

## 17. Transport

### 17.1 Overview

The existing transport network operates at capacity in the study area. The predicted rise in traffic volumes on the current network will significantly increase delays and congestion, particularly along South Road and Grand Junction Road.

The construction of the South Road Superway will provide an important link for the South Australian freight network.

In general, stakeholder consultation comments to date have been supportive of the project, recognising the benefits of improved travel times and improved local and regional access. There are, however, concerns about changes to access provisions and their effect on business operations and residents.

### 17.2 Legislative and policy requirements

Legislation relevant to the project in relation to transport is summarised in **Table 17.1**.

**Table 17.1. Relevant legislation**

Legislation	Description	Relevance to project
<i>Highways Act 1926</i> (SA)	The Highways Act requires that the design and operation of roads must be undertaken using the relevant standards and codes, and to the Australian Road Rules.	The design and assessment of the project must comply with all relevant standards and codes, and to the Australian Road Rules.
<i>Road Traffic Act 1961</i> (SA)	The Road Traffic Act requires that the design and operation of roads must be undertaken using the relevant standards and codes, and to the Australian Road Rules.	The design and assessment of the project must comply with all relevant standards and codes, and to the Australian Road Rules.

DTEI requires that the design and assessment of traffic impacts be undertaken to the following Australian Standards and Guidelines:

- Code of Technical Requirements for the Legal Use of Traffic Control Devices, Transport SA
- Australian Standard 1742, Manual of Uniform Traffic Control Devices
- Urban Road Design, A Guide to the Geometric Design of Major Urban Roads, Austroads
- Guide to Traffic Engineering Practice – Part 2 Roadway Capacity, Part 5 Intersections at Grade, and Part 7 – Traffic Signals, Austroads Traffic Engineering Practice Series.
- Road Planning and Design Manual, Main Roads Queensland

### 17.3 Existing transport network

#### 17.3.1 Arterial road network

**Figure 17.1** shows the transport network in the study area. It is characterised by three major north–south roads, South Road, Hanson Road and Churchill Road. South Road and Grand Junction Road (east of South Road) form part of the AusLink National Network.

South Road currently forms part of the Sydney–Adelaide corridor, the Melbourne–Adelaide corridor and Adelaide–Perth corridor. South Road links into Salisbury Highway and Port Wakefield Road to provide one of the main connections to the Mid-North and Riverland areas of South Australia, as well as to northern Victoria and New South Wales via the Sturt Highway. Grand Junction Road links into Hampstead Road, Main North Road and Port Wakefield Road and connects to the Princes Highway.

### 17.3.2 Local road network

The local road network in the study area generally forms a grid pattern that links the arterial roads with the communities of Mansfield Park, Regency Park, Angle Park, Woodville Gardens, Ferryden Park, Wingfield and Kilburn. The main distributor and collector roads for residents in the study area include Days Road and Ridley Grove. Precinct 5 is being redeveloped as part of the Westwood project and there will be changes to the existing collector road network (see Section 8.1).

The freight roads in the study area include Cormack Road, Francis Road, South Terrace, Johanssen Road, Rosberg Road, Hanson Road, Kateena Road, Wirriga Street, Taminga Street, Aruma Street, Birralee Road and Naweena Road.

### 17.3.3 Existing traffic volumes

Existing (2008 and 2009) traffic data in the form of 'annual average daily traffic' for the arterial and major local roads in the study area are presented in **Figure 17.1**.

Existing traffic volumes on South Road range from just over 29,100 vehicles per day (v/d) immediately south of the Port River Expressway–Salisbury Highway interchange to 49,000 v/d immediately south of Grand Junction Road. Daily volumes on Grand Junction Road vary between 42,700 v/d immediately west of Churchill Road and 27,000 v/d 500 metres west of South Road. Existing traffic volumes along Regency Road varies from 22,300 v/d west of South Road to 29,600 v/d east of South Road.

Maximum existing daily traffic volumes on the other arterial roads intersecting with South Road are:

▪ Port River Expressway	14,600 v/d
▪ Salisbury Highway	48,200 v/d
▪ Days Road	16,500 v/d
▪ Cormack Road	14,300 v/d

The 11-hour turning and classification counts indicate the following two-way peak hour volumes:

- at the intersection of South Road and Grand Junction Road the maximum peak hour two-way volumes are 4,530 vehicles per hour (v/h) on South Road and 3,600 v/h on Grand Junction Road
- at the intersection of Hanson Road and Grand Junction Road the maximum peak hour two-way volumes are 2,700 v/h on Grand Junction Road and 1,890 v/h on Hanson Road
- along South Road the peak hour volume ranges from 4,530 v/h immediately south of Grand Junction Road to 2,890 v/h immediately north of Grand Junction Road.



Existing Traffic Volumes Daily

Figure 17.1

The commercial vehicle content varies considerably on the main corridors, a proportion of heavy commercial vehicles (semi-trailers, B-doubles and Road Trains) in the commercial vehicle traffic volume (Table 17.2).

**Table 17.2. Commercial vehicle content**

	<b>AADT (daily volume)</b>	<b>% of commercial vehicles</b>	<b>% of heavy commercial vehicles</b>
South Road (south of Grand Junction Road)	37,600	16% (6010 v/d)	35% (2105 v/d)
Grand Junction Road (east of South Road)	25,500	16% (4,080 v/d)	31% (1265 v/d)
Cormack Road (east of South Road)	11,200	27% (3,030 v/d)	34% (1030 v/d)
Hanson Road (north of Cormack Road)	15,000	19% (2,850 v/d)	32% (540 v/d)

The commercial vehicle proportions show that a significant volume of heavy vehicles use the arterial road network in the study area.

Along Grand Junction Road the following connecting roads have average daily traffic volumes of:

- Wingfield Road                      3,300 v/d
- Richard Street                      450 v/d

Along South Road the following connecting roads have average daily traffic volumes of:

- Wing Street                      1,200 v/d
- South Terrace                      5,500 v/d
- Senna Road                      2,100 v/d
- Francis Street                      4,000 v/d
- Rosberg Road                      2,900 v/d
- Wirriga Street                      4,700 v/d
- Kateena Street                      5,100 v/d
- Cardigan Street                      2,700 v/d
- Taminga Street                      2,900 v/d
- Aruma Street                      1,900 v/d
- Camira Street                      2,500 v/d
- Tikalara Street                      2,700 v/d

**17.3.4 Existing level of service**

The *Austrroads Guide to Traffic Engineering Practice (1988) – Roadway Capacity* defines level of service (LOS) as ‘a qualitative measure describing operational conditions in a traffic stream, and their perception by motorists and/or passengers’. The guide describes six levels of service including LOS A (free flowing conditions), LOS B (unrestricted stable conditions), LOS C (restricted stable conditions), LOS D (restricted conditions approaching capacity), LOS E (close to capacity – unstable traffic flow), and LOS F (worst conditions— capacity exceeded, forced flow conditions).

Traffic analysis, using the existing traffic data, has been used to determine the existing LOS for various intersections:

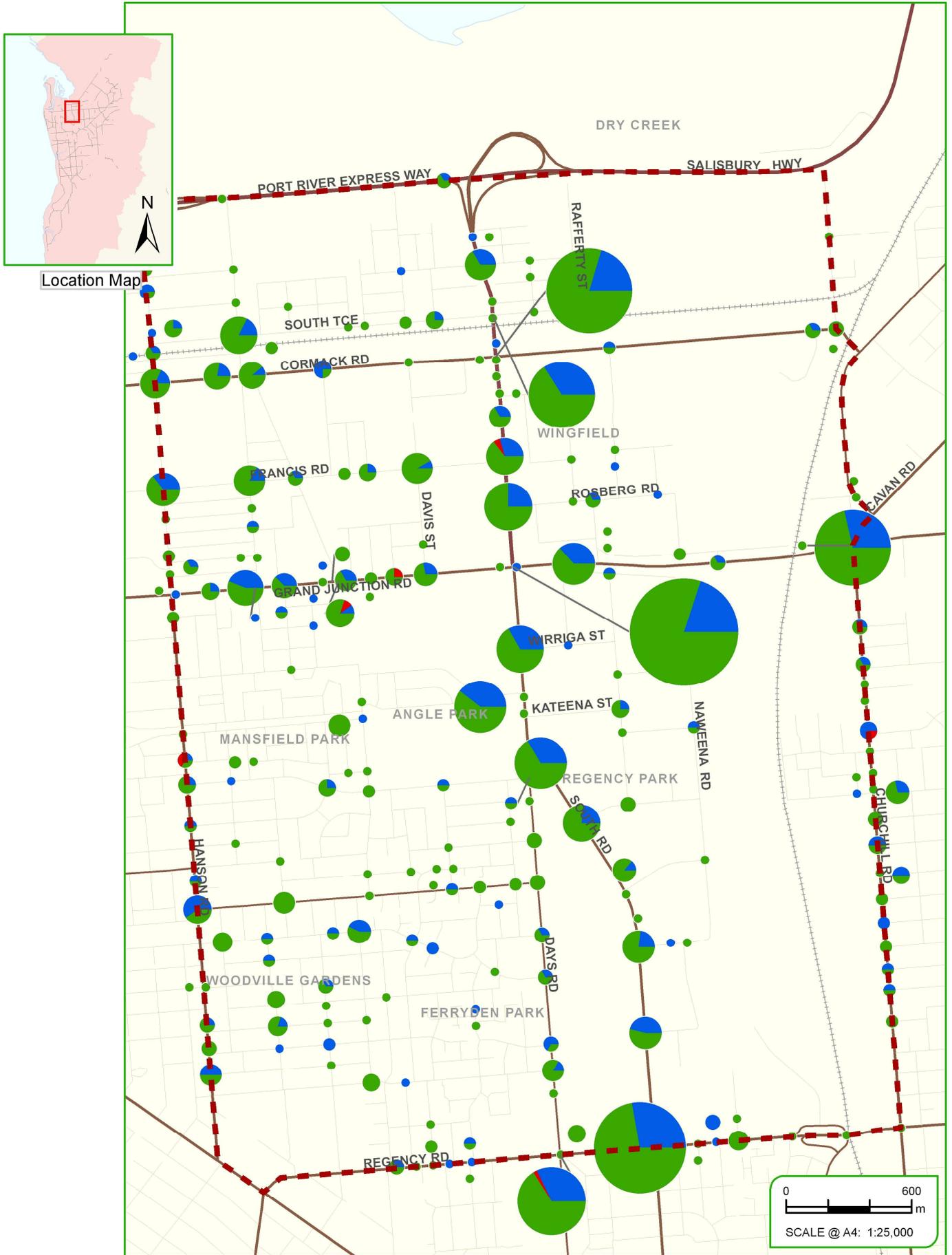
- South Road and Cormack Road – LOS C
- South Road and Grand Junction Road – LOS E
- South Road and Kateena Street – LOS B
- South Road and Days Road – LOS B
- South Road and Regency Road – LOS E
- Grand Junction Road and Hanson Road – LOS E
- Grand Junction Road, Wingfield Road and Richard Street – LOS B
- Grand Junction Road, Churchill Road and Cavan Road – LOS E
- Hanson Road and Cormack Road – LOS C
- Hanson Road and PREXY – LOS C
- Regency Road and Days Road – LOS E
- Regency Road and Churchill Road – LOS E.

Travel speeds have been used to determine the LOS during peak times on:

- South Road – LOS D to E (50 kph approximately)
- Grand Junction Road – LOS D to E (35 kph approximately).

### **17.3.5 Road crashes**

Road crashes between 2003 and 2007 are presented in **Figure 17.2** for the arterial and major local roads in the study area. In total there have been 637 crashes on South Road between the Port River Expressway interchange and Regency Road (Regency Road intersection included) in that time. Of these, 465 have been property damage, 170 casualties and 2 fatalities (**Table 17.3**).



**Road Crash Patterns**

**Figure 17.2**

Table 17.3. Summary of road crashes

Location	Property damages	Casualties	Fatalities	Total
Wing St to Uncoded* Rd	9	0	0	9
Salisbury Hwy x Wing St	6	4	0	10
South Tce to Wing St	3	7	0	10
Salisbury Hwy x South Tce	26	17	0	43
South Tce To Cormack Rd	9	2	0	11
Salisbury Hwy X Cormack Rd	44	12	0	56
Cormack Rd to Senna Rd	4	3	0	7
Salisbury Hwy X Senna Rd	1	0	0	1
Senna Rd to Francis Rd	3	1	0	4
South Road X Francis Rd	9	4	1	14
Francis to Rosberg Rd	1	4	0	5
Salisbury Hwy X Rosberg Rd	10	6	0	16
Grand Junction Rd to Rosberg Rd	3	0	0	3
Grand Junction Rd X South Rd	110	27	0	137
Grand Junction to Uncoded* Rd	2	0	0	2
Grand Junction Rd to Wurriga St	20	3	0	23
South Rd X Wurriga St	21	9	0	30
Wurriga St to Uncoded* Rd	1	0	0	1
South Rd X Angle Rd	19	10	0	29
Kateena St to Uncoded* Rd	1	0	0	1
South Rd X Kateena St	15	1	0	16
Days Rd to Kateena St	3	1	0	4
Days Rd X South Rd	21	8	0	29
Days Rd to Taminga St	6	2	0	8
South Rd X Taminga St	12	4	0	16
Taminga St to Uncoded* Rd	0	1	0	1
Aruma St to Taminga St	4	1	0	5
South Rd X Aruma St	4	1	0	5
Aruma St to Uncoded* Rd	2	0	0	2
Aruma St to Camira St	2	1	0	3
South Rd X Camira St	8	3	0	11
Camira St to Tikalara St	2	2	1	5
Camira St to Uncoded* Rd	2	0	0	2
South Rd X Tikalara St	7	6	0	13
Tikalara St to Uncoded* Rd	1	0	0	1
Tikalara St to Regency Rd	5	4	0	9
South Rd X Regency Rd	68	26	0	94
Total	465	170	2	637

Source: Spatial Information Unit, DTEI

\* Road not identified in the Spatial Information Unit database, DTEI

The crashes between 2003 and 2007 can be summarised as:

- most crashes on South Road were rear end crashes followed by side swipe, right angle, right turn and hit fixed object
- of the 170, casualties, 48.5% were the result of rear end crashes
- 71% of the casualty rear end crashes involved the lowest level of injury type (doctor)

- casualty crashes resulted in 75 being treated by their doctor, 77 being treated in hospital, 18 being admitted to hospital, and there were two fatalities
- The majority of the crashes (523) occurred at intersections
- 113 crashes occurring midblock
- 191 crashes occurred at unsignalised intersections
- 332 crashes occurred at signalised intersections.

A number of the rear end crashes at unsignalised intersections are likely the result of long queues from the major signalised intersections along South Road (Cormack Road, Grand Junction Road and Regency Road). For instance, at South Terrace there were 33 rear end crashes which are likely to have been caused as a result of the railway crossing and the traffic signals.

For Grand Junction Road, there were 235 crashes in the study area, of which 72 resulted in casualties and three involved fatalities (**Table 17.4**). The majority of crash types were rear end crashes followed by right angle and right turn type crashes.

**Table 17.4. Breakdown of crash types**

Location	Property damages	Casualties	Fatal	TOTAL
Grand Junction Rd x Hanson Rd	76	30	0	106
Hanson Rd to Gladstone St	7	6	0	13
Gladstone St to Wingfield Rd	7	1	0	8
Grand Junction Rd x Wingfield Rd	9	7	0	16
Grand Junction Rd x Frederick St	0	1	0	1
Production Rd to Frederick St	0	1	0	1
Frederick St to William St	3	3	1	7
Grand Junction Rd x William St	3	0	0	3
Grand Junction Rd x Plymouth Rd	8	1	1	10
Grand Junction Rd x Hill Rd	2	2	0	4
Hill Rd to Penley Ave	2	0	0	2
Grand Junction Rd X Penley Ave	2	0	0	2
Grand Junction Rd X Graham St	2	0	1	3
Graham St to Davis St	2	1	0	3
Grand Junction Rd X Davis St	4	2	0	6
Davis St to South Road	7	6	0	13
South Rd to Dunstan Rd	14	3	0	17
Grand Junction Rd x Dunstan Rd	12	7	0	19
Dunstan St to Churchill Rd	0	1	0	1
Total	160	72	3	235

Source: Spatial Information Unit, DTEI

### 17.3.6 Freight routes

The majority of the land use, immediately adjacent to South Road, in the study area is industrial, with a heavy focus on freight. South Road (north of Camira Street), Hanson Road (north of Cormack Road), Cormack Road and Grand Junction Road are strategically important freight routes which are approved A-double routes. **Figure 17.3** displays a comprehensive graphic of the approved roads and routes, showing that most of the roads in the area of land described in Section 8.1 as Precinct 6 (between South Road, Grand Junction Road and the railway corridor) are part of the approved routes for A-doubles. There are also a number of approved A-double routes in Precinct 4. However, in Precinct 2 the

approved route is a loop along South Terrace, Rafferty Street and Wing Street; there is only a short route along Francis Road and Davis Street, as well as Cormack Road, in Precinct 3.

All of the roads in Precincts 4 and 6 (see Section 8.1) are approved B-double routes. In Precinct 1 South Terrace, Wingfield Road, Hanson Road and Hines Road are approved; the only difference between the A-double and the B-double routes for Precinct 2 is that the entire length of Rafferty Street is approved. In Precinct 3, numerous roads are approved B-double routes, including Wingfield Road and Plymouth Road, to ensure adequate access to this Precinct. Days Road in Precinct 5 is also an approved B-double route.

Grand Junction Road, South Road, Regency Road and Churchill Road are approved oversized and overmass routes. Regency Road is however only approved between South Road and Churchill Road for oversized vehicle.

### **17.3.7 Public transport**

Adelaide Metro bus routes in the project area are shown in **Figure 17.4**. The routes are focused around the Centro Arndale Shopping Centre and the residential suburbs of Mansfield Park, Woodville Gardens, Angle Park and Ferryden Park. These bus routes service Grand Junction Road, the southern section of South Road (south of Grand Junction Road), Hanson Road, Regency Road and Churchill Road. The industrial areas north of Grand Junction Road and east of South Road are not currently serviced by public transport.

The Adelaide to Gawler railway line also runs along the eastern boundary of the study area with a train station located at Kilburn, west of Churchill Road.

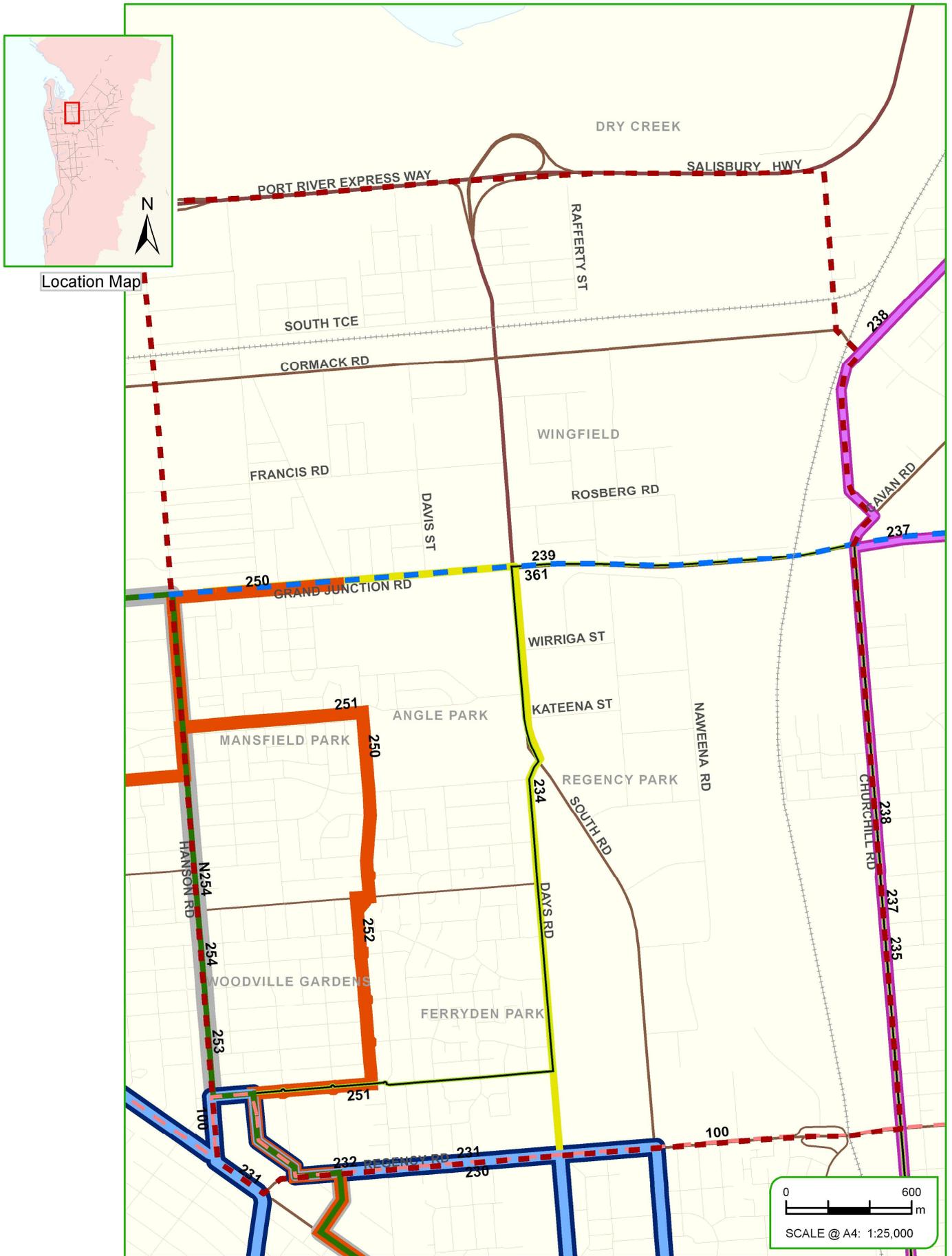
### **17.3.8 Non-motorised transport**

Both DTEI (via Bikedirect maps) and the City of Port Adelaide Enfield (via Local Bike Plan 2008–2012) have defined a number of cycling routes in the study area (**Figure 17.5**). These include primary routes along South Road, Hanson Road, Cormack Road, Churchill Road and Grand Junction Road. There are also secondary routes on Naweena Road, Wingfield Road, Taminga Street, Tikalara Street, Richard Street, Trafford Street, Cowan Street, Cardigan Street, Gatehead Street, Ely Street, First Avenue, Coker Street and Days Road.



<ul style="list-style-type: none"> <li> Study Area</li> <li> General Mass Limit Route</li> <li> DETI Maintained Higher Mass Limit Route</li> <li> Council Maintained Higher Mass Limit Route</li> </ul>	<p><b>Heavy Vehicle Routes (Restricted Access Vehicles)</b></p>
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Figure 17.3



- |  |               |  |               |
|--|---------------|--|---------------|
|  | Study Area    |  | 237; 238      |
|  | 100           |  | 250; 251; 252 |
|  | 230; 231; 232 |  | 253; 254      |
|  | 234           |  | 361           |
|  | 235; 239      |  | N254          |

**Bus Routes**

**Figure 17.4**



Study Area  
 Bike Routes  
 Recreation

**Bike Routes**

**Figure 17.5**

## 17.4 Effects of the project

The project will have an effect on regional and local traffic movements in the study area. It will change the access arrangements for a number of roads and some traffic will be redirected via alternative routes. This section describes these effects and also provides a brief description of the operation of the road network.

### 17.4.1 Arterial road network

The arterial road network is presented in **Figure 1.1**. The elevated roadway will comprise three lanes in each direction north of Grand Junction Road and two lanes in each direction south of Grand Junction Road. It will pass over Cormack Road, Grand Junction Road and Days Road before returning to ground level in the vicinity of Taminga Street. On and off ramps will be provided for traffic access to the elevated roadway north of Grand Junction Road and also immediately south of Days Road, to connect the main alignment of South Road to the South Road service road.

Grand Junction Road will retain its existing at-grade alignment, with the addition of a new set of traffic signals, at a new intersection with Naweena Road and Rosberg Road. This allows traffic indirect access to and from Precinct 4 and 6 to Grand Junction Road. All the other intersections on Grand Junction Road will retain existing treatments.

Traffic signals are proposed at South Road service road and Grand Junction Road, Cormack Road, Kateena Street, Days Road and Regency Road. Alterations to the signalised intersections in the network include:

- the existing South Road and Grand Junction Road intersection will be replaced with an intersection that incorporates Grand Junction Road, the South Road service road and the on and off ramps for the elevated roadway located north of Grand Junction Road
- Cormack Road will become a T-junction with South Road service road
- Kateena Street will have left in, left out and right turn out (detailed design will determine whether the right turn in can be maintained)
- Days Road will maintain all movements
- Regency Road will retain its existing intersection layout.

### 17.4.2 Local road network

The local road network is also presented in **Figure 1.1**. The uncontrolled intersections along South Road will be incorporated into the new South Road service road. The intersection treatments considered at the following locations are:

- Senna Road full access, all movements
- Francis Road full access, all movements
- Rosberg Road full access, all movements
- Wirriga St left in/left out
- Angle Road left in/left out/right out
- Taminga Street left in/left out
- Aruma Street left in/left out
- Camira Street left in / left out
- Tikalara Street left in/right in.

Many right turns in and out will be removed but alternative access will be provided with the extension of the existing Naweena Road to form signalised intersections with Grand Junction Road and Regency Road, allowing full traffic movements.

To alleviate the access issues to Precinct 3 and 4 a new connection will be provided from Salisbury Highway to link into Rafferty Street, which will be extended to Cormack Road, resulting in an at-grade signalised railway crossing. The railway crossing will be actively controlled, and the Rafferty Street–Cormack Road intersection will be a signalised T-junction.

An off-ramp connection will be provided from Salisbury Highway into the western end of Wing Street to maintain access to Precinct 2. Also in Precinct 2, a section of service road will connect Wing Street to South Terrace (along the western boundary of the Precinct) and South Terrace will be maintained as a connection between Precincts 1 and 2.

In Precinct 4, the extension of Rafferty Street to traffic signals at Cormack Road will be combined with the extension of Rosberg Road to Grand Junction Road to minimise the effects caused by the loss of direct access from South Road. Traffic signals at the intersections of Grand Junction Road and Rosberg Road will ensure access to the southern section of Precinct 4 is maintained.

In Precinct 3, a culvert (small bridge) will be constructed to allow vehicles to use Davis Street as a through road between Cormack Road and Francis Road. Precinct 6 will maintain access due to the extension of Naweena Road to a signalised intersection with Grand Junction Road. Naweena Road will also be connected to Gallipoli Grove, and a set of traffic signals provided at this intersection with Regency Road. Precinct 6 maintains its internal road network, with some changes made to the access arrangements.

### 17.4.3 Predicted traffic volumes

Forecast future traffic data have been provided from DTEI's Metropolitan Adelaide Strategic Transport Evaluation Model (MASTEM) and are presented in **Figure 17.6**. The model includes programmed road and public transport improvements on Adelaide's transport network. The model demographic scenario is based on the Department of Planning and Local Government's '2 million in 2050' planning case, interpolated to 2016 and 2031 for this assessment. The daily traffic volume on the various sections of the project are summarised below for the year 2031. These traffic volumes are based on the inclusion of the link with the possible future project, Northern Connector, which is subject to another planning study. Traffic forecasts are:

- 136,000 v/d on the South Road Superway between Salisbury Highway and Grand Junction Road on/off ramps
- 128,000 v/d on the South Road Superway between Grand Junction Road on/off ramps and the South Road service road on/off ramps
- 139,600 v/d on South Road between the South Road service road on/off ramps and Regency Road
- 54,520 v/d on Grand Junction Road east of South Road and 47,200 v/d on Grand Junction Road west of South Road
- 58,000 v/d on Regency Road east of South Road and 40,400 v/d on Regency Road west of South Road
- 12,460 v/d on Cormack Road west of South Road and 15,430 v/d on Cormack Road east of South Road
- 9,700 v/d on Rosberg Road
- 10,100 v/d on Naweena Road near Grand Junction Road and 9,500 v/d at the Regency Road end
- 11,000 v/d on Days Road.

The traffic modelling indicates that maximum one-way peak hour flows along the South Road Superway in the year 2031 are expected to range from 4,450 v/h, between the Grand Junction Road and South road service road on/off ramps, to 6,800 v/h between the Salisbury Highway interchange and the Grand Junction Road on/off ramps north of Port Wakefield Road.

Traffic composition on the arterial network is expected to change with the construction of the South Road Superway. It is expected that most of the heavy commercial traffic (semi-trailers, B-doubles and A-doubles) and some of the light commercial traffic (rigid trucks) on the existing South Road will be diverted to Rafferty Street, Hanson Road and Naweena Road, as these roads provide better access to the commercial and industrial land uses.

It is expected that commercial vehicles on the South Road Superway will make up 10–15% of total traffic. Some of the roads providing access to the precincts with commercial and industrial land are predicted to contain up to 40% commercial vehicles, with 25% on Naweena Road North and 40% on Cormack Road.

The traffic volumes generated by the MASTEM are based on high growth and high employment to meet the targets of South Australia's Strategic Plan and Draft 30-year Plan for Greater Adelaide. These volumes are considered to be the maximum volumes, and therefore have been used as the design traffic volumes for this project. In some cases they are three or four times higher than the existing traffic volumes. The current road network in the study area does not have the capacity to support this large increase.



Predicted  
2031 Traffic  
Volumes

Figure 17.6

#### 17.4.4 Predicted level of service

Traffic analysis, completed using the predicted traffic data, has been used to determine the LOS for various intersections as indicated below:

- South Road and Cormack Road – LOS B
- South Road and Grand Junction Road – LOS E
- Grand Junction Road, Rosberg Road and Naweena Road – LOS C
- Regency Road and Naweena Road (Gallipoli Grove) – LOS C
- South Road and Days Road – LOS C
- Grand Junction Road and Hanson Road – LOS F
- Grand Junction Road, Churchill Road and Cavan Road – LOS E
- Hanson Road and Cormack Road – LOS D
- Hanson Road and PREXY – LOS C
- Regency Road and Days Road – LOS E
- Regency Road and Churchill Road – LOS E.

The LOS on the South Road Superway has been determined using TRB's Highway Capacity Manual 2000 and the predicted traffic volume data. The LOS has been determined for the on/off ramps, midblock and weaving during peak times, resulting in the following LOSs:

- midblock between Salisbury Highway / Port River Expressway and Grand Junction Road on/off ramps – LOS D (both directions)
- midblock between Grand Junction Road on / off ramps and South Road service road on / off ramps – LOS E (both directions)
- midblock between South Road service road on / off ramps and Regency Road – LOS D (both directions)
- on ramp for Salisbury Highway (southbound) – LOS D – 2 lanes
- on ramp for Grand Junction Road (northbound) – LOS C – 2 lanes
- on ramp for South Road service road (southbound) – LOS C – 1 lane
- off ramp to Port River Expressway (northbound) – LOS D – 2 lanes
- off ramp to Grand Junction Road (southbound) – LOS C – 2 lanes
- off ramp to South Road service road (northbound) – LOS C – 2 lanes
- weaving – LOS D – between Salisbury Highway on ramp and Grand Junction Road off ramp (southbound)
- weaving – LOS E – between Grand Junction Road on ramp and PREXY off ramp (northbound).

Given that traffic volumes are optimised and based on high growth and high employment to meet targets (as above), the project's LOS is considered satisfactory.

#### 17.4.5 Road crashes

It is predicted that, with the project, the overall number of crashes along South Road and Grand Junction Road will reduce because the majority of the traffic volume on South Road will pass over the railway crossing and the signalised intersections of Cormack Road, Kateena Street, Days Road and Grand Junction Road. There will, however, be a potential increase in sideswipe crashes associated with the lane changes at the on/off ramps. An additional set of traffic signals will be provided on Grand Junction Road but the resultant increase in potential crashes should be nullified by the reduction in rear

end crashes at the intersection with the South Road service road. Also, the high level of crashes involving vehicles turning in and out of uncontrolled local access roads into South Road will reduce, as the traffic volume and the speed on the service road will be lower. The crashes on Grand Junction Road west of South Road are predicted to remain steady.

#### **17.4.6 Freight routes**

Approved freight routes will be maintained but there will be access changes for all precincts. Precinct 2 will be accessed via the new Salisbury Highway exit onto Rafferty Street or Wing Street and the upgraded South Terrace will retain access to Precinct 1. South Terrace and Rafferty Street will be upgraded to meet A-double requirements. The South Road service road will connect Wing Street to South Terrace to provide a loop road for the freight vehicles.

Precinct 3 will maintain access from Cormack Road or Francis Road from the South Road service road. Access will also be maintained from Grand Junction and Hanson Road. Davis Street will be upgraded to allow for a loop road to be established using Francis Road, Davis Street and Cormack Road. This will improve the flow of freight traffic in this precinct.

Rafferty Street and Rosberg Road will provide access to Precinct 4. Cormack Road, Senna Road and Rosberg Road will provide access for restricted vehicles from South Road service road to Precinct 4.

For freight accessing Precinct 6, the routes will include the extension of Naweena Road to a set of traffic signals at an intersection with Grand Junction Road, an extension of Naweena Road to connect into Gallipoli Grove and into Regency Road, as well as access from the South Road service road. Routes in the precinct will be maintained.

There will be no change to the freight routes in Precinct 5, with access being maintained to Days Road from the South Road service road and Regency Road.

Overall, changes to access will affect how the freight routes are used but should not result in adverse effects for the movement of freight.

#### **17.4.7 Public transport**

In consultation with the Public Transport division the project team will explore opportunities to further improve existing public transport routes. Existing routes will be maintained with the provision of a service road between Days Road and Grand Junction Road. The services may experience disruption during the construction stage of the project and it is likely that the bus routes may require diversions to ensure effective operation.

#### **17.4.8 Non-motorised transport**

Bicycle lanes will be provided along the length of South Road service road north of Days Road, and on Grand Junction Road in the vicinity of the intersection with the South Road service road to facilitate the movement of cyclists through this intersection. In the local road network the only changes will be at the connection of Naweena Road to Grand Junction Road and Regency Road, and these will lead to improvements in the local bike network.

At the connection of Salisbury Highway to the South Road Superway, the existing bike path and bike lanes (part of the Bikedirect network) will need to be relocated to Rafferty Street. Cyclists will not be allowed to travel on the elevated roadway; they will be required to use the South Road service road.

## 17.5 Mitigation measures to minimise effects

### 17.5.1 Principles and measures adopted to minimise effects during construction and post construction

The construction of the project, including the associated local road improvements, requires a well-considered construction management plan based on the appropriate design and management arrangements to minimise disruptions.

In broad terms the construction phase will follow the following sequence of events and is expected to last for a 3-year period to December 2013:

- local road improvements including provision on Hanson Road to provide two lanes in each direction, plus completion of work on Rafferty Street, Davis Street, Rosberg Road and Naweena Road with major works components of traffic signals, road widening and extensions, at grade railway crossing and culverts
- services relocation
- drainage relocation
- elevated roadway and associated works
- ramp construction
- service road improvements under the elevated roadway and landscaping.

It is expected that the local road improvements as well as Churchill Road, Cavan Road and Hanson Road will provide viable alternative routes during construction. In addition, all reasonable efforts will be made to ensure access to businesses fronting South Road will be maintained during normal operating hours. To expedite construction works and reduce disruption to traffic sections of South Road may be closed at night. Overall effects on local road access and local traffic movements are expected to be manageable and not change business operating conditions.

Following construction, operation of these roads will be monitored to determine if the road network is operating as predicted, and to identify unforeseen problems in the network. Particular attention will be paid to the Salisbury Highway interchange, signalised intersections, operation of the on/off ramps, roads closed due to the project and alternative routes around the road closures (including service roads). All road closures will be monitored to determine where traffic is diverting effectively and any possible issues with these diversions.

## 17.6 Conclusion

The project aims to expand the capacity of South Road to satisfy the future traffic predicted to use South Road and other roads in the study area in 2031. Currently, South Road and Grand Junction Road are experiencing poor levels of service and could not meet the expected increase in traffic demand by 2031. The project will ensure reasonable access to the six precincts in the study area through the upgrading of the existing local road network, the provision of new access roads (Rafferty Street and Naweena Road) as well as service roads along the South Road alignment.

The project will aim to minimise effects on the community, commuters and businesses through the staging of construction works and monitoring of the project during and after construction.