

SOLUTIONS AND ACTIONS



**BUILDING A STRONGER
SOUTH AUSTRALIA**



Priorities for Greater Adelaide

- Continued improvements to the passenger train network.
- Improved O-Bahn access into the CBD.
- Bringing a network of trams, called AdeLINK, back to the CBD, inner and middle Adelaide to the northwest, east, west, north, south and a loop in the CBD.
- A redesigned and modernised bus network.
- Complete the North-South Corridor, upgrade the Inner and Outer Ring Routes, targeted improvements to many intersections and road sections.
- Duplicate Victor Harbor Road (Old Noarlunga to McLaren Vale), provide more overtaking lanes and shoulder sealing to Victor Harbor, and in the longer term, duplicate to Mount Compass.
- Duplicate Main South Road (Seaford to Aldinga), Beach Road and Dyson Road (Noarlunga), Commercial Road (Seaford), Richmond Road (Keswick), West Lakes Boulevard, Churchill Road (Devon Park), Montague Road (Modbury), Elder Smith Road (Mawson Lakes, including extension to Port Wakefield Road), Kings Road (Paralowie), Womma Road, Curtis Road (Munno Para West), Main North Road (Evanston Park), and additional lanes on Main North Road (Parafield).
- In the longer term – a potential underground rail link in the CBD, relocate the interstate passenger rail terminal at Keswick into Adelaide Railway Station, and protect the extension of train lines into growth areas to the north and south.
- Enabling cycling and walking as more sustainable and healthy travel choices.

Priorities for regional South Australia

- Seal the Strzelecki Track.
- Duplicate the Dukes Highway to Victoria.
- Targeted road widening, more overtaking lanes and rest areas across the network including the Augusta Highway to Port Augusta, Sturt Highway to the Riverland, Riddoch Highway to the South East, Eyre Highway to the west, Barrier Highway to NSW, Stuart Highway to the Far North, and Lincoln Highway – potential further capacity improvements including duplication of sections of the Augusta and Sturt Highways in the longer term.
- Town bypasses of Penola, Port Wakefield and Truro, and a potential bypass at Renmark and upgrading of Yorkey's Crossing at Port Augusta.
- Expand 'pit to port' capacity for the mining sector.
- Continue improvements to regional passenger transport, aviation and walking/cycling facilities.

Priorities for Freight and Ports

- Implement the *Regional Mining and Infrastructure Plan* and the *Green Triangle Freight Action Plan*.
- Expand the High Productivity Vehicle network, deliver regulatory reforms for freight transport, upgrade rail freight corridors and intermodal terminals, and improve access to Adelaide Airport.

State-wide priorities

- Increase maintenance funding to improve and sustain the performance of the transport network and make better use of our transport assets.
- Protect freight corridors and facilities.
- Make our transport system safer and deliver South Australia's *Road Safety Strategy*.
- Use smart technology to improve transport system outcomes.
- Support for tourism.
- Reduce environmental impacts and car dependency.
- Adapt to climate change and building our resilience to disasters.

The Plan identifies short, medium and long term actions for our state. Some of these actions apply to the broader networks that make up our transport system; others relate to specific locations along these networks or to particular issues that need to be addressed.

5.1 A FULL RANGE OF SOLUTIONS FOR THE TRANSPORT NETWORK

Providing the efficient and safe transport networks that South Australia needs into the future requires a range of complementary measures. These measures include better targeted investment in public transport and improvements in road, cycling and walking infrastructure, along with non-infrastructure solutions such as traffic and vehicle management, travel demand management initiatives (e.g. TravelSmart) and better land use and transport integration.

A critical component will be to sustain the useful life of our transport assets to get maximum value from our investment. This means maintaining these assets in good condition, reinforcing the financial sustainability of the system as a whole and – where possible – leveraging further investment in new transport infrastructure. We must also consider the impact of our transport use and systems on the environment and how we can make transport assets more resilient to climate change, extreme events and incidents.

The full range of solutions proposed allows flexibility in the future to respond to changes in development, the economy and environmental pressures.

Setting priorities

Over the last decade, approximately \$6.6 billion has been invested into the transport network in South Australia by the State Government and the Australian Government. This represents around 50 per cent of total South Australian Government capital investment and does not include significant investment in transport infrastructure by the private sector, particularly in mining, ports and landside infrastructure such as rail links, or by local government in local road networks, airports and community passenger transport. This Plan investigates the type and extent of investment that will be required over the next 30 years to deliver solutions to the transport challenges before us.

The Plan prioritises strategic investments to address South Australia's most pressing transport problems, while moving towards achieving our goals and objectives. Solutions are designed to align with the Government's other strategic plans and priorities, and to reflect land use and economic development plans for Adelaide and the state.

The Plan prioritises the investment to allow us to extract maximum value from our existing transport assets and provide new assets and services when and where they are needed, using the following time periods:

Short term	Next five years
Medium term	5-15 years
Long term	15 years and beyond

The Plan applies the following principles when setting priorities:

- Delivering upon the goals and targets within *South Australia's Strategic Plan*.
- Integrating solutions with the land use outcomes and priorities identified in the Planning Strategy.
- Delivering upon key outcomes within this Plan.
- Providing solutions as the need arises (e.g. when capacity is reached).
- Investigating better use of existing assets before committing to investment in new capacity.
- Enabling active travel options and how these can be promoted before committing to investment in new capacity.
- Demonstrating that transport solutions address multiple social, economic and sustainability objectives.
- Maximising benefits and providing value for money.
- Achieving an appropriate balance in expenditure over the 30 year period of the Plan.

The solutions

This chapter and the next outline the broad actions and solutions proposed to address current challenges and future needs. They also set a timeframe for the implementation of solutions over the short-term (next 5 years), medium-term (5-15 years) and long-term (15 years and beyond), subject to further investigations and the availability of funding.

The future of transport summarises the broad range of actions proposed for each transport network:

- The public transport network – outlines actions to position the public transport system in Greater Adelaide to meet our needs into the future, particularly in increasing public transport's share of journeys.
- The urban road network – outlines actions to enable the road system to cater for the growth in all modes – private car, business, freight travel, public transport, cycling and walking – expected on the road network in Greater Adelaide.
- The urban cycling and walking network – outlines actions that have been identified to enable more people to take up walking and cycling as preferred modes of travel.
- The regional networks – outlines actions that will address the transport requirements for connecting people and businesses in regional and remote South Australia, including solutions for the road, aviation and passenger transport networks, and walking and cycling.
- The freight and port networks – outlines actions for our freight networks and ports to be ready for the expected step-change growth in the mining sector and steady growth in the freight task, including ensuring consistent regulatory frameworks create the right environment for business in South Australia.
- Solutions for all of South Australia – outlines actions that are required to address challenges faced in all areas of the state, including asset management and maintenance, road safety, managing the impact of transport on the environment and reducing our car dependency.

What's happening when and where identifies key solutions in inner, middle and outer Adelaide and each of South Australia's regions. Maps and tables in this chapter show where and when these actions will be delivered, and identify areas where the South Australian, Australian and local governments can work together – with the private sector – to support seamless network connections.

5.2 PUBLIC TRANSPORT SOLUTIONS FOR GREATER ADELAIDE

Adelaide will continue to consolidate along its public transport spines, but with a sharper focus on supporting and facilitating medium density development in Adelaide's CBD, inner and middle suburbs.

Planning based around routes within *A Functional Hierarchy for South Australia's Land Transport Network* will deliver a high frequency, high capacity, multi-layered and more integrated public transport system. This network will offer faster, more reliable, more frequent, direct and comfortable services that connect major activity centres and areas of employment growth. The development of the network will be influenced by the spatial location of activities that generate the need for travel, such as density of population, the presence of jobs and services, and the location of major activity centres.

This marks a shift toward a mass transit system that focuses passenger movements onto high capacity, high frequency corridors, supported by bus feeder services that aim to reduce our reliance on car travel, especially in the CBD, inner and middle Adelaide.

Public transport solutions will focus on:

- Electrifying the Gawler train line to build upon the electrification of the Seaford and Tonsley train lines as the backbone of the public transport system, improving the amenity of stations, getting more electric trains, grade separated key pedestrian and level crossings, a focus on the use of technology to provide real time information about services, and in the longer term to electrify the Belair train line and have the potential to have an underground train link through the CBD.
- Bringing trams back to inner and middle Adelaide (*AdeLINK*) through progressive extensions of the tram network to support jobs and business growth, facilitating medium density mixed-use development, and help deliver the land use outcomes that build upon *The 30-Year Plan for Greater Adelaide*, including converting the Outer Harbor train line to deliver a new tram service to Outer Harbor, Port Adelaide and Grange and new tram lines to West Lakes and Semaphore.
- Improving access for the O-Bahn into the Adelaide city centre.
- Redesigning and modernising Adelaide's bus network to concentrate passenger flows onto the core high frequency corridors, supported by services and high quality interchanges, and strengthened cross-suburban bus services.
- Providing more park and rides at key locations.
- Defining and protecting future train corridors in the outer growth areas.
- Providing an integrated and customer-focused public transport system that offers easy and seamless journeys.

All future projects delivered and vehicles procured will give consideration for accessibility by all users and will be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport*.

Infrastructure to support the community's use of public transport will be provided including construction of park and rides at key nodes where people access high frequency public transport services for the majority of their journey.

'Super Stops' will be located on specifically identified high-frequency priority corridors, particularly at points adjacent to an activity centre, such as a large shopping centre and dedicated corridors such as a train-bus interchange. They will be implemented at strategic locations to accommodate a large number of people/passengers and where good connectivity between services and modes is required. The design and location of these stops will be further explored in consultation with local councils.

In the medium to longer term, and subject to demand, cross suburban services will be improved by increasing frequency of buses available for people to access activity centres and key destinations. The current focus of cross suburban bus routes will be strengthened to provide more direct travel access between activity centres and key public transport interchange locations, improving service levels and thus connectivity.

In the outer suburbs bus services will be upgraded by improving access to the activity centres, such as from Craigmare, Davoren Park and Blakesview to Elizabeth, from Nairne, Hahndorf and Bridgewater to Mount Barker, and from Seaford, Hackham and Woodcroft to Noarlunga Centre. For example, an access between Elizabeth and Salisbury via the Lyell McEwin Hospital, will be upgraded to a Standard Frequency (Go-Zone) service level.

Mount Barker to the city bus services, via the hills townships of Hahndorf, Bridgewater and Stirling, will be upgraded to a high frequency service. Road improvements along Glen Osmond Road will improve the reliability of travel times for these services.

Bus services in the outer suburbs will feed into the larger capacity train lines – with a focus on Munno Para, Hillbank and Paralowie to connect to the Gawler train services, and Aldinga, McLaren Vale and Sheidow Park to the Seaford train services.

SOLUTIONS – PUBLIC TRANSPORT

<p>Continue the modernisation of Greater Adelaide's public transport system</p>	<p>Continue the current proposed landmark public transport improvements, including:</p> <ul style="list-style-type: none"> • The electrification of the Gawler line. • Introducing new electric trains as lines are electrified. • Increasing frequency of services. • Delivering the Darlington public transport project. • Increasing park and ride car spaces such as at Parafield and for the O-Bahn, and expand cycle storage capacity. • Delivering real time passenger information through smart technology and enhancing information at key stations and stops. • Continuing to improve accessibility for people with disabilities as part of the upgrade of major stations, interchanges and procurement of vehicles which comply with the <i>Disability Discrimination Act 1992</i> and relevant accessibility standards.
<p>Bring trams back to inner and middle Adelaide</p>	<p>Adelaide's tram-led revival will occur in several stages in line with the market for residential and commercial development, jobs and population growth, and as funding becomes available. The new lines in the AdelLINK network will include:</p> <ul style="list-style-type: none"> • PortLINK – a conversion of the Outer Harbor train line to deliver a new tram service to Outer Harbor, Port Adelaide and Grange, and construct new tram lines to West Lakes and Semaphore. • EastLINK – a tram line running along The Parade to Magill. • WestLINK – a tram line running along Henley Beach Road to Henley Square, with a branch line to Adelaide Airport. The existing tram line to Glenelg will also form part of WestLINK. • ProspectLINK – a tram line running from Grand Junction Road along Prospect Road and O'Connell Street. • UnleyLINK – a tram line running along Unley Road and Belair Road to Mitcham. • CityLINK – a tram running in a continuous loop at regular intervals along the Morphett Street, Sturt Street, Halifax Street and Frome Street corridors, with transfers available from other tram lines and railway stations. <p>The final location of routes will be subject to further investigations and consultation.</p>
<p>Redesign and modernise the bus network</p>	<p>Redesign and modernise the bus network through:</p> <ul style="list-style-type: none"> • Provide for improved O-Bahn access to the Adelaide city centre. • Simplified bus route numbering and directness of travel to key destinations. • Develop high capacity, high frequency corridors in the inner areas, supported by on-road bus priority measures on core routes. • Improve the frequency, coverage and directness of bus services that focus on major activity centres, tertiary education centres, hospitals and sports hubs. • Further improve, expand and promote feeder services to the high frequency network, particularly to the train services and the O-Bahn. • Strengthen cross suburban bus services, connected to the dedicated (rail and O-Bahn) and priority (bus) networks. • Develop new bus 'Super Stops' at strategic activity centres. • Expand services into new growth areas. • Provide community services at the local level where feasible.
<p>Further develop and, in the longer term, expand the train network</p>	<ul style="list-style-type: none"> • Construct and upgrade all train stations. • Continue to increase park and ride car spaces and provide more cycle storage capacity. • Introduce higher frequency services and longer trains to meet peak growth demand. • Address the conflicts between pedestrians, trains and road vehicles on the high frequency train line between Brighton Road and Elizabeth by replacing with grade separation at key locations and improving safety at other locations. • Improve accessibility and wayfinding to stations from walking/cycling networks adjacent to train corridors. • Potential electrification of the Belair line in the longer term. • Subject to further investigation and, in the longer term, develop an underground metropolitan passenger train link in the CBD providing more city stations and providing through linked services. This will also need to consider the capacity to manage platform congestion at Adelaide Station. • Define and protect future rail corridor extensions, to the north and east of Gawler, and to Aldinga. • Relocate the interstate passenger rail terminal at Keswick to the existing Adelaide Railway Station in the longer term.

PROVIDING USERS WITH EASY, WELL CONNECTED JOURNEYS

One of our key objectives is to ensure that public transport, walking and cycling are desired choices of travel for the majority of Greater Adelaide's population, in order to boost public transport patronage and active transport usage, reduce reliance on the car, enhance health outcomes and improve the city's liveability.

In addition to factors such as frequency, reliability and cost, Australian and international research shows that people will use the public transport system and active transport networks if they offer easy, comfortable and seamless journeys. People want to be able to plan journeys across modes easily and in real time. They want services that connect at key points, are predictable and have coordinated timetables to minimise waiting times; stations and other facilities that make switching between modes easy; and ticketing and fares that make switching hassle-free and penalty-free. Importantly, this is not just between public transport modes, but also how private modes – car, walking and cycling – interact through park and ride facilities, secure bike parking, clear signage and walkable environments for pedestrians.

In short, people want a truly coordinated and customer-focused transport system.

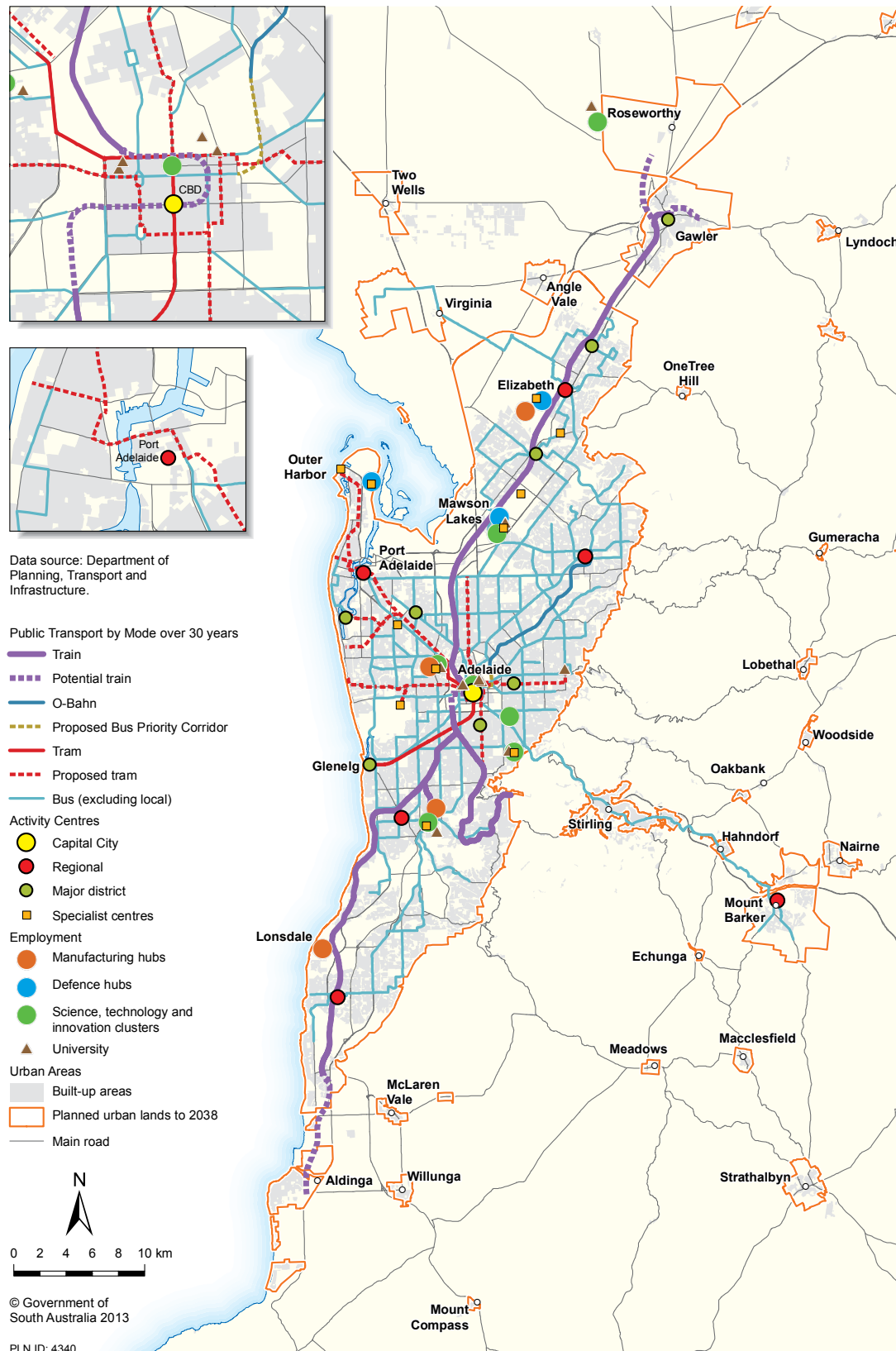
South Australia has already taken a number of important steps to create such a system. The new Metrocard provides a modern, electronic ticketing system that makes switching between modes simple and fast. Upgraded major train stations have improved amenities. Major stations have increased car space and cycle space capacity in park and rides, extending their catchment areas. Adelaide's tram network has been extended to Hindmarsh and the train network to Seaford. These are part of a series of projects that have been rolling out since 2008 and continue to unfold.

We will build on these steps to further improve people's travelling experience:

- **Provide co-ordinated services.** The transit system will have coordinated services – train services, inner city core on-road priority transit services (either bus or tram) and bus services – to better connect more people to more major activity centres to access jobs, services and shops. Bus route planning will strengthen cross suburban connections to major activity centres, supported by local bus feeder services. New bus route plans will include feeder services to the high frequency network, particularly the dedicated fast train services and the O-Bahn. This will be progressed within the framework of *A Functional Hierarchy for South Australia's Land Transport Network*, which introduces the new public transport hierarchy: the Strategic Mass Transit Network. Higher frequency public transport services means less waiting time and more people out and about, contributing to the vibrancy of local neighbourhoods.

- **Give users real time information.** We will facilitate data sharing so that mobile devices and developments in technology can offer new ways to provide public transport users with accurate, real time information about services. The new Metrocard's GPS tracking technology has facilitated the provision of Real-Time information for the first time. Software application developers will be able to develop new apps that give users access to service information in real time. Stations and stops will be progressively upgraded with screens showing Real-Time information.
- **Smoother transfers.** To make transfers between modes easy, stations and other interchanges need to be of good quality and to cater for all modes, including private vehicle users. More direct bus services that focus on major activity centres will enable the development of new, strategically located bus 'Super Stops' that will make transfers easier and more convenient and facilitate better timetable coordination between modes. We will continue to upgrade train stations, tram and bus stops, increase park and ride car spaces (such as at the O-Bahn, Mount Barker and other interchanges in outer suburban areas), expand secure cycle storage facilities and provide public bike sharing opportunities at key stations.
- **Create a simple and easily navigable physical network.** We will roll out actions to simplify the signs, maps and route numbering and naming that help users to physically navigate the system. We will invest in improved signage at interchanges, including looking at the potential for innovations in communications and visual technologies to improve wayfinding – as well as improving permanent, 'low tech' signage. We will adopt simpler, innovative route identification on buses to reduce complexity – helping new and occasional users – and we will progressively introduce new, simplified network maps.

Figure 5-1 Greater Adelaide's future public transport solutions



5.3 ROAD NETWORK SOLUTIONS FOR GREATER ADELAIDE

Adelaide's road network needs to cater for a diverse range of sometimes competing demands for travel, including private vehicles, business travellers, freight vehicles, pedestrians, cyclists and public transport services. The new *A Functional Hierarchy for South Australia's Land Transport Network* identifies the different functions of roads – based on their location and links within the broader transport network, the type and volume of users and the adjacent land use – to provide clear direction for future investment and operational management of the network.

Analysis of the road transport task and the growth expected in the next 30 years indicates that, with the exception of the North-South Corridor, there is little justification for fundamental changes to the road network – such as the building of new freeways – beyond that proposed for the North-South Corridor.

The critical function of the North-South Corridor means that a continued focus on this corridor will be required to provide a high standard, reliable and efficient traffic route through Adelaide.

In addition, we will focus on the other major corridors that primarily serve freight and business trips and dispersed employment across the urban area. In relation to road network efficiency, the strategic focus of The Plan will be the Inner and Outer Ring Routes that will enhance the performance of Adelaide's major metropolitan roads by:

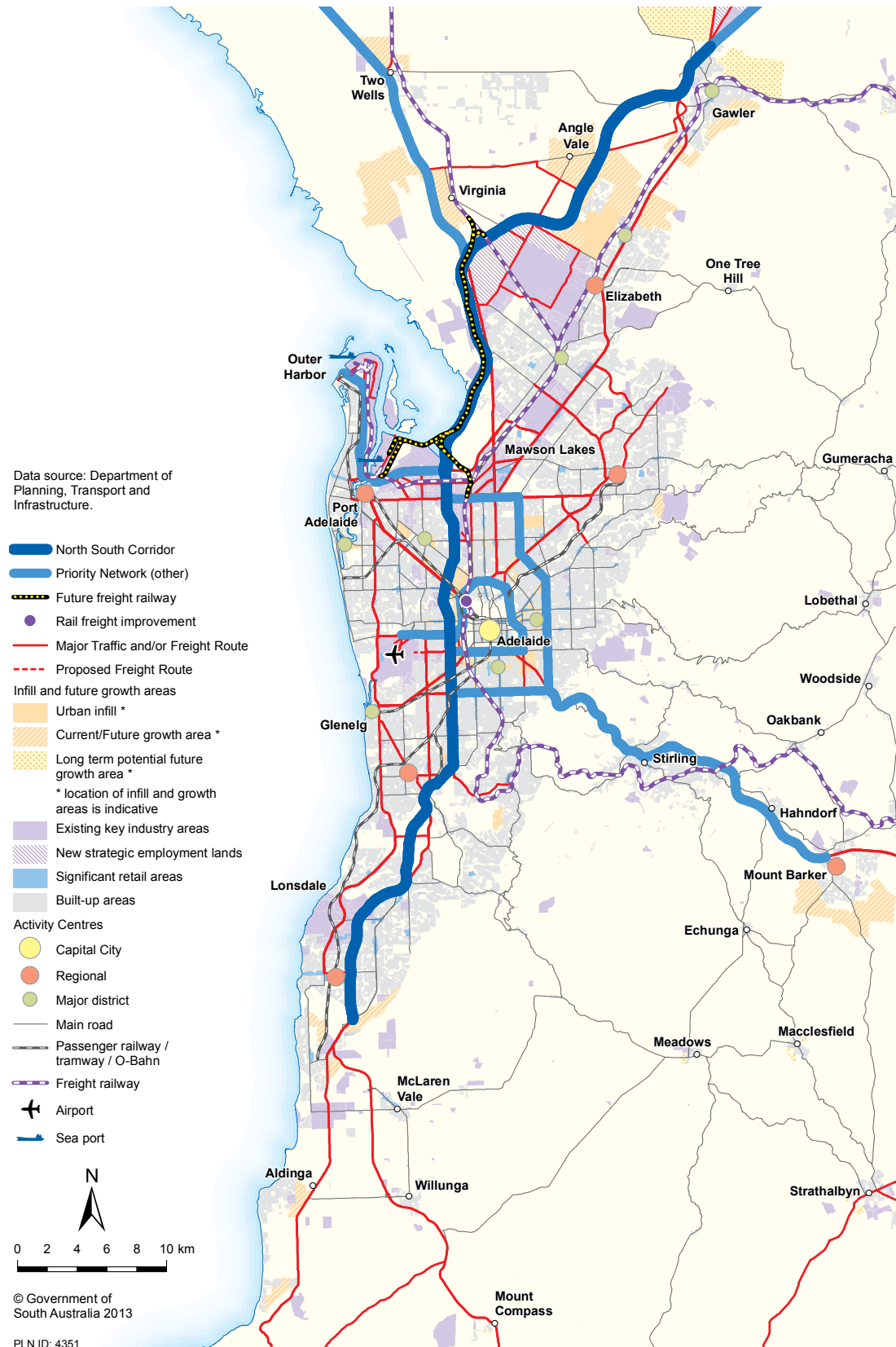
- increasing the efficiency of traffic flow
- improving safety for all road users including motorists, pedestrians, cyclists and businesses moving freight and delivering goods and services
- providing alternative, efficient connections for traffic travelling around the central city, which forms the basis for creating attractive main streets, streetscapes and pedestrian amenity in the CBD.

These corridors will be the primary focus for managing congestion and ensuring the reliability and efficiency of the road network, particularly for those trips that cannot be readily served by public transport, walking or cycling.

Targeted upgrades to other major traffic and freight routes, especially at intersections, will also be undertaken to relieve pinch points along the network and address safety issues.

SOLUTIONS – ROAD NETWORK EFFICIENCY	
Complete the North-South Corridor	<ul style="list-style-type: none"> • Complete the 78km non-stop North-South Corridor to provide a high standard, non-stop transport connection for freight and business travel: <ul style="list-style-type: none"> • Torrens Road to River Torrens • Darlington Upgrade Project • Regency Road to Darlington (remaining sections). • Northern Connector (road and rail freight).
Target investment to improve capacity and reliability	<ul style="list-style-type: none"> • Undertake targeted upgrades of the Inner and Outer Ring Routes. • Provide new road and public transport infrastructure to support growth areas (eg Playford Projects). • Duplicate Victor Harbor Road (Old Noarlunga to McLaren Vale), provide more overtaking lanes and shoulder sealing to Victor Harbor, and in the longer term duplicate to Mount Compass. • Duplication of Main South Road (Seaford to Aldinga), Beach Road and Dyson Road (Noarlunga), Commercial Road (Seaford), Richmond Road (Keswick), West Lakes Boulevard, Churchill Road (Devon Park), Montague Road (Modbury), Elder Smith Road (Mawson Lakes, including extension to Port Wakefield Road), Kings Road (Paralowie), Womma Road, Curtis Road (Munno Para West), Main North Road (Evanston Park), and additional lanes on Main North Road (Parafield). • Grade separate key rail crossings between Brighton and Elizabeth. • Other targeted intersection and road section upgrades to improve efficiency and safety along major traffic routes.
Manage demand for car travel	<ul style="list-style-type: none"> • Continue to roll out major public transport, walking and cycling initiatives. • Implement travel demand programs. • Promote, support and introduce bike and car-sharing schemes.
Actively manage the road network	<ul style="list-style-type: none"> • In line with the new <i>A Functional Hierarchy for South Australia's Land Transport Network</i>: <ul style="list-style-type: none"> • Implement Road Development Plans to manage and set priorities for future road investment. • Prepare Network Operating Plans and Road Management Plans to identify and implement the operating requirements of major traffic and freight routes.
Make better use of existing road infrastructure	<ul style="list-style-type: none"> • Continue to implement the Managed Motorway measures on non-stop routes. • Develop a broad strategy for the implementation of Intelligent Transport Solutions across the transport network (all modes), with a focus on improved efficiency along freight routes and major traffic routes. • Develop and roll out programs that reallocate road space during critical time periods of the day. • Require a Better Use Strategy as part of transport-related business cases and the prioritisation of transport solutions.
Establish consistent networks across government boundaries	<ul style="list-style-type: none"> • Support local councils in the Greater Adelaide region to prepare transport plans that reflect the strategic directions of The Plan and establish consistent road networks across government boundaries and integration of transport and land use at a local level.
Protect freight routes	<ul style="list-style-type: none"> • Ensure that land use policies in the South Australian Planning Policy Library align with freight and major traffic routes identified in the new <i>A Functional Hierarchy for South Australia's Land Transport Network</i>.

Figure 5-2 Adelaide's Road and Rail Freight Solutions



5.4 CYCLING AND WALKING SOLUTIONS FOR GREATER ADELAIDE

Growing concerns about the environmental sustainability of our transport and land use systems and the health of South Australians mean that more people walking and cycling will play an increasingly important role in producing more liveable, sustainable and productive urban places.

Extending our cycling and walking networks and catchments, and improving the attractiveness and convenience of cycling/walking routes, are key ways to enable increased participation in active transport. More convenient and direct connections to public transport stops and stations, and the provision of secure bike parking facilities, public bike sharing opportunities and walkable environments at these stops and stations will contribute to greater patronage of our public transport services, as well as increase the vibrancy of local main streets and activity centres. In turn, creating lively, pleasant places that are pedestrian-friendly and cyclist-friendly will help bring new businesses and jobs to these centres.

Facilitating safe and convenient walking and cycling options along Adelaide's arterial road network is critical to enable more people to adopt active transport and this will be achieved by providing separated bike lanes and footpaths on key arterial roads. Such network improvements will be designed to incorporate pedestrian scale lighting, with good surfaces and connections to surrounding areas by allowing for safe access and egress.

A Citizens' Jury convened in 2014 to consider the issue of motorists and cyclists sharing the roads safely. The majority of the Jury's recommendations have been supported by Government for implementation. They include regulatory amendments, improving cycling infrastructure and facilities, information, education and a collaborative road safety campaign, awards to acknowledge best practice in cycling environment, and continuing high visibility initiatives.

The South Australian Government, through DPTI, will work closely with local councils to design and deliver cycling/walking infrastructure and networks that follow best practice standards to enable greater participation in cycling and walking.

Cycling and walking network improvements will focus on:

- completing the Gawler, Outer Harbor, Tonsley and Grange Greenways by 2025
- developing walkable main streets that are lively, pleasant places for pedestrians and cyclists that help bring new businesses and jobs to these places
- providing greater separation between bicycle, pedestrian and motor vehicle traffic on arterial roads
- increasing public transport mode share and station catchment areas by removing barriers to walk-up and ride-up patronage, providing secure bike storage and bike sharing opportunities at key stations
- introducing a public bike share scheme starting in the city
- ongoing extensions and improvements to the *Bikedirect* network
- improving local cycling and walking routes in partnership with local government and providing safe and convenient crossings of arterial roads.

These initiatives are designed to enable more people to take up cycling and walking for a greater number of journeys, preferring to switch modes, especially for shorter trips. They will also demonstrate the convenience of walking and cycling to a range of destinations, while promoting the health, social and economic benefits of choosing active transport modes.

Implementation of these initiatives will pay attention to the different design needs for walking and cycling, as well as the different types of walking and cycling activities and users. While consistent design principles need to be adopted for both cycling and walking, each situation will need to be considered on its own merits to achieve the desired outcome of an increased uptake of active travel modes.

SOLUTIONS – URBAN CYCLING AND WALKING NETWORKS	
Extend and improve cycling and walking networks	<ul style="list-style-type: none"> • Complete the Greenways Program (including the Gawler, Outer Harbor, Tonsley and Grange Greenways) by 2025. • Provide separated bike lanes and footpaths on key arterial roads. • Ensure major road and public transport upgrades provide walking and cycling infrastructure designed to best practice standards. • Upgrade the existing Bikedirect network, including retrofitting existing bike lanes to best practice standards and extending bike lanes through intersections. • Continue funding for cycling and walking improvements, including the Black Spot program, on local and arterial roads including upgrades to arterial road crossings. • Provide facilities for cycling tourism and sporting activity through the Barossa, Adelaide Hills and Fleurieu Peninsula, including sealed shoulders and shared paths where appropriate.
Expand walking/cycling catchments	<ul style="list-style-type: none"> • Increase accessibility of public transport stops and stations, activity centres, main streets and schools for cycling and walking. • Provide secure bike storage facilities and walkable environments in and around public transport hubs, centres and main streets. • Introduce a public bike sharing scheme for inner Adelaide and other urban centres to enable cycle use for short, local trips. • Increase Way2Go funding to encourage and enable walking and cycling amongst school children, improve safety and expand walking and cycling catchments of schools. • Support Main Street grant programs to improve the walking and cycling environment.
Incorporate cycling and walking options in planning	<ul style="list-style-type: none"> • Revise existing standards and guidelines to reflect best practice road design for cycling and walking using the Streets for People Compendium as a guide. • Enable cycling and walking to major events and provide bike parking facilities at these events. • Work with local councils across Greater Adelaide to create and maintain convenient, direct and attractive street networks conducive to walking and cycling, particularly at the land division stage of new housing developments. • Ensure all new housing and mixed-use developments incorporate attractive and convenient cycling routes and walkable environments that provide connectivity with local services and facilities. • Through the policies in the South Australian Planning Policy Library ensure: <ul style="list-style-type: none"> • Cycling and walking networks, facilities and connections to key centres are provided as part of all new developments. • Appropriate levels of bike parking and car parking at centres, main streets and public transport hubs are provided.
Improve driver education and awareness	<ul style="list-style-type: none"> • Revise driver education and awareness programs so that drivers look out for cyclists and pedestrians to reduce their vulnerability on the road.

Figure 5-3 Cycling solutions



5.5 REGIONAL SOUTH AUSTRALIA TRANSPORT SOLUTIONS

Actions have been identified to improve regional and remote transport networks to better connect people to their communities, jobs and critical services, and regional businesses to their suppliers and markets. The Plan's strong focus on supporting the mining, agriculture and advanced manufacturing industries is reflected in a range of solutions to improve the efficiency of our ports, freight routes and supply chains (discussed in the Freight and Ports section).

An ongoing focus will be to ensure that regional transport networks respond effectively to the wide range of needs served by the network including passenger transport, freight, business and private travel. To do this, The Plan will focus on:

- improving inter- and intra-state transport links, particularly the National Land Transport Network and major traffic, freight and tourist networks, where the growth in freight and general traffic is highest and the safety and efficiency of freight and private travel is being affected.
- upgrading key road freight routes to enable use of High Productivity Vehicles, particularly along inter- and intra-state links and connections to key export gateways, and working with local councils to improve 'last mile' access for these vehicles, such as those identified in *A Modern Transport System for Agriculture – A New Partnership Approach*.
- improving links to international and interstate gateways such as ports and airports (current and future) that support our mining, agriculture and tourism sectors.
- better understanding and more integrated service delivery responses to passenger transport needs within our regions.

Our country towns and communities are important contributors to the liveability and economy of regional South Australia. Larger regional centres and townships provide access to services, jobs and recreational activities for many people in regional and remote areas. The Plan will support the vibrancy of these regional centres and townships by targeting critical bypass routes and working with local councils to increase walking and cycling options.

SOLUTIONS – CONNECTING REGIONAL AND REMOTE SOUTH AUSTRALIA

Safe, efficient and connected road networks	<ul style="list-style-type: none"> • Seal the Strzelecki Track • Duplicate the Dukes Highway • Deliver regional road upgrades including extensive shoulder sealing, more overtaking lanes and rest areas across the network – such as the Augusta, Sturt, Riddoch, Eyre, Barrier, Stuart and Lincoln Highways – potential further capacity improvements including duplication of parts of the Augusta and Sturt Highways in the longer term. • In line with the new <i>A Functional Hierarchy for South Australia's Land Transport Network</i>: <ul style="list-style-type: none"> • Implement Road Development Plans to target the most effective road investment. • Prepare Network Operating Plans and Road Management Plans to identify and implement the operating requirements of major traffic, freight and tourist routes. • Work with local government to prepare or revise local transport plans that facilitate consistent road networks across local government boundaries in regional and remote South Australia, particularly for freight and tourist networks.
Continue to implement a whole of government approach to addressing regional passenger transport delivery	<ul style="list-style-type: none"> • Conduct a Regional Passenger Transport Review, leading to the development of regional passenger transport plans that will identify critical passenger transport needs in each region to assess changing demands and refresh opportunities. • Provide better information to regional bus passengers, including updating the regional bus network website. • Work with local government and private industry to promote the regional bus network. • Continue to support existing regional passenger bus services, integrated passenger services and community passenger networks. • Continue to work with other service agencies and State Government departments to coordinate resources and funding and better integrate services to ensure a holistic approach to service delivery to diverse regional communities.
Increase cycling and walking options	<ul style="list-style-type: none"> • Work with local government to develop strategic cycling and walking frameworks that will: <ul style="list-style-type: none"> • Target areas where cycling and walking can be promoted most effectively. • Deliver travel behaviour change programs to provide information about the benefits of active transport and demonstrate the convenience and increased connectivity that can be achieved by walking and cycling. • Facilitate the development of convenient and attractive street networks conducive to walking and cycling. • Expand walking and cycling catchments for schools, main streets and key activity centres. • Support and promote cycling tourism. • Provide and expand existing shared paths between key locations.
Preserve amenity for local communities	<ul style="list-style-type: none"> • Construct bypasses at Penola, Port Wakefield and Truro. • Investigate the longer term potential to bypass Renmark and upgrade Yorkey's Crossing at Port Augusta. • Work with local councils to identify alternative heavy vehicle local road bypass routes where full arterial bypasses cannot be economically justified.
Support regional aviation	<ul style="list-style-type: none"> • Provide guidance and assistance to local councils, outback communities and the Australian Government in their management of the regional aviation network including: <ul style="list-style-type: none"> • Working with the Australian Government to provide a network of 24 hour all weather aerodromes to provide access for emergency medical services provided by the RFDS. • Licensing regional air services, where required, to ensure the continuity of fragile air services. • Working with council planners to protect airports from inappropriate surrounding development.
Collect regional travel data	<ul style="list-style-type: none"> • Conduct targeted regional transport surveys that enables a better understanding of regional travel patterns, region-specific issues and regional transport disadvantage.

THE ROLE OF BUS SERVICES IN SERVING REGIONAL PASSENGER TRANSPORT NEEDS

The Government is committed to supporting public transport services in regional areas and in 2011/2012 provided over \$9.1 million (excluding GST) in operating subsidies and concession reimbursements to regional operators. A variety of complex and changing regional passenger transport needs is met by a wide range of services provided by private operators, and at the local and state government levels.

With around 14 to 16 percent of South Australia's population outside Greater Adelaide and spread over a vast area, providing efficient, cost effective passenger transport requires innovative solutions, including those that integrate the services provided by the different levels of service providers.

While trains are seen by some as a more attractive solution, the variability and breadth of passenger transport requirements in regional areas simply cannot be met by fixed rail services. The high capital and operational costs of rail infrastructure requires high use to justify investment and, with the considerable level of public subsidies that would be required to run such services, could only service a limited range of destinations and times.

Other Australian states have similar issues to South Australia in meeting the challenges of servicing regional and remote areas for passenger transport. Recently, Queensland announced a review of its regional passenger transport services, including a review of the value of some western train services where the cost to taxpayers is more than \$2000 for each passenger.

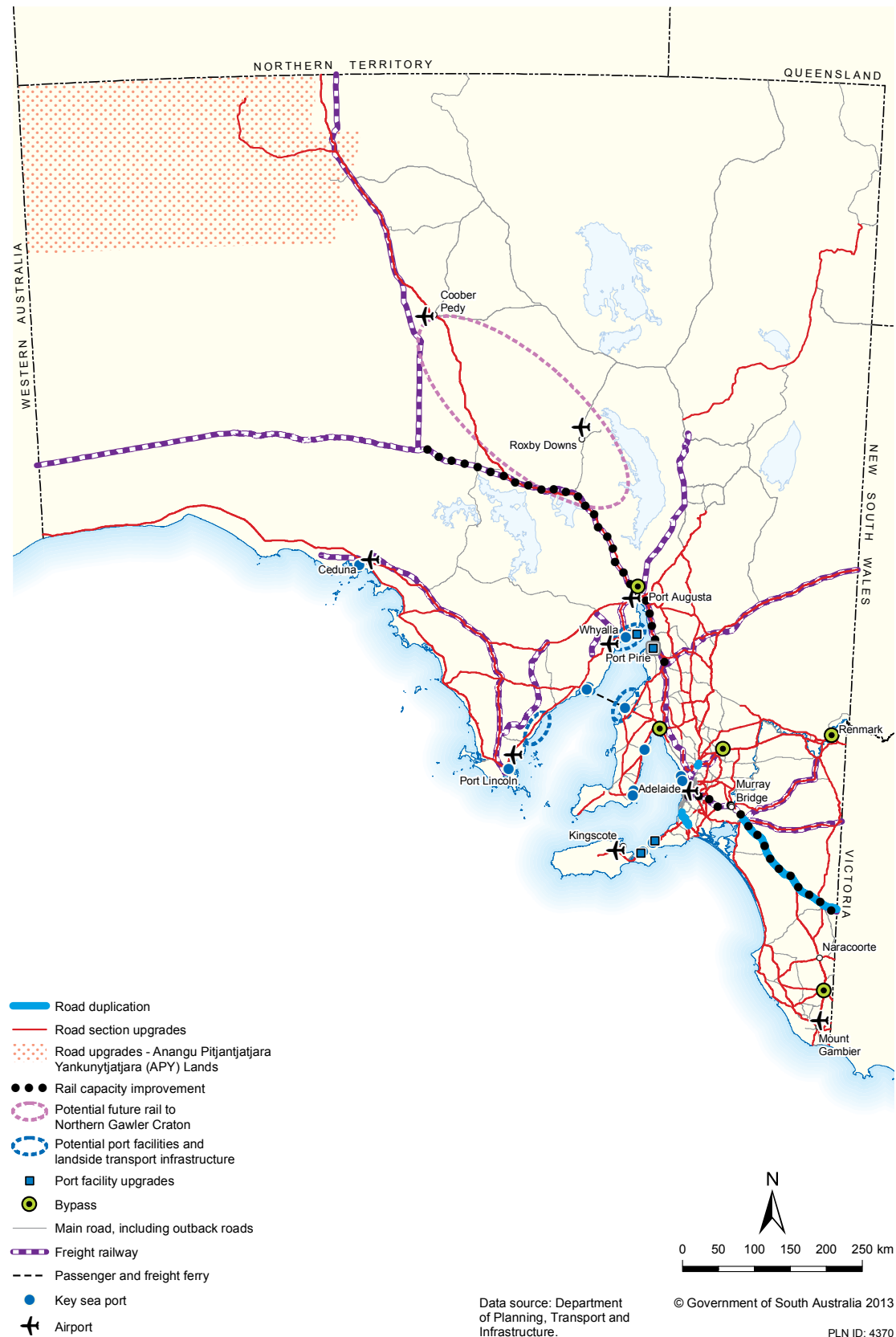
South Australia's integrated service approach in regional areas involves encouraging the coordination and integration of existing transport services and infrastructure, promoting more efficient use of government resources, and supporting private operators to deliver identified transport services. Importantly, it encourages strong community involvement in identifying the transport needs of the region and in developing strategies to address these needs.

At this time, the provision of regional passenger rail services is not being contemplated by the *Integrated Transport and Land Use Plan*. The wide range of passenger transport services required in regional areas can be more efficiently and effectively provided by the more innovative use of passenger transport services that use the road network. A key challenge for regional passenger networks in South Australia is to make them more efficient and attractive to deliver the level of patronage they need to become viable.

The key to success for regional passenger networks lies with integrating service delivery and tailoring services to meet the specific needs of communities – a partnership approach between state and local government, the private sector and the community.

SOLUTIONS AND ACTIONS

Figure 5-4 Regional and remote South Australian solutions



5.6 FREIGHT AND PORTS SOLUTIONS

South Australia's economic development is tied to our ability to connect businesses with each other and with their customers as efficiently, quickly and cost-effectively as possible. As our economy changes and grows, we will also need to move more goods around the state, to/from interstate and overseas markets. Efficient freight networks and ports are vital to our competitive edge and continued economic prosperity, particularly for the three globally competitive industries of advanced manufacturing and defence, mining and resources, and premium food and wine.

South Australia has significant private sector involvement in its ports and rail freight networks along with different levels of government involvement from local government access to freight facilities, State Government roads and Australian Government responsibilities for the National Land Transport Network. The Plan focuses on ensuring the continued efficiency of our ports and freight sector by:

- Taking action now to make sure South Australia is prepared for the coming step-change in growth in the mining sector and can act promptly to ensure critical infrastructure is provided when and where it is required (acknowledging that the types of infrastructure required – ports, rail, road and pipelines – can take long periods of time to plan, develop and construct and involve the input of multiple parties).
- Recognising that the general freight task is growing steadily and the need to use our existing assets more effectively to unlock additional capacity before identifying targeted and cost effective improvements and additions to our networks – with a focus on those networks and sites that are strategically important to South Australia.
- Recognising that changes in the nature of logistics and the general freight sector require more innovative management of our freight networks and a better understanding of supply chains to respond proactively to a more complex and evolving freight market.
- Giving priority to protecting existing and potential major freight routes and facilities, including ports, airports and intermodals.
- Working with the private sector and other levels of government to ensure the freight and port networks work together to provide efficient connections and that the right regulatory environment is in place to support economic growth.

The challenge associated with the growing mining task is being addressed through the Resources Infrastructure Taskforce. The taskforce has been created to build on the *Regional Mining and Infrastructure Plan* to further guide investment in infrastructure needed to realise our significant mining potential.

A 90 day Change@SA project investigating heavy vehicle access issues for the agriculture industry has identified over 180 opportunities to improve productivity for the industry. *A Modern Transport System for Agriculture – A New Partnership Approach* details these issues and the next steps for addressing specific initiatives.

In addition, and in line with the requirement of the Australian Government for all states, South Australia will produce a freight strategy and a ports strategy to address state-wide freight issues and support the *National Land Freight Strategy* and the *National Ports Strategy*.

SOLUTIONS – POSITION THE SOUTH AUSTRALIAN FREIGHT SYSTEM TO SUPPORT THE EXPANSION OF THE MINING SECTOR

Implement outcomes from the *Regional Mining and Infrastructure Plan*

- Initially focus on the development of high capacity ports, and associated land based links, on the Central Eyre Peninsula, Yorke and Mid North/ Braemar, and the Northern Eyre Peninsula. An early priority is to confirm the preferred commercial solutions to bulk mineral export infrastructure on Spencer Gulf.
- Provide a supportive regulatory framework for public and private investment, particularly with respect to protecting multi-use infrastructure corridors and efficient approvals processes.
- Provide leadership and coordination to facilitate mining-related infrastructure development.
- Develop business cases and funding applications under suitable Australian Government programs for infrastructure projects identified as part of the *Regional Mining and Infrastructure Plan*.

SOLUTIONS – MAINTAINING AND OPTIMISING THE CAPACITY AND EFFICIENCY OF FREIGHT NETWORKS

Target investment in infrastructure to improve the capacity and efficiency of strategic freight corridors

Road

- Complete the 78 kilometre non-stop North-South Corridor and make targeted upgrades to the Inner and Outer Ring Routes in Greater Adelaide.
- Make targeted upgrades of strategic regional freight roads to achieve High Productivity Vehicle (HPV) standards and improve the safety and consistency of interstate freight routes.
- Work with other levels of government and industry associations to appropriately grow the HPV network and address 'last mile' issues.
- Investigate and implement productivity improvements identified in the Change@SA project *A Modern Transport System for Agriculture – A New Partnership Approach*.

Rail

- Make improvements to the national rail network, including Tarcoola to Crystal Brook, between the Port of Adelaide and northern metropolitan Adelaide, and through the Adelaide Hills, including the resolution of freight capacity constraints at Torrens Junction.
- Investigate potential new rail lines to mines in the North Gawler Craton area.
- Provide for the development of a new rail line to Olympic Dam.
- Work with the private sector and Australian Rail Track Corporation (ARTC) to identify potential solutions to create a direct access link between Whyalla and the national rail corridor near Spencer Junction for trains travelling to the north and west of the State.
- Work with the private sector and industry groups to improve understanding of supply chain needs and identify solutions, including potential improvements and storage locations to support the grain industry on the Eyre Peninsula.

Multi-modal

- Continue to work with the Victorian and Australian Governments to implement the *Green Triangle Freight Action Plan*.
- Further expansion of intermodal terminals at Bowmans and Penfield and develop new intermodals.

Improve the capacity and efficiency of strategic ports and airports, including landside connections

Port of Adelaide

- Protect and improve road and rail access to the Port of Adelaide, including through the Northern Connector project.
- Improve rail infrastructure within the port.

Adelaide Airport

- Continue to support direct international aircraft calls to Adelaide Airport.
- Improve key intersections (such as Sir Donald Bradman Drive/Sir Richard Williams Drive) to maintain efficient freight access to the airport.
- Provide access from Richmond Road for commercial vehicles, taxis and buses.

SOLUTIONS – PREPARE A FREIGHT STRATEGY AND PORTS STRATEGY FOR SOUTH AUSTRALIA

<p>Deliver regulatory reforms and reduce red tape</p>	<ul style="list-style-type: none"> • In conjunction with the review of the planning system: <ul style="list-style-type: none"> • Identify opportunities to improve protection of strategic freight transport corridors and hubs. • Provide consistent and streamlined development assessment processes for freight transport infrastructure and facilities. • Identify opportunities to further improve the regulatory environment for freight transport and reduce red tape for business. <p>National Regulatory Reforms</p> <ul style="list-style-type: none"> • Continue to work with other jurisdictions to deliver nationally consistent and streamlined regulations for freight transport.
<p>Improve the quality of information on the freight transport system and supply chains to inform planning and delivery of infrastructure</p>	<ul style="list-style-type: none"> • Work with other jurisdictions as a part of national efforts to improve the reliability, accuracy, specificity and timeliness of freight transport data. • Work with the private sector and industry groups to improve understanding of supply chain needs and identify solutions, with initial priority being the grain industry.
<p>Provide for strategically located freight hubs and intermodal facilities</p> <p>Provide for freight deliveries in urban environments</p>	<ul style="list-style-type: none"> • Work with the transport sector and local councils to identify locations for freight hubs and enable a supply of well located and serviced land for freight generators and hubs. • Provide for the needs of freight vehicles and deliveries in the design of urban development, including flexibility in time of day delivery.
<p>Introduce a program to address potential traffic conflicts and safety issues</p>	<ul style="list-style-type: none"> • Prepare a rural bypass strategy to improve the safety and amenity of towns frequented by heavy vehicles. • Update and deliver a roadside rest area strategy and service centres policy to support fatigue management and improve heavy vehicle safety. • Implement <i>South Australia's Road Safety Strategy</i> and the <i>Road Safety Action Plan</i>. • Identify opportunities to further improve safety on the road, railways and at freight terminals.
<p>Work in partnership with the private sector, other levels of government, and Regional Development Australia Associations</p>	<ul style="list-style-type: none"> • Identify opportunities and approaches to further improve the capacity and reach of the freight system, including: <ul style="list-style-type: none"> • further develop and grow the identified freight network. • encourage greater use of High Productivity Vehicles. • adoption of intelligent transport systems. • Enhance the safety, sustainability and innovative capacity of the freight system, including sustaining a qualified and productive Transport and Logistics workforce and addressing a range of environmental and productivity factors.

REGIONAL MINING AND INFRASTRUCTURE PLAN

Achieving greater collaboration between the private sector and government – and positioning all levels of government to meet the challenge of mining expansion – led the South Australian Government to develop and release the *Regional Mining and Infrastructure Plan*.

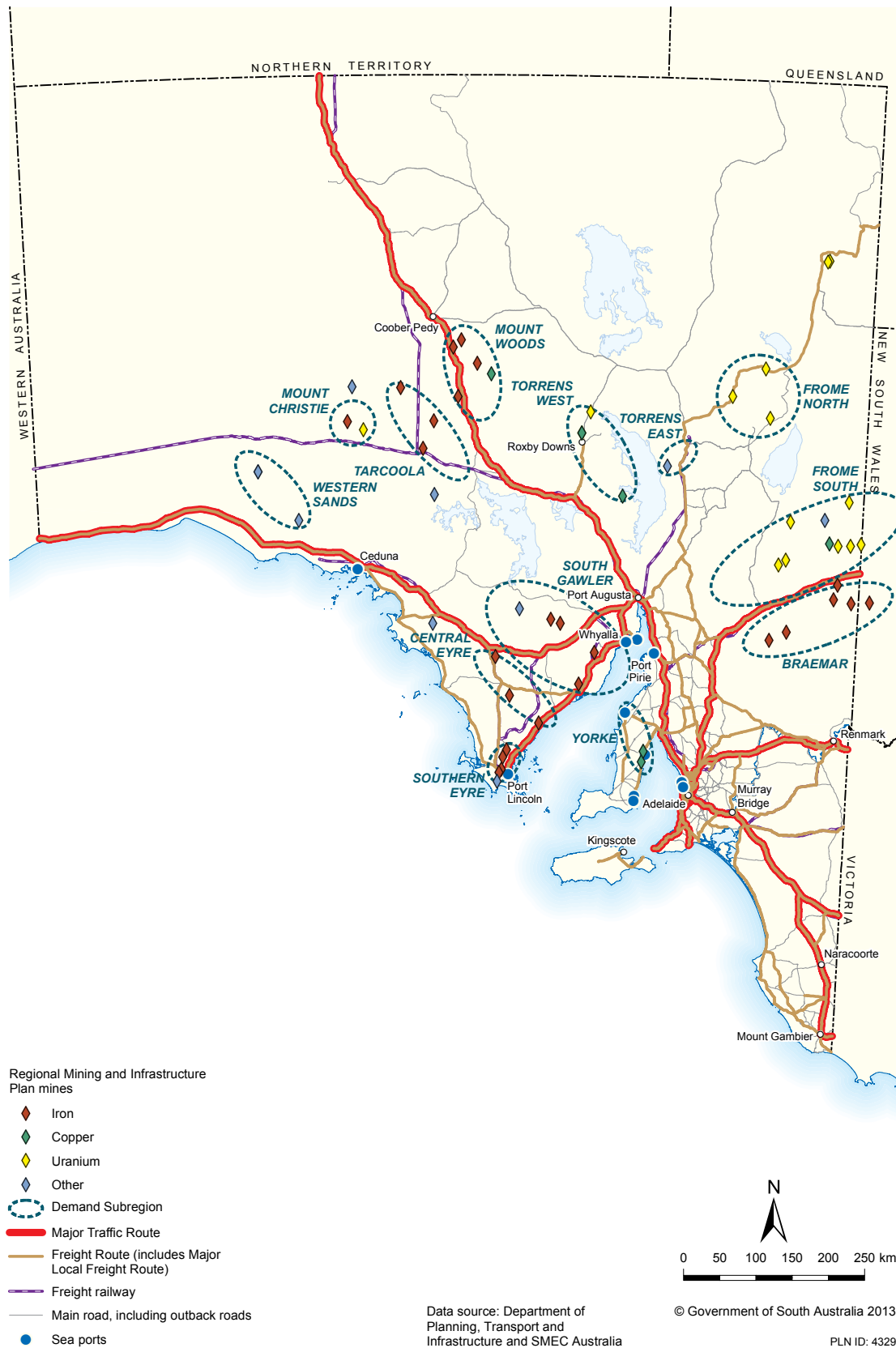
Delivered in partnership between the South Australian Government, the Australian Government and Regional Development Australia, the plan brings together information from across the mining sector and infrastructure providers to gain a more accurate understanding of the following freight and logistics issues:

- The future freight task likely to be generated from emerging mines.
- Port needs in terms of capacity, capability and location, and land transport connections to mines.
- The adequacy of existing freight transport facilities and infrastructure in meeting projected demand.

Planning has been undertaken for each of South Australia's three key mining regions: Far North, Eyre and Western, and Yorke and Mid North/Braemar. The planning identifies and prioritises transport solutions to meet the minerals freight challenge. The *Regional Mining and Infrastructure Plan* aims to promote development of mining related infrastructure to build upon the South Australian Government's Plan for Acceleration Exploration, and to advance mining exploration into operating mines.

The South Australian Government has established the Resources Infrastructure Taskforce to drive the implementation of the *Regional Mining and Infrastructure Plan*.

Figure 5–5 Mining in South Australia



THE ROLE OF ADELAIDE'S AIRPORTS AND THEIR LOCATION AS A COMPETITIVE ADVANTAGE

Adelaide Airport is Australia's fifth busiest airport serving over 7.5 million passengers in 2013 and is ideally situated to encourage growth in both tourism traffic and air freight to and from South Australia. More than 7,480 tonnes of freight was exported in 2013.

The current position of Adelaide Airport is one of South Australia's competitive advantages: it's easy to get to, has ample room for growth and is supported by a range of businesses and industries that have grown alongside it to benefit from the flow of passengers and freight in the area or to support activities at the airport. This proximity to Adelaide's metropolitan areas requires some compromises to protect community amenity, such as curfew arrangements and flight path procedures.

Parafield Airport is one of Australia's busiest General Aviation airports and also the location for Flight Training Adelaide, UniSA Aviation Academy and TAFE SA. The airport also provides pilot training for a number of domestic and foreign airlines. Similarly to Adelaide Airport, significant investment has been undertaken over time to entrench this airport in its current location (where it has been since 1927) and it supports significant industry and employment in the north of Adelaide.

Adelaide Airport and Parafield Airport are owned by the Australian Government and leased to private industry. Adelaide Airport Limited purchased the leases for both airports in May 1998. The initial 50 year lease expires in 2048 and there is an option to extend the lease period to 2097. In its 2009 *National Aviation Policy White Paper*, the Australian Government confirmed its commitment to the continued operation of these nationally important facilities and is working with all states and territories to ensure that these and all significant airports are protected from inappropriate surrounding development.

Landside links are currently satisfactory to support the needs of the airports and, with the future potential tram link to Adelaide Airport and upgrades to Sir Donald Bradman Drive, the airport's future transport requirements will be met.

ADELAIDE'S ROLE IN THE SOUTH AUSTRALIAN FREIGHT TASK

Adelaide itself is a significant attractor for freight vehicles, both road and rail. Key generators/destinations include the Port of Adelaide, Adelaide Airport and the city's growing domestic import/export industries – as goods for Adelaide residents and the products of Adelaide-based businesses often are imported or exported through the Port of Melbourne.

The existing rail alignment was opened in January 1887 through the largely unpopulated Adelaide Hills. Since that time, urban development surrounding the rail line has increased as has the number of trains using the line. This has led to increasing concern about the impacts of the rail freight line on the amenity of this area for local residents.

While alternative options have been considered that seek to bypass the Adelaide Hills area, these options are prohibitively expensive, with benefits that do not justify the costs associated with their implementation. Some of these options, particularly those that identify an alternative alignment to the north of Adelaide, also have other negative impacts on rail freight operations, including longer running distances for Melbourne to Adelaide movements, which may result in rail losing its market share to road freight on this corridor.

With respect to a road freight bypass of Adelaide, investigations have identified that a bypass route cannot be justified on economic grounds. This is primarily due to the limited number of vehicles that would use such a bypass and the longer distances and travel times associated with alternative route options.

There are existing alternative routes that allow heavy vehicles (including B-Doubles) to travel between the South Eastern Freeway and Adelaide's northern suburbs or the mid north of the State to the east of the Adelaide Hills. A B-Double route exists via Murray Bridge and Sedan to the Sturt Highway and then into Adelaide along the Northern Expressway to Adelaide. Depending on the destination and transport task being undertaken, further options are available for travel to/from the mid north.

Traffic counts suggest that only approximately 10-15% of heavy vehicles on the Princes Highway to the east of Murray Bridge use these existing roads to bypass Adelaide. The relatively low use of this route is due to the high proportion of heavy vehicles having an origin or destination within Adelaide, and therefore use the South Eastern Freeway. The data further suggests that approximately half of the heavy vehicles using the section between Crafers and the Portrush Road / Glen Osmond Road / Cross Road intersection have origins or destinations within the Adelaide Hills area. This section of the freeway therefore provides important access for businesses within the Adelaide Hills. This data confirms the importance of Adelaide being a significant attractor for freight.

The *Integrated Transport and Land Use Plan* concentrates on ensuring that freight routes through Adelaide are efficient and that freight vehicles are concentrated on the freight routes identified in the new *A Functional Hierarchy for South Australia's Land Transport Network*. This minimises their travel on routes where land use and condition are unsuitable.

5.7 SOLUTIONS FOR ALL OF SOUTH AUSTRALIA

Many transport and land use issues are not specific to any one location or corridor: they are important for all of South Australia. These issues include the sustainable management of our transport infrastructure assets, addressing road safety issues, and managing the ecological footprint of our transport network and travel demand.

Managing and maintaining our transport assets

The risks of not performing appropriate maintenance on our transport assets range from safety risks associated with the use of the asset, and in some cases loss of availability of the asset due to failure, through to increased replacement and repair costs and greater inefficiency. The Plan includes actions to minimise these risks and make sure that our transport assets continue to make a major contribution to the state's economy, connectivity and liveability.

SOLUTIONS – MANAGING AND MAINTAINING OUR TRANSPORT ASSETS	
Increased maintenance	<ul style="list-style-type: none"> Increased maintenance funding to improve and sustain the performance (safe and efficient operations) of the transport network. Continue to ensure State Government asset management practices provide the best mix of maintenance solutions.
Maintain our road network	<ul style="list-style-type: none"> Establish and fund minimum service levels for roads, consistent with <i>A Functional Hierarchy for South Australia's Land Transport Network</i>, to improve and sustain the performance of the state's arterial road and bridge networks. Update asset management plans for the state and national road and bridge networks consistent with the <i>A Functional Hierarchy for South Australia's Land Transport Network</i>. Expand the use of the Pavement Asset Management System. Continuously review maintenance practices and procurement and delivery models to ensure value for money from investment in the road network. Purchase five new replacement ferries for the River Murray. Work with local councils to improve road maintenance delivery in regional areas. Continue to use the <i>Road Classification Guidelines in South Australia</i> to distinguish between arterial and local roads.
Maintain our public transport networks	<p>State Assets</p> <ul style="list-style-type: none"> Prepare and work to a new asset management plan to optimise the life of our rail and tram assets and manage performance and operating costs. Incorporate all new rail and tram network assets into our Asset Management System for effective lifecycle management. Undertake a rail network bridge upgrade program. Continue to maintain the public transport rolling stock – train, tram and bus – to enable delivery of efficient services. <p>Private Sector assets</p> <ul style="list-style-type: none"> Encourage maintenance strategies appropriate to required safety and performance targets.
Maintain our marine assets	<ul style="list-style-type: none"> Ensure asset management plans are consistent with other transport asset management plans. Continuously review maintenance practices and procurement and delivery models to ensure we get value for money from investment in marine assets. Ensure boat ramps at North Haven, West Beach and O'Sullivan Beach continue to provide unrestricted access for public use. Develop strategic boat ramp sites along the state's coastline such that they provide a network of safe havens for vessels. Enhance visitor experiences of jetties.
Maintain our aviation assets	<ul style="list-style-type: none"> Continue to actively support local councils and airport owners in maintaining regional and remote aviation assets.

Making our transport system safer

No death or serious injury on our roads is acceptable or inevitable, and all South Australians share the responsibility to address the trauma caused by everyday road use.

Over the last 30 years, South Australia has achieved a significant reduction in the number of deaths and serious injuries due to road crashes – despite a 20 per cent growth in population and a 47 per cent increase in registered motor vehicles. But the total cost of road crashes to the South Australian community remains high: over \$1 billion each year, together with a great amount of personal grief, suffering and loss.

As well as continuing with approaches that have proved successful, we will take further action to reduce the personal and community costs of road crashes and make our transport system safer.

Towards Zero Together – South Australia's Road Safety Strategy 2020 sets the direction for reducing serious casualty crashes during the decade by at least 30 per cent to less than 80 fatalities and less than 800 serious injuries per year by 2020. The strategy is supported with action plans that set out priority actions for achieving the targets. Key performance indicators allow the regular assessment of progress of the actions in different areas. The *Road Safety Action Plan 2013-2016* highlights 66 actions to be undertaken over the next three years.

SOLUTIONS – MAKING OUR TRANSPORT SYSTEM SAFER	
Promote a shared responsibility for road safety	<ul style="list-style-type: none"> • Work closely with the community to implement the <i>Road Safety Strategy</i> and the <i>Road Safety Action Plan</i>. • Build community understanding of road safety through safety information and education.
Invest in safer roads	<ul style="list-style-type: none"> • Undertake targeted road upgrades and infrastructure programs, regular safety assessments and audits of the network.
Create safer communities and neighbourhoods	<ul style="list-style-type: none"> • Cater for and enable more walking and cycling, and create more vibrant, better connected and healthier communities.
Encourage safer behaviours	<ul style="list-style-type: none"> • Work towards greater compliance with road rules, speed limits, drink and drug driving laws, heavy vehicle driver fatigue and seatbelt laws.
Continuously improve the licensing system	<ul style="list-style-type: none"> • Help all South Australians to develop the necessary knowledge, skills and experience to be safe, compliant road users.
Apply new technology	<ul style="list-style-type: none"> • Promote and encourage the uptake of emerging vehicle safety and speed enforcement technologies. • Legislate for driverless vehicles. • Continue to work with other Australian jurisdictions and the private sector to support and roll out emerging Cooperative ITS technologies that include vehicle to infrastructure (V2I) and vehicle to vehicle (V2V) communications.

Using smart technology to improve transport system outcomes

Electronic communications and other advanced technologies will increasingly enable a wide range of transport system outcomes to be achieved more efficiently and effectively across all modes. This will involve adapting our infrastructure as progressively smarter vehicles come to South Australian roads.

We will work in collaboration with industry, universities and all levels of government to research, develop and implement a range of advanced technologies designed to achieve safer vehicles and roads, improved traveller information, network efficiency and congestion management, freight industry efficiency as well as supporting local industry development in the emerging areas of technology.

There is significant global interest in the development of driverless vehicles. Driverless cars could deliver significant societal benefits for improved safety, reduced congestion, better road-space utilisation and amenity, and reduced emissions. The State Government will legislate for driverless vehicles which will revolutionise transportation in South Australia.

CONNECTSAFE ADELAIDE – BRINGING SMARTER VEHICLES TO SOUTH AUSTRALIAN ROADS

In 2011, the South Australian Government and the South Australian Motor Accident Commission commissioned Australia's first field trial of vehicle-to-infrastructure technologies. The ConnectSafe Adelaide trial was conducted by the University of South Australia and Cohda Wireless, an Adelaide company recognised as a global leader in the development of connected vehicle technologies. The trial used ten vehicles equipped with dedicated short range communications (DSRC), also known as Cooperative Intelligent Transport Systems (C-ITS) that allow vehicles to communicate to other vehicles (V2V) and to infrastructure (V2I). Data was uploaded via roadside equipment to the DPTI Traffic Management Centre, providing valuable information about road conditions and traffic flow, congestion, road safety 'black spots', intersection queue lengths and travel times. On-road demonstrations also gave participants first-hand experience of co-operative safety applications including intersection collision warning, emergency electronic brake light and roadworker alerts.

C-ITS technologies have been hailed as the next innovation to deliver road safety improvements, similar to those provided by seat belts and airbags. A recent Austroads report² found that the adoption of V2V and V2I technologies could reduce serious road crashes by 25-35 per cent. Researchers have also developed systems that communicate with mobile devices such as smart phones to enable vehicles to be aware of pedestrians or cyclists.

2 Austroads 2013, *Austroads Research Report – Vehicle Positioning for C-ITS in Australia (Background Document)*.

HOW INTELLIGENT TRANSPORT SYSTEMS CAN IMPROVE TRANSPORT SYSTEM OUTCOMES

Intelligent transport systems (ITS) are technologies that enable information to flow between vehicles, infrastructure and transport users. A number of ITS technologies underpin South Australia's transport system.

- The state-of-the-art Traffic Management Centre (TMC) to enable management of one of the most sophisticated traffic signal systems in the world, and is responsible for the smooth flow of traffic through more than 850 sets of coordinated traffic lights and pedestrian crossings, as well as on expressways and the South Eastern Freeway.
- The TMC is central to managing traffic impacts from roadworks, incidents and planned on-road events, using 500 closed circuit television (CCTV) cameras, and electronic road signs, such as variable speed limits along the South Eastern Freeway and managed motorway technology on the South Road Superway which includes lane use management signs.
- Real-time public transport information from Adelaide Metro.
- Traffic SA website showing real-time roadworks, incidents and planned events.
- 45 remotely controlled outback road condition signs across the Far North of the state.
- Reversible lanes along Flagstaff Hill Road.
- Automated and/or remotely controlled road signs, such as the variable speed limits along the South Eastern Freeway as part of a Managed Motorway system.
- The Safe-T-Cam system for enforcement of heavy vehicle driving hours.
- In-vehicle technologies such as navigation systems, electronic stability control, adaptive cruise control, intelligent speed assist, tyre pressure monitoring, etc.

Road and rail freight operators are also embracing ITS to improve the competitiveness, safety and environmental performance of their fleets, including Advanced Train Management Systems, National Intelligent Access Program, and freight terminal management.

Cooperative ITS (C-ITS) is seen as the next wave of ITS development that could fundamentally affect the way we travel. C-ITS offers significant safety, efficiency/congestion and environmental benefits through a range of applications combining wireless communications and GPS. This allows vehicles to communicate their position, speed, braking and other information to nearby vehicles (V2V) and also between vehicles and roadside infrastructure (V2I). Examples include:

- **Safety** – collision warning, collision avoidance, incident warning, intersection assistance, signal violation warning, rail crossing warning, lane departure warning, emergency brake light, speed limit notification, roadworks warning, and road weather warning.
- **Efficiency and environment** – traffic information services, enhanced route guidance, road access warning, in-vehicle signage, traffic light advisory, green wave, eco-driving systems, loading and parking management and vehicle fleet movement data to enable optimised traffic management.

SOLUTIONS – USING SMART TECHNOLOGY TO IMPROVE TRANSPORT SYSTEM OUTCOMES	
Priority for cycling and walking	<ul style="list-style-type: none"> • Incorporate intersections and pedestrian crossings that allow priority for cyclists and people walking where appropriate.
The modernisation of Greater Adelaide's public transport system	<ul style="list-style-type: none"> • Deliver real-time information at key stations and stops as well as enhanced passenger information through data sharing on mobile devices using apps. • Apply smart public transport priority measures at ramps and intersections.
Build the open data foundations for transport in the digital age	<ul style="list-style-type: none"> • Provide real-time and background data feeds of transport and traffic information. • Work with the transport and traffic information industry to continuously improve the standardisation, accuracy and timeliness of information. • Establish a resilient ITS backbone across Greater Adelaide using road and rail corridors. • Review legislation and regulatory frameworks to ensure transport and traffic management is prepared for the evolution of ITS.
Implement managed motorway techniques	<ul style="list-style-type: none"> • Implement treatments and techniques along the South Eastern Freeway including: <ul style="list-style-type: none"> • Hard shoulder running between Stirling and Crafers in the short term, and extending further out towards Mount Barker when required. • Extending the traffic management system (incident detection, CCTVs, variable speed limit signs and variable message boards) from Bridgewater to Mount Barker. • Expand South Australia's managed motorway network to include the South Eastern Freeway, Northern Expressway, Northern Connector, South Road (Wingfield to Darlington), the Southern Expressway and the Port River Expressway.
Improving freight productivity, safety and compliance	<ul style="list-style-type: none"> • Continue to work with other Australian jurisdictions and the private sector to support and roll out advanced freight management systems, for example Intelligent Access Programs for optimising intermodal freight. • Apply smart freight priority measures at ramps and intersections as part of the managed motorway network.
Adapt to new technologies to improve road safety and efficiency outcomes	<ul style="list-style-type: none"> • Increase the use of point-to-point speed enforcement. • Legislate for driverless vehicles. • Continue to work with other Australian jurisdictions and the private sector to support and roll out emerging technologies that include V2I and V2V communications.

Supporting tourism

Transport plays a critical role in supporting tourism: an easy to use transport system allows tourists to move around Adelaide, visit attractions close to Adelaide such as the Barossa Valley, Adelaide Hills, Victor Harbor and Kangaroo Island and explore regional South Australia and the more remote parts of the State.

The South Australian and Australian Governments, local councils, Regional Development Australia associations and the private sector all have roles to play in supporting and growing the State's tourism industry. Solutions proposed through The Plan focus on addressing specific transport issues that will improve visitors' experiences in Adelaide and South Australia and contribute to the industry's growth.

SOLUTIONS – SUPPORTING OUR TOURISM INDUSTRY	
Helping tourists to move around	<ul style="list-style-type: none"> • Improve signage along tourist routes (on and off road) and to particular points of tourism interest (including for cyclists and walkers). • Improve roadside rest areas to provide greater amenity and cater for larger tourist vehicles to support safer driver behaviour. • Upgrade existing and provide additional walking and cycling facilities to support active tourism and connect tourist attractions in our cities and towns. • Improve the information available on regional bus services. • Maintain and improve the outback road network. • Sustain regional air access and secure new air charter opportunities.
Increase the number of direct international connections and enhance gateways to South Australia	<ul style="list-style-type: none"> • Develop more cruise ship opportunities. • Attract more international air services to Adelaide. • Relocate the interstate passenger rail terminal at Keswick to the existing Adelaide Railway Station. • Continued investment in passenger facilities and amenity improvements at ports called on by cruise ships.

Reducing transport's environmental impacts

Approximately 17-20% of South Australia's greenhouse gas emissions are attributable to the transport sector. The construction and operation of transport infrastructure can also adversely impact aspects of the natural environment. Air toxic emissions, such as particulate matter and nitrous oxides, and noise from transport operations can have deleterious health effects, particularly in urban environments. While existing levels are very good by international standards, it is important that they are maintained or improved as the transport task grows and the population is further concentrated in urban centres.

There is a need to reduce the state's emissions, and the State Government has recently announced the intention to establish a carbon-neutral Adelaide Green Zone for the city centre. To achieve these goals, net greenhouse gas emissions from transport will need to be reduced over time. Within a decade, electric and hybrid vehicles will be the preferred form of transport within Adelaide's Central Business District.

To better manage and reduce the environmental impacts of our transport sector, we will need to re-think how we travel, the kinds of vehicles and fuels we use and the way we design and construct our cities, towns and transport infrastructure. In addition to measures adopted in this Plan to better integrate transport and land use and encourage people to shift to more sustainable transport modes, we will pursue initiatives designed to have a direct impact on reducing transport energy use and emissions. New technologies such as electric and/or hydrogen fuel cell vehicles may also emerge as cost effective ways to reduce net or local emissions.

SOLUTIONS – REDUCING ENVIRONMENTAL IMPACTS	
Reduce greenhouse gases in line with State Government targets, as well as other air emissions from the vehicle fleet	<ul style="list-style-type: none"> • Monitor the emissions profile of the transport sector and develop strategies to contribute to the State's emission targets and the achievement of the carbon-neutral Green Adelaide Zone. • Encourage shifts in both passenger and freight transport to lower emission modes. • Improve local air quality by making the shift to electric trains (electrification also allows for potential future benefits of increased renewable energy). • Encourage and adopt new technologies and practices in infrastructure design, construction and maintenance which reduce greenhouse gas and other emissions from transport. • Encourage early replacement of ageing transport fleets (all modes) • Implement strategies within <i>South Australia's Low Emissions Vehicle Strategy</i>, including: <ul style="list-style-type: none"> • Promote fuel efficient vehicles and encourage maintenance programs for optimum performance. • Facilitate increased use of renewable and low emission fuels in South Australia. • Remove information, policy and market barriers to electric vehicles. • Provide the community with tools and authoritative information about ways to reduce vehicle emissions. • Support research, development and commercialisation opportunities for South Australia relating to low emission vehicles and fuels.
Reduce noise emissions and their impacts	<ul style="list-style-type: none"> • Reduce the noise profile of the transport sector. • Deploy the Minister's Noise Specification for new housing developments adjacent tram lines, train lines and major traffic routes. • Undertake noise mitigation when constructing new or substantially upgraded roads or railways adjacent to areas that are sensitive to noise. • Participate in national policy forums to reduce noise and air emissions from vehicles including, for example, improving Australian Design Rules for vehicles.
Improve environmental design, resource use and procurement practices	<ul style="list-style-type: none"> • Minimise transport and land use effects and enhance the natural environment by using appropriate sustainable design principles, guidelines and targets for projects • Adopt energy saving, low emission technologies as they become available. • Develop an environmental procurement policy
Build relationships	<ul style="list-style-type: none"> • Find innovative ways to collaborate with environmental groups and the community.

Reducing our car dependency

This Plan supports a social and cultural shift in which people move increasingly towards choosing active travel modes, public transport and using their cars more efficiently. This supports healthier, stronger, more resilient communities who use local goods, services and facilities, decreasing their need to travel longer distances. It also enables significant emission reductions from within the transport sector.

Medium density mixed-use development will increase access to the number and variety of services that are within walkable and cycling distances. Busier public spaces will encourage people to walk through an area, as well as providing a sense of security. Better public transport, walking and cycling links between and within mixed-use activity centres (that provide bike parking facilities) will enable people to move around easily and safely without using their cars.

While this shift will make public and active transport options more attractive, large scale and sustainable changes in individual and household travel choices and behaviours will require a range of interventions. Programs delivered will encourage individuals and organisations to consider their travel options: to substitute car trips with another mode; reduce the distance travelled by car; or even eliminate the need for some journeys.

SOLUTIONS – REDUCING OUR CAR DEPENDENCY	
Make public transport, walking and cycling more attractive travel choices	<ul style="list-style-type: none"> • Encourage medium density mixed-use development to increase access to the number and variety of services that are within active travel distances. • Give South Australians more travel choices through more frequent, faster and better connected public transport services. • Continue to support public transport service innovations for carnival events (e.g. Clipsal 500 and free tram travel vouchers for City-Bay Fun Run). • Actively promote the social, economic, environmental and health benefits of cycling and walking.
Change our travel choices and behaviour	<ul style="list-style-type: none"> • Deliver targeted travel behaviour change programs that are designed to shift people's travel patterns and reduce car dependency. • Consider including carpooling schemes in future travel behaviour programs (following the trial of the Adelaide Car Pool initiative). • Introduce car sharing and public bike sharing schemes. • Take advantage of information and communication technology to reduce the need for physical travel.
Embed travel behaviour change approaches into planning	<ul style="list-style-type: none"> • Ensure that travel behaviour change initiatives and approaches are built into transport and land use planning processes.

Adapting to climate change and building our resilience to disasters

With the likelihood of more frequent and more extreme weather events occurring as a result of climate change, we need a transport system that is capable of operating during more extreme events with minimum disruption. The system also needs to be resilient in the event of localised incidents and disasters.

The range of potential impacts from climate change that could affect South Australia's transport system includes: higher average temperatures; more extreme hot days; greater risk of bushfires; increased solar radiation (UV); increased concentration of CO₂; sea level rises or storm surges; reduced annual rainfall; more intense rainfall events and frequency of flooding; and increased frequency of storms. These impacts are likely to vary in their frequency and severity across different regions of the State. Figure 5-6 shows projected change in total annual rainfall and mean surface temperature based on a moderate global warming scenario.

To protect the environment and ensure continuity of services, vital transport assets and services, our future infrastructure investment and service provision will need to identify and assess the potential risks from these impacts and manage them appropriately.

In addition to continuing to find ways to reduce CO₂ emissions from transport, we need to start planning now to adapt our infrastructure and business processes over time to build a resilient transport system that includes:

- the capacity to provide alternative routes in the event of incidents or disasters, or planned events
- quick responses to incidents on the network and emergency situations
- a comprehensive hazard identification and risk management approach that is integrated into transport planning, infrastructure design and service provision.

We will deliver a comprehensive Climate Change Adaptation Plan for state-owned transport assets that enables the government to:

- systematically develop and implement responses to the challenges of climate change
- provide leadership and strategic direction for increasing the resilience of roads and other transport infrastructure
- provide operational responses that are based on the best scientific and technical knowledge³ and include comparison of the financial costs of various adaptation options.

We will also work in partnership with other regional and sectoral adaptation plans to ensure that the possible effects of climate change on the environment, our transport assets and our processes are better understood and addressed.

Effective adaptation will enable informed decision-making, help to avoid potential economic and community disruption, and reduce the risk of legal liabilities associated with climate impacts.

We will adopt an all hazards approach for emergency and disaster management in line with the State Emergency Management Plan. This will cover prevention, preparedness, response and recovery. We will coordinate the protection, restoration and maintenance of transport infrastructure during major incidents, emergencies and disasters. This will occur in partnership with South Australia Police, emergency service organisations and other stakeholders to deliver an inclusive and fully coordinated state-wide response.

SOLUTIONS – ADAPTING TO CLIMATE CHANGE

Building a resilient transport system

- Deliver a comprehensive Climate Change Adaptation Plan for state-owned transport assets.

Improving our management of emergencies and disasters

- Adopt an all hazards approach for emergency and disaster management that covers prevention, preparedness, response and recovery.

³ Leonello B (June 2011), "Climate Change Adaptation Decision Framework for Maintenance of Road Infrastructure", University of Adelaide.

SOLUTIONS AND ACTIONS

Figure 5-6 Projected climate change impacts

