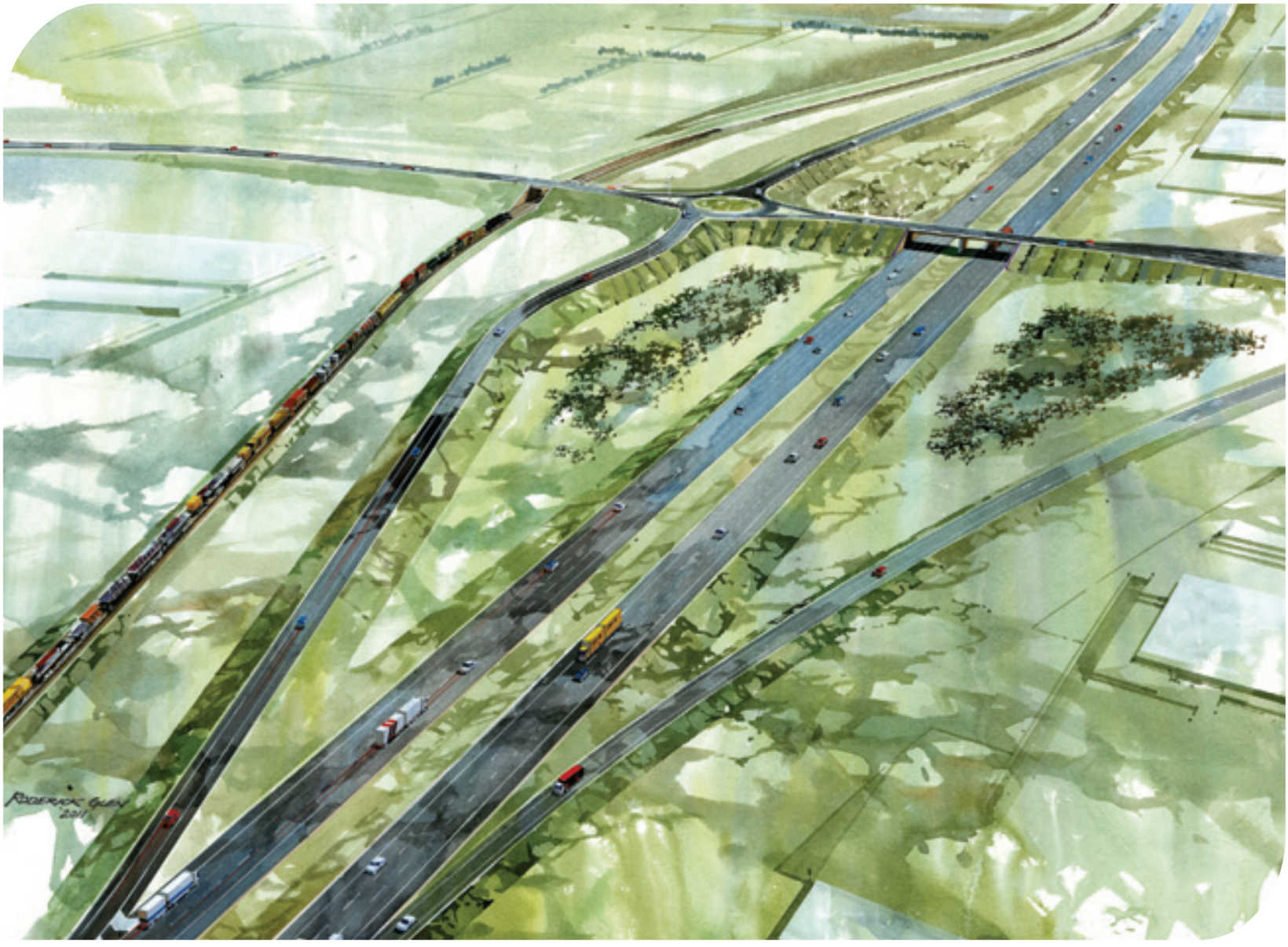
DELIVERING OUR TRANSPORT FUTURE NOW

north-south corridor
northern connector



Project Impact Report Volume 1

An environmental, social and economic assessment

Government of South Australia
Department for Transport,
Energy and Infrastructure

DELIVERING OUR TRANSPORT FUTURE NOW

north-south corridor

northern connector

Part B. Need for the project

3 Project context

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Part B

Project Impact Report Volume 1

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3 Project context

The Northern Connector project sits in a strategic context, growth context and transport context. Further details on strategic context can be found Technical Report 2 – Planning, zoning and landuse.

3.1 Strategic context

The strategic context of a completed Northern Connector is further discussed Technical Report 2 — Planning, zoning and landuse.

A number of Australian, South Australian and regional planning documents are relevant to the project. Some planning strategies have been updated or newly released while this Project Impact Report was being prepared and are thus not incorporated. The strategies relevant to the Northern Connector project will be addressed in the Supplement Report.

3.1.1 Our Cities, Our Future: A national urban policy for a productive, sustainable and liveable future

On 18 May 2011, the Federal Minister for Infrastructure and Transport released *Our Cities, Our Future - A National Urban Policy for a productive, sustainable and liveable future*. Our Cities, Our Future sets in place the Australian Government's objectives and directions for our cities as we prepare for the decades ahead. It recognises the critical roles that State, Territory and Local Governments, the private sector and individuals play in planning, managing and investing in cities. It also highlights that the Australian Government makes decisions that impact upon urban Australia. This is the first time that an Australian Government has sought to outline its overarching goals for the nation's cities and how we will play a role in making them more productive, sustainable and liveable.

The Australian Government has made significant investments in Australia’s urban communities through its contribution to the development of economic, transport and other infrastructure; health, housing, education and training; and social services and welfare. These investments, together with a range of Commonwealth policies and regulatory activities, influence the way cities are planned, managed and developed.

The goals of the National Urban Policy are:

- Productivity: To harness the productivity of Australia’s people and industry, by better managing our use of labour, creativity and knowledge, land and infrastructure.
- Sustainability: To advance the sustainability of Australia’s natural and built environment, including through better resource and risk management.
- Liveability: To enhance the liveability of our cities by promoting better urban design, planning and affordable access to recreational, cultural and community facilities.

The Australian Government has made significant investments in Australia's urban communities through its contribution to the development of economic, transport and other infrastructure; health, housing, education and training; and social services and welfare. These investments, together with a range of Commonwealth policies and regulatory activities, influence the way cities are planned, managed and developed.

The Northern Connector delivers an excellent road/rail infrastructure in South Australia which would make important contribution towards achieving the goals of the National Urban Policy.

3.1.2 Capital Cities Strategic Planning System

The Coalition of Australian Governments (COAG) has established a Reform Council to assist COAG drive its reform agenda by strengthening public accountability of the performance of governments through evidence-based monitoring, assessment and reporting. The Council has been asked to review and recommend improvement for capital city strategic planning and build share best practice planning approaches nationally.

To achieve those outcomes and meet the key objective (below) nine criteria for the future strategic planning of capital cities have been identified. Several are evident with the development of the Northern Connector (Table 3.1).

Table 3.1 Northern Connector links to the COAG Reform Council for future strategic planning.

Objective	Contribution of Northern Connector to objective
(1) Be integrated • across functions, including land-use and transport planning, economic and infrastructure development, environmental assessment and urban development	The Northern Connector corridor is an integrated rail and road transport corridor. The complex planning associated with this corridor has included integrated land-use and transport planning, potential for economic development and thoroughly assessed environmental impacts of such infrastructure development.
(3) Provide for nationally significant economic infrastructure (both new and upgrading) including • transport corridors • intermodal connections • international gateways	The Northern Connector project contributes to this priority by focussing the upgrade along Adelaide's strategic north-south corridor. Improved connectivity by providing an efficient corridor between Port Adelaide, northern Adelaide Industrial areas, the City of Adelaide and the Adelaide Airport.
(4) Address nationally significant policy issues including • efficient development and use of existing and new infrastructure and other public assets • connectivity of people to jobs and businesses to markets	The Northern Connector project contributes to this priority by focussing the upgrade along Adelaide's strategic north-south corridor. Increased capacity for north-south movement of people and freight (road and rail) along this corridor improves connectivity, minimises delays and enhances efficiency. Journey time, operating costs and travel time reliability are improved.

Objective	Contribution of Northern Connector to objective
• development of major urban corridors	
(5) Consider and strengthen the networks between capital cities and major regional centres, and other important domestic and international connections	Reduced operating costs for freight and business transport with reduced travel delay and reliable travel times between northern Adelaide and the Port of Adelaide, northern Adelaide Industrial areas, the City of Adelaide and the Adelaide Airport The Northern Connector will form a strategic link in Adelaide's north-south transport corridor. It will provide contribute to the north-south movement of people and goods in Adelaide.
(7) Clearly identify priorities for investment and policy effort by governments	Strategic prioritisation and investment decision focused on achieving a complete north-south corridor.

3.1.3 Infrastructure Australia: A Report to the Council of Australian Governments and Getting the Fundamentals Right for Australia's Infrastructure Priorities

Infrastructure Australia is committed to developing a long term co-ordinated approach to infrastructure planning and investment with focus on nationally significant infrastructure and improving national productivity.

To meet the infrastructure challenges seven key themes for action have been established by Infrastructure Australia, and several reports released including the State of Australian Cities 2010 (2010), A Report to the Council of Australian Governments (2008), and Getting the Fundamentals Right for Australia's Infrastructure Priorities (2010).

The Northern Connector can contribute to three of those seven key themes, as outlined in Table 3.2.

Table 3.2. Links to Infrastructure Australia's key themes for action

Infrastructure Australia Key Theme	Northern Connector's relevance to theme
Competitive International Gateways: developing more effective ports and associated land transport systems	The Northern Connector can contribute to an efficient land transport system by improving efficiency of the northern link to Port of Adelaide, and as a strategic link in Adelaide's broader north-south corridor.
National Freight Network: development of our rail and road networks so that more freight can be moved by rail and by road	Contributes to providing infrastructure with improved capacity to move more freight efficiently and reliably. By providing an alternative integrated transport corridor Minimises rail and road delays that exist along the current

	at sections of the corridor where road and rail networks intersect by providing network alternatives.
Transforming our Cities: increasing public transport capacity in our cities and making better use of existing transport infrastructure, including road networks.	Combined with the existing Southern Expressway, South Road and Northern Expressway corridors the Northern Connector will form an important link in Adelaide's strategic north-south corridor. The Northern Connector corridor provides limited opportunities to increased public transport capacity but does improve efficiency of road related public transport by reducing congestion levels throughout the northern Adelaide arterial road network.

Infrastructure Australia recently released the State of Australian Cities 2010 report collating information about the economic, environmental and social changes in Australian cities. The report identified that past outward urban expansion creating greater distances between housing and employment required increased travel. This travel has increased the reliance on private motor vehicles, leading to increased congestion. This is evident in Adelaide, particularly given the elongated and narrow distribution of the broader metropolitan Adelaide area between the coast and hills.

Planning for a Northern Connector within the North South Corridor provides an opportunity to improve connectivity and congestion for both private motor vehicles and freight transport to enable improved efficiency and travel time reliability for land transport.

3.1.4 Infrastructure Australia - National Land Freight Strategy: Discussion Paper

In February 2011 Infrastructure Australia released the National Land Freight Strategy: Discussion Paper. The strategy outlines the vision for a national land freight network strategy as being:

> 'The overarching purpose of the national land freight network strategy is to drive the development of efficient, sustainable freight logistics that balance the needs of a growing Australian community and economy, with the quality of life aspirations of the Australian people'.

The objectives under consideration by Infrastructure Australia are 'to improve the efficiency of freight movements across infrastructure networks, to minimise externalities associated with such freight movements and to influence policy making in areas relevant to freight.'

The Strategy aims for interoperability, including:

- for rail: engineering standards for 2km train, vertical/horizontal curvature standards, double stack, automatic train control which is urban area

compatible, USA type standards for loading gauge/kinematic envelope, and freight priority 55

- for roads: relevant highway level of service standard, access for high productivity/weight dimension configurations, compatibility of freight transfer with rail/international shipping, consistent truck communications/routings/pricing procedures
- interoperable communications, vehicle control and information systems, and smart infrastructure technologies
- ability to 'refit' (new) corridors with either road or rail freight configurations – probably governed by rail curvatures.

Northern Connector has been identified in the Strategy as a key part of national urban motorway networks to freight specifications/priority, similar to interstate projects such as, Melbourne (Peninsula Link, Westlink, north east Melbourne link, Outer Melbourne Ring Road-E6), Sydney (M5 East, F3-M2, M9, M4 if warranted), Brisbane (Gateway motorways, Northern link), Perth (Gateway WA plus Roe and Leach highway access to ports).

3.1.5 National Transport Policy Framework

In 2008 the National Transport Commission (NTC) consulted closely with state governments, peak bodies, business and individuals to develop the National Transport Policy Framework. The framework identified the need to develop a co-ordinated approach for Australia's road, air and sea transport systems, with a focus on;

- an economic framework for efficient transportation marketplace
- infrastructure planning and investment
- capacity constraints and supply chain performance
- urban congestion
- climate change, environment and energy
- safety and security
- strategic research and technology
- workforce planning and skills
- social inclusion
- governance

Table 3.3 lists the outcomes of the framework that a non-stop North-South Corridor Road will contribute to.

Table 3.3 Links to the National Transport Policy Framework

Reference	Outcome	Description of relevance
Urban congestion	An appropriate mix of policy responses to congestion including...intelligent transport systems, funding priorities and improved public transport	Strategic investment in the Northern Connector corridor will include these attributes to minimise congestion and emissions, improve efficiencies, minimise delays and improve travel time reliability
Safety and security	Strategy developed to significantly improve safety and security across all modes. Application of 'safe system' principles to all road and land use design and development	The free-flow Northern Connector corridor will provide an alternate route to the signalised route of Port Wakefield Road and reduce the potential for conflict and the number of fatal and serious injury crashes (for all modes of transport) along the corridor. This integrated corridor will remove freight trains from the urban at-grade network, improving safety by removing the conflict of road and rail at at-grade level crossings along the existing rail corridor. Integrated planning and corridor upgrades minimise conflict between transport modes. (intersections, crossings and unprotected right and left hand turns)
Infrastructure planning and investment	Infrastructure spending linked to passenger and freight forecasts Improved utilisation of current infrastructure	Strategic investment decisions focused on achieving: ▪ more efficient freight access to the port from northern Adelaide; and ▪ a free-flow north-south corridor fro Adelaide
Capacity constraints and supply chain performance	Frameworks which best optimum and provide flexibility for supply chains	The Northern Connector will reduced operating costs for freight transport (reduced travel delay) Providing efficient and reliable movement and access to key air/sea ports and intermodals, and also industry and business hubs along Adelaide's North-South Corridor

3.1.6 Adelaide Urban Corridor Strategy

The *Adelaide Urban Corridor Strategy: Building Our National Transport Future* (Auslink and DTEI 2007) identifies current and future conditions, and the adequacy of South Australia's road and rail links, and establishes strategic priorities.

The project would help achieve the objectives of the strategy to:

- improve national and inter-regional connectivity for people, communities, regions and industry
- improve national, inter-regional and international logistics
- enhance national, inter-regional and international trade
- enhance health, safety and security
- be consistent with our obligation to current and future generations to sustain the environment
- be consistent with viable, long-term economic and social outcomes
- be linked effectively to the broader transport network.

3.1.7 South Australia's Strategic Plan 2007

South Australia's Strategic Plan (SASP) was first released by the South Australian Government in March 2004 and was updated and re-released in 2007 following extensive consultation (Government of South Australia 2007a). The plan's targets reflect South Australia's aspirations for 2014 and beyond. It guides government actions and priorities, and drives greater discipline and focus across government. Targets are grouped under the six objectives of:

1. growing prosperity
2. improving wellbeing
3. attaining sustainability
4. fostering creativity and innovation
5. building communities
6. expanding opportunity.

The Northern Connector is expected to contribute primarily to achieving the growing prosperity targets. It should also contribute to several social and environmental objectives and targets (Table 3.4).

Table 3.4 Northern Connector contribution to achieving SASP targets

SASP Objective	SASP Target	Northern Connector contribution
Growing Prosperity	Economic growth: Exceed the national economic growth rate by 2014 (T1.1)	Directly (through employment) and indirectly (through increased exports) contribute by improving freight links and increasing the opportunity for greater levels of exports (through increased output to ports)
Growing Prosperity	Competitive business climate: Maintain Adelaide's rating as the least costly place to set up and do business in Australia and continue to improve our position internationally (T1.2)	Respond to the needs of industries by implementing major projects, specifically by increasing the viability of industrial development and improving the competitiveness of industrial land in the northern region
Growing Prosperity	Business investment: Exceed Australia's ratio of business investment as a percentage of the economy by 2014 (T1.5)	An platform for taking advantage of investment opportunities in the region and the state
Growing Prosperity	Labor productivity: Exceed Australia's average labor productivity growth rate in trend terms by 2014 (T1.6)	Directly influence jobs during construction and create a competitive industrial environment in north and north-west metropolitan region
Growing Prosperity	Jobs and Employment Participation: Better the Australian average employment growth rate by 2014 (T1.10) and increase the employment to population ratio, standardised for age differences, to the Australian average (T1.12)	Build employment capacity at regional and industry levels, and strengthen the workforce through planning and development Retain and build employment in the northern region, commensurate with state population growth
Growing Prosperity	Total Exports: Treble the value of South Australia's export income to $25 billion by 2014 (T1.14)	In association with Northern Expressway, improve interstate links and connections to Port Adelaide facilitating the movement of export goods
Growing Prosperity	Defence Industry and Defence Employment: Double the defence industry's contribution to our economy from $1 billion to $2 billion annually (T1.20) and increase defence industry employment from 16,000 to 28,000 by 2013 (T1.13)	Facilitate expected growth in defence in the state focused in the northern region and potentially create further 'industry clustering' opportunities
Growing Prosperity	Strategic infrastructure: Match the national average for investment in key economic and social infrastructure (T1.21)	Meet the doubling of the freight task (not expected to be implemented within SASP target timeframes of)

SASP Objective	SASP Target	Northern Connector contribution
Road safety – reduce fatalities and serious injuries	Reduce road fatalities to less than 90 persons per year. Reduce serious injuries to less than 1000 per year. (T2.9 and 2.10)	The road operational improvements expected as a result of the Northern Connector will improve road safety.
Greenhouse gas emissions reduction	Achieve the Kyoto target by limiting the state's greenhouse gas emissions by 60% (to 40% of 1990 levels) by 2050 (T3.5)	The new road link will provide free flowing traffic conditions for freight and commuters and therefore reduce the transport related greenhouse gas emissions compared to the 'stop-start' conditions on the existing road network.

South Australia's Strategic Plan guides the development and implementation of other South Australian planning strategies and policy initiatives that relate to the Northern Connector project (Figure 3.1) including *The 30-Year Plan for Greater Adelaide* (Department of Planning and Local Government 2010a) and *Strategic Infrastructure Plan for South Australia* (DTEI 2010).

Figure 3.1 South Australia's Strategic Plan relationship with other key state government policies

3.1.8 The 30-year Plan for Greater Adelaide

In February 2010, the Government of South Australia released *The 30-Year Plan for Greater Adelaide*, a volume of the South Australian Planning Strategy.

This detailed document aims to guide growth and development, and stimulate investment by:

- setting regional targets for housing and population growth
- setting related targets for the number of jobs needed to support population growth and identify where those jobs may be located and where specific employment land should be set aside
- identifying major transit corridors and growth precincts within Greater Adelaide, and integrating land use priorities with long-term transport and infrastructure planning
- identifying investigation areas for areas of primary production significance
- identifying the regional distribution of affordable housing targets.

The plan is driven by 14 principles:

1. A compact and carbon-efficient city
2. Housing diversity and choice
3. Accessibility
4. A transit-focused and connected city
5. World-class design and vibrancy
6. Social inclusion and fairness
7. Heritage and character protection enhancement
8. Healthy, safe and connected communities
9. Affordable living
10. Economic growth and competitiveness
11. Climate change resilience
12. Environmental protection, restoration and enhancement
13. Natural resource management
14. Community engagement.

The Northern Connector will play a role in defining and improving the North–South Corridor for metropolitan Adelaide, a key priority of the Strategic Infrastructure Plan for South Australia (Section 3.1.6).

The 30-Year Plan recognises the proposed Northern Connector as part of the wider North–South Corridor, and the land use and development opportunities it would open. Other mass transit, major freight corridors and major road capital works in the 30-Year Plan that relate to the Northern Connector include:

- ongoing North–South Corridor investigations, which will provide a direct link into the Northern Connector from the south (South Road Superway project)
- the Northern Expressway, which provides a direct link into the Northern Connector from the north
- Port River Expressway and the associated direct connection rail.

The Northern Connector is expected to help achieve many of the 30-Year Plan principles, such as population, housing and employment targets, the specifics of which are detailed in the Housing and Employment Land Supply Program (HELSP) report (Department of Planning and Local Government 2010b).

The Northern Connector will directly service:

- urban growth areas of Buckland Park, Angle Vale, Concordia, Roseworthy and Gawler East
- Greater Edinburgh industrial area
- Gillman industrial area.

The Northern Connector will indirectly service:

- proposed urban growth areas associated with Cheethams (through a potential future interchange) and possible new areas in the St Kilda precinct
- key activity centres such as Mason Lakes, Salisbury Downs and Gawler
- key industrial sites such as Parafield Airport precinct, Virginia industry zone and Kingsford industrial estate.

3.1.9 Strategic Infrastructure Plan for South Australia

The Strategic Infrastructure Plan for South Australia 2005/6–2014/15 (Government of South Australia 2005) maps out the state's infrastructure priorities for the next 10 to 15 years. It has guided significant progress in infrastructure development with more than 80% of its priority projects completed or underway. Following release of The 30-Year Plan for Greater Adelaide and progress in updating regional volumes of the South Australian Planning Strategy, the state's infrastructure plan is being updated to provide state-wide direction on priorities for investment or policy effort by governments. It will also integrate infrastructure planning and delivery by the three spheres of government and the private sector, with land use planning.

As part of this process, the *Strategic Infrastructure Plan for South Australia; Discussion Paper 2010* (DTEI 2010) is helping public consultation. The discussion paper identifies that to deliver the outcomes of The 30-Year Plan for Greater Adelaide, the government has broadened the scope of Adelaide's North–South Corridor. The corridor will be a series of strategic non-stop road links from Gawler to Old Noarlunga, to connect the rapidly expanding industrial and residential growth areas in the north and the south, and open new opportunities for economic development. The 78-kilometre corridor (Figure 3.2) will comprise four road links:

- Northern Expressway from Gawler to Port Wakefield Road

- Northern Connector from Port Wakefield Road to the Port River Expressway
- South Road from Port River Expressway to the Southern Expressway
- Southern Expressway from Darlington to Old Noarlunga.

The following Strategic Infrastructure Plan priorities (Government of South Australia 2005) are relevant to development of the Northern Connector:

- invest in transport infrastructure:
  - develop and deepen Outer Harbor and substantially improve infrastructure at the Port of Adelaide
  - improve the North–South Corridor
  - develop and maintain regional freight networks
- ensure our energy, water and land supplies are sustainable:
  - better manage our water resources, including stormwater.

The Northern Connector would help achieve these priorities, in some instances; in others, measures would be needed to avoid or reduce adverse impacts on the environment.

Transport sector

In relation to the transport sector, the plan states:

> passenger and freight transport loads on roads are rapidly increasing, adding to congestion. The freight load is predicted to double over a 20-year period and congestion is causing increasing delays on Adelaide roads. (Government of South Australia 2005)

The plan's desired position for 2015 includes the following of relevance to the Northern Connector:

- South Australia will have a sustainable transport system, one that is integrated, coordinated, affordable, efficient and safe, meeting the accessibility needs of all South Australians.
- Congestion on transport routes will be managed by a range of capital works projects.
- Freight movements will have greatly improved through greater use of rail.
- Land at Outer Harbor and Osborne will be developed for a range of export, defence and maritime services industries.
- The Port of Adelaide will be a busy import/export port for South Australia as a result of improved services to ensure the efficient transport of goods and passengers.

Figure 3.2 Adelaide's North–South Corridor (DTEI 2010)

Roads

The Strategic Infrastructure Plan proposes that the impacts associated with road freight and movements by larger vehicles be contained by the use of designated freight routes.

Its road priorities of relevance to the Northern Connector are to:

- improve South Australia's competitiveness through efficient freight transport networks
- minimise the impact of freight vehicle movement on the community and environment by appropriately locating and protecting freight routes.

The plan sets out priorities for the road network such as completion of the link from Sturt Highway to Outer Harbor, including the Port River Expressway and the upgrade of Port Wakefield Road to expressway standard and the upgrade of the North–South Corridor through metropolitan Adelaide (the Northern Connector would remove the need to upgrade Port Wakefield Road to expressway standard)

Rail network

The Strategic Infrastructure Plan notes that the use of rail for freight and passenger transport has the potential to reduce road congestion, improve safety and reduce environmental impacts.

> The long-term strategic aim for rail is to develop a connected metropolitan, regional and interstate standard-gauge network, capable of supporting the axle weights and lengths of modern freight trains. (Government of South Australia 2005)

The strategic priority for rail is to 'encourage the shift to rail transport for passenger and freight movements where justified by environmental, economic or social imperatives' (Government of South Australia 2005).

The Northern Connector project offers a unique opportunity to divert rail freight currently using the existing north–south national rail link away from suburban areas east of Port Wakefield Road, such as Salisbury, Parafield and Mawson Lakes.

Land sector

The Strategic Infrastructure Plan sets out a desired position for the land sector for 2015, with a timely release of industrial and residential land.

The Northern Connector would have a direct impact on land by improving access, particularly for freight. Its location may also increase industrial and residential land supplies in the area between the Northern Connector and Port Wakefield Road and in the Gillman area.

3.1.10 Housing and Employment Land Strategy Program

The 2010 HELSP report will guide more effective management of land supply for residential, commercial and industrial purposes. HELSP, formed under the 30-Year

Plan, combines the Metropolitan Development Program and the Industrial Land Program.

Beyond the principles of the 30-Year Plan for Greater Adelaide, the HELSP report contains the Government of South Australia's policy directions for the physical development of South Australia over the next 10–15 years. It is a physical and policy framework for reaching SASP targets.

Infrastructure is an essential element of building new and revitalised communities; it provides the support and connections to sustain social and economic wellbeing. HELSP is intended to guide the planning for vital infrastructure in new urban development areas by programming land releases and identifying areas to be rezoned in the short term. A governance framework, established through the Government Planning and Coordination Committee, will further assist in linking infrastructure requirements for new growth areas to the capital works budget process.

The HELSP report plays a key role in guiding and delivering the population and employment targets of The 30-Year Plan for Greater Adelaide. The program sets out a timetable for achieving and maintaining the plan's target of a 15-year supply of development-ready zoned land, and matches the supply with current and future demand projections. The Northern Connector will assist in achieving elements of HELSP by catering for land supply to meet housing demand, as well as employment land increases over the life of the plan (to 2038).

The report identifies past and predicted industrial land demand and identifies that northern and western Adelaide regions are expected to retain their significant industrial status, representing nearly 63% of Greater Adelaide's growth in industrial employment.

In terms of developable industrial land, state government-owned land equals more than eight years' supply at current consumption rates, but it may be constrained by, for example, slope or contamination. Most of this developable industrial land is located in northern or western Adelaide and will be served by the Northern Connector.

The plan has identified about 14,000 hectares of gross land supply in new growth areas (this figure has been discounted for land uses other than residential; that will be refined during the structure planning process). About half of this land has been identified for rezoning in the short term to meet the 15-year zoned supply target. Most future land supply from new growth areas is in the Northern Adelaide and Barossa regions. This approximately 10,300 hectares is in areas including Cheethams, Buckland Park, Gawler East, Roseworthy and Two Wells, all directly serviced by the Northern Connector.

The HELSP report details the expected population and employment growth of South Australian Government regions, of which the Northern and Barossa regions (Table 3.5), both relevant to the Northern Connector project, are the most significant in Greater Adelaide.

Table 3.5 HELSP targets (2036) for the Northern and Barossa regions

Region	Population	Dwellings	Jobs	Industrial land
Northern	169,000	67,000	79,000	1021 ha
Barossa	110,000	46,400	38,500	214 ha

Transport connectivity and efficiency will be essential in creating and supporting growth in the Northern and Barossa regions. The HELSP report recognises the coordination of infrastructure planning to achieve these targets, including the role of the Northern Connector ('The region's road access will be greatly improved by the construction of the Northern Expressway and the Northern Connector' (Department of Planning and Local Government 2010b, p 174)

The HELSP report supports the SASP competitiveness, economic growth, employment and export targets (see Section 3.1.3). As part of its investigations for the report, the Government identified three strategic industrial areas (Lefevre Peninsula–Gillman; Lonsdale; Edinburgh Parks–Defence Science and Technology Organisation) which — based on their economic importance to South Australia, significant export function, extent of infrastructure investment and future industrial land supply — should be afforded long-term protection from incompatible or competing uses.

In terms of market trends, the report identified a shift in industrial development from inner suburban sites to the outer suburbs, predominantly to the north and north-west sectors. These sectors have land available and access to needed infrastructure (e.g. Adelaide Airport and Outer Harbor), as well as improved accessibility to future transport infrastructure projects (e.g. Port River Expressway and Northern Expressway). The Northern Connector would improve access to a number of these areas. The Northern Connector will also complete the connection between the Sturt Highway and Northern Expressway, and the Port River Expressway and North–South Corridor.

The Northern Connector will fill the missing link in the following transport infrastructure projects for major freight corridors in Adelaide:

- North–South Corridor
- Outer Harbor channel deepening
- Port River Expressway
- Lefevre Peninsula Transport Corridor
- Northern Expressway.

These projects focus on improving safety and capacity, and thus travel times and reliability, along corridors connecting industrial areas to air and sea ports, intermodals, rail terminals, and the National Land Transport Network leading to regional South Australia and other states and territories.

3.1.11 Housing Plan for South Australia 2005

The *Housing Plan for South Australia* (Department for Families and Communities 2005) presents a plan to:

- make affordable housing available to more people
- provide quality housing for those in greatest need in our community
- renew and reinvigorate neighbourhoods.

The Housing Plan has five main objectives and identifies the associated key actions that would deliver the desired results in affordable housing, high need housing, neighbourhood renewal and other areas of importance to South Australians.

The plan sets out to 'expand the supply of affordable housing by implementing a target of 10% affordable and 5% high need housing in all significant new housing developments'. The Northern Connector would assist the aims of the Housing Plan for South Australia by providing:

- greater accessibility to housing lands (e.g. Buckland Park, Concordia and Roseworthy)
- ease of access to employment lands
- further housing land in the corridor created between the Northern Connector and Port Wakefield Road, subject to suitability, feasibility studies and a potential change in zoning.

3.1.12 Development of horticulture industries on the Adelaide plains

The report, *Development of Horticulture Industries on the Adelaide Plains — A Blueprint for 2030*, designates land to the east of Port Wakefield Road, between Virginia and Angle Vale, as being suitable for 'intensive horticulture (sheds, glasshouses and inground)' and land to the west of Port Wakefield Road as 'lower value land' that 'could be utilised for hydroponic greenhouse production'.

Land to the south of the intersection of the Northern Expressway and Port Wakefield Road, in the vicinity of the northern end of the Northern Connector, is not shown as being required for horticulture; further south, the blueprint land is not in the project area.

The proposed development of the Northern Connector would improve access to and from the key horticultural areas on the Adelaide Plains but not impinge on land identified for horticultural purposes.

3.2 Growth context

The estimated resident population of South Australia increased by 19,600 people in one year to 1.62 million people in June 2009.

The four LGAs with the largest growth in South Australia during 2008–09 were all in the Adelaide statistical division:

- Salisbury — 2,500 person increase
- Port Adelaide Enfield — 1,500 person increase
- Onkaparinga — 2,300 person increase
- Playford — 2.100 person increase

Three of these LGAs (Salisbury, Port Adelaide Enfield and Playford) are part of the project area.

The LGAs with the fastest growth rates in the Adelaide statistical division during 2008–09 were:

- Playford — 2.8%
- Gawler — 2.3%
- Salisbury — 1.9%.

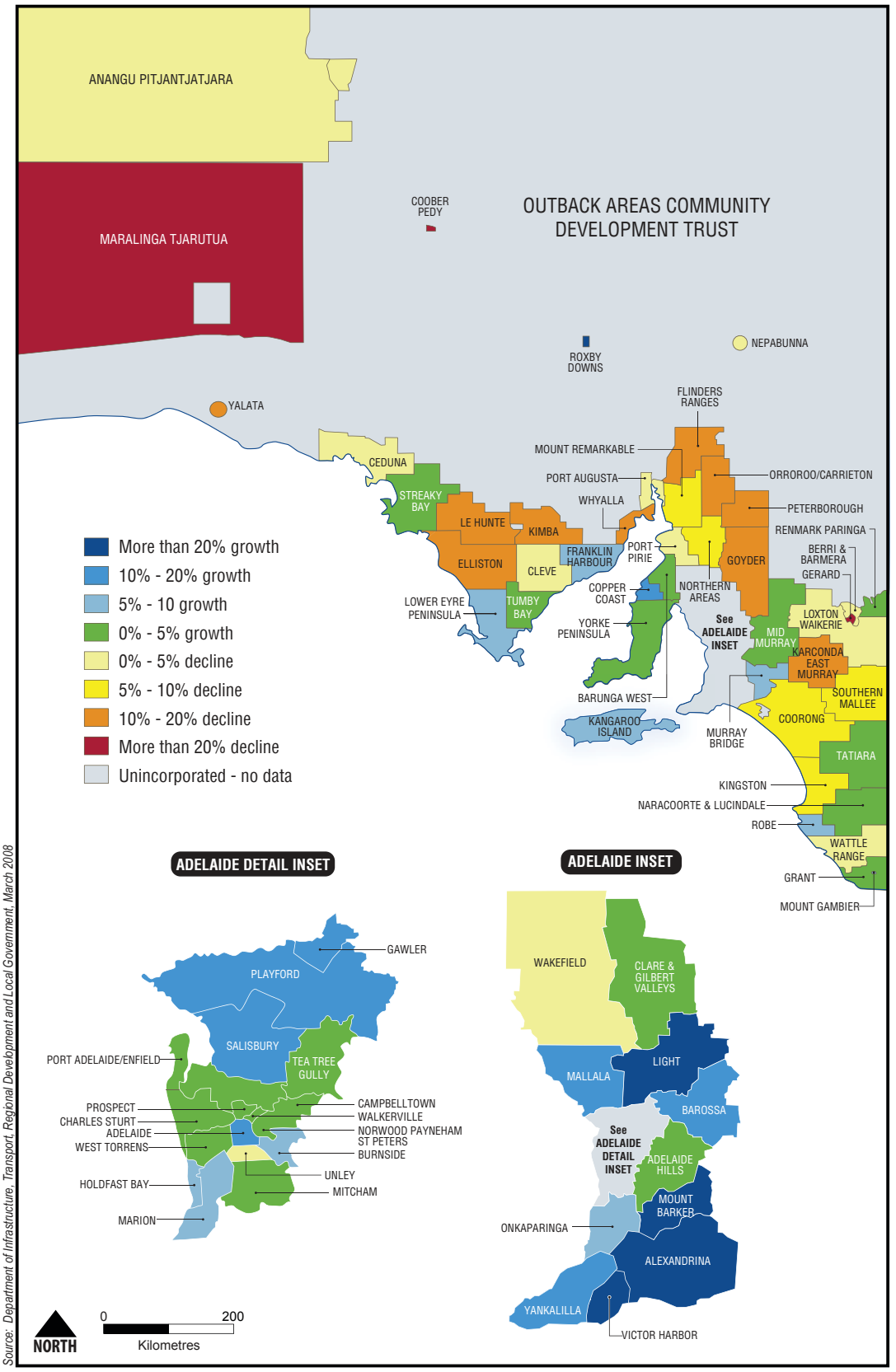
The Northern Connector (in conjunction with the Northern Expressway) project would play a vital role in linking Adelaide and Gawler.

The LGAs predicted to have significant future population growth in South Australia (Figure 3.3) are in the Northern and Barossa Regions.

3.2.1 Northern Adelaide Region

The Northern region, as highlighted in The 30-Year Plan for Greater Adelaide, is the most significant growth area in metropolitan Adelaide. The region is projected to accommodate an additional 169,000 people (one-quarter of the overall projected growth of metropolitan Adelaide) and 79,000 jobs in the next 30 years. Urban expansion during that time is expected in Buckland Park, Roseworthy, Concordia, Two Wells, Angle Vale and Virginia, and the Dry Creek salt fields (Figure 3.4).

Also of significance is the role of the Northern Connector (and Northern Expressway) in directly connecting the Barossa and Western regions, which are also poised for significant population and employment growth. These regions, combined with the Northern region, will accommodate an additional 362,000 people, or two-thirds of metropolitan Adelaide's growth over the next 30 years. Investment in transport infrastructure is essential to accommodate the expected increase in both residential and freight transport demand.



Source: Department of Infrastructure, Transport, Regional Development and Local Government, March 2008

Figure 3.3 **Growth rates by local government area, 1997-2006**

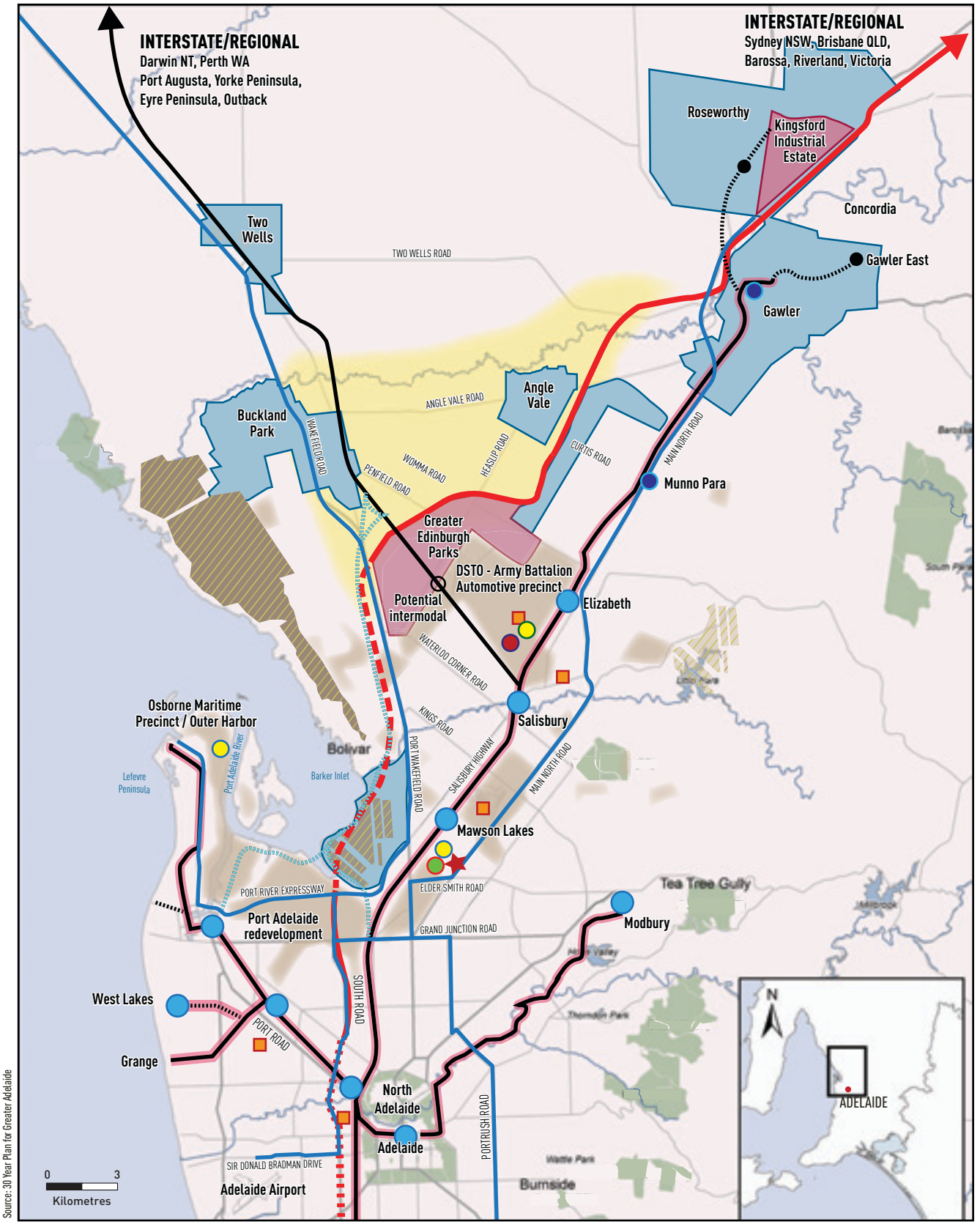


Figure 3.4 **Current and future regional transport and industrial generators**

- Planned urban land
- New strategic employment
- Existing key industry
- Adelaide Plains food bowl
- Transit oriented development
- Major district centre
- Planned district centre
- Key other employment centre
- Science, technology, innovation
- Manufacturing hub
- Defence hub
- University
- Major road network
- Existing mass transit
- Northern Connector rail
- Major corridor (fixed line)
- Constructed/committed freeway
- Northern Connector road
- North–South Corridor
- Wetlands

3.3 Transport context

3.3.1 Traffic and road safety

Existing traffic volumes

The current significant traffic congestion along sections of Port Wakefield Road south of Waterloo Corner Road during weekday peaks is symptomatic of high traffic volumes nearing the capacity of the road, coupled with the mix of local and through traffic. Existing traffic volumes (2010) along Port Wakefield Road range from 14,000 vehicles per day (vpd) (north of Brown Road) to 47,600 vpd (near Globe Derby Drive).

The existing volume along Salisbury Highway between Port Wakefield Road and South Road is 54,700 vpd.

Figure 3.5 shows existing annual average daily traffic (AADT) volumes for arterial and local roads in the project area. Traffic volumes along Port Wakefield Road generally decrease to the north. During the morning peak (7.30–8.30 a.m.) and afternoon peak (4.45–5.45 p.m.) a significant volume of commuter traffic is generated from within the wider Salisbury area.

Evidence from directional traffic counts shows a skew in traffic flows: during the morning peak, the predominant commuter traffic flow is southbound towards Adelaide's central business district (CBD) and during the afternoon peak, flow is predominantly northbound away from the CBD

Generalised characteristics of the daily traffic movements in the project area are:

- weekday traffic volumes are generally higher than on weekends
- event days at Adelaide International Raceway, Speedway City, Globe Derby Park and St Kilda recreation area generate significant volumes of traffic.

Future traffic volumes

Traffic volumes along Port Wakefield Road would continue to increase if the Northern Connector was not constructed: Port Wakefield Road is forecast to reach capacity by 2016. Forecast traffic volumes in 2031 for sections of Port Wakefield Road are given in Table 3.6 and Figure 3.5.

Significant volumes of traffic would be expected to shift from east of Port Wakefield Road (from Salisbury Highway and Main North Road) to the Northern Connector (Figure 3.5), lowering traffic volumes on those roads to well below existing levels.

Table 3.6 Port Wakefield Road existing and 2031 traffic forecasts

Port Wakefield Road section	Existing 2010 AADT (vpd)	2031 *with* Northern Connector (vpd)	2031 *without* Northern Connector (vpd)
North of Northern Expressway	15900	32,500	33,000
Northern Expressway to Waterloo Corner Road	30,900	22,500	52,000
Waterloo Corner Road to Bolivar Road	38,700	20,000	53,000
Bolivar Road to Ryans Road	49,000	25,000	60,000
Ryans Road to Globe Derby Drive	47,600	29,100	69,100
Globe Derby Drive to Salisbury Highway	56,100	25,000	67,500

Existing level of service

Level of service (LoS) is a term used to denote the performance of a road network. It is measured on a scale from A to F, with A representing free-flowing traffic and F representing forced flow with significant delays and queuing. LoS D is close to the limit of stable flow and is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre in the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems. A minimum LoS of D suggests little spare capacity to accommodate any future growth in traffic without degradation in performance to possible unacceptable levels.

Analysis of Port Wakefield Road (before the upgrade) indicates that sections are currently operating at LoS D to F, depending on the section of road. Salisbury Highway is currently operating at LoS D, approaching LoS E.

Future level of service

Without the Northern Connector being built, Port Wakefield Road LoS is expected to worsen from 2016, with increasing traffic from the Northern Expressway. The predicted 2016 a.m. and p.m. LoS for Port Wakefield Road should the Northern Connector not be constructed are given in Table 3.7.

Source: DEH, DTEI, DPLG

Figure 3.5 **Current (2010) and forecast (2031) annual average daily traffic volumes**

Northern Connector road
Northern Connector rail
Spur line to Port Flat siding
South Road Superway
Northern Expressway
Existing roads
Existing railway

Annual average daily traffic volume

27800 (2010 - Current)
116700 (2031 - With Northern Connector)
82100 (2031 - Without Northern Connector)

Table 3.7 Port Wakefield Road traffic peak-period congestion calculations for 2017 without the Northern Connector

	2017 without Northern Connector	
Port Wakefield Road section	**a.m. peak LoS**	**p.m. peak LoS**
Northern Expressway to Waterloo Corner Road	D	D
Waterloo Corner Road to Bolivar Road	E	E
Bolivar Road to Ryans Road	F	E
Ryans Road to Globe Derby Drive	F	F

The Northern Connector LoS would range from A to D along sections of the route during the morning peak and afternoon peak (Chapter15 Traffic and transportation).

With the Northern Connector in place, the LoS along Port Wakefield Road is expected to range from LoS A to C in 2017 (including recent upgrades).

Road safety

Previous investigations into road safety in the vicinity of the Northern Connector revealed that the crash rate along Port Wakefield Road is at average levels for National Network urban corridors in Adelaide. During the period of 2005 to 2010, crashes rates at intersections with Port Wakefield Road were (note: data indicates crashes resulting in injuries):

- Salisbury Highway – 43 crashes
- Bolivar Road — 29 crashes
- Globe Derby Drive — 14 crashes (including one fatality)
- Waterloo Corner Road — 11 crashes
- Martins Road — 10 crashes
- St Kilda Road — 8 crashes
- Ryans Road — 6 crashes.

It is likely that, with increasing traffic volumes and congestion, the rate of accidents could increase.

For the period of 2005 to 2010, a total of 192 crashes were recorded at midblock sections (i.e. between intersections), including minor junctions along Port Wakefield Road, which resulted in:

- two fatalities
- some form of injury in 69 cases
- property damage only in 121 cases.

In summary, the crash data indicated:

- the majority of crashes along Port Wakefield Road occurred at midblock locations
- Salisbury Highway and Bolivar Road had the worst crash rate of intersections where data were available
- crashes that occurred at unsignalised intersections along Port Wakefield Road were predominantly right angle crashes
- 17% of crashes at midblock locations along Port Wakefield Road resulted from vehicles hitting either a fixed object or a parked vehicle.

It is predicted that, with increasing traffic volumes and congestion, the rate of accidents could increase notwithstanding recent geometric improvements at some of these intersections.

3.3.2 Rail infrastructure

Adelaide presently has a broad gauge passenger train network operated by TransAdelaide; and a standard gauge rail network for freight and interstate passenger trains operated by Australian Rail Track Corporation. Work has begun on converting the TransAdelaide broad gauge network to standard gauge.

Delays caused by inconsistent and irregular crossing loops, and the requirement that freight and interstate passenger trains give way to TransAdelaide passenger trains, results in inadequate capacity at critical peak times and road freight delays, and ultimately stifles further land development.

The length of existing crossing loops restricts train lengths, further limiting rail freight transport capacity.

The Dry Creek North and South intermodal/marshalling yards have a dual role of holding and storing trains and handling containers. The yards are adjacent to sensitive residential developed land and the intermodal facility is constrained in length (for long train combinations).

Residents in the suburbs of Salisbury North and South, Parafield Gardens and Mawson Lakes are affected by the operation of freight trains through their urban areas. They are subjected to train engine noise, wheel squeal through tight radius curves, and blocked vehicle and pedestrian access when trains are stationary or moving slowly.

Rail freight can cause significant delays at key intersections in the Gillman/Wingfield area including:

- Cormack Road
- South Road (service road following construction of the Superway)
- Hanson Road
- North Arm Road

- Eastern Parade
- Bedford Street
- Port River Expressway (service road)
- Perkins Drive and Eastern Parade junction (road and rail).

These delays are predicted to grow exponentially as rail-based freight traffic grows (Figure 3.6).

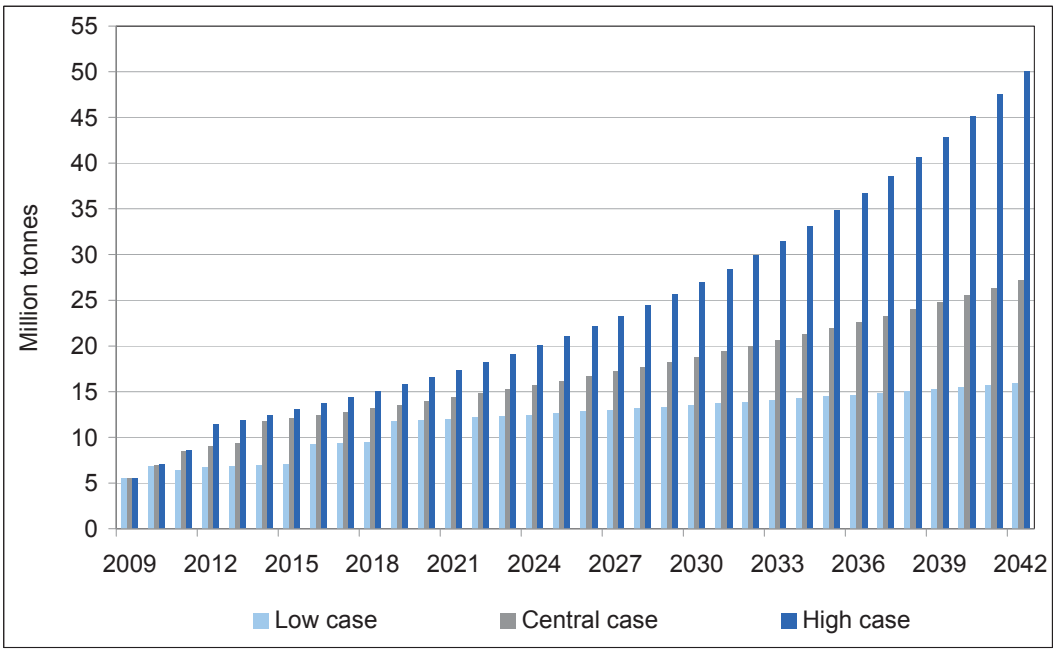


Figure 3.6 Forecast total annual rail freight volumes, 2009–42

(Source: Flinders Ports, ARTC, ABB Grain, Genesee and Wyoming Australia, BHP Billiton, FROG, GHD Meyrick)

Safety at level crossings is also an ongoing concern at many locations along the corridor. There have been a number of significant incidents involving freight trains at key level crossings in South Australia.

Another key community and commercial issue is the number of freight train movements through Salisbury Centre. The expected longer freight trains (1.6 km) will significantly worsen delays at level crossings and visual and noise impacts on this community. The significant reduction of freight from this line, will greatly improve amenity and allow passenger freight to increase/improve over time.

It is expected that future rail freight through the project area will no longer be dominated by interstate rail traffic. The significantly enhanced and consistent demand from the agricultural and mining sectors to access the rail network to/from the Port of Adelaide will inevitably increase competition for pathways between port and interstate freight. The existing rail line has only a finite number of paths available, which may work to reduce the efficiency of this rail network.

3.3.3 Freight (road)

A number of key road freight routes pass through the area:

- Port Wakefield Road
- Waterloo Corner Road
- Salisbury Highway
- South Road
- Port River Expressway
- western end of Ryans Road
- western end of Martins Road.

Port Wakefield Road has the highest average number of heavy vehicles travelling on it, with 2,000 to 5,700 vehicles a day, or 12–14.5% of the total traffic. Waterloo Corner Road has the highest percentage of heavy vehicles, at approximately 18% (2,600) of total traffic.

The heavy vehicles travelling on these arterial roads include two-axle trucks/buses, three-axle trucks/buses, four-axle articulated vehicles, A-double road trains and B-doubles. The number of heavy vehicle movements on these roads in the project area is generally consistent throughout the day — as a proportion of the total daily traffic on these roads, peak heavy vehicle times are less significant than other traffic.

Over the next 20 years, the Bureau of Transport and Regional Economics (BTRE 2010) predicts that the general freight task (both intrastate and interstate) will double and urban freight activity (in vehicle tonne kilometres) will increase by close to 60%.

BTRE projections indicate a continued rapid increase in interstate freight that originates from, is destined for, or passes through Adelaide. This freight task is expected to grow from around 13 million tonnes in 1999 to 26 million tonnes in 2025, with the total land-freight task growing from 12 million to 24 million tonnes. Road and rail are expected to continue to compete strongly for the interstate freight transport market. A range of scenarios has been considered but in all cases, even with a significant improvement in rail's market share, substantial increases are expected in the tonnage of freight carried by road.

In addition to intrastate and interstate freight, the Adelaide Urban Corridor plays a vital role in the freight task to distribute an estimated 40 million tonnes of goods throughout the Adelaide metropolitan area. Under a business as usual scenario it is likely that this task will continue to be carried out almost exclusively by road vehicles.

By 2031, car vehicle kilometres travelled per day on the Adelaide metropolitan road network are expected to grow by around 26% over current levels (to 32.7 million km per day). Commercial vehicle traffic (freight) is predicted to grow by 52% over this same period to 2.2 million vehicle km per day.

With the latest economic projections by the South Australian Government indicating significant industrial, employment and mining/economic growth in the northern areas

of Adelaide and the State, traffic modelling indicates that traffic conditions along Port Wakefield Road will exceed operational standards and desired levels of transport efficiency and safety for a national transport network link beyond 2016.

3.3.4 Pedestrian and cycle access

Bicycle movements and access

The following cycling facilities exist in the vicinity of the project:

- South Road — the South Road Superway, currently under construction. will have bicycle facilities along its length that connect to the Port River Expressway
- Port River Expressway — has sealed shoulders mid-block and 90 degree cyclist crossings at ramps, and a shared path at the south-east corner of the Port River Expressway–South Road intersection for southbound cyclists, which exits onto on-road bicycle lanes at the junction of South Road and Wing Street
- Port Wakefield Road — has sealed shoulders for use by cyclists that connect to short sections of exclusive bicycle lanes at signalised intersections
- Northern Expressway — the Stuart O'Grady Bikeway (shared path) runs along the eastern side of the Northern Expressway, and at its southern end follows around Port Wakefield Road connecting into the local street network at Waterloo Corner
- Little Para shared path — between Rifle Range Road and Globe Derby Park, crosses Port Wakefield Road via an underpass on the south side of the river and continues west, terminating just before the Northern Connector corridor alignment; it passes the wetlands just north of Ryans Road and is used primarily by recreational cyclists.

Pedestrian movements and access

- South Road — the South Road Superway, currently under construction, will have footpaths in its corridor that terminate south of the Port River Expressway.
- There are no formal footpaths along Port Wakefield Road and pedestrians walk in the verge area. Pedestrian crosswalks are provided at most signalised intersections.
- Northern Expressway — Stuart O'Grady Bikeway (shared path) along the eastern side of the Northern Expressway continues from its southern end around Port Wakefield Road and connects into the local street network at Waterloo Corner.

No other pedestrian footpaths are formed along the arterial roads or local roads in the project area.

The Little Para shared path crosses Port Wakefield Road via an underpass and continues west, terminating just before the Northern Connector corridor alignment.

4 Project need and benefits

The Northern Connector's anticipated benefits will fulfil current and future needs. Economic benefits are detailed in Chapter 5.

4.1 Need for the project

4.1.1 National and regional economic drivers

Major infrastructure projects such as the Northern Connector integrated road and rail transport corridor will facilitate future economic growth and development in the broader Northern Adelaide region and the Barossa region.

The efficient transport network that the Northern Connector project will help complete will facilitate delivery of exportable goods to South Australia's transport hubs, such as Adelaide Airport, Islington Rail Terminal, Port of Adelaide and Outer Harbor, from industry sectors such as:

- Agribusiness — contributes to over 35% of State goods exports; requires large allotments in close proximity to growing areas (Virginia horticultural region/Adelaide Hills/Aldinga) that are well connected to the freight network
- Manufacturing — creates new products and markets, which in turn lead to higher growth, often resulting in highly skilled, full-time jobs; contributes roughly 70% of the State's merchandise exports, nearly 11.6% of Gross State Product and 10.3% of total employment; the northern region's most important industry, accounting for over 20,000 jobs
- Automotive — integral part of State economic development; in the northern region, the General Motors Holden assembly plant at Elizabeth is a significant component of the industry, which comprises more than 270 motor vehicle and component manufacturers, employs more than 9,800 people in motor vehicle parts and manufacturing, contributes $1.7 billion in exports to the State's economy and makes up 17% of the State's total goods exports
- Defence — South Australia is Australia's defence state, with more than $10 billion worth of defence contracts, 11,135 jobs in the industry and 13,383 people employed indirectly as at 2007; the expansion of Edinburgh Defence Cluster, $8 billion Air Warfare destroyer contract and multi-billion dollar Collins class submarine contract are all located in the Northern Adelaide region
- Transport and storage — covers road, rail, water and air transport; transport and storage industry also closely linked to the success of many industries, including retail, manufacturing, automotive, wine and food; requires good access to the freight network to efficiently transport goods
- Mining and energy production — almost $13 billion worth of projects in the minerals and energy sector helped add $2.9 billion (4.4%) to the State's gross value added in 2007–08; over 27,600 jobs in mining and metals manufacturing

industries South Australia as of August 2008 in a network of over 1,728 businesses, creating $3.0 billion in mineral and mineral manufactures exports, or 29% of the State's total goods exports in the year to September 2008 to key markets including China and Japan; actual mining operations take place in regional South Australia but mineral and energy resource developments create significant infrastructure, jobs and spill-over activities

- Population and employment — *The 30-Year Plan for Greater Adelaide* (Department of Planning and Local Government 2010a) predicts population growth of 560,000 people over 30 years, and accommodates this growth through the delivery of 258,000 additional dwellings to be constructed over the life of the Plan (to 2038); an estimated 370,000 of these new residents (in the Barossa, northern and western regions) will directly benefit from the Northern Connector; the location of key employment lands for an expected 282,000 additional jobs (over the next 30 years) reflects where people propose to live to minimise 'journey to work' times; more than 165,000 (i.e. over 50%) of these new jobs will again be located in the Barossa, northern and western regions, in industries that will benefit directly from an accessible labour supply via the Northern Connector.

4.1.2 Regional growth and economic sustainability

Construction of the project is clearly vital to the rapid residential and economic development north of Adelaide, including expansion of the Defence facilities and personnel at Edinburgh (Figure 3.4) which will generate several new residential areas and industrial development, and a significantly increase in traffic volumes. The Northern Connector would significantly ease congestion on the existing network, particularly Port Wakefield Road, which is expected to reach capacity by 2016.

As transport is a major component of production costs, road improvements have a direct and positive impact on local, regional and national economies. The Northern Connector road and rail corridor would support growth in the region and the long-term sustainability of the regional economy. It could facilitate further economic development in the Northern Adelaide region.

4.1.3 Travel and operational efficiency

The ability of the road and rail networks in Adelaide to provide efficient and reliable levels of transport services will be impacted by forecasts of:

- the greater Adelaide population to reach 1.85 million by 2036, an increase of 560,000 people over 30 years
- population and economic development to continue to expand in the outer northern area
- industrial activity to expand in the north and north-west of Adelaide
- interstate and intrastate freight traffic centred on, or passing through, Adelaide to double in volume by 2025

- international containerised trade through Outer Harbor to triple over the next 20 years
- urban freight distribution activity to grow by about 60% over the next 20 years
- passenger travel to grow by about 30% in the next 20 years.

Road

The main challenges for the Adelaide road system, as outlined in the *Adelaide Urban Corridor Strategy: Building our national transport future* (AusLink and DTEI 2007), are associated with:

- north–south movement across Adelaide
- access to the airport
- connectivity to the South Eastern Freeway.

The Northern Connector would increase the efficiency of north–south movements in Adelaide. It would link the Northern Expressway to the Port River Expressway and South Road Superway. The Port River Expressway link would provide effective access into the port and the north-west sector of Adelaide from the north.

Port Wakefield Road is one of a number of roads that form part of the Adelaide Urban Corridor (Figure 4.1) and is a vital link between the Adelaide CBD and the north. It also serves as a through-route for interstate traffic to Perth, Darwin and Sydney, and also a local access thoroughfare for domestic and commercial traffic.

Port Wakefield Road is expected to reach its traffic capacity by 2016, creating unacceptable congestion and delays for the National Land Transport Network. The Northern Connector is needed to reduce travel times and avoid the significant congestion destined for Port Wakefield Road if it is not constructed (Table 3.3).

Rail

The interaction between Adelaide's three rail systems — Australian Rail Track Corporation's standard gauge network, and Trans Adelaide's broad gauge and tram systems — and the road network causes delays and inefficiencies to the rail network (see Section 3.3.2) at the existing 12 level crossings and six stations on the Dry Creek–Two Wells freight line (i.e. seven fewer at-grade level crossings on the Gillman–Wingfield section and five level crossings on the Salisbury line).

The rail corridor will divert rail freight currently utilising the North–South National Rail link (Adelaide to Darwin/Perth) away from well-developed suburban areas of northern Adelaide, east of Port Wakefield Road. That will improve rail freight efficiencies, safety and noise for local communities and impacts on the environment, by significantly shortening the line and removing conflicts with local rail passenger services.

The project is also needed to reduce travel times and avoid congestion on the existing freight rail line. Currently, 89 trains per week travel between Dry Creek and Bolivar; increases are inevitable over time as rail traffic follows a normal growth

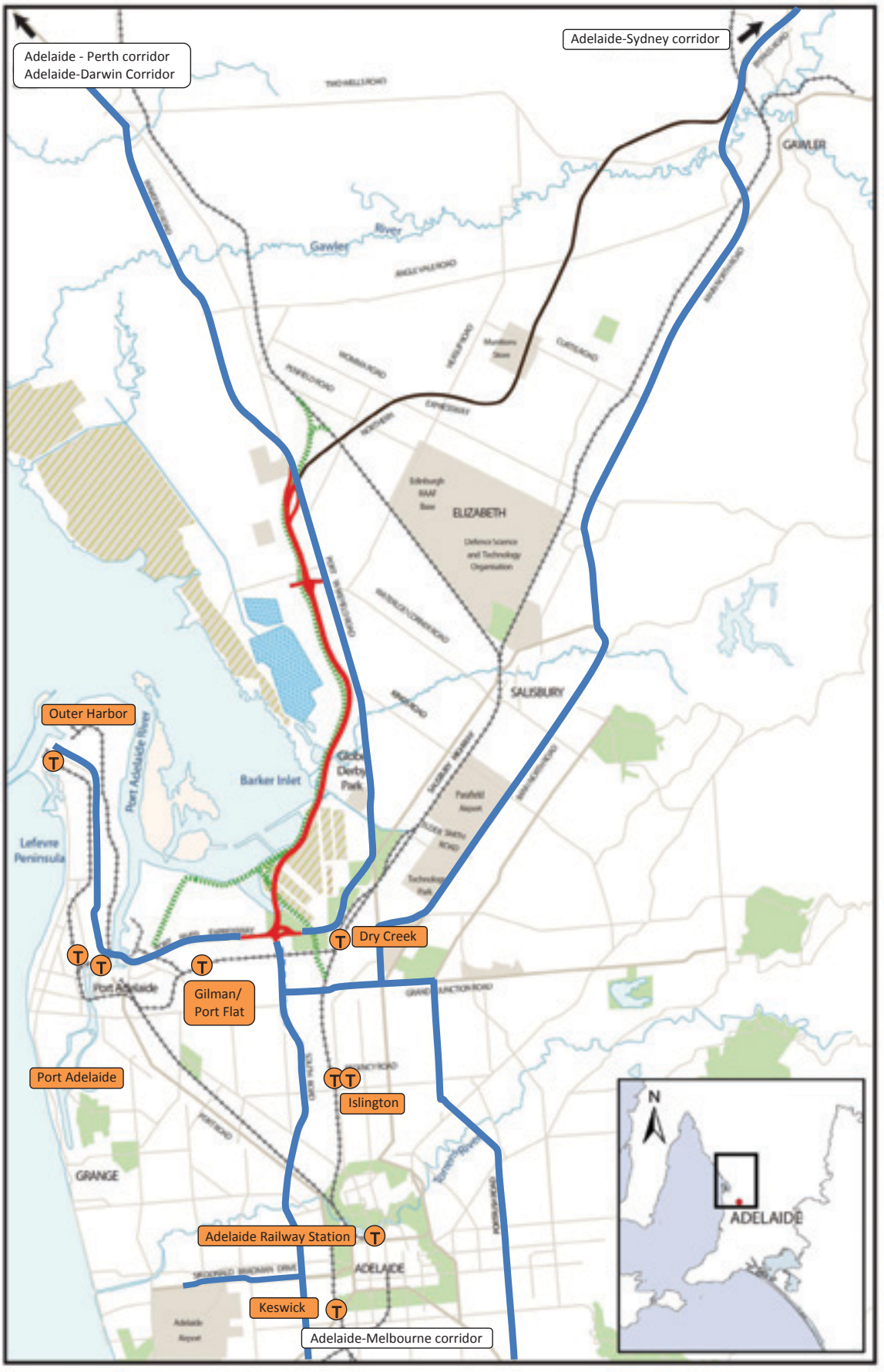


Figure 4.1 Adelaide Urban Corridor

pattern. Each train is slowed down by level crossings and for rail stations. Also of significance is rail freight, forecast to increase by 45 million tonnes on current rail freight volumes by 2042.

The existing Kings Road level crossing, to the east of Port Wakefield Road, would be realigned to allow connection with the existing rail line. Other than this level crossing, the Northern Connector rail line would not pass through stations or level crossings. The shift of freight rail from the existing train line to the Northern Connector would significantly enhance safety and reduce travel delays for road commuters currently passing across level crossings on the existing freight train network (e.g. Park Terrace, Salisbury).

4.1.4 Safety

Road

South Australia's Strategic Plan (Government of South Australia 2007a) (see Section 3.1.3) set targets to reduce fatalities and serious injuries to fewer than 90 and 1000 persons per year respectively, by 2010.

The Northern Connector road corridor is needed to improve road safety and reduce accident risks, which are mainly increased by traffic congestion and high demand on intersections. Over half of all fatal and serious injury crashes on the Adelaide Urban Corridor occur at intersections (AusLink and DTEI 2007). There would be no intersections on the Northern Connector.

Regionally, it is desirable for motorists to have a continuous and uniform standard of arterial road. Such high quality road conditions allow safe and efficient traffic movement by reducing driver fatigue and frustration. The characteristics of such roads (i.e. free flowing traffic, less demand on intersections) contribute to a reduction in accidents.

The Northern Connector, which will link the recently completed Northern Expressway and the South Road Superway (currently under construction), will provide a continuous and uniform standard road in Adelaide's North–South Corridor.

Rail

Freight trains run at high frequencies through populated areas around Salisbury and Wingfield–Gillman, resulting in increased congestion at railway level crossings along arterial roads and increased safety risks. Five level crossings between Penfield and Salisbury South (including the Park Terrace crossing) and seven between Cavan–Gillman–Wingfield will be bypassed by the Northern Connector rail line (Figure 4.2).

The Northern Connector would significantly reduce freight trains using the existing line and ease congestion. The new route would avoid populated areas and the grade-separated interchanges would eliminate the need for level crossings. Safety will be significantly enhanced for road commuters currently using the freight rail line level crossings.

Source: DEH, DTEI, DPLG

Figure 4.2 **Existing rail crossing safety and delay improvments with Northern Connector**

4.1.5 Amenity and environmental sustainability

Current and predicted future congestion along Port Wakefield Road creates constant stop–start movements, which would worsen without the Northern Connector. This inefficient driving environment increases fuel use, and wear and tear on vehicles, costs that impact on both the community and environment. The increased fossil fuel use contributes to greenhouse gas emissions.

Without the project, increased traffic volumes and congestion would further reduce urban amenity, and increase traffic noise and air quality impacts in the area. The physical barrier formed by a busier Port Wakefield Road would also make residential movement and access increasingly difficult. For residents living west of Port Wakefield Road, the shifting of freight from Port Wakefield Road to the Northern Connector will significantly improve access to service areas to the east of Port Wakefield Road.

The Northern Connector would help reduce congestion by providing an alternative free-flowing route with no traffic lights. This will reduce travel times, improve fuel efficiency and reduce vehicle greenhouse gas emissions.

The project will remove most through traffic from Port Wakefield Road, improving amenity for residents adjacent to the road.

4.2 Anticipated project benefits

As identified in Chapters 3 and 4, the project would benefit the community, industry and commerce by improving the safety and efficiency of the South Australian and national transport network. Advantages of the project include:

- provision of a critical link in a free flowing strategic North-South corridor from Gawler to Old Noarlunga
- improved freight connections between the Port of Adelaide and the Riverland and Barossa Valley to the east, Perth to the West, and Darwin, Olympic Dam and other significant mining operations to the north
- improved safety for road users by reducing freight traffic and conflicts at at-grade intersections, particularly from Port Wakefield Road
- improved traffic conditions and access for road users and local communities along Port Wakefield Road and Main North Road
- improved freight efficiency and export opportunities
- provision of a safer, faster connection to suburban destinations such as Adelaide Airport, sporting venues, beaches and businesses in the southern and western suburbs
- reduced travel times for commuters travelling to and from the northern suburbs

- reduced overall vehicle emissions due to smoother traffic flow
- improved safety for pedestrians and road users and enhanced quality of life for nearby residents through reduction of freight rail traffic through the suburban area to the east of Port Wakefield Road
- reduced heavy freight trains and interstate passenger trains (which are often disruptive and can cause major delays and traffic problems in peak hours, particularly near Park Terrace, Salisbury) from northern suburban areas such as Salisbury, Parafield and Mawson Lakes
- unlocked commercial and industrial development opportunities along the corridor, including the Economic Development Precinct in Gillman and Defence SA in Port Adelaide
- facilitation of a freight transport mode shift from road freight to rail freight
- reduced environmental impact of heavy rail freight transport through suburban communities
- efficiencies through higher speed and shorter connection to port and intermodal facilities
- improved access to Adelaide and the Port of Adelaide for rail freight transport travelling from north and west regional South Australia.

Other anticipated project benefits are identified throughout this Project Impact Report. The overall justification and benefits of the project, and the ability to meet the project needs and objectives, are provided in Chapter 24.

5 Economic assessment

5.1 Background

The strategic importance of the Northern Connector project is outlined in Chapter 3. Chapter 4 outlines the project's need and benefits.

The economic assessment for the project was carried out as two components:

- Benefit cost analysis (BCA) — addresses both monetised (Section 5.1) and non-monetised (Section 5.2) benefits and costs, and includes an estimate of the wider economic benefits for the project.
- Economic activity impact assessment (Section 5.3).

5.2 Economic rationale

The current transport network will constrain further growth in the northern region and ultimately, in the State and National economy.

Unless the north-south corridor via the Northern Connector is substantially improved the following opportunities will be undermined:

- ability to attract additional intermodal and industry hubs to this key freight and transport region, including the development of key clusters associated with the air warfare destroyer and other naval ship activities, cast metals, waste resource recovery, defence, horticulture, automotive, technology and other manufacturing;
- ability to take advantage of new investment and transport infrastructure e.g. Port River Expressway, the deepening of the Outer Harbor
- ability to strengthen this region as a key road, rail and sea export hub to Asia and the rest of the World
- ability to minimise journey to work times (car and public transport) within the corridor (including Port Wakefield Road) to new employment opportunities, linking to strategic residential growth areas, as identified within the 30-year Plan for Greater Adelaide. These include the linkage of Playford North Extension, Cheetham / Globe Derby Park, Buckland Park, Roseworthy and Concordia, to strategic employment lands e.g. Greater Edinburgh Parks, Wingfield, Techport Osborne precinct, as well as other key industrial areas in the north and north-west of Adelaide

To date, the rail freight landscape in Adelaide has been dominated by regular interstate container and steel train services, with irregular bulk agricultural and mining export train services scattered around these interstate services. The recent and impending mining boom will be constrained by severe congestion and delays on the land side of the bulk commodity Port of Adelaide. Unaddressed constraints will dampen exports and increasing the costs of imports. Projections suggest very

substantial growth in port activity in the medium term, and left unaddressed, the impact of growth constraints will intensify.'

5.3 Strategic Fit

The release of the *30-year Plan of Greater Adelaide* reflects a policy shift towards stronger population growth, demographic change, land development and employment increases over the next 30 years. The Northern Connector project will create the necessary 'system wide' accessibility improvements to not only support major economic activity in the northern and western regions, but to also create greater certainty and be a catalyst for new investment in this State.

The proposed Northern Connector project has been developed in response to the State Strategic Plan and 30-Year Plan for Greater Adelaide, which forecasts a significant increase in population growth, road and rail freight tasks and economic expansion in the northern Adelaide region, while balancing social and environmental impacts on the broader community.

Infrastructure Australia has outlined the following seven strategic priorities. This framework accords with what the Northern Connector project is seeking to achieve in an outcome sense:

- Expanding Australia's productive capacity - highly beneficial
- Increasing Australia's productivity - highly beneficial
- Diversifying Australia's economic capabilities - highly beneficial
- Building on Australia's global competitive advantages - highly beneficial
- Developing Australia's cities and regions - moderately beneficial
- Reducing greenhouse emissions - highly beneficial
- Improving social equity and quality of life in our cities and regions - highly beneficial.

Government policies that the Northern Connector, either directly or indirectly, contributes to or facilitates the achievement of policy outcomes and objectives are provided in Chapter 3 Strategic Context.

There are a number of significant State and Commonwealth investments (recent, current and proposed) that will benefit from the Northern Connector project. These include:

- Northern Expressway ($564 million);
- Port River Expressway (Stage1 = $62 million; Stages 2 and 3 = $178 million);
- North-South Corridor;
- Economic Development Precinct;
- Sea 4000-Airfare Destroyer(AWD) ($6 billion);

- Techport Australia- Common User Facility ($240 million);
- deepening the main channel from 12.2 metres to 14.2 metres ($55 million);
- extension of the berth at the Outer Harbor container terminal ($18 million);
- Outer Harbor grain terminal ($80 million);
- Port Waterfront redevelopment Project ($1.2 billion);
- LeFevre Peninsula Transport Corridor - Road and Rail Upgrade ($24 million);
- Australian Army Base - DSTO, BAE ($500 million);
- RAAF Base redevelopment Stage 2 ($51 million);
- Edinburgh Industry Estate ($145 million);
- Coles Myer state-of-the-art distribution centre ($125 million);
- Ingham Food Processing Facility ($104 million);
- Logistic Optimisation Centre for DHL ($24 million);
- Taylor Distribution Centre, currently accommodating DHL and TOLL;
- Westwood Urban Regeneration Project ($600 million)
- investment in Greater Edinburgh Parks and horticultural region; and
- SCT Logistics intermodal (Direk).

The South Australian *30-year Plan for Greater Adelaide* also identified the existing Dry Creek salt fields as a future urban growth area. The proposed rail alignment provides the most efficient rail link, with consideration of allowing for the ongoing operation of the Dry salt fields, and maximising the available area for any future urban development.

5.4 Benefit cost analysis (monetised)

A Benefit Cost Analysis (BCA)[1] for the integrated road and rail project has been undertaken . A BCA indicates whether the whole of South Australia is 'better off' by funding this project rather than using those funds in some other important activity. It does this by comparing the project with an alternative 'do minimum' base case (i.e. minor upgrades of the road and rail network in the region), with benefits and costs interpreted from a triple bottom line perspective – monetised economic, social and environmental. From an economic perspective a BCA greater than one indicates that there is a benefit to South Australia.

'Net benefit', or 'net value' — the indicator of whether South Australia is better off — is the difference between the sum of all benefits and the sum of all costs, expressed in present value dollars. It is calculated as the net present value (NPV) of the project. An NPV greater than 0 means that there is a positive net benefit.

[1] Based on the National Guidelines for Transport System Management in Australia – Volume 3. Appraisal of initiatives, prepared by the Australian Transport Council.

The results of the analysis (Table 5.1) indicate that the project would return significant positive incremental NPVs over the base case, and a benefit cost ratio (BCR) greater than 5 (evaluated using a 7% discount rate). For the project, the NPV is $1,678 million with a BCR of 5.2.

Table 5.1 Summary of benefit cost analysis — monetised results

	Integrated road and rail project
Net present value ($ million)	$1,678.0
Benefit cost ratio	5.2
Internal rate of return	18%

Sensitivity tests were undertaken to understand the impact of changes to key variables on the project result. These included variation of the project discount rate (4% and 10%), inclusion of wider economic benefits[2] (5% and 30%), changes in the level of project benefits (+15%, <25%) and changes in the capital cost (± 20%). All sensitivity tests maintained positive NPV results.

5.5 Benefit cost analysis (non-monetised)

Non-monetised benefits and costs that, while difficult to value, also need to be taken into account when evaluating the project options. These are outlined in Table 5.2. The impacts of the project are further discussed in Part D, Volume 2 of the Project Impact Report.

Table 5.2 Non-monetised benefits and costs

Benefit cost	**Description**	**Rating**
Traffic and accessibility	The Northern Connector would ease restricted access on the current Port Wakefield Road.	Moderately beneficial to businesses adjacent to Port Wakefield Road Highly Beneficial to residents in the Globe Derby area and other future development west of Port Wakefield Road accessing services in the Northern region
Supply Chain efficiency	Contribution to increase efficiency of usage of new port infrastructure, in particular the new export infrastructure at the Outer Harbour.	Moderate to Highly beneficial
Noise (social	Noise and overall social amenity benefits by moving the new	Highly beneficial to dense residential areas adjacent to

[2] The core economic appraisal did not include wider economic benefits. For the sensitivity tests they are estimated as a percentage of total road user benefits (sum of perceived user benefits and unperceived vehicle operating costs).

Benefit cost	Description	Rating
amenity)	freight rail corridor away from its existing alignment, adjacent to residential, industrial and commercial premises, to less densely populated land(1). The negative impacts to residents adjacent to the Northern Connector would be ameliorated by noise treatment measures, were eligible.	current rail line; also highly beneficial to residents/properties along Port Wakefield Road and in the Suburbs of Salisbury, Parafield Gardens and Mawson Lakes
Visual effects and landscaping	The project area is predominantly flat and low-lying, although there are a number of important visual elements in and around the corridor. The structures and landscaping aspects of the project would add visual appeal.	Moderately beneficial
Improved commercial viability of Port Wakefield Road	The Northern Connector will significantly reduce the volumes of traffic on Port Wakefield road, such that some sections may qualify as arterial/local road classification. The change in status provides opportunities to investigate reducing existing development constraints along the corridor and allow businesses to extend their footprint to enable improved access.	Highly beneficial
Stormwater management	The Northern Connector could improve the stormwater management practices of a large catchment area.	Highly beneficial
Dealing with rising sea levels due to climate change	The Northern Connector rail could function as a 'sea-wall' to protect the road, current and future residential areas from a 2m rise in the sea level. This will impact the Cheetham site and Gilman site.	Highly beneficial
Habitat and biodiversity of region	Impacts will occur to habitats and fauna species within the Barker Inlet wetland systems and North Arm Creek. Significant impacts on EPBC listed species are not expected. Additional wetlands would be created and wetland	Slightly unfavourable

Benefit cost	Description	Rating
	rehabilitation undertaken to minimise impacts.	
An additional bus passenger station at Virginia and/or possible express service from Gawler to the City	Buckland Park development, if approved, is expected to include approximately 15,000 additional houses by 2036 and a new station for public transport access to the metropolitan network. Gawler residential growth is expected to increase at more than three times the growth of the local region. A new pathway (provided by vacated freight line) would support either or both commuter services (along with a 'Park-n-Ride' centre to support Buckland Park development at Virginia). A new commuter station at Virginia is anticipated.	Highly beneficial
Facilitate future development of new western rail freight corridor	The rail component would provide improved accessibility for future Adelaide-Melbourne rail freight should a new western rail freight corridor be opened (currently the focus of an Australian Government funded investigation).	Moderately beneficial
Mode shift to lower emissions transport mode	Potential for a modal shift from road to rail for transfer of Adelaide originated and destined exports and import container cargoes, respectively. The construction of the Northern Connector rail link may facilitate the start up of a regular, dedicated short haul rail shuttle between the Outer Harbour container terminal located at the northern end of the Northern Connector rail link. This may be a viable transport solution for exporters and importers whose premises are located close to the intermodal terminal. The rail shuttle would carry container volumes that previously utilised road transport to/from Outer Harbour.	
Operating cost	The current rail analysis does	Moderate positive

Benefit cost	Description	Rating
savings from location adjacent to Port Adelaide Area (Economic Development Precinct). Additional potential benefits from incremental net revenue benefits from international or interstate businesses attracted to the site	not take into account additional traffic generated from the EDP site. Expected benefits might include reduced travel times and vehicle operating cost savings. Additional benefits (in the form of incremental net revenue) may accrue if international or inter-state businesses were attracted to the area.	
Improved access to car traffic at Grand Trunk Way	Improved access for car traffic at Grand Trunk Way will reduce constraints on development adjacent to the road (i.e. Grand Trunk Way East parcels)	Moderate positive

(1) This land is most likely to be developed for future residential use but the new alignment would have only a marginal (incremental) impact on its development as it would be further set back from adjacent properties.

Overall, the BCA shows that the combined road and rail project not only performs well with respect to monetised benefits and costs (see NPV and BCR results in section 5.1), but it also delivers a range of non-monetised benefits.

5.6 Economic activity impacts

The above BCA results show that the project produces positive net benefits. South Australia as a whole is therefore better of as a result of the project. Another important complementary outcome is the targeted employment and economic activity effect of the project. Employment effects are very relevant given the recent global economic downturn and the influence it is starting to have on employment levels in Australia.

5.6.1 Employment effects

'Skills in demand lists' (DEEWR 2008) have previously indicated state-wide shortages in the engineering and construction trades. Thus the unemployed in the region would benefit from education-backed employment programs. Furthermore, the social infrastructure to support a growing regional population and economy requires skilled professionals in other areas with shortages, such as education and the health sector.

As is the case for Australia as a whole, pressure on the available labour supply in South Australia would become more pronounced over time as the population ages.

It has been forecast that the increase in total employment in South Australia (up to 2009–10) is likely to be 13,000 less than it would have otherwise been had South Australia not been affected by population ageing. This is likely to increase as industries, such as defence, electronics, mining, export, manufacturing and creative industries are established.

In a previous survey of 200 industrial companies (Hudson Howells 2005), 94% of companies identified access to staff and labour, proximity to customers and suppliers, and provision of infrastructure as the most important criteria in their original site location decision. The wider economic benefits (WEBs) analysis included in the BCA largely addresses this issue.

Development of the Northern Connector provides a link that will reduce current and future congestion problems for traffic that moves between north western Adelaide, the North–South Corridor, Gawler and the National Land Transport Network including traffic on Sturt Highway, Main North Road, Heaslip Road and Port Wakefield Road. An important proportion of the project benefits is likely to accrue to business related and interstate traffic. The linkage roads of Northern Expressway, Port River Expressway and Northern Connector service the industrial areas in North West Adelaide and freight gateways of Outer Harbor, and the Airport.

The project is modelled as contributing to the level of economic activity in the following ways:

- job creation impacts through the investment spend on the project itself (i.e. construction of the road and rail improvements)
- providing cost savings for business (in terms of transport costs) which will lead to improved general competitiveness for businesses, new ongoing economic activity and support new jobs
- opening up of land development opportunities, with prospect for industrial and residential estates due to improved connectivity outcomes
- offsetting these activity impacts will be the potential loss of some economic activity through current use of the land (primarily horticulture).

The modelled results should be interpreted here as follows:

- all impacts are solely from a South Australian perspective
- 1 full time equivalent (FTE) job means 1 person working full time for one year
- ‘total’ jobs is the sum of ‘direct’ jobs (those directly related to the project itself, on-site and off-site) and ‘indirect’ jobs that ‘flow-on’ throughout the rest of the economy.

Analysis indicates that for the Northern Connector Project an estimated 4.22 full time equivalent jobs will be created for every million dollars spent. Because not all jobs are full time the SA Department of Trade and Economic Development includes a conversion factor of 1.21 total jobs (including part and full time jobs, which can fluctuate over a 3 year construction period) for every full time equivalent job. To this end it is estimated that the project will create approximately 1662 jobs per year, for a construction period of 3 years.

5.6.2 Boosting regional skills

*According to the 2006 South Australi*an Census, Playford local government area (LGA) had a higher percentage of people earning less than $250 a week (33.2%) than Adelaide (28.9%). Only 34% of the Playford LGA population earned $600 or more a week (49.7% in Adelaide). Salisbury LGA was similar to Playford LGA with 31% of people earning less than $250 a week and 31.4% more than $600 a week.

Playford, Salisbury and Port Adelaide Enfield LGA's unemployment rates are higher than average for the Adelaide Statistical Division. Playford had a high percentage of youth unemployment (16.2%), in comparison to the general metropolitan area (10.7%), with 68.5% of these youth looking for full-time work.

Employment and industry skills formation programs targeted at youth unemployment could be directly addressed by the construction and urban development program of the project, along with the Northern Connector project, over several years. Employment would bring with it increased average incomes for households in the region. This would lead to greater investment in the region and attraction of national and interstate migrants (skilled and unskilled) contributing to South Australia's population and employment targets.

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For more information

For more information, to make an enquiry or join the mailing list contact the Northern Connector project team.
Phone: 1300 793 458 (interpreter service available)
Email: dtei.northernconnector@sa.gov.au
Visit the website: www.infrastructure.sa.gov.au and then follow the prompts.

Για περισσότερες πληροφορίες γι' αυτό το πρόγραμμα οδοποιίας τηλεφωνήστε στο **1300 793 458**. Διαθέτουμε και διερμηνείς.

Se desiderate altre informazioni su questo progetto stradale telefonate al **1300 793 458**. Ci sono interpreti a disposizione.

Để có thêm thông tin về công trình đường bộ này xin hãy gọi điện thoại số **1300 793 458**. Sẽ có phiên dịch viên.

បើចង់ទទួលពត៌មានបន្ថែមទៀតអំពីគំរោងផ្លូវថ្នល់នេះ សូមទូរស័ព្ទមកលេខ **1300 793 458**

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