13 Transport

13.1 Introduction

The existing transport network operates at an acceptable to poor level along most arterial roads in the study area. The predicted increase in traffic volumes on the current network will significantly increase delays and congestion, particularly along Main North Road and Heaslip Road.

The construction of the Northern Expressway will provide an important link to the South Australian freight network.

In general, consultation comments to date have been supportive of the Expressway, recognising the benefits of freight being diverted from local roads in the study area, improved travel times and improved access to other regions. Comments have also highlighted concerns from local people about access to their properties, to the Expressway, east–west access across the Expressway, and the effects on Port Wakefield Road.

13.2 Existing transport network

13.2.1 Arterial road network

The fold-out plan at the back of this Environmental Report shows the road network within the study area. It is characterised by three major north–south roads: Port Wakefield Road, Heaslip–Angle Vale Road and Main North Road (and the Gawler Bypass). Main North Road and Port Wakefield Road form part of the existing National Network; Heaslip–Angle Vale Road is considered a significant freight route and connects the two National Network links. Main North Road and Heaslip Road form the main connections to the Mid North (e.g. Clare) and to the Riverland areas of South Australia as well as to northern Victoria and New South Wales via the Sturt Highway.

The remaining arterial roads (generally east–west such as Womma Road, Penfield Road, Angle Vale Road and Two Wells Road) perform linking functions within the road network to the AusLink National Network and surrounding communities.

Within the Gawler township, the arterial road network, including Main North Road, Adelaide Road, Murray Street, Redbanks Road and Ryde Street, essentially provides connections to the Gawler Bypass and from Gawler to the major towns to the north and west.

13.2.2 Local road network

The local road network within the study area generally forms a grid pattern of sealed and unsealed roads that link the arterial roads and the surrounding communities of Angle Vale, Virginia, Macdonald Park and Lewiston with Gawler and Munno Para.

The Local Government Association's *Metropolitan Transport Strategy Contract Report* (ARRB Group and Tonkin Consulting 2005) identified various local roads as having particular importance within the study area. These roads have been identified based on their particular function and include:

- primary freight routes – Curtis Road, Taylors Road, West Avenue (Edinburgh Parks) and Wyatt Road

- secondary freight routes – Womma Road (west of Heaslip Road), St Kilda Road and Heaslip Road (north of Angle Vale Road)
- primary social access routes – Curtis Road and West Avenue
- primary tourism route – St Kilda Road.

The majority of the local roads are sealed although there are a number of access roads that are unsealed such as Frisby Road and Wingate Road (north of Two Wells Road). The speed zones on these roads vary but are typically the default speed limit in urban areas (50 km/h) increasing to 100 km/h in the rural areas.

The local roads generally have a two-lane cross-section of varying width.

13.2.3 Existing traffic volumes

Existing traffic data (2005) in the form of 'annual average daily traffic' (AADT) for the arterial and major local roads within the study area have been assessed as described below.

The traffic volumes on Main North Road range from 34,300 vehicles per day (vpd) just south of the Gawler Bypass to 61,800 vpd at Salisbury. Daily volumes on Heaslip–Angle Vale Road vary between 6,000 and 12,000 vpd. Typically, the remaining arterial roads have traffic volumes less than 5,000 vpd. Traffic volumes on the local road network are typically less than 1,500 vpd, except for:

- Curtis Road east of Heaslip Road with daily volumes greater than 4,500 vpd, increasing to 15,000 vpd at Main North Road
- Petherton Road east of Heaslip Road to Andrews Road with daily volumes in the order of 3,000 vpd
- sections of Andrews Road between Curtis Road and Womma Road where traffic volumes are just over 1,500 vpd
- Taylors Road west of Mill Road with daily volumes less than 2,000 vpd.

Analysis of the turning and classification counts for traffic over an 11–hour period indicates that two-way peak hour volumes vary between 700 vehicles per hour (vph) on Angle Vale Road to 1,300 vph on Heaslip Road south of Womma Road. Typically, peak direction flows are 60–70% of the two-way flow.

For Main North Road, two-way peak hour flows range from 2,700 vph at Tiver Road and increase to 3,700 vph at Womma Road, with maximum one-way peak hour flows of up to 2,000 vph.

The commercial vehicle content is typically 6% of the total volume on Main North Road and varies between 16% and 22% on Heaslip–Angle Vale Road with a high proportion of these commercial vehicles (55%) being large vehicles such as semitrailers and B-double vehicles.

Figure 13.1 illustrates heavy vehicle usage in the study area.

13.2.4 Existing level of service

The *Austroads Guide to Traffic Engineering Practice (1988) – Roadway Capacity* defines level of service (LOS) as *a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers*. The guide describes six levels of service ranging from Level of Service A (best operating conditions) to Level of Service F (worst conditions – capacity exceeded, forced flow conditions). This guide (together with current traffic data) has been used to determine the LOS for various roads in the network as described below:

Heaslip Road

Heaslip Road

Figure 13.1 **Heavy vehicle usage**

- Angle Vale Road – LOS C
- Heaslip Road (south of Angle Vale township) – LOS E
- Heaslip Road (Womma Road to Waterloo Corner Road) – LOS E
- Gawler Bypass – LOS B
- Main North Road (north of Munno Para) – LOS C

Travel speeds have been used to determine the LOS of the following roads during peak times:

- Main North Road (through Munno Para and Elizabeth) – LOS C–D
- Main North Road (through Salisbury) – LOS D

13.2.5 Road crashes

Analysis of road crash statistics within the study area has been based on DTEI data for the period 2001 to 2005 inclusive.

The majority of crashes that occurred at signalised intersections on Main North Road were rear end collisions with some sideswipe and right angle collisions. The predominant crash type for unsignalised intersections was right angle collisions. Of the crashes that occurred at midblock locations, the majority resulted from vehicles hitting either a fixed object or parked vehicle. Several of the midblock crashes also resulted from vehicle loss of control and leaving the roadway.

A summary of the crash statistics for the main arterial and local road sections and intersections is provided in Tables 13.1 and 13.2.

Table 13.1
Road crash summary – arterial roads

Road name	Section	Fatal	Casualty	Property damage	Total
Angle Vale Road	Heaslip Road to Jack Cooper Drive	2	12	38	52
Heaslip Road	Waterloo Corner Road to Womma Road	1	25	34	60
	Womma Road to Curtis Road	1	24	18	43
	Curtis Road to Angle Vale Road		14	44	58
Womma Road	Heaslip Road to Stebonheath Road		18	18	36
Main North Road	Gawler Bypass to Curtis Road	2	53	101	156
	Curtis Road to Womma Road	1	77	244	322
	Womma Road to John Rice Ave	3	186	446	635
Jack Cooper Drive	Heaslip Road to Ryde Street		13	21	34
Gawler Bypass	Main North Road to Main North Road		8	28	36

Table 13.2
Road crash summary – local roads

Road name	Section	Fatal	Casualty	Property damage	Total
Curtis Road	Heaslip Road to Andrews Road		12	14	26
	Andrews Road to Stebonheath Road		8	1	9
Coventry Road	Angle Vale Road to Curtis Road		7	5	12
Stebonheath Road	Angle Vale Road to Curtis Road	1	1	2	4
Dalkeith Road	Angle Vale Road to Main North Road	1	7	8	16
Andrews Road	Angle Vale Road to Curtis Road		2	7	9

The major points from an analysis of the crash data (Figure 13.2) indicate that:

- signalised intersections along Main North Road have high numbers of crashes due to the high volume of traffic using this road
- on Heaslip Road, the major unsignalised intersections with Angle Vale Road, Curtis Road, Womma Road and Waterloo Corner Road have high numbers of crashes and also high numbers of crashes with casualties compared to the signalised intersections on Main North Road
- based on the data in Table 13.1, there appears to be a high proportion of casualty crashes in the midblock section along Heaslip Road, south of RAAF Base Edinburgh to Waterloo Corner Road.

13.2.6 Freight routes

Freight movement in the study area is concentrated on Heaslip–Angle Vale Road as the main long distance north–south freight route and a designated over-dimension vehicle route. Main North Road supplements this route and provides for shorter distance movements.

Road trains are permitted access only along Port Wakefield Road with B-double trucks gazetted for Heaslip–Angle Vale, Main North, Taylors and Womma roads. However, B-double trucks have been allowed by permit to travel on various local and arterial roads to access individual properties.

The following roads are indicated as being capable of catering for over-dimension vehicles: Port Wakefield Road, Heaslip Road, Main North Road–Gawler Bypass, Angle Vale Road (Angle Vale to Gawler section), Two Wells Road to Gawler Road and Wilkinson Road (part of the over-dimension (load) route, OD3).

13.2.7 Public transport

Public transport services in the study area are focused on serving the Adelaide–Gawler/Barossa rail line and the Elizabeth Regional and Munno Para District centres. This includes provision of bus feeder services along Main North Road, Womma Road and Curtis Road to the Smithfield, Elizabeth and Salisbury rail stations. A Metroticket bus service is provided along Port Wakefield Road from Waterloo Corner Road to Penfield Road which provides for Elizabeth and Salisbury residents. Additional Metroticket circle bus routes operate within the local surrounding area between the Salisbury Interchange and the Mawson Connector. A number of local school bus services use Heaslip, Angle Vale and Two Wells roads.

13.2.8 Non-motorised transport

There are no defined cycle or pedestrian paths within the study area. However, cyclists may use the road network to access schools in the region from residential properties located outside of the main residential areas.

Many of the rural living properties in the study area have tracks for equestrian usage. On this basis, it is expected that some of the local road corridors would be used by horse riders.

13.2.9 Future network without the Expressway

If the proposed Northern Expressway was not to proceed, then alternative, less effective road upgrades would need to be assessed in addition to the upgrading of Port Wakefield Road south of Waterloo Corner Road and the duplication of the Sturt Highway from Gawler to Nuriootpa. The duplication of the Sturt Highway will be completed prior to the opening of the Northern Expressway and the Sturt Highway will also include an upgrade of the Gawler Belt Interchange. It is proposed, through this work, that some movements not currently allowed for at this interchange will be provided. The expected effect of this is a slight reduction in traffic at the Redbanks Interchange for vehicles accessing the Gawler Bypass.

If the Expressway is not provided, then Main North Road would require substantial upgrading and widening between Montague Road and Gawler to cater for the future traffic volumes.

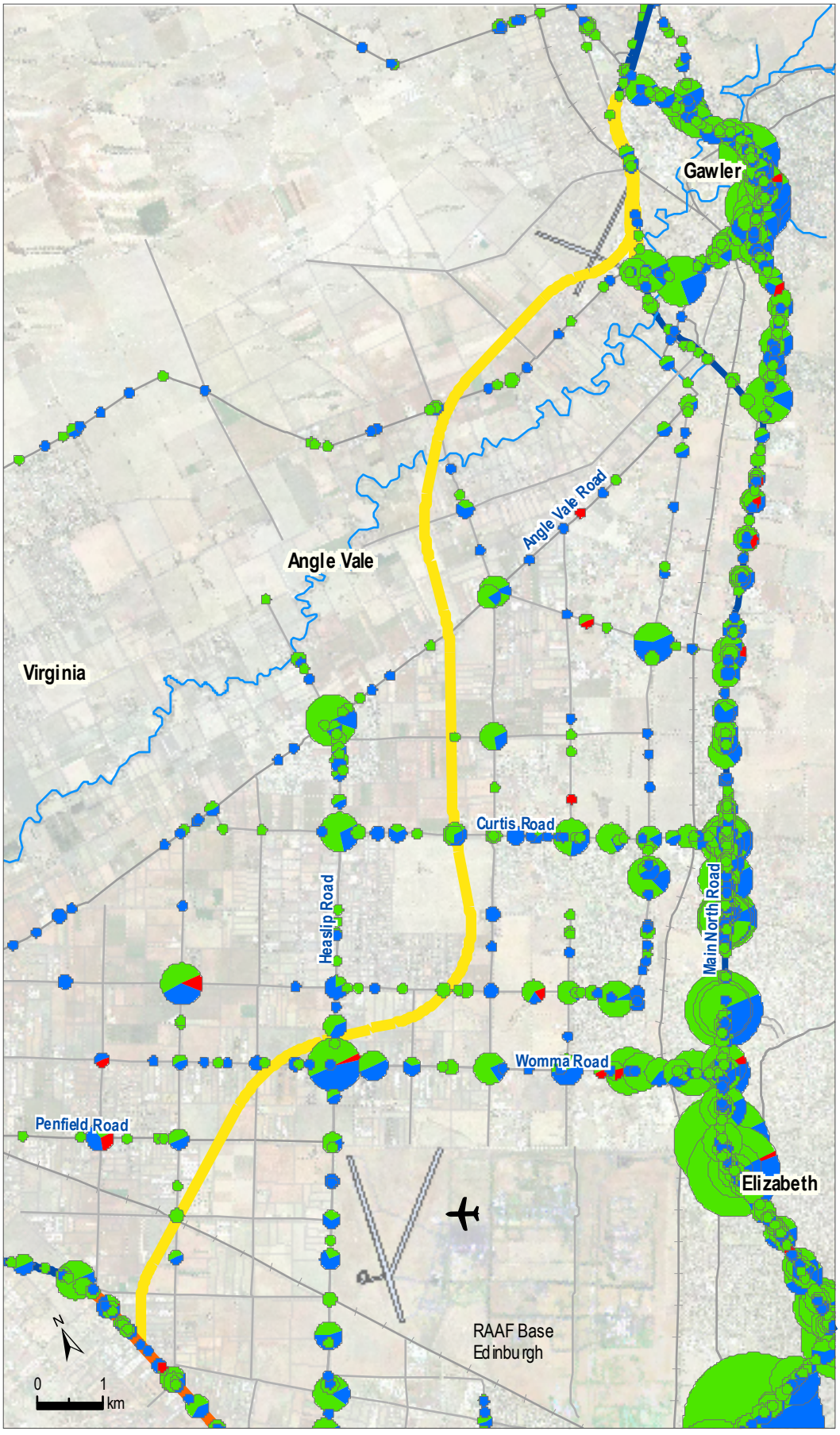
There would also be the need to upgrade a number of other arterial roads in the study area to improve safety and access including

- Womma Road between Heaslip Road and the Adelaide–Gawler/Barossa rail line
- Waterloo Corner Road from Port Wakefield Road to Heaslip Road
- access roads from the Gawler Bypass into Gawler.

In addition, Heaslip/Angle Vale Road would also require upgrading and widening (including duplication) to improve safety and cater for the expected traffic volumes.

There are expected to be some minor changes to the local road network with increased development in the region. The following are possible improvements that could occur in the future:

- continued upgrading of Wyatt Road to a divided four-lane road to service the rapidly growing Edinburgh Parks development
- upgrading of Taylors Road to service the horticultural area surrounding Virginia
- upgrading of a number of north–south local roads that service the Munno Para area
- some requirement to provide additional or upgraded connections from the future residential development of the Evanston Gardens area to Main North Road and Angle Vale Road
- upgrading of Curtis Road and other major local roads as part of the Playford North development. At this time, the exact nature of the upgrade for Curtis Road is unknown but could involve widening to four lanes and the installation of roundabouts at key intersections.



Property damage only
Casualty
Fatality

Figure 13.2 **Road crash patterns**

13.3 Effects of the project

13.3.1 Arterial road network

The provision of the Northern Expressway is unlikely to alter the arterial road network significantly. There is expected to be a change in the road network responsibility and function between Penfield Road and Womma Road to the west of Heaslip Road. In particular, Womma Road would become the arterial road and Penfield Road would revert to a local road under the care and control of the City of Playford. The Taylors Road connection with Port Wakefield Road will be affected as a result of the proposed Northern Expressway with left and right in and left out access only. Access onto the proposed Northern Expressway is limited to the following:

- access from the north via the Gawler Bypass only
- full movement interchange at the intersection of Heaslip Road–Womma Road/Northern Expressway
- partial movement interchange at the intersection of Curtis Road/Northern Expressway (to and from the south access only)
- Port Wakefield Road.

Overpasses on Angle Vale and Two Wells roads are provided where the Northern Expressway crosses these roads. This ensures that access is maintained as much as possible to surrounding areas.

13.3.2 Local road network

There are expected to be minor changes to the local road network north of Waterloo Corner with some east–west and north–south roads being severed such as Fradd Road and Petherton Road (both of which carry more than 1000 vpd). Alternative local routes are available that would still retain access but would require further travel. Depending on the final location and form of interchanges, there may be a need to upgrade a number of local roads, such as Frisby Road, to cater for the increased traffic attracted to the Northern Expressway. Service roads would be provided to ensure appropriate access is maintained to properties where no alternatives are available. Wingate Road and Womma Road would be required to be realigned or deviated. The local roads likely to be severed by the proposed Expressway route are listed as follows along with alternative local routes:

- service road from Atyeo Road to Lange Road (adjacent to Gawer Bypass)
- Whitelaw Road (alternative route via Ward Belt Road, Wingate Road and Two Wells Road)
- Hillier Road (alternative route via Riverbanks Road, Two Wells Road and Wingate Road)
- Fradd Road (alternative routes using Frisby or Andrews roads to Angle Vale or Curtis roads).
- Petherton Road (alternative routes using Heaslip, Julian or Andrews roads to Womma or Curtis roads)
- Argent Road (alternative routes via Womma or Petherton roads)
- Short Road (alternative routes using Robert Road to Heaslip or Taylors roads)
- Penfield Road (alternative routes using Taylors or Heaslip roads to Womma or Pellew roads)
- Huxtable Road (alternative routes using King or Taylors roads to Nash Road)

- Stanley Road (alternative access via Taylors Road)
- Norma Road (alternative access via Taylors Road).

13.3.3 Predicted traffic volumes with and without the Expressway

Traffic volumes are anticipated to increase significantly in the near future and several roads will require upgrading irrespective of the proposed Northern Expressway proceeding.

The traffic volumes for the future years have been developed by DTEI using the new Metropolitan Adelaide Strategic Transport Economic Model (MASTEM). This model uses employment and demographic data provided by Planning SA of the Department of Primary Industries and Resources, South Australia (PIRSA) and takes into consideration the current two million population strategy.

The percentage change between existing traffic conditions and predicted future traffic data (2011 and 2026) in the form of 'annual daily traffic' for the arterial and major local roads within the study area is shown on Figures 13.3, 13.4 and 13.5. Selected volumes are given in Tables 13.3 and 13.4 for 2011 and 2026 (with and without the Northern Expressway).

Traffic volumes along the proposed Northern Expressway would be in the range of 35,850 vehicles per day (vpd) at the Gawler Bypass and up to 40,000 vpd at Port Wakefield Road by 2026. It is anticipated that peak hour volumes on the proposed Northern Expressway will be 920 vph by 2011 and 2,310 vph by 2031. The Expressway is expected to operate satisfactorily at these traffic levels.

As a result of the proposed Northern Expressway, traffic volumes are expected to increase on Port Wakefield Road and Curtis Road. Traffic volumes along Port Wakefield Road are expected to increase significantly; however, the proposed upgrades would provide for this additional traffic. Predicted traffic volume incrases on Curtis Road are expected to be minimal.

Without the proposed Northern Expressway, future traffic volumes are expected to increase significantly on selected roads which include Main North Road, Heaslip Road and Angle Vale Road with a high number of commercial and heavy vehicles.

Without the Expressway, traffic volumes on sections of Main North Road will increase by approximately 55% by 2026. Heaslip Road is likely to experience an increase in future traffic volumes of up to 40% by 2026.

Table 13.3
Predicted traffic volume comparison 2011

Location	Existing 2006 (vpd)	2011 without Expressway (vpd)	2011 with Expressway (vpd)
Main North Road south of the Gawler Bypass	34,300	34,300	28,100
Main North Road at Munno Para	35,850	44,100	35,600
Main North Road at Elizabeth	40,700	62,600	56,100
Main North Road at Salisbury	41,300	46,900	41,900
Angle Vale Road east of Dalkeith Road	5,700	8,800	2,700
Curtis Road east of Heaslip Road	4,980	5,800	6,200
Heaslip Road (northern end)	8,800	9,400	4,400
Heaslip Road (southern end)	11,600	17,800	12,100
Northern Expressway Gawler Bypass–Curtis Road	N/A	N/A	17,100
Northern Expressway Curtis Road–Womma Road	N/A	N/A	18,300
Northern Expressway Womma Road–Port Wakefield Road	N/A	N/A	18,100

Table 13.4
Predicted traffic volume comparison 2026

Location	Existing 2006 (vpd)	2026 without Expressway (vpd)	2026 with Expressway (vpd)
Main North Road south of the Gawler Bypass	34,300	49,150	26,850
Main North Road at Munno Para	35,850	46,650	35,850
Main North Road at Elizabeth	40,700	69,650	61,200
Main North Road at Salisbury	41,300	51,250	48,750
Angle Vale Road east of Dalkeith Road	5,700	13,000	4,000
Curtis Road east of Heaslip Road	4,980	8,950	9,500
Heaslip Road (northern end)	8,800	11,600	6,700
Heaslip Road (southern end)	11,600	27,550	15,850
Northern Expressway Gawler Bypass–Curtis Road	N/A	N/A	26,900
Northern Expressway Curtis Road–Womma Road	N/A	N/A	31,550
Northern Expressway Womma Road–Port Wakefield Road	N/A	N/A	40,000

The expected proportion of commercial vehicles on the Northern Expressway will be in the range 10–15% of total traffic.

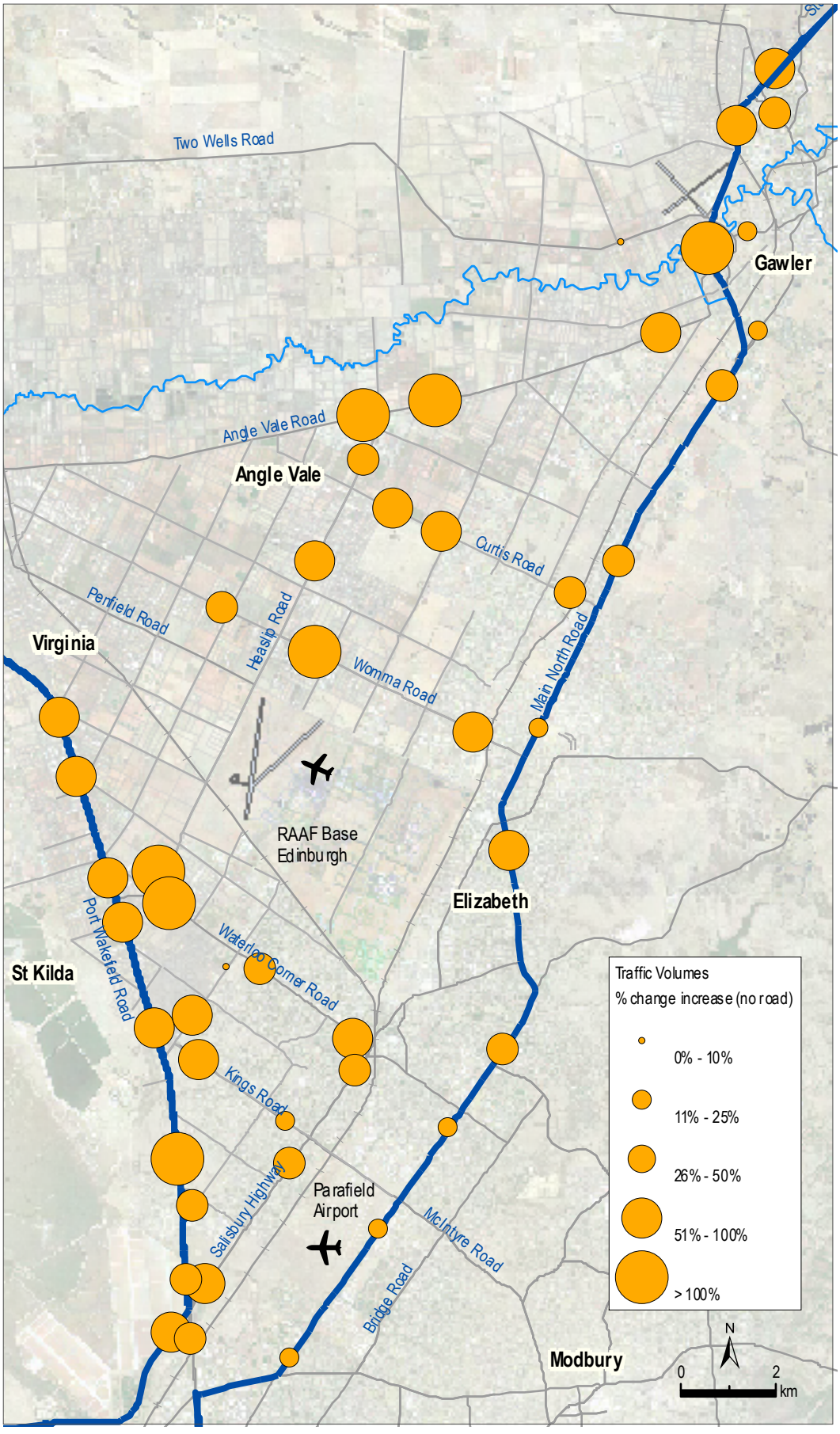


Figure 13.3 **% change between 2011 and 2026 traffic volumes (without expressway)**

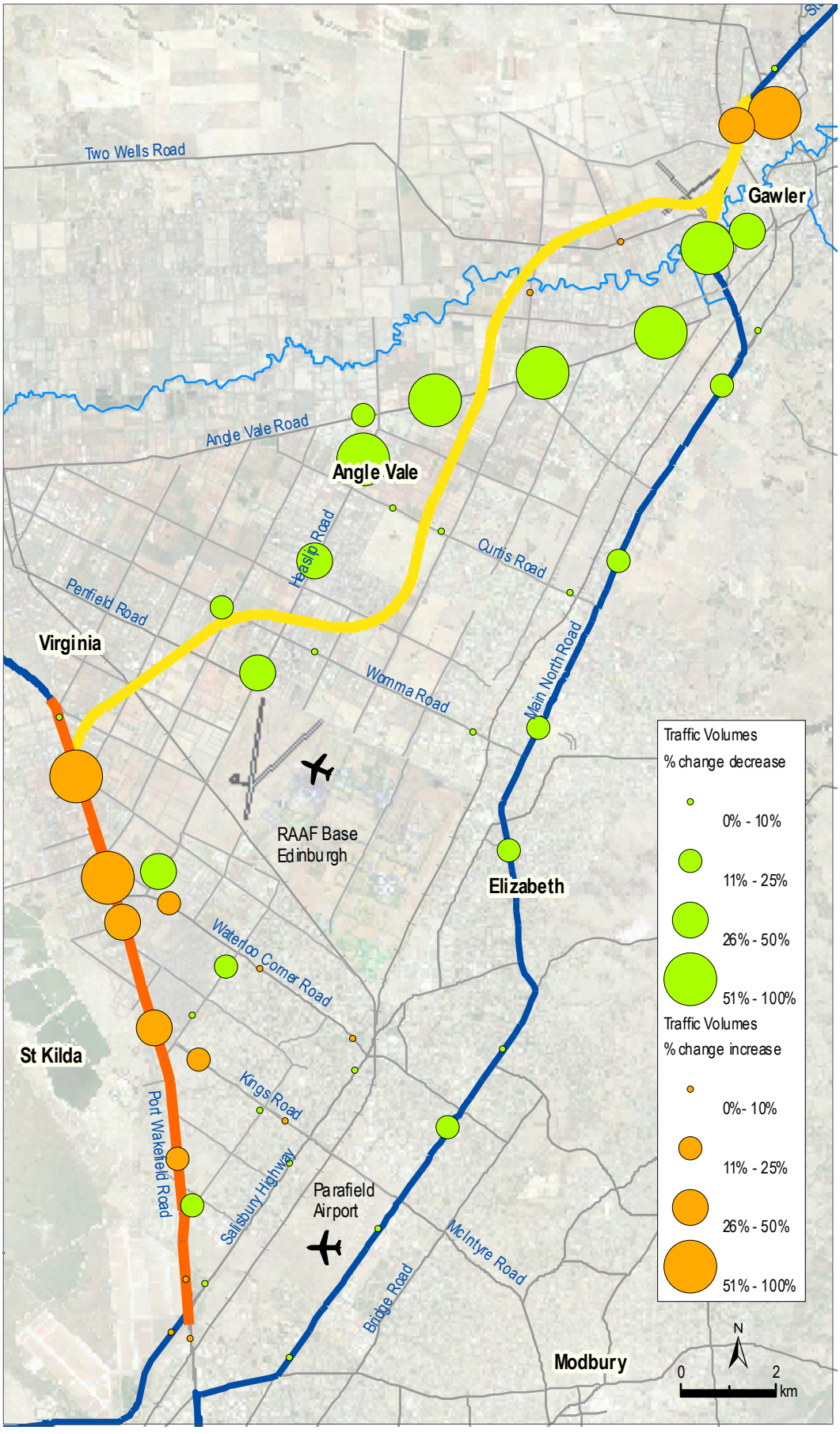


Figure 13.4 **% change in 2011 traffic volumes with expressway compared to without expressway**

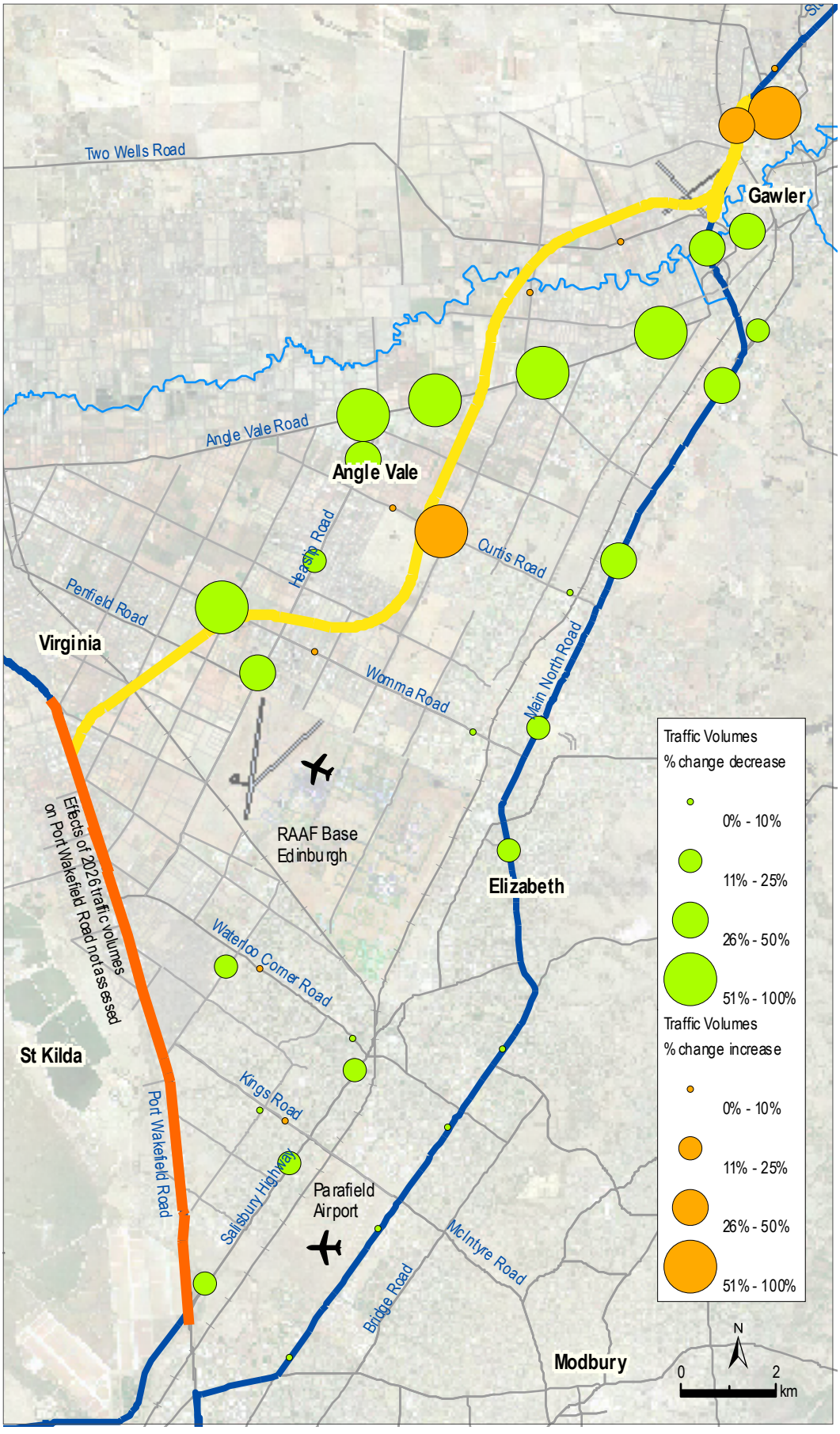


Figure 13.5 **% change in 2026 traffic volumes with expressway compared to without expressway**

13.3.4 Predicted level of service

The level of service (LOS) can be predicted for future traffic volumes for the various roads in the existing road network using the same methodology as for the existing traffic volumes. The existing levels of service for the arterial road network are given in Section 13.2.4.

It is expected that with the predicted increase in traffic on Main North Road, depending on possible upgrades, congested conditions would result and be beyond existing capacity on some sections.

Without the proposed Expressway, the decrease in operating conditions is expected to result in:

- significant delays at the major intersections on Main North Road and Heaslip Road
- increased travel times and reduced speeds on the midblock sections of these roads. This is particularly important for commercial vehicle traffic which is time sensitive. In addition, even minor incidents such as a breakdown or crash are expected to result in significant queues and delays to traffic
- increased crash rates as traffic levels increase. Also, there is expected to be an increase in crashes at access points with vehicles trying to access the arterial roads as sufficient gaps in the traffic may not occur
- increased use of local roads ('rat running') to bypass the poor operating conditions on the major arterial roads. This is expected to primarily occur on the north–south roads (Andrews and Stebonheath roads) as well as on east–west roads such as Curtis and Petherton roads. This would result in reduced pedestrian access, increased noise and reduced air quality as well as an increase in crashes, primarily at intersections.

Arterial road network

For Heaslip and Angle Vale roads the LOS has been determined using Section 3 of the Austroads Guide. Based on future traffic volumes anticipated without the proposed Northern Expressway, the LOS is expected to reduce to D–E on Angle Vale Road and E on Heaslip Road with the increase in traffic. For Main North Road the predicted LOS is expected to reduce to D–E compared with E–F to F anticipated without the Expressway.

The provision of the Northern Expressway will improve the LOS on Heaslip Road and Angle Vale roads to current operating conditions, that is, LOS B-C for the full length of this route.

Northern Expressway

Based on the peak hour volumes indicated in Section 13.3.3, the Northern Expressway is expected to operate at LOS B to LOS D by 2031.

The LOS for the ramp merges and diverges for 2031 has been estimated based on the methodology detailed in Chapter 25 'Ramps and Ramp Junctions Methodology' in the *Highway Capacity Manual* (Transport Research Board, 2000). The traffic data indicate the following:

- At the Gawler Bypass interchange, the merge and diverge ramps would operate at LOS B conditions. For the 2031 afternoon peak period, levels of service on the Gawler Bypass interchange would reach LOS C for the southbound merge movement.
- At the Curtis Road and the Womma Road interchange, the on and off ramps would operate at LOS B conditions.

- At the Womma Road interchange, all merge movements would operate at LOS C for the 2031 period. The northbound morning peak merge movement would operate at LOS B for this same period. All diverge movements would operate at LOS B with the northbound afternoon peak movement reaching LOS C.
- At the connection with Port Wakefield Road as a signalised junction, the LOS in 2011 would be C.

13.3.5 Road crashes

The proposed Northern Expressway is expected to reduce the overall crash rate in the study area as traffic is diverted from Heaslip Road and Main North Road to the Northern Expressway and Port Wakefield Road. The number of crashes would generally be expected to increase with increased traffic volumes; however, the proposed Expressway is of a higher standard and has no signalised intersections or at-grade junctions except at its junction with Port Wakefield Road. As a result, it is anticipated that the rate of crashes will be reduced significantly.

13.3.6 Freight routes

The Expressway will be part of the National Network and consequently is a strategic freight route. Therefore it is expected that long distance freight movements would divert to the Expressway from Main North Road, Angle Vale Road and Heaslip Road. The proportion of daily traffic volume is assumed to remain constant at 15% for commercial vehicles.

As indicated in Section 13.2.6, Heaslip Road is an over-dimension vehicle route. Minor roads will pass over the Expressway and thus restrict over-dimension vehicles from using it, particularly those with over-height loads. Thus appropriate connections would be made to Heaslip Road from Port Wakefield Road and the existing road network to cater for these vehicles.

13.3.7 Public transport

No major changes are expected as a result of the proposed project. Some modifications may be required to Passenger Transport Division Route 900 as it passes through the junction of the proposed Northern Expressway and Port Wakefield Road.

13.3.8 Non-motorised transport

While the proposed Expressway corridor width has capacity for the future construction of a shared-use path for the full length of the road, no dedicated pedestrian/bicycle bridges or underpasses are currently proposed. Bicycle plans and/or strategies within the District Council of Light and the City of Playford are at present informal or may be developed in the future.

The City of Playford has expressed a desire to ensure bicycles can travel across the Northern Expressway using the overpass bridge proposed on Curtis Road. Wide lanes (minimum 4.5 m wide) are proposed which allows for safe bicycle movement.

Pedestrian and bicycle access to the Macdonald Park area will be reduced by the Northern Expressway because of the closure of Petherton Road. This is likely to have the greatest effect on students travelling to and from St Columba College.

Connectivity for cyclists between communities is currently restricted by the relatively high volume of traffic on Heaslip Road. This situation is likely to be improved by the predicted reduction in traffic on Heaslip Road due to the construction of the Northern Expressway.

Equestrian access and access to equestrian facilities may be reduced at locations where roads will be closed or modified.

13.4 Management

13.4.1 Principles adopted to minimise effects

To minimise any adverse effects from the Northern Expressway on the transport network, a series of principles has been adopted including providing:

- a limited number of access points to provide a safe, free-flowing roadway
- appropriate access between communities for all users by minimising the number of roads closed
- alternative access routes and arrangements provided where roads are closed.

Measures include determining alternative routes for roads required to be closed, taking into account the additional length, time and traffic volume predicted on the alternative route and the land uses of areas along the alternative routes. Suitable alternative routes for pedestrians, cyclists and equestrians where current routes have been modified or removed, particularly in the Macdonald Park area, are to be provided to reduce the potential impacts on access to individual properties within the areas surrounding the proposed Northern Expressway. Road closures will be monitored to determine where traffic is diverting to and possible reasons for these diversions.

13.4.2 Measures to minimise effects during construction

Construction works for the Expressway are planned to occur off-line in a single staged process. Measures to minimise the effects of this process include the following:

- fenced off-line construction with minimal connection to existing road network
- road sealing of alternative routes for road closures and haul routes (reduces dust and maintenance required)
- fill to be carted along the new road corridor and local roads from quarries. Asphaltic concrete or concrete plants to be located on site and concrete placed with specialised paving equipment
- for overpass construction, pavement construction and material deliveries, the haul routes will include mainly, but not exclusively:
  - Two Wells Road
  - Wingate Road
  - Angle Vale Road
  - Andrews Road
  - Womma Road
  - Heaslip Road

- overpasses will be built off-line to avoid traffic disruption
- where necessary, new or temporary access arrangements will be provided for local residents
- temporary road access to maintain through traffic at interchange/overpass sites
- significant traffic management will be required at the Gawler interchange and Port Wakefield Road connections to the existing roads and will be the subject of a special traffic management plan prepared by the contractor.

13.4.3 Measures to minimise effects post-construction

The operation of the Northern Expressway and surrounding road network will be monitored to determine if the Northern Expressway is operating as predicted and to identify any unforeseen problems within the network. Particular attention will be paid to the connections with the Northern Expressway, the roads closed due to the project and the alternative routes around the road closures.

13.5 Conclusion

The existing transport network operates at an acceptable to poor level along most arterial roads in the study area. The predicted increase in volumes on the current network will significantly increase delays and congestion, particularly along Main North Road and Heaslip Road.

The introduction of the proposed Northern Expressway will provide an important link to the South Australian freight network. The Expressway will relieve the pressure on the existing road network particularly along Main North, Angle Vale and Heaslip roads. Port Wakefield Road will experience an increase in traffic volumes and will require upgrades to operate at an acceptable level (part of this project proposal).

It is anticipated that the number of crashes will be reduced significantly by the Expressway through limited access to it and removing through traffic from existing congested arterials.

The provision of alternative access arrangements will be key to the successful integration of the Northern Expressway with the local transport network.

Some local routes will be severed by the construction of the Expressway, with alternative routes determined for these road closures. Access to individual properties may be affected by the proposed Expressway. Direct access between the communities in the study area will be maintained wherever possible with alternative routes provided where this is not possible. Based on vehicle travel times anticipated before and after completion of the proposed Expressway, accessibility within the study area will be generally maintained and in some instances improved.

Pedestrian, cyclist and equestrian access is important throughout the study area particularly in the Macdonald Park and Globe Derby areas. Alternative access arrangements will be provided for pedestrians, cyclists and equestrians where road closures are implemented.

During construction, traffic issues will generally be managed by constructing away from existing roads without any traffic in the Expressway corridor. Wherever possible, the Expressway corridor will be used to haul materials to and from the construction site. At locations where local access roads are closed, new or temporary access arrangements will be provided.

Post-construction monitoring of the arterial and local road networks will be essential to determine the overall impacts of the Expressway.

The proposed Northern Expressway is considered a significant link in the National Network. The Expressway will significantly improve most travel times and reduce delays within the existing road network. Network crash rates are expected to decrease overall with most commercial vehicles diverting away from the adjacent local road network to the new high standard Expressway with a reduced number of intersections. This expectation is based on the provision of the Port Wakefield Road Upgrade.