

North-South Corridor

Torrens Road to River Torrens



Graphical representation: North-South Corridor (Surface roads and lowered road) looking south towards Grange Road-Manton Street intersection.

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What is the Project Assessment Report?

The release of this *Project Assessment Report* is the next stage of the North–South Corridor (Torrens Road to River Torrens) project’s planning phase. The document has been developed as part of the Environmental impact Assessment (EIA) process for the project. The *Project Assessment Report* explains the need for the project, describes the project and summarises the environmental, social, economic and engineering assessments undertaken on the concept design. The report outlines the measures proposed to avoid or minimise the effects of the project. Through this process members of the public, community organisations, and government agencies can comment on any aspect of the project.

Further information on the issues identified in this *Executive Summary* can be found in the *Project Assessment Report*.

The report and its executive summary are available on the project website at www.infrastructure.sa.gov.au/south_road_upgrade.

Hardcopies of the executive summary will be available from DPTI on request (see website or phone the project information line, 1300 794 899).

Have your say – make a submission

During the display period, submissions are invited on any issues associated with the project. Formal comment is also requested from government agencies. You can comment on any aspect of the project. All comments must be received in writing – formal written submissions – and may include:

- your opinion, suggestion or opposition to the project
- additional elements that you believe would make the project better
- any errors or omissions in the report, plus any extra factual information you have, and its source
- any other aspect that you would like to make comment on, question or propose.

Your written submission, be it a question or comment, contributes to the planning process. To have your say please make a submission.

Include your full name, address and day time contact telephone number. Clearly identify your issue/s and refer to the appropriate section/s of the report. If you hand write your submission, please ensure it is legible.

All submissions will be public documents unless confidentiality is requested. However, the Department of Planning, Transport and Infrastructure can be challenged on confidentiality through the *Freedom of Information Act 1991*.

The closing date for submissions is **Monday 11 August 2014**, which can be lodged by post (Project Director, Torrens Road to River Torrens project, GPO Box 1533, Adelaide SA 5001) or email (dpti.southroad@sa.gov.au). Please include the title “Submission on Project Assessment Report”.

Open day

An open day will be held at the project site office at 196 Torrens Road (corner of South Road) on Saturday 26 July 2014 between 11am and 2pm to enable members of the community to talk to the project team on any aspect of the project.



Graphical representation: Lowered road heading south under Port Road.

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North-South Corridor (Torrens Road to River Torrens)

The North–South Corridor is one of Adelaide’s most important transport corridors (Figure 1). It is the major route for north and south bound traffic including freight vehicles running between Gawler and Old Noarlunga, a distance of 78 kilometres, and comprises four road links:

- Northern Expressway from Gawler to Port Wakefield Road (opened in 2010)
- Northern Connector from Port Wakefield Road to Port River Expressway (proposed future project)
- South Road from Port River Expressway to Southern Expressway
- Southern Expressway from Darlington to Old Noarlunga (currently being duplicated, to be opened in mid-2014).

The Australian Government has announced its intention to upgrade the North–South Corridor over the next decade and together with the South Australian Government has committed \$896 million to construct the Torrens Road to River Torrens project. Each government will contribute \$448 million for construction of the project, due for completion in 2018.

The North–South Corridor will provide a series of strategic free-flowing road links to connect the rapidly expanding industrial and residential growth areas in the north and the south, to provide new opportunities for economic development.

The current roadway isn’t capable of handling projected growth and the number of vehicles that need to use the road or the size of freight carriers travelling along it. In response, the Australian and South Australian governments are expanding the route by creating a dedicated non-stop North–South Corridor with a program to eliminate the worst bottlenecks already underway.

By mid 2014 almost 50 km of the North–South Corridor will be completed. New road links have been built between Gawler and Port Wakefield Road (Northern Expressway), Regency Road and the Port River Expressway (South Road Superway) and between Bedford Park and Old Noarlunga (Southern Expressway duplication). Traffic flow along and across the route has also improved with the building of Gallipoli Underpass and the Glenelg Tram Overpass.

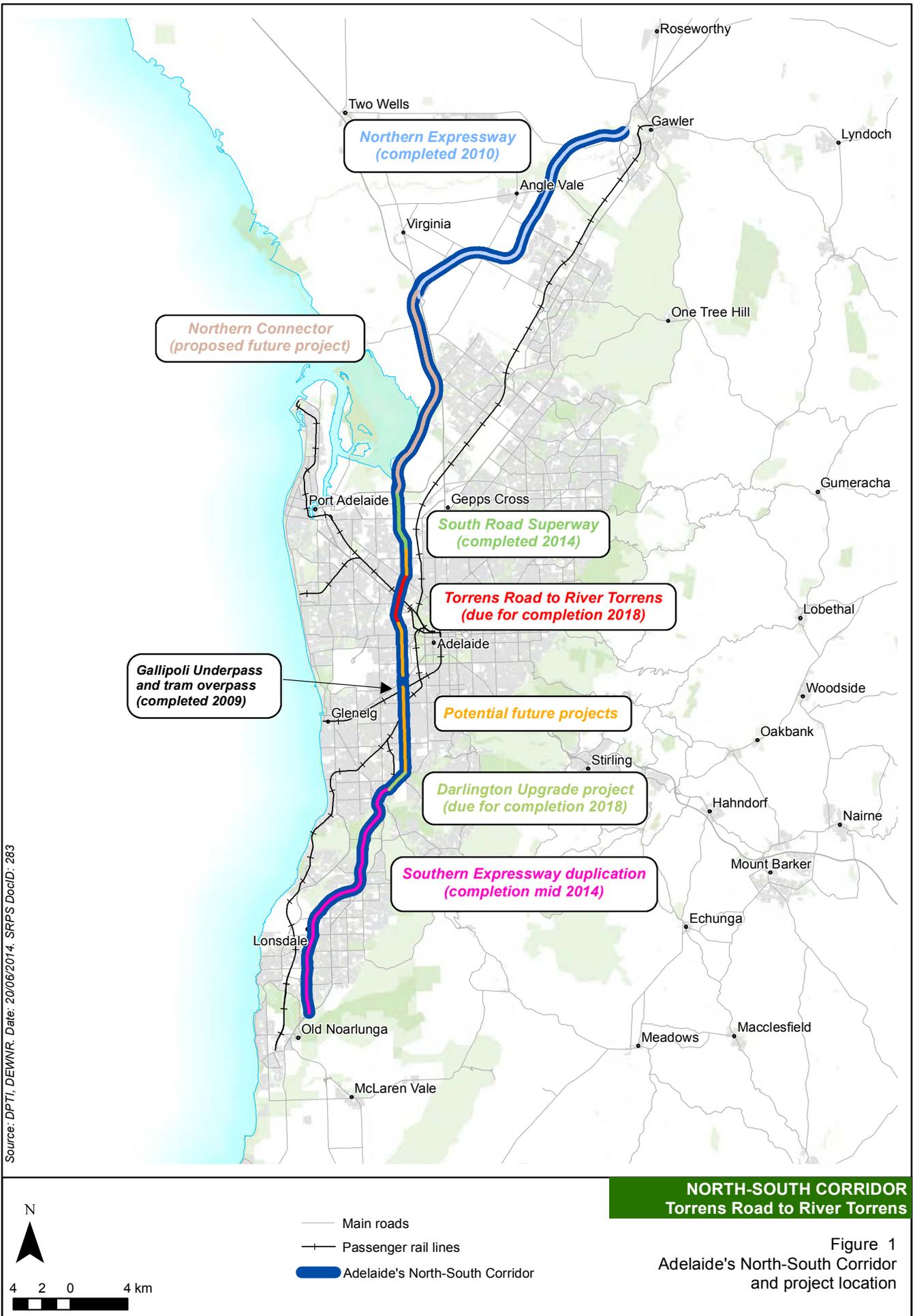
In 2011, following provision of funding from the Australian Government, the Department of Planning, Transport and Infrastructure (DPTI) began a study to plan for a non-stop South Road corridor between Regency Road and Anzac Highway. It identified that the highest priority for upgrade in that section was between Torrens Road and the River Torrens. This section of South Road is congested because of the delays associated with the Outer Harbor passenger rail line, the Port Road intersection and the Grange Road–Manton Street intersection.

The Torrens Road to River Torrens section of South Road would gain significant benefits from upgrading the current narrow congested roadway to a non-stop corridor that separates through traffic (including freight) from local traffic and introduces improvements to this inner suburban area.

When completed, the North–South Corridor (Torrens Road to River Torrens) project would significantly improve travel for north–south traffic through a 3.7 km upgrade of South Road from just north of Torrens Road to just south of the River Torrens (Figure 2). Within this section, a 2.5 km non-stop length of roadway between Hawker Street, Ridleyton and Ashwin Parade, Torrens ville will incorporate a 1.4 km long lowered road, approximately 8 metres below ground level.

The project would:

- provide a critical piece of infrastructure for delivering Adelaide’s non-stop North–South Corridor
- allow more efficient access to and from key freight areas of the National Land Transport Network, the Port of Adelaide, the industrial north-west sector of Adelaide and Adelaide Airport
- improve road network reliability, efficiency and accessibility for business
- provide more efficient access to some of Adelaide’s key employment areas
- reduce traffic congestion and improve traffic flows, with an anticipated peak hour travel time saving of between 3 and 6 minutes (an average of 5½ minutes for the non-stop section across the two flow directions and AM and PM peaks)
- improve traffic flows and reduce congestion on east–west roads such as Port Road and Grange Road–Manton Street
- improve safety for road users by reducing the potential for conflict at at-grade (ground level) intersections
- improve cycling facilities and therefore cyclists safety
- enable involvement of locally based industry/companies and their employees
- create an estimated 480 jobs per year during the construction phase of the project
- help to achieve strategic policy outcomes and objectives for the Australian and South Australian governments.





Graphical representation: South Road/Grange Road-Manton Street intersection.

Features of the Torrens Road to River Torrens project

The project's key features, as shown in Figures 2 and 3, are:

- a 1.4 km section of lowered road from Cedar Avenue, Croydon to Gawler Avenue, West Hindmarsh, approximately 8 metres below the existing surface of South Road
- a 2.5 km non-stop section of roadway (incorporating the 1.4 km lowered road) between Hawker Street, Ridleyton and Ashwin Parade, Torrensville
- parallel surface (at-grade) roads along the length of the lowered road to connect most local roads and arterial roads to South Road
- an upgraded South Road from Sunbeam Road to the lowered road
- an upgraded South Road from the lowered road to Ashwin Parade
- a grade separation (overpass) of the Outer Harbor rail line

- intersection upgrades at Torrens Road, Hawker Street, Hurtle Street, Port Road, Grange Road–Manton Street and Ashwin Parade–West Thebarton Road
- improved cycling and pedestrian facilities through a combination of upgraded footpaths and on-road or off-road bike paths
- landscaping and noise barriers (where required).

Project area

The project area extends for 3.7 km along South Road from Sunbeam Road, Croydon Park (just north of Torrens Road) to Ashwin Parade, Torrensville (just south of the River Torrens). It is located approximately 3 km to the west of Adelaide's central business district. It is substantially situated in the City of Charles Sturt, but also extends into the City of West Torrens and just into the City of Port Adelaide Enfield.

The project passes through or adjacent the suburbs of Croydon Park, Renown Park, Ridleyton, Croydon, West Hindmarsh, Hindmarsh, Thebarton and Torrensville.

Modifications to the concept design

An initial concept design for the project was released in May 2013. Following further engineering and economic investigations and community feedback received, predominately through community liaison groups established for the project, the concept design has been modified including (Figure 5):

- positioning the northbound carriageway/surface road in its ultimate position (i.e. western side of the corridor) between Torrens Road and the lowered road to enable the intended future extension of the non-stop road without the need to relocate this carriage way
- shifting the road corridor (lowered and surface roads) to the east to bypass the SA Power Networks Croydon electrical substation

- altering the lowered and surface road layout to be symmetrical between Port Road and Grange Road
- realigning the South Road/Port Road intersection and installing U-turn facilities within a reduced Port Road median
- constructing a shorter rail overpass between Coglein Street and Queen Street–Elizabeth Street, leaving the Queen Street–Elizabeth Street level crossing and Croydon railway station in their current locations
- redesigning the South Road/Hurtle Street intersection to allow for a right turn onto South Road only; the South Road/Hawker Street intersection would be upgraded to allow more north–south traffic flow by installing additional lanes and new dedicated right hand turn lanes
- redesign of the cycling and pedestrian facilities to reflect feedback from the community.

See Section 1.4 of the *Project Assessment Report* for further detail.



Graphical representation: South Road/Port Road intersection.

Project phases and schedule

Table 1. Indicative time frames for the Torrens Road to River Torrens project

Project phase	Activities	Time frame
Preliminary concept planning (Regency Road to Anzac Highway)	<ul style="list-style-type: none"> • Development of possible road options • Early stakeholder and community engagement • Preliminary environmental investigations 	February 2011 to March 2012 – completed
Concept planning and design (Regency Road to River Torrens)	<ul style="list-style-type: none"> • Detailed concept planning • Environmental investigations continue • Funding submission to Infrastructure Australia and Department of Infrastructure and Regional Development • Property acquisition started • Development of concept design 	March 2012 to May 2013 – completed
Concept design (Torrens Road to River Torrens)	<ul style="list-style-type: none"> • Formal community and stakeholder engagement on concept design • Property acquisition and demolition • Environmental impact assessment (including preparation and release of the <i>Project Assessment Report and Supplement Report</i>) • Finalisation of concept design • Completion of concept planning and design 	June 2013 to September 2014
Pre-construction	<ul style="list-style-type: none"> • Property acquisition and demolition • Detailed design • Environmental and other approvals • Procurement • Early works – service relocations and local/arterial road and intersection upgrades on alternative/parallel routes • Ongoing community and stakeholder engagement 	May 2013 to mid 2015
Construction	<ul style="list-style-type: none"> • Construction • Ongoing community and stakeholder engagement and other activities 	2015 to 2018
Post-construction	<ul style="list-style-type: none"> • Operation • Maintenance 	2018 onwards

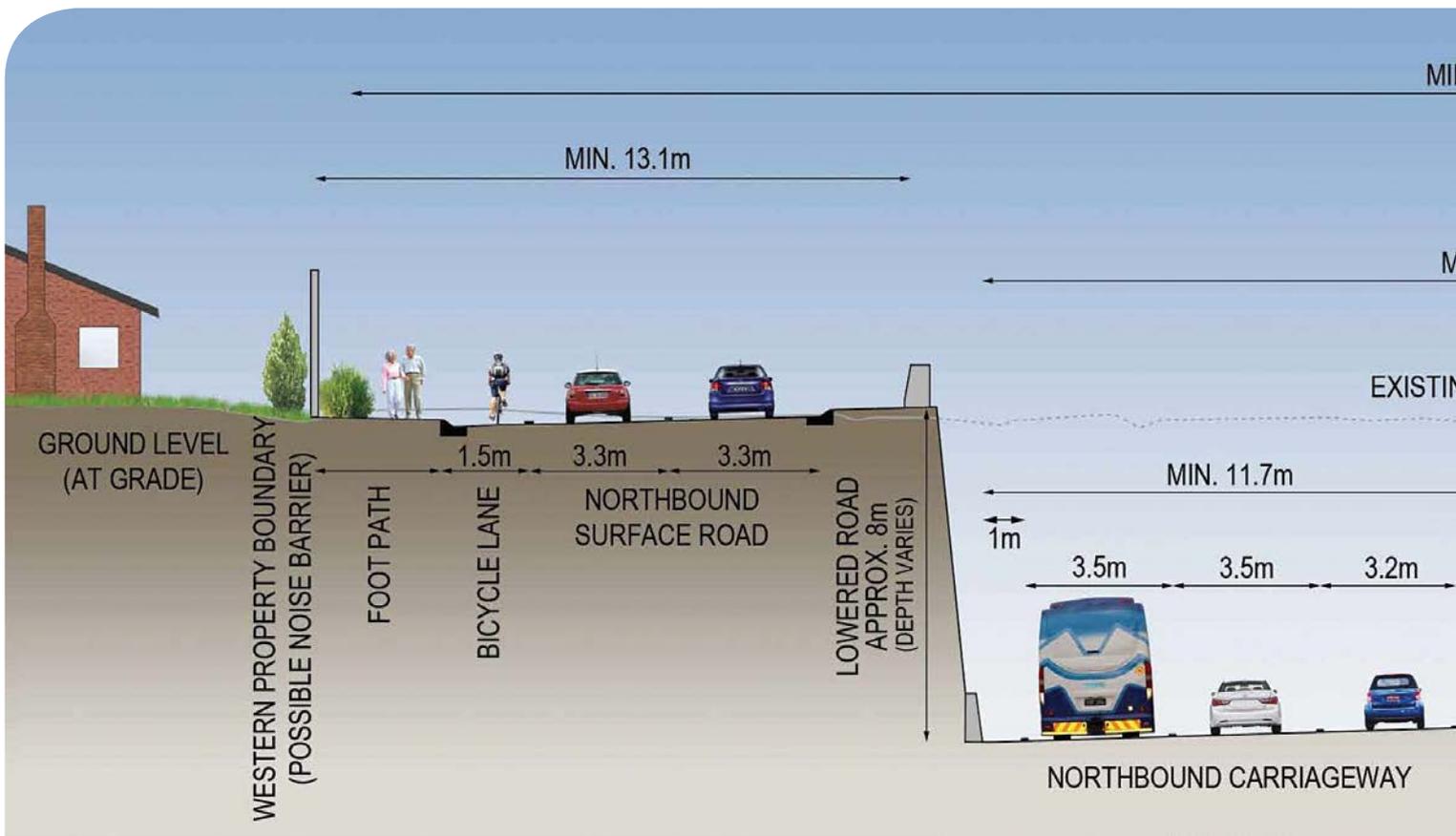


Figure 3. Typical symmetrical cross-section of the project corridor.

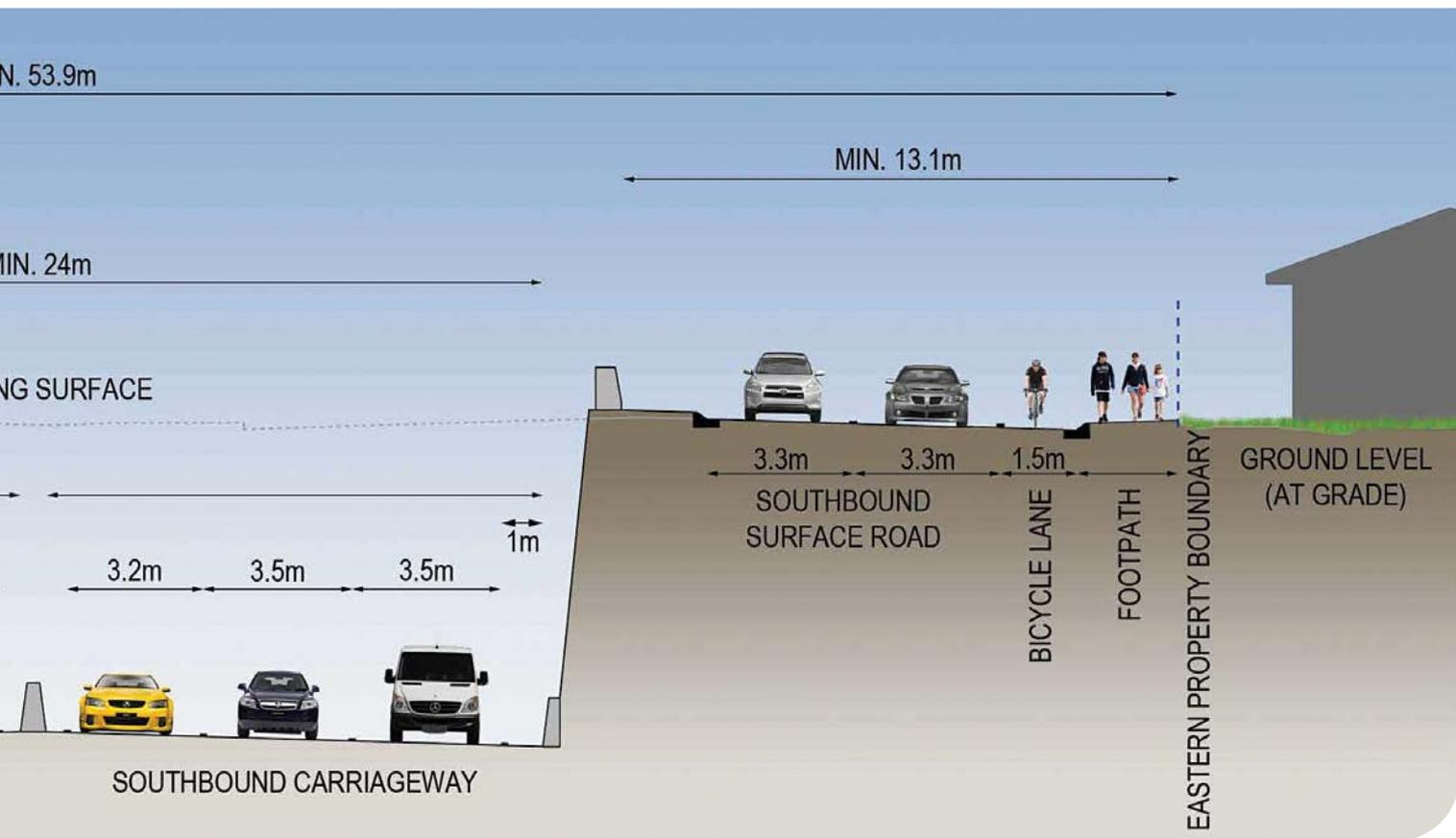
Strategic importance of the Torrens Road to River Torrens project

The Torrens Road to River Torrens project forms part of Adelaide's North-South Corridor, which has strategic importance for the future of South Australia and Adelaide. This link would help to realise benefits in transport, industrial growth and population growth. The project would address freight productivity and improve freight accessibility to domestic and international gateways.

It would help achieve policy outcomes for both the Australian and South Australian governments which are embodied in the policies listed below.

National strategic policy and program context

- National Land Transport Network (<http://investment.infrastructure.gov.au/whatis/network>)
- Infrastructure Australia's themes for action (a national freight network, transforming our cities and competitive international gateways) and other strategic priorities
- Infrastructure Investment Program (<http://investment.infrastructure.gov.au>)
- The National Urban Policy (*Our cities – Building a Productive Sustainable and liveable Future*, www.infrastructure.gov.au/infrastructure/pab/urbanpolicy/)
- Council of Australian Governments Reform Council, Capital city strategic planning systems (www.coagreformcouncil.gov.au/agenda/cities)
- National road safety strategy 2011–2020 (www.infrastructure.gov.au/roads/safety/national_road_safety_strategy)



State strategic policy context

The strategic documents that guide decision making in South Australia sit under *South Australia's Strategic Plan*, the overarching plan which guides the development and implementation of other planning strategies and policy initiatives including those specifically for land use and transport:

- Planning Strategy for South Australia (incorporating *The 30-Year Plan for Greater Adelaide*, www.plan4adelaide.sa.gov.au)
- Draft *Integrated Transport and Land Use Plan* (www.transportplan.sa.gov.au)
- *Strategic Infrastructure Plan for South Australia* (www.infrastructure.sa.gov.au/strategic_infrastructure_plan).

These documents, along with *Tackling Climate Change: South Australia's Greenhouse Strategy*, (www.sa.gov.au/_data/assets/pdf_file/0005/19382/SA_Greenhouse_Strategy_2007.pdf) support the Seven Strategic Priorities identified by the South Australian Government to guide all other government initiatives to improve the lives of South Australians and ensure the future prosperity of the state:

- creating a vibrant city
- safe communities, healthy neighbourhoods
- an affordable place to live
- realising the benefits of the mining boom for all
- every chance for every child
- growing advanced manufacturing
- premium food and wine from our clean environment.

Need for the project

The need for a strategic non-stop North–South Corridor in Adelaide, which includes the Torrens Road to River Torrens project, is driven by population growth and transport requirements for access to industrial/business precincts and Adelaide’s planned employment areas.

Problem identification and assessment

The South Road Planning Study (Regency Road to Anzac Highway), which began in early 2011, identified and assessed three problems associated with the current condition of South Road:

- Problem 1 – Increasing demand from diverse users of South Road is increasing congestion, travel time and reducing reliability of the road and causing high costs for business and reducing Adelaide’s liveability.
- Problem 2 – Poor accessibility (including public transport) between east and west of Adelaide is increasing congestion and travel times and causing high costs for business and reducing Adelaide’s liveability.
- Problem 3 – The current high incident rate (including road crashes) along South Road is causing direct and indirect costs to the community.

Traffic and transport drivers

Adelaide has developed in an elongated north–south manner, as dictated by its geography. Most of its industry is concentrated in the northern, north-western and western parts of Adelaide and to a lesser degree in the south.

Large volumes of freight move through metropolitan Adelaide along designated major road and rail corridors that link major freight nodes, including Port Adelaide, industrial centres, Adelaide Airport, rail and road freight terminals, and inter-modal facilities. Figure 4 shows the key freight distribution centres and employment areas reliant on the North–South Corridor.

Strategic transport movements converge in Adelaide’s western sector between the coastline and the central business district. Both international gateways that connect to industry areas – the Port of Adelaide and Adelaide International Airport – are located in this sector.

There is considerable conflict in the western sector of Adelaide between north–south and east–west movement of traffic.

Many key strategic network routes in Adelaide’s western sector are showing high levels of congestion and delays with signalised intersections either approaching or at capacity levels.

The recently released draft *Integrated Transport and Land Use Plan* (www.transportplan.sa.gov.au) indicates that Adelaide’s businesses need the certainty of reliable road and rail routes to operate successfully and deliver goods and services to local, interstate and global markets. Adelaide is a key destination for freight which needs to access industrial areas along with sea and air ports. To this end, the city’s arterial road and freight rail network must have the capacity to service these needs, reduce road congestion and meet future transport demand along major freight and traffic routes.

The draft *Integrated Transport and Land Use Plan* and *The 30-Year Plan for Greater Adelaide* further reinforce the north as the future growth area for industrial lands. The integrated plan identifies continued investment into the North–South Corridor to complete the non-stop route between Gawler and Old Noarlunga.

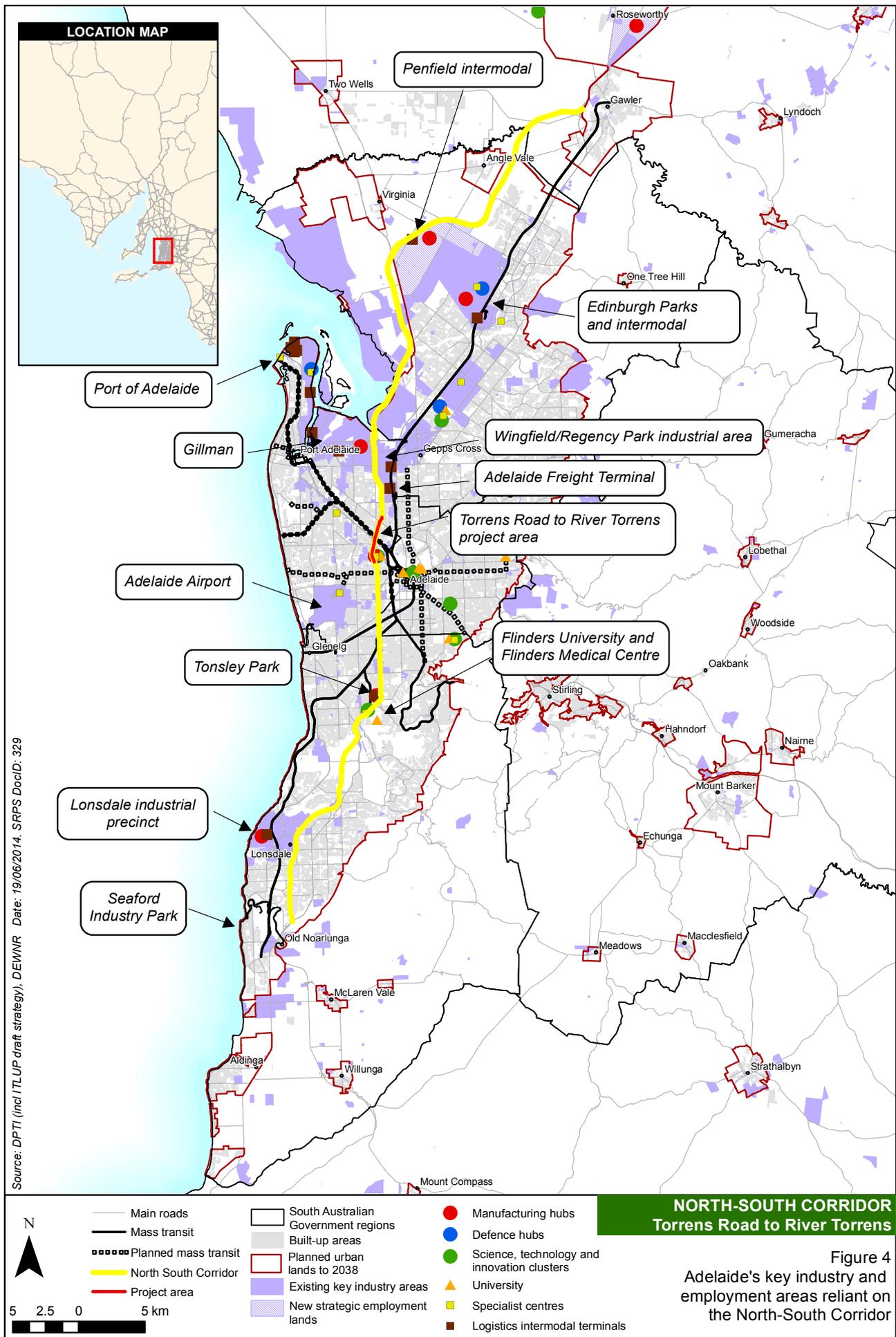
Population growth

The Greater Adelaide metropolitan area is home to eight out of ten South Australians. *The 30-Year Plan for Greater Adelaide* plans a steady population growth of an additional 560,000 people and construction of 258,000 additional homes. The plan focuses on identification of key locations for future regeneration and associated higher density mixed use development. This development is a fundamental part of meeting infill targets of 70% in urban areas and 30% at the fringe by 2030. The project forming part of Adelaide’s North–South Corridor will play a vital role in efficiently connecting the rapidly expanding employment and residential growth areas in the north and south.

Project objectives

The project aims to:

- protect and provide freight priority consistent with a National Network Transport Link between Wingfield and Darlington to the Port of Adelaide, Adelaide’s southern employment areas, Adelaide Airport and other industrial and commercial centres consistent with *The 30-Year Plan for Greater Adelaide*
- improve travel time, reliability and vehicle operating costs along Adelaide’s North–South Corridor
- improve accessibility to employment, leisure and service opportunities of Adelaide’s east–west traffic (including by motorists, public transport, pedestrians and cyclists)
- reduce the incidence and severity of South Road crashes
- minimise/manage social and environmental impacts
- deliver a solution with positive net benefits for South Australia.



Community and stakeholder engagement

Process

Extensive community and stakeholder engagement has informed the design development and decision-making process for the project, during two phases:

- South Road Planning Study (Regency Road to Anzac Highway) started in February 2011
- Torrens Road to River Torrens project since release of the initial concept design in May 2013.

Key industry bodies, representative bodies, members of parliament, government agencies, local government, emergency services authorities, community groups as well as the broader community, including local residents and road users, were consulted during the planning process.

The Project Report, which included the initial concept design, was released in July 2013.

Community engagement activities will continue throughout the project, in particular through an ongoing community liaison group.

Feedback

Feedback to date has been collected through group and individual meetings, online and postcard surveys, community open days, letters, emails, telephone calls (through the project's information line), feedback forms, presentations, workshops and briefings; and through the established community liaison groups.

Businesses have raised concerns such as:

- maintaining main road exposure (visibility or passing trade) during construction and after project completion
- maintaining ongoing access
- availability of an alternate site and continuity of operation/trading should their business be acquired as part of the project.

Community information days identified issues such as:

- property impacts (e.g. acquisition requirements, property values and saleability, leasing arrangements and restrictions on future development)
- impacts from increased freight traffic (e.g. air quality and noise pollution)
- changes to local access and connectivity
- improvements to pedestrian and cycling arrangements
- visual impacts from the rail overpass
- difficulties in purchasing similar commercial or residential properties in the local area.

Consultation with project's community liaison groups continues. The groups have identified that the community wants a solution that:

- caters for pedestrians and the mobility impaired
- avoids historic and high community value sites
- maintains connections across the roadway by including pedestrian crossing points at intersections and the rail overpass
- ensures businesses have adequate access
- reduces the impact on new neighbours of South Road.

The groups saw opportunities through the project for improved safety and security, connectivity for cyclists and pedestrians, street art, landscaping and other community facilities.

Community liaison groups – progress on issues raised

Since the initial announcement of the project, the project team has continually met with the community liaison groups to discuss and identify solutions and opportunities in response to the initial concept design. Key issues discussed, some of which have led to modifications to the concept design, include:

- Croydon access – local road access to/from South Road including Hurtle Street (shown on Figure 5 for local road access arrangements and possible U-turn facilities on South Road)
- West Hindmarsh access – a footbridge/one-way local road bridge over the River Torrens (construction subject to discussion and agreement with local councils)
- opportunities for use of remaining land following project completion, with landscaping, pocket parks and stormwater detention basins currently being investigated (construction subject to discussion and agreement with local councils)
- pedestrian and cycle access arrangements
- urban design opportunities for the Outer Harbor passenger rail overpass.

Environmental impact assessment process

In conjunction with community and stakeholder engagement, the project is being assessed using an environmental impact assessment process similar to the major developments process under the *Development Act 1993*.

The environmental impact assessment process evaluates the effects of the proposed project so that decision making can take these effects into account and include appropriate mitigation or management measures.

Environmental, social and economic investigations have identified and described the likely effects of the project on the existing environment and community, and outlined proposed management measures. These investigations, by a number of technical specialists, are summarised in the main body of the *Project Assessment Report*.

The *Project Assessment Report*:

- introduces and explains the need for the project
- describes the design development, and the project (including modifications to the preliminary concept design)
- details the environmental, social and economic assessments and how any adverse effects are proposed to be managed and mitigated.

The *Project Assessment Report* will be publicly displayed for a period of at least 30 days and submissions are invited during this period. A Supplement Report will respond to submissions received, outline findings of investigations since the *Project Assessment Report* was prepared and identify further design modifications to the project.

Project benefits

The project is a vital link in the Australian and South Australian governments' vision for a continuous, free flowing North–South Corridor. Existing problems with the network are currently constraining economic growth opportunities.

By improving network reliability and accessibility for business, the Torrens Road to River Torrens project would negate the need for traffic to use other parts of the network during both peak and inter-peak periods of the day. It is expected to have effects such as:

- cost savings for industry and other users through improvements in travel time, vehicle operating costs etc., and what that may mean for industry competitiveness
- reduction in crash rates
- net creation of economic activity (e.g. companies setting up in South Australia) and new activity by existing companies that would not otherwise occur.

A benefit cost analysis to determine whether South Australia is 'better off' by funding this project shows the project provides:

- travel time savings (public and private transport)
- reduced vehicle operating costs
- reduced or manageable environmental impacts
- road crash safety benefits
- rail crossing safety and delay benefits.

It also shows benefits for pedestrians, cyclists and residential/commercial development potential.

However, there are some negative community effects during construction and ongoing access and community cohesion impacts. Mitigation measures would be put in place to manage these effects.

The benefit cost analysis results indicate that the project would produce positive net benefits in cost savings for business and in job creation.

In monetary terms the project would deliver a net present value of \$544 million with a benefit cost ratio of 2.40. Both of these results indicate that the project would provide a positive economic outcome for South Australia.

Development of the Torrens Road to River Torrens project

In 2011, following provision of funding from the Australian Government, DPTI began a study to plan for a non-stop South Road corridor between Regency Road and Anzac Highway. The study had two phases:

- preliminary concept planning of the 9 km length of South Road between Regency Park and Anzac Highway
- concept planning and concept design of a 3.7 km section from Torrens Road to the River Torrens, determined to be the highest priority section of the 9 km.

The preliminary concept planning phase of the project investigated all possible solutions for a non-stop South Road between Regency Park and Anzac Highway. A range of qualitative and quantitative data was collected through traffic modelling and engineering, economic, social and environmental investigations.

A community engagement process then gained information which was used by the study team to further develop engineering options during the preliminary concept planning phase.

Each option for developing a non-stop road was assessed and ranked by using triple bottom line (economic, social and environmental) assessment criteria against the project objectives. Each was economically evaluated using monetised and non-monetised criteria to ensure that the scale of project option being considered could be economically justified.

The 4.5 km section between Regency Road and the River Torrens was selected as the next priority for upgrading.

Efforts then focused on preparing and submitting a business case to the Australian Government, through Infrastructure Australia and the Department of Infrastructure and Regional Development, in 2012, to secure funding for construction.

Further detailed concept planning and design, and traffic and stormwater analysis, was undertaken on the Regency Road to River Torrens section.

Based on removing traffic delays and improving safety, the upgrade of South Road from Torrens Road to the River Torrens, which includes the grade separation of Outer Harbor rail line, was determined to be the optimal project scope for funding by both the South Australian and Australian governments.

An initial concept design for the Torrens Road to River Torrens project was announced in May 2013.

Since this time community feedback and outcomes of further social, economic and engineering assessments have prompted further investigation and modification of the road and rail design.

Project design and description

The Torrens Road to Torrens River project concept design has been developed in response to design criteria, community and stakeholder feedback on the concept design, and the outcomes of environmental, social, safety, economic and engineering investigations. It adheres to relevant Australian Standards, guidelines and principles.

The information provided below outlines the current concept design for the project, it is possible that during the next phases of the project (procurement, detailed design and construction) modifications may be made to the project's design.

Road alignment – North–South corridor

South Road from Sunbeam Road to Cedar Avenue

Beginning in the north (from Sunbeam Road, Ridleyton and heading south) the section of South Road from Sunbeam Road to Cedar Avenue would be upgraded to allow for efficient north–south and east–west (arterial) traffic movements in the interim until the section of the non-stop North–South Corridor, from Torrens Road to Regency Road is funded for construction. In this area, the following upgrade activities would occur (Figure 5):

- The existing South Road curve from Sunbeam Road to the South Road/Torrens Road intersection would be realigned to meet current standards for a 60 km/h posted speed.
- The signal controlled South Road/Torrens Road intersection would remain in its existing location but be upgraded to provide for additional north–south traffic flow through additional lanes.
- South Road corridor from South Road/Torrens Road intersection to Cedar Avenue would be widened, predominately to the west, and provide three lanes in each direction (north and south). Land in this section is being acquired to allow for the ultimate corridor design for the completed non-stop North–South Corridor. The northbound carriageway will be located to the western side of the (newly acquired) road corridor. The southbound carriageway will remain on the eastern side of the existing corridor. The carriageways will be separated by a wide median strip to cater for the future extension of the non-stop road without the need to relocate these carriageways.

- The South Road/Hawker Street intersection would remain in its existing location and be upgraded to allow additional north–south traffic flow through provision of additional lanes and installation of new dedicated right hand turn lanes. Hurtle Street would be designed to allow for a right turn onto South Road only.

South Road from Cedar Avenue to Hindmarsh Avenue

The section of South Road from Cedar Avenue to Hindmarsh Avenue includes the 1.4 km non-stop lowered road and an arterial surface road (Figure 5). On this section, traffic travelling in a north or south direction on the lowered road would be grade separated from the Outer Harbor rail line and from traffic travelling east and west on Port Road and Grange Road–Manton Street.

The section of the South Road from Cedar Avenue to Gawler Avenue forms the ultimate design (i.e. the lowered road) for the non-stop North–South Corridor. It is designed in a symmetrical arrangement with the lowered road in the middle and a surface road in each direction on the eastern and western side of the lowered road.

The surface roads running parallel to the lowered road still have to perform an arterial road function and would provide access to the local road network and the key arterial roads (Port Road, Grange Road–Manton Street).

To improve traffic flow at the South Road/Port Road and South Road/Grange Road–Manton Street intersections, upgrades would add north–south traffic lanes and designated right and left turn slip lanes. Works on the Port Road intersection would also improve east–west traffic flow to and from the city.

With the majority of north-south traffic movements on South Road occurring in the lowered road, the operational efficiency and safety performance of the South Road/Port Road intersection will be substantially improved. Additional further improvements will also be gained through the modification of current access arrangements at this intersection. Motorists currently turning right from South Road onto Port Road in both directions (to Port Adelaide and to the city) will instead be redirected and catered for through the provision of signalised U-turn facilities on Port Road (Figure 5).



Photo: Traffic congestion at the Port Road/South Road intersection.

South Road from Hindmarsh Avenue to Ashwin Parade

The section of South Road from Hindmarsh Avenue to just beyond Ashwin Parade would be upgraded to allow for efficient north–south traffic movements in the interim until the section of the North–South Corridor, from Torrens River (heading south) is funded for construction. The interim upgrade activities would be:

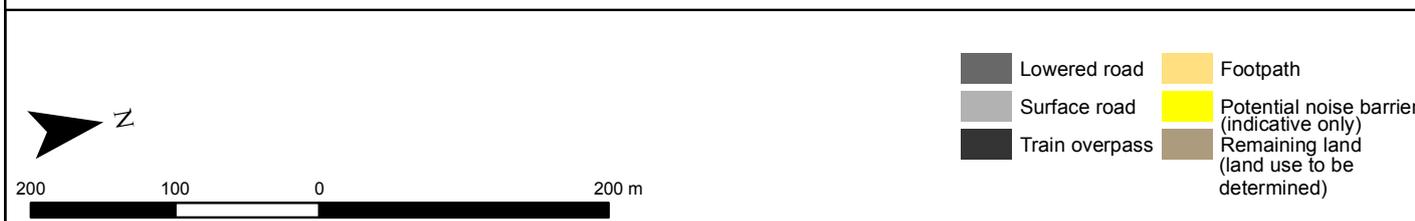
- reconfiguring South Road from where the lowered road joins the surface roads just north of Hindmarsh Avenue to enable three southbound lanes and two north-bound lanes to cross the River Torrens
- widening the bridge crossing the River Torrens (Taylors Bridge) on the western side
- upgrading the South Road/Ashwin Parade intersection to accommodate the three southbound lanes (with works proposed to begin in mid 2014).

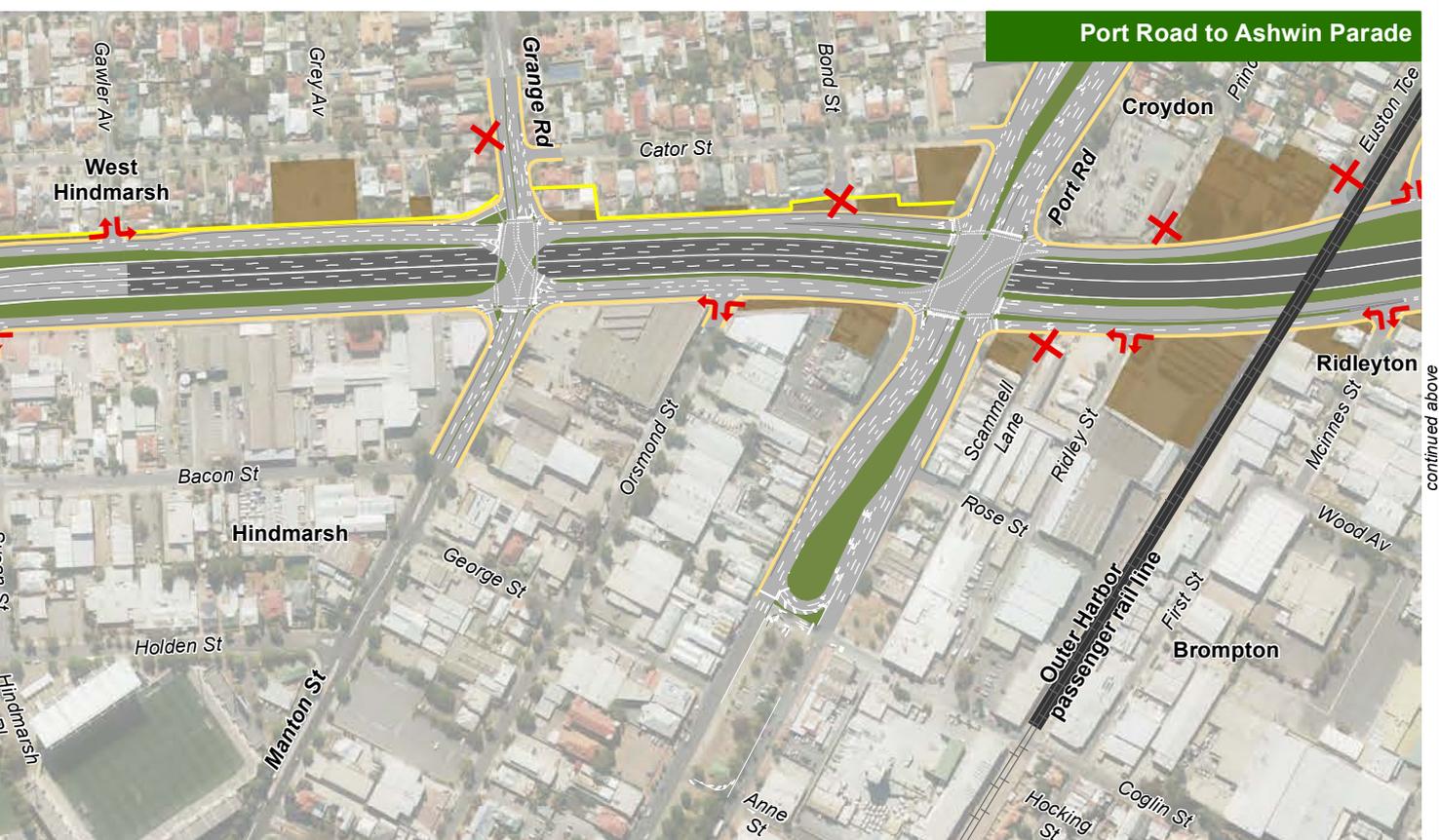
Local road access

To ensure appropriate safety requirements are met, right hand turning movements would be restricted to and from South Road, and left turn movements to and from South Road would be permitted only at some local roads. Feedback on local access to/from the Croydon and West Hindmarsh areas from the project’s community liaison groups, together with further assessments by DPTI, has led to modifications to the local road access arrangements as shown in Figure 5.



Source: DPTI, Aerometrex (Jan 2014) Date: 20/06/2014. SRPS DocID: 360





- Local road access:**
- ✘ Road closed
 - ↔ Left in/left out access only
 - ↗ Right out only
 - All movements (left in/out; right in/out)

**NORTH-SOUTH CORRIDOR
Torrens Road to River Torrens**

Figure 5
Torrens Road to River Torrens
current concept design (June 2014)

continued above

Rail overpass – Outer Harbor rail line grade separation

DPTI has investigated a number of possible rail design options that grade separates the north–south through traffic from the Outer Harbor rail line. These included a long overpass, a short overpass and an at-grade level crossing (see Section 6.4.2 and Appendix C of the Project Assessment Report). The short overpass (outlined below) is the selected option and is included in the concept design.

The (short) rail overpass will begin west of the Coglein Street level crossing and rise over the lowered South Road and South Road surface roads. It will return to ground level just east of the Elizabeth Street level crossing. The Croydon rail station, the Coglein Street level crossing and the Queen Street-Elizabeth Street level crossing will remain in their current locations (Figure 5). Investigations into the need to upgrade the level crossing will be undertaken.

The design of the overpass requires the South Road surface road carriageways to be partially lowered at the overpass to achieve clearance under the structure. The overpass would be approximately 660 metres long and be approximately 7.6 metres high over the existing ground level (on the eastern side).

Pedestrian and cyclists will be catered for on the on the overpass structure with a shared use path. This path will grade separate the Outer Harbor pedestrian and cycling Greenway link from the North-South Corridor.

The short overpass has been selected for construction as it:

- has a reduced visual impact through a reduction in the length of the structure (compared to a long overpass)
- provides safety benefits of separating trains from vehicles using the lowered road and the surface road
- has a reduced impact on train services during the construction phase (compared to a long overpass) by enabling trains to continue to operate adjacent the construction site, via a temporary bypass single rail track. There would likely be only minor disruptions to train services over the six to nine month construction timeframe.
- reduces construction related impacts on the community (compared to a long overpass)
- enables the Croydon rail station to remain open during the construction period and remain in its existing location.

A graphical representation of the short rail overpass is shown below.

The recently released draft *Integrated Transport and Land Use Plan* (www.transportplan.sa.gov.au) identifies a proposed future conversion from diesel heavy rail (passenger trains) to electrified light rail (trams) for the Outer Harbor rail line (i.e. PortLINK). The rail overpass will be able to cater for both passenger trains or any future conversion to electrified light rail.



Graphical representation: Rail overpass of the North-South Corridor looking South.

Improved pedestrian and cycling facilities

Pedestrian and cycling facilities throughout the project area will be improved to connect with other pedestrian/cycling facilities such as the Outer Harbor greenway (cycle route) and the existing River Torrens Linear Park cycle route.

Options are being explored to include a combination of upgraded footpaths and on or off road bike paths, within the project area, including improvements on local roads (subject to further discussions with local councils). The pedestrian and cycling facilities have been redesigned based on community feedback but further feedback will be considered in the design.

Bridge structures

Bridges are to be constructed at the intersections of Port Road and South Road, Grange Road and South Road, and as an overpass for the Outer Harbor rail line. The western side of Taylors Bridge spanning the River Torrens will be widened.

A footbridge could be constructed across the River Torrens (at McDonnell Street) to improve links between recreational and commercial facilities on the southern side of the river and facilities on the northern side of the river, including River Torrens Linear Park and cycling and walking paths through the project area. A possible alternative raised by the Community Liaison Group is to provide a one-way local road bridge constructed across the River Torrens that connects to River Road and Jervis Street at either McDonnell Avenue or Barrpowell Street. Further investigation and consultation with local councils are required.

Landscape and urban design

The landscape and urban design for the project would seek to create a complementary and engaging experience for both road users and the adjacent community.

The design would provide consistent, adaptable and distinctive themes all working together to generate an integrated and holistic design solution. The architectural character and detailing of structural elements such as bridge parapets and abutments, retaining walls, noise barriers, visual screens and fencing would all be considered.

Planting would be a mix of indigenous, native and non-native plants in a consistent planting palette along the length of the corridor.

Additional considerations

Services

Existing services or utilities, such as water pipelines, sewer or gas lines, overhead or underground electrical conductors, and telephone cabling, would be impacted by the project and would need either protection or realignment to ensure service continues during construction and operation. Services would be relocated to common service trenches along the South Road corridor and in local back streets as appropriate.

Advanced traffic management systems

Advanced traffic management systems have been incorporated into the design to manage traffic flow (both now and in the future) and the risks of road crashes and enable effective response to incidents on the lowered road. The design will cater for potential installation of a full suite of managed motorway measures along the corridor in the future.

Lighting

Road lighting would be designed in accordance with AS/NZS 1158 Set-2007: Lighting for roads and public spaces, and be incorporated into the urban design framework.

Stormwater

Stormwater design for the project includes consideration of minor drainage (typically subsurface through pipes) and major drainage (overland flow) systems, minimising impacts on the existing stormwater systems where possible.

The lowered road stormwater system is designed to a 20-year average recurrence interval (ARI), and standard and stormwater systems in the surface road sections to a 5-year ARI standard. Major flood events (100-year ARI) are also taken into consideration.

Stormwater in the lowered road is proposed to be collected in storage chambers (sumps) and pumped into the existing stormwater network. The design utilises two pump stations at Grange Road and Port Road, being either the lowest points in the carriage way or the most appropriate position to reconnect into the existing stormwater system. Opportunities for providing detention basins within the corridor are also being explored.

Construction

Construction of the project is anticipated to be completed in 2018.

Preferred construction methods would be determined during the procurement and detailed design phase of the project, by the contractor chosen to construct the project.

Construction hours for large infrastructure projects are often six or seven day working weeks and two shift (day and night) operation.

A project safety management plan would be developed to identify the safety management measures to be followed during construction. In addition a traffic and transportation management plan would be developed and implemented during construction.

The construction contractor would require construction compounds in the project area. Their locations would be identified in the pre-construction phase of the project.

A number of utility services, such as electricity, water, gas and telephone, would be affected by the project and would need to be relocated. Works will be managed to avoid or minimise any disruption to services.

In addition to service relocations, possible early and enabling works to assist with traffic management and access during construction will include:

- property demolition
- South Road/Ashwin Parade intersection upgrade.

Minor traffic capacity improvements on detour routes during construction would minimise additional congestion caused by traffic avoiding the project area during construction. These include:

- Park Terrace, Fitzroy Terrace and Torrens Road upgrade
- James Congdon Drive upgrade.

A construction environmental management plan would be developed and implemented by the main construction contractor to manage potential environmental and community impacts.

The project would generate large quantities of spoil (surplus excavated soil that cannot be reused). Subject to contamination status, spoil would be reused in line with EPA requirements, temporarily stockpiled at an EPA licensed waste/recycling facility for use on future projects or disposed of to an EPA licensed landfill.

Where possible, water used during construction would be sourced from sustainable supply but would generally be sourced from SA Water mains. Water use and reuse measures would be developed to ensure the use of recycled water is maximised (if available) and waste is minimised.

The estimate of direct full-time equivalent jobs created by the project is approximately 480 per year during construction of the project.

Operation

The project would become operational (i.e. open to traffic) following construction.

As part of the proposed upgrade, five at-grade intersections with South Road would require traffic signals.

Advanced traffic management systems would remotely observe and control operation of the completed Torrens Road to River Torrens section, and respond to incidents or traffic activity.

Maintenance of the road carriageways would be the responsibility of DPTI. Plans and inspection regimes would be put in place for large culverts and bridges, road lighting structures and wiring, and pump station maintenance. Maintenance of parks, local roads, footpaths and cycling facilities is the responsibility of Councils.

An operational environmental management plan, prepared to coordinate ongoing monitoring and maintenance after the project is opened, would include requirements for maintenance, monitoring, auditing and reporting by DPTI.

Project Effects

Construction and operation of the Torrens Road to River Torrens Project would bring environmental, social and economic benefits. In developing the project, many often competing environmental, social, economic and engineering issues have had to be balanced.

The scale, nature and location of the project make some adverse effects inevitable. Where possible, measures will be put in place to manage or minimise these effects throughout construction and operation of the project.

Traffic and transportation

South Road is a key component of Adelaide's North-South Corridor and the section between the Port River Expressway and the Southern Expressway is part of the National Land Transport Network. Along its length, South Road allows direct access to Adelaide's arterial and local road network. It provides for both longer distance travel as well as access to local communities.

South Road

Traffic volumes currently on South Road typically range from 51,000 vehicles per day north of Ashwin Parade to 31,700 vehicles per day just north of Torrens Road. Private vehicle travel dominates South Road, with commercial vehicles typically representing 10–15% of the total traffic volume.

Ultimately a non-stop North-South Corridor will be a more efficient and safer route for traffic travelling north-south across metropolitan Adelaide. It will attract traffic from other parts of the surrounding road network predominantly from parallel north-south roads from Main North Road in the east to Tapleys Hill Road in the west.

Forecast daily traffic volumes (based on future population and employment estimates) for a non-stop road between Regency Road and the River Torrens are estimated at an average 113,000 vehicles per day by 2031. This volume has been used to determine the capacity of the new road infrastructure (i.e. the number of lanes required at midblock sections and intersections).

The peak hour travel time saving associated with the project is estimated at being between 3 and 6 minutes (an average of 5½ minutes for the non-stop section across the two flow directions and AM and PM peaks). Vehicles using the surface roads will also save travel time in comparison to current conditions. The project is expected to significantly reduce the number of incidents on the North-South Corridor because it would be a higher standard road with fewer conflict points.

Intersecting arterial roads

Intersecting arterial road routes of South Road in the project area include Torrens Road, Port Road, Grange Road-Manton Street. Each of these major intersections will be upgraded as part of the project.



Graphical representation: South Road/Torrens Road intersection.

The arterial road system would remain unchanged in its connections to the rest of the road network. However, the operation of a non-stop road would increase traffic on those arterial roads that connect to the non-stop road (e.g. Port Road).

Vehicles that remain on the surrounding road network would also find increased average travel speeds and reduced travel times because they are less congested. It is expected that crash rates would lessen significantly at intersections with most north–south traffic travelling on the lowered road.

Local roads

About 30 local roads intersect with South Road in the project area. Generally all turning movements are currently permitted to South Road from the local road network. Sections of South Road, south of Port Road with a central median, have separate right turn lanes.

Converting South Road to a non-stop road will significantly change local access arrangements to and from South Road, with some traffic redirected to alternative roads.

The local road network will not have direct access to the non-stop road. All access will be along surface roads, with most local roads restricted to left in/left out, or no, access (Figure 5). Proposed access changes and alternative routes are identified in the *Project Assessment Report*.

Public transport

Eighteen bus routes either serve or cross South Road within the project area.

Following construction, all current South Road bus services would remain on the surface roads. Public transport services would be improved by lower traffic volumes on South Road surface road and the likely priority for east–west travel at signalised intersections given most north–south travel would move to the lowered road.

A level crossing on the Outer Harbor rail line also currently intersects with South Road just north of Port Road. Grade separating the Outer Harbor rail line over the North–South Corridor would allow for more frequent services on this line and allow for the proposed conversion of the line to electrified trams (PortLINK).

Pedestrian and cycle networks

The number of cyclists and pedestrians currently using South Road is relatively small. The project will improve the north–south cyclists and pedestrians facilities likely using a combination of residual land and road reserve.

Project cycling and pedestrian facilities will connect existing local routes with Torrens Linear Park path and the greenway along the Outer Harbor rail corridor

Construction effects

Temporary closures of roads, road diversions and speed restrictions will be necessary during construction. Bus services could be disrupted during construction and bus routes could require diversions to ensure effective operation. Footpaths and cycle networks may be closed during construction but temporary diversions would maintain connections.

Train services on the Outer Harbor rail line would be disrupted at times during construction of the rail overpass. The length of disruptions is subject to construction methodology.

A traffic and transportation management plan would be developed and implemented during construction.

Property impact and acquisition

Property impact

For such a large upgrade, more space is required than the existing South Road corridor. South Road would be widened generally on its western side, where DPTI already owns approximately 75% of the properties required for the project.

Property acquisition process

The South Australian Government is authorised under the *Highways Act 1926*, together with the *Land Acquisition Act 1969* to acquire properties for the purpose of road construction. Properties can be acquired either by owner initiated settlement or compulsory acquisition, but the government would prefer to acquire through an early owner initiated settlement.

All affected parties are given the opportunity to negotiate for compensation. They may be a registered proprietor, lessee, property owner, holder of an encumbrance or worker's lien, executor of a deceased estate, beneficial owner, mortgagee, business operator, or native title claimants or holders.

DPTI individually contacts all property owners and parties whose properties will be affected by the project.

Money paid for a property is referred to as compensation. All compensation is based on the market value of the property and may include other factors depending on whether the whole property or just part of it is acquired. DPTI may also compensate for other reasonable expenses incurred through the acquisition.

All affected parties are consulted as part of the valuation process. After valuations are submitted by DPTI, negotiations begin with the property owner to reach agreement for compensation. Every effort is made to reach a mutually acceptable agreement. If agreement is reached, the matter proceeds through an approvals process to settlement.

Property owners whose property is being acquired should not enter into a contract to buy a replacement property without confirming with DPTI that the settlement has been approved.

All parties are entitled to obtain professional advice. DPTI reimburses reasonable costs for valuation, legal expenses and conveyancing where deemed appropriate and related to the acquisition.

If agreement cannot be reached then a property may be acquired by further negotiation or by compulsory means under Land Acquisition Act provisions.

There are established procedures for appeal at several stages under the provisions of the Land Acquisition Act.

Socioeconomic

The South Road Planning Study completed an extensive analysis of socioeconomic impacts and this knowledge contributed to the evaluation of options and selection of the preferred solution. The information gained from the community engagement process (including business interviews and community surveys) was critical in understanding the needs of the community and ensuring the project was designed to deliver an appropriate engineering outcome that was also socially acceptable.

The engagement process directly influenced and informed analysis of project options. The feedback findings were collated and analysed, and then used by the planning and socioeconomic assessment teams to inform the options refinement process.

The analysis included assessment of schemes based on their potential to avoid, mitigate or adversely impact on key sites, connections or facilities that were identified in the feedback process.

The socioeconomic assessment identified that potential effects of the project include:

- severance, social cohesion and access (particularly in relation to local road closures and restricted turning movements)
- amenity
- property acquisition
- public health and safety, and disturbance
- walking and cycling.

Measures to minimise these impacts include:

- continued access to South Road (surface roads)
- ensuring alternative routes are available
- ensuring east-west travel still traverses major road intersections
- upgrading footpaths and pedestrian crossings
- improving cycling facilities
- undergrounding major electricity services and removing stobie poles
- investigating use of remaining land for community purposes (e.g. parks)
- installing noise barriers and landscaping
- minimising the project footprint and land acquisition requirements, where possible
- providing support to those directly affected by property acquisition

- working with Croydon Station Community Liaison Group to investigate and identify opportunities for the space adjacent to and beneath the rail line overpass.

Planning, zoning and landuse

The project will help achieve a number of objectives in key national, state, regional and local planning strategies.

The project bisects part of western Adelaide including its mix of employment uses, residential areas, open space and sporting facilities and shopping/entertainment activities. The diversity of land use along the elongated South Road corridor is borne of the area's historical development starting at the earliest period of Adelaide's settlement through to recent urban infill projects and extension of the tramline to the Adelaide Entertainment Centre.

Despite its long history and diverse pattern of development, the Western Adelaide region is sensitive to change and the potential effects, both positive and negative, of a new non-stop North-South corridor.

Potential effects of the project relate to property acquisition, project timeframes, vehicle movement, employment, amenity, liveability, and to zoning, development opportunities and strategic planning.

Mitigation measures to those effects are outlined throughout the *Project Assessment Report*.

Non-Aboriginal heritage

An assessment has been made of the project's potential to impact on national, state and local non-Aboriginal heritage items.

No national heritage places are found in the project area but two State Heritage places are adjacent the alignment: Hindmarsh Cemetery and the dwelling at 9 Grange Road (originally Job Hallett's house). Neither will be impacted by the project.

With regard to local heritage, two Historic Conservation areas in the City of Charles Sturt front the existing South Road at Croydon and West Hindmarsh. To accommodate the project, eight local heritage listed places and additional properties fronting South Road in the historic conservation areas would require demolition.

A process has been established to inspect and salvage heritage features for resale or reuse before demolition of the buildings.

A construction noise and vibration management plan will manage vibration where construction is directly adjacent to heritage items to minimise the risk of vibration affecting heritage listed buildings.

Aboriginal heritage and Native Title

Today South Road is part of a highly built-up urban environment with very little evidence of the original topography, vegetation or geology. Both the eastern and western sides of South Road have been extensively modified with industrial, commercial and residential buildings along the corridor.

Before settlement the project area was very different and home to the Kaurna Aboriginal people. Their close connection to country and to the area continues today.

Preliminary investigation by the Aboriginal Affairs and Reconciliation Division of the Department of the Premier and Cabinet Central Archive has identified that no previously recorded Aboriginal sites are located within or immediately adjacent to the project alignment.

Although no sites have been recorded, measures would be included to minimise impacts to Aboriginal heritage should it be encountered during construction, in compliance with the *Aboriginal Heritage Act 1988*.

Native Title is likely to have been extinguished on freehold land and road reserves. If it is identified that Native Title has not been extinguished on some parcels of land then DPTI will consult with the Native Title Claim Representatives as required by the *Native Title Act 1993*.

Noise and vibration

Construction noise

Assessment of construction noise indicates that some degree of impact during construction is likely. As for any major infrastructure projects there will be a wide variation in intensity, activity and therefore noise at any given location. Night time works would also be needed to expedite the construction program particularly when those works affect the existing South Road corridor.

A construction noise and vibration management plan (CNVMP) and a night works management plan will be developed and implemented for the project. Management and mitigation measures to minimise the impact may include locating noisy machinery away from residential properties, avoiding truck movements on local roads where possible, and installing temporary noise barriers around stationary equipment. Notification to affected residents and businesses throughout the construction phase would form an essential part of the CNVMP and mitigation strategy.

Construction vibration

During construction, residents near the works may feel vibration and there may be some vibration effects on building contents for properties closest to the works. Structural damage is not expected, but a building condition inspection may be undertaken where significant construction vibration from an activity is anticipated.

Construction vibration management and mitigation measures may include minimising vibration energy as necessary, undertaking vibration monitoring and notifying the community about when and where vibration effects may be noticeable.

Operational road noise

The project has the potential to change existing noise levels along the corridor by altering the existing road configuration, influencing traffic flows and speeds, and exposing some properties to new noise sources.

Noise monitoring was undertaken in the study area to understand existing noise levels and to calibrate a noise model.

Preliminary noise modelling has anticipated the future noise level and identified noise treatment measures. Further modelling will be undertaken during detailed design.

Noise criteria, as defined in DPTI's Road Traffic Noise Guidelines, are set and a range of treatment measures were considered during planning and design to reduce traffic noise for this project once operational. The measures include:

- minimising the noise generated from design (i.e. a lowered road)
- treatment of noise at the source (e.g. acoustic barriers, including noise walls)
- treatment of residual noise from the project if required for eligible properties (e.g. house treatments).

It will be DPTI's preference to focus on minimising noise through design and treating noise at the source and along the path to the receiver.

Methods to mitigate road traffic noise would be determined and finalised during the detailed design phase of the project. Indicative noise barrier locations are shown in Figure 5.

Operational rail noise

Potential changes in noise associated with an overpass for Outer Harbor rail line at Croydon have been considered. A preliminary noise assessment of the rail corridor, assuming diesel passenger trains, indicated that future rail noise would achieve the 'upgraded existing railway line' criteria in accordance with Environment Protection Authority *Guidelines for the assessment of noise from rail infrastructure* (www.epa.sa.gov.au/xstd_files/Noise/Guideline/guidelines_rail_noise.pdf) at the nearest residential receiver following rail side acoustic treatments.

The overpass can minimise the noise generated by trains by incorporating noise attenuation in the structure as well as removing the need for level crossing warning devices sounding on South Road.

The recently released draft *Integrated Transport and Land Use Plan*, identifies a proposed future conversion from diesel heavy rail (passenger trains) to electrified light rail (trams) for this rail line (i.e. PortLINK). On finalisation of the integrated plan, an additional rail noise assessment will be undertaken, to determine if noise mitigation for the chosen rail mode is required to meet Environment Protection Authority rail noise guidelines.

Operational vibration

Operational vibration assessment determined that during road operation, vibration levels at residences are expected to be below both structural damage and nuisance guideline levels. Operational rail vibration levels are not expected to change from the existing situation and would not exceed structural damage guideline levels.

Flora and fauna

A preliminary vegetation assessment identified exotic non-native vegetation along side streets and roads intersecting South Road, in public open spaces and in private property. The project area is located in a fully urban section of the Adelaide metropolitan area with highly fragmented and highly modified habitat with limited biodiversity.

Vegetation communities are not native, although there are scattered trees and areas of reconstructed habitat and revegetation with replanted native species as well as non-native amenity plantings.

The most important area for flora and fauna in the project area is the River Torrens which has some replanted native species and habitat value, plus significant and/or regulated trees, both planted and possibly remnant.

Removal of vegetation will be minimised, with final removals determined during the detailed phase. Any remaining areas of important vegetation will be protected during construction. Where removals are unavoidable, planting within and adjacent to the upgraded road would be undertaken to offset the removals.

It is likely that some vegetation along Day Terrace and Euston Terrace, adjacent the rail corridor, would require removal to enable construction of the rail overpass. The extent of removal is still to be determined.

Landscape and urban design

A preliminary assessment has been undertaken of existing and future landscape and urban design values for both South Road and the adjoining area between Torrens Road and the River Torrens.

Landscape and urban design has been an integral part of the development of the concept design and aims to recognise not only those using the road network but also those who live adjacent to it.

Evaluation criteria, design assessment workshops and recommendations to enhance the aesthetic and social elements of the project contributed to the concept design process.

Evaluation and assessment criteria used were based on the Infrastructure Australia urban design protocol criteria of comfortable, vibrant, safe, diverse, enduring and enhancing.

Existing conditions can be enhanced in many ways through good urban design.

These criteria will continue to be incorporated during detailed design.

Air quality

The project could influence air quality by changing traffic volumes in the corridor and across the adjacent road network. An efficient road design that increases vehicle speeds with fewer stop–start movements should reduce the amount of vehicle based emissions.

The improved pedestrian and cycling facilities (both north–south adjacent the road and east–west along the rail corridor) and upgraded public transport infrastructure in the Croydon area, could provide additional air quality benefits as commuters seek alternatives to using private vehicles.

Preliminary assessment and modelling has determined existing levels of particulate matter, carbon monoxide and nitrogen dioxide adjacent to South Road. Preliminary results indicate that transport emissions would meet the National Environment Protection (Ambient Air Quality) Measure guidelines in the project area. If required, modelling would continue in the detailed design phase of the project.

Air quality would be managed during construction by measures outlined in a construction environment management plan. The main impact during construction would be dust, which would be managed by the use of dust suppressants, speed restrictions for construction vehicles and minimising material stockpiles.

Water quality, drainage and flooding

The potential effects of the project on surface water, groundwater and water quality can be categorised into three main areas: hydrological (impacts on volume and timing of flows), physical (impacts on landforms and drainage pathways) and water quality. These areas were investigated to help understand surface water and groundwater quantity and quality.

The assessments indicated that, with a range of measures incorporated into the design, the project would not have a significant impact on water volumes, drainage and water quality.

Surface water

Surface water/hydrology assessment of both minor drainage (stormwater networks) and major drainage (catchments) has helped understanding of existing flows in and across the project area. It identified that the project area is relatively flat; and that in the area south of Torrens Road the dominant drainage catchments are the Port Road–Torrens Road catchment and the River Torrens catchment.

The design maintains connection of the existing piped systems by realigning pipes or attaching pipes to the underside of structures crossing the lowered road; it also includes detention storage.

Water quality

A review of water quality data for the project area indicated that existing water quality is typical of polluted runoff in an urban catchment. Adverse impacts to water quality have been minimised and water sensitive urban design incorporated where possible.

During construction a soil erosion and drainage management plan would be developed and implemented to manage water flows and quality. Erosion and sediment control measures would be implemented during construction.

Groundwater

Preliminary investigations to determine the depth of groundwater show conditions along the alignment are variable, with the shallowest groundwater levels (less than 10 metres deep) expected north of Torrens Road.

This information has influenced the maximum depth of the lowered road, which would be constructed above the groundwater table. The project would not have a significant impact on levels or flows.

Contamination of groundwater as a result of the project is considered highly unlikely and therefore management measures during construction are not anticipated.

Geology, soils and site contamination

During the concept design development phase, slope stability, erodability, landforms, foundation type, retaining wall requirements, settlement and groundwater were all considered. They would continue to be considered during detailed design.

The mix of residential, commercial and industrial land uses in the project area show potential for soil and groundwater contamination to be present. The risk of contamination from previous or current land uses is an important consideration for the project.

A preliminary analysis of properties adjacent to the corridor considered site characteristics and former and current uses that may have included potentially contaminating activities.

Provisions for the management of contamination resulting from demolition of residential and commercial properties are included.

Additional investigations to confirm preliminary analyses would be undertaken.

Results from these on-site investigations will help prepare a contamination management plan which would document environmental controls and measures required to manage contamination risks during construction, and surplus materials for reuse or disposal, in accordance with Environment Protection Authority requirements.

Greenhouse gas, sustainability and climate change

Sustainability

Sustainability objectives developed for the project were considered during the concept development phases. These objectives consider the health, diversity and productivity of the biological, social and built environment to ensure environmental impacts are minimised in planning the project, during construction, in operation and maintenance.

During the detailed design phase, a sustainability management plan would be prepared to further address these objectives. The measures in the plan would be incorporated into the design and reflected in an implementation plan for construction.

Greenhouse gas emissions

A quantitative assessment has estimated the greenhouse gas (GHG) emissions associated with construction, operation and maintenance of the project.

Emission modelling shows that with the North–South Corridor in place (which includes the operation of the current non-stop section of the project and other future projects along South Road contributing a non-stop corridor), a reduction in annual average GHG emissions can be anticipated, compared to the situation of the project not being built (i.e. no North–South Corridor).

With a non-stop corridor in place the estimated reduction in GHG emissions from improved traffic flow and increased traffic speeds across the metropolitan network (1,977 kt CO₂-e) far outweighs the GHG emissions anticipated from construction and ongoing operations and maintenance (152 kt CO₂-e) over a 30-year period.

Based on the results of this assessment, construction and operation of a non-stop corridor is expected to result in a net reduction of GHG emissions.

On-site measures to minimise GHG emissions during construction would be identified pre- construction, and developed and implemented through a construction environment management plan.

Climate change

The projected changes to climate have been considered and incorporated into the design as deemed necessary. This will help to ensure that South Road maintains its desired level of service over the life of the project, irrespective of a changing climate.

Environmental management during construction

A construction environment management plan will detail the environment protection requirements the contractor must implement to minimise and mitigate environmental and community impacts during construction.

The plan ensures environmental requirements and commitments adhere to the DPTI *Code of Practice for Construction – Road, Rail and Marine Facilities* (www.dpti.sa.gov.au) and incorporate any specific environmental requirements or approvals.

Environmental inspections and audits during construction would confirm whether environmental requirements are being met. Inspections and audits would confirm compliance with relevant legislation, the construction environment management plan and other documentation associated with the construction contract. Any issues identified during the inspections/audits will be rectified where reasonable and practicable to do so.

What happens next?

The release of this *Project Assessment Report* is the next stage of the project's planning, phase. The *Project Assessment Report* will be exhibited until 11 August 2014 and members of the public, community organisations and government agencies are invited to comment on any aspect of the project. See inside the front cover of this Executive Summary for information on making a submission.

A Supplement Report to be prepared following public exhibition of the *Project Assessment Report* will summarise the public submissions received during the exhibition period and respond to relevant issues raised. The Supplement Report will also display the final concept design of the project, highlighting any changes or refinements made as a result of the consultation process, and any additional engineering, social, environmental and economic investigations.

When completed the Supplement Report will close out the project's planning phase and will be available on the project website (www.infrastructure.sa.gov.au/south_road_upgrade). The planning phase will then be completed with the finalisation of the concept design and the project will move into the detailed design phase.

During the next phases of the project (detailed design and construction) further modification may be made to the project's design. Where relevant, key modifications will be identified on the project's website.

Community engagement activities will continue throughout the detailed design and construction phases of the project.

For more information, provide your thoughts or to join the mailing list you can:

call: 1300 794 899

email: dpti.southroad@sa.gov.au

visit: infrastructure.sa.gov.au/south_road_upgrade