14. Transport

14.1 Overview

The Southern Expressway is one of three major road transport corridors linking the outer southern suburbs with the wider metropolitan area of Adelaide. It is located to the west of Main South Road and to the east of the Ocean Boulevard–Lonsdale Road–Dyson Road transport corridor. Since the opening of the one-way reversible Southern Expressway in 2001, traffic volumes have significantly grown along it relative to the other two major routes because it offers a free-flow high-speed facility.

The Southern Expressway generally caters for long distance trips and primarily services the weekday commuter traffic peaks in the morning and afternoon periods. Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road cater for relatively shorter distance trips and for the contra (opposite) peak direction traffic flows which cannot be accommodated by the one-way reversible Southern Expressway.

The Southern Expressway, which operates on weekdays northbound from 2.00 a.m.–12.30 p.m. and southbound from 2.00 p.m.–12.30 a.m. (switched on weekends and public holidays), is managed remotely via the DTEI Metropolitan Region Traffic Control Centre. A changeover period of up to 90 minutes, when road users are unable to use the facility and have to use alternative routes, is required to reverse the operation. Vehicles queue at entry ramps before the re-opening, which can cause safety concerns when queues extend onto arterial roads.

The demand for pedestrian and cycle movements along and across the Southern Expressway corridor is adequately catered for by formal bike, shared use and informal paths. Access across the Southern Expressway, via road and pedestrian bridges, is critical to ensuring connectivity for pedestrian and cycle demands.

14.2 Legislative and policy requirements

Table 14.1 summarises the key legislation relevant to transport associated with the project.

Table 14.1 Relevant legislation (transport)

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Description</th>
<th>Relevance to project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways Act 1926 (SA)</td>
<td>Requires the design and operation of roads according to relevant standards and codes, and to the Australian Road Rules</td>
<td>Design and assessment of the project must comply with all relevant standards and codes, and to Australian Road Rules</td>
</tr>
<tr>
<td>Road Traffic Act 1961 (SA)</td>
<td>Requires the design and operation of roads according to relevant standards and codes, and to the Australian Road Rules</td>
<td></td>
</tr>
</tbody>
</table>

Traffic impacts must be designed and assessed with reference 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
- Guide to Road Design, Austroads
14.3 Existing transport network

14.3.1 Arterial road network

The three north–south oriented arterial roads that characterise the southern regional road network (Figure 14.1) – the Southern Expressway, Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road – are all used for inter-regional and intra-regional trips, as they all link key local destinations and Adelaide central business district.

Traffic travelling in the direction opposite to that on the reversible Southern Expressway must use Main South Road or Ocean Boulevard–Lonsdale Road–Dyson Road. These roads are also used by traffic unable to directly access the Southern Expressway at any time.

The Southern Expressway is connected to the arterial road network at Main South Road (Bedford Park), Marion Road (Sturt), Main South Road–Panalatinga Road (Reynella), Sherriffs Road (Morphett Vale), Beach Road (Noarlunga) and Main South Road (Huntfield Heights). Only the connections at Sherriffs Road and Beach Road provide for all possible movements to and from the Southern Expressway (commensurate with the direction of traffic flow). Road bridges at Seacombe Road, Majors Road, Lander Road, O’Sullivan Beach Road, Flaxmill Road and Honeypot Road cross the Southern Expressway but do not connect to it. The connections at Sherriffs Road and Beach Road are close to capacity during peak periods when traffic is entering/exiting the Southern Expressway from/to the local roads.

14.3.2 Local road network

A number of local roads in the project area cross the Southern Expressway, including Adams Road, Young Street, Moore Road, Brodie Road and Elizabeth Road.

Adams Road connects Majors Road (just west of the Southern Expressway) to Lander Road through Sheidow and Trott Park and is used by local traffic to access Main South Road.

Young Street connects Sheidow Park and Old Reynella across the Southern Expressway. The southern end of Young Street connects to Main South Road, extending north to Lander Road.

Moore Road is an east–west local road passing over the Southern Expressway from Old Reynella to Lonsdale, approximately 500 metres north of Sherriffs Road. Moore Road forms part of a greater east–west local road link, which incorporates The Strand, Grant Road and Reynella Road, connecting west Reynella (from Brodie Road) through to Happy Valley.

Brodie Road is a north–south local road which runs between Moore and Flaxmill roads, providing access to both light industrial and residential areas. Brodie Road currently connects into the Southern Expressway ramps via roundabouts at Sherriffs Road interchange.

Elizabeth Road is a distributor road connecting Flaxmill Road (east of Dyson Road) to Beach Road in the south, providing an important local connection through Christie Downs and Morphett Vale.
14.3.3 Existing traffic volumes

The existing Southern Expressway daily traffic volumes range from 33,400 vehicles per day in the section between Marion Road and Panalatinga Road interchanges to 16,900 vehicles per day south of Panalatinga Road. Main South Road traffic volumes range from 72,600 vehicles per day at Bedford Park to 21,300 vehicles per day at Old Noarlunga; the Ocean Boulevard–Lonsdale Road–Dyson Road daily traffic volumes range between 20,000 and 40,000 vehicles per day. Current annual average daily traffic (AADT) volumes are shown in Table 14.2.

Figure 14.2 illustrates the existing 2010 AADT volumes.

Morning peak along the Southern Expressway and Main South Road is generally 7.00-9.00 a.m.; afternoon peak is between 4.30 and 6:30 p.m. Traffic volumes on the Southern Expressway are slightly higher during the morning peak than the afternoon peak, and generally higher at the northern end of the expressway than the southern end.

Current peak hour traffic volumes are summarised in Table 14.2 for the three parallel routes. The Southern Expressway caters for high volumes of traffic: 35–60% of peak direction traffic in the morning and afternoon.

An estimated 30–80% of Main South Road contra (opposite) peak direction traffic flows (i.e. southbound in the morning and northbound in the afternoon peaks) could use the Southern Expressway if it were available/accessible as a two-way road. Similarly, 15–40% of contra peak direction traffic flows along Ocean Boulevard–Lonsdale Road–Dyson Road could use a two-way Southern Expressway.

Table 14.2 Existing 2010 AADT and peak hour traffic volumes by Southern Expressway section

<table>
<thead>
<tr>
<th>Time period and section</th>
<th>Direction</th>
<th>Lonsdale Road</th>
<th>Southern Expressway</th>
<th>Main South Road</th>
<th>Total</th>
<th>Southern Expressway (% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedford Park to Marion Road</td>
<td>Two-way</td>
<td>35,000</td>
<td>20,800</td>
<td>50,100</td>
<td>105,900</td>
<td>20%</td>
</tr>
<tr>
<td>Marion Road to Panalatinga Road</td>
<td>Two-way</td>
<td>39,600</td>
<td>33,400</td>
<td>49,800</td>
<td>122,800</td>
<td>27%</td>
</tr>
<tr>
<td>Panalatinga Road to Sherriffs Road</td>
<td>Two-way</td>
<td>30,000</td>
<td>21,600</td>
<td>32,900</td>
<td>84,500</td>
<td>26%</td>
</tr>
<tr>
<td>Sherriffs Road to Beach Road</td>
<td>Two-way</td>
<td>30,100</td>
<td>21,400</td>
<td>29,700</td>
<td>81,200</td>
<td>26%</td>
</tr>
<tr>
<td>Beach Road to Old Noarlunga</td>
<td>Two-way</td>
<td>20,700</td>
<td>16,900</td>
<td>21,300</td>
<td>58,900</td>
<td>29%</td>
</tr>
<tr>
<td>a.m. peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedford Park to Marion Road</td>
<td>Northbound</td>
<td>2,340</td>
<td>2,880</td>
<td>2,820</td>
<td>8,040</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>1,100</td>
<td>0</td>
<td>1,720</td>
<td>2,820</td>
<td>0%</td>
</tr>
<tr>
<td>Marion Road to Panalatinga Road</td>
<td>Northbound</td>
<td>2,470</td>
<td>4,680</td>
<td>2,470</td>
<td>9,620</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>1,260</td>
<td>0</td>
<td>2,060</td>
<td>3,320</td>
<td>n.a.</td>
</tr>
<tr>
<td>Panalatinga Road to Sherriffs Road</td>
<td>Northbound</td>
<td>1,040</td>
<td>3,130</td>
<td>1,070</td>
<td>5,240</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>1,580</td>
<td>0</td>
<td>1,520</td>
<td>3,100</td>
<td>n.a.</td>
</tr>
<tr>
<td>Time period and section</td>
<td>Direction</td>
<td>Lonsdale Road</td>
<td>Southern Expressway</td>
<td>Main South Road</td>
<td>Total</td>
<td>Southern Expressway (% of total)</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>--------------</td>
<td>--------------------</td>
<td>----------------</td>
<td>-------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Sherriffs Road to Beach Road</td>
<td>Northbound</td>
<td>990</td>
<td>2,590</td>
<td>670</td>
<td>4,250</td>
<td>61%</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>1,520</td>
<td>0</td>
<td>1,310</td>
<td>2,840</td>
<td>n.a.</td>
</tr>
<tr>
<td>Beach Road to Old Noarlunga</td>
<td>Northbound</td>
<td>770</td>
<td>2,130</td>
<td>540</td>
<td>3,440</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>Southbound</td>
<td>850</td>
<td>0</td>
<td>1,000</td>
<td>1,850</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

**Table 14.3 Existing 2010 AADT and commercial vehicle proportion**

<table>
<thead>
<tr>
<th>Road</th>
<th>Section</th>
<th>AADT</th>
<th>Commercial vehicle proportion</th>
<th>Commercial vehicle volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Expressway</td>
<td>Main South Road interchange at Darlington to Marion Road</td>
<td>20,800</td>
<td>5.5%</td>
<td>1,140</td>
</tr>
<tr>
<td></td>
<td>Marion Road to Panalatinga Road interchange</td>
<td>33,400</td>
<td>5%</td>
<td>1,670</td>
</tr>
<tr>
<td></td>
<td>Panalatinga Road interchange to Sherriffs Road interchange</td>
<td>21,600</td>
<td>5%</td>
<td>1,080</td>
</tr>
<tr>
<td></td>
<td>Sherriffs Road interchange to Beach Road interchange</td>
<td>21,400</td>
<td>4.5%</td>
<td>960</td>
</tr>
<tr>
<td></td>
<td>Beach Road interchange to Main South Road interchange at Old Noarlunga</td>
<td>16,900</td>
<td>5.5%</td>
<td>930</td>
</tr>
</tbody>
</table>
2010 annual average daily traffic volumes (two-way)

Figure 14.2

Traffic volumes - all other roads
38,100

Traffic volumes - Brighton Rd, Lonsdale Rd, Dyson Rd
29,800

Traffic volumes - Main South Road
22,400

Traffic volumes - Southern Expressway
16,900

Traffic volumes - Main South Road Interchange at Darlington
51,200

Traffic volumes - Panalatinga Road Interchange
45,100

Traffic volumes - Beach Road Interchange
20,700

Traffic volumes - Sherriffs Road Interchange
30,100

Traffic volumes - Happy Valley Reservoir
72,600

Traffic volumes - Southern Expressway Duplication
72,600

Traffic volumes - Old Noarlunga
50,100
Figure 14.3

Traffic volumes - all other roads
Traffic volumes - Brighton Rd, Lonsdale Rd, Dyson Rd
Traffic volumes - Main South Road
Traffic volumes - Southern Expressway

2010 peak hour directional traffic volume

Figure 14.3
### 14.3.4 Existing level of service

The Austroads *Guide to Traffic Management Part 3 – Traffic Studies and Analysis*) defines level of service (LOS) as ‘a quantitative measure describing operational conditions in a traffic stream, and their perception by motorists and/or passengers’. The guide describes six LOS:

- 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)
- LOS F (worst conditions—capacity exceeded, forced flow conditions).

A LOS during peak periods of LOS D or better is considered acceptable.

The LOS for various mid-block sections at peak times has been assessed using existing peak hour traffic data (*Table 14.4*).

### Table 14.4 Existing level of service on southern arterial roads

<table>
<thead>
<tr>
<th>Road</th>
<th>Section</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Expressway</td>
<td>Main South Road interchange at Darlton to Sherriffs Road interchange</td>
<td>D</td>
</tr>
<tr>
<td>Southern Expressway</td>
<td>Sherriffs Road interchange to Main South Road interchange at Old Noarlunga</td>
<td>C</td>
</tr>
<tr>
<td>Main South Road</td>
<td>South of Seacombe Road</td>
<td>C</td>
</tr>
<tr>
<td>Main South Road</td>
<td>North and south of Panalatinga Road interchange</td>
<td>B</td>
</tr>
<tr>
<td>Main South Road</td>
<td>North of Sherriffs Road interchange</td>
<td>D</td>
</tr>
<tr>
<td>Main South Road</td>
<td>South of Sherriffs Road interchange</td>
<td>C</td>
</tr>
<tr>
<td>Lonsdale Road</td>
<td>North and south of Sherriffs Road interchange</td>
<td>C</td>
</tr>
<tr>
<td>Dyson Road</td>
<td>North of Beach Road interchange</td>
<td>C</td>
</tr>
<tr>
<td>Dyson Road</td>
<td>South of Beach Road interchange</td>
<td>D</td>
</tr>
</tbody>
</table>
The performance of existing signalised intersections has also been assessed. Overall intersection performance is reported as a degree of saturation (DOS), which is an indicative measure of the ratio of traffic demand to available capacity. A DOS of 1 represents an intersection that is at capacity (desirably DOS should be less than 0.90). The intersections of the existing Southern Expressway ramp terminals with the local/arterial roads currently operate within capacity, with the exception of the Southern Expressway–Main South Road interchange at Darlington.

Table 14.5 summarises the intersection performances for both morning and afternoon peaks in the form of DOS.

<table>
<thead>
<tr>
<th>Section of road</th>
<th>DOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Morning peak</td>
</tr>
<tr>
<td>Southern Expressway–Main South Road signalised interchange at Darlington</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Southern Expressway–Marion Road signalised intersection</td>
<td>0.78</td>
</tr>
<tr>
<td>Panalatinga Road–Southern Expressway–Main South Road signalised interchange</td>
<td>0.79</td>
</tr>
<tr>
<td>Kenihans Road–Panalatinga Road–Old South Road signalised intersection</td>
<td>0.64</td>
</tr>
<tr>
<td>Brodie Road North–Sherriffs Road signalised intersection</td>
<td>0.73</td>
</tr>
<tr>
<td>Brodie Road South–Sherriffs Road signalised intersection</td>
<td>0.84</td>
</tr>
<tr>
<td>Beach Road–Southern Expressway roundabout</td>
<td>0.52</td>
</tr>
<tr>
<td>Southern Expressway–Main South Road signalised interchange at Old Noarlunga</td>
<td>n.a.*</td>
</tr>
</tbody>
</table>

*n.a.: free flow conditions during morning peak

14.3.5 Road crashes

A total of 476 crashes were recorded on the Southern Expressway and its associated entry and exit ramps during the period January 2005 to September 2010.

Of the 476 crashes, 135 (28%) involved injuries (classified as treatments by a doctor or in hospital) and 341 (72%) involved property damage only (classified as incidents that have a damage value greater than $3,000).

There were 245 rear-end crashes (51%), 80 hit fixed objects (17%), 32 obtained side swipes (7%) and 24 right angle crashes (5%). The remaining crashes involved vehicles rolling over, hitting a loose object/animal or leaving the road out of control.

Of the crashes, 55% occurred during northbound travel, 45% during southbound travel. Approximately 26% of the crashes (124) occurred at night time.

A total of 299 crashes (of the 476) occurred at on-ramps or off-ramps, and of these:

- 52% were rear-end crashes with 46% occurring at on-ramps and 54% at off-ramps
- 55% due to inattention
- 23% occurred at night
- 15% occurred when the road surface was wet.
A total of 177 crashes (of the 476) occurred on the Southern Expressway midblock sections, and of these:

- 51% were rear-end crashes
- 27% hit fixed object crashes
- 44% due to inattention
- 30% were following the car in front too closely
- 31% occurred at night
- 27% occurred when the road surface was wet.

### 14.3.6 Freight routes

Industrial and commercial enterprises in the outer southern suburbs (including Noarlunga Centre and Lonsdale) contribute significantly to the local and state economies. The efficient and effective movement of freight to and from the wider metropolitan area and key distribution centres and export markets is critical to supporting those industries. Main South Road is the primary route to and from the area supported by Ocean Boulevard–Lonsdale Road–Dyson Road and the Southern Expressway. The efficient free-flow link of the Southern Expressway between Darlington and Old Noarlunga operates for less than 12 hours per day for any one direction. It is classified as a general B-Double freight route. Vehicles travelling in the direction opposite to the operation of the Southern Expressway are required to use either the Main South Road or Ocean Boulevard–Lonsdale Road–Dyson Road, and must stop at traffic signals; increasing operating costs and vehicle emissions.

### 14.3.7 Public transport

The Southern Expressway provides for commuter peak bus services within the limitations of the one-way operation (Table 14.6).

No bus services travel along the full length of the Southern Expressway. Buses needing to travel in the contra (opposite) peak direction have to use Main South Road. Priority is given to northbound buses on the Southern Expressway at the signalised intersection with Main South Road at Darlington via a 175 metre long red bus lane and a priority B-light. Bus only lanes are provided for buses entering and exiting the Southern Expressway at the intersection of Panalatinga Road with Main South Road; no bus priority is given at the traffic signals.

Stopping and other express bus services not travelling along the Southern Expressway use Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road.

East–west bus services travel across the Southern Expressway and are unaffected by the reversible operation.

<table>
<thead>
<tr>
<th>Table 14.6 Existing bus services along the Southern Expressway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus service(s)</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>T721, 721X, T721X, T722, 722X</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>T748</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
14.3.8 Pedestrian and cycling paths

The pedestrian and cycling network includes paths in the Southern Expressway corridor as well as pedestrian and cycling links to, from and across the corridor. These paths play an important role as pedestrians and cyclists are prohibited from using the Southern Expressway.

A sealed path runs along the eastern side of the Southern Expressway corridor for its entire length. The northern section of this path, the Patrick Jonker Veloway, is for exclusive use by cyclists; the southern section, the Patrick Jonker Bikeway, is a shared path for use by cyclists and pedestrians.

On the western side of the project corridor, a series of unsealed informal paths and tracks link up to form a shared path for most of the corridor length. These informal paths are a combination of paths constructed by DTEI/Council and desire line tracks worn by local residents. They have varying degrees of use along their length by pedestrians and cyclists. In some locations the path is used by maintenance and emergency vehicles.

The existing paths and external links to these paths are illustrated in Figures 14.4 to Figure 14.7.

14.3.8.1 Patrick Jonker Veloway (exclusive bikeway)

The Patrick Jonker Veloway is a 7 kilometre sealed path located on the eastern side of the Southern Expressway corridor for exclusive use by cyclists. It runs between Marion Road and its intersection with the Coast to Vines Trail near Lander Road. It is used by high speed commuter and training cyclists, as well as recreational and other cyclists. Some cyclists in downhill sections are able to travel at high bicycle speeds. Pedestrians are not permitted on the appropriately signed veloway but crashes have been recorded between pedestrians and high speed cyclists on this path.

14.3.8.2 Patrick Jonker Bikeway (shared pedestrian/cyclist pathway)

The Patrick Jonker Bikeway is a 12 kilometre sealed path on the eastern side of the Southern Expressway corridor from the Patrick Jonker Veloway intersection with the Coast to Vines Trail near Lander Road and the Coast to Vines Trail in Huntfield Heights north of Main South Road.

The path is grade separated at all road crossings except at Sherriffs Road where an at-grade signalised crosswalk is provided. At Brodie Road a pedestrian/cyclist refuge is also provided.

The bikeway and veloway meet at the Coast to Vines Trail tunnel under the Southern Expressway and signage informs pedestrians they are not permitted to use the veloway.

14.3.8.3 Unsealed paths

A series of unsealed paths along the western side of the Southern Expressway corridor comprise shared paths constructed by DTEI/Council, Country Fire Service emergency tracks, maintenance tracks, and worn sections formed by use. The majority of these paths are in the Southern Expressway corridor but deviate outside of the corridor into the O’Halloran Hill Recreation Park (Department of Environment and Natural Resources) and council-owned land. The unsealed paths exist because there is a desire for off-street, direct paths in those locations (particularly parallel to the veloway where there is no other pedestrian path).

These paths link up and form an almost continuous route along the length of the Southern Expressway. Gaps in the route are found in areas of challenging topography and areas with no or sparse residential development, for example between the Trott Park shared path underpass and O’Sullivan Beach Road. These informal paths fulfil an important role for off-road pedestrian and cycling access for the communities on the western side of the Southern Expressway, particularly between...
Shared path on western side connects to Sturt River.
Shared path underneath Sturt River Overpass. Path links to Warrapatinga Reserve, Sturt River Linear Park (to Glenelg), future public transport interchange, future Tonsley Line Greenway, Flinders University, Flinders Medical Centre and Tonsley Park redevelopment site.

Shared path provides key off-road route on western side (note: pedestrians not allowed on Veloway - east side). Provides access at end of cul de sacs. Connects to Sturt Triangle via median refuge in Marion Road.

Shared path central pedestrian refuges at Seacombe Road and Diagonal Road.

Shared path provides off-road route on western side and access at end of cul de sac. Corridor is narrow at Ridgecrest Avenue and Graham Road.

Shared path and CFS emergency access under Expressway. Links paths on both sides of Expressway and TAFE College. Does not link to Veloway due to grade separation.

Veloway start/finish connects to signalised intersection and bike lanes on Marion Road and Main South Road.

Patrick Jonker Veloway (cyclist use only) between Marion Road and its intersection with Coast and Vines Trail.

Patrick Jonker Bikeway

Figure 14.4
Southern Expressway Duplication  Project Impact Report

Figure 14.5

Pedestrian and cycling network

- Majors Road Underpass plus Veloway ramps up to Majors Road. No formal at-grade road crossing.
- Glenthorpe Underpass. Cyclist/pedestrian bridge over Expressway and Veloway. Also CFS access road. Connects to unsealed path but not Veloway due to grade separation.
- Shared path. Limited access from streets due to property fencing.
- Veloway at-grade access to Lander Road via Matthews Street.
- Lander Road Overpass
- Veloway and Bikeway interface. Connects to Coast to Vines Trail via Trott Park shared underpass.
- Coast to Vines Trail (major regional trail) connects to Bikeway on western side, Expressway shared path and Veloway.
- Patrick Jonker Veloway (cyclist use only) between Marion Road and its intersection with Coast and Vines Trail.
- Grants Creek Overpass. East-west path under Expressway connects Grant Road to informal trails on western side.
- Bicycle lockers at Reynella East bus interchange.
- Young Street Underpass plus Veloway ramp up to Young Street. No formal at-grade road crossing.

Legend:
- Walkway
- Overpass
- Underpass
- Intersection
- Unsealed shared path
- Local road BikeDirect route (no lanes marked)
- Main road BikeDirect route (no lanes marked)
- Secondary Road with bicycle lanes
- Main Road with bicycle lanes
- Off road sealed shared path
- Patrick Jonker Bikeway
- Patrick Jonker Veloway (cyclists only)
Southern Expressway Duplication Project Impact Report

Pedestrian and cycling network

- **Grants Creek Overpass.** East-west path under Expressway connects Grant Road to informal trails on western side.
- **Moore Road Overpass and ramp to Moore Road.** No formal road crossing.
- **Sugarbrush Road pedestrian bridge.**
- **Shared path connects at-grade to Sherriffs Road via signalised crosswalk.**
- **Refuge crossing at Brodie Road.**
- **Patrick Jonker Bikeway.**
- **O’Sullivan Beach Road Underpass at grade to Brodie Road, south of O’Sullivan Beach Road.**
- **Unsealed paths link to Christies Creek Trail.** Alternative route exists along Morrow Road.
- **Christies Creek Overpass.** East-west shared path underpass for Christies Creek Trail access.
- **Glenhelen Road pedestrian bridge.**
- **Flaxmill Road underpass and shared path ramp up to Flaxmill Road - no formal road crossing.**
- **Pedestrian bridge.**

---

**Figure 14.6**

Scale @ A4 1:20,000

- **Walkway**
- **Unsealed shared path**
- **Overpass**
- **Local road BikeDirect route (no lanes marked)**
- **Underpass**
- **Main road BikeDirect route (no lanes marked)**
- **Secondary Road with bicycle lanes**
- **Main Road with bicycle lanes**
- **Off road sealed shared path**
- **Patrick Jonker Bikeway**
- **Patrick Jonker Veloway (cyclists only)**
Pedestrian and cycling network

- **Elizabeth Road Underpass** with informal path up to Elizabeth Road. No formal road crossing.
- **Beach Road Underpass** and ramp up to Beach Road with central refuge at crossing.
- **Poznan Crescent pedestrian bridge** connects Noarlunga Centre to east of Expressway.
- **Honeypot Road Underpass** and shared path ramp up to Honeypot Road - no formal road crossing.
- **Peppermint Grove pedestrian bridge**
- **Honey Grove pedestrian bridge**
- **Path deviates around minor waterway**
- **Coast to Vines Trail east-west shared path underpass**
- **Shared path connection to Main South Road**
- **Bikeway connects to Coast to Vines Trail at-grade.**

**Unsealed shared path**
- Provides good western side connection.
- Provides connections to The Ranch (city farm and community centre), Noarlunga Centre, Coastal trails, numerous schools and TAFE.

**Patrick Jonker Bikeway**

**Patrick Jonker Veloway (cyclists only)**

**Figure 14.7**

*Scale @ A4 1:20,000*
Darlington and Trott Park where the veloway prohibits pedestrians. They provide access to shops and other services in areas of high residential density, and connections to east–west trails. They also form loops with the shared path on the eastern side for recreational use. In addition, the paths provide access ‘through’ the ends of cul-de-sacs to make pedestrian routes shorter and more direct. Sections of the path on the western side of particular interest include:

- Seacombe Road to Marion Road: anecdotal evidence of high level of use to access the local shops and the Flagstaff Hotel
- Seacombe Road to Ridgecrest Road: access at the end of the cul de sacs and to the east–west crossing of the Southern Expressway at Seacombe Road
- Poznan Crescent and the Perry Grove pedestrian bridges: connections to various destinations on the western side including the Noarlunga Centre and TAFE
- Glenthorne Underpass and Coast to Vines Trail: pedestrian access to the Coast to Vines Trail.

14.3.8.4 Pedestrian and cycling access across the Southern Expressway corridor

Grade separated east–west connections for pedestrians and cyclists in the form of underpasses and bridges are provided across the Southern Expressway corridor, and at frequent intervals in areas of high density.

Where the veloway or bikeway ramps up to the road crossing, there are, in most cases, ramps to both sides of the local road so that cyclists and pedestrians can exit on the side of the road that suits them. Median refuges to facilitate road crossing in two stages are provided at Seacombe Road, Diagonal Road, Brodie Road and Beach Road. Sherriffs Road has signalised cross walk.

Roads containing cycling lanes that cross the Southern Expressway include Beach Road, Honeypot Road, Majors Road, Seacombe Road and Marion Road.

14.3.8.5 Connections to the broader pedestrian and cycling network

A number of pedestrian and cycling trails and destinations link to the Southern Expressway corridor. Some are currently still in the design phase, external to this project. The ultimate vision is for the River Torrens Linear Park to link to the Patrick Jonker Veloway via the Sturt River Linear Park and Coast Park. This will result in a significant, regional off-road trail between Athelstone and Willunga.

Table 14.7 summarises existing pedestrian and cycling network connections and links in the vicinity of the Southern Expressway corridor.

<table>
<thead>
<tr>
<th>Trail</th>
<th>Connections/links</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coast to Vines Trail between</td>
<td>Connects with veloway/bikeway at Trott Park underpass;</td>
<td>Forms significant loop trail between Noarlunga and Trott Park</td>
</tr>
<tr>
<td>Marino Rocks and Willunga</td>
<td>also connects with the bikeway at the southern end of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the Southern Expressway</td>
<td></td>
</tr>
<tr>
<td>Sturt River Linear Park</td>
<td>Shared path links Warriparinga Triangle to Glenelg East</td>
<td>Does not link directly with veloway/bikeway on western side</td>
</tr>
<tr>
<td></td>
<td>and River Torrens Linear Park</td>
<td>of Southern Expressway. Cyclists and pedestrians must travel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>along Main South Road between Sturt River Linear Park and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Southern Expressway. There are plans to extend the trail to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coromandel Valley under a separate project.</td>
</tr>
</tbody>
</table>
Trail Connections/links Comments

Christie Creek Trail Extends from northern end of Christies Beach to Panalatinga Road. Trail crosses the Southern Expressway via an underpass and links to bikeway. Informal unsealed paths on western side of Southern Expressway link to the trail between Flaxmill Road and O’Sullivan Beach Road. There are plans to extend the trail along the riverine corridor to the Mount Lofty Ranges.

Colonnades to Golden Wattle Way Link Trail will cross the Southern Expressway via the Poznan Crescent pedestrian bridge Proposed local trail by the City of Onkaparinga

As well as the pedestrian and cycling trails, various destinations are likely to be accessed by cyclists and pedestrians along the Southern Expressway corridor:

- Warripparinga Reserve and Warripparinga (‘Sturt’) Triangle
- O’Halloran Hill TAFE College
- neighbourhood centre and tennis courts, Trott Park
- Reynella East bus interchange (bicycle lockers)
- Noarlunga TAFE, Noarlunga Centre, aged care centre, hospital
- The Ranch (community centre and city farm)
- Christies Beach High School.

Further afield, cyclists working or studying at Flinders University and Flinders Medical Centre are likely to use the veloway. In addition, future destinations will include the Tonsley Park redevelopment (previously Mitsubishi), Tonsley Park Greenway and the public transport interchange at the Sturt Triangle as identified in the Darlington Transport Study.

14.4 Effects of the project

The project will affect both regional and local traffic movements. It will change traffic patterns as Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road traffic will be able to use the Southern Expressway at all times of the day.

14.4.1 Arterial road network

The duplicated Southern Expressway carriageway will replicate the number of lanes on the existing carriageway: generally three lanes from Marion Road to Panalatinga Road interchange, and two lanes between Main South Road interchange at Darlington and Marion Road, and between Panalatinga Road interchange and Main South Road interchange at Old Noarlunga.

The project will also add connectivity at the Marion Road interchange and the Main South Road interchange at Old Noarlunga, including provision for:

- a left turn from Marion Road (south) to the Southern Expressway (southbound)
- a right turn from the Southern Expressway (northbound) to Marion Road (south)
- formalisation of the left turn from the expressway onto Main South Road at Old Noarlunga.

Existing interchanges at Marion Road, Panalatinga Road (Chapter 5 – Project description), Sherriffs Road and Main South Road at Old Noarlunga will be upgraded and maintained as signal controlled
intersections. The Beach Road interchange will become signalised. The Main South Road interchange at Darlington will be modified to be compatible with the proposed Darlington Transport Study.

14.4.2 Local road network

There will be minimal changes to the local road network as a result of the project.

Brodie Road north will be realigned to connect to the Sherriffs Road service road independently of the Southern Expressway ramp. Access will then be at the same locations as access to the service road.

No permanent road closures or cul-de-sac creations are expected from the project.

14.4.3 Predicted traffic volumes

Forecasts of 2031 morning and afternoon peak hour traffic volumes have been developed from the Metropolitan Adelaide Strategic Transport Evaluation Model (MASTEM). Results from MASTEM have been used in the design process and to understand any traffic or environmental impacts. The data used in the MASTEM modelling is from The 30-Year Plan for Greater Adelaide.

The 2031 forecast peak hour traffic volumes are illustrated in Figure 14.8.

Peak hourly traffic volumes in 2031 on the Southern Expressway are forecast to reach 6,000 vehicles per hour in the section between Marion Road and Panalatinga Road interchange. Other sections are forecast to have between 3,000 and 4,000 vehicles per hour in the peak direction. Contra (opposite) peak flows along the Southern Expressway are forecast to be approximately 2,700–3,300 vehicles per hour between Marion Road and Panalatinga Road interchange, and in other sections of the Southern Expressway, between 1,800–2,700 vehicles per hour. The contra peak traffic flows on the Southern Expressway will be a direct transfer from both Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road. The year 2031 forecasts a reduction in traffic on Main South Road in the contra peak direction of up to 1,500 vehicles per hour in the peaks, and along Ocean Boulevard–Lonsdale Road–Dyson Road of up to 300 vehicles per hour.

The forecast volumes along Panalatinga Road and States Road are forecast to be relatively consistent. There may be some small shift in traffic accessing the Southern Expressway in the contra peak direction.

14.4.4 Predicted level of service

Forecast 2031 intersection performance (reported as DOS) has been assessed for the Southern Expressway interchanges with the arterial road network. The intersections with the Southern Expressway are forecast to operate under capacity, with a DOS of less than 1 (i.e. spare capacity).

Table 14.8 summarises the intersection performances for both morning and afternoon peaks as DOS for the forecast of 2031 traffic volumes.
Table 14.8  Intersection performance during morning and afternoon peaks for forecast 2031 traffic volumes

<table>
<thead>
<tr>
<th>Section of road</th>
<th>DOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Expressway–Main South Road signalised interchange at Darlington</td>
<td>*</td>
</tr>
<tr>
<td>Southern Expressway–Marion Road signalised interchange</td>
<td>0.88 0.87</td>
</tr>
<tr>
<td>Panalatinga Road–Southern Expressway–Main South Road signalised interchange</td>
<td>0.79 0.62</td>
</tr>
<tr>
<td>Kenihans Road–Panalatinga Road–Old South Road signalised intersection</td>
<td>0.97 0.79</td>
</tr>
<tr>
<td>Sherriffs Road–Southern Expressway diamond interchange</td>
<td>0.70 0.75</td>
</tr>
<tr>
<td>Beach Road–Southern Expressway diamond interchange</td>
<td>0.68 0.72</td>
</tr>
<tr>
<td>Southern Expressway–Main South Road signalised interchange at Old Noarlunga</td>
<td>0.88 0.88</td>
</tr>
</tbody>
</table>

* Darlington Transport Study scheme is assumed to be in place by 2031 with free-flow traffic conditions

Peak traffic queues at interchanges are to be accommodated within the lanes provided and will not extend to adjacent intersections or onto the Southern Expressway. However, the southbound queues at the Marion Road interchange are forecast to extend as far as the Main South Road–Marion Road intersection in the morning peak.

14.4.5  Road crashes

Crash data from January 2005 to September 2010 shows no crashes directly attributable to the one-way operation of the Southern Expressway.

During the changeover period (i.e. when the operation of the Southern Expressway is changing direction), and when the Southern Expressway is closed, a notable number of vehicles incorrectly enter the corridor but exact figures are unknown. This behaviour will no longer occur once duplication is complete.

The exit and entry ramps along the Southern Expressway will all be converted to conventional merges and diverges to and from the left. This is expected to eliminate some of the current at the exit and entry ramps to and from the right, and improve safety.

14.4.6  Freight routes

When duplicated, the Southern Expressway will become a key heavy vehicle freight route, which may replace Main South Road between Darlington and Old Noarlunga as the designated heavy vehicle freight route. The duplicated Southern Expressway will provide significant travel time savings for freight vehicles which currently use Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road to and from the southern region.

14.4.7  Public transport

No changes are planned to public transport as part of the project including the operation of the Panalatinga ‘park and ride’ facility. The full access will allow flexibility for additional bus services to be routed along the Southern Expressway in the future.
Southern Expressway Duplication Project Impact Report

Southern Expressway forecasts are Consultant's design volume estimates. All other forecasts are directly from MASTEM.

Traffic volumes:
- **1530**: Traffic volumes - all other roads
- **1410**: Traffic volumes - Brighton Rd, Lonsdale Rd, Dyson Rd
- **3410**: Traffic volumes - Main South Road
- **2810**: Traffic volumes - Southern Expressway

2031 forecast peak directional traffic volumes

Figure 14.8
14.4.8 Pedestrian and cycling network

The duplicated carriageway of the Southern Expressway will be located predominantly on the western side of the project corridor and existing carriageway which, except at a few locations, will leave the existing veloway and bikeway unaffected on the eastern side of the corridor. The informal pedestrian and cycling network on the western side of the corridor will be affected where the project corridor width is constrained. However, current connectivity will be retained as part of the project.

14.4.8.1 Patrick Jonker Veloway and Bikeway

Realignment of the veloway and bikeway will be required in the immediate vicinity of the new carriageway located on the eastern side (south of Ridgecrest Road) at the Darlington escarpment, and at major modifications to interchanges. The realignment will provide at least the same standard that currently exists.

Existing cyclist/pedestrian underpasses will generally be lengthened to extend under the new carriageway. However, overpasses may be constructed where feasible to avoid the long underpasses. The underpasses will be designed with Crime Prevention through Environmental Design principles, including light wells between carriageways where required. ramps will also be designed to comply with the Disability Discrimination Act 1992.

At the Panalatinga Road interchange, the layout of the veloway and bikeway will be improved to reflect a more intuitive/user friendly alignment. The bikeway will be grade separated to form an overpass at the Southern Expressway, removing the need for a long shared path underpass. The veloway will run under the on-ramp and off-ramp to Panalatinga Road.

Cycling lanes will be provided on all new bridges to complement existing cycling lanes on adjacent bridges.

14.4.8.2 Unsealed paths

The accessibility on informal, unsealed pedestrian paths is acknowledged and functionality will be retained. Realignment of the paths will be required in some locations.

In addition, existing maintenance vehicle and emergency vehicle paths may be consolidated with the pedestrian and cycling paths where required.

14.5 Mitigation measures to minimise effects

14.5.1 Principles and measures to minimise construction effects

The project will take an estimated 2–3 years to construct and will be operational by mid-2014. In this time, traffic impacts on and across the existing Southern Expressway will be minimised.

Reductions in capacity along the Southern Expressway (i.e. speed restrictions) and subsequent shifts in traffic will be accommodated by alternative routes along Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road. These alternative routes have spare capacity to accommodate these route shifts; they are currently underused in peak directions when the Southern Expressway takes most of the peak flows.

Initial construction planning envisages a number of temporary road closures on Moore Road, O’Sullivan Beach Road, Flaxmill Road and Elizabeth Road, during construction while bridges are being
constructed or widened. Initial analysis shows that alternative routes have capacity to accommodate additional traffic flows over this period of closure.

14.5.2 Potential intelligent transport systems measures

The Southern Expressway has been nominated by the South Australian Government to form part of its Managed Motorways Network. Managed motorways are urban motorways (or other high speed free flow roads including freeways and expressways) that have intelligent information, communications and control systems incorporated in and alongside the road. The national approach to developing managed motorways across Australia has the overall objectives of improving reliability and travel time performance of the facilities. Techniques being considered for the duplication of the Southern Expressway as a managed motorway include:

- coordination of traffic signals on the on-ramps to control the rate of traffic entering the facility
- variable speed limits supported by variable message signs to prevent secondary incidents after an initial incident
- lane control signs that manage lane use around incidents without the loss of capacity
- hard shoulder running where emergency break down lanes are used as supplementary traffic lanes during periods of peak traffic flows
- traffic and traveller information services such as signs displaying real-time advice about travel times to destinations.

Intelligent transport systems may contribute to achieving managed motorway objectives at four levels:

- Base level (including CCTV and variable message signs)
- Level 1 (Base level plus either variable speed limits or ramp controls)
- Level 2 (Base level plus variable speed limits and ramp controls)
- Level 3 (Level 2 plus lane controls).

The Southern Expressway is proposed to be provided with base level intelligent transport systems.

14.6 Conclusion

The project aims to provide an expressway standard road with two-way traffic flow at all times of the day. The duplicated Southern Expressway will attract traffic currently using Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road.

The project will improve travel times for traffic travelling to and from the southern region that currently uses Main South Road and Ocean Boulevard–Lonsdale Road–Dyson Road. It will also improve safety and accessibility for commercial traffic to industry related facilities in the wider metropolitan area.

The project will minimise impacts on the community, commuters, freight and businesses through effective construction staging and monitoring of the project both during and after construction.

Construction of the project will afford the same level of access and amenity for pedestrians and cyclists as currently provided. The existing veloway and bikeway along the eastern side of the project corridor will mostly remain as is and, in places, be replaced to ‘at least’ the equivalent provision. The existing connectivity along the unsealed paths on the western side of the project corridor will be retained.