



City of Charles Sturt

Woodville West Transport and Parking Plan

Final Report

July 2013

Executive summary

The overarching objective of the Woodville West Transport and Parking Plan (WWTPP) is to provide recommendations for future improvements for the local transport network, including a strategy for implementation.

A detailed assessment of the existing conditions within the study area was undertaken including, public transport, pedestrian and cyclist facilities, street hierarchy, reported crashes, parking restrictions, traffic speeds and traffic volumes. The previous studies have been reviewed and summarised with an assessment undertaken on the recommendations contained within these reports.

The study area is bound by West Lakes Boulevard, Clark Terrace, Trimmer Parade, Findon Road and Port Road which are all classified as arterial roads. Todville Street, Ryan Avenue and Alma Terrace are existing collector roads, with all other roads in the study area being classified as local roads. A small portion of the study area is within the suburb of Seaton but is recognised in this document as Woodville West for ease of naming.

Overall, Woodville West is well serviced with bus and train services that are within a walkable distance to the bus routes or train stations. Several roads within the study area are classified as being part of the *Bikedirect* secondary road network.

The locations of highest incidences of crashes that have occurred in the last five years are at the intersections of Alma Terrace / Todville Street, Rosemary Street / Ryan Avenue and Victor Avenue / Lewis Crescent, where three crashes have occurred at each location.

Parking restrictions exist within the area bounded by Findon Road, Sage Crescent, Ryan Avenue, Beryl Street and Pitman Avenue, comprising of a combination of No Parking, 3-Hour Parking and 2-Hour Parking; all applicable from 8am to 5pm Monday to Friday.

Traffic speed and volume data was collected in early December 2012 at various locations within the study area. It was found that, in most streets, some drivers were travelling above the 40km/h local area speed limit. Traffic volumes in excess of 1000 vehicles per day were recorded in Todville Street, with all other streets having volumes less than this.

The report undertaken in 2010 by Murray F. Young and Associates provided an assessment of the implications of the additional traffic volumes on the adjacent road network as a result of the Woodville West Redevelopment. Some assumptions have been made as to the eventual distribution of this traffic to the greater network. Additional traffic is expected along Todville Street, Alma Terrace, Nicholls Terrace, Smith Avenue, Lewis Crescent, Elizabeth Street and Holden Street. The expected increase in traffic volumes as a result of the Woodville West Redevelopment has guided the review of the road hierarchy.

Based on an assessment of the existing conditions, and expected future traffic generation from the Woodville West Redevelopment, a number of new traffic control devices are recommended.

It is recommended that the existing give-way controlled intersection at Rosemary Street / Ryan Street be upgraded to a roundabout. This treatment is proposed in order to address the crashes occurring at this intersection and to slow drivers on the approaches to the intersection.

It is recommended that modified T-intersections with changed priority be introduced at the intersections of May Street / Alma Terrace, Lewis Crescent / May Street, Todville Street / Minns Street East and May Street / Shirley Avenue. It is proposed that a channelised 'Gull Wing' type traffic control be introduced at the Todville Street / Levistone Street intersection, with priority

maintained for Todville Street. These treatments are proposed to address relatively high driver speeds along straight stretches of roads and varying incidents of crashes at these locations.

It is recommended that general improvements to delineation are undertaken at the intersections of Elizabeth Street / Emily Street, Nicholls Terrace / Henderson Avenue, Nicholls Terrace / Wye Street, Alma Terrace / Nicholls Terrace and Lewis Crescent / Victor Avenue (including the bend on the approach to Victor Avenue).

Actions for monitoring parking in the eastern area of Woodville West, and in the vicinity of the new Woodville West Redevelopment are provided. It is also proposed that the parallel car parking is formalised along Alma Terrace, in the vicinity of the Albert Park Railway Station, and designed for long term parking and drop off/pick up.

Recommendations for improvements to public transport infrastructure are also provided.

Improvements for cyclists are recommended with the proposed introduction of shared roadway bicycle markings or 'sharrows' along the entire length of Alma Terrace and a section of May Street effectively linking the existing path along the Grange rail corridor. Way-finding signage is also required along the greenway corridor. Long-term bicycle storage facilities are also proposed at the Albert Park Railway Station.

Installation of a new footpath along the northern section of Alma Terrace from just north of Pitman Avenue to Nicholls Terrace is recommended. In addition, it is recommended that Council undertake a comprehensive review of existing pedestrian infrastructure, including all footpaths and kerb ramps, by incorporating into the existing CCS maintenance / asset renewal program. Recommendations are made for upgrades to pedestrian facilities in the vicinity of the Albert Park Railway Station and Bus Stop 28 on West Lakes Boulevard.

A plan showing these recommended infrastructure improvements is provided in on the following page.




An indicative cost for all of the proposed treatments is provided along with a plan for implementation over the next 5 financial years. Priority is given to projects to address immediate safety concerns as well as pedestrian and cyclist projects to improve safety and access / mobility as well as promoting these sustainable transport choices.

Public consultation has been undertaken with the wider community which included a public meeting at the Soccer Cub accessed off Minns Street East. The results of the public consultation have been assessed for suitability and have now been incorporated into this final report.





TRAFFIC CONTROL DEVICES

EXISTING



(ONLY MAJOR TRAFFIC CONTROL DEVICES SHOWN)

-  ROUNDABOUT
-  PLATEAU ROAD HUMPS
-  OFF ROAD PATH

PROPOSED

-  ROUNDABOUT
-  IMPROVED LINEMARKING
-  PAVEMENT BARS
-  PARKING TO BE FORMALISED & INSTALLATION OF WESTERN FOOTPATH SUBJECT TO NEGOTIATION WITH DPTI, AS ROAD IS PARTIALLY ONLY DPTI LAND
-  MODIFIED T JUNCTION (CHANGED PRIORITY)
-  MODIFIED T-JUNCTION 'GULL' TYPE (PRIORITY UNCHANGED)
-  'SHARROWS' ROADWAY MARKING (SHARED ROADWAY FOR CARS & BIKES)
-  INSTALLATION OF WESTERN FOOTPATH BY NARROWING ROADWAY WIDTH (DEPENDING ON LAND OWNERSHIP)
-  SHARED PATH (WOODVILLE WEST DEVELOPMENT)

ROAD HIERARCHY

-  ARTERIAL ROAD
-  COLLECTOR ROAD

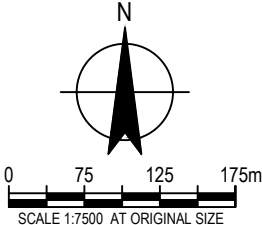
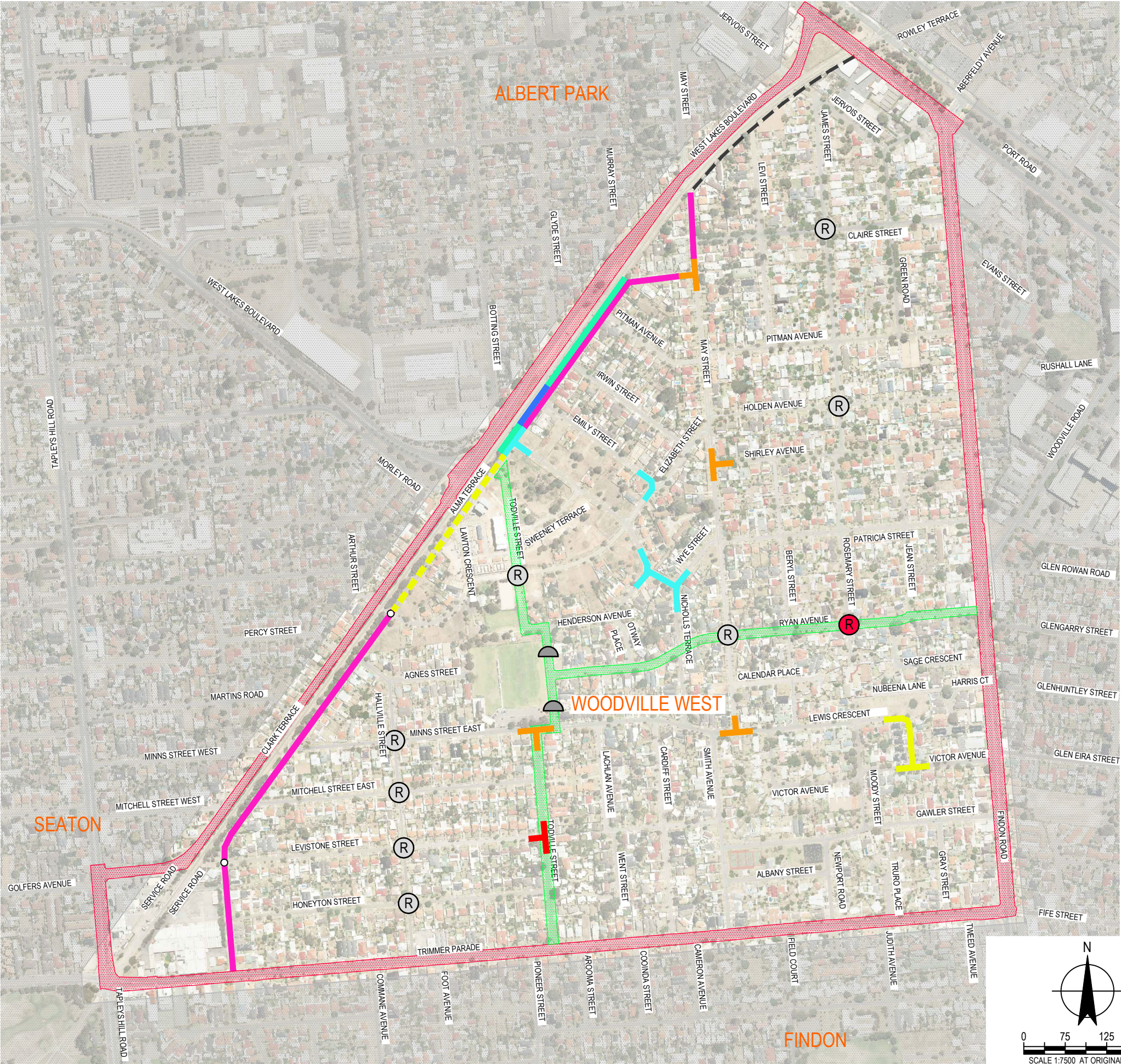


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1. Introduction

1.1 Project Background

Woodville West is an established suburb located approximately 8km north-west of the Adelaide CBD. The area is primarily residential having straight and narrow streets, generally with low amenity. An area located in the north-western part of the study area is undergoing high/medium density redevelopment and is referred in this report as Woodville West Redevelopment (refer to section 1.4 for description).

The City of Charles Sturt (CCS) is seeking to take the next steps from historical Local Area Traffic Management (LATM) plans to prepare integrated Precinct Transport and Parking Plans in order to support the aspirations of the local community for healthy and active lifestyles and to plan for the future demands of streets and open space areas.

The Woodville West Transport and Parking Plan (WWTPP) identifies the infrastructure and service requirements for all modes of transport in the local area, including safe and efficient vehicular traffic movements, parking, public transport, walking and cycling. Of particular importance will be the consideration of traffic management, safe pedestrian and cyclist facilities and a parking review around the Woodville West Redevelopment. The scope of work includes the preparation of the WWTPP through consultation with the key stakeholders and the local community.

The overarching objective of the WWTPP is to provide recommendations for future improvements to the local transport network, including a strategy for implementation.

Following public consultation on the proposed plan, further investigation can be undertaken to determine how each treatment can be matched in with the existing streetscape and such proposed treatments can enhance the amenity and streetscape of the area.

1.2 Previous Studies

GHD has undertaken a review of all information provided relating to Woodville West transport and parking issues. This includes traffic count data, traffic issues raised by residents, as received by Council, and two separate reports prepared for Council for this area. The two separate reports are the Woodville West LATM prepared by Kym Dorrestyn and Tonkin Engineering in December 2006 and Woodville West Neighbourhood Renewal Project Stage 1A Land Division prepared by Murray F Young in October 2010.

Following a review of this information, the following key points are noted:

- Based on a review of the previous traffic reports and correspondence from residents it is evident the community is concerned with vehicle speed and a perception that through traffic is a significant issue. After investigation, through traffic is considered to be limited due to the layout of the surrounding arterial road network, however this is not to say that cut-through traffic is non-existent.
- Both reports relied upon data that was collected around 2006 and 2007. With the changes that have occurred with the Redevelopment project, additional traffic data was collected in December 2012 to determine what impact the new changes are having on traffic patterns and driver behaviour.
- The Dorrestyn and Tonkin report made a number of recommendations for infrastructure upgrades, some of which have since been implemented. A number of recommendations to install roundabout treatments have not been installed and the other recommendations that have not been implemented are not considered necessary at this time following a review of current traffic volumes, speeds, crashes and the street hierarchy which have changed since

the realignment of Todville Street and Stage 1 of the Woodville West Redevelopment.

- The Murray F Young report predicted an increase in traffic volumes as a result of the Woodville West Redevelopment for surrounding streets (refer to section 2.6.2 for description). Volumes are expected to increase from between 200 to 500 vehicles per day along Todville Street, Alma Terrace, Nicholls Street and Elizabeth Street.

1.3 Stakeholder and Community Consultation

There have been several meetings with Council staff and a presentation to Council's Major Projects Coordination Group on treatments prepared within the study area. The Woodville West Community Reference Group (associated with the Woodville West Redevelopment) and the Woodville West Residents Group have provided input into this plan. Input included identification of issues such as improvements required to pedestrian facilities along Alma Terrace, the need for traffic calming along Todville Street and poor delineation at various intersections within the study area.

Consultation was held with the local community involving all residents, owners and business operators who reside within the study area, including a workshop in May 2013. Feedback received from this public consultation process has been reviewed

and, where appropriate, incorporated into the Final WWTPP. The Final WWTPP is to be presented to Council for consideration in August 2013.

1.4 The Woodville West Redevelopment

The Woodville West Urban Renewal Project is a project to convert part of the existing residential area that was developed by the South Australian Housing Trust (SAHT) in the 1940's. The area previously consisted of high concentrations of public housing. It has been earmarked to be redeveloped due to the aging housing stock and it's suitability for higher density development closely associated with public transport and other community facilities.

The Redevelopment will cover approximately 13 hectares of land, immediately south of the junction between West Lakes Boulevard and Clark Terrace, as shown in Figure 1. The Redevelopment is to be undertaken in six stages. Once completed, the development will occupy the area bound by Emily Street, Elizabeth Street, Nicholls Street, Henderson Avenue, Lawton Crescent and Alma Terrace. The design of Stage 2 is currently being undertaken at the time of preparation of this report. This Transport and Parking Plan has in part been developed considering the potential increased traffic demand as a result of this.

Figure 1 Woodville West Redevelopment Area



2. Existing Conditions

2.1 Study Area

The study area is bound by the Grange Railway line (adjacent West Lakes

Boulevard and Clark Terrace), Trimmer Parade, Findon Road and Port Road and is shown in Figure 2. Land use consists predominantly of residential with some commercial located along surrounding arterial roads. The Woodville West Redevelopment site is located adjacent to the West Lakes Boulevard / Clark Terrace intersection.

Figure 2 Study Area showing Land Use and Public Transport Infrastructure



2.2 Public Transport

Albert Park and Seaton Train Stations, on the Grange Railway Line service the western side of the study area and the Woodville West Redevelopment. The Albert Park Train Station is located within close proximity to the Redevelopment.

Most of the bus routes that service the Woodville West study area operate along the arterial road network, with bus stops along Findon Road, Port Road, West Lakes Boulevard and Trimmer Parade. The Findon Road bus routes (Routes 100, 101, J7 and 300) are inter-suburban services that do not go through the Adelaide CBD.

The Port Road and West Lakes Boulevard bus routes (Routes 150, 155, 157 and 231) have services to the Adelaide CBD. The Trimmer Parade bus routes (Routes 115, 117 and 118) operate between Port Adelaide or West Lakes Shopping Centre and the Adelaide CBD. High frequency 'Go Zone' corridors to Adelaide CBD exist along Port Road and Trimmer Parade with a combined frequency of one bus every 15 minutes between 7:30 am and 6:30 pm Monday to Friday and every 30 minutes at night, Saturday, Sunday and Public Holidays until approximately 10 pm.

Route 374 is a local 'Hail and Ride' bus service that operates north-south between Findon and the West Lakes Shopping Centre and services the study area via Todville Street.

Overall, the suburb of Woodville West is well serviced with bus and train services that are within a walkable distance.

2.3 Pedestrian and Cycling

For a detailed description and assessment of existing cycling and pedestrian infrastructure refer to section 7 and section 8 of this report respectively.

2.4 Reported Crashes

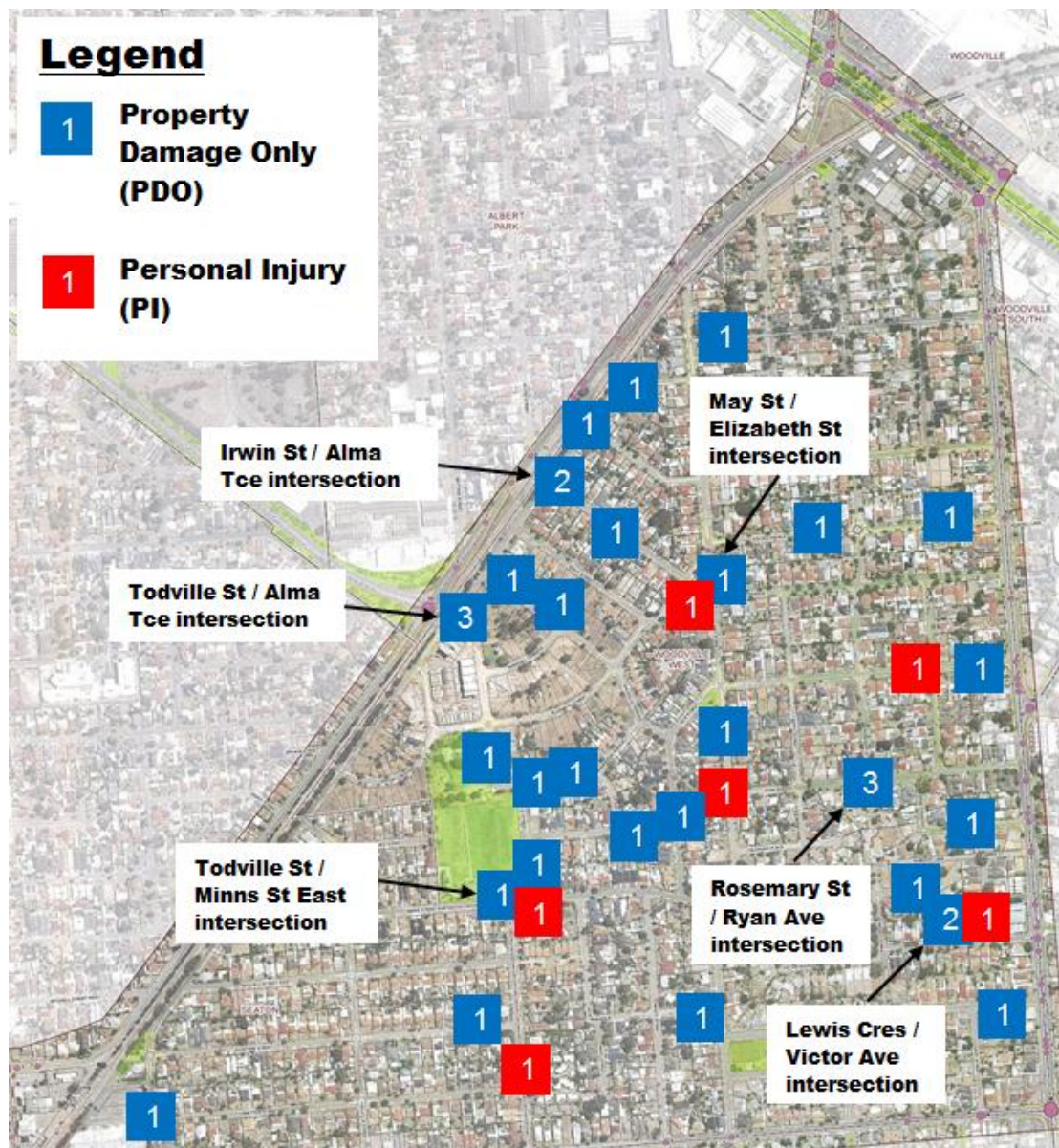
Crash data within the study area was obtained from the Department of Planning, Transport and Infrastructure (DPTI) crash database for the 5-year period from 2007 to 2011. Crashes occurring at intersections with surrounding DPTI roads are not shown and have been excluded from investigation as part of this study.

There were a total of 50 crashes in the study area in this 5 year period, comprising of 44 property damage only (PDO) and 6 personal injury (PI) crashes. Locations of crashes within the study area are shown in Figure 3.

Key locations where multiple crashes have occurred are listed below:

- Alma Terrace / Todville Street intersection: three crashes (all PDO)
- Rosemary Street / Ryan Avenue intersection: three crashes (all PDO)
- Victor Avenue / Lewis Crescent intersection: three crashes (one PI, two PDO)
- May Street / Elizabeth Street intersection: two crashes (one PI, one PDO)
- Irwin Street / Alma Terrace intersection: two crashes (all PDO)
- Todville Street / Minns Street East intersection: two crashes (one PI, two PDO)

Figure 3 Locations of reported crashes from 2007 to 2011



2.5 Parking Arrangements

The re-development of the Queen Elizabeth Hospital commenced in 2006, resulting in some staff parking spilling into surrounding Figure 4.

Parking restrictions in this area included a combination of the following:

- No Parking 8am to 5pm Monday to Friday;
- 3 Hour Parking 8am to 5pm Monday to Friday;

streets, including those in the eastern section of the study area. In response, a number of parking controls were introduced in the area bounded by Findon Road, Sage Crescent, Ryan Avenue, Beryl Street and Pitman Avenue in 2008, as shown in

- 2 Hour Parking 8am to 5pm Monday to Friday;
- A few small sections of streets in this area still have unrestricted parking.

There are a few other locations within the study area where there are 'no stopping' parking restrictions (mainly about intersections / roundabouts etc. to highlight

parking restrictions associated with the

Australian Road Rules).

Figure 4 Existing Parking Restrictions within the Study Area



2.6 Traffic Speeds and Volumes

2.6.1 Surveys

A traffic volume and speed survey was undertaken in early December 2012 using traffic counters at various locations within the study area. Traffic volumes are expressed as an average over seven days (AADT: 'average annual daily traffic' measured in vehicles per day). Traffic speeds are expressed as the 85th percentile speed (which is the speed which 85% of drivers travel at or below). The 85th percentile speed is commonly used by traffic engineers to determine the design speed of a road. A summary of the data showing these two key indicators is provided in Table 1.

The posted speed limit along all roads in the study area is 40km/h. It is clear that speed is an issue at several locations where the 85th percentile speed is well above the posted speed limit. The highest recorded 85th percentile speed occurs along Todville Street (just north of Levistone Street), with high speeds also recorded on Smith Avenue, Ryan Avenue, Pitman Avenue, Gawler Street, Cardiff Street and Alma Terrace.

The highest traffic volumes were recorded on Todville Street, especially in the vicinity of Sweeney Terrace, with relatively high traffic volumes also recorded along Smith Avenue, Ryan Avenue, Lewis Crescent, Claire Street and Alma Terrace.

Traffic volumes and traffic speeds are also presented graphically on Figure 5 and Figure 6 respectively. Areas where volumes and speeds are highest are highlighted.

2.6.2 Woodville West Redevelopment Traffic Generation

The report undertaken in 2010 by Murray F. Young and Associates provided an assessment of the implication of the additional traffic volumes on the adjacent road network. A traffic generation assessment was undertaken for the overall site.

The report identifies that approximately one third of the additional traffic movements are expected to be undertaken via the West Lakes Boulevard / Clark Terrace / realigned Todville Street intersection. The report also identifies that the remaining traffic movements will be distributed to the surrounding road network, along the following roads:

- Todville Street (south of Henderson Avenue) – increase of up to 500 veh/day.
- Alma Terrace (south of Agnes Street) – increase of up to 200 veh/day.
- Nicholls Street (south of Henderson Avenue) increase of up to 200 veh/day.
- Elizabeth Street (north of Emily Street) – increase of up to 200 veh/day.

Some assumptions have been made as to the eventual distribution of this traffic to the greater network:

- For the additional traffic heading along Todville Street, approximately 200 veh/day are directed to Ryan Avenue with the remainder continuing along Todville Street to Trimmer Parade
- The additional traffic heading along Alma Terrace continues until Trimmer Parade.

- For the additional traffic heading along Nicholls Terrace, half is directed to Smith Avenue and half is directed to Lewis Crescent (100 veh/day to each road).
- The additional traffic heading along Elizabeth Street continues along Holden Street and onto Findon Road.

These increases in traffic volumes have been added to the relevant roads in Table 1. Increases to other local roads are not considered.

The expected increase in traffic volumes as a result of the Woodville West Redevelopment has influenced the proposed future road hierarchy as detailed in section 2.7. This, in turn, has influenced recommendations for the locations of future traffic control devices as detailed in section 4.

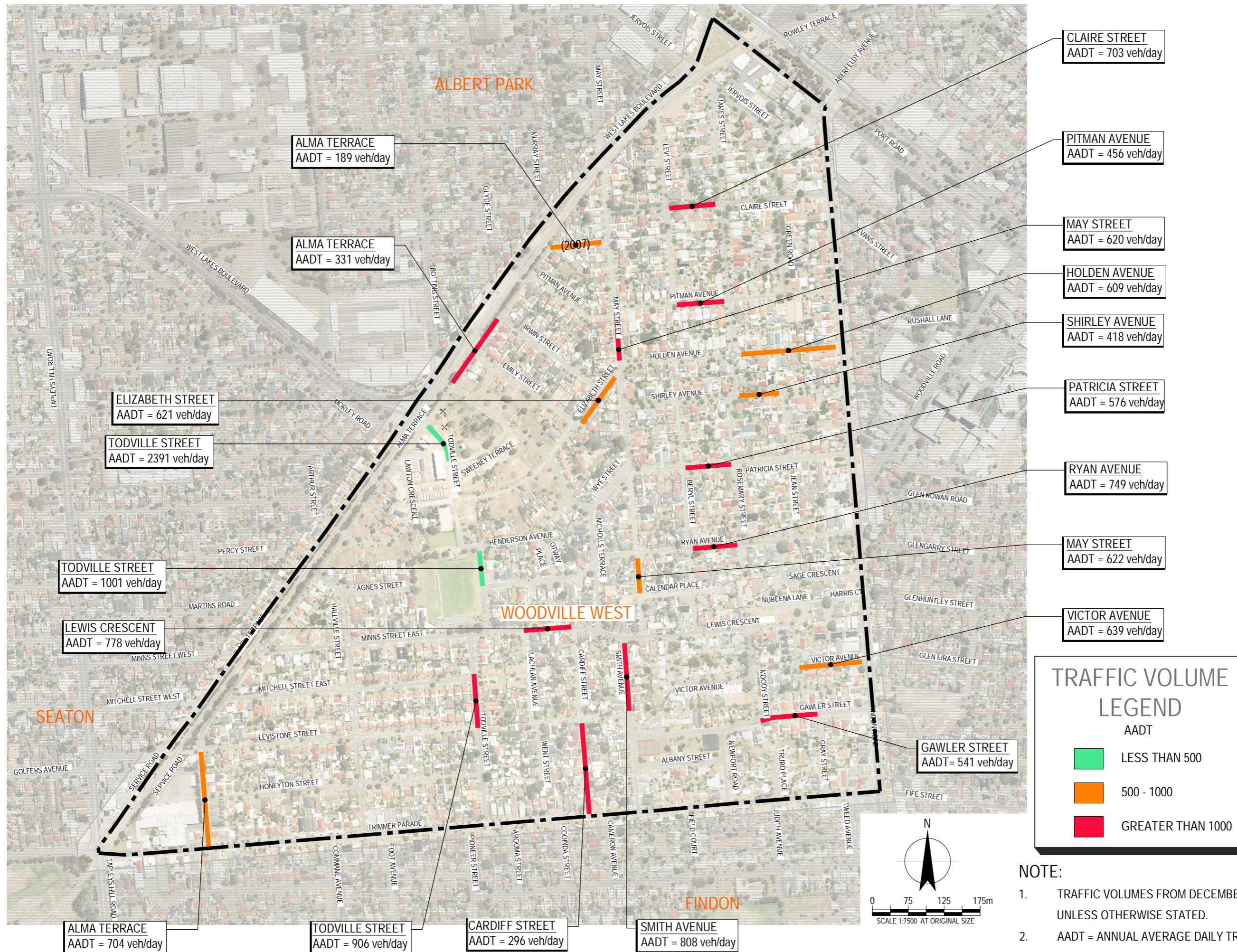


Figure 5

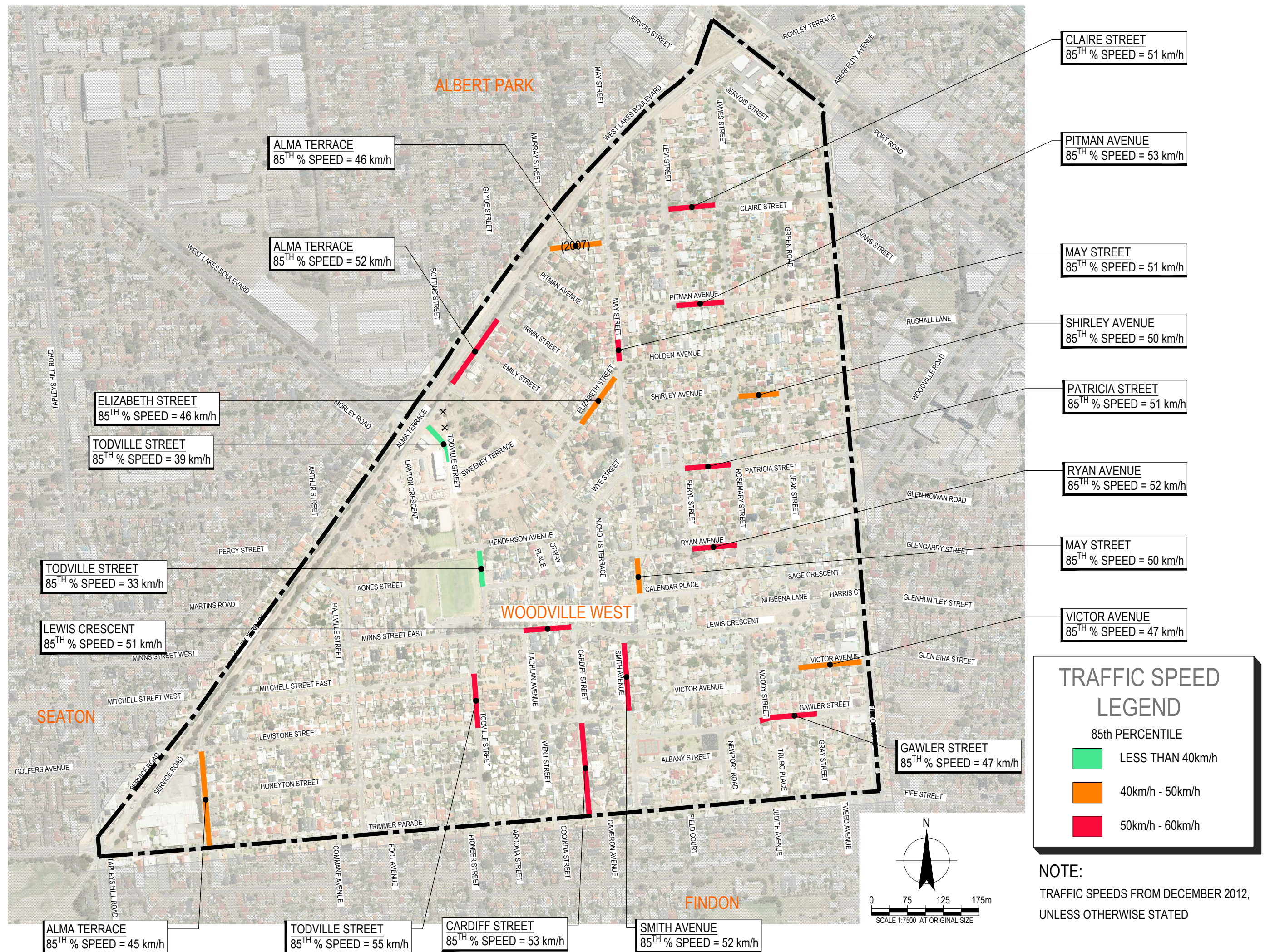


Figure 6

Table 1 Survey Results for Traffic Volumes and Speeds

Location	85 th Percentile Speed (km/hr)	Existing average traffic volumes (veh/day)	Predicted traffic volumes (veh/day) at completion of Woodville West Redevelopment
Alma Terrace – north of Trimmer Parade	45	704	904[†]
Alma Terrace – south of Irwin Street	52	331	531[†]
Alma Terrace – west of May Street	46	189	389[†]
Cardiff Street – south of Lewis Crescent	53	296	n/a
Claire Street – east of Levi Street	51	703	n/a
Elizabeth Street – east of Emily Street	46	621	821[†]
Holden Avenue – east of James Street	n/a	609	809[†]
Gawler Street – east of Moody Street	52	541	n/a
Lewis Crescent – east of Lachlan Avenue	51	778	878[†]
May Street – north of Calendar Place	50	622	n/a

Location	85 th Percentile Speed (km/hr)	Existing average traffic volumes (veh/day)	Predicted traffic volumes (veh/day) at completion of Woodville West Redevelopment
May Street – south of Pitman Avenue	51	620	n/a
Patricia Street – east of Beryl Street	51	576	n/a
Pitman Avenue – east of Levi Street	53	456	n/a
Ryan Avenue – east of Beryl Street	52	749	949[†]
Shirley Avenue – west of Jean Street	50	418	n/a
Smith Avenue – north of Lachlan Avenue	52	808	908[†]
Todville Street – north of Levistone Street	55	906	1206[†]
Todville Street – north of Ryan Avenue	33	1001	1500*
Todville Street – north of Sweeney Terrace	39	2391	3900*
Victor Avenue – west of Findon Road	47	639	n/a

**As provided by the report by Murray F. Young and Associates.*

[†]As determined by the method and assumptions detailed in section 2.6.2.

2.7 Road Hierarchy

2.7.1 Existing Road Hierarchy

The *City of Charles Sturt Traffic Management Strategy (2005)* provided broad definitions for the Road Hierarchy and the resulting Road Hierarchy was allocated across the whole Council area. The hierarchy for Woodville West, defined by the report, is shown in Figure 7.

Figure 7 Existing Road Hierarchy



Source: Adapted from the *City of Charles Sturt Traffic Management Strategy (2005)*

Trimmer Parade, West Lakes Boulevard, Findon Road and Port Road are all classified as arterial roads with Clark Terrace being defined as a distributor road. This was an error as Clark Terrace was (and is currently) defined as an arterial road.

Todville Street (north of Ryan Avenue), Ryan Avenue and Alma Terrace (west of Todville Terrace) are all defined as

collector streets providing a link from local streets to the arterial road network. All other roads within the study area are defined as local streets.

2.7.2 Proposed Road Hierarchy

The official Council definition of a collector street is for those having greater than 1,500 veh/day.

Todville Street provides the main north-south link through the suburb and has relatively high traffic volumes, with an approximate AADT of 900 – 2400 veh/day depending on location. Traffic volumes are expected to increase along Todville Street to an approximate AADT of 1200 – 3900 veh/day depending on location. Hence, traffic volumes are predicted to increase along Todville Street and it is recommended that the entire street is classified as a collector street.

Ryan Avenue provides a key main east-west link through the suburb and has relatively moderate to high traffic volumes compared to surrounding streets with an approximate AADT of 750 veh/day. Traffic volumes are expected to increase to an approximate AADT of 950 veh/day. Although having a predicted traffic volume less than 1,500 veh/day, it is recommended that Ryan Avenue continues to be classified as a collector street as this is higher than surrounding east-west links.

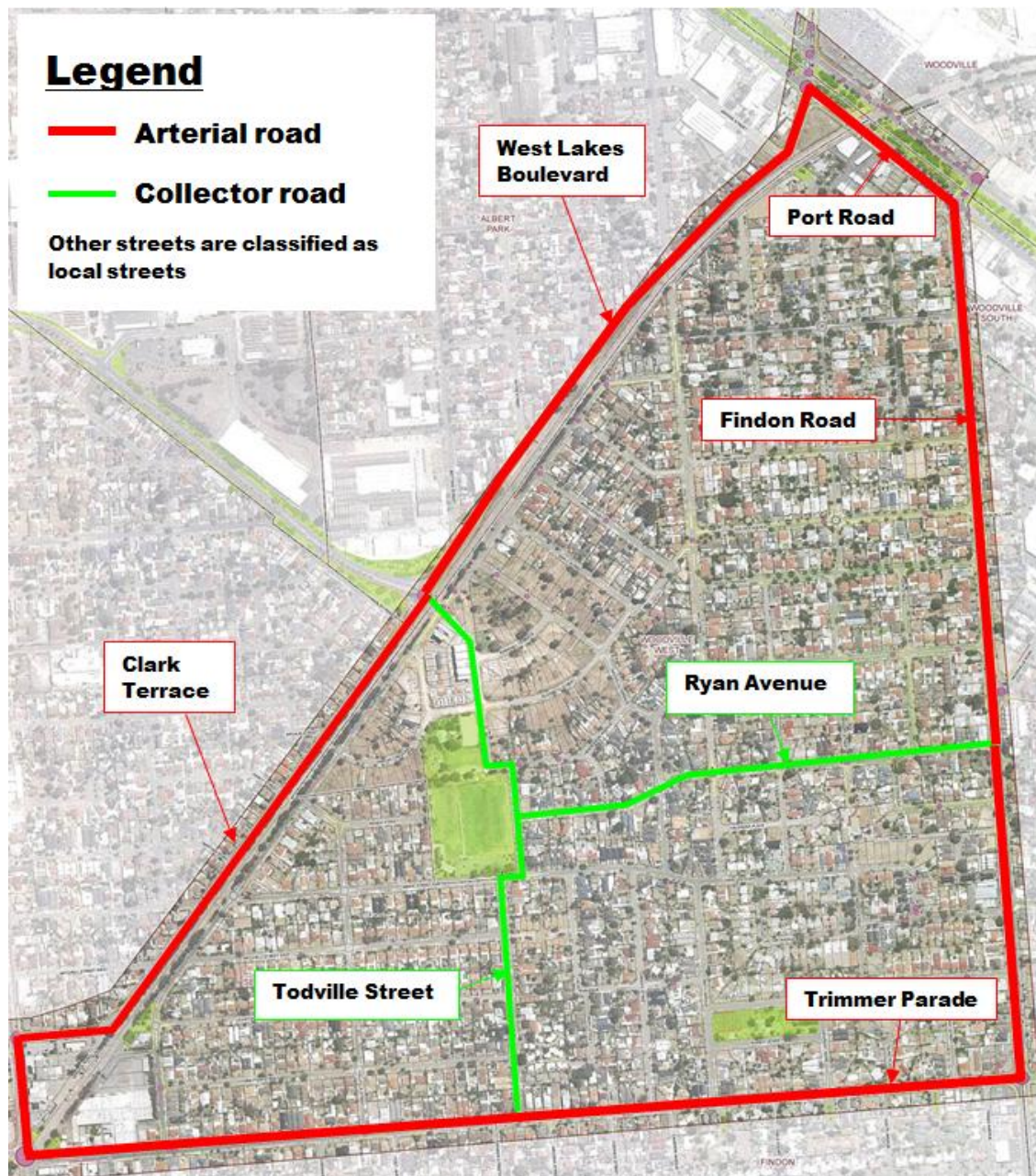
Alma Terrace provides a key link from the Woodville West Redevelopment to Trimmer Parade and has relatively moderate to high traffic volumes compared to surrounding streets with an approximate AADT of 704 veh/day (just north of Trimmer Parade). Traffic volumes are expected to increase to an approximate AADT of 904 veh/day. Hence, Alma Terrace will remain as a local street.

Holden Avenue also provides a key link in an east-west direction across the suburb and has relatively moderate to high traffic volumes compared to surrounding streets with an approximate AADT of 609 veh/day. Traffic volumes are expected to increase to an approximate AADT of 809 veh/day. This increase is anticipated as a result of increasing east-west movements

between Findon Road and Elizabeth Street from demand from the Woodville West Redevelopment. However, Holden Avenue will remain as a local street.

All other streets in the study area are classified as local streets providing access to residential properties. The street hierarchy is shown below in Figure 8.

Figure 8 Proposed Road Hierarchy



3. Proposed Upgrades

3.1 Overview

Based on a review of the previous reports, existing conditions, including street hierarchy, reported crashes, parking arrangements, traffic speeds and volumes, and in consultation with key stakeholders and community representatives, various treatments are proposed. A detailed description of each proposed treatment is provided in the following sections.

These recommendations supersede those recommendations included in the previous reports as a comprehensive review has been undertaken of current motorist behaviour, which has changed slightly since the realignment of Todville Street and Stage 1 of the Woodville West Redevelopment. Future stages of the Woodville West Redevelopment have also been considered as part of these deliberations and recommendations.

The format of the following sections is as follows:

- **Traffic Control Devices** (Section 4);
- **Parking Controls** (Section 5);
- **Public Transport** (Section 6);
- **Bicycle Network and Safety** (Section 7);
- **Pedestrian Network and Safety** (Section 8).

The Figure attached to the Executive Summary shows the Proposed Plan within the local area as part of investigations. Additional recommendations further to that shown in this same Figure have been added as a result of public consultation. These additional recommendations are listed below:

- Request DPTI to investigate the operation of the West Lakes Boulevard signalised intersection to identify if there are potential opportunities for operation efficiencies (ie reducing delays for those existing Todville Road).
- Enforcement of existing parking restrictions on soccer game days around the soccer ground.
- Pavement bars to be installed on the bend of James Street and Jervois Street.
- Pavement bars to be installed at the intersection of Patricia Street and Findon Road.
- The review of the effectiveness of parking restrictions and consideration of prohibiting parking on one side of the street near Findon Road in:
 - Ryan Avenue
 - Shirley Avenue and;
 - Harris Court

(similar to those introduced in adjacent streets to reduce congestion at and on approach to Findon Road).

The review of parking in Findon Road on approaches to these same streets.

- A request for DPTI (in conjunction with Council) to improve the standard of street lighting at and on approach to railway stations and consider improved facilities at those locations where railway corridor pedestrian mazes exit onto arterial roads.

A summary of the response to public consultation is provided in Appendix A.

The proposed traffic control devices are considered to be sufficient to address additional traffic volumes generated by the Woodville West Redevelopment.

However, further monitoring will be required by Council to determine if any additional measures are required.

Additional improvements and actions to be undertaken are also provided in the following sections.

4. Traffic Control Devices

4.1 Roundabouts

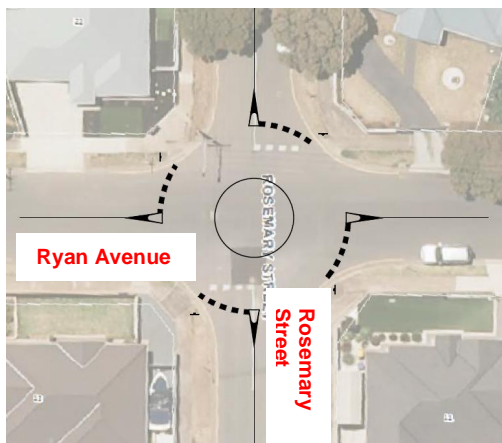
4.1.1 Rosemary Street / Ryan Ave Intersection

The Rosemary Street and Ryan Avenue intersection is a give-way controlled intersection with priority for Ryan Avenue. There have been 3 reported (all PDO) crashes at this location over a five year period. Both roads have uninterrupted straight stretches on approach to the intersection allowing vehicles to reach higher speeds. This is confirmed by traffic speed data on Ryan Avenue, just west of the intersection, where the 85th percentile speed is 53km/h, which is well above the posted speed limit of 40km/h.

Action: *It is recommended that a roundabout is installed at this location as this type of treatment is safer than a give-way controlled intersection. The installation of a roundabout will reduce driver speeds by forcing drivers to slow down in order to negotiate the roundabout.*

A concept plan showing the recommended roundabout at this location is shown in Figure 9.

Figure 9 Proposed Roundabout at Rosemary Street and Ryan Avenue



4.2 Modified T-Intersections

4.2.1 Minns Street East and Lewis Crescent

There have been a total of 2 crashes that have occurred at the Todville Street / Minns Street East intersection. Minns Street East is a straight, uninterrupted stretch of road (except from the roundabout at the intersection with Hallville Street) allowing vehicles to reach higher speeds. Lewis Crescent is a continuation of Minns Street East and is also a straight uninterrupted stretch of road.

Action: *It is recommended that modified T-intersections be introduced at the following locations:*

- Minns Street East / Todville Street
- Lewis Crescent / May Street

Installation of these treatments will result in reduced vehicle speeds as drivers travelling along Minns Street East / Lewis Crescent will be forced to slow down in order to give-way at Todville Street and May Street.

A concept plan showing the recommended modified T-intersection arrangements at these locations are shown in Figure 10 and Figure 11 respectively.

Figure 10 Proposed modified T-intersection at Minns St East / Todville St

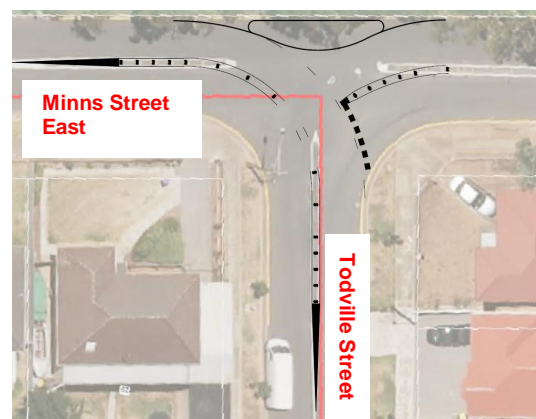
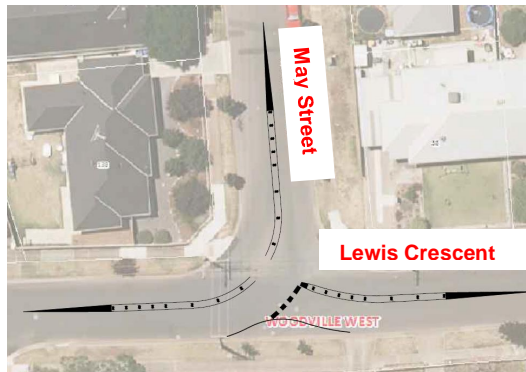


Figure 11 Proposed modified T-intersection at Lewis Crescent and May Street



4.2.2 May Street – Intersections with Alma Terrace and Shirley Avenue

There have been a total of 4 reported crashes along May Street, with 2 occurring at the May Street / Elizabeth intersection. May Street is a straight, uninterrupted stretch of road (except from the roundabout at the intersection with Ryan Avenue) allowing vehicles to reach higher speeds. This is confirmed by traffic speed data on May Street, where the 85th percentile speed is 50km/h (north of Calendar Place) and 51 km/h (south of Pitman Avenue), which is well above the posted speed limit of 40km/h.

Action: *It is recommended that modified T-intersections be introduced at the following locations:*

- May Street / Alma Terrace intersection
- May Street / Shirley Avenue intersection

Installation of these treatments will result in reduced vehicle speeds as motorists travelling along May Street will be forced to slow down in order to give-way at Alma Terrace and Shirley Avenue.

A concept plan showing the recommended modified T-intersection arrangements at these locations are shown in Figure 12 and Figure 13 respectively.

Figure 12 Proposed modified T-intersection at May Street / Alma Terrace

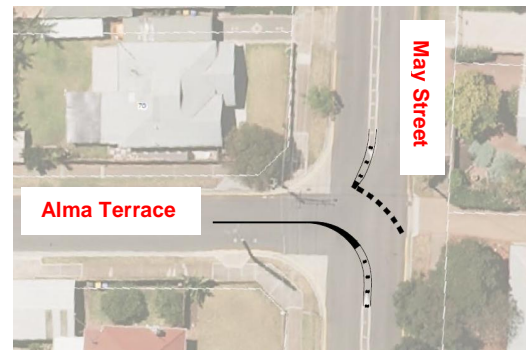
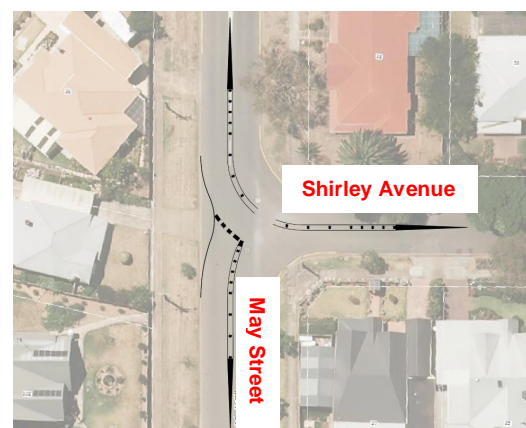


Figure 13 Proposed modified T-intersection at May Street / Shirley Avenue



4.2.3 Todville Street / Levistone Street Intersection

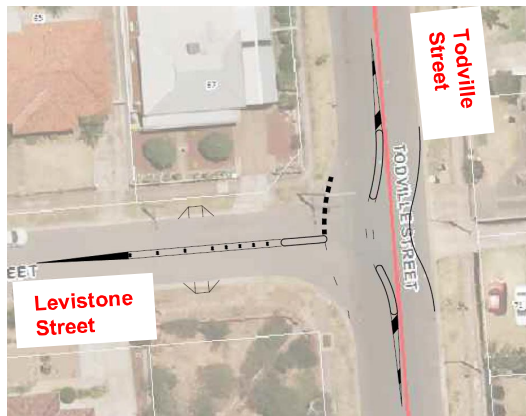
The southern section of Todville Street (from Trimmer Parade to Minns Street East) is a long, uninterrupted stretch of road allowing vehicles to reach higher speeds. This is confirmed by traffic speed data on this section of Todville Street, where the 85th percentile speed is 55km/h, which is well above the posted speed limit of 40km/h.

Action: *It is recommended that a modified T-intersection channelisation 'gull wing' type be introduced at the intersection of Todville Street and Levistone Street (located approximately half way along the southern section of Todville Street).*

This will result in reduced vehicle speeds due to a change in the road alignment which forces drivers to slow down in order to negotiate the treatment.

A concept plan showing the recommended modified T-intersection arrangement at this location is shown in Figure 14.

Figure 14 Proposed modified T channelisation 'gull wing' type at Todville St and Levistone St



4.3 Improved Delineation

A number of treatments are proposed to improve delineation at various locations within the study area. Where pavement bars are proposed, parking will need to be prohibited to the end of the linemarked taper to ensure the proper use of this traffic control.

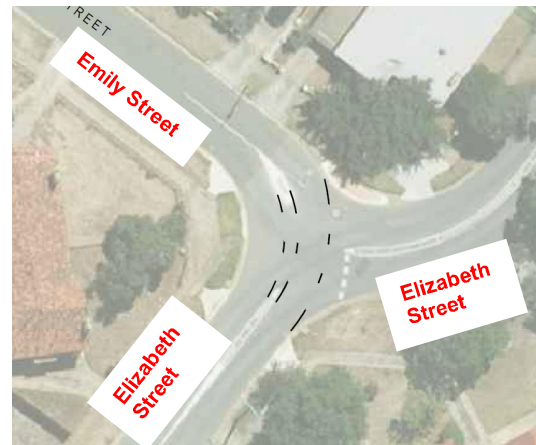
4.3.1 Elizabeth Street / Emily Street Intersection

The intersection of Elizabeth Street and Emily Street is a modified T-intersection with priority given to road users moving to and from the southern section of Elizabeth Street and Emily Street. Under the current arrangement, there is no linemarking to assist drivers negotiating the bend.

Action: *It is recommended that linemarking is installed to assist drivers negotiating the bend at this location.*

A plan showing proposed improvements to line marking at this intersection is shown in Figure 15.

Figure 15 Proposed linemarking at Elizabeth Street and Emily Street



4.3.2 Nicholls Terrace – Intersections with Henderson Avenue and Wye Street

The Nicholls Terrace and Henderson Avenue intersection is a give-way controlled intersection with priority given to traffic on Nicholls Terrace. The Nicholls Terrace and Wye Street intersection is also a give-way controlled intersection with priority given to traffic on Wye Street. At both locations, the give-way holding lines are 'set back' from the continuing road, restricting sight distances. In addition, no lines are present through the intersection on Nicholls Terrace, meaning that delineation through the intersection is poorly defined.

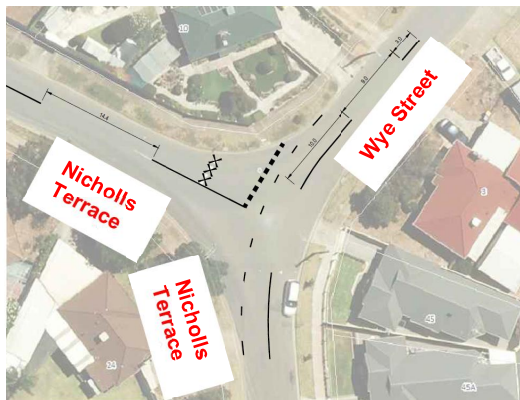
Action: *It is recommended that various linemarking improvements are made at the intersections.*

A concept plan showing proposed improvements to line marking at these intersections is shown in Figure 16 and Figure 17.

Figure 16 Proposed linemarking at Henderson Avenue



Figure 17 Proposed linemarking at Wye Street and Nicholls Terrace



4.3.3 Alma Terrace / Nicholls Terrace Intersection

There has been one reported crash at the Alma Terrace and Nicholls Terrace intersection. The intersection has recently been converted to a bend following Stage 1 works associated with the Woodville West Redevelopment. The new arrangement is an improvement as Alma Terrace is closed reducing the potential for conflicts. It is proposed that line marking and signage is installed to improve delineation at this location.

4.3.4 Lewis Crescent

There is a 90 degree bend on approach to the Lewis Crescent / Victor Avenue intersection. There is existing line marking through the bend to assist motorists in negotiating the bend. There have been 3

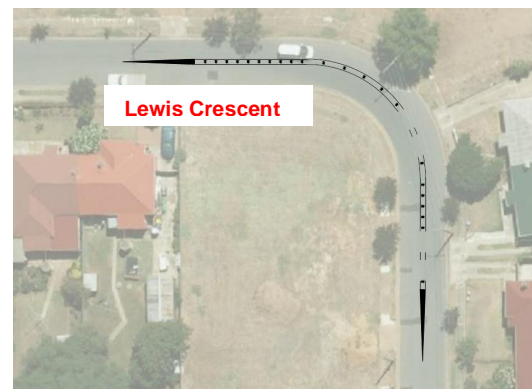
reported crashes in the vicinity of the nearby intersection with Victor Avenue.

Action: It is recommended that pavement bars (commonly referred to as 'small yellow bars' or 'rumble strips' placed in the centre of the road) are installed through the bend and curve warning signs also installed to better define opposing traffic lanes.

A concept plan showing proposed improvements to delineation at this intersection is shown in Figure 18.

It is also proposed that pavement bars are installed on each approach to the Lewis Crescent / Victor intersection (with priority maintained for Victor Avenue) to improve delineation.

Figure 18 Proposed pavement bars on Lewis Crescent



4.3.5 James Street / Jervois Street bend

Following consultation a response was received from a local resident concerned with the speed and driver behaviour around the bend of James Street and Jervois Street. Accordingly, a pavement bar layout similar to that shown on the Lewis Crescent bend (Figure 17) is proposed to improve motorist behaviour at and on approach to the bend and encourage motorists to keep to the correct side of the road.

4.3.6 Patricia Street / Findon Road

Following consultation, a number of concerns were received in relation to motorists cutting the corner of Patricia Street and Findon Road, parking too close to the intersection and speeding at and on approach to the same intersection.

Accordingly, it is also proposed to install a standard pavement bar layout (and associated no stopping restrictions) in Patricia Street at Findon Road.

5. Parking

5.1 General

There are three key locations where parking issues have been identified:

- East Parking Zone (area bounded by Findon Road, Sage Crescent, Ryan Avenue, Beryl Street and Pitman Avenue – refer to 2.5);
- Woodville West Redevelopment;
- Albert Park Railway Station.
- Parking on streets surrounding the soccer grounds

Actions for parking control implementation and monitoring for these areas is provided in the following sections.

5.2 Recommendations

5.2.1 Eastern Parking Zone

As discussed in Section 2.5, a number of parking restrictions were introduced in the area bounded by Findon Road, Sage Crescent, Ryan Avenue, Beryl Street and Pitman Avenue to address parking 'spill over' from the Queen Elizabeth Hospital.

It is recommended that these parking restrictions are retained as they have been reported to be operating satisfactorily by Council's Control Officers and meeting their required objectives.

Following community consultation on the plan a number of requests have been received to review parking further on these streets with 'no parking' areas to be considered further on one side of the road on Ryan Avenue, Harris Court and Shirley Avenue (and parts of Findon Road near each of these streets). The extents of these parking restrictions are to be determined through consultation and further investigation.

Action: *It is recommended that Council continue to enforce compliance through inspections in this area. Also, it is recommended that Council monitor the time limits and review periodically.*

Action: *It is recommended that Council implement 'no parking' restrictions on one side of the road in Ryan Avenue, Shirley Avenue and Harris Court following further investigations and consultation with residents directly affected by such a proposal.*

5.2.2 Woodville West Redevelopment

The Murray F Young report provided an assessment of parking requirements for Stage 1A of the Woodville West Redevelopment. The assessment found that, on the basis of the Development Plan, 13 on-street spaces would be required for the Stage 1A development. The proposed network included the provision of 25 indented parking spaces and hence the on-street parking requirement is being met.

Action: *Parking assessments should continue to be undertaken for all future stages to ensure that parking is being provided in accordance with the City of Charles Sturt Development Plan.*

Action: *Council to monitor demand for parking and determine if any issues arise as the next stages of the development progress.*

5.2.3 Albert Park Railway Station

Existing parking facilities along Alma Terrace consist of approximately 80 metres of informal parallel parking along the western side of the road and 20 metres of formal parallel parking on the eastern side of the road south of the Albert Park Railway Station.

Action: *It is recommended that parking along the western side of the road is formalised by introducing a new footpath, line marking and parking signage to promote a combination of all day parking and drop off / pick up facilities.*

The location of this proposed parking upgrade is shown in the attachment to the Executive Summary.

5.2.4 Parking in streets surrounding the soccer grounds

Following community consultation on the plan it was identified that enforcement of existing parking restrictions are necessary in streets surrounding the soccer ground during soccer games as it has been reported that there are motorists parking in no stopping areas and ignoring parking restrictions.

Action: *It is recommended that Council focus on the compliance of parking restrictions through inspections in this area during soccer game days.*

6. Public Transport

6.1 General

A description of the existing public transport in the study area is provided in section 2.2 with bus stop locations shown in Figure 2.

Actions for improvements to public transport and associated infrastructure are provided in the following sections.

6.2 Recommendations

6.2.1 Todville Street

As mentioned previously in section 2.2, Route 374 is a local 'Hail and Ride' bus service that operates north-south between Findon and the West Lakes Shopping Centre and services the study area via Todville Street.

The service provides an indirect link to West Lakes Shopping Centre, also serving the suburb of Royal Park to the north.

Action: *It is recommended that any future studies investigating upgrades to bus services between the Woodville West Redevelopment and West Lakes Shopping Centre should be undertaken along West Lakes Boulevard, rather than Todville Street (increased bus services along Todville Street will increase noise pollution and reduce amenity for local residents).*

6.2.2 Alma Terrace

Refer to section 8.2.2 for description of recommended footpath upgrades along Alma Terrace.

6.2.3 West Lakes Boulevard

The Woodville West Redevelopment is likely to increase patronage to key destinations including the City and West Lakes Shopping Centre. There are multiple options for accessing these

destinations by bus along West Lakes Boulevard (Routes 157, 155, J7) and by train via the Grange Railway. The frequency of these combined services provides buses every 15 mins in the morning and afternoon peaks and every 30 mins during the inter-peak period.

Action: *It is recommended that patronage surveys are undertaken during subsequent stages of the Redevelopment to determine whether the existing bus services are adequately meeting demand.*

6.2.4 Surrounding Arterial Roads

A common issue for all the surrounding arterial roads (West Lakes Boulevard, Findon Road, Clark Terrace and Trimmer Parade) is that existing bus stops are generally not DDA compliant and generally do not have shelters (only benches).

Action: *Council to lobby DPTI regarding upgrades to ensure DDA compliance and installation of bus shelters.*

7. Cycling Network and Safety

7.1 Background

7.1.1 Existing Bicycle Network

Bikedirect maps show several 'secondary roads' which form part of the Bikedirect network within the study area. These roads are classified as having generally light to medium motor vehicle traffic and as being convenient for cyclists, as many run parallel to and connect with main roads.

These roads are Hallville Street, Alma Terrace, Smith Avenue, May Street, Nicholls and Patricia Street and are shown in Figure 19.

Figure 19 Existing Bikedirect Network in Woodville West



There is an existing off road cycling path running along the southern side of the rail corridor from Port Road to May Street (which ends at May Street). Path users

who wish to continue along the rail corridor must detour to via May Street to connect back onto the shared path on Alma Terrace south of Nicholls Terrace, which runs parallel along the railway line except for a short section near May Street.

7.1.2 Grange Greenway

The Grange Greenway follows the alignment of the Grange Railway line. The objective of the Grange Greenway is to provide a continuous route from the Grange Railway Station to the Outer Harbor Greenway. The current phase of the project will create a continuous 3km route from the Seaton Park Railway Station to the Outer Harbor Greenway at Woodville by connecting existing BikeDirect routes on local streets and segments of shared use path. These improvements will connect the Woodville West Redevelopment with the Outer Harbor Greenway.

Recently, as part of Stage 1 of the Woodville West Redevelopment, a shared use path was constructed connecting the two ends of the existing Bikedirect route following Alma Terrace.

Construction is planned for Bicycle / Pedestrian Actuated Crossing at the Port Road Crossing in 2013. These works will provide a crossing of Port Road by upgrading an existing uncontrolled pedestrian/cyclist crossing to a signalised crossing. The crossing is located adjacent to the railway on the westbound carriageway of Port Road near Rowley Terrace. This facility will link existing facilities on the north and south sides as well as the median of Port Road.

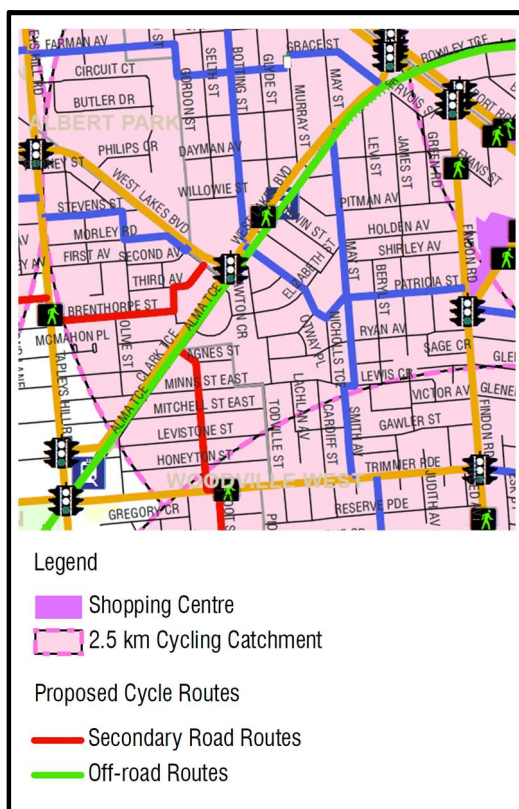
7.1.3 Active Living: Plan to Cycle (2008)

The *Active Living: Plan to Cycle 2008* (City of Charles Sturt) is the current Local Area Strategic Bike Plan in effect for the City of Charles Sturt. One of the main objectives of the plan is to support and

encourage a safe, accessible City with a well-defined network of street, paths and trails, which reflect the needs of residents. The report recommended some upgrades within Woodville West as listed below (and as shown in Figure 20):

- Inclusion of Hallville Street as a *Bikedirect* secondary road (since implemented).
- Off-road facility running parallel to the Grange Railway (off-road path not implemented).

Figure 20 Local Area Bike Plan - Proposed Bicycle Routes in Woodville West (2008)



7.2 Recommendations

Several recommendations for improvements to cyclist infrastructure are proposed in the following sections.

7.2.1 Grange Greenway / Alma Terrace

There is scope to upgrade the existing off road path (Port Road to May Street running parallel to the railway line) from an off-road path to a shared use path.

It would be desirable to construct a section of shared path along the southern side of the rail corridor from May Street to Alma Terrace to provide a continuous link. However, a preliminary assessment has found that the existing rail corridor width is insufficient to allow the installation of a shared path along this section of the rail line due to clearance requirements necessary for the installation of a path within a rail corridor.

Action: It is recommended that existing off road path (Port Road to May Street running parallel to the railway line) in converted to a shared use path. This shall be undertaken with appropriate linemarking and signage.

Action: It is recommended that the existing May Street to Alma Terrace link (as shown previously in Figure 19) is maintained, and formalised through the introduction of shared roadway bicycle markings, called 'sharrows' and shown in Figure 21. It is recommended that sharrows are introduced along the entire length of Alma Terrace (where there is no shared path), thus forming a continuous link adjacent to the rail corridor from Port Road to Trimmer Parade (at the intersection with Alma Terrace). This is recommended as an alternative to the off-road path proposed previously by the Local Area Bike Plan.

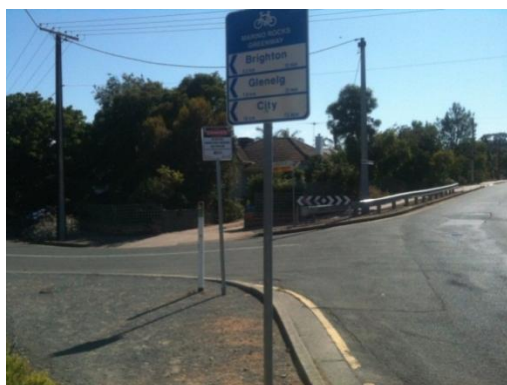
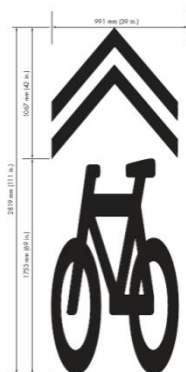
Action: Way-finding signage for cyclists should also be introduced to direct cyclists between the existing shared path, Alma Terrace and the Woodville West Redevelopment. Way-finding signage could also be installed at other locations along the route.

An example of the type of way-finding signage that could be used is shown in Figure 21.

Locations for the signs will be determined following a more detailed investigation on needs and requirements but it is anticipated that signs could be installed at locations where cyclists would be required to make decision points (i.e. at intersections or where direction is unclear).

A section of the route runs through the new Woodville West Redevelopment (from Lawton Crescent to Nicholls Terrace) and consists of a shared path which was recently.

Figure 21 Shared roadway bicycle marking 'sharrows' (top) and example of way-finding signage in the City of Holdfast Bay (bottom)



7.2.2 Albert Park Railway Station

A lack of end of trip facilities at the Albert Park Railway Station may discourage people from otherwise using public transport.

Action: *It is recommended that bicycle enclosures are installed at the Albert Park Railway Station to provide 'all day' bike parking for train commuters*

This enclosure could be installed either within the existing commuter railway carpark on West Lakes Boulevard or just to the south of the train station accessed off Alma Terrace (a new concrete platform and approval to install on railway land would be required for the latter location). Some examples of where these have been previously used at train stations are shown in Figure 22.

Figure 22 Examples of bicycle enclosures for 'all day' storage



8. Pedestrian Network and Safety

8.1 Existing Network

The key features of the existing footpath network in Woodville West are provided below:

- Generally constructed in concrete;
- Usually footpaths are located on both sides of the road, but there are a few local streets where a footpath is only provided on one side of the street;
- Footpath widths vary depending on location. Some locations have very narrow sections of footpath (less than 1.2m in width).
- Currently, approximately only 30% of kerb ramps in the study area are DDA compliant.

8.2 Recommendations

Several recommendations for improvements to pedestrian infrastructure are proposed in the following sections.

8.2.1 Footpaths and Kerb Ramps

The City of Charles Sturt (CCS) Path Policy guides the provision of safe routes for people to walk, cycle, use mobility aids and 'non-motorised' small wheeled recreational devices (i.e. scooters and skateboards) that connect local neighbourhoods, major land uses and to other forms of transport. The CCS Path Guideline provides guidance about path requirements, the standards for design and construction and priority applying to path installation or renewal so that paths are provided in accordance with the Path Policy.

A large percentage (approximately 70%) of the existing footpath kerb ramps in the study area are not DDA compliant. In addition, many of the paths are below the minimum width requirement of 1350mm, as specified in the CCS Path Guidelines, and should be upgraded.

Action: *It is recommended that Council address the issues identified above, and undertake a comprehensive review of existing infrastructure, by incorporating into the existing CCS maintenance / asset renewal program. Footpaths should be upgraded to at least the minimum widths (i.e. 1.35m) and kerb ramps upgraded to ensure DDA compliance. It is also recommended that the footpath adjacent to the Kindergarten in Elizabeth Street / Lawson Crescent be widened to encompass the entire verge area to provide for drop off / pick up.*

8.2.2 Alma Terrace

Given the proximity to the Woodville West Redevelopment, increased usage of Alma Terrace is expected and should be encouraged for local residents to access the Albert Park Railway Station.

Existing pedestrian facilities along Alma Terrace consists of a narrow concrete footpath running along the eastern side of the road. There is a narrow verge, with no provision for pedestrians, running along the western side of the road between the railway corridor fence line and the kerb. There are pedestrian crossings over the railway line near the Alma Terrace / Pitman Avenue and Alma Terrace / Emily Street intersections where pedestrians gain access to the railway platform on the western side of the tracks (and also to cross the tracks to West Lakes Boulevard).

Action: *It is recommended that a footpath is constructed along the western side of Alma Terrace to enhance pedestrian facilities in the vicinity of the railway station, where pedestrian traffic is likely to increase as a result of Woodville West Redevelopment.*

The proposed footpath would run from Nicholls Terrace to the bend north of Pitman Avenue (connecting into the existing footpath). Locations for rest areas including bench seat locations and other street furniture will be further considered in the detailed design of this path.

This may require some minor narrowing of Alma Terrace in some sections whilst utilising as much of the western verge as possible. It is noted that a section of the existing road corridor on the western side is owned by DPTI. The construction of a footpath at this location is subject to further investigation and negotiations with DPTI.

The Woodville West Redevelopment is located approximately 400m from Albert Park Train Station and bus stop 28 on West Lakes Boulevard. Visitors to the Woodville West Redevelopment, arriving by public transport, may be unaware of where the site is located.

Way-finding signs should be installed for pedestrians at the above mentioned train station and bus stops and in the vicinity of the Woodville West Redevelopment. Examples of way-finding signage are shown in Figure 24. Council is currently investigating implementation of way-finding signage across the Council area at large.

Action: *It is recommended that Council investigate appropriate locations for way finding signage to provide linkage between the Woodville West Redevelopment and public transport including Albert Park Railway Station.*

Figure 24 Examples of Pedestrian Way-finding signage



Way finding signage along North Terrace Adelaide, SA



Way-finding signage along pedestrian path in the Botanic Gardens Adelaide, SA

8.2.3 West Lakes Boulevard

One of the key considerations is to ensure that there are sufficient linkages for both pedestrians and cyclists between Woodville West and West Lakes Boulevard, across the Grange Railway Line.

Between Port Road and Trimmer Parade, there are a total of 8 crossing points for pedestrians and cyclists (an average of approximately 1 crossing every 250m). The number and locations of crossing points are considered to be adequate. Retention of existing crossing points will ensure permeability between the Woodville West Redevelopment and West Lakes Boulevard where there bus stops are located.

Of particular importance will be the pedestrian movements to between the Woodville West Redevelopment and the Albert Park Railway Station / West Lakes Boulevard Bus Stop 28, as shown in Figure 25.

Action: *It is recommended that Council advocate for the retention of all existing crossing points.*

Action: *The following is recommended to cater for future increases in demand (also see Figure 25):*

- *Upgrade kerb ramps at the pedestrian actuated crossing to DDA compliance;*
- *Provide new kerb ramps at West Lakes Boulevard (directly west of the northern railway crossing point) to provide for pedestrian crossing to the west side of the road to access bus stop 28. Consider installing a pedestrian refuge / kerb extension at this location;*
- *Formalise pedestrian facilities around the bus stop on the east side of the carriageway to ensure DDA compliance.*

Council is to liaise with DPTI regarding the upgrades listed above on DPTI maintained roads. Council to program the upgrade of footpaths at existing bus stops to ensure DDA compliance.

8.2.4 Surrounding Arterial Roads

A common issue for all the surrounding arterial roads (West Lakes Boulevard, Findon Road, Clark Terrace and Trimmer Parade) is that there are few safe crossing points, particularly in the vicinity of bus stops (and the pedestrian rail mazes on Clark Terrace and West Lakes Boulevard).

Action: *It is recommended that Council advocate for the installation of safe crossing points in the vicinity of bus stops and pedestrian rail mazes along all surrounding arterial roads. Further investigations are required to determine suitable treatments (i.e. pedestrian refuges, median cut outs, kerb ramps etc).*

8.2.5 Public street lighting

The street lighting should be reviewed along pedestrian routes, particularly at and on pedestrian footpaths to the two railway stations in the area. This would need to be a shared responsibility with Council and DPTI as some locations are on or adjacent arterial roads and the railway stations. This was of particular concern raised by several residents during the consultation process.

The car park provided for rail commuters at the Albert Park Railway Station on West Lakes Boulevard has very poor lighting levels and accordingly the State Government should be lobbied to address this issue.

Figure 25 Pedestrian Links between Woodville West to nearby Public Transport



9. Implementation

9.1 Overview

A summary of the proposed traffic control treatments for Woodville West, as discussed in previous sections of the report, is provided in Table 2.

9.2 Indicative Costs

An indicative cost for each of the recommended treatments is also provided in Table 2. The indicative costs are high-order only and are based on standard industry rates. Cost estimates should be prepared following detailed design when any constraints can be identified and an appropriate assessment of project specific requirements can be made.

9.3 Timeline

A priority ranking is applied to each of the proposed treatments and is also provided in Table 2.

Proposed projects are rated as being either:

- High – implementation in the short term (1 to 3 years) and are considered cost effective solutions.
- Medium – implementation in medium term (3 to 6 years).

Prioritisation of treatments for implementation has been determined based on several factors including crash history, areas with high potential for crashes, cost, road hierarchy and, in response to residents' immediate concerns.

Other prioritised projects are those that can easily be implemented, at minimum cost, to address safety concerns.

Implementation of the recommended projects is subject to budget provision and formal Council consideration.

Table 2 Summary of Proposed Treatments with Indicative (High Order) Costing and Priority for Implementation

Location	Issue	Proposed Treatment	Indicative Cost	Priority
Ryan Avenue / Rosemary Street Intersection	Relatively high speeds (85 th percentile – 53km/h) and history of crashes (3 crashes at the intersection). <i>Reference section 4.1.1.</i>	Roundabout	\$100,000	High
Alma Terrace & May Street	Opportunity for cyclist treatments. <i>Reference section 7.2.1.</i>	Bicycle 'Sharrows' line marking along entire length of Alma Terrace and May Street (from railway line to Alma Terrace).	\$20,000	High
Lewis Crescent	Poor delineation on the bend approx. 50m from Victor Avenue and at the intersection with Victor Avenue. <i>Reference section 4.3.4.</i>	Install new pavement bars through the bend and at the intersection with Victor Avenue.	\$10,000	High
Alma Terrace / Nicholls Intersection	Poor delineation at the intersection. <i>Reference section 4.3.3.</i>	Install line marking and signage to improve delineation.	\$10,000	High
Elizabeth Street / Emily Street Intersection	Poor delineation at the intersection. <i>Reference Section 4.3.1.</i>	Install continuity line marking.	\$1,000	High
Nicholls Terrace / Henderson Avenue	Poor delineation at the intersection. <i>Reference Section 4.3.2.</i>	Install continuity, centre line and holding bar line marking.	\$2,000	High
Nicholls Terrace / Wye Street	Poor delineation at the intersection. <i>Reference Section 4.3.2.</i>	Install continuity, centre line and holding bar line marking.	\$2,000	High
Lewis Crescent / May Street Intersection	Long straight stretch of road, relatively high speeds (85 th percentile - 51km/h). <i>Reference section 4.2.1.</i>	Modified T-intersection	\$20,000	Medium

Location	Issue	Proposed Treatment	Indicative Cost	Priority
Minns Street East / Todville Street Intersection	Long straight stretch of road, relatively high speeds (85 th percentile - 51km/h), and history of crashes (2 crashes at Todville Street / Minns Street East intersection). <i>Reference section 4.2.1.</i>	Modified T-intersection	\$20,000	Medium
May Street / Alma Terrace Intersection	Long, straight stretch of road, relatively high speeds (85th percentile speed – 51km/hr) and history of crashes (4 along the length of May Street). <i>Reference section 4.2.2.</i>	Modified T-intersection	\$20,000	Medium
May Street / Shirley Avenue Intersection	Long, straight stretch of road, relatively high speeds (85th percentile speed – 51km/h) and history of crashes (4 along the length of May Street). <i>Reference section 4.2.2.</i>	Modified T-intersection	\$20,000	Medium
Todville Street / Levistone Street	Long, straight stretch of road, relatively high speeds (85 th percentile – 55km/h), high traffic volumes (906 veh/day). <i>Reference section 4.2.3</i>	Modified T-intersection Channelised type (with priority maintain for Todville Street).	\$30,000	Medium
Alma Terrace	Opportunities for improved footpath and parking facilities. <i>Reference section 8.2.2.</i>	Install new footpath on the west side of Alma Terrace from just north of Pitman Avenue to Nicholls Terrace. Formalisation of car parking in the vicinity of Emily Street.	\$150,000	Medium
West Lakes Boulevard	Inadequate linkage between crossing of railway and bus stop 28. <i>Reference section 6.2.3 .</i>	Various enhancements to pedestrian facilities – refer to section 8.2.3.	\$15,000	Medium
Alma Terrace	Cycle route to be completed. <i>Reference section 7.2.1.</i>	Sharrow on pavement and way-finding signage delineating greenways route.	\$5,000	Medium

10. Conclusion

This WWTPP will support the City of Charles Sturt's broader transport strategies allowing Council to plan, budget and deliver local area traffic management improvements in the Woodville West study area, supporting the aspirations of the local community for healthy and active lifestyles.

Based on a review of previous reports, existing conditions, including street hierarchy, reported crashes, parking arrangements, traffic speeds and volumes, anticipated impacts of the Woodville West Redevelopment and consultation with key stakeholders, various treatments are proposed. These recommendations include new traffic control devices, improvements to pedestrian, cycling and public transport infrastructure and linkages and monitoring of parking controls.

An indicative cost and priority for implementation is assigned to each of the recommended treatments.

The community has now been consulted on the draft plan and a summary of these comments and concerns and suggestions on whether to include as part of the WWTPP report are provided in Appendix A. This report and suggested recommendations has been amended to reflect the results of the community consultation where relevant.

Subject to Council endorsement the recommendations contained herein should be progressed from conceptual design to detailed design utilising an engineering survey where appropriate. As per the recommendations contained within the report, Council should write to the State Government requesting consideration of those issues under DPTI jurisdiction.

Appendix A - Results of public consultation

Consultation was undertaken on the Draft Woodville West Transport and Parking Management Plan with a display at the Civic Centre and information provided on the City Charles Sturt website from 17 May to 7 June 2013. A public information session was held on 28 May 2013 at the White City Woodville Soccer Club where the local community were invited to hear more about the plan and ask any questions for clarification.

A summary of the responses received are provided in Table 1. The specific issues raised and response to those issues is provided in Table 2.

Table 3 – Summary of responses

Feedback response	Number of responses (%)
Unsure	19 (42%)
Disagree/strongly disagree	8 (18%)
Agree/strongly agree	18 (40%)
Total	45

Table 3 shows that 18% of those who responded either disagree or strongly disagree to the proposed traffic management plan. Table 4 looks into more detail on some of the issues raised and how these could be addressed

Table 4 - List of issues raised during consultation and proposed response to issues

Issue	GHD response	Further amendments to TPP required?
The only comment or complaint I have is when there is a big game of soccer at the Woodville West ground cars park on both sides of the road and restricts traffic along Todville between the two bends. If nothing is done there will be a bad accident one day. Also if we have visitors there is no parking available	Monitor illegal parking on streets surrounding the soccer oval during events at soccer game days	Yes –enforce parking restrictions on soccer game days
Having read the plan online, I feel in general that it is well thought out. I think roundabouts are a good way to regulate traffic flow. I already appreciate the improved layout of the Alma Terrace train crossing when I go to work in the morning. However, I don't think most people deliberately speed. Most cars appear to travel in 3rd gear. The nature of modern cars is that they tend to creep so easily up to 50K in 3rd gear. I prefer friendlier ways to regulate speed traffic fines and parking inspectors.	Comment only. Noted	No
I believe the end of James Street which becomes Jervois Street Woodville West needs to be looked at regard some way of stopping drivers from flying around this corner sometimes on the wrong side of road. Hoons are continually doing wheelies, also lots of drivers use this as a short cut to get to Port Road. Council need to do something to slow down traffic.	Treat bend with pavement bars and no stopping parking restrictions to encourage motorists to keep to the correct side of the road	Yes – pavement bars to be placed on bend

Issue	GHD response	Further amendments to TPP required?
1. Parking on both sides near Findon Road. 2. heavy traffic. 3. Dangerous intersection. 4. Speeding. (at intersection of Findon Road and Patricia Street)	This issue was also raised at the public consultation meeting. Suggested pavement bars installed in Patricia Street and Findon Road.	Yes –pavement bars be installed in Patricia Street at Findon Road
It's good to hear there is a transport and parking plan. I know of many concerned residents in the area, worried about increased traffic, particularly on Holden Avenue. Any improvements are more than welcome	Comment only. Noted	No
I have not viewed the plan but the key actions seem fine. My concern, and I am sure that of others on Ryan Avenue is that it is becoming a speedway and a short cut from West Lakes Boulevard to the Port Road. The 40 kph signs are a joke, hardly anyone obeys them and it is not policed. Also with the urban infill in our area more and more cars are using it. At peak hours you now have to drive through the backstreets to get on to Findon Road from Ryan Avenue it is almost impossible. You need roundabouts at both Rosemary Street and Beryl Street junctions with Ryan Avenue to slow the traffic. There have been more accidents at the Beryl Street intersection than the Rosemary Street intersection.	Roundabout proposed at Rosemary Street and Ryan Avenue as part of the proposed plan. An additional roundabout at Beryl would mean 3 roundabouts within 300 metres which is difficult to justify (traditionally traffic control devices should be installed approximately every 200 metres). There has been no recorded crashes at the intersection of Beryl Street and Ryan Avenue over the last 5 years (2007-2011)	No
A roundabout at the intersection of Beryl Street and Ryan Avenue would be a preferable position than Rosemary Street as traffic is cutting through Smith Ave into Lewis and into Beryl Street	As above	No
We are extremely concerned by the parking arrangements in our street and surrounding streets in our neighbourhood. Why is there restricted parking in the streets but cars can be parked all day long on both sides of the street just in from the corners? When cars are entering and exiting the street at the same time, there is not enough room for both therefore one car has to come to a complete stop (on a road which does not have a stop sign or give way sign) or even worse, reverse when there could be cars coming up behind them. This is especially a problem on the corners of Findon Road. This is also occurring on corners where traffic could be coming from all four directions and as you are coming to the corner you cannot see what is ahead. Because there are no parking restrictions on the corners, people from the hospital park there all day. Our daughter goes to Woodville Primary and there are a lot of children who walk to and from school and we feel that this is a dangerous situation which could be easily	Parking restrictions do exist on the following streets: Pitman Avenue Holden Avenue Shirley Avenue Patricia Street Ryan Avenue Sage Crescent To the intersection with Findon Road. No stopping anytime restrictions are in place for the first 10 metres on either side of the road at each of these intersections with timed parking restrictions thereafter. Pitman Avenue, Sage	Yes – install 'no-parking' restrictions along one kerbside (side TBD) in Ryan Avenue and Shirley Avenue

Issue	GHD response	Further amendments to TPP required?
<p>rectified. It would make more sense to have parking on one side only so that there is ample room for 2 cars to pass.</p>	<p>Crescent and Holden Avenue do have 'no parking' restrictions on one side of the road. Consideration should also be given to introducing similar parking restrictions in Ryan Avenue and Shirley Avenue.</p>	
<p>In regard to Figure 12 (sect 4.2 modified t-sections) we would propose this be moved to the corner of Holden Avenue and Elizabeth Street Woodville West. This is a common 'rat-run' to avoid traffic lights at Port Road and West Lakes Boulevard and Findon Road.</p> <p>We own both properties on both corners and our experience in living on this site for 25 years and are speed statistics also point that this alternative may have a greater benefit to slowing traffic in the area. I also recall 2 accidents in this area.</p>	<p>The modified T's are proposed equally spaced along May Street and are considered in the correct location</p>	<p>No</p>
<p>I was unable to attend the information session on Tuesday 28 May 2013 and therefore I have no information on the Woodville West Transport and Parking Plan. I have lived at 82 May Street since February 1950 and I have witnessed this area change and develop. However, May Street has become a speedway in spite of numerous 40K signs in the area. A traffic calming device is required at the corner of May Street and Pitman Avenue in addition to the existing one on the corner of May Street and Ryan Avenue. Tree pruning is required in May Street.</p>	<p>The modified T's are proposed equally spaced along May Street to address speed along the street</p>	<p>No</p>
<p>Good idea for Ryan Avenue, but please build up the roundabout in the new built up area. *Roundabouts* in May Street as well. Roundabout on Nicholls dangerous corner.</p>	<p>Further traffic control will be considered as part of further redevelopment of the housing development</p>	<p>No</p>
<p>As an almost daily user of the pedestrian (train) crossing on Alma Terrace between Minns Street East and Mitchell Street East, I find the access/exit point at Clark Terrace to be extremely dangerous. A footpath/pedestrian rest/fenced zone would make it much safer. Elimination of some tree/shrub would be also aid in the ability of vision without having to step onto roadway to see for oncoming traffic. As my grand daughter and daughter often also use this crossing point but are not within the zone area. I would be confident that they would also have similar view (NB my grand-daughter is still in a pram.)</p>	<p>Request DPTI to provide improved facilities on Clark Terrace from rail pedestrian maze</p>	<p>Yes</p>

Issue	GHD response	Further amendments to TPP required?
At Seaton Park railway station - better lighting at the western end of Levistone Street at the path that leads out of the pedestrian crossing of the train line. It's dark and too scary for people (my daughter and wife) to walk along. Please address this as it is of great concern.	Street lighting outside the scope but Council should work with DPTI to improve street lighting where required.	Yes - Council to work with DPTI to improve street lighting around the railway station, station car parks and nearby pedestrian routes
I do not agree with the premise that the study area must be maintained as a 40km/h zone, and subsequently, I do not agree with measures proposed to simply impede the flow of traffic along natural routes, and May St. in particular. I am also concerned that the changes are based on data gathered before the significant changes to streets through The Square development, which has since had its own impact on traffic flow through the area. As a resident, I have never feared for the safety of myself or my children, due to the normal traffic flow, including prior to the 40km/h implementation.	Noted – traffic data was collected in December 2012 after the Square redevelopment	No
<p>Firstly the name is not correct as part of Seaton is in this area. The development plan was not provided to residents at the recent meeting 28 May 2013 as I was told to put back a copy I picked up to read. The proposal is to prevent accidents and provide parking for people who do not live in the area.</p> <p>I would like to see a plan that cares about it's existing residents by not interfering with our streets to make them messier for us to drive around. I do not understand why money is being wasted on a plan. Statistics were provided on the number of crashes but no interpretation of these, ie 50 crashes in 5 years: is this relatively a small number or large number? What would MAC interpretation of these stats be?</p>	Noted. Will acknowledge the Seaton suburb in the introduction section of the report. However, given that the section of Seaton is very small it is difficult to justify the entire report name to include Seaton.	Yes – amend introduction to include discussion to advise that part of the study area is in Seaton
Comprehensive but there again it was only a draft and a lot of the proposals will not see the light of day due to costs i.e. one roundabout costing 100K and the infighting between council members who will vote against each other out of spite!!	Noted. Council will consider at budget considerations	No
Parking on both sides near Findon road - heavy traffic - dangerous intersection - speeding	Difficult to interpret exact details. Parking restrictions are recommended on some roads near Findon Road. See above.	Yes – analysis of parking restrictions on Findon Road adjacent side streets to be assessed for sight distance requirements

Issue	GHD response	Further amendments to TPP required?
<p>I have not viewed the plan but the key actions seem fine. My concern and I am sure that others on Ryan Avenue is becoming a speedway and a short cut from West Lakes Boulevard to the Port road. The 40km/h signs are a joke hardly anyone obeys them and it is not policed. Also with the urban infill in our area more and more cars are using it. At peak hours you now have to drive through the backstreets to get on to Findon Road, from Ryan Avenue it is almost impossible. You need roundabouts at both rosemary street and beryl street junctions with Ryan Avenue to slow the traffic. There have been more accidents at the beryl street intersection than the rosemary Street Intersection. You also permit cars to park far too close to corners coming off Findon Road on to any of the side streets you are forced in to the oncoming traffic as soon as you turn the corner and often your view is blocked by parked cars. The problem with Findon road and many of the streets in our area are they are parking stations, not roads. It is like a slalom drive dodging and weaving, pulling in for oncoming traffic. Try turning left of the intersection of Findon road/ Ryan Avenue, at peak hours. You cannot see the oncoming traffic to your right for the wall of parked cars.</p>	<p>Roundabout proposed at Rosemary Street and Ryan Avenue will address speed concerns along Ryan Avenue. Comments regarding parking too close to Findon Road addressed above</p>	<p>No</p>
<p>A roundabout at the intersection of Beryl Street and Ryan Avenue would be a preferable position that rosemary Street as traffic is cutting through Smith Avenue into Lewis and into Beryl.</p>	<p>Spacing and crash history at Ryan Avenue and Rosemary Street suggest that roundabout at this location more appropriate</p>	<p>No</p>
<p>I have an issue with parked cars on Findon Road near intersection of Harris Court There are yellow lines marked but its very difficult trying to turn right or left when four wheel drives and cars are parked close to the lines.</p>	<p>Parking should be restricted on one side of Harris Court similar to other proposal above</p>	<p>Yes</p>
<p>If you put a roundabout at Ryan Ave & rosemary St you should also put a roundabout on Patricia St & May St intersection. Patricia St is used as a short cut from West Lakes to Findon Road. The speed is 40 but people do 60-80kph.</p> <p>If you put a roundabout at Ryan Ave & Rosemary St they will use Patricia St instead - more traffic. Also parking at Patricia St & Findon Rd is a hazard many times cars parked both side, many near misses this has been changed.</p>	<p>As above</p>	<p>No</p>

Issue	GHD response	Further amendments to TPP required?
Many thanks for your information regarding parking I live at the address as above, and we have a parking problem. Patricia St is too narrow for parking between Findon Road and Jean St mothers drop their children to child centre of Findon road by using Patricia St for drop of, and this is a problem , cars on both sides of the road and you can't get through this should be looked at before there is an accident. Parking from Jean Street to Findon Road should be no parking for safety. I am not the only one concerned about this.	As above	No
On the 17th Jan 2011 received a letter from the Council telling me that a roundabout would be installed at Pitman Ave/ James St crossing, the roads at this crossing have already been marked out and ETSA have done their part. Why has this roundabout not been started after approx 2 and a half years and why is it that Ryan Ave/Rosemary St crossing are getting priority over Pitman/ James St? (we still have idiots racing down pitman Ave doing dangerous speeds of approx 70-80k). Once the Holden Ave/James St roundabout was completed all the labour and machinery was taken away. i would have thought the cost saving and smart move would have been to complete the roundabout at Pitman Ave/ James Street while all the labour and machinery was only one street away. When will Pitman Ave/ James St roundabout be completed??? Not another 2 and a half years I hope!!	No roundabout proposed at Pitman and James due to low traffic volumes and low crash history. However, it should be noted that a roundabout as proposed as part original Dorrestyn Plan. With roundabouts already installed at Holden Avenue and Claire Street; an additional roundabout is not considered necessary	No
My main concern is we have more traffic cutting thru from the boulevard and they are not doing the correct 40k speed in the street especially Lewis crescent. Also train crossing some people are not waiting and crossing the track to turn right onto Clark Terrace from Todville Street. Turning arrow only allows 2 cars to cross and motorists are getting anxious especially when we get caught with train. accident just waiting to happen I have seen 3 close shaves. Soccer around needs to have no parking on match days one side of Todville street.	Pass onto DPTI Metro for review of signals operation independent of this study	Yes –Discuss traffic signal operation and phasing at the Clark Terrace/Todville intersection with DPTI to avoid encouraging increased traffic through Woodville West.'
A roundabout was scheduled to be put on the corner of Pitman Avenue and James Street work commenced about 2 years ago however never went through. Cars fly down the street at high speeds all day and night, someone will be injured soon.	As above	No

Issue	GHD response	Further amendments to TPP required?
It looks like all the changes will be either side of us so really doesn't affect us ,but from my experience from over nearly 30 years living in Woodville west it's mainly the people not the infrastructure that is the problem ie the new round about on Todville Street has low edges and people just speed through it and do donuts around it which I realise some times you have to do to give access to emergency vehicles .As you have already identified speeding is a factor which gets back to the people again but hey what do you do put a roundabout on every corner	Noted	No
On my corner there is a roundabout (Ryan Ave/May St) but it does not always slow the traffic. The vehicles crash through it , continually smashing through the signs when you build the new roundabout at Rosemary St/Ryan Ave please built it up and beautify with plants and shrubs.	Noted. This should be addressed as part of Councils maintenance programme	No
Installation of roundabouts of Ryan Avenue and Rosemary street is ok, but many locals feel a roundabout at Ryan Ave and Beryl Street would be more beneficial as we have a lot of transition traffic at both ends of Beryl Street , usual speeding and using it as a short cut.	As above	No
It all looks good to me, I have utmost faith in our council to do what is best for our community. St Clair could be an exception I always understood it was left to the people of Woodville (not the government or Council)	Noted	No
My concern is more in relation to Trimmer Parade whereby there are no sufficient landings in the middle of the road to cross safely. In particular near bus stops.	Noted. There is a recommendation in the plan to upgrade all existing bus stops to DDA compliance on surrounding arterial roads which includes upgrading facilities for pedestrians to cross arterial roads safely	No
The Intersection of May and Lewis Street needs to be looked at as traffic coming along Lewis Street do not travel at required speed and as you are trying to pull out of May Street Turning right and then left into Smith Street are often caught out due to the slightly blind corner coming from Lewis and speed many travel at.	A Modified T intersection is proposed at Lewis Street And May Street to address this issue	No
More roundabouts required. All roads that run between May street and Findon Road have become straights for speeding cars.	Traffic volumes, speeds and crashes do not justify roundabouts at every intersection	No

Issue	GHD response	Further amendments to TPP required?
The suggestions seem to be well thought out and have no great impact. However I believe the parking restrictions on Findon Road need to be extended past Sage Crescent to Gawler Street. It is very difficult to see past the cars currently parked there while trying to make a right hand turn onto Findon Road from the side street.	See above	No
Draft plan long over due considering increase traffic in the area. Roundabout proposal along Ryan Ave and Rosemary Street not a good idea as Ryan Avenue is not a straight road-it deviates which drivers might not realise and have enough distance to slow down around the roundabout. 40 km/hr speed limit is still an issue with drivers speeding above this might be useful to go 50 km/hr -west lakes boulevard towards port road is a bottle neck (near Caststone)-real issue -it would be useful to consider 2 full lanes in both direction plus allowance for bike lane and parking bays.	See above	No
Need to address car parking on the Wye St and Nichols Tce junction. Cars/trucks/trailers block the view of southbound traffic from Wye St and there have been several near misses with northbound traffic on Nichols Tce.	Intersection realignment proposed at Wye and Nicholls intersection which should address this issue	No
I am concerned that the recommendations do not deal with one of the major concerns raised by residents via the WWRG and CRG - that is the increased prominence of the thoroughfare from West Lakes Boulevard, through Todville St, Elizabeth St, Holden Av to Findon Road. By installing modified junctions at Lewis, and Shirley and Alma, it further reinforces that the best way to dart through the suburb is to stick to Elizabeth, Cross May and out through Holden or Pitman, two of the most narrow streets in the area. I believe the treatments may make the issues worse on these narrow streets.	It is considered that the volumes on these streets are low and that traffic controls on May Street are strategically placed to encourage a consistent approach speed to the proposed traffic control devices. Further traffic controls would have significant impact on local residents.	No
I am not exactly sure what is meant by this Draft Plan. What Parking is been discussed? What Traffic Management is needed?	N/A	No
You also permit cars to park far too close to corners. Coming off Findon Road on to any of the side streets you are forced in to the coming traffic as soon as you turn the corner and often your view is blocked by parked cars. The problem with Findon Road and many of the streets in our area are parking stations, not roads. It is like a slalom drive, dodging and weaving, pulling in for on coming traffic. Try turning left at the intersection of Findon Road coming off Ryan Avenue at peak hours. You cannot see the oncoming traffic to your right for the wall of parked cars.	See above	No

Issue	GHD response	Further amendments to TPP required?
<p>Not enough done on major issues - parking. The important issues such as parking cars on corners of streets is a hazard and allowing cars to park on the corner of main roads and side streets is absolutely stupid.</p> <p>There is going to be a terrible accident on the corner of Patricia street/Findon Road with cars parked on both sides.</p>	See above	No
<p>The area is already a 40 km limit zone. Existing crashes and speeding issues by drivers are a police matter. I would rather council spend the money on permanent speed cameras for the problematic streets identified in this plan, ie May Tce, Todville St, Alma Tce and Ryan Ave. Or use speed humps instead of the proposed expensive roundabouts, T-sections, line markings,etc.</p> <p>Existing pavement bars, roundabouts and the like are not currently maintained and I will be posting a letter with photos of these. It would be a waste of taxpayers money to put new devices in when the current are not maintained adequately. I am puzzled to the name of "Grange Greenway" in section 8 in regards to footpaths and bicycle access as the screen planting is not being maintained with residents currently exposed to train and Clark Tce traffic exhaust pollutions and noise pollutions.</p> <p>I was informed by council that screening planting only happens when there is a complaint, an example is plants to be considered in the 2013/2014 budget only immediately out front of my home, no other plants. I am STRONGLY OPPOSED to any form of encouragement of bicycles along Alma Tce as the homes at the southern end are built on angle to the roads already creating multiple blindspots for cars reversing out of driveways. It would be negligent of council to encourage cycle activity putting cyclists and drivers at risk of accidents.....I would encourage you listen to anecdotal evidence PLEASE as residents live the experiences, myself having near misses with cyclists in reversing from my driveway. My driveway cannot be rectified as there is a stobie pole on one side and a road drain on the other. The report states Alma Tce may require some narrowing to accommodate footpaths. I would accept a pathway only IF screen planting was rectified for the entire rail corridor prior to any pathways installed. I would not have a pathway if narrowing means screen plants cannot be successfully planted and maintained. Poorly maintained control devices need to be fixed first ! I support the residents affected directly by the roundabout at Ryan Ave/Rosemary St as this removes parking for the existing residents.</p>	<p>Speed cameras cannot be installed by Councils. Speed cameras are the responsibility of SAPOL.</p> <p>Landscaping and maintenance of landscaping is a separate issue that Council needs to address. Alma Terrace is considered a low trafficked street and should be promoting as a safer route for cycling in lieu of Clark Terrace and West Lakes Boulevard.</p>	No

Where identified, the report has been amended to reflect those issues that need to be included as part of the Woodville West Transport and Parking Plan recommendations in the final draft of the report.

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