South Australia's Transport Infrastructure: Problems and Solutions

Submission to Infrastructure Australia

October 2008

Committee for Adelaide Roads

Introduction

This paper has been prepared by the Committee for Adelaide Roads in response to Infrastructure Australia's call for submissions into the future planning and investment of Australia's infrastructure.

The Committee for Adelaide Roads was established in 2003 to provide input into government policy and promote public debate on road transport infrastructure and economic development in South Australia. The Committee represents the broad community of interests within the South Australian road sector including transport operators, road contractors, individuals and businesses who rely on transport infrastructure.

Transport infrastructure underpins our social and economic well being and it has a major role in shaping the future. At the same time transport is the third major contributor to greenhouse gas emissions and its emissions are increasing at a greater rate than any other source.

As this paper outlines South Australia, in particular Adelaide's transport system is at the cross roads. It faces major challenges. Solving these problems requires not only investment in new infrastructure but a step change in thinking about how future transport infrastructure is planned and managed.

This is an issue of national significance. If Australia is to grow in a way that preserves and improves our living standards, recognizes the aspirations of its regions and protects the environment then South Australia's transport system must be overhauled.

Infrastructure underpins our economic and social well being. There are serious shortfalls in South Australia's transport networks and these are of national significance.

These problems are primarily focused on Adelaide and include:

- *Worsening urban congestion*:
- *The growing freight task:*
- *Reducing transport's carbon footprint*:
- *The road maintenance backlog*;
- *Road safety*:

As this paper outlines, a step change is needed. If the Adelaide metropolitan region is to improve its competitiveness and connectivity it must move away from the existing grid of inner arterial roads for freight and intra regional travel.

Reducing the transport system's carbon footprint requires a very substantial change in the way that public transport is used.

However a project by project approach is not an appropriate response to this problem. Achieving a step change in the performance of the state's transport system requires long term planning and involves more than simply investing in new infrastructure.

- The plan must choose between competing priorities and must be sufficiently forward looking so as to guide future development rather than simply respond to current pressures.
- The state needs to find ways of getting more out of its existing infrastructure
- Transport projects themselves require long lead times in order to acquire the land, construct the infrastructure and to achieve the desired changes in travel patterns.
- Future transport routes and their role must be clearly identified well in advance of construction and integrated with land use plans.

Current problems

South Australia's economy is growing strongly, more so than at any other period since the 1960's. Gross State Product (GSP), the key measure of the states economic performance, has grown by an average of almost 3% per annum over the past 6 years compared with the 15 year average of 2.1%.The state has become much more prosperous and living standards are rising leading to increased travel demand.

This growth is set to further accelerate over the next 5 years with GSP forecast to rise by between 3.6 and 5.6%. The nature of this growth is changing as manufacturing and agriculture decline in relative importance and mining, service and knowledge-based industries become the new drivers of the state's growth. The South Australian resources sector is at a crucial point in infrastructure development.

South Australia's population is also increasing. In the year to December 2007 the state's population increased by 1.3%, the largest increase since 1980. Based on current trends the state will need to accommodate a further 300,000 people by 2030, almost 80% of these will be located within the Adelaide region.

Grasping the opportunities provided by this growth will require investment in transport infrastructure well beyond what the state has seen in the past. At the same time the a number of problems have emerged.

Urban congestion

Urban congestion impacts on South Australia's competitiveness and connectivity. By causing delays, unreliable trip times, increased fuel and vehicle operating costs, congestion increases business cost and makes travel more expensive and less attractive for the population. Congestion also increases noise and air pollution and contributes significantly to greenhouse gas emissions.

Until relatively recently this has not been an issue for South Australia. However it is now a significant problem for Adelaide's inner city road network, in particular movement of people and freight north-south and to the CBD. Travel times on these routes have increased sharply over the past 5 years and without major new infrastructure will get much worse.

Even with the significant increase in public transport. patronage anticipated in the state's strategic plan, the number of private vehicles trips on Adelaide's roads is forecast to increase by over 35% by 2030. This means an additional 0.5 million car trips per day.

Based on Bureau of Infrastructure Transport and Regional (BITRE) studies and work undertaken by the committee it is estimated that the cost of congestion to the South Australian economy could be as high as $1.1 billion and, if not addressed, could grow to $2.5 billion by 2030.

The growing freight task

The nature of the freight task is growing and changing as standards of living rise and the state's economy shifts moves towards away from its traditional manufacturing base.

The increase in freight is being driven by a number of factors. Manufacturers are reducing stock and moving to "just in time " freight deliveries, people are increasingly expecting greater choice and variety in the products they purchase, and the decline of local manufacturing means that more goods is now coming from interstate and overseas.

For the most part these are areas in which road transport offers advantages over other modes of transport through its ability to service door to-door. In addition intense competition within the road freight industry and increased carrying capacities have led to steep falls in road freight rates.

The nature of the freight task is also being influenced by the advent of large scale distribution and warehousing facilities and the development of intermodal facilities nearby.

The BITRE has forecast a doubling of the Australian urban freight task between 2003 and 2020. Changes in South Australia reflect national trends:

- Road transport is likely to continue to dominate accounting for 76 % of non-bulk freight and a decline in rail's share to 17%.
- Rail to remain the largest mode for bulk freight (46%) followed by sea (29%).

Current problems

- The major increase in freight will be in the non-bulk items which are primarily within urban areas.

Other trends that will have an impact on South Australia's freight task include further increases in truck lengths and carrying capacities, larger ships requiring deeper draughts and longer interstate trains and double stacking of containers.

Reducing transport's carbon footprint

Transport is a major contributor to greenhouse gas emissions thus impacting climate change. The movement of people and goods accounts for almost 14% the state's total CO^2 emissions. Whilst the major sources of greenhouse gasses are power generation and land uses, transport is the fastest growing.

Private motor vehicles are a major source of transport related CO^2 emissions. Increasing public transport patronage is therefore important if the state is to reduce its carbon footprint. Better integrating between transport facilities with land use planning will also assist by reducing the demand for travel and increasing access to public transport.

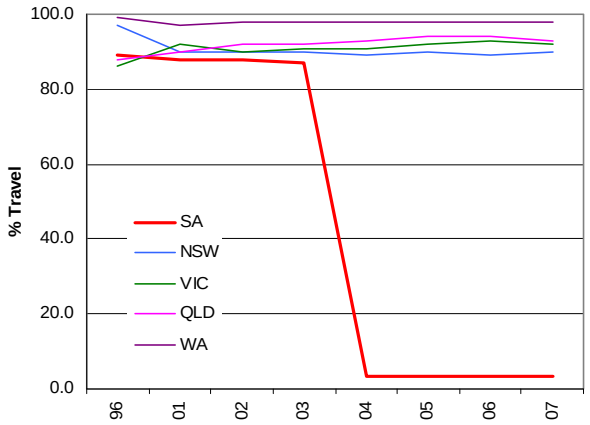
However even with a major shift in travel patterns towards public transport, private car travel is forecast to continue to grow to 2030. Significantly non-bulk freight and non-freight business trips account for the major proportion of road-based fuel usage and these vehicles will continue to be reliant on Adelaide's road system. Less than 10% of urban fuel usage relates to moving vehicles themselves the rest is used in accelerating and decelerating and in idling. Whilst the key to major reductions in CO^2 emissions will be the use of new fuel technologies and improvements in fuel efficiencies, reducing congestion will also be important if the state is to reduce its carbon footprint.

The road maintenance backlog

The task of maintaining South Australia's road infrastructure is growing. For the past twenty years the level of expenditure on the state's road assets including pavements, shoulders, kerb and drainage, bridges and culverts has been below that which is needed to enable the assets to achieve their design life.

A key measure of road condition is surface roughness. As the following graph shows the proportion of the state's roads meeting the roughness levels regarded as the minimum by Australia's state road authorities has declined alarmingly in the past 5 years.

Figure 2 Smooth travel exposure *(1)*



1. Proportion of travel undertaken each year on roads with roughness level condition less than 4.2 IRI

Source: Austroads

The consequences of poor road conditions are increased risk of accidents, and higher road user costs in the form of increased travel times, impacts to vehicles using the road and increased fuel costs.

The shortfall maintenance expenditure is being exacerbated by increased traffic levels, and the 40% increase in freight vehicle carrying capacities that has occurred over this time.

Much of the expenditure that has been undertaken has been urgent repairs needed to keep assets in service rather than maintenance works aimed at preserving the asset's operating life. The consequence of deferring maintenance expenditure is not only a reduction in the life of the asset itself but also that when the work is eventually carried out the cost of fixing the problem is greatly increased.

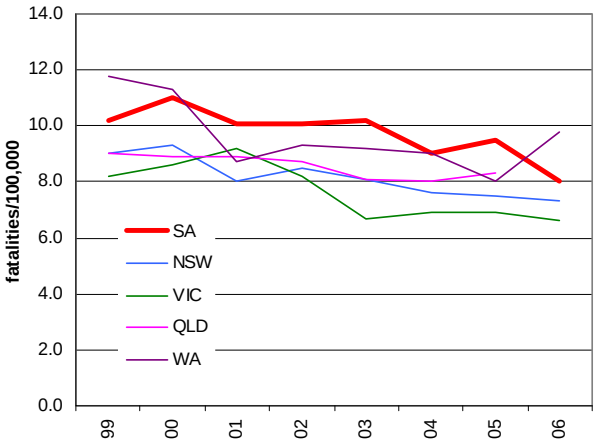
The backlog in maintenance for state government maintained roads alone is estimated to be in the order of $160 -$200 million. The SA Local Government association has estimated that a further $100 million backlog exists in relation to local roads.

Current problems

Improving safety

South Australia's transport safety has improved significantly over the past thirty years. Road safety is the major challenge. The road fatality rate, the number of road deaths per 1000 population has declined from 30 in 1970 to around 9 however, as the following graph shows the state's road safety performance has lagged other Australian states.

Figure 3-Road fatalities per 100,000 population



Source: Austroads

In 2007 125 people died on the states roads, only marginally below the 5 year average of 137. It appears unlikely that the South Australia Strategic Plan (SASP) target of less than 90 fatalities per year will be achieved. The major improvements since the 1970's have come from the use of seat belts, tighter drink driving laws and reduced speed limits.

Whilst initiatives aimed at changing driver continue to be important, as noted by the AAA, research shows that the biggest gains in helping to achieve road safety targets will come from investing in road infrastructure. Whilst road conditions may not themselves be the main factor in causing crashes it is often the road itself that turns what could have been a minor crash into a fatality. Roadside hazards are a factor in around 40 per cent of car occupants' fatalities.

The way forward- a 30 year plan

A step change is needed if South Australia is to successfully respond to these challenges and cope with the anticipated higher levels of population growth over the next 30 years.

If the Adelaide metropolitan region is to improve its competitiveness and connectivity it must move away from its reliance on the existing grid of inner arterial roads for freight and intra regional travel. Reducing the transport system's carbon footprint requires a very substantial change in the way that public transport is used.

.Achieving a step change in the performance of the state's transport system requires long term planning and involves more than simply investing in new infrastructure.

- The plan must choose between competing priorities and must be sufficiently forward looking so as to guide future development rather than simply responding to current pressures.
- The state needs to find ways of getting more out of its existing infrastructure
- Transport projects themselves require long lead times in order to acquire the land, construct the infrastructure and to achieve the desired changes in travel patterns.
- Future transport routes and their role must be clearly identified well in advance of construction and integrated with land use plans.

Thus a comprehensive long term plan is required addressing all of these elements. A thirty year plan is proposed. The key elements of the plan are outlined in the following section:

Thus a comprehensive long term plan is required addressing all of these elements. A thirty year plan is proposed. The key elements of the plan are summarized below:

Metropolitan road and rail
(Table 1 – Maps 1a & 1b)

- Establishing a light rail network as a replacement for the existing passenger rail lines and extending the light rail network to key centres including Port Adelaide, Norwood, Marion and the Adelaide Airport.
- Establishing major new interchanges including shopping and parking facilities at key locations to encourage transit oriented development.
- The establishment of two new busways in the outer north-west and outer south and the introduction of bus priority measures on arterial roads to make travel by bus more attractive and reliable.
- Establishing a clear hierarchy of Orbital and Strategic Roads to facilitate the movement of freight and medium-long distance trips between major commercial, employment and population centres. New orbital roads will include the North South Corridor and links to the South-Eastern Freeway, Victor Harbor and the Barossa.
- Identifying and reserving key transport corridors for the future. Early identification of these corridors ensures better land use planning and more efficient infrastructure provision in the future.
- Identifying the investigations which need to be undertaken to enable the transport network to function efficiently beyond 2030.
- A greater emphasis on walking and cycling. Aside from reducing demand for private car travel, walking and cycling have significant health and environmental benefits.

The way forward- a 30 year plan

Auslink Corridors
(Table 2 – Map 2)

The major initiatives involving the national transport network are summarized below. The cost of this new investment totals $2.4 billion.

- *Adelaide-Melbourne corridor:* The Dukes Highway will be progressively duplicated to the Victorian border. A new freight line will be constructed to bypass Adelaide and provide direct access between Murray Bridge and Gawler.
- *Adelaide-Sydney corridor:* The Sturt Highway will be progressively upgraded including widening, construction of a new bridge at Paringa and bypass at Renmark.
- *Adelaide–Perth corridor*: Road projects will involve the construction of a bypass at Port Wakefield, the duplication of heavily trafficked sections of the Princes Highway and increasing road surface widths on the Eyre Highway. Rail upgrades will involve additional crossing loops and the establishment of an intermodal terminal at Port Augusta
- *Adelaide-Darwin corridor:* The major focus will be on targeted replacement of sections of the Stuart Highway nearing the end of their economic life and accelerating pavement rehabilitation and resealing works..

Regional South Australia
(Table 3 – Map 3)

The major regional transport initiatives are summarized below. The cost of this new investment totals $1.1 billion

- *Accelerated Maintenance and State Road Maintenance Strategy:* The plan provides an additional $200 million over the next 10 years to address the road maintenance backlog on state maintained roads. A state-wide road maintenance strategy covering all roads including the national network will be developed,
- *Arterial road upgrades* :The plan proposes upgrade and part duplication of the Riddoch Highway. Other major upgrades include Noarlunga -Cape Jarvis Road, Barossa Valley Way, Back of Hills Freight Route, Main North Road and the freight connection between Peterborough and the Princes Highway.
- *Rail improvements:* the plan provides for the upgrade of the Eyre Peninsula grain transport system, The Angaston-Port Adelaide-Penrice radial line is to be converted to standard gauge.
- *Port Bonython:* The plan will facilitate the establishment of a new deepwater port at Port Bonython to service SA's growing mining industry.
- *Statewide Highway Passing Lanes and Shoulder Improvement Program* : The plan proposes additional expenditure to extend the current passing lane and shoulder improvement programs.
- *Statewide Restricted Access Vehicle (RAV) Facilitation Program* The plan proposes the introduction of an annual program to extend Restricted Access Routes and construct new parking bays and staging points.

The way forward- a 30 year plan

Funding

The plan has a very high rate of return. The North South Corridor project alone has benefits totaling $ 2.4 billion million including savings of $1.8 billion from reduced travel times and vehicle operating costs, improvements to the environment ($0.4 billion) and reductions in accidents ($0.3 billion).

The total investment required is in the order of $12.9 billion.

As the table below demonstrates, if SA is to achieve a step change in the performance of its transport system then much of this expenditure needs to take place over the next 5 -10 years when the investment averages $720 million per year. Beyond this period the investment in new and replacement infrastructure is relatively modest.

Investment ($million)	2008/9 to 2012/13	20013/14 to 2017/18	2018/19 to 22/23	23/24 to 2029/30	Total
Road infrastructure	2500	3000	2000	2675	10175
Public transport	700	800	300	275	2075
Rail freight	80	200	250	120	650
Total Investment	**3280**	**4000**	**2550**	**3070**	**12900**

Even after assuming significantly higher levels of Commonwealth and State funding going forward there is a shortfall between 2010 and 2020. Without an additional injection of funds the key projects underpinning this step change will be delayed and the majority of the benefits flowing from the new investment will not be seen until the latter years of the plan.

The North South Corridor appears to be the only South Australian road project capable of supporting a toll, however the toll would not be sufficient to fully fund the project. The plan assumes that the North South Corridor and Southern Expressway duplication would both be undertaken as PPPs and privately funded ($1.0 billion), with total investment, including debt, equity and finance costs of $2.5 billion.

This paper advocates additional investment of $**2** billion from the infrastructure Australia fund as a means of achieving the plan. We do not believe that this money should be allocated from the pool available to fund individual projects as prioritizing projects across Australia does not take into account the ability of state and local governments to fund their transport infrastructure requirements from other sources and the use of cost benefit analysis as the sole a means of comparisons is likely to lead to a concentration of projects Australia's three largest cities where population growth and traffic volumes are greatest.

More Information

This submission is based on SA's 2030 Transport Plan which has been developed by The Committee for Adelaide Roads as part of its activities promoting public debate on transport infrastructure and economic development.

More information including a copy of the detailed 2030 Transport Plan and other CAR transport publications can be found on the CAR website **www.car.asn.au**

Contact: Mike Canny

Email: mike.canny@dawley.com.au

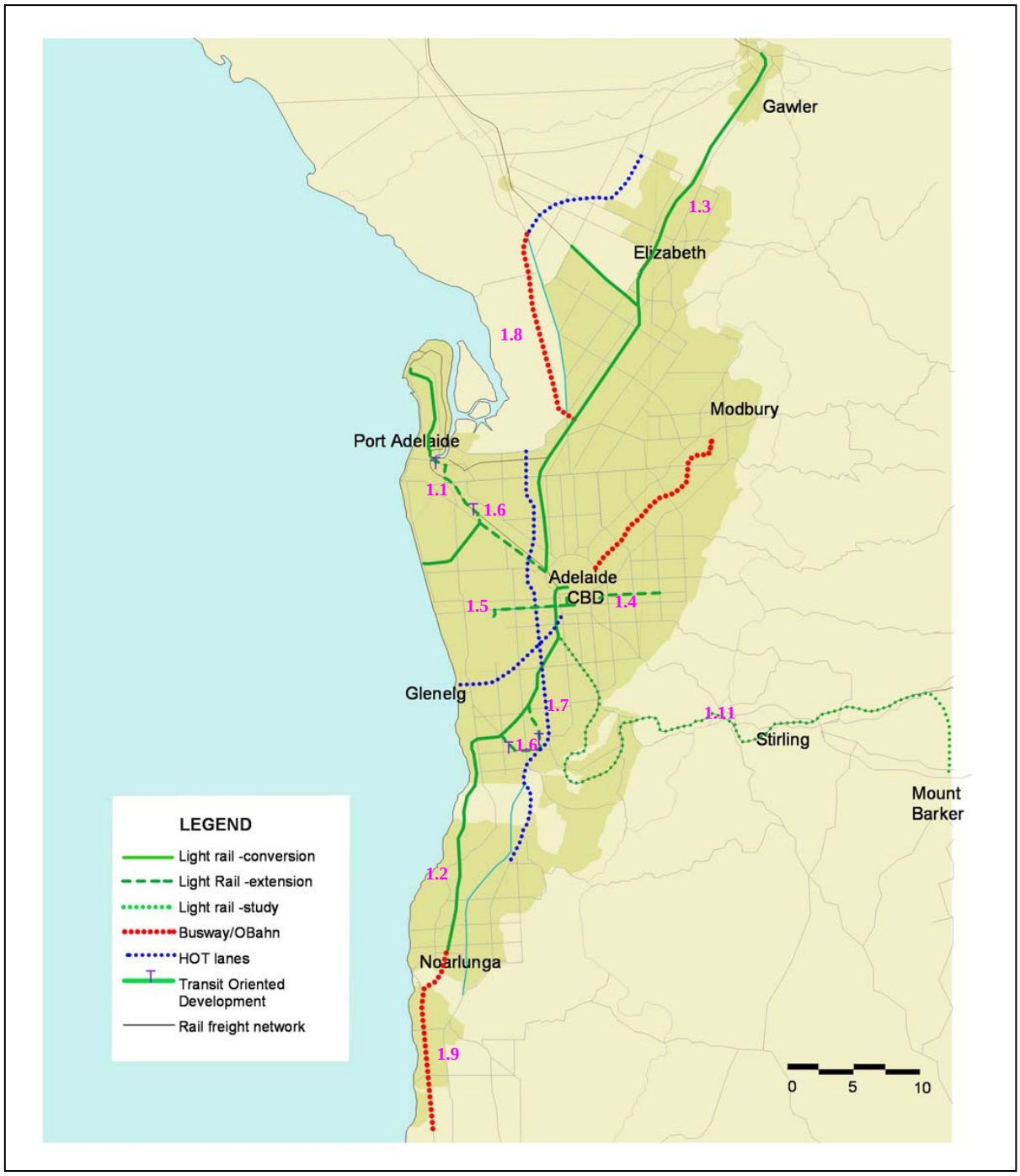
Phone: 0400 130 550

The way forward- a 30 year plan

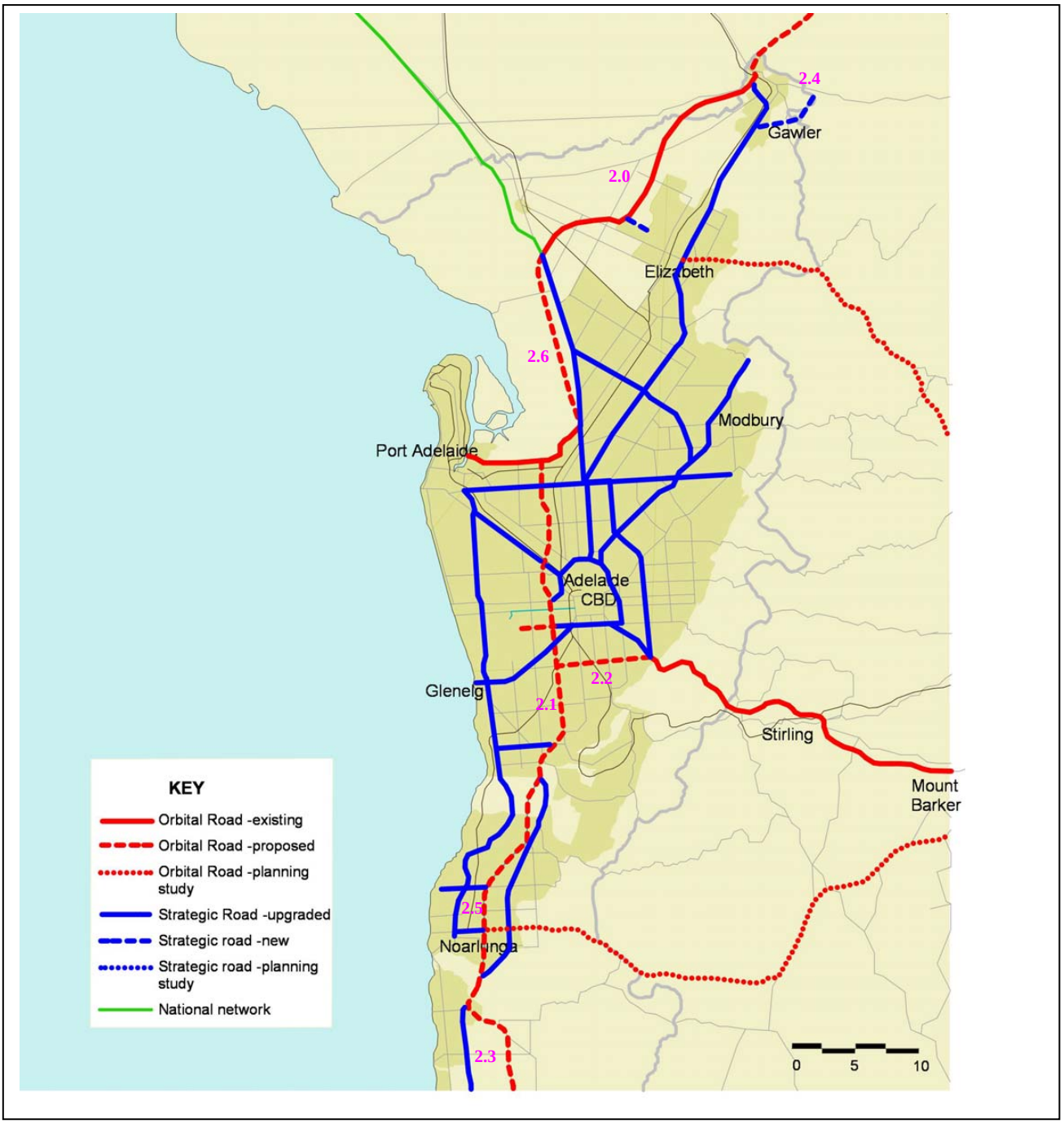
Table 1 Metropolitan road and rail

Map ref.	Project	Estimated investment ($mil)	Delivery timeframe			
			2008/9 to 2012/13	2013/14 to 2017/18	2018/19 to 2022/23	2023/24 to 2029/30
Public transport connections						
1.1	Light rail line to Port Adelaide	220				
1.2	Conversion and extension of Noarlunga Line and extension to Aldinga/Sellicks Beach	530				
1.3	Conversion and extension of Gawler line including grade seperation in Salisbury/Elizabeth	350				
1.4	Light rail,extensions Adelaide CBD	110				
1.5	Light rail extension Adelaide Airport	150				
1.6	Improved transit interchanges and stations	150				
1.7	Implementation of HOT/bus only lane program	100				
1.8	North western busway	170				
1.9	Noarlunga -Sellicks busway	140				
1.10	Relocate Adelaide rail workshops	150				
1.11	Investigation of possible future extension of light rail system to Mount Barker	5				
Orbital road network						
2.0	Northern Expressway	581				
2.1	North-south corridor	2100				
2.2	Cross Road Link	800				
2.3	Victor Harbor Link and South Coast bypass	190				
2.4	Barossa Link	160				
2.5	Duplication of Southern Expressway	240				
2.6	Northern Link	350				
Strategic road system						
3.1	Upgrading of existing strategic roads including widening,introduction of 24 hr clearways, median barriers	300				
3.2	Extensions to strategic road system including Gawler South bypass	500				
Improving road connections						
4.1	Arterial road improvements and extensions	700				
4.2	Existing programs including local government transport planning, rail crossing safety, and black spot program	250				
4.3	Improved traffic management	100				
Rail freight improvements						
5.1	Adelaide freight bypass (Murray Bridge-Port Wakefield)	350				
5.2	Upgrade of intermodal facilities including new facility at Penfield.	100				
5.3	Upgrade metro freight line and freight facilities	150				
5.4	Metro rail grade separations	150				
Walking and cycling						
6.1	Extension of Bikedirect network including establishing new corridors in MOSS, parklands and linear parks.	50				
6.2	Improved pedestrian access to city west and parklands includingTorrens Lake footbridge	80				
6.3	Victoria square transport improvements	20				
6.4	Existing programs including bike safety, schools and promotion activities	40				
Total		**9286**				

Map 1a Metropolitan rail



Map 1b Metropolitan road



The way forward- a 30 year plan

Table 2 Auslink corridors

Map ref.	Project	Estimated investment ($mil)	Delivery timeframe			
			2008/9 to 2012/13	2013/14 to 2017/18	2018/19 to 2022/23	2023/24 to 2029/30
Adelaide-Melbourne						
1.1	Dukes Highway duplication	800				
1.2	Adelaide rail freight bypass (Murray Bridge-Gawler)	350				
1.3	Rail-other short term improvements	10				
Adelaide-Sydney						
2.1	Sturt Highway improvements	300				
2.2	Rail improvements	500				
Adelaide- Perth						
3.1	Eyre Highway improvements	200				
3.2	Princes Highway Port Wakefield -Pt Augusta improvements	300				
3.3	Rail improvements	100				
Adelaide- Darwin						
4.1	Stuart Highway improvements	100				
4.2	Minor rial improvements	50				
Total		**2710**				

Notes : 1. Excludes maintenance of state roads & national network
2. The estimated projects costs are in 2008 dollars

Map 2 Auslink corridors

The way forward- a 30 year plan

Table 3 Regional South Australia

Map ref.	Project	Estimated investment ($mil)	Delivery timeframe			
			2008/9 to 2012/13	2013/14 to 2017/18	2018/19 to 2022/23	2023/24 to 2029/30
Outer Metropolitan & Fleurieu Peninsula						
1.1	Cape Jarvis Rd upgrade & re-align Myponga-Cape Jarvis	10				
1.2	Barossa Valley Way upgrade & realignment	16				
1.3	Back -of Hills route-Sth (Ferries Mc Donald/Kangaroo Rd)	10				
1.4	Back -of Hills route-Nth (Bower Rd)	30				
1.5	Adelaide Hills tourist Routes (incl Norton Summit, Greenhill)	16				
1.5	Angaston-Port Adelaide Rail standardisation	8				
South East and Mallee						
2.0	Riddoch Highway improvements	80				
2.1	Princes Highway re-alignment	10				
Mid North, Riverland & York Peninsula						
3.1	Main North Road (Clare-Barrier Hwy)	8				
3.2	East-West Freight route (Gladstone-Jamestown)	5				
3.3	Other major road improvement projects	10				
Eyre Peninsula & West Coast						
4.1	Eyre Peninsula grain project (road and rail upgrades)	20				
Iron Triangle, Broken Hill and Far North						
5.1	Investigate feasibility of Gawler Craton rail link					
5.2	Port Bonython facility incl associated road infrastructure	35				
Highway Passing & Shoulder Lanes						
6.1	Statewide passing lane & shoulder improvement program	374				
Restricted Access Vehicle Program						
7.1	Extension of RAV program, new parking bays & staging points	220				
Other						
8.1	Existing programs including local government transport planning, rail crossing safety, and black spot program	**220**				
Total		**1072**				

Notes : 1. Excludes maintenance of state roads & national network
2. The estimated projects costs are in 2008 dollars

Map 3 Regional South Australia