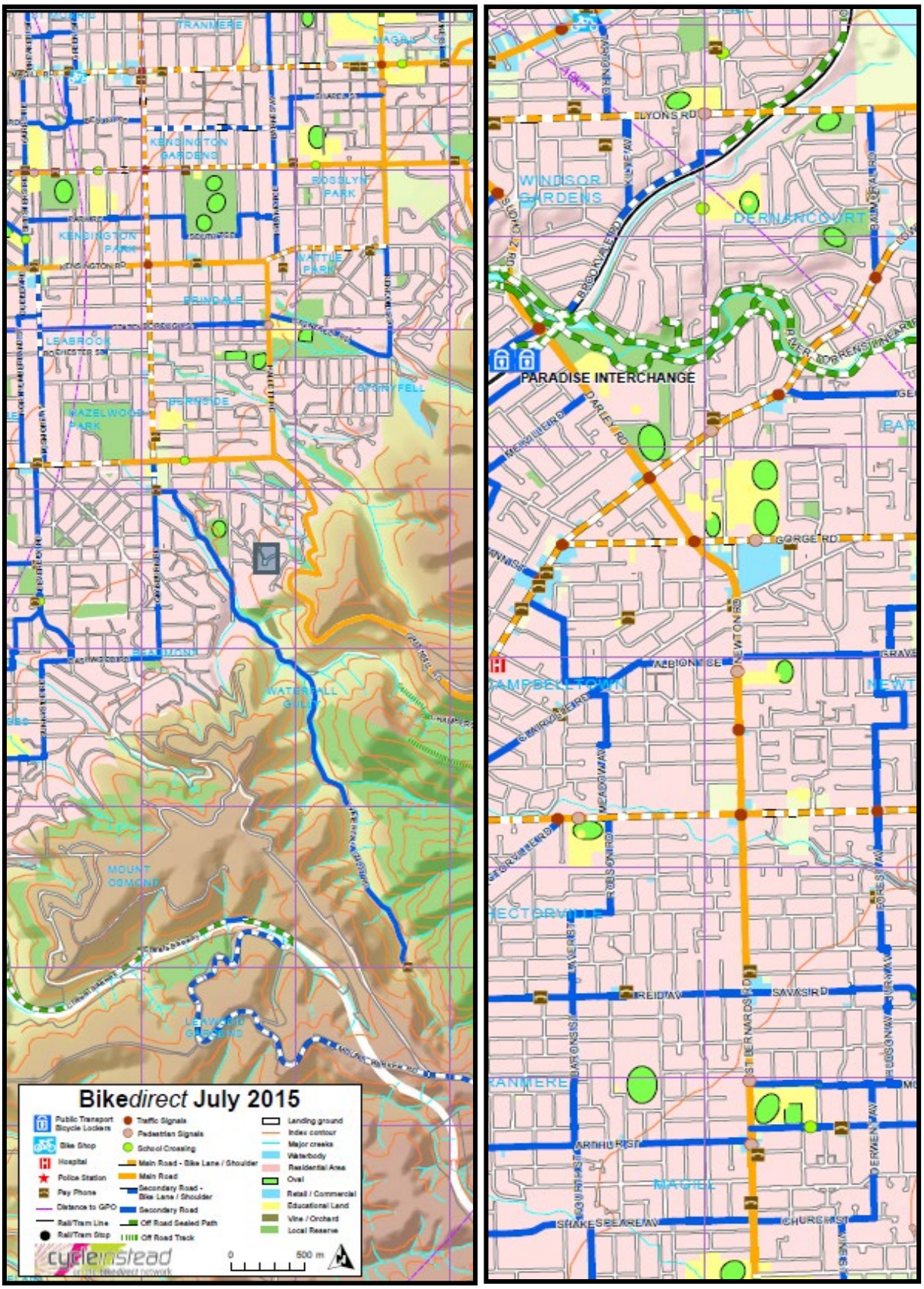

Figure 4-3 - Bike Direct Map: Penfold Rd / St Bernards Rd / Newton Rd / Darley Rd

4.4 PEDESTRIANS

The provision of properly designed, safe and Disability Discrimination Act (DDA) compliant walking facilities along these roads is the responsibility of DPTI, the City of Burnside and the City of Campbelltown. DPTI is primarily responsible for providing safe pedestrian facilities at signalised crossings (e.g. pedestrian actuated crossings and traffic signals) and pedestrian crossing points at unsignalised locations on arterial roads across the state.

The pedestrian facility (e.g. footpath or crossing) design and function should target:

- Clear width and height requirements
- DDA compliant gradients and cross fall
- DDA compliant kerb ramps and tactile indicators
- Access to public transport and other pedestrian generators

Figure 4-4 shows the locations of all of the dedicated pedestrian crossing points along the length of the road in the study area. As shown, in addition to the traffic signals, there are five pedestrian actuated crossings (PAC) and seven pedestrian refuges. It should be noted that not all of the pedestrian refuges meet the requirements outlined in the Disability Discrimination Act.

It is noticeable from the figure that there is no dedicated facility for pedestrian access in Section 1, aside from the PAC adjacent to Magill Primary School. Generally, pedestrian accessibility along this section of road is not of a high standard. The absence of a raised central median along the majority of the length of the road limits opportunities to provide appropriate crossing facilities for pedestrians.

Analysis of the crash data shows that there were 10 casualty crashes involving pedestrians from 2012 to 2016. There were 5 at intersections (1 Magill Road, 1 Malpas Street, 1 Graves Street and 2 Gorge Road) and in the mid blocks there were 5 (1 between Magill Road & Shakespeare Avenue, 1 between Arthur Street & Reid Avenune, 1 between Koonga Avenue & Montacute Road and 2 between Graves Street & Gorge Rd).

Provision for pedestrian needs have been considered as a part of the analysis of each treatment proposed within the RMP.

Locations of community interest for pedestrians include Reid Avenue and Clairville Road due to generally higher pedestrian demand generated by the retail businesses in the area. The area near the intersection of Gorge Road and Newton Road is identified as a pedestrian precinct due to the presence of the large shopping centre generating significant pedestrian movements when compared to other locations along the length of road.

Pedestrian facility improvements have been recommended for Reid Avenue and are detailed in Section 6.1.5 of the report.

A review of the pedestrian facilities adjacent to the Centro Shopping Centre noted that there are currently two existing pedestrian refuges in the area; one near Clairville Road and another south of Hambledon Road. Additionally, traffic signals with pedestrian crossing facilities are provided at the intersection of Gorge Road and Newton Road and a raised central median is provided along the majority of the length of this section of road providing opportunities for pedestrians to cross the road in two stages. The Department has investigated the potential for installation of a signalised pedestrian crossing in this section of road, however owing to safety concerns regarding the installation of signals on a curve and sight distances not meeting acceptable guidelines no recommendations have been made for a PAC at this location.

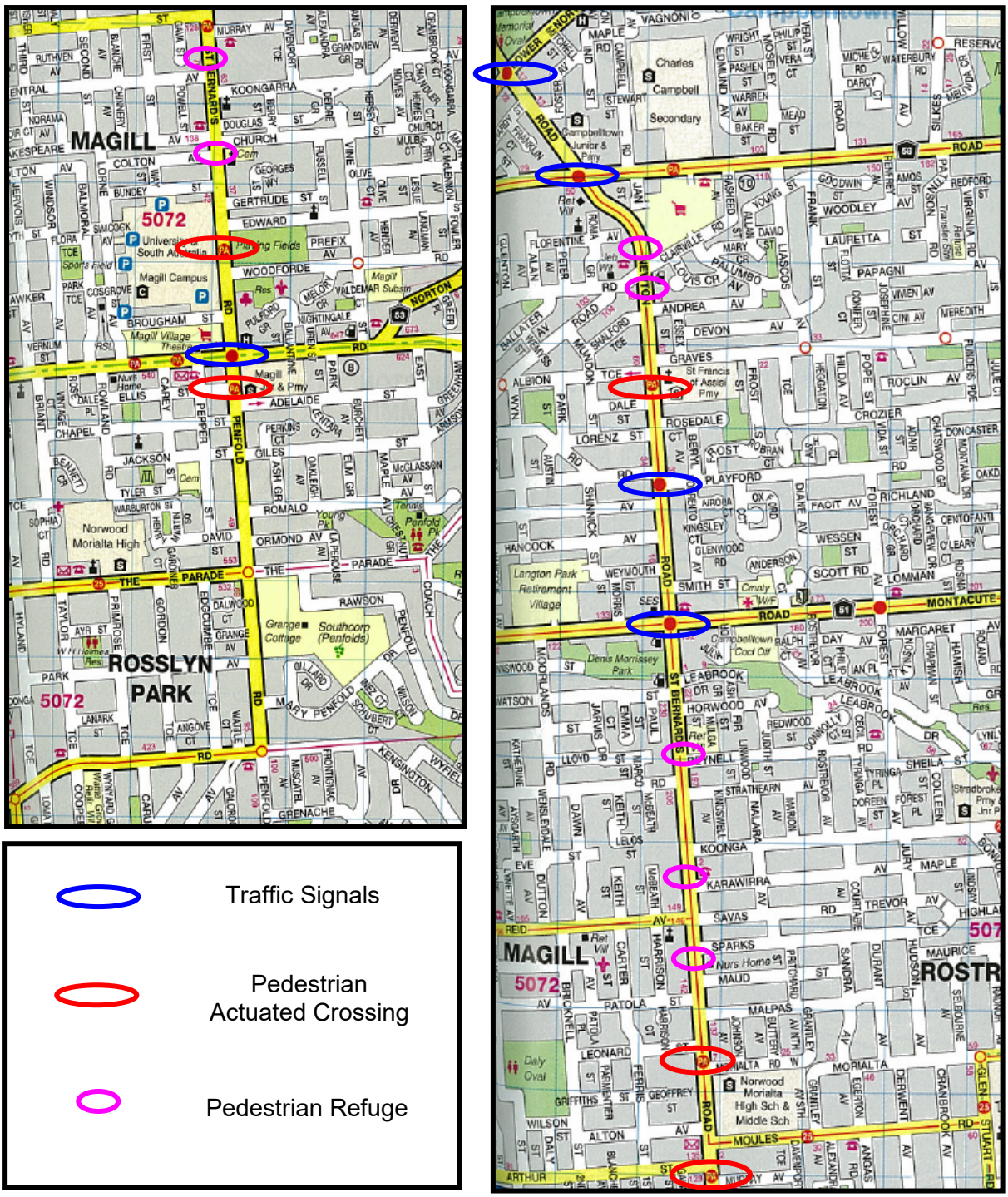

Fig 4.4 – Dedicated Pedestrian Crossing Points

5 ROAD CAPACITY

5.1 CURRENT TRAFFIC VOLUMES

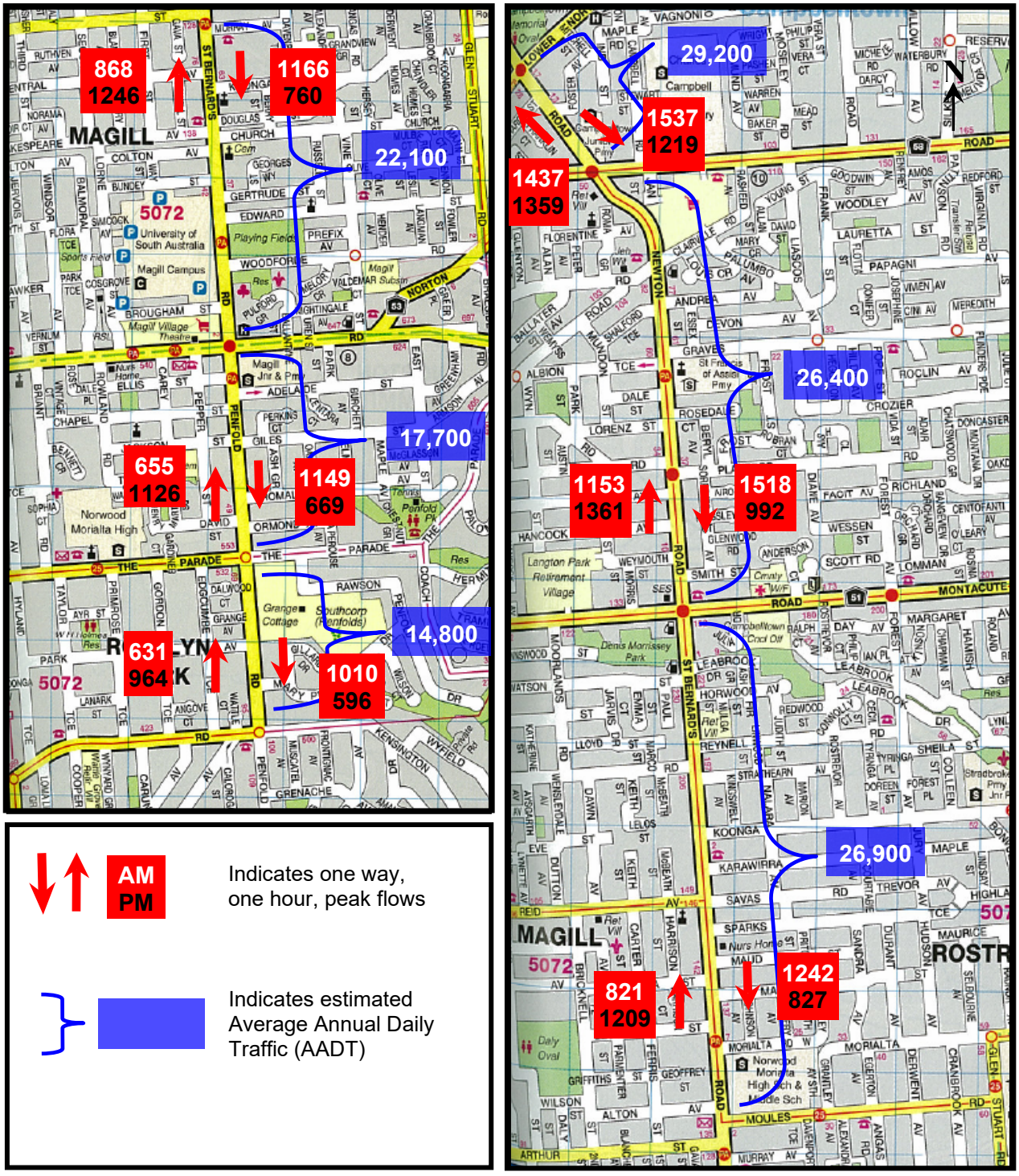

Figure 5-1 - Average Annual Daily Traffic (AADT) and one way peak hour flows

The AADT volumes for all road sections in this report vary from 14,800 vehicles on Penfold Road in Rosslyn Park in the south to 29,200 on Darley Road in Paradise to the north. Figure 5-1 indicates the distribution of AADT volumes along the length of the road.

As previously discussed, the road varies between one through lane each way for traffic (Kensington Road – Magill Road) and two through lanes each way (Magill Road – Lower North East Road). Throughout the length of the road the traffic flow is interrupted by right turning vehicles and on street parking.

It should be noted that a single clear lane of traffic has the capacity to cater for between 900 to 1,000 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 capable of supporting the recorded traffic volumes along the roads covered in this RMP, assuming that at least one lane of traffic is preserved unimpeded.

Some sections of the road, particularly from Magill Road to Gorge Road, have narrow pavement widths which lowers vehicle capacity. Road widening to provide additional road width for turning traffic, stopping buses, parking and cyclists in these sections is therefore highly desirable.

6 TRAFFIC ISSUES AND RECOMMENDATIONS

6.1 RECOMMENDATIONS FOR INTERSECTIONS/ JUNCTIONS

6.1.1 Penfold Road / The Parade

There were 20 recorded crashes at this site in the period 2012-2016. This intersection is controlled by a roundabout. Of these crashes, 15 were right angle crashes, 4 were rear end crashes and 1 a hit fixed object type crash. 11 crashes resulted in injury to vehicle occupants of which 2 were serious. As such, this junction does meet the Black Spot criteria on a crash basis, however there are 32 other sites across the metropolitan road network with higher instances of casualty crashes and therefore considered a higher priority than this site. Preliminary traffic modelling of this intersection suggests the intersection is operating at capacity in the AM peak period only and traffic on the eastern approach experiences high delays due to the volume of south bound traffic and movements to the city. Table 6-1 summarises the crash history at this location from 2012 to 2016.

Table 6-1- Summary of crashes at The Parade intersection

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
1	The Parade	Right Angle	7	8	4	3	1	2	5	15
		Rear End	1	3	1	1	1	1		4
		Hit fixed object	1						1	1
		Total	9	11	5	4	2	3	6	20

The high proportion of right angle crashes at this location is typical of the crash pattern associated with roundabouts due to the uncontrolled nature of the movements. However, the congestion currently experienced at this location is likely to exacerbate this problem due to increased driver frustration due to the delays being experienced. Additionally the roundabout does not meet the current design standards, being designed to the standards of the day in the late 1970's. The approach deflection curves are not adequate to slow drivers approaching the roundabout, as such promoting a 'straight across' manoeuvre, essentially ignoring the roundabout.

The proposed treatment to improve the conditions during the morning peak period is to add a second approach lane on the northern side and a second exit lane on the southern side of the intersection. This will result in the north approach having two south bound lanes shared with left and right turn traffic. The addition of this lane would improve the travel time for both south bound and west bound traffic and the overall traffic operation would be more efficient. Traffic modelling suggests introduction of a new lane on the northern approach would reduce delays on the eastern approach considerably. The addition of a lane on the northern approach would also change the existing alignment of the roundabout. This will improve the visibility for traffic on the eastern approach to the roundabout and slow the approaching vehicles, thus reducing the potential for right angle collisions at the intersection.

A concept drawing for this proposal is depicted in Figure 6-1. As the concept indicates, the upgrade may be undertaken within the existing road reserve to the current design standards. Initial investigations indicate there are many utility services present in the vicinity of the existing roundabout which may impact on the implementation of the proposed upgrade. Underground telecommunication and water services run along both eastern and western sides of the road. High pressure gas mains run underground along the western side. Overhead electricity cables are present along both sides of Penfold Road. Further design work will need to be undertaken to assess the exact location and likely impact of any services on the proposed upgrade.

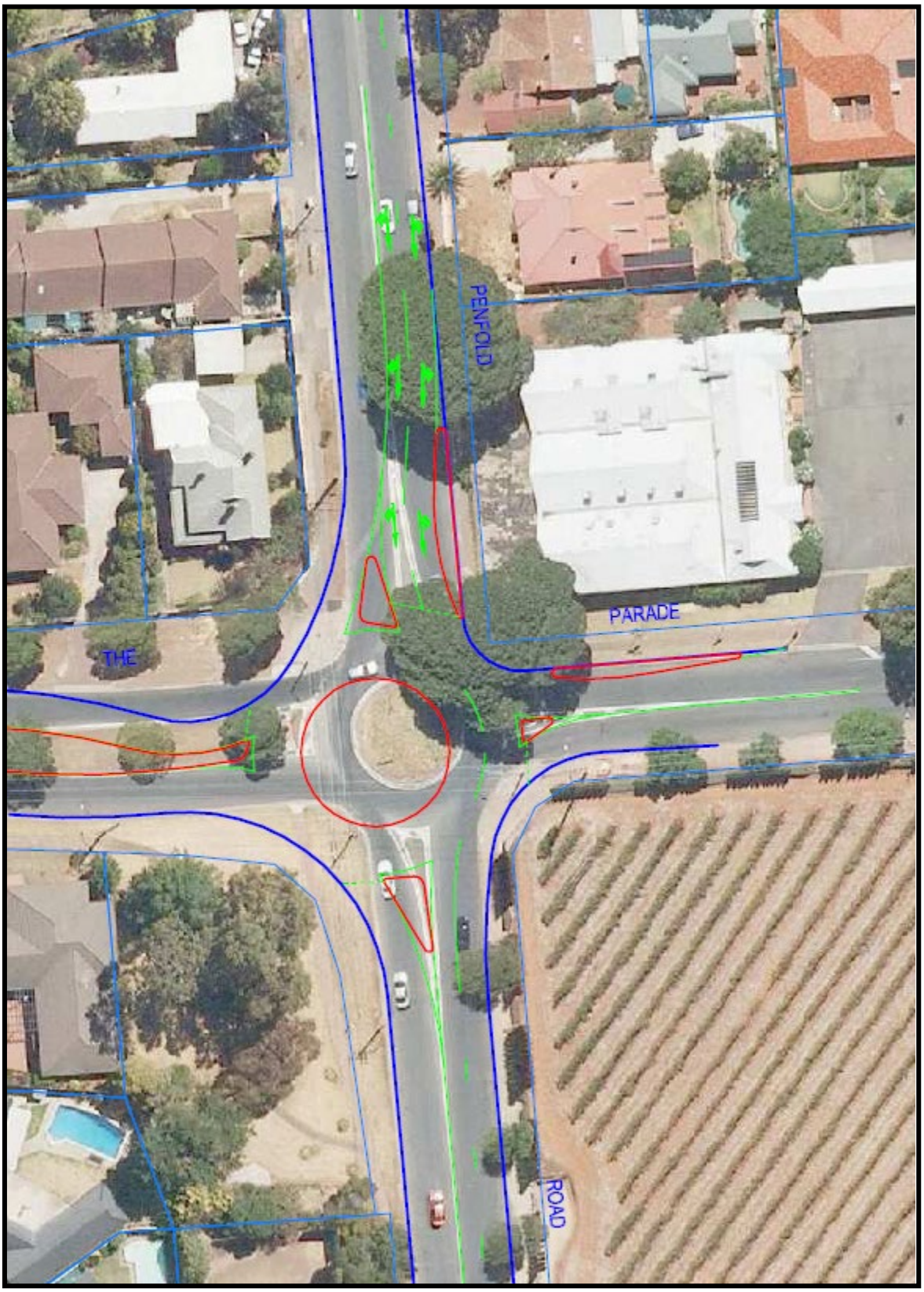

Figure 6-1 Roundabout - Penfold Road / The Parade

6.1.2 St. Bernards Road / Penfold Road / Magill Road

There were 11 recorded crashes at this site in the period 2012-2016. 3 crashes were rear end, 1 right turn, 1 right angle, 3 side swipe 2 hit fixed object and 1 hit pedestrian type crashes. There were 2 casualty crashes of which one was serious and there are 490 other signalised intersections across the metropolitan road network that experienced higher instances of casualty crashes over the same period. Preliminary traffic modelling suggests that this intersection is working at capacity with Level of Service E. However, it is difficult to improve capacity at this junction without considerable acquisition of land from surrounding properties to increase the number of traffic lanes, in particular to separate right turning movements from the through movements. Table 6-2 summarises the crash history at this location from 2012 to 2016.

Table 6-2 - Summary of crashes at Magill Road intersection

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Magill Road	Rear End	2	1	1				2	3
		Right Turn	1				1			1
		Right Angle	1			1				1
		Side Swipe	3		1		1		1	3
		Hit Fixed Object	2		1		1			2
		Hit Pedestrian		1			1			1
		Total	**9**	**2**	**3**	**1**	**4**	**0**	**3**	**11**

There are many services present in the vicinity of the intersection. Telecommunication and water services are laid underground on all approaches of the intersection. Gas mains run along Penfold Road and St Bernards Road. Overhead electricity cables also exist on all approaches of the intersection.

The proposed treatment at this location is to install a mast arm and safety camera on the western approach of the intersection, provided a suitable location can be determined, taking into consideration existing services and building verandahs etc. Further detailed investigation will be required to determine the feasibility of this option given these constraints.

Introducing a mast arm will improve the visibility of traffic signals for traffic on the western approach and the presence of a safety camera will deter motorists from disobeying the signals.

Any increased capacity of this intersection would require significant land acquisition and is outside the scope of this Road Management Plan.

6.1.3 St Bernards Road / Shakespeare Avenue / Church Street

There were 10 recorded crashes at this site in the period 2012-2016. Of these 1 was right turn, 3 rear end and 5 right angle type crashes. There was 1 serious casualty crash at this site and there are 1838 other unsignalised intersections across the metropolitan road network that experienced higher instances of casualty crashes over the same period. Table 6-3 summarises the crash history at this location from 2012 to 2016.

Table 6-3 - Summary of crashes at Shakespeare Avenue junction

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Shakespeare Avenue / Church St	Rear End	3		2	1				3
		Right Turn	1	1					2	2
		Right Angle	5		1	1	1	1	1	5
		Total	**9**	**1**	**3**	**2**	**1**	**1**	**3**	**10**

Whilst the crash history at this location is not severe, this location has been reviewed as it provides a key access to local traffic and students accessing the nearby university campus.

At present there is no facility for traffic turning right into Shakespeare Avenue. This means cars waiting to turn right block the right lane for through south bound traffic. This location is further complicated by the presence of Church Street which is immediately to the south and is also a bus route, with movements from the south to the east and return. There are many services in the area, with power lines and telecommunication services running on both eastern and western sides of St Bernards Road. Gas and water mains are also present but a detailed survey would need to be conducted to determine the location, depth and likely impact of any existing service on any upgrade proposal which required road widening.

The proposed solution for this junction is to introduce a sheltered right turn lane at St Bernards Road for traffic turning right in to Shakespeare Avenue. Provision of this sheltered lane will enable southbound traffic to flow smoothly without obstruction from right turning traffic and also provide road space for the right turners to wait for appropriate gaps in the opposing traffic stream.

Shakespeare Avenue is one of the collector roads for the local area and improving traffic flow at this junction would facilitate safer access for the local traffic. Provision of a sheltered right turn lane would reduce the potential of rear end and right turn crashes at the junction.

Ultimately though, given the low crash history at this location the implementation of this treatment is a low priority. Figure 6-2 indicates how this improvement may be implemented within the road reserve but impact on existing utility services would be unavoidable due to the requirement to widen the existing road carriageway. Consideration could also be given to extending the painted median scheme to incorporate right turn facilities for the other adjacent local roads such as Church Street.

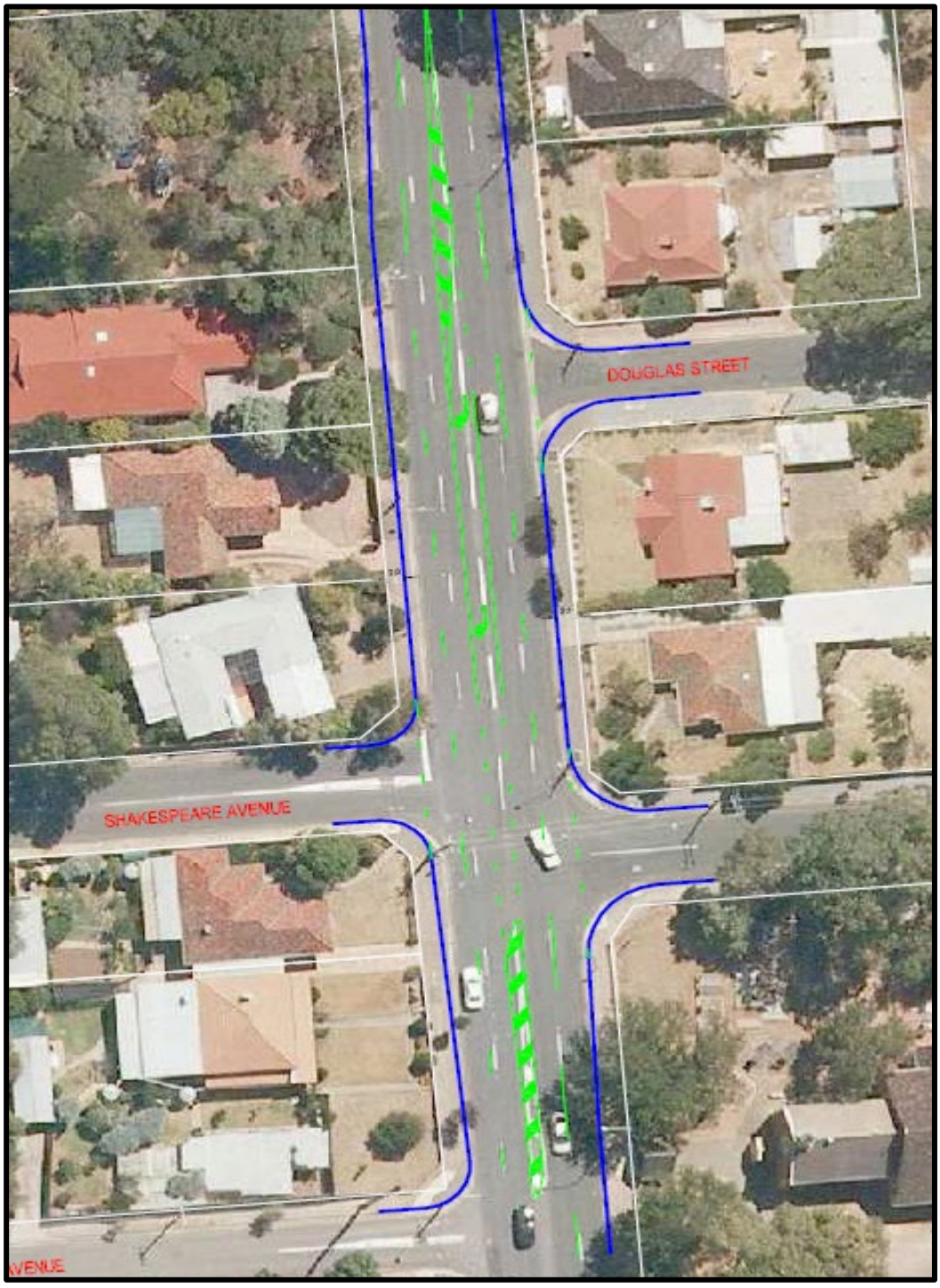

Figure 6-2 Sheltered Right turn lane at Shakespeare Avenue

6.1.4 St Bernards Road / Arthur Street / Moules Road

The St Bernards Road / Arthur Street intersection experienced 17 crashes in the period from 2012 - 2016 of which 8 were casualty crashes. This site meets the Black Spot criteria on a crash basis, however there are 59 other unsignalised junctions with a higher instance of casualty crashes over the same period.

The St Bernards Road / Moules Road intersection experienced 11 recorded crashes in the same period of which 2 were casualty crashes, one being a serious injury. The number of casualty crashes at this site meets the Black Spot criteria on a crash basis, although there are 972 other unsignalised junctions across metropolitan network with a higher instance of casualty crashes over the same period.

Table 6-4 - Number of Crashes at Arthur Street / Moules Road junction

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Arthurs Street/ Moules Road	Side Swipe	4		2			1	1	4
		Right Angle	5	4	1	2	2	2	2	9
		Right Turn	4	5	1		5	3		9
		Rear End	4	1		1	2		2	5
		Hit Parked Vehicle	1				1			1
		Total	**18**	**10**	**4**	**3**	**10**	**6**	**5**	**28**

Whilst the crash history of Arthur Street and Moules Road does not appear significant, the junctions are only 60 metres apart and form a staggered T-junction. The junctions are surrounded by a school, deli, pharmacy and bus stops, with a PAC operating immediately south of Arthur Street.

At present, there is no facility to cater for the right turn movements into either Moules Road or Arthur Street. This requires vehicles waiting to turn right into these side roads to block the through traffic movements on St Bernards Road. This problem is further compounded by cars parked in the kerbside lane accessing the deli as well as buses stopping on the road adjacent to the school. Bus services run from Arthur Street, left onto St Bernards and right into Moules, and return.

There are many utility services present in the vicinity of this intersection. High pressure gas mains run along St Bernards Road in addition to telecommunication and water services which are present on all approaches to the intersection. Overhead electrical high voltage cables run along the western side of St Bernards Road.

Three options have been investigated to improve the safety and efficiency of this location. The 3 options could be progressively implemented as a longer term upgrade strategy.

Option 1 is to provide an indented bus bay on St Bernards Road to the north of Moules Road and to also indent the existing parking on St Bernards Road between Moules Road and Arthur Street. Indentation of the bus stop and the parking will result in more efficient and safer traffic flow for south bound vehicles. The potential for rear end and side swipe collisions will be reduced with this proposal and will also provide one lane of uninterrupted through traffic. No land acquisition is anticipated to be required in order for this upgrade to be implemented. A DDA compliant access for pedestrians will remain with a wide parking area and footpath able to be installed within the existing road reserve. Figure 6-3 indicates how the indentation of the bus stop and parking may be achieved.

Figure 6-3 Indented bus bay and parking at St Bernards Road / Moules Road / Arthur Street

Option 2 involves constructing back to back right turn lanes in the mid-block section of St Bernards Road to service both Arthur Street and Moules Road. This proposal would serve to remove the right turning traffic from the through traffic on St Bernards Road. This would reduce the potential for rear end collisions at this location and also improve the flow of traffic through the junctions. Unfortunately, due to the lack of space available within the road reserve this upgrade could not be implemented without considerable land acquisition. Consideration could also be given to restricting right turn out movements from Arthur Street and enabling this movement to be undertaken at the Central Ave junction to the south, with access via the local road network. Further consultation will be required with council in considering the merits of this approach.

Option 3 is to install traffic signals to improve the overall access at this location. Traffic volumes at this location do not presently meet the warrant for the installation of traffic signals. In addition, the PAC south of Arthur Street would be removed as part of this scheme.

The installation of signals will require additional land to be purchased in order to construct the right turn lanes on St Bernards Road and the auxiliary lanes on both Arthur and Moules Road. It is difficult to accurately model how the signals at this junction would function given the amount of traffic that may be attracted to this location with improved access to the arterial road. Any on street parking in the vicinity of this junction would also need to be prohibited.

At this time, Option 1 is the recommended treatment for this location. Option 1 would guarantee one lane of uninterrupted through traffic and reduce the amount of swerving undertaken by road users in this area, without the need for any land acquisition.

Option 2 requires significant land acquisition to implement this proposal. Given the distance between the two junctions is only 60m, the length of both the deceleration lanes and storage lanes at this location would be below standard on both approaches.

The installation of traffic signals, as proposed in Option 3, is considered the ultimate solution upon monitoring the effectiveness of the alternative treatment. However it is noted that Option 3 is Council’s preferred treatment.

6.1.5 St Bernards Road / Reid Avenue / Savas Road

There were 11 collisions in the past 5 years at this intersection in the period from 2012 - 2016. Of these collisions 5 were casualty crashes, 2 of which were right angle type and the other 3 were rear end. This location does meet the Black Spot criteria however there are 220 other unsignalised intersections with a higher instance of casualty crashes over the same period. A breakdown of the collision type and the severity is shown in Table 6-5.

Table 6-5 - Summary of crashes at Reid Avenue / Savas Road intersection

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Reid Avenue / Savas Road	Rear End	2	3		1	1	1	2	5
		Side Swipe	1						1	1
		Right Angle	1	2	2	1				3
		Right Turn	2			1		1		2
		Total	**6**	**5**	**2**	**3**	**1**	**2**	**3**	**11**

Presently, Savas Road is limited to left in and left out movements with no ability to improve the right turn into or out of Reid Avenue within the current road carriageway width. A large upgrade has occurred at the adjacent shopping centre in the last few years which has had an impact upon the traffic volumes generated in the area. There have been requests from the community for the installation of signals at the junction or a PAC to improve the access for pedestrians wishing to access the supermarket on the eastern side of St Bernards Road.

A study was undertaken in 2008 in response to these requests to determine if the upgraded shopping centre had caused an increase in pedestrian volumes. At the time, the study determined that there was not a significant enough increase to warrant the installation of a PAC. The warrant for the installation of traffic signals at this location was also not met, based on the most recent vehicle turning count data undertaken in 2014. As such, the installation of signals at this location is also not recommended. Further to this, the land acquisition required for the installation of signals would be considerable.

Reid Avenue forms part of the Metro Adelaide bus route. There are many utility services in the area with power lines running down the western side and Telstra services on the eastern side of St Bernards Road. Gas and water services are also present but a detailed survey would need to be conducted to determine the location, depth and likely impact of any service on any proposed road upgrade.

Option 1 for this location is the installation of a short right turn lane to improve access to Reid Avenue. At the same time, the current pedestrian refuge will be relocated further to the north and widened so that it is DDA compliant. This option will effectively treat the majority of the collisions occurring at this location and assist in reducing interruptions to through traffic. Due to the width of the road reserve, with the additional space on the eastern side of St Bernards Road, this upgrade may be completed without the need for any land acquisition. It is also recommended that parking be banned between Reid Avenue and Karawirra Avenue, on both sides of the road, to ensure that continuous flow of traffic remains outside of the shopping centre. A concept plan for this proposal is shown in Figure 6-4.

Figure 6-4: Separated Right Turn at Reid Avenue

The second option (Option 2) involves adding a short right turn lane into Reid Avenue and a short right turn lane to service Karawirra Avenue which is immediately to the north of Savas Road. The proposed back to back right turn lanes would also retain the pedestrian refuge which would be upgraded and situated between the two side roads. Consideration will also be given to upgrading this site to a Pedestrian Actuated Crossing (PAC), given the existing pedestrian demand in the vicinity, particularly the elderly or incapacitated using wheelchairs or gophers. There are some design issues which will need to be overcome to fit this treatment within the road reserve. It will be necessary to install a painted median to the north of Karawirra Avenue to channelise the traffic flow in accordance with the appropriate standards. The installation of this median may require the acquisition of some land depending upon the design required at this location. A parking ban is also recommended with this proposal between Reid Avenue and Karawirra Avenue and additionally to the north of Karawirra Avenue outside of the small row of shops. A concept plan for this proposal is shown in Figure 6-5.

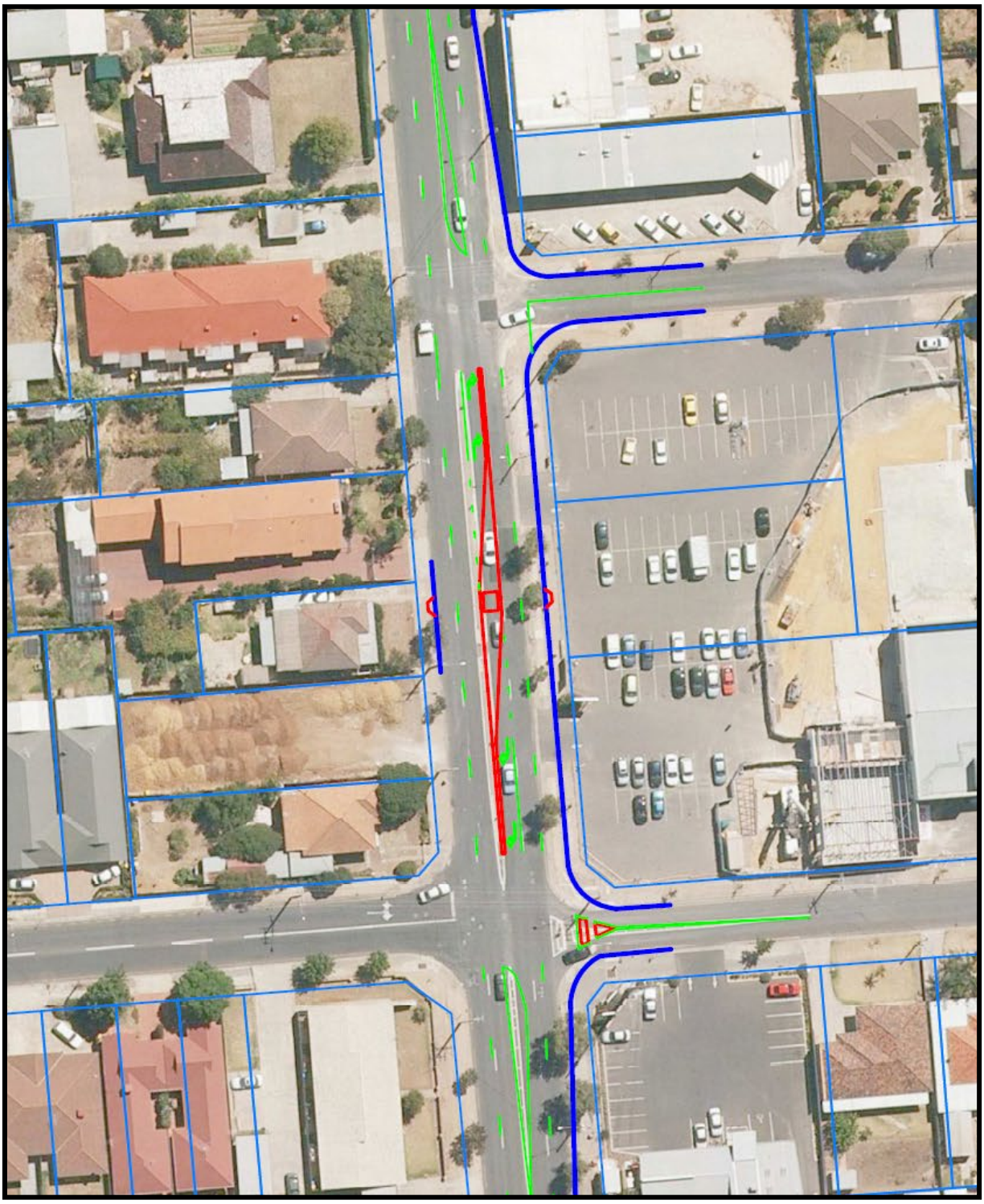

Figure 6-5: Back to Back Right Turns on Reid Avenue and Karawirra Avenue

In addition to these treatments, consideration will also be given to installing a partial indented bus bay for the bus stop to the south of Savas Road. This will further reduce any obstructions and increase the potential for continuous traffic flow.

This option also provides a solution to the traffic problem at Karawirra Avenue. Option 2 is the preferred solution at this location, including the installation of an indented bus bay to the south of the intersection.

6.1.6 St Bernards Road / Koonga Avenue

There were 5 collisions in the past 5 years at this intersection, of which 1 involved an injury. The most predominant type of collision was the right angle type. There are 2921 other unsignalised intersections with a higher instance of casualty crashes over the same period. A full listing of all the collisions and when they occurred is shown in Table 6-6.

Table 6-6 - Summary of crashes at Koonga Avenue junction

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Koonga Avenue	Rear End	1				1			1
		Right Angle	2	1	1		2			3
		Right Turn	1			1				1
		Total	**4**	**1**	**1**	**1**	**3**			**5**

Presently there is no facility to improve access to and from St Bernards Road and Koonga Avenue. This creates conflict in that vehicles wanting to turn right from St Bernards into Koonga must pause in the through lane and stop all northbound traffic. This occurs regularly not only due to local traffic, but also due to traffic accessing Stradbroke Primary School and the bus service that runs along Koonga Avenue. Further adding to this problem is that parking is permitted on both sides of St Bernards Road outside of the clearway times, thus creating the possibility that both of the northbound lanes may be blocked to through traffic at any one time by a parked vehicle and a right turning vehicle.

It is recommended that this junction be improved to incorporate a short right turn lane to separate this movement from the through traffic and improve access for buses. The preference would be to combine this treatment with the upgrade proposed in Section 6.1.5 with a painted median essentially extended from Reid Avenue past Karawirra Avenue and through to Koonga Avenue . The upgrade of the painted median is a low priority given its relatively low history of collisions and other opportunities for improvement identified within the scope of this study.

6.1.7 St Bernards Road / Montacute Road / Newton Road

There were 42 crashes recorded at this signalised intersection in the 5 year period from 2012 to 2016. Of these collisions, 12 were rear end type and 8 were right turn type. Additionally, there were 14 casualty collisions in this period, 4 of which were of right turn type and 9 rear end. This proportion of right turn collisions is high for a signalised junction and is likely due to the conflict of vehicles on Montacute Road filter turning right through oncoming traffic. The number of collisions does meet the Black Spot criteria but there are 121 other signalised intersections with a higher instance of casualty crashes over the same period.

Preliminary modelling indicates that this intersection is operating above its capacity in both peaks, therefore increasing drivers' frustration due to the delays experienced in clearing the intersection. A full listing of the type of collisions and when they occurred is shown in Table 6-7.

Table 6-7 Summary of crashes at Montacute Road intersection

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Montacute Road	Rear End	12	9	5	5	4	3	4	21
		Right Angle	4	1	2		2		1	5
		Right Turn	8	4	2	4	2	4		12
		Side Swipe	2		1	1				2
		Roll Over	1						1	1
		Hit fixed object	1				1			1
		Total	**28**	**14**	**10**	**10**	**9**	**7**	**6**	**42**

Services at this location, specifically on the northern approach, include telecommunication and underground power services on both sides of the road. There is also gas and underground water and sewerage which will need to be located to determine the impact on any proposed upgrade.

Option 1 involves extending the right turn lane on Newton Road from 40m to 100m in length. This would increase the right turn capacity of Newton Road and therefore enable a change to the existing traffic signal phasing, minimising the risk of the right turn lane overflowing into the through lane.

Preliminary analysis suggests that the implementation of this treatment would result in an approximate 40% reduction in delays in both peaks. It is possible to implement this change within the road reserve so that no land would need to be acquired.

Due to the expected reduced delays at this location, it is expected that the collision pattern would be reduced; however consideration to restriction of access will need to be considered as part of further investigations.

A concept plan for this development is indicated in Figure 6-6 as well as a cross-section of the lane allocations in Figure 6-7.

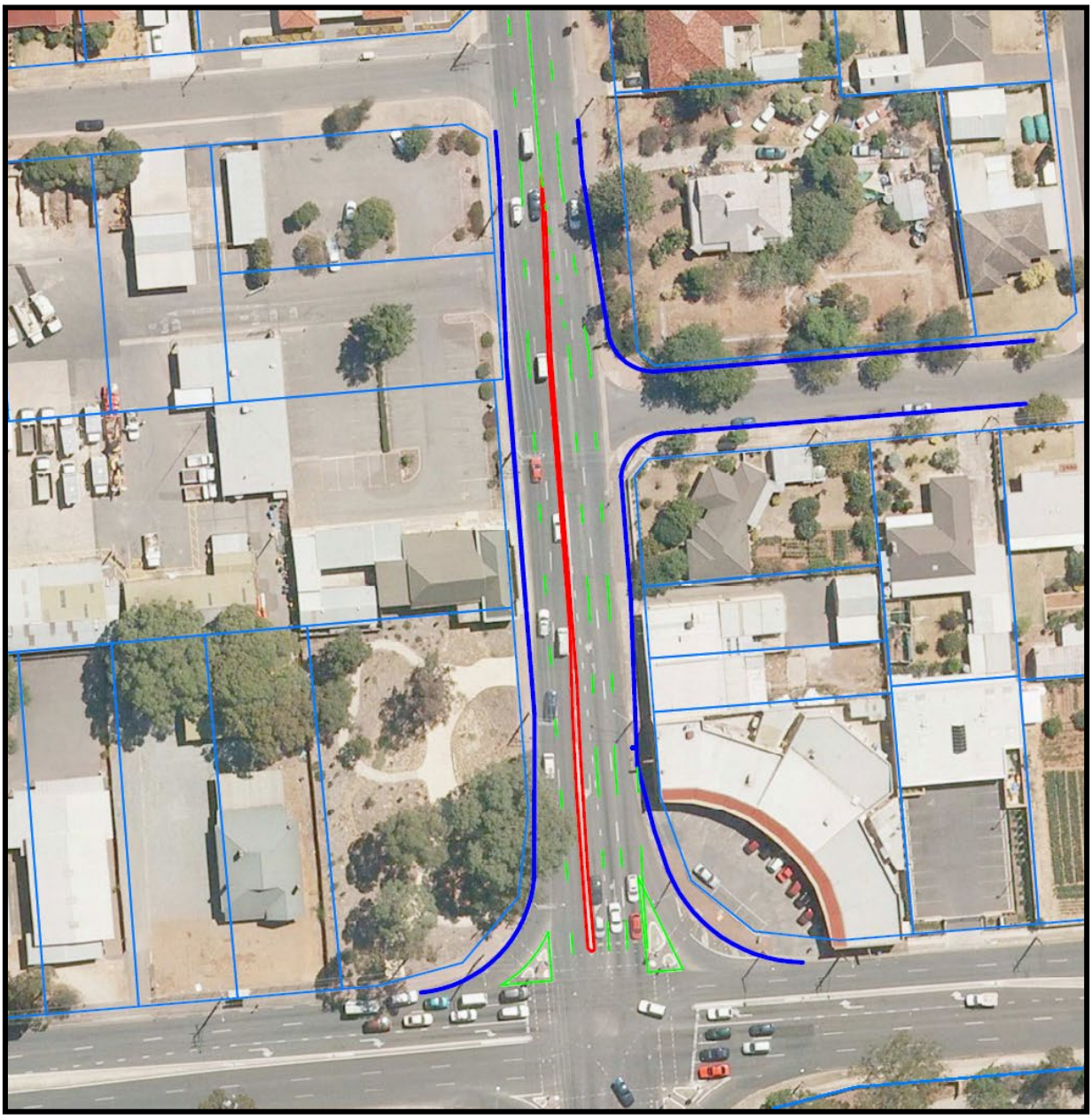

Figure 6-6: Newton Road with extended Right turn lane

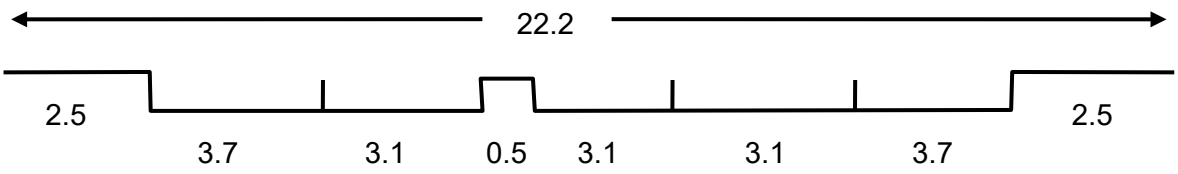

Figure 6-7: Cross Section of Lane widths for proposed solution

Additional concerns have been raised adjacent to this intersection regarding the access into the service station on the south western corner of the intersection. At present, St Bernards Road has a narrow raised median which only extends approximately 40m from the intersection thus making the right turn into and out of the service station possible. Whilst there are signs at the end of the median prohibiting a U-turn and the right turn in, it is apparent that people are illegally undertaking this movement, causing a safety concern. This is particularly an issue when queues on St Bernards Road are long.

Analysis of the crash data shows that 5 right angle type collisions occurred at this point alone, 1 of which was a casualty. It is recommended that the raised median be extended past its current location to prevent the right turn into and out of the service station to remove any potential conflict.

Vehicles will still have the ability to access the Service Station by performing a U-turn further down St Bernards Road, or alternatively accessing the site from Montacute Road. There will be some inconvenience to residents of the home units on the eastern side of St Bernards Road in achieving the desired road safety outcome.

6.1.8 Newton Road / Graves Street

There were 16 crashes recorded at this intersection in the period from 2012 – 2016, the majority being of rear end and right angle type. Of these collisions 4 were casualty crashes thus the intersection does meet the Black Spot criteria. However, there are 77 other unsignalised intersections across the network with worse casualty rates over the same 5 year period. A complete listing of the collisions is provided in Table 6-8.

Table 6-8 -Summary of crashes Graves Street junction

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Graves Street	Rear End	2	3	1	2	2			5
		Side Swipe		1		1				1
		Right Angle	7	1	2		1	2	3	8
		Hit pedestrian		1					1	1
		Other		1					1	1
		Total	**9**	**7**	**3**	**3**	**3**	**2**	**5**	**16**

This junction is located immediately adjacent to St Francis of Assisi Catholic Primary School. The principle access to the school by road users is off Graves Street approximately 40m from the junction with Newton Road. There is no facility to cater for either the right turn into or out of Graves Street. Cars waiting to turn right into Graves Street block the lane of through traffic on Newton Road causing conflict at this location. From a public transport perspective, buses access this location by turning left in and right out which causes delays on these routes.

High voltage power lines run along the western side of Newton Road and the proximity of underground optic fibre cable and high pressure gas mains in the area will have an impact on implementing any proposed improvements. A survey was conducted in 2007 as part of a planning study to explore the viability of signals at this location.

Option 1 proposes the installation of a short right turn lane and painted median which would improve both the right turn into and out of Graves Street. Additional widening on Graves Street would also be undertaken to separate the left and right turn out movements to reduce delays on the side road. In order for this upgrade to be undertaken land may need to be acquired to provide the additional road width.

It is recommended that any land to be acquired is taken from the eastern side of Newton Road where the land is currently utilised for a car park for both the school and church. A concept proposal for this development is shown in Figure 6-9.

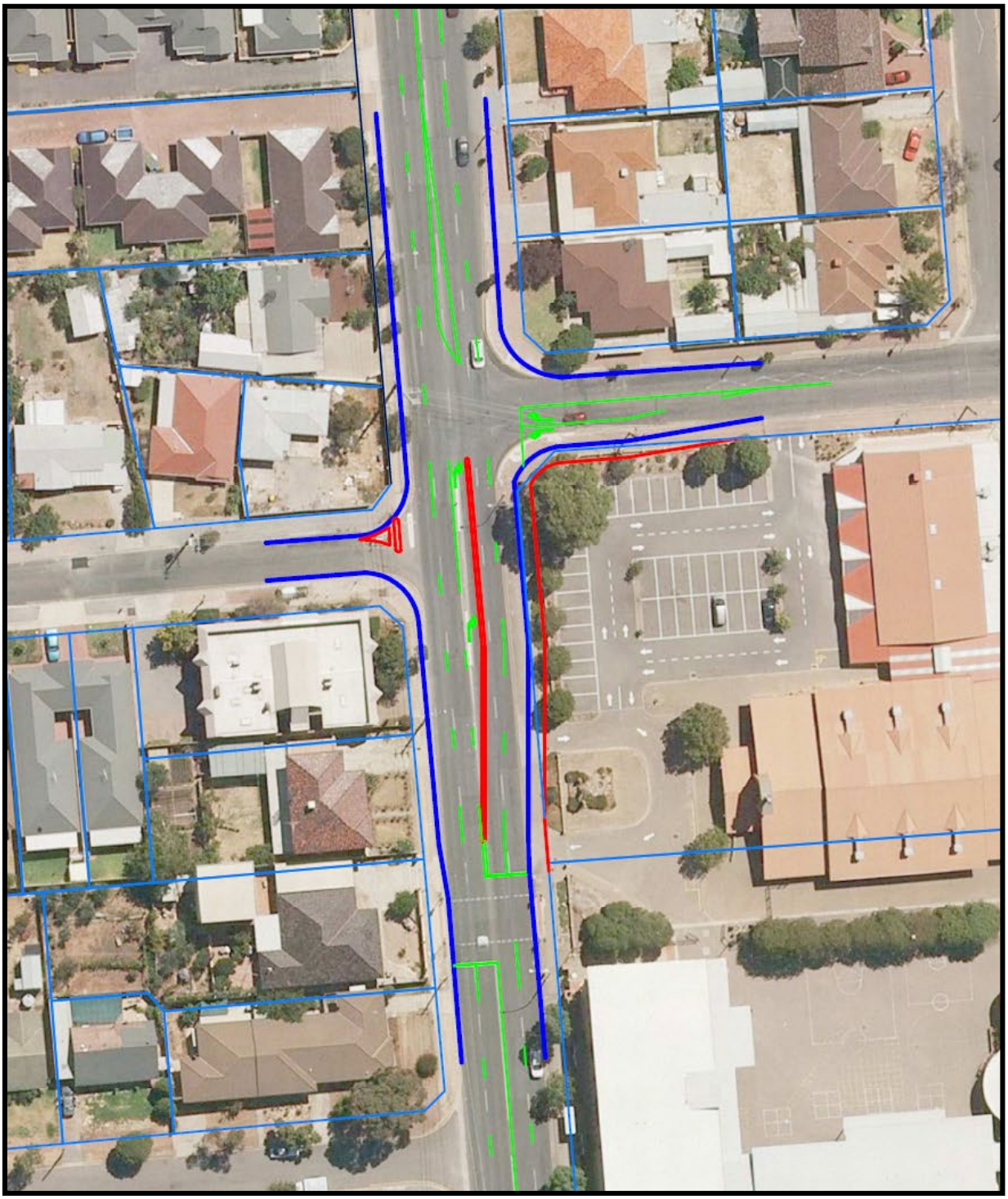

Figure 6-8: Graves Street with separated Right Turn and improved access

Option 2 is the installation of traffic signals at this location to improve the overall access for traffic. It is noted that the volume of traffic on the side street does not warrant the installation of traffic signals on a traffic volume basis. The installation of signals would also require the removal of the PAC and potentially some land acquisition in order to construct an adequate number of turning lanes. This proposal would improve access for pedestrians, buses using Graves Street and all of the other traffic using Graves Street, particularly from the industrial area to the east. It is not possible to determine what volume of traffic would be attracted to Graves Street due to the improved access, as no doubt many vehicles are avoiding this intersection due to the poor access onto Newton Road. The potential for the increase in traffic volumes along Graves Street will need to be taken into consideration by the community. A concept plan of the layout of the traffic signals option is shown in Figure 6-9.

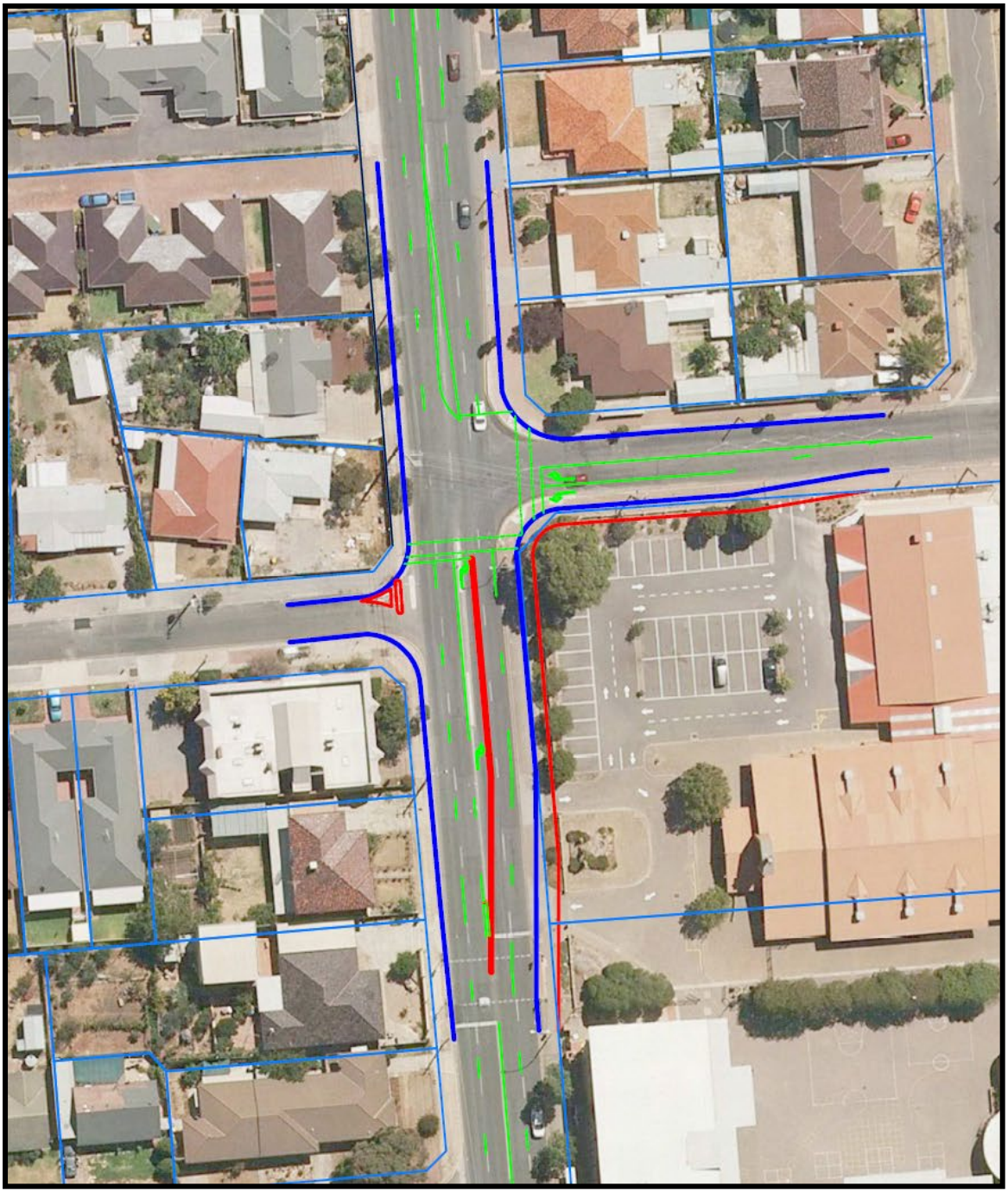

Figure 6-9: Graves Street with Signalised junction

Option 1 is the recommended treatment at this location in the short to medium term. The installation of a short right turn lane will help to reduce congestion at this location by improving the through flow of traffic and make both the right turn into Graves Street easier, as well as improving safety.

As the existing traffic volumes at the intersection do not meet the warrant for signals and would impact on the existing efficiency of Newton Road, the potential need for traffic signals will be reviewed at a suitable time after the completion of Option 1 to allow an assessment of the effectiveness of the initial treatment. However it is noted that Option 2 is Council's preferred treatment.

6.1.9 Darley Road / Gorge Road

There were a total of 55 crashes recorded at this signalised intersection in the period from 2012 – 2016, of which 17 were rear end type and 26 were right turn type. There was a total of 23 casualty crashes in this period which satisfies the criterion for the Black Spot program however there are 34 signalised intersections in Adelaide with a higher instance of casualty crashes over the same period. Preliminary modelling of the intersection suggests that it is operating satisfactorily in both peak periods. Details of the number of crashes and their type are provided in Table 6-10.

Table 6-10 - Summary of crashes at Gorge Road intersection

Sect.	Intersection	Crash Type	PDO $3000+	Casualty	2012	2013	2014	2015	2016	Total
3	Gorge Road	Rear End	12	5	5	5	2	2	3	17
		Right Angle	6	2	2	1	1	2	2	8
		Right Turn	12	14	4	5	6	8	3	26
		Hit Fixed Object	1			1				1
		Hit Pedestrian		2	1	1				2
		Other	1		1					1
		Total	**32**	**23**	**13**	**13**	**9**	**12**	**8**	**55**

Treatments recently implemented at this location include the complete control of pedestrian movement on Darley Road north west and the installation of bicycle lanes on Gorge Road.

The proposed treatment for this location is to partially control the right turn movements at this location on the eastern and western approaches in the off peak periods, i.e. only be able to turn right under a green arrow (no filter turns). These two right turn movements are responsible for 26 of the right turn collisions at this junction and 14 of the casualty collisions.

It is recommended that this change only be implemented during the off peak period to limit the impact on delays during the high demand periods.

6.1.10 Darley Road / Lower North East Road

There was a total of 59 collisions at this signalised intersection in the period from 2012 – 2016, 18 of which were casualty crashes. Whilst this location does satisfy the Black Spot criteria, there are 69 other signalised junctions with a higher instance of casualty crashes over the same period. The most predominant type of crash was the rear end type with 30 incidents but there were also a high number of right turn collisions (16) of which 7 were casualty crashes with 1 being a fatality. Details of the number of collisions are provided in Table 6-11.

Table 6-11 - Summary of crashes at Lower North East Road intersection

Sect.	Intersection	Crash Type	PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
3	Lower North East Road	Rear End	21	9	9	6	5	5	5	30
		Hit Fixed Object	2	2		1	1		2	4
		Side Swipe	4		1	2	1			4
		Right Angle	5		2	1			2	5
		Right Turn	9	7	5	2	5	3	1	16
		Total	**41**	**18**	**17**	**12**	**12**	**8**	**10**	**59**

There have been multiple upgrades to this intersection over the period of data collection, addressing both safety and efficiency concerns. Most notably, with the realignment of several lanes on the Darley Road approaches. These improvements are expected to reduce the amount of collisions, especially rear end type collisions, simply because vehicles will be stopping less.

Further to this, a safety camera was installed on the south-western approach, in an effort to reduce the number of right angle collisions.

It is recommended that this site be further monitored to assess the effectiveness of the recent treatments.

6.2 RECOMMENDATION FOR MID-BLOCK SECTIONS

Mid-block crashes which occurred between 2012 and 2016 are listed in Table 6-12 below. A full comprehensive table of all crashes can be found in Appendix B, showing the year in which the crashes occurred.

The data collected relies on accurate recording by the officer or personnel involved. In some cases the exact location is not known and therefore recorded as an unknown location. These crashes have been included within the mid – block crash data.

Table 6-12 - Key Mid-Block Crashes for 2012- 2016

Sect.	Section	Crash Type	PDO $5000+	Casualty	Total	Traffic Volumes
1	The Parade – Magill Road	Hit Fixed Object	2	1	3	17,700
		Rear End	1	2	3	
		Hit Parked Vehicle	2	1	3	
		Right Angle	3	2	5	
		Side Swipe	2	1	3	
		Rear End	4		4	
		Right Turn	1		1	
		Total	**15**	**7**	**22**	
2	Magill Road – Shakespeare Avenue / Church Street	Right Angle	6	3	9	22,100
		Right Turn	1	2	3	
		Rear End	5	1	6	
		Hit Parked Vehicle	1	1	2	
		Hit Fixed Object	1	2	3	
		Side Swipe	1		1	
		Hit Pedestrian		1	1	
		Total	**15**	**10**	**25**	
2	Koonga Avenue – Montacute Road	Rear End	3	12	15	26,900
		Side Swipe	1		1	
		Right Angle	12	4	16	
		Hit Fixed Object	4	1	5	
		Right Turn	1	1	2	
		Head On		1	1	
		Hit Pedestrian		1	1	
		Total	**21**	**20**	**41**	
2	Montacute Road – Graves Road	Rear End	11	4	15	29,500
		Right Angle	6	1	7	
		Hit Fixed Object	1	1	2	
		Hit Parked Vehicle	3		3	
		Right Turn	1	2	3	
		Side Swipe	1	1	2	
		Total	**23**	**9**	**32**	
3	Graves Street – Gorge Road	Side Swipe	1		1	29,500
		Hit Fixed Object	3		3	
		Right Angle	10	4	14	
		Rear End	2	2	4	
		Right Turn		1	1	
		Hit Pedestrian		2	2	
		Total	**16**	**9**	**25**	

6.2.1 Section 1 – Kensington Road to The Parade

The section of Penfold Road between Kensington Road and The Parade is currently kerbed on both sides of the road, with a 13.4 m road carriageway width. This section has a single lane in each direction and predominantly caters for local traffic access to local streets and commuter traffic during peak periods. Average annual daily traffic for this section is 14,800 vehicles per day and this section of road is a bus route with three bus stops. The recorded number of crashes for this section in the past five years is not considered high.

Given there is limited potential for significant property development within this location, traffic volumes are expected to remain constant. Therefore, the single lane in each direction will provide sufficient capacity to cater for the expected traffic demand. Preliminary consultation with Burnside Council has identified that the installation of Bicycle Lanes along Penfold Road, from Kensington Road to Chapel Street would link in with new Bike Direct Route which enters Penfold Road from Chapel Street.

To manage the traffic along this section of road, the road layout as depicted in Figure 6-10 is recommended to be implemented within the existing kerb alignment.

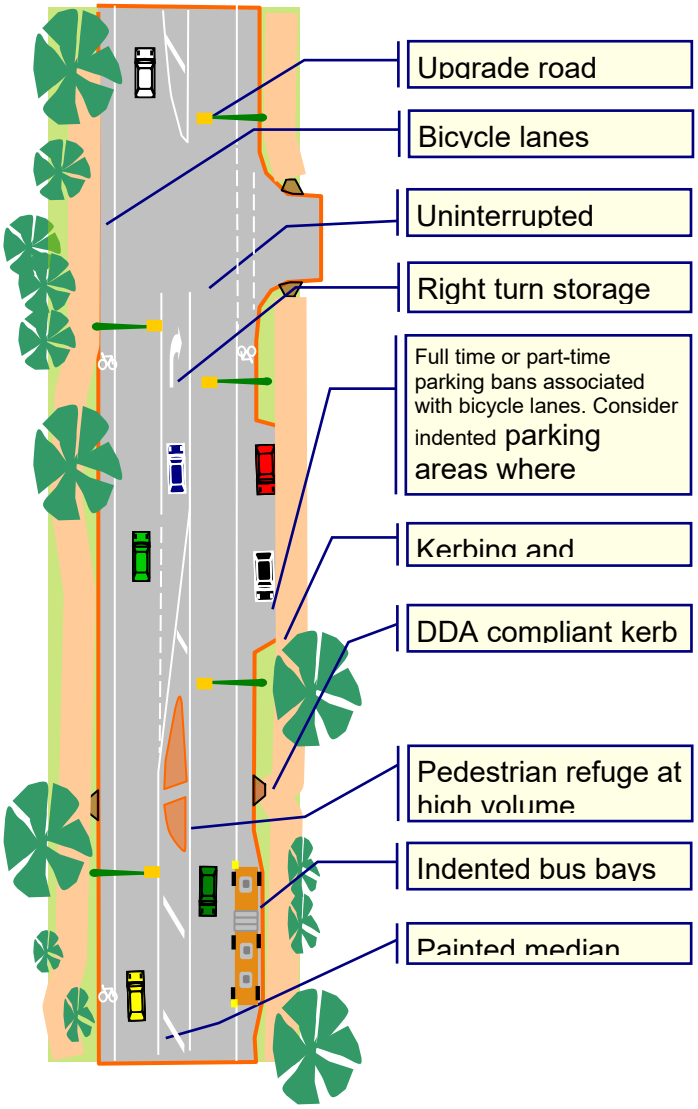

Figure 6-10: Preferred Layout for cross section of Penfold Road

This traffic management scheme involves clearly marking short right turn lanes to improve access to the side streets, the installation of cycle lanes and where possible indenting bus bays and installing pedestrian refuges. Preliminary analysis suggests that there would be a need for right turn lanes at four locations along this section of the road. The proposed treatment will provide uninterrupted flow for through traffic and reduce the possibility of rear end and right angle collisions.

The typical cross sections for this treatment would consist of 1.5m cycle lanes, 3.5m through lanes and 3.4m right turn lanes / painted median.

6.2.2 Section 1 – The Parade to Magill Road

The road section between The Parade and Magill Road is kerbed on both sides with 13.4m road width. This road section is a single lane road in each direction with no formal median or parking zones. Average annual daily traffic at this section of road is 17,700 vehicles per day.

This section of road is also a bus route with a total of six bus stops on both sides of the road. It predominantly caters for local traffic and commuter traffic during peak periods generated from the surrounding residential properties. There were a total 22 of recorded crashes in past five years and 7 of these were casualty crashes. The number of crashes along this section of road is not high relative to other mid-block sections of arterial roads across Adelaide.

It is considered appropriate to introduce a cross section similar to the one recommended in Figure 6.10 which would result in a similar traffic corridor on Penfold Road.

Further consideration will need to be given to the appropriate way to treat the existing bus stop locations (i.e. consider provision of bus indents)

6.2.3 Section 2 – Magill Road to Shakespeare Avenue / Church Street

This section of road is immediately adjacent to the Magill Campus of the University of South Australia and as such there is a considerable demand for traffic and pedestrian access in the area. Parking is accessible off St Bernards Road via the local road network. The predominate crash types in this section of St Bernards Road are right angle (9) and rear end (6), with a total of 25 crashes over the last 5 years.

There is currently a PAC in the middle of this section at the primary entrance to the university. It is therefore considered that the pedestrian requirements are suitably catered for.

The ultimate improvement for this section of road would be to widen the road to incorporate a painted median with designated crossing points, sheltered right turn lanes into the side roads and bicycle lanes. However the extent of such an upgrade would require considerable land acquisition along the length of the road. This scope of upgrade is considered to be outside the scope of this RMP.

The recommended treatment at this time is to indent the bus stops just to the south of the PAC. This small section of road is the most congested section for public transport along the whole length of the road. Indenting the bus stops will assist in reducing the occurrence of rear end and side swipe collisions at this location and improve traffic flow. The proximity to the intersection with Magill Road and the PAC also generates more conflict at this location.

The road reserve at this location is narrow, therefore some land acquisition may be necessary to implement this treatment. Further design works will be required to identify the scale of the land acquisition.

6.2.4 Section 2 – Koonga Avenue to Montacute Road

This section of St Bernards Road has two lanes in each direction and runs through the predominantly residential area of Campbelltown Council. Records show that in the last five years there were 41 collisions on this section of road, with 7 casualty rear end crashes and 8 right angle crashes, 2 being casualties. The high proportion of right angle type crashes in particular, suggests that the majority of these collisions are occurring at junctions with minor roads. A review of Appendix A shows that there were a high number of collisions on Koonga Avenue, Ross Road, Reynell Road and Watson Street.

Ideally, the best solution would be to widen the road to incorporate a painted median with designated crossing points, sheltered right turn lanes into the side streets and bicycle lanes over the full length of road.

However the scope of such an upgrade would require considerable land acquisition along the length of the road and is outside the scope of this Road Management Plan.

6.2.5 Section 2 – Montacute Road to Graves Road

This section of Newton Road has two lanes in each direction with minimal sections of central median provided. Records for the previous 5 years show that there were 32 reported crashes, 15 of which were of rear end type and 7 right angle type crashes.

Considering the number of side streets and the cross section of the road, these statistics are not considered unusual for an arterial road in metropolitan Adelaide. No treatment is recommended at this time.

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.

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

- safety benefits, to improve safety for vulnerable road users,
- reducing roadside hazards
- improving amenity and appearance of the roads
- benefit/cost appraisal of treatment

7.1 INTERSECTION/ JUNCTION TREATMENTS

Priory of treatments has been made by experienced practitioners within DPTI.

ROAD SECTION	TREATMENT	PRIORITY
Penfold Road / The Parade	Modification of roundabout to encompass two north-south lanes	**Medium**
Penfold Road / Magill Road	Safety camera and Mast Arm	**High**
St. Bernards Road / Shakespeare Avenue	Provide sheltered right turn lane	**Low**
St Bernards Road / Arthur Street / Moules Road	Indented bus bay and parking	**High**
St Bernards Road / Reid Avenue	Install Back to Back Right turns to service Reid Avenue and Karawirra Avenue, indented bus bay to the south and upgrade the pedestrian facilities.	**High**
St Bernards Road / Koonga Avenue	No recommendation – Monitor Operation	**Monitor**
Newton Road / Montacute Road	Extend Right turn lane on Newton Road from 40 to 100m within the Road Reserve	**High**
Newton Road / Graves Street	Install short Right Turn lane and accompanying median on Newton Road	**High**
Darley Road / Gorge Road	Change traffic signal phasing to ban Right Turn filter during off peak period.	**Low**

ROAD SECTION	TREATMENT	PRIORITY
Darley Road / Lower North East Road	No Recommendation – Monitor Operation	**Monitor**

7.2 MID-BLOCK TREATMENTS

ROAD SECTION	TREATMENT	PRIORITY
Penfold Road Kensington Rd – The Parade	Delineation with painted parking bays and designated right turn slots Installation of bicycle lanes Installation of RRPMs to enhance the line marking.	**Low**
Penfold Road The Parade – Magill Rd	Delineation with painted parking bays and designated right turn slots Installation of bicycle lanes Installation of RRPMs to enhance the line marking.	**Low**
St Bernards Road Magill Rd – Shakespeare Ave	Indent Bus Bays adjacent to Magill Campus	**Low**
St Bernards Road Koonga Ave – Montacute Rd	No Recommendation – Monitor Operation	**Monitor**
Newton Road Montacute Rd – Graves Rd	No Recommendation – Monitor Operation	**Monitor**

8 CONCLUSION

This RMP 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 will therefore require further development and consultation with the relevant councils and the community prior to any proposed implementation.

Importantly, funding commitments to the initiatives detailed in this plan are subject to normal budgetary processes and priorities.

Initially, implementation of recommendations is likely to be limited to the higher priority treatments that target specific sites with high crash rates. The design of specific treatments will aim at consistency with and target the longer-term functional outcomes outlined in this Road Management Plan.

APPENDIX A – INTERSECTION CRASH DATA

Sect.	Intersection	Crash Type	* PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
1	Kensington Road	Right Angle	2			1	1			2
		Rear End	1					1		1
		Total	**3**	**0**	0	1	1	1	0	**3**
1	The Parade	Right Angle	7	8	4	3	1	2	5	15
		Rear End	1	3	1	1	1	1		4
		Hit Fixed Object	1						1	1
		Total	**9**	**11**	5	4	2	3	6	**20**
1	Magill Road	Rear End	2	1	1				2	3
		Right Turn	1				1			1
		Right Angle	1			1				1
		Side Swipe	3		1		1		1	3
		Hit Fixed Object	2		1		1			2
		Hit Pedestrian		1			1			1
		Total	**9**	**2**	3	1	4	0	3	**11**
2	Woodforde Road	Right Angle	2	2	1		1		2	4
		Rear End	2				1	1		2
		Total	**4**	**2**	1		2	1	2	**6**
2	Edward Street	Right Angle	3	1	2		2			4
		Total	**3**	**1**	2	0	2	0	0	**4**
2	Colton Avenue	Rear End		1			1			1
		Right Turn	2		1				1	2
		Total	**2**	**1**	1	0	1	0	1	**3**
2	Shakespeare Avenue/ Church St	Rear End	3		2	1				3
		Right Turn	1	1					2	2
		Right Angle	5		1	1	1	1	1	5
		Total	**9**	**1**	3	2	1	1	3	**10**
2	Central Avenue	Rear End	2	1	1		1	1		3
		Right Angle	1				1			1
		Total	**3**	**1**	**1**	**0**	**2**	**1**	**0**	**4**
2	Murray Avenue	Right Angle	2		1			1		2
		Side Swipe	1						1	1
		Rear End	1						1	1
		Total	**4**	**0**	**1**	0	0	1	2	**4**
2	Arthur Street	Side Swipe	1		1					1
		Right Angle	3	3	1	1	1	2	1	6
		Right Turn	3	4	1		3	3		7
		Rear End	1	1			1		1	2
		Hit Parked Veh	1				1			1
		Total	**9**	**8**	3	1	6	5	2	**17**
2	Moules Road	Right Angle	2	1		1	1		1	3
		Side Swipe	3		1			1	1	3
		Rear End	3			1	1		1	3
		Right Turn	1	1			2			2
		Total	**9**	**2**	1	2	4	1	3	**11**
2	Morialta Road West	Hit Fixed Object	1		1					1
		Right Angle	1	1				1	1	2
		Total	**2**	**1**	1	0	0	1	1	**3**
2	Malpas Street	Rear End	1			1				1
		Right Angle	2	1		1		1	1	3
		Hit Pedestrian		1				1		1
		Total	**3**	**2**	**0**	**2**	0	2	1	**5**
2	Savas Road / Reid Avenue	Rear End	2	3		1	1	1	2	**5**
		Side Swipe	1						1	**1**
		Right Angle	1	2	2	1				**3**
		Right Turn	2			1		1		**2**
		Total	**6**	**5**	2	3	1	2	3	**11**

* Please note as of 2013 the average reporting damage in our crash system increased from $3000 to $5000.

Sect.	Intersection	Crash Type	* PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
2	Karawirra Avenue	Rear End	2	1		2		1		3
		Right Angle	2	1	1		1	1		3
		Side Swipe		1	1					1
		Right Turn		1					1	1
		Total	**4**	**4**	2	2	1	2	1	**8**
2	Koonga Avenue	Rear End	1				1			1
		Right Angle	2	1	1		2			3
		Right Turn	1			1				1
		Side Swipe								
		Total	**4**	**1**	1	1	3	0	0	**5**
2	Stratheam Avenue	Rear End	2		1			1		2
		Right Angle	1		1					1
		Total	**3**	**0**	2	0	0	1	0	**3**
2	Ross Road	Right Turn		1				1		1
		Rear End		2	1		1			2
		Right Angle	1	1					2	2
		Hit Fixed Object	2		1			1		2
		Total	**3**	**4**	2		1	2	2	**7**
2	Reynell Road	Right Angle	4		1		1	1	1	4
		Total	**4**	**0**	1	0	1	1	1	**4**
2	Horwood Avenue	Right Angle	1					1		1
		Rear End		1					1	1
		Total	**1**	**1**	0	0	0	1	1	**2**
2	Watson Street	Head On		1		1				1
		Rear End	1	2	1		1	1		3
		Hit Fixed Object		1					1	1
		Total	**1**	**4**	1	1	1	1	1	**5**
2	Leabrook Drive	Right Angle		1	1					1
		Total	**0**	**1**	1	0	0	0	0	**1**
2	Montacute Road	Rear End	12	9	5	5	4	3	4	21
		Right Angle	4	1	2		2		1	5
		Right Turn	8	4	2	4	2	4		12
		Side Swipe	2		1	1				2
		Roll Over	1						1	1
		Hit Fixed Object	1				1			1
		Total	**28**	**14**	10	10	9	7	6	**42**
2	Hancock Avenue	Hit Fixed Object		1	1					1
		Rear End		1	1					1
		Total	**0**	**2**	0	0	0	2	0	**2**
2	Alexander Avenue	Rear End	2	1	1			1	1	3
		Total	**4**		1	0	0	1	1	**3**
2	Playford Road	Rear End	2	1				2	2	4
		Right Angle	4				1	1	1	3
		Right Turn		1			1			1
		Total	**6**	**2**	**0**	**0**	**2**	**3**	**3**	**8**
2	Lorenz Street	Right Turn		1					1	1
		Hit Parked Veh	1					1		1
		Total	**1**	**1**	**0**	0	**0**	**1**	**1**	**2**
2	Dale Street	Right Angle	2			**1**	1			2
		Total	**2**	**0**	**0**	**1**	1	0	0	**2**
2	Graves Street	Rear End	2	3	1	2	2			**5**
		Side Swipe		1		1				**1**
		Right Angle	7	1	2		1	2	3	**8**
		Hit Pedestrian		1					1	**1**
		Other		1					1	**1**
		Total	**9**	**7**	3	3	3	2	5	**16**

* Please note as of 2013 the average reporting damage in our crash system increased from $3000 to $5000.

Sect.	Intersection	Crash Type	* PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
3	Andrea Avenue	Rear End	1		1					1
		Right Angle	1				1			1
		Total	**2**	**0**	**1**		1			**2**
3	Hambledon Road	Right Angle	**6**	**2**	2	1	1	2	2	8
		Right Turn		1	1					1
		Total	**6**	**3**	3	1	1	2	2	**9**
3	Clairville Road	Rear End		1	1					1
		Right Angle	3	2	2	3				5
		Total	**3**	**3**	3	3	0	0		**6**
3	Gorge Road	Rear End	**12**	**5**	5	5	2	2	3	**17**
		Right Angle	**6**	**2**	2	1	1	2	2	**8**
		Right Turn	**12**	**14**	4	5	6	8	3	**26**
		Hit Fixed Object	**1**			1				**1**
		Hit Pedestrian		**2**	1	1				**2**
		Other	**1**		1					**1**
		Total	**32**	**23**	13	13	9	12	8	**55**
3	Foster Avenue	Side swipe	1					1		1
		Rear End	1				1			1
			2	**0**	0	0	1	1	0	**2**
3	Hardy Street	Hit fixed Object		1		1				**1**
		Total	**0**	**1**	**0**	1	0	0	1	**1**
3	Lower North East Road	Rear End	21	9	9	6	5	5	5	**30**
		Hit Fixed Object	2	2		1	1		2	**4**
		Side Swipe	4		1	2	1			**4**
		Right Angle	5		2	1			2	**5**
		Right Turn	9	7**	5	2	5	3	1	**16**
		Total	**41**	**18**	17	12	12	8	10	**59**

* Please note as of 2013 the average reporting damage in our crash system increased from $3000 to $5000.

** 1 fatality

APPENDIX B – MID BLOCK CRASH DATA

Sect.	Mid-Block Section	Crash Type	* PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
1	Kensington Road – The Parade	Right Angle	1					1		1
		Hit Parked Veh	2		1		1			2
		Total	**3**		1		1	1		**3**
1	The Parade – Magill Road	Hit Fixed Object	2	1	1	1		1		3
		Rear End	1	2		2		1		3
		Hit Parked Veh	2	1		2	1			3
		Right Angle	3	2	1	1			3	5
		Side Swipe	2	1	1	1			1	3
		Rear End	4		2		1		1	4
		Right Turn	1		1					1
		Total	**15**	**7**	6	7	2	2	5	**22**
2	Magill Road – Shakespeare Avenue / Church Street	Right Angle	6	3	3		4		2	9
		Right Turn	1	2	2				1	3
		Rear End	5	1		1	4	1		6
		Hit Parked Veh	1	1	1		1			2
		Hit Fixed Object	1	2			2		1	3
		Side Swipe	1				1			1
		Hit Pedestrian		1			1			1
		Total	**15**	**10**	6	1	13	1	4	**25**
2	Shakespeare Avenue / Church Street – Arthur Street / Moules Road	Rear End	4	3	1	2	1	1	2	7
		Side Swipe	2	1			2		1	3
		Hit Fixed Object	1			1		1		1
		Right Angle	3		1		1	1		3
		Total	**11**	**4**	**2**	**3**	**4**	**3**	**3**	**14**
2	Arthur Street / Moules Street – Reid Avenue / Savas Road	Hit Fixed Object	2		1	1				2
		Side Swipe	2	1			1		2	3
		Right Angle	4	4		2	1	2	3	8
		Rear End	4		2	1	1			4
		Hit Parked Veh	1			1				1
		Hit Pedestrian		1				1		1
		Total	**13**	**6**	3	5	3	3	5	**19**
2	Reid Avenue / Savas Road – Koonga Avenue	Hit Pedestrian		1					1	1
		Side Swipe	2	1	2		1			3
		Hit Parked Veh	1						1	1
		Roll Over	1				1			1
		Right Turn		1					1	1
		Right Angle	2	1	1		1	1		3
		Rear End	2	1		2		1		3
		Total	**8**	**5**	3	2	3	2	3	**13**
2	Koonga Avenue – Montacute Road	Rear End	3	12	3	2	4	3	3	15
		Side Swipe	1				1			1
		Right Angle	12	4	3	2	4	3	4	16
		Hit Fixed Object	4	1	3			1	1	5
		Right Turn	1	1		1		1		2
		Head On		1		1				1
		Hit Pedestrian		1					1	1
		Total	**21**	**20**	9	6	9	8	9	**41**
2	Montacute Road – Graves Street	Rear End	11	4	3	3	1	4	4	15
		Right Angle	6	1		2	1	1	3	7
		Hit Fixed Object	1	1	1		1			2
		Hit Parked Veh	3			1		1	1	3
		Right Turn	1	2		2			1	3
		Side Swipe	1	1			1	1		2
		Total	**23**	**9**	4	8	4	7	9	**32**

* Please note as of 2013 the average reporting damage in our crash system increased from $3000 to $5000.

Sect.	Mid-Block Section	Crash Type	* PDO $5000+	Casualty	2012	2013	2014	2015	2016	Total
3	Graves Street – Gorge Road	Side Swipe	1				1			1
		Hit Fixed Object	3			1		2		3
		Right Angle	10	4	4	4	2	2	2	14
		Rear End	2	2	2		1		1	4
		Right Turn		1	1					1
		Hit Pedestrian		2	2					2
		Total	**16**	**9**	9	5	4	4	3	**25**
3	Gorge Road – Lower North East Road	Side Swipe	3				1	2		3
		Rear End	5				2	1	2	5
		Hit Fixed Object		1		1				1
		Total	**8**	**1**	**0**	**1**	**3**	**3**	**2**	**9**

* Please note as of 2013 the average reporting damage in our crash system increased from $3000 to $5000.

APPENDIX C – SUMMARY OF COMMUNITY SUBMISSIONS AND DPTI RESPONSES

FEEDBACK ID NUMBER	COMMENTS	DPTI RESPONSE
	SECTION 1	
OTH01	Penfolds Rd / St Bernards Rd / Magill Rd: In support. Recommend that consideration be given to the timing of the lights at on-peak and off-peak times to maximise efficiency. Constituents have complained about the length of waiting time when there is no traffic.	Traffic signals in Adelaide are connected to a computerised system which controls over 800 sites, provides signal coordination along the strategic arterial roads such as St Bernards Rd and Magill Rd in the peak direction and where possible in both directions during periods when traffic flows are lower. It is a dynamic system which continually measures traffic and adjusts the time available for each movement. It records the density at the intersection and alters the timing and sequencing of the next phase to clear the vehicles through the intersection. During week-day peak traffic hours and for many hours in the day intersections such as Magill Rd, St Bernards Rd and Penfolds Rd are over-saturated with traffic volumes exceeding the available lane capacity. It is not possible to provide more green time for one approach without taking green time away from another. This means that traffic often has to wait a number of cycles. Outside of peak traffic hours the signals at this site have separate phases with controlled right turns on all approaches. This provides a high level of safety for road users including pedestrians crossing at the intersection. However it is acknowledged that this type of phasing is less efficient and causes longer delays. The operation of the traffic signals has been checked and is considered to be providing an appropriate balance in delays for all approaches.

C38	Penfolds Rd/ The Parade: I believe that this is an overkill, as most of the traffic on Penfolds Road (North) flows right, onto the Parade (West), and not Penfolds Road (south). Making the approach definition curves more adequate is a positive.	Noted
C38	Penfolds Rd / St Bernards Rd, Magill Rd: Support this.	Noted
C52	Penfolds Rd / St Bernards Rd / Magill Rd: Only 3 cars get through the signals per phase for north bound on Penfold Rd / St Bernards Rd. AM Peak is very large and given the amount of traffic using Penfold Rd the painted median scheme is not suitable (i.e. one lane only).	Refer to response above (OTH01)
C58	Penfold Rd/ The Parade: A Painted Median Strip will cause more traffic congestion.	Kensington-Parade: this section of road consists of a single wide lane in each direction. The implementation of a painted median with protected right turn lanes & bike lanes will improve safety and will have minimal impact on congestion.
SECTION 2		
C08	St Bernards / Playford Rd: If the lights were removed from Playford Road all traffic would divert turning right onto Newton Rd onto Graves St. As a resident of Graves St I would object to the increase of traffic.	There is no proposal to remove the signals at Playford Road
C21	Need signals at Arthur Street. Unable to turn right from Moules Rd onto St Bernards Rd. Median in middle of road is needed more width between vehicle passing in opposite direction (rumble strip).	Noted
C34	Outside the shops on St Bernards Rd between Moules Rd and Murray Ave: Cars parked at this location reduce the southbound flow on Newton Rd to Murray Ave.	Noted

C34	A turning bay for Shakespeare Ave - (Increase to medium or High priority).	It is recognised that the installation of a sheltered right turn lane would improve safety, but given the low crash history at this location, the implementation of this treatment is a low priority.
C34	Arthur St, Moules Rd and St Bernards Rd: Install traffic lights. I also support the ban on right turns out of Arthur St, shifting them to Central Ave. The pedestrian crossing interrupts the traffic flow on to St Bernards Rd. Presently traffic queues across Moules Rd and the south bound for the right hand turn into Arthur St and northbound for the right turn into Moules Rd. It would greatly aid the traffic flow on Newton Rd if the car park was only accessible from Karawirra Ave. Supports the back-to-back slip lanes, but removing the car park entrance/exit from Newton Rd will solve many of the problems. Cars using the car park from Newton Rd make tight turns due to right turners into Reid Ave. Pedestrians crossing at the shelter point in the middle are also at risk. If the median is extended on the south side to prevent turns in and out of the service stations & Denison Park, please include a right hand turn land for this increased U-turn traffic at Watson Rd. This turn currently causes close calls with traffic accelerating south bound from the lights, only to be banked up 100m down the road.	Carpark access can be designed to aid smooth vehicles entry from Newton Rd. It is recommended in this RMP to extend the median south past its current location, to prevent the right turn movement in and out of the service station
OTH01	St Bernards Rd / Arthur St / Moules Rd: Option 3 is the preferred option. Traffic signals be built on either Moules Road or Arthur Street. We would recommend that land adjacent to Norwood Morialta High School be considered for the construction of any bus or parking bays due to the greater width of the footpaths.	The installation of signals is considered the ultimate solution but traffic volumes at this location do not presently meet the warrant for signals.
OTH01	St Bernards Rd/ Playford Rd: Further investigation. Recommend the removal of the lights at this intersection.	The signals at this location are providing an efficient and safe method of controlling traffic movement. The removal of these signals will compromise the safety at this intersection.

OTH01	St Bernards Rd / Church Ave/ Shakespeare Ave: Support the sheltered turn right lane onto Shakespeare Ave. Recommend the construction of turn right lane into Church Ave, assuming that the two lanes are not in too close a proximity to each other.	The RMP recommends the installation of a right turn lane into Shakespeare Ave as it is considered one of the collector roads for the local area. The RMP also recommends that consideration could also be given to extend the painted median scheme to incorporate a right turn lane into other side roads, including Church Ave.
OTH01	St Bernards Rd / Montacute Rd / Newton Rd: Do not support. Recommend that no action is taken. Lengthening the median strips would prevent emergency vehicles from Newton Rd would prevent them from turning right onto the road.	Emergency vehicles can mount the median strip if required.
C38	St Bernards Rd / Arthur St / Moules Rd: Will aid the H30 and H30S bus routes. Support all 3 Options. I support Option 1 and if bus bay, for stop 21B (eastern side) was moved north, then a right hand land (southbound) could also be provided to turn onto Alton Avenue.	Noted
C38	St Bernards Rd/Koonga Ave: Will aid the H31 bus route and trial to the Stradbroke Primary School. I believe that this should be combined with installing right turn lanes for traffic turning onto Reid or Karawirra Avenues.	The RMP recommends the incorporation of a short right turn lane into Koonga Ave with the upgrade at Karawirra Ave & Reid Ave
C38	St Bernards Rd / Church Ave/Shakespeare Ave: Support the sheltered turn right lane. Believe that a sheltered right-turn (northbound) onto Church Street due to the B10, B10X and B11 bus routes making that turn.	Noted
C38	St Bernards Rd/Montacute Rd/ Newton Rd: Support the plan. In order for the signalling to change the middle lane will need to change from straight and right, to just straight, with adequate signage. People may do illegal U-turns into the service station - suggest raised median be extended.	The RMP recommends the extension of the median south to prevent illegal U-turns and the right turn out of the service station

C39	Newton Rd pedestrian crossing in front of St Francis Assisi School: An incident involving a car running a red light. Pedestrians were given the green light to walk we proceeded to cross, halfway over the lights a car failed to stop and just missed two 3 year old boys. I have reported this to the Council. Within the past two years 2 children have been hit and several accounts of near misses.	Noted
C43	St Bernards Rd/Arthur St/Moules Rd: The Plan offers 3 options aimed at resolving some of the problems that exist at these intersections. The main problem I experience is the delay in getting safe access to St Bernards Rd using a right-hand turn from Moules Rd. Delays of several minutes are often needed because of the continuous stream of traffic in both directions along St Bernards Rd. I have seen a number of near misses at the intersection with impatient motorists joining the traffic on St Bernards Rd when there is really an insufficient gap to safely join the traffic.	Noted
C51	St Bernards Rd/ Playford Rd: To avoid any impact on the efficiency of Newton Road (St Bernards Rd), I suggest that the lights at Playford Road be dispensed with.	The signals at this location are providing an efficient and safe method of controlling traffic movement. The removal of these signals will compromise the safety at this intersection.
C57	St Bernards Rd/Arthur St: Difficult to do a right - hand turn from Arthur Street onto St Bernards Road.	Noted

NEWTON ROAD / GRAVES STREET JUNCTION		
C07	Lights at this intersection. If not a roundabout at both ends of Grave St.	Preference for traffic signals at Graves St
C08	Agrees with lights at this intersection.	Noted
C15	Intersection between peak times, school pick up and drop off becomes dangerous.	Noted
C16	Recommendation that traffic lights be installed at this intersection. As a bus passenger using the bus at approx. 8am Monday to Friday, I think the implementation of option 2 will help reduce the risk of serious accidents. Many times vehicles have had to brake suddenly when the bus pulls out. Option 1 is not a good long term option - safety or cost wise.	Noted
C18	Recommendation that traffic lights be installed at this intersection.	Noted
C20	Remove PAC at Graves St.	Noted
C24	install Option 2: install traffic lights	Noted
C25	install Option 2: install traffic lights	Noted
C26	Turning right from Graves Street onto Newton Rd. And a turn left from Graves St onto Newton Road.	Noted
C27	Needs further study. Gridlock of cars waiting to turn into the school.	Noted
C29	Option 2 - "the installation of traffic lights"	Noted
C30	Option 2 - "the installation of traffic lights"	Noted
C31	Option 2 - "the installation of traffic lights"	Noted
C32	Option 2 - "the installation of traffic lights"	Noted

C35	Waiting time spent at the intersection is ridiculous and especially at peak times. Have waited more than 8 minutes to cross. Supports signal lights at this intersection. Traffic in and out of the church carpark needs to be addressed. Possibly in one entrance and out the other. would like to see a right hand ban in and out of the Church carpark and the same across from the school yard onto Graves St during peak between 8 - 9 am and 2.30 - 4pm.	The existing traffic volumes do not meet the warrant for signals. Potential need for the signals will be reviewed after the completion of Option 1, to allow an assessment of the effectiveness of the initial treatment. The existing access in and out of the church is in one entrance and out the other. The implementation of a solid median on Newton Rd between Graves St & the PAC has prevented the right turns in and out of the church driveway.
C37	Option 2	Noted
OTH01	Newton Rd / Graves St interest ion is not dealt with satisfactorily in this Draft Road Management Plan. Local residents, the church community and the school community are deeply concerned about the safety of the corner and have long campaigned for traffic signals to be installed.	Noted
C38	Benefit to drivers accessing the school and church. Requires an extra lane on both Newton Road (northbound) and Graves Street.	Noted
C40	Support lights at the intersection of Graves Street and Newton Road (Option 2). Option 1 would only clog up the already tight intersection, as buses turn right frequently delaying traffic.	Noted
C46	Traffic originating in Graves St has numerous options to access local main roads via "left turns" if the drivers would try PLANNING their trips.	Noted

C48	The parents that drop off and pick up their children from the primary school located at the intersection. They park along Graves St over the yellow no parking lines and nearby side street. This restricts the space available for traffic to travel. This is made worse when a bus is trying to come through at the same time. Better policing of the no parking zones at peak school drop off and pick up times would go a long way to reduce congestion. The second problem at this intersection are the drivers that think it's okay to turn right from Newton Rd onto Graves St at high speeds and then accelerate rapidly at speeds higher than the 50km limit. I don't believe traffic signals are the best choice. If the proposed traffic lights are like the nearby lights down the road at Playford Ave, which remain green for traffic on Newton Rd and only turn red when a car approaches the side street, then turning left from Graves St onto Newton Rd could actually take longer as you will have to wait for the lights to change. A short right turn lane may help as many motorists don't move over far enough while waiting to turn right and in turn block the traffic trying to turn left.	This RMP recommends the installation of right turn lanes in and out of Graves St in both Option 1 and Option 2. The phasing & timing of each phase of the proposed signals will be determined by the traffic demand and can be changed according to changing demand. Policing of no parking and speed of motorists is outside the scope of this RMP and can be taken up with the local council and the SA Police.
C51	It is very difficult turning right on to Newton Road and most frustrating when a SUV or commercial vehicle pulls up on your left to turn left blocking all vision South.	Noted
C54	Would like to see lights at this intersection.	Noted
C55	Option 2.	Noted
C56	Would like to see lights at this intersection.	Noted
C62	Need traffic lights at Newton Rd / Graves Street intersection because it is hard to turn right onto Newton Rd.	Noted
ST BERNARDS ROAD / REID AVENUE / SAVAS ROAD / KARRAWIRRA AVENUE		

C03	Investigate pedestrian lights rather than a refuge island. Relocate pedestrian lights opposite the Morialta campus and at the top of Arthur St. Pedestrians attempting to cross St Bernards Rd via the refuge island just north of Reid Ave have incredible trouble due to its location in relation to the intersection. Left-turning traffic from Reid Ave makes it very difficult for pedestrians to get across the northbound lane; as soon as northbound traffic along St Bernard's Rd clears, traffic from Reid Ave nips around the corner & cancels any chance of a pedestrian easily reaching the refuge. This is especially difficult for anyone slow-moving, or with a pram, bike, or shopping trolley. There are routinely several cars lined up on Reid Ave waiting to turn north throughout the day, but particularly in the peak hours (in fact, to get the kids to Stradbroke School in the mornings, I go up Patola to avoid that queue). So pedestrians wait ...consider relocating this pedestrian refuge south of the intersection of Reid Ave and St Bernards Rd? Giving pedestrians the chance to get across the northbound lane out of the way of Reid Ave traffic turning left, and make the crossing of the road a much easier proposition, instead he crosses St Bernards Rd south of Reid Ave. My children are at Stradbroke Primary, and I know other parents who live west of St Bernards Rd who would walk or take the bikes not at all or more often if it were easier to cross St Bernards Rd in the mornings and afternoons.	We appreciate your feedback regarding the provision/relocation of the pedestrian refuge to south of Reid Ave. We will consider the provision of an additional pedestrian refuge south of Reid Ave to facilitate the safe movement of pedestrians across St Bernards Rd.
C09	St Bernards Rd and Reid Ave. A pedestrian crossing was installed, however people get caught half way.	Noted
C13	Concerned about drivers failing to stop at stop sign on Reid and St Bernards junction. 75% don't stop.	Noted
C14	A pedestrian crossing on St Bernards Rd near Reid St to access the shopping centre.	

C23	The crossing 50 m north of Reid Ave is more dangerous as the drivers slow down and don't stop. If there was a controlled pedestrian crossing installed this would compound the problem due to cars turning right from St. Bernards Road. Further south to the T junction would be a better/safer option.	We will consider including the installation of an additional pedestrian refuge south of Reid Ave in this RMP, to facilitate the safe movement of pedestrians across St Bernards Rd
C36	Would like to see traffic lights at this intersection. I believe that in order to improve safety and flow of traffic at this intersection if is necessary to create left and right turning lanes from Reid Ave for entry to St Bernards Rd.	Noted
OTH01	Option 2 is preferred. Establishment of short right turn lanes that service Karawirra Avenue along Reid Avenue. Better placement of pedestrian refuge which is not currently located in an ideal position. Elderly pedestrians from a nearby nursing home have difficulty crossing St Bernards in a safe fashion currently.	Noted
C38	Will aid the H31 bus route, shopping at Foodland. Support Option 2. Support right turn lanes if land is available and cost effective.	Noted
C59	Need traffic lights at the St Bernards/Reid Ave intersection. It is dangerous for cyclists to turn right into Reid Ave. Traffic lights would make it safer.	Noted
C60	Reid Avenue/ St Bernards Rd needs traffic lights. There are many near misses, young girl almost hit, many elderly. Open up road adjacent fruit shop.	Noted
C61	Concerned about the corner of St Bernards Rd and Reid Ave - this is where pedestrians cross the road to get to the shopping centre. There is a crash daily and she is just waiting for a car to drive through her front fence. Issue is speed.	Noted
SECTION 3		

C14	Newton Rd / Clairville Rd intersection - need traffic lights to cross the road.	Noted
C34	This section is not clear, including terminology. Right hand turning from Lower North East Rd is not permitted at Darley Rd, traffic from the city direction entering Newton Rd to travel south must use Gorge Rd and turn right at Darley/Newton Rd. Banning right turns from the western approach on Gorge Rd into Newton Rd will force additional traffic onto Hambledon Rd through residential areas to undertake a right turn from Hambledon Rd onto Newton Rd. Banning right turns from eastern approach on Gorge Rd into Darley Rd will force traffic from shops at Target (Centro) back across the carpark to Clairville Rd where they will turn right (without traffic lights) onto Newton Rd. This would make the Newton Rd/Clairville Rd/Hambledon Rd a disaster. This intersection is listed in 7.1 (pg 47) for monitoring. Traffic turning right from Newton Rd into Clairville Rd makes turning onto Newton Rd from east or south Hambledon Rd or west or north Clairville Rd very difficult. This is compounded by limited views due to the curve in Newton Rd to the north of this intersection. Note comments for the inter-connection between the Gorge Rd intersection and traffic from Graves St. I strongly support the closure of the outbound left-turn from the chemist on Newton Rd, south of Gorge Rd. Left turn inbound is not ideal (pg 46) limited views with the road curve.	It is not proposed to ban the right turn movements on the eastern & western approach. It is proposed to provide partial control of right turns except for peak hours and late at night.
OTH01	There is a pedestrian refuge near Claireville Avenue which I believe is unsafe, especially for the elderly who reside at the Retirement Village. The refuge is located on a sharp bend in the road and is difficult to see pedestrians crossing when driving south on Newton Road. Recommend that pedestrian activated signals be considered in this vicinity.	Further investigation to upgrade the existing pedestrian crossing is underway. Number of pedestrians at this location does not warrant the installation of a PAC.

OTH01	Darley Rd/Gorge Rd/Newton Rd: Do not support. The intersection is used by heavy vehicles. A ban would increase traffic at the intersection of Lower North East Rd and Gorge Rd. Recommend no changes.	Noted
C38	Darley Rd/Gorge Rd/Newton Rd: Where possible, right-turning traffic should not be restricted at intersections with the use of a red arrow.	Noted
C38	Darley Road / Lower North East Road: I would encourage an extra couple of seconds from right turning traffic from Darley Road, onto Lower North East Road, in both directions.	Noted
C46	Darley Road / Gorge Road / Newton Road: Rather than turning right from the western end of Graves St, vehicles should proceed via the local roads to Gorge Rd and then turn left. What could be easier?? No expensive lights needed, no additional holdups to drivers on Newton Rd, less road rage!!!	Noted
C53	Darley Road / Gorge Road / Newton Road: Our suggestion to minimise crashes in this area is that you take a close look at the entrance and exit on Newton Rd heading south just past the Gorge Rd lights. The National Pharmacy is on the corner. Having observed the many near misses at this place, we suggest that it be closed as there are plenty of entry and exit places in this area as it is next to Target.	This issue has been noted and the department has initiated investigation to resolve this issue.
	BICYCLE LANES	

C01	Just like cars have painted lanes, arrows, signs etc. that guide motorists to manoeuvre safely in traffic e.g. to turn right etc., there should be the same for cyclists on major cycling routes, ESPECIALLY WHEN THE ROAD WIDTH IS NARROW, OR AT INTERSECTIONS. Road markings for cyclists do not have to be separate from car lanes all the time. Where there is insufficient space to have distinct car and bicycle lanes, the bicycle lanes should be overlayed on the left hand side of the car lanes (perhaps distinguished by a different colour or broken lines etc.) with signs to indicate that this section of the road is shared, and if cyclists are travelling in the bicycle lanes motorists need to slow down and give way to the cyclist until they have safely transitioned to a section that is not shared, or have completed their right turn etc. (obviously requiring cyclists to indicate, and check for safety while manoeuvring etc.)	Noted
CO4	I am an avid cyclist, and use Darley, Newton, St Bernards & Penfolds, to access the hills via Gorge, Montacute, Moules, Magill, Kensington and Stonyfell Roads, on most weekends as do numerous other people and cycling clubs, not to mention the many who use these same roads to ride to their place of employment every day. Anything that could be done to make it safer for all cyclists, via cycle lanes, better road surfaces, and cyclist buttons at intersections, clear ways, or any other initiative would be greatly appreciated.	Noted

C06	Cycle lanes the length of Penfolds Rd from at least Kensington Rd/St Bernards Rd to Magill Rd is essential. A lot of cyclists turn left from Kensington Rd and/or The Parade and travel north along St Bernards Rd, then turn right (east) along Magill Rd to cycle into the hills, especially Norton Summit. For example, observe the number of cyclists who travel during week-day or week-end mornings using those roads and heading into the hills, especially Norton Summit. The fact that Penfolds/St Bernards Roads are not Primary or Secondary Roads, should not preclude those roads from having cycle paths, as they are highly used by cyclists. I believe currently the road is wide enough for one lane for cars and one for cycles going each way. No lines are currently marked, and cars often travel side-by-side, leaving no room for cyclists. Having one car lane and one cycle line marked would be a quick cost effective immediate solution.	Noted
C10	Yes, with a cemented median strip separating bikes from cars.	Noted
C14	I would like a bicycle lane to be included on St Bernards Rd between Montacute Rd and Magill Rd.	Noted
C20	Albion to Graves is very dangerous as there is no median strip.	Noted
C24	Could the lights at Playford Rd into Newton Rd be less than two minutes?	Noted
C33	Make this a priority for St Bernards etc. road changes.	Noted

C41	In support of a bike track on St Bernards Rd. Magill Rd from Glynburn Rd going east are dangerous. The ramps onto the side streets Gawler, Emerson, Kings etc. are around the corner into the street which means that people in gophers, wheel chairs and walking have to look over their shoulders and back around the corner to see if there is any traffic coming. They then cross to the other side of the ramp which is in the position that the other side of the road should be. Reid Avenue bike lane has houses being replaced the road is dug up where the bike lane should be and patches are never consolidated before filing in. (I know that this can be done properly because the old E&WS blokes patches used to last for years. The section from Gorge Rd to Lower North East Rd desperately needs a bike lane to link the Norton Summit run with the Linear Park.	Noted
C42	On page 43 of the plan I note proposed parking bans associated with bicycle lanes. Full time bans would make it difficult for us to get any work such as lawn mowing done at our house as workmen usually park on Penfold Rd. As the road is fairly wide at that point this doesn't affect traffic. Also an amazing number of people pull over near our house to make calls, look for directions etc. and at certain times of the year there are semitrailers pulled up outside Penfold's waiting for the gates to open at 6am. None of these activities poses a problem with traffic at the moment and I'm concerned that full time parking bans associated with the proposed bike lane would cause significant problems for the residents along this section of road. As most of the serious bike riding takes place in the early morning perhaps a parking ban at this time is justified but not throughout the whole day. Thank you for allowing feedback on the plan.	Noted
C44	Would like a bicycle lane along St Bernards Road and Darley Road.	Noted

C47	I am disappointed about the dismissal of cycling provisions along most of this road, in particular, the section between Gorge Rd and Magill Rd. The draft document states that bicycle lanes are not a priority and that this road is not classed as a primary or secondary cycling route. I feel that this classification is based solely on "peak hour" commuting, and ignores the very large number of cyclists using this road to access the Adelaide Hills via Montacute Rd, Gorge Rd or Norton Summit Rd. I believe a much safer proposal would be to make the entire section between Gorge Rd and Magill Rd a single lane in each direction, with a wide median strip with turn right lanes at every minor road, indented bus pullouts for all bus stops, and a bicycle lane on both sides of the road. There would be no obstruction of through traffic at any side road by traffic turning right, and traffic turning left can generally make use of the bike lane so they also don't obstruct through traffic. The stated capacity of a single lane very nearly matches the current usage figures for the road. With no blocking from vehicles turning right or left, through traffic will actually move more freely than it does now.	Noted
PAINTED MEDIAN SCHEME		
C14	Are dangerous and cause congestion	Noted
C21	The whole length of St Bernards Rd.	Noted
CLEARWAYS		
C19	Clearway both ways. Except where there is a turn lane.	Noted
C34	Optional in both directions.	Noted

OTH01	Support Campbelltown Council and strongly oppose clearways. The restrictive nature of the suggested bans will be detrimental to a number of businesses, especially considering that sufficient off street parking is not yet available. If parking bans are to be made it should occur after nearby parking is made available and not before.	Noted
	PARKING BAYS	
C34	Don't bother to indent the parking. Parking bays may improve flow but do not remove the accidents or near misses caused by parkers pulling out into traffic from St Bernards Rd, or worse turning right out of Arthur St.	Noted
	GENERAL COMMENTS	
C02	The impact of traffic entering and leaving Magill Primary School and St Francis Assisi School are not mentioned in the report. These schools have significant impact on traffic patterns and the safety of children entering/leaving the school. A large volume of traffic enters Adelaide St from Penfolds Rd to drop children at Magill PS. Provision of turning lanes into Adelaide St should be considered. At a minimum the narrowing of traffic to a single lane travelling south down Penfold Rd should occur after Adelaide St to allow south bound traffic to turn in Adelaide St before the road narrows. The traffic flow at St Francis of Assisi will be significantly improved based on the planned provisions within the plan. Good Ideas!	Noted
C05	The entire roads mentioned in the plan should all have power lines underground. This will improve the appearance of the roads and remove instances when power lines are inoperative	Noted

	due to weather events. Otherwise, all the recommendations should be implemented.	
C13	St Bernards Rd in front of Reid Ave has many manholes and as trucks go over them they make a lot of noise. Could this section of road not be resealed any better with the technology these days could there not be more levelling done?	There are no plans to reseal St Bernards Rd at this present time. The level of the man hole covers has been noted but is unfortunately an issue for the service authorities to deal with. The department will forward your concerns to the relevant service authority.
C19	Do not support the Plan. I am appalled, I thought something was finally being done to ease traffic congestion along this critical ring route, but on reading the plan it is designed to increase traffic confession with extra lights and crossings and scrupulously avoids the simple, cheap and effective measures that could be taken to improve traffic flow. The minor enhancements proposed are not at areas of major congestion and will have no appreciable effect. Simple cheap & effective measures: assuming DPTI was interested in improving traffic flow, the following 2 measures would prove very effective: Peak hour clearway BOTH WAYS, No right turn in peak hours except where there is a turn lane.	While we recognise extra traffic lights and pedestrian crossings may affect traffic efficiency along the main road, they are proposed to improve safety of intersections and the safety of pedestrians crossing the busy main road. Clearways are provided on main roads at the peak hours in the predominant direction.
C20	Plan fails to address the need for water sensitive design features and the 30 year plan.	This is outside the scope of this RMP.
C28	Vegetation placed on roadside, median strips and roundabouts create a blind spot and should be a consideration by DPTI and Council. I refer to Greenhill Rd - Kensington Rd section of Portrush Rd.	Noted
C32	Supports the Member for Morialta's comments.	Noted
OTH01	Supports Campbelltown Council recommendations.	Noted

C45	P9, The map of public transport route needs updating. P24, The aerial photo of the Penfield Rd Parade intersection is not up to date.	Updated. The aerial photo is indicative to show the intent of the concept to upgrade the roundabout. No significant change to the roundabout has taken place since date of the photo.
C46	I am TOTALLY against more traffic lights.	Noted
C50	Our store (and three other stores) are based at 84-96 Newton Road and we recently submitted an application (incl. signed petition with over 300 signatures) for a crossing to be put near our store to Grace Portalese who takes care for transport and road management for this area on 'hartley@parliament.sa.gov.au'. This particular area has been very problematic for our customers and other pedestrians wishing to cross to our group of shops from Newton Centro Shopping Centre. It is a very unsafe and congested area with high speeds and lots of traffic travelling down Newton road. Many of our customers, of which most are elderly have expressed that they feel it is necessary we have a crossing put up here due to their scary experiences of trying to cross at this section.	Further investigation to upgrade the existing pedestrian crossing is underway to improve location and sight distance. The number of pedestrians at this location does not warrant a PAC.
C57	Page 29 - A pity we can't have the same request. Traffic lights that operate from Arthur Street auto Glynburn Road.	Noted
C58	Install pedestrian lights in front of Newton Foodland on Newton Rd.	Noted
C59	Install pedestrian lights in front of Newton Foodland on Newton Rd.	Noted
SUPPORTIVE OF RECOMMENDATIONS		

C03	In support of seeing the plan at the Council Library. Including recessed bus stop, dedicated right-turn lanes along St Bernards Rd. I was pleased to see that the RMP includes an upgrade of that refuge; as I note above, it is currently really unsafe if you've got a pram or a bike or similar. It's just not wide enough and some bit of you or your equipment always sticks out into the traffic. But it would be even better if it were south of Reid Ave	Noted
C05	Yes all the recommendations should be implemented, plus underground all power lines.	Noted
C08	Yes. Agrees with lights at Graves St and Newton Road intersection.	Noted
C14	Commend the plan.	Noted
C19	No.	Noted
C21	Most of it and option 3 with regard to 6.1.4.	Noted
C27	Yes. Look forward to actual work on Graves St and Newton Road.	Noted
C36	Supportive of recommendations to have back to back turn right lanes for Reid and Karawirra Avenue including indentations for the bus stops.	Noted
C43	I strongly support implementation of Option 3, which involves installation of traffic lights to better control the traffic flow. Removal of the pedestrian access lights south of Arthur St should not be a disadvantage to most users. Many of the people using these lights are students who come down from Moules Rd.	Noted
C45	This is an excellent report and the project team are to be congratulated.	Noted

C51	In support of Option 2 (traffic light) at the Newton Rd - Graves Street intersection.	Noted