

2. NEED FOR THE PROPOSAL

This Chapter of the Environmental Assessment has been prepared by the ARTC and is based on ARTC's *North-South Corridor Strategy* (2005) and *Southern Sydney Freight Line Economic Evaluation* (2005).

2.1 Strategic rail and freight context

2.1.1 Rail development in NSW

Rail was the dominant mode of freight transport in NSW from the late 1800's through to World War II. After this time, rail began to rapidly lose market share to the growth of road traffic. This decline was paralleled by a lack of investment in the rail network and continued largely unabated until the late 1980's, when increasing financial pressures forced both State and Federal Governments to embark on a series of structural reforms to the rail industry.

Since the early 1990's Australian Government competition policy has influenced the evolving rail industry structure. Competition policy encouraged the separation of fixed rail network ownership from freight operators who compete to provide customers with freight services. This is generally referred to in the rail industry as vertical separation of below rail (track) from above rail (operators) and has been implemented to provide better access to facilitate competition between freight operators.

In 1991, the National Rail Corporation (National Rail) was established to take over the interstate rail freight business from the then five Government-owned rail operators – State Rail Authority (NSW), V/Line Freight (Victoria), Australian National Railways (Commonwealth), Westrail (WA) and Queensland Rail.

National Rail had been expected to take over those parts of the rail network predominantly used for interstate freight. However, with the advent of competition policy, the Commonwealth and NSW began to resist the transfer of track ownership to National Rail.

In NSW, the State-owned rail operator, the State Rail Authority, was split into four separate organisations on 1 July 1996. The organisations were:

- Rail Access Corporation, which owned the track infrastructure
- Rail Services Authority, which provided track maintenance services under contract to Rail Access Corporation
- Freight Rail Corporation (FreightCorp), which operated intrastate freight services
- State Rail Authority, which operated all passenger services and continued to own all rail corridor land.

By 1997, the growing number of interstate rail freight operators had become concerned at the level of complexity involved in gaining access to the interstate rail network. Victoria was also in the process of privatising its rail operations and keen to off-load ownership of the interstate track.

This led to the negotiation in late 1997 of an Intergovernmental Agreement that, among other things, provided for the establishment of the Australian Rail Track Corporation Ltd (ARTC). On its establishment ARTC took ownership of the Commonwealth owned track in South Australia, including the Trans Australian Railway to Kalgoorlie and a lease of the Victorian interstate network.

Subsequently, the Commonwealth, NSW and Victoria sought to withdraw from the operation of above rail freight services. This led to the joint sale of National Rail and NSW's FreightCorp businesses in 2002. The successful purchasers, Toll Holdings and Patrick Corporation merged the two operators to form Pacific National. Pacific National subsequently purchased the privatised former Victorian rail freight business, Freight Australia.

Pacific National is now the dominant rail freight operator on the national standard gauge network. Services are also provided by QR National (the Queensland Government owned freight business), ARG (the former Western Australian freight operator) and new private operators including Silverton Rail, Lachlan Valley Rail Freight and Southern Shorthaul.

On 1 January 2004, NSW re-merged the above and below rail operations in the metropolitan area that had been split since 1996. The new entity, RailCorp, now controls all passenger operations and rail infrastructure in the Sydney metropolitan area, including the rail corridor which is the subject of this Environmental Assessment.

On 5 September 2005, ARTC took a lease of the NSW interstate and Hunter Valley network, consolidating most of the interstate networks under its control.

2.1.2 National rail freight network

ARTC was established by the Commonwealth in accordance with the Inter-Governmental Agreement signed in November 1997 between the Commonwealth of Australia and the States of NSW, Victoria, Queensland, Western Australia, and South Australia.

The key principles of the agreement were:

- an organisation to be known as ARTC was to be established as a fully Commonwealth owned corporation to take over the interstate standard gauge track previously owned by the Commonwealth through Australian National Railways, and to lease the interstate standard gauge track in Victoria
- ARTC was to negotiate with other owners of the interstate standard gauge track the retail access for interstate rail freight operations
- ARTC was to coordinate an investment strategy across the interstate network.

ARTC was established as a Corporations Law Company wholly owned by the Commonwealth on 25 February 1998 and commenced operations on 1 July 1998. Its shares are fully owned by the Commonwealth Government through the Ministers for Finance and Administration, and Transport and Regional Services.

The purpose of the 1997 Intergovernmental Agreement was to facilitate a commercially viable Australian rail freight industry through the introduction of new infrastructure and freight operator access arrangements, contributing to an efficient national transport system. ARTC's corporate strategy has been developed to reflect the objectives of the Intergovernmental Agreement, namely:

- to operate the business on commercially sound principles
- to provide seamless and efficient access to users of the interstate rail network
- to pursue a growth strategy for interstate rail through improved efficiency and competitiveness
- to improve interstate rail infrastructure through better asset management and coordination of capital investment
- to encourage uniformity in access, technical, operating and safeworking procedures.

Since commencement of operations in 1998, ARTC has sought to increase utilisation of its network by assisting in maintaining and improving rail's competitive position in national and regional logistics markets. Rail's competitiveness in the freight market, particularly in east-west intermodal markets, has improved markedly since then, contributing to an improvement in rail's share of the east-west land transport freight market from 69% in 1997/98, to 81% currently. This has been achieved through targeted investment, and efficient low-cost maintenance practices to improve rail's reliability, transit time and cost structure, as well as pricing and network management to encourage competition on the network.

On 5 September 2004, ARTC commenced a 60 year lease of the NSW interstate and Hunter Valley rail lines. ARTC's lease of the interstate railway line ends to the south of Macarthur, where RailCorp's electrified passenger network terminates. ARTC's lease recommences at Islington in the Hunter Valley. ARTC previously controlled the interstate rail network within the area bounded by Albury on the NSW/

Victoria border, Kalgoorlie in Western Australia and Broken Hill in western NSW. The commencement of the NSW lease consolidated control of the majority of the interstate rail network under ARTC. **Figure 2.1** illustrates the ARTC network.

It has long been recognised that performance improvement of the interstate standard gauge rail network on the north-south corridor on the east coast of Australia has not matched that achieved on the east-west corridor. Relatively low rail market share on the north-south railway corridor results from an inability to effectively compete with road freight transport. Significant improvement has been constrained by the quality of rail infrastructure compared to road, and a disjointed approach to management of, and investment in, these corridors.

In 2002, ARTC developed a detailed infrastructure investment program for the NSW network in the context of the lease proposal to NSW. This investment program was worth \$872 million including complementary investment on the Melbourne–Albury railway corridor.

Subsequently, the Commonwealth made available \$550 million to ARTC as a grant to invest in the interstate rail network. The Commonwealth has made a further \$550 million available (largely to State Governments) for rail freight projects around Australia through AusLink, of which \$110 million is available for works to improve freight access through Sydney. The SSFL will be funded directly by ARTC and is not part of the AusLink funded works.

ARTC has developed a detailed strategy for investment in the north-south railway corridor. Further information is available from the North-South Corridor Strategy located on ARTC's website (<http://www.artc.com.au/news/latest.htm>).

A key element of both the original and expanded investment strategies is construction of the Southern Sydney Freight Line to provide independent and priority freight train access through southern Sydney.

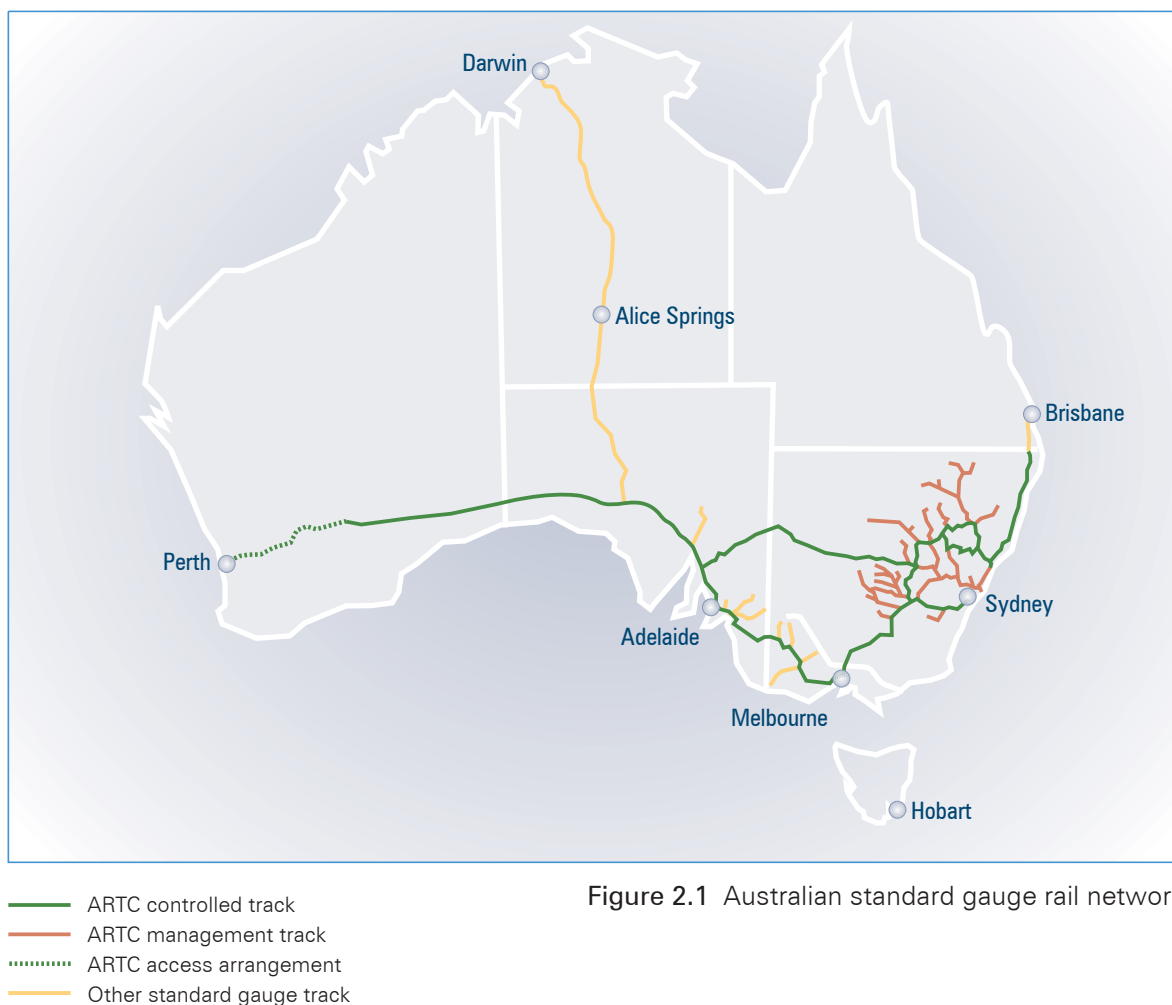


Figure 2.1 Australian standard gauge rail network

2.2 North-south railway corridor

2.2.1 The north-south transport market

The north-south railway corridor on the east coast of Australia carries five broad categories of rail traffic:

- coal
- grain
- minerals
- general freight
- passenger.

The following discussion outlines the market for each, the role of rail in its carriage and its relevance to the Southern Sydney Freight Line.

Coal

The coal transport market in NSW is split into three broad areas, the Hunter Valley, Western and Southern coalfields. Rail carries the overwhelming majority of coal and opportunities to increase volume will be driven by new mine developments rather than a shift from road transport.

The Hunter Valley is by far the largest source of coal. Rail carries the overwhelming majority of coal which is exported through the port of Newcastle. Hunter Valley coal has no relevance to the Southern Sydney Freight Line.

The Western coalfields around Lithgow produce smaller tonnages. The majority of this coal is exported through Port Kembla with trains operating down the Blue Mountains, through Sydney, and down the Illawarra Line. The relatively longer and more difficult route to the port compared to Newcastle, and nature of the coal deposits, means that this region has not seen the growth experienced in the Hunter Valley.

During the 1980's there was an expectation of very significant growth in coal from the Western coalfields. This led to the partial construction of the Maldon–Dombarton rail line as an alternative route, avoiding the Illawarra Line. This was abandoned in 1988 due to downturns in forecast coal volumes. There are periodic proposals to complete construction of the line. Were this route constructed, coal from the western coal fields would traverse the Southern Sydney Freight Line.

The southern coalfields encompass the coal mines of the Illawarra and Southern Highlands. Volumes from these mines have been relatively stagnant since the 1990's. The mines to the west of Camden previously railed coal from Glenlee to Port Kembla along the corridor covered by the Southern Sydney Freight Line. However, these mines have ceased production and there is no expectation that they will reopen. Tahmoor mine rails its coal southward to Moss Vale and then east to Port Kembla and does not use the Southern Sydney Freight Line corridor.

Grain

Rail carries the majority of grain grown on the eastern seaboard and opportunities to further increase this share are very limited.

Export grain travels from southern NSW to Port Kembla via the Unanderra–Moss Vale Line and does not use the Southern Sydney Freight Line corridor.

Grain using the Southern Sydney Freight Line corridor is predominantly domestic grain. Volumes tend to be relatively stable with export grain absorbing the seasonal fluctuations in volume. Domestic grain has a number of destinations including some to the north of Sydney. A major grain customer, Allied Mills is

planning to relocate from Summer Hill in Sydney to a site in the vicinity of Maldon. The flour produced at the mill will not use rail transport to Sydney. This will result in a significant reduction in domestic grain volumes using the Southern Sydney Freight Line corridor.

Minerals

The minerals transport market is the overwhelmingly largest freight market in tonnage terms. However, the majority of freight is aggregates moving relatively short distances. This is generally carried by local road operators.

Rail has a large share of the longer distance minerals movements on the eastern seaboard, predominantly limestone and copper concentrates.

There is little opportunity for rail to increase its share of the minerals market by winning volume off road freight.

There are currently no regular movements of minerals traffic on the Southern Sydney Freight Line corridor.

However, this is expected to change dramatically from around 2008 when the depletion of the Prospect and Penrith Lakes quarries will force aggregates suppliers to source material from locations further from Sydney. Current indications are that large volumes of aggregates will be sourced from the Marulan area with all of this material being carried by rail. This will result in around 6 million tonnes of aggregates using the Southern Sydney Freight Line corridor in the medium term, resulting in additional trains being required.

General freight

The general freight market has three distinct sub-markets:

- interstate general freight
- industrial products (primarily steel)
- intrastate general freight.

Interstate general freight

Interstate general freight represents a large proportion of the movements across the ARTC network. Where rail is highly competitive in the east-west freight market, it achieves only a relatively low share of the freight on the east coast as shown in [Figure 2.2](#).

This east coast general freight market represents an outstanding opportunity to shift freight volumes off road and on to rail.

The Melbourne–Sydney corridor, which incorporates the Southern Sydney Freight Line, services two distinct interstate general freight markets.

First, the Melbourne–Brisbane market represents around 5 million tonnes of freight per year. It is the east coast market where rail is most competitive due to its longer distance which gives rail both a cost and transit time competitiveness. Specifically, both road and rail offer second morning availability for freight leaving in the late afternoon, despite road being significantly faster than rail.

Being double the length of the Melbourne–Sydney and Sydney–Brisbane corridors, volume growth on Melbourne–Brisbane generates double the gross tonne kilometres making it very attractive for rail growth.

The second relevant market, the Melbourne–Sydney market, is estimated at approximately 11 million tonnes, making it by far the largest general freight market in Australia.

Rail currently has a negligible share of this market. Precise market shares are hard to establish. Rail has been thought to hold around 11% of this market, but its share may be as low as 8% or less. Rail has not been as price competitive in this market as in other corridors.

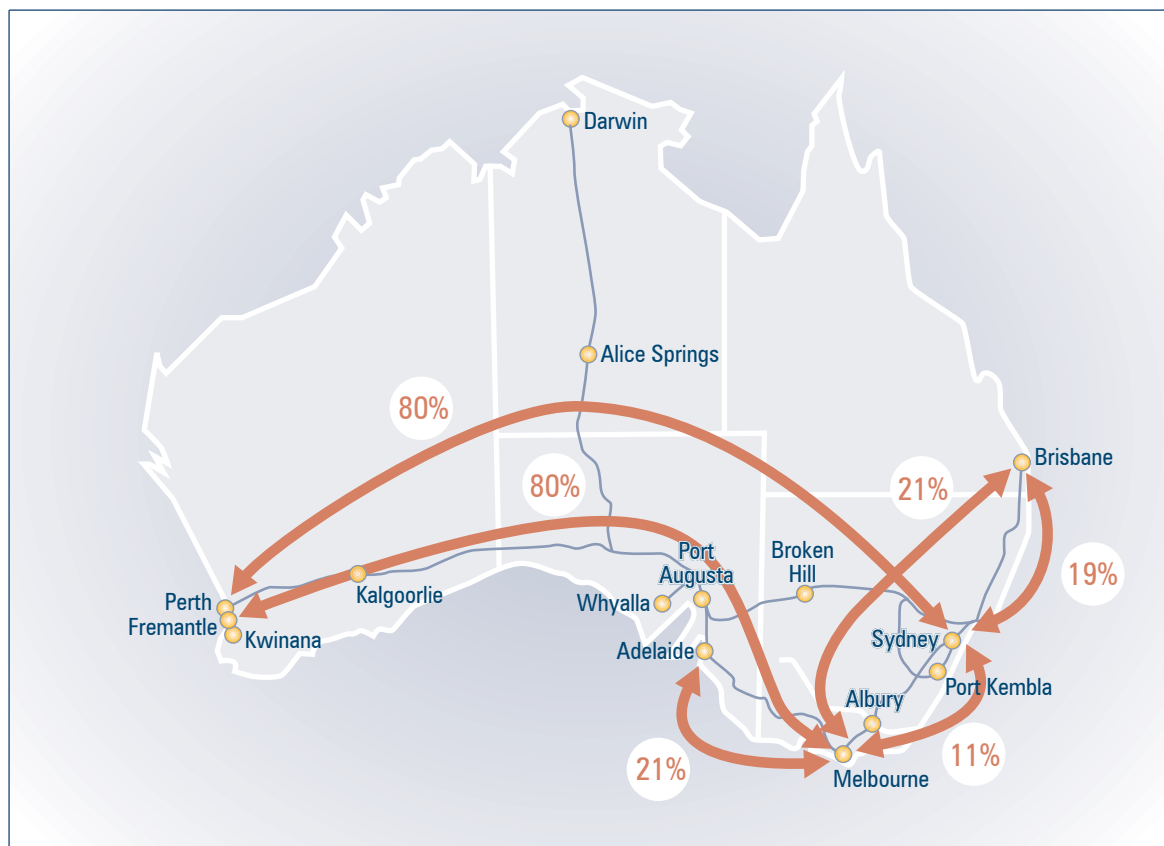


Figure 2.2 Interstate general freight market - rail market share

With such a large market available, relatively small changes in market share translate into significant volume growth, making this an important market for rail to improve its competitiveness in.

Industrial products

The dominant freight in the industrial products market is steel. Rail has a good share of this market which is serviced by one or two dedicated trains per day serving all of the major cities.

There is some scope for rail to increase its share of this market at the margins. This includes freight entering and leaving Sydney from the south, which would operate along the Southern Sydney Freight Line.

Other general freight

Other general freight using the corridor includes fuel, cement, containerised waste and export containers. Volumes of these commodities are expected to grow approximately in line with economic growth, with little opportunity for rail to secure significant additional volumes, except for containerised waste.

With the availability of landfill sites suitable for Sydney waste declining, it is expected that there will be significant medium term growth in the volumes of waste being transported to the Crisps Creek landfill near Tarago south of Goulburn. It is anticipated that these will initially be accommodated by progressive lengthening of the existing train with a longer term requirement for additional trains.

2.2.2 Volumes

The following chart illustrates the levels of freight tonnage on ARTC’s sections of the Melbourne–Sydney corridor (refer to [Figure 2.3](#)). The Macarthur–Glenlee Junction section is reflective of the volumes that will be operating over the proposed Southern Sydney Freight Line.

As can be seen from the chart, the majority of volume by tonnage will be represented by general freight (over 10,000,000 gross tonnes), with a majority of this originating in Melbourne and a further significant proportion originating at Cootamundra, which generally represents Perth and Adelaide rail traffic.

Rail volume growth since 1998 has been gradual but reasonably consistent, (refer to Figure 2.4). The temporary closure of the Menangle Rail Bridge in April 2003 contributed to a fall in volume for that year and it is believed that Melbourne–Sydney intermodal volumes have not yet recovered from that incident.

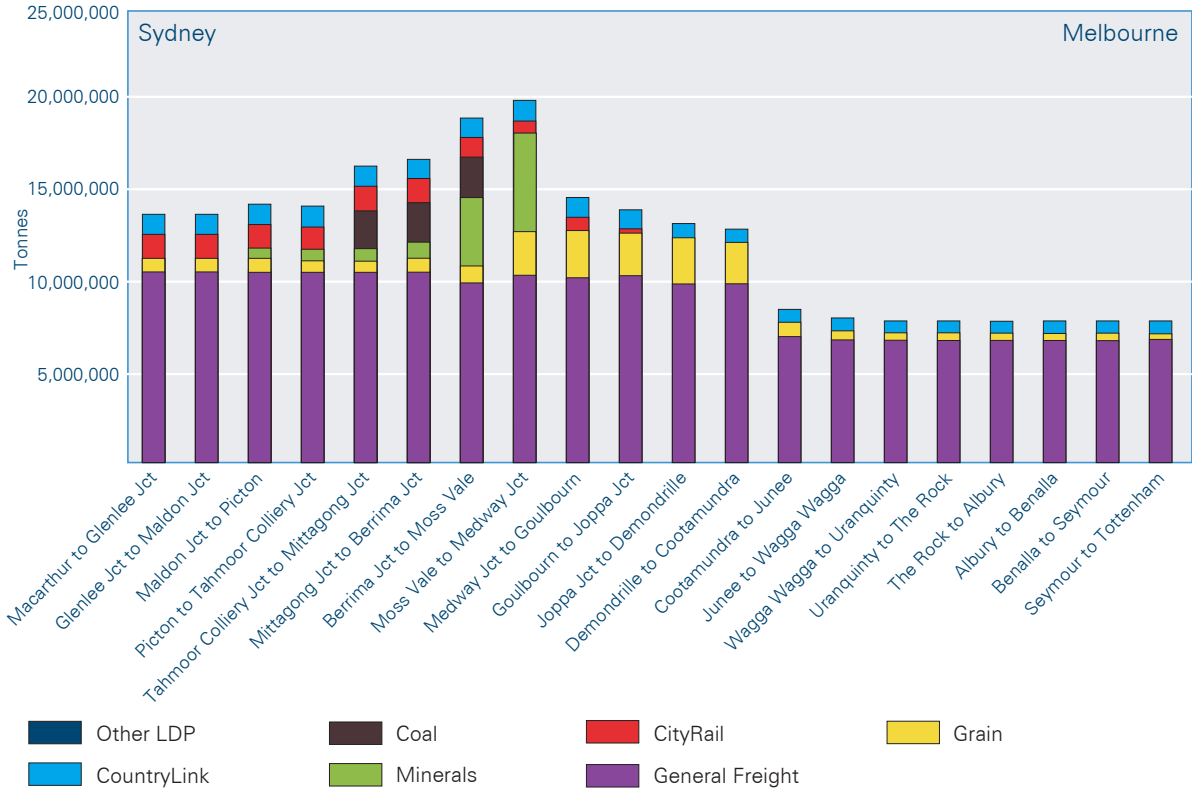


Figure 2.3 Melbourne - Sydney corridor rail freight gross tonnage

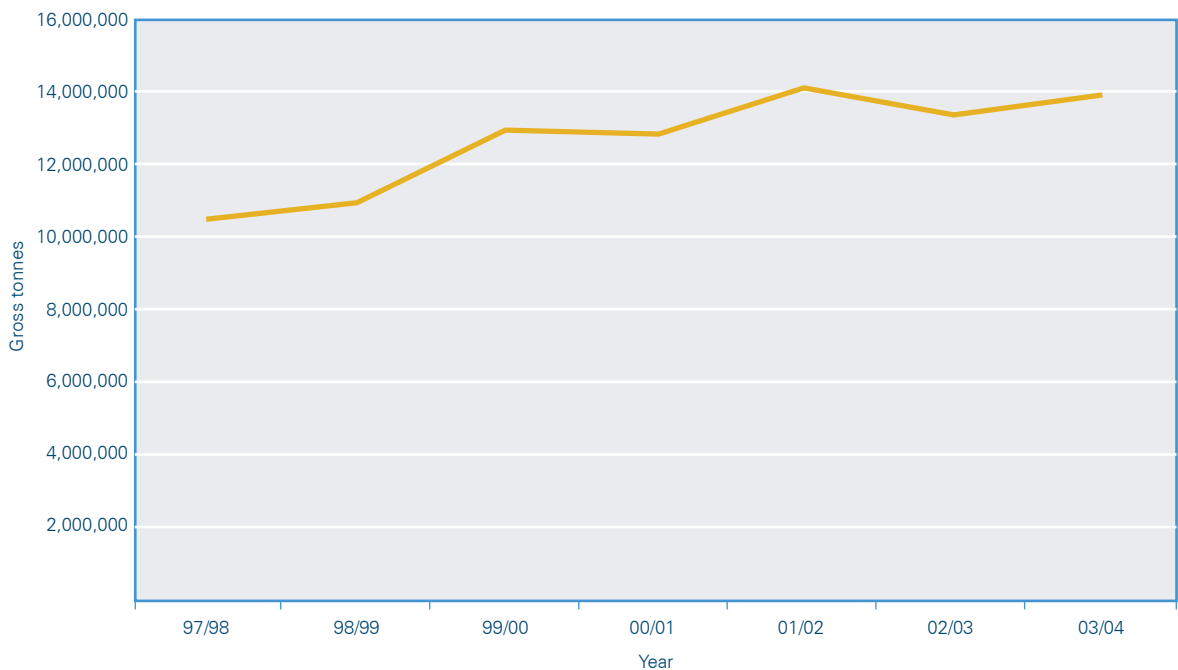


Figure 2.4 Freight tonnages at Macarthur

2.3 ARTC's business strategy

As discussed above, the north-south interstate general freight market on the east coast of Australia represents an opportunity for rail to achieve a shift of freight volume from road.

This is one of the key drivers of ARTC's business strategy.

In ARTC's opinion it also represents a major opportunity to deliver significant benefits to the community, due to rail's ability to deliver better environmental outcomes, with fewer trucks on the road meaning less pollution, fewer road accidents and generally improved amenity to road users.

2.3.1 Influences on the road/rail mode share

Research and observation suggest that the critical factors affecting road/rail market share outcomes are:

- *Transit time/Availability* – This refers to the ability of freight to be despatched and received at times that meet the needs of the market. Generally this requires departures by late afternoon for an early morning arrival at the start of the business day. Transit time is not a direct factor, rather it is a key input into the ability of rail to meet availability objectives.
- *Reliability* – Poor reliability results in additional costs due to disruption to local pick-up and delivery and to the efficient operation of warehousing. A further consideration for rail is that when a truck is late it is one load of freight that is delayed, but when a train is late it is hundreds of loads. While reliability is generally an issue that is under the control of rail operators, the track owner can have a meaningful influence on reliability by providing high levels of capacity and operational flexibility.
- *Price* – Price is considered to be the dominant consideration in decisions about mode choice for the majority of freight. However, availability and reliability both have large indirect cost effects and as a result can have an effect on mode choice greater than that of direct price alone.

The precise roles of these factors in determining market share outcomes is inherently difficult to quantify and hence subject to some uncertainty.

ARTC also has a fourth key strategic objective, to provide adequate capacity, which is an essential enabling factor to achieve growth.

2.3.2 Current rail performance

Current rail performance in the Melbourne–Sydney intermodal market falls significantly short of the levels required to make rail competitive on all three key parameters. In the Melbourne–Brisbane market, rail is currently competitive on door-to-door price, but reliability and capacity continue to constrain rail's ability to grow market share.

ARTC's north-south corridor investment strategy is designed to address each of these areas with the aim of providing a significant boost to rail's market share.

2.3.3 ARTC's investment strategy

The key market share driver in the Melbourne–Sydney corridor is considered to be the availability of market responsive departure and delivery times. To meet the market's demand for late afternoon departures and early morning arrivals it is considered by ARTC that a transit time in the order of 11 hours from Dynon, Melbourne to Chullora, Sydney is necessary. The current transit time is around 13 hours.

For the Melbourne–Brisbane market, the key issues are reliability and price.

The key objectives of ARTC's investment strategy have been to deliver transit times that:

- meet the market demand for late afternoon departure and early morning arrival in the Melbourne–Sydney market, while also delivering material above rail cost savings,

- allow the current Melbourne–Brisbane round trip time of 96 hours to be reduced to 72 hours (which significantly reduces above rail cost) while offering high reliability and an operating pattern that meets market needs.

ARTC’s proposed infrastructure investment, including the Southern Sydney Freight Line, has been developed to best address these objectives.

The proposed infrastructure will achieve a transit time on the Melbourne–Sydney corridor in the order of 10 hours 40 minutes if operated with a 1,500 metre train at current average freight density. An 1,800 metre train will have a transit time in the order of 11 and a half hours.

On the Sydney–Brisbane corridor the proposed infrastructure will allow a 1,500 metre train to achieve a transit time of 15 and a half hours. Together with the improvements in the Melbourne–Sydney transit time this will allow a Melbourne–Brisbane service to achieve a 27 hour transit time, thereby easily allowing it to achieve a 72 hour round-trip.

To achieve these transit time improvements the proposed infrastructure investment for the north-south corridor includes:

- construction of the Southern Sydney Freight Line
- construction of 16 long loops or ‘passing lanes’ (these are double track sections of 10 kilometre – 15 kilometre in length) between Melbourne–Junee
- extension of 13 loops on the North Coast Railway Line, between Sydney–Brisbane
- extensive concrete sleepers of curves to increase the allowable ‘cant deficiency’ (this will effectively allow an increase in the speed that the train can travel through the curves)
- upgrading turnout speeds to 80 kilometre per hour between Junee and Melbourne and 50 kilometre per hour between Junee and Sydney and Sydney and Brisbane
- additional passing loops between Junee and Sydney
- construction of a direct connection between the east-west and north-south corridors at Tottenham, Melbourne
- replacement of the rail bridge over the Murrumbidgee River at Wagga Wagga
- upgrading and centralising the signalling and train control system.

2.3.4 Role of the Southern Sydney Freight Line

The key objective of the SSFL is to eliminate the transit time/availability impacts of RailCorp’s passenger peak prohibition on rail freight operations through southern Sydney’s commuter rail network (i.e. RailCorp’s electrified Main South Line corridor). The current prohibition coincides with the optimum arrival and departure times for Sydney–Melbourne intermodal freight services.

For rail freight to be competitive in this market it is essential that freight trains be able to enter and exit Sydney during the passenger peak periods. The passenger peak prohibition on freight trains is in place due partly to the availability of train paths across the RailCorp network, but more importantly to insulate passenger train service reliability from freight train breakdowns.

To address this requires complete separation of freight and commuter passenger services. Accordingly, a dedicated freight track is necessary between Melbourne and Sydney for rail to be competitive in the general freight market on this corridor.

Secondary benefits of the dedicated freight line are:

- Increased reliability throughout the day and night for both passenger and freight services.
- Increased flexibility for timetabling of freight services. It is important to note that the constraints of the Sydney peak prohibition effect freight timetabling across and beyond the Sydney–Melbourne corridor.

2.3.5 Volume growth projections

This section discusses the projected outcomes of ARTC's north-south investment strategy, as outlined in ARTC's North-South Corridor Strategy.

Market growth

ARTC has adopted the projections of the Bureau of Transport and Regional Economics that predict a doubling of all interstate general freight volumes over 20 years. These projections are consistent with long-term trends and result in a compound growth rate of 3.5% per year.

The key drivers of predicted freight growth are increased economic activity and a general trend towards consolidation of industrial production, requiring increased freight movements to service national markets.

Market share growth

Due to the inherent uncertainty over elasticities, ARTC has adopted two models for the calculation of projected growth in market share over 10 years from 2005 (ARTC, 2005). The two models generate a significant difference in outcomes. The first model predicts growth in rail's share of both the Melbourne-Sydney and Melbourne-Brisbane markets of around 50-60%. The second model predicts growth in the Melbourne-Sydney market of around 100% and growth in the Melbourne-Brisbane market of around 80%. This is outlined in [Figure 2.5](#).

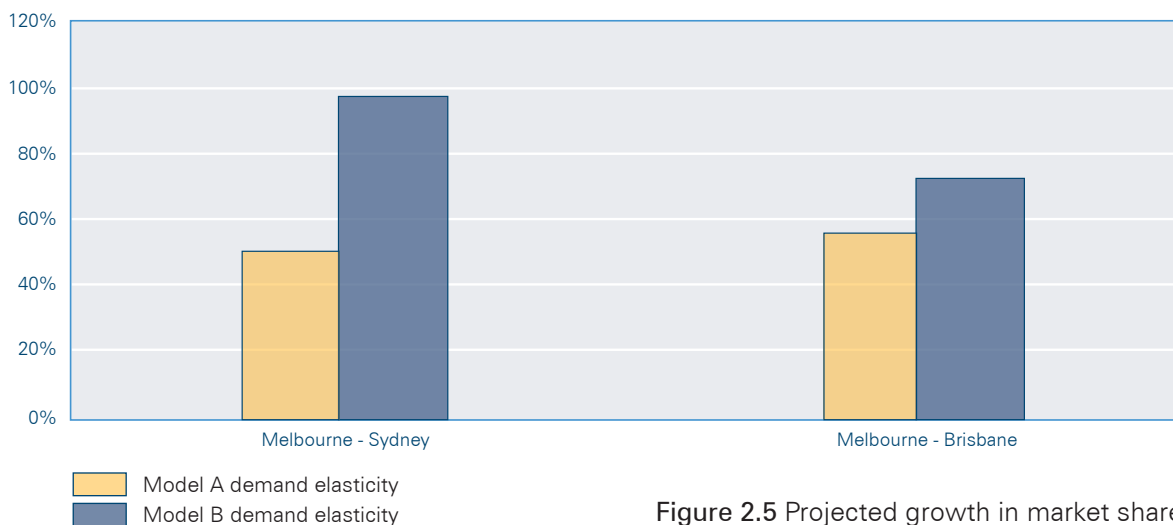


Figure 2.5 Projected growth in market share

Total volume growth

Combining the underlying growth in the general freight market with the growth in rail market share, provides a total volume growth for traffic on the North-South (Melbourne-Sydney-Brisbane) railway corridor as shown in [Figures 2.6](#) and [2.7](#) for low growth and high growth scenarios respectively (ARTC, 2005).

A comparison of the growth projections by 2015 for the low and high growth scenarios is shown in [Figure 2.8](#) and summarised as follows:

- Overall gross tonne kilometres growth reaches approximately 35 billion under the high growth scenario which is about 30% higher than predicted under the lower growth model.
- The Melbourne – Brisbane growth projection reaches 13 billion gross tonne kilometres under the high growth scenario with is 30% higher than predicted under the lower growth model.

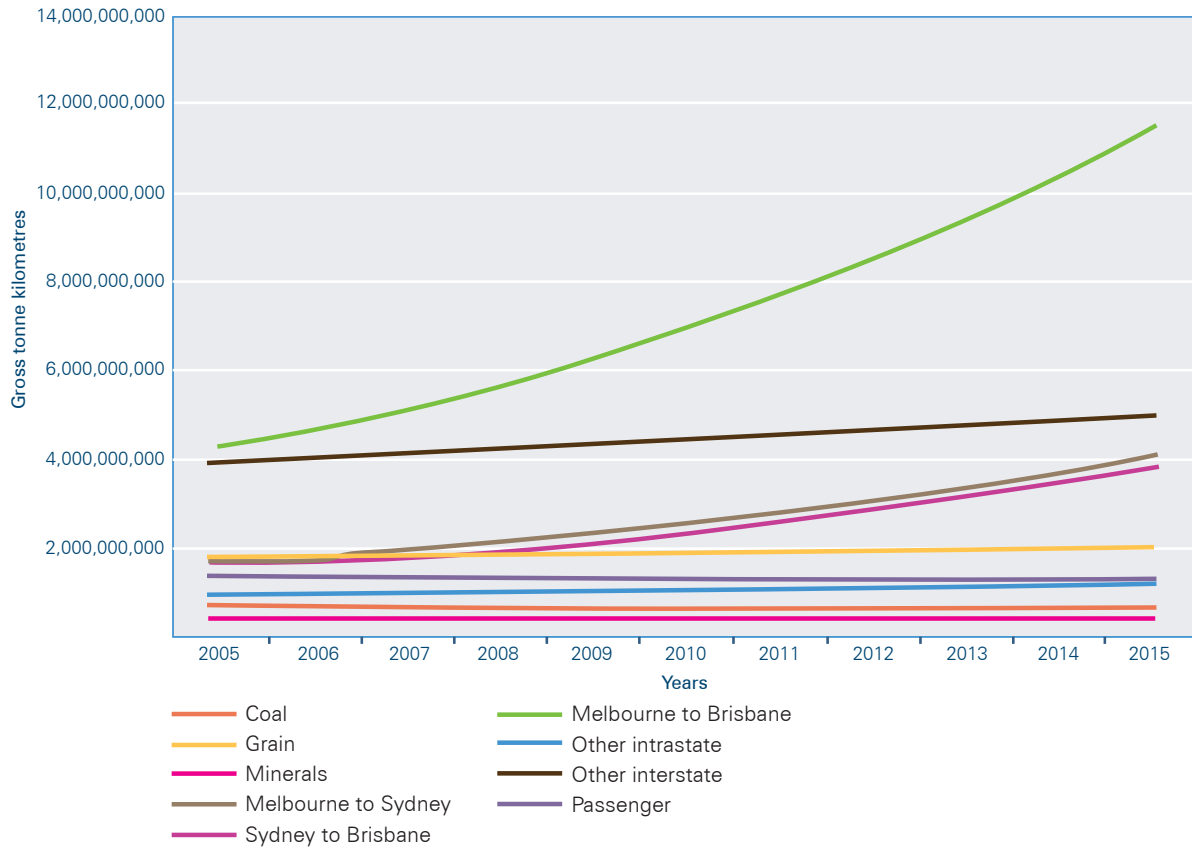


Figure 2.6 Projected low-case volume growth

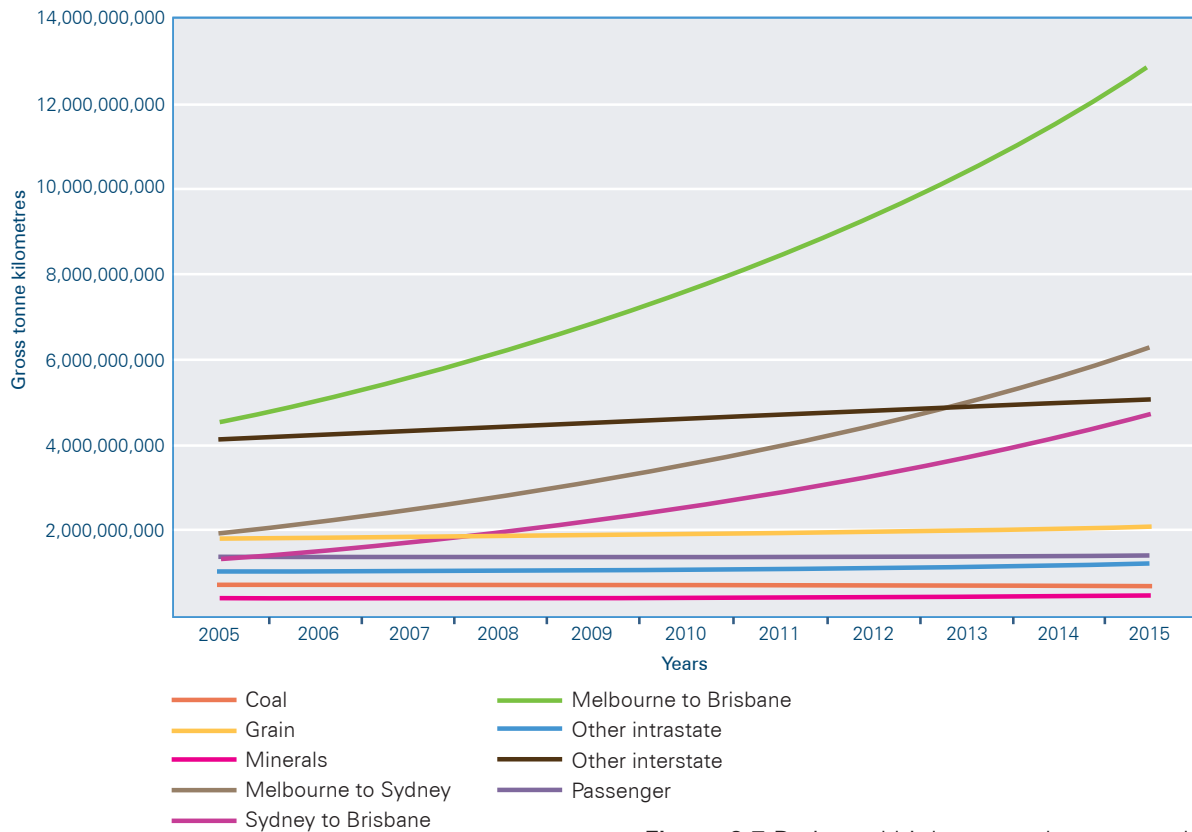


Figure 2.7 Projected high-case volume growth

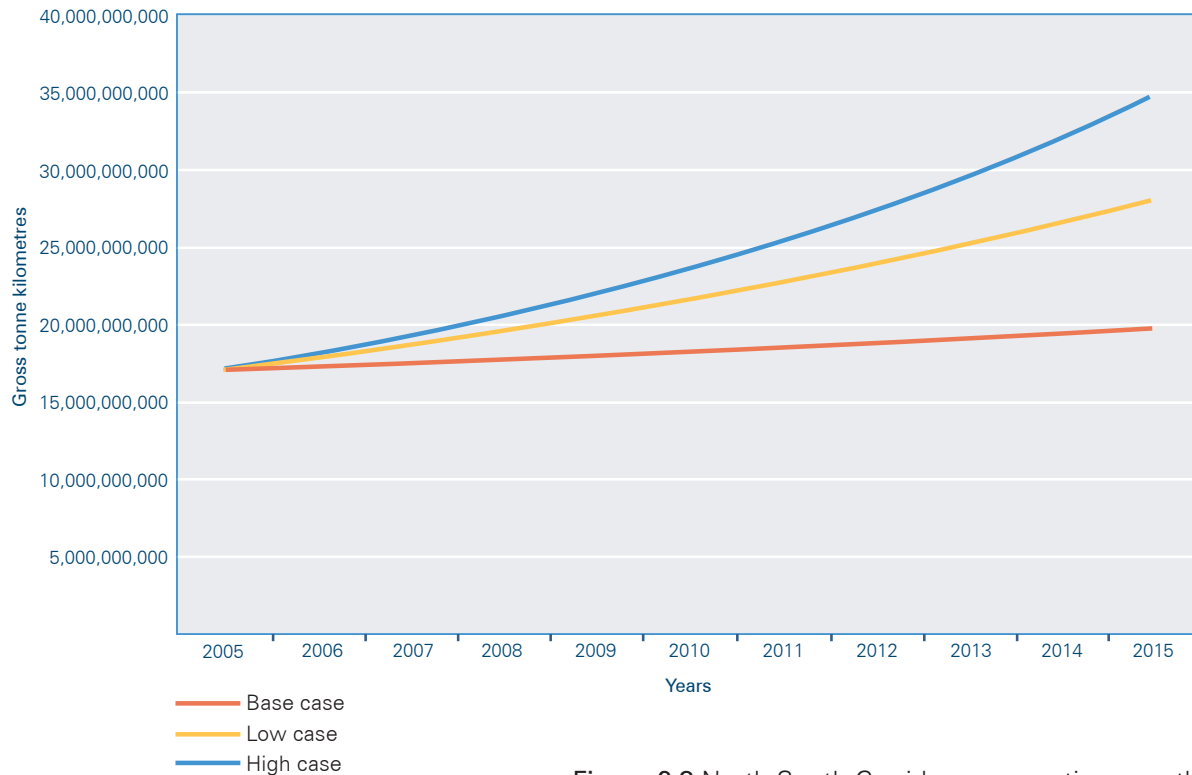


Figure 2.8 North-South Corridor comparative growth

- The Melbourne – Sydney growth projection exceeds 6 billion gross tonne kilometres under the high growth scenario with is nearly 60% higher than predicted under the lower growth model.
- The Sydney – Brisbane growth projection reaches nearly 5 billion gross tonne kilometres under the high growth scenario with is also close to 60% higher than predicted under the lower growth model.

A 'do nothing' base case option shows growth over the next ten years of a little less than 20% which assumes a constrained supply of train paths and a consequent loss of market share. Whereas the low growth model predicts growth of 60% and the high growth model projects a near doubling of gross tonne kilometres of freight volume.

The two alternative growth projections are provided to establish a maximum possible range of growth to 2015. The growth in freight train frequency to 2018 (see **Chapter 7**) has assumed the higher growth scenario when modelling train operations for noise, air quality and hazard and risk assessment.

2.4 Regional planning context

Sydney's population has grown faster than forecast, with approximately 1,000 people arriving in Sydney on a weekly basis. This has subsequently resulted in increased demand for housing and construction services and associated services and infrastructure.

To effectively manage this growth, current planning policies aim to contain most of the growth in Sydney within existing areas through urban consolidation and/or renewal projects. The Department of Planning is currently in the process of preparing a new metropolitan planning strategy to sustainably manage Sydney's growth over the next 30 years.

The Metropolitan Strategy for Sydney (Department of Planning, 2005) notes the importance of connecting urban centres through the transport network and proposes the establishment of key strategic bus corridors. This will work in conjunction with a six year Rail Clearways Program, which

aims to increase the number of commuter rail services and improve reliability throughout the entire rail network. Another objective of the Metropolitan Strategy is to facilitate the upgrading of the metropolitan rail freight network and to maximise the efficiency of freight transport and the proportion of freight transported by rail. Key actions contained in the Metropolitan Strategy to deliver these objectives are for the NSW Government to work with ARTC to facilitate the SSFL and for RailCorp and ARTC to increase the separation of passenger and freight services on the rail network (Department of Planning, 2005).

In December 2004, the NSW Government released the future land release areas in the North-West and South-West Sectors of Sydney. The plan has identified an estimated \$7.8 billion worth of infrastructure to be coordinated in conjunction with a staged release of land for urban development.

The South-West Sector is located within the local government areas of Liverpool, Campbelltown and Camden and is proposed to contain the villages of Austral, Leppington, Rossmore, Catherine Fields and parts of Kemps Creek, Badgerys Creek and Bringelly (refer to [Figure 2.9](#)). It is expected that the South-West Sector will accommodate approximately 100,000 new dwellings over the next 25 to 30 years. Consequently, it is expected that demand for transport services will increase within the South-West Sector, particularly along RailCorp's Main South and East Hills Lines, from Macarthur to the Sydney CBD and other regional centres.

2.5 Regional transport infrastructure

The amount of road and rail transport projects currently undertaken or being proposed in Sydney is unprecedented. An overview to the key regional transport infrastructure relevant to the proposed SSFL and south western Sydney is provided below. Refer also to [Figure 2.9](#).

2.5.1 AusLink national network

The Department of Transport and Regional Services (DOTARS) established the AusLink National Network, which is based on national, regional and urban transport corridors, links to ports and airports, and intermodal connections between road and rail.

The AusLink National Network examines and includes connections to Sydney Airport, Port Botany and other major intermodal terminals. Access to these key transport facilities is already constrained and the forecast growth in freight and passenger volumes could lead to congestion and operational problems. AusLink noted that the capacity of the land transport links to accommodate forecast freight and passenger growth is a critical challenge which must be addressed.

2.5.2 Future rail network

In early June 2005, the NSW Government announced that \$8 billion would be invested in Sydney's rail network over the next 15 years. The NSW Government has acknowledged the importance of improving Sydney's rail system and committed itself to projects such as the Rail Clearways Program. In addition, a new rail line is being proposed for south western Sydney.

Rail Clearways Program

The Rail Clearways Program is a \$1 billion plus initiative of the NSW Government to improve capacity and reliability on RailCorp's Sydney suburban passenger network. The Rail Clearways program comprises 15 key projects that will separate RailCorp's network of 14 metropolitan rail routes into five relatively independent clearways. As a result, bottlenecks and junctions will be removed to reduce congestion and delays on the metropolitan rail network. It is expected that the Rail Clearways Program will be completed in 2010.

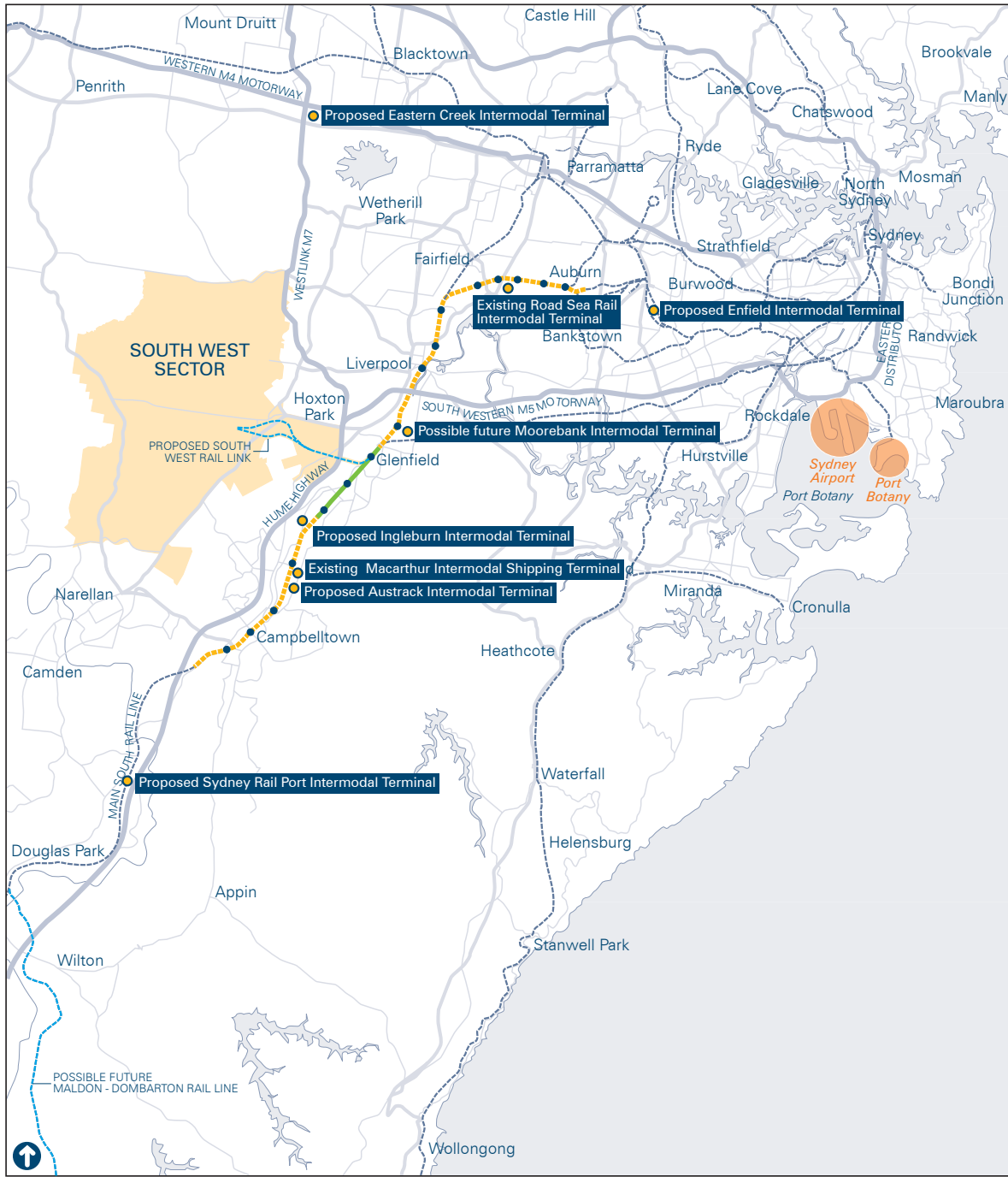


Figure 2.9 Regional planning and transport context

- Southern Sydney Freight Line route
- Intermodal freight terminals
- Existing freight passing loop
- - - Rail line
- Freeways

As part of the Rail Clearways Program, the stabling yards at Liverpool and Campbelltown Railway Stations are proposed to be remodelled. The aim is to improve operations train servicing and safety for railway operations and cleaning staff. This program will increase passenger service frequencies on the Main South Line from these locations, further reducing capacity for freight path availability on the RailCorp network.

South West Rail Link

The proposed South West Rail Link will operate between Glenfield and Leppington and connects with the existing Main South Line just south of Glenfield Railway Station. The new line will require the construction of two new rail stations at Edmondson Park and Leppington, with a further extension to Bringelly being considered.

The South West Rail Link will connect the newly developing suburbs to key centres and facilities in Sydney. The new rail line will provide an additional public transport option for local residents and workers. The South West Rail Link will serve a catchment of almost 100,000 new dwellings. Once completed, it is expected that the South West Rail Link will service 280,000 people per week over the next 25 to 30 years.

To enable the movement of additional passengers from the south-west sector, an increase in passenger services are expected. The existing Main South Line has limited capacity to sustain the projected increase in freight transportation (due to the constrained number and time of available train paths for freight services) and an increase in passenger services would further constrain freight path availability.

2.5.3 Road network

As a major growth area, south-west Sydney is serviced by a number of higher order roads, including the South Western M5 Motorway and Hume Highway, and will be by the soon-to-be completed Westlink M7.

Westlink M7

The Westlink M7 is a 40 kilometre electronic tollway and is expected to open by the end of 2005. The Westlink M7 begins at the Hume Highway, Prestons in the south, and intersects the M4 at Eastern Creek and the M2 at West Baulkham Hills in the north, providing a ring road around the entire Sydney metropolitan area. There are a total of 17 interchanges along the 40 kilometre route, which will improve access to Western Sydney from Liverpool to Baulkham Hills.

2.5.4 Sydney ports

The Sydney Ports Corporation manages commercial shipping in Sydney Harbour and Port Botany. The ports are recognised as a valuable asset to NSW, handling over \$50 billion in trade in 2004. Of goods transported to Sydney Ports 85% are packed and unpacked within the Sydney metropolitan area, with approximately 21% of these goods moved by rail, with the remainder transported on trucks.

As part of the NSW Ports Growth Plan, the former Minister for Infrastructure, Planning and Natural Resources examined ways to increase the proportion of containers moved by rail to and from the ports to intermodal terminals in both the Sydney metropolitan area and regional NSW. The NSW Government has recently stated its aim of having 40% of containers to be moved by rail by 2011.

Recent studies have shown that with the growing trend of increased container trade within Sydney Ports, the existing facilities at Port Botany will reach capacity by 2010. The recently approved Port Botany expansion includes the reclamation of approximately 60 hectares of land to develop five new berths and additional container terminal areas.

The development of additional container facilities at Port Botany will improve the efficiency of the container transport chain in Sydney. As part of the recently approved expansion, Sydney Ports

Corporation is committed to increasing the proportion of container movements by rail. The Sydney Ports Corporation has subsequently proposed to redevelop and enhance the existing intermodal terminal at Enfield, which will minimise congestion at Port Botany. This proposal is further discussed below in **Section 2.5.6**.

The expansion project will enable Port Botany to remain a key port in the NSW freight network and continue to be one of the most significant trade links in Australia.

2.5.5 Freight Infrastructure Advisory Board

The NSW Freight Infrastructure Advisory Board was established by the NSW Government to advise the Minister for Planning on major freight infrastructure policy and project matters. The recently released report on 'Proposals to Ease Pressure on Sydney's Roads' entitled 'Railing Port Botany's Containers' recommends that the Southern Sydney Freight Line investment be brought forward and that the project be declared critical infrastructure.

In making this recommendation, the Advisory Board has acknowledged that achieving the 40% target for Port Botany freight by rail will require substantial mode shift underpinned by investment in rail. Even with a 40% rail share, the report claims that container truck volumes on the South Western M5 Motorway are projected to increase by approximately 75%. Taking containers to the south west by rail is seen as critical to extending the life of the South Western M5 Motorway and serving the needs of the wider motoring public.

2.5.6 Freight terminals

There are a number of existing and proposed freight terminals (and possible future terminals) that form part of the regional transport infrastructure network. These are discussed below.

Macarthur Intermodal Shipping Terminal, Minto

The Macarthur Intermodal Shipping Terminal is located at Minto on the eastern side of the railway corridor, just to the south of the Minto Railway Station. The terminal currently runs shuttle freight services to/from Port Botany using trains of up to 400 metres in length. Future expansion of the terminal is proposed to handle longer trains of up to 700 metres in length, and to increase the number of return trips to four daily between the terminal and Port Botany.

A possible future proposal by Austrack includes the establishment of a further container terminal, to the south of the Macarthur Intermodal Shipping Terminal. The proposal would primarily handle interstate freight movements and accommodate up to 1,800 metre freight trains in length. The proposal would extend southwards with a connection to the RailCorp tracks close to Leumeah Railway Station. It is envisaged that trains would run to and from both the south and north. No formal proposal is known.

Road Sea Rail Terminal, Leightonfield yard

The Road Sea Rail terminal is located at Leightonfield Yard, on the southern side of the railway corridor. The terminal currently runs shuttle freight services to/from Port Botany and future expansion of the terminal is proposed to increase the number of return trips to three/four daily to/from Port Botany. The terminal would have direct connection to the proposed SSFL.

Proposed Sydney Rail Port Terminal, Menangle

The Sydney Rail Port Terminal is proposed on over 500 hectares of land, located to the east of the Main Southern Railway Line and straddling the Hume Highway at Menangle. It is understood that the proposal includes a rail freight terminal (with two 1,800 metre railway sidings) which is to be supported by surrounding freight logistics, distribution centres, light industrial activities and employment lands.

A new interchange with the Hume Highway is also proposed. It is understood that a Planning Focus Meeting has been held for the proposal.

Proposed Patrick Freight Terminal, Ingleburn

Patrick Autocare Pty Ltd owns a site at Broadhurst Road, Ingleburn which adjoins the western side of the Main South Corridor. Patrick intends to establish an intermodal freight terminal on this site. It is envisaged that this terminal will be used by interstate trains up to 1,800 metres long to and from Brisbane and Melbourne and by shipping container trains up to 600 metres long, to and from Port Botany.

Proposed Enfield Intermodal Logistics Centre

Sydney Ports Corporation is proposing the development of a new Intermodal Logistics Centre at the Enfield Marshalling Yards to improve the efficiencies of Port Botany and to contribute to the movement of containers off roads and onto rail. Shuttle freight services would operate between the proposal and Port Botany. It is understood that the proposal includes railway sidings for the freight terminal, as well as light industrial land and warehouse/distribution areas for freight storage and for container packing and unpacking.

Possible Intermodal Terminal, Moorebank

The School of Military Engineering at Moorebank has been identified by NSW and Commonwealth governments as a possible site for a future intermodal terminal facility. This would potentially comprise a major intermodal terminal and supporting warehouse/distribution facilities catering for 1,000 metre long interstate freight trains. The proposed terminal is not dependent on access to the SSFL as there is good access to the Main South Line.

2.6 Alternatives to the Southern Sydney Freight Line

2.6.1 Implications of doing nothing

ARTC's North-South Corridor Strategy has been conceived as an integrated investment strategy with the Southern Sydney Freight Line as a key element of that strategy. The primary consequence of excluding the SSFL would be to severely compromise the ability to achieve the freight availability and reliability objectives of the strategy.

The do nothing option would result in worsening delays (i.e. reliability) for freight access to and through Sydney, leading to a lower rate of rail freight growth than would otherwise be the case on the north-south corridor. Consequently, road freight traffic would necessarily grow at a higher rate, with attendant impacts on other road users and the environment. In the longer term, rail market share could eventually decline if RailCorp further constrains freight rail access through Sydney to increase passenger service levels for the growing south west urban fringe.

2.6.2 Alternative corridors

In 2000, Maunsell undertook a study of alternative routes for freight only access through Sydney on behalf of the NSW Department of Transport and ARTC.

The Sydney Dedicated Freight Track Study (Maunsell, 2000) considered the feasibility of a dedicated freight track through Sydney from Macarthur to Hawkesbury River. The report examined four route options through southern Sydney from Macarthur or Waterfall to Chullora/Enfield and one route was

identified through northern Sydney (i.e. the Main North Line corridor). The four southern routes are shown on [Figure 2.10](#) and are as follows:

1. Option 1 involves using the RailCorp corridor between Macarthur to Sefton and is the preferred proposal presented in the Environmental Assessment (see also [Figure 1.1](#)).
2. Option 2 is the same as Option 1 between Macarthur and Cabramatta Junction and from there the track would then proceed via an underpass under the Junction to the Old South Line corridor. The track would continue to Clyde Yard and Auburn on the eastern (Down) side of the Main West Line corridor. A second underpass under Auburn Railway Station would cross the freight track to the north (Up) side where it would run east to connect with the existing freight network at Flemington Junction via a third underpass under the Olympic Park lines.
3. Option 3 is the same as Option 1 between Macarthur and Glenfield Junction and from there the track would then proceed on the north (Up) side of the East Hills Line to Wollie Creek Junction and then to Meeks Road Junction where it would join the existing freight network.
4. Option 4 would utilise the existing Illawarra Line corridor between Waterfall and Meeks Road Junction. A flyover would be required at Wollie Creek Junction to separate the freight track from the East Hills and Airport Lines. All freight movements south of Sydney would go via Wollongong and Robertson and connect to the Main South Line at Moss Vale.

A multi-criteria analysis of the corridor options was undertaken for the four corridors described above. The following assessment options were used to compare each corridor alternative:

The criteria used to assess the corridor options were:

- operational – efficiency of train operations, suitability of the alignment for freight operations, access to current/future freight terminals, impacts on future projects, track alignment suitability for freight (curve and grade)
- technical – capital cost and maintenance costs
- environmental – land take, proximity to sensitive areas, and noise, vibration and air quality impacts
- economic impacts – changes in transit time/availability, impact on future freight and growth.

To summarise the means of comparison between alternatives, a qualitative and objective assessment was applied to the ranking of design alternatives and is shown in [Table 2.1](#). The following rankings were used:

- very positive effect (**++**) — resulting in a significant net gain or effect
- positive effect (**+**) — a net gain or effect
- neutral (**0**) — no discernable change or a balance between the positive and negative effects
- negative effect (**-**) — a net adverse effect or disbenefit
- very negative effect (**--**) — a significant adverse effect or disbenefit.

Table 2.1 Assessment of corridor options

Assessment criteria	Corridor options			
	Option 1	Option 2	Option 3	Option 4
Operational	+	0	-	--
Technical	+	--	-	-
Environmental	+	+	-	0
Economic impacts	0	0	0	-
Overview	+	0	-	--

Note: **++** refers to very positive effect
+ refers to positive effect
0 refers to neutral
- refers to negative effect
-- refers to very negative effect

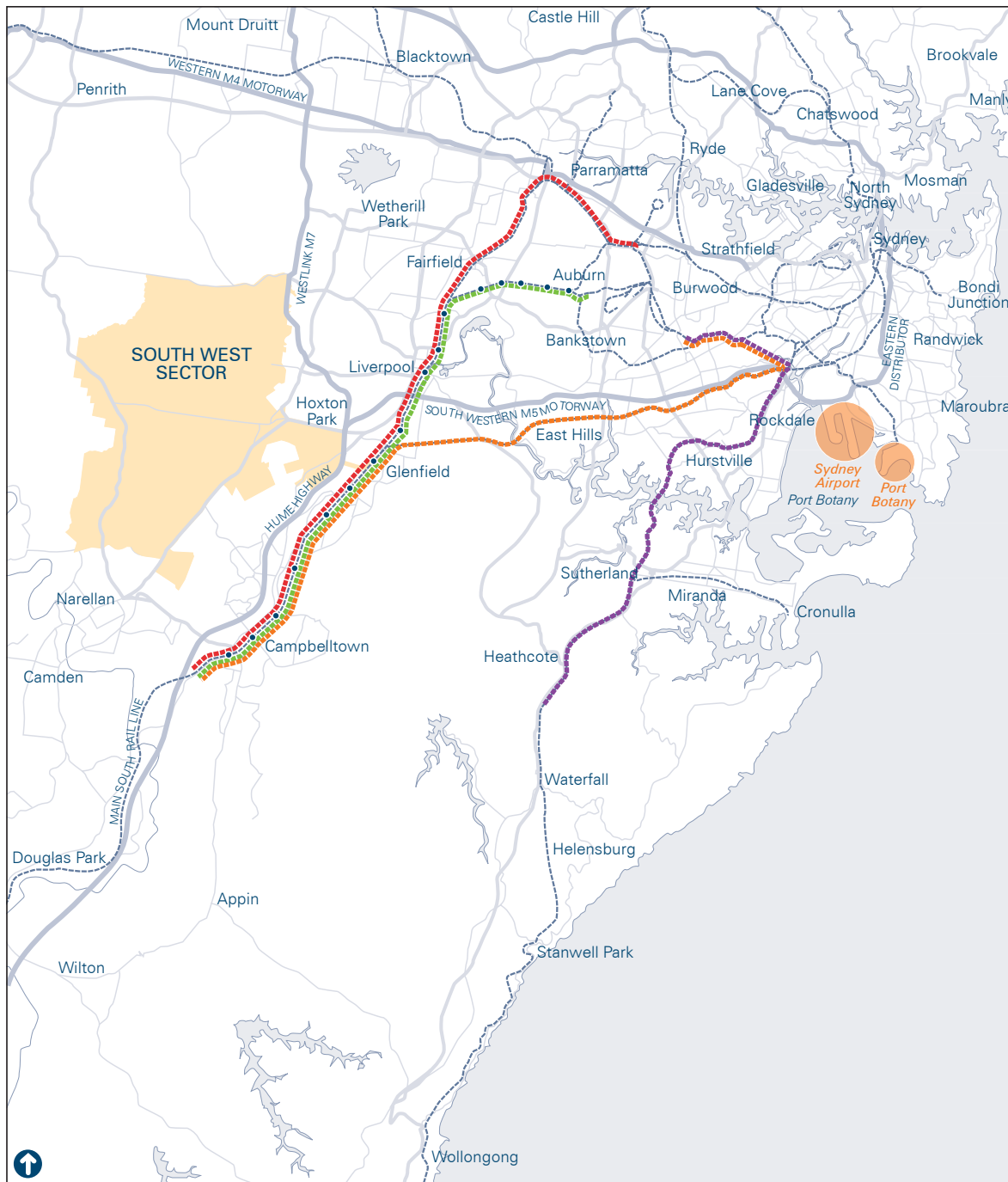


Figure 2.10 Southern Sydney route options for dedicated freight line

- Rail line
- Option 1
- Option 3
- Freeways
- Option 2
- Option 4

Assessment

Option 1, the preferred proposal, was found to be the lowest cost, have the least environmental impacts and best operational benefits. It was followed by Option 2, then Option 3 and lastly Option 4. The findings of the assessment were that Option 1:

- has good compatibility with all existing and future freight terminal locations
- has the lowest capital and maintenance cost of any of the options considered
- uses the existing freight corridor for the majority of the route distance, giving rise to relatively fewer environmental impacts
- has a relatively low impact on future network infrastructure plans.

Option 2 (via Granville) has several physical constraints requiring underpass structures at Cabramatta Junction, Auburn and Olympic Park Line to gain access to the Metropolitan Freight Line at Flemington. As a result, this option would cost 65% more than Option 1.

Option 3 (via the East Hills Line) has a narrow corridor between Bexley North and Turrella and there is not the width for a fifth track without significant land acquisition of Wollli Creek Regional Park, and impacts on the creek. The freight line would access the Metropolitan Freight Line at Meeks Road which has no direct access to Port Botany. This option would also have a 30% greater cost of construction compared to Option 1, with nearly 10 kilometres of extra track construction.

Option 4 (via the Illawarra Line) would also access the Metropolitan Freight Line at Meeks Road (as per Option 3) with no direct access to Port Botany. Additionally, the Illawarra Line has a less suitable track alignment for freight trains due to steep gradients. Freight services would use the Moss Vale–Unanderra Line to and from Sydney which climbs up an escarpment to the Southern Highlands. On this line there is a 20 kilometre length of track with a 1/30 (3.3%) gradient between Unanderra and Summit Tank. Longer freight trains would require additional locomotive power between Unanderra and Moss Vale, significantly complicating train operations, increasing costs, journey time and consuming more fuel. There is also a shorter 2 kilometre stretch of 1/40 (2.5%) gradient track on the Como Bank as it rises up from the Georges River bridge to Sutherland. The Option 4 route would not connect with existing and planned major intermodal terminals along the Main South Line.

The cost of Option 4 is 35% greater to construct than Option 1, given major bridge crossings at Georges River and Cooks River. These operational and cost disadvantages would result in a relatively poor economic performance when compared with the other options.

2.6.3 Terminals south of Macarthur

A partial alternative to the Southern Sydney Freight Line could be to construct significant intermodal terminals south of Macarthur where freight train access is possible without interference from RailCorp's electrified passenger network.

This option has been available for a long time and there is currently a private sector proposal at Menangle (refer to Section 2.5.6). Whilst this site may prove to be a useful freight terminal location, it will not solve rail freight access restrictions through Sydney for interstate freight services between Melbourne–Brisbane.

2.7 Need for the Southern Sydney Freight Line

In summary, the need for the Southern Sydney Freight Line is:

- The Melbourne–Sydney intermodal freight market represents the largest single opportunity to shift a large volume of freight from road to rail.
- The ability to offer a late afternoon departure from Melbourne and early morning availability of freight in Sydney (and vice versa) is critical to rail’s ability to compete with road in this corridor.
- The prohibition imposed on freight operations in the Sydney metropolitan area during the morning and afternoon commuter peak periods, which has been imposed in the absence of a dedicated freight rail line, means that rail cannot currently offer the departure and arrival times required for rail to be competitive.
- The North-South Corridor Strategy investment will result in transit times for Melbourne–Brisbane services of 27 hours (down from 34 hours). The resulting improvements in rolling stock utilisation would be significant for operators. For example, currently four trains are required to offer a daily service between these two cities but the shorter transit time would result in a 72 hour cycle time, which would require only three trains to provide a daily service (a 25% saving). The SSFL will assist in achieving this by reducing timetabling constraints on this corridor.
- The proposed urban growth in the South-West Sector of Sydney and development of the proposed South West Rail Link (with increased passenger services on the rail network) would further constrain the available train paths for freight services, with impacts to rail’s competitiveness.
- The project is supported by the NSW Government’s Metropolitan Strategy for Sydney which aims to facilitate the upgrading of the metropolitan rail freight network and maximise the efficiency of freight transport and the proportion of freight transported by rail.
- The project is supported by the NSW Freight Infrastructure Advisory Board as part of a strategy to encourage transfer of mode share from road to rail to ease pressure on Sydney’s roads. The Advisory Board rates the proposed SSFL as ‘perhaps the most important of all the rail freight projects in Australia’ and it regards its strategy for promoting the development of intermodal terminals across south western metropolitan Sydney as dependant on the successful completion of the SSFL (Freight Infrastructure Advisory Board, 2005).
- The project would, in effect, extend the existing Metropolitan Goods Line to Macarthur and onto the interstate freight network. A dedicated freight line will provide improved opportunity for development of major intermodal terminals in south west Sydney.
- The project would provide direct and in-direct connections to existing, proposed and possible future freight terminals, completing the existing regional transport infrastructure.
- The proposal is complementary to other freight transport initiatives, including the recently approved Port Botany expansion and proposed and existing intermodal facilities in southern Sydney. It would directly link to the Metropolitan Goods Line at Sefton facilitating rail freight access to and from Port Botany.
- The proposal would potentially reduce the growth of road freight traffic within the Sydney metropolitan area and along major highways linking the capital cities. This would reduce future road infrastructure costs and also have environmental and road safety benefits for the communities along these highways.
- The most effective solution to this is the construction of the Southern Sydney Freight Line using available land within RailCorp’s corridor, but with independent train operations to the existing RailCorp network.

2.8 Objectives to address identified needs

In consultation with relevant authorities, and having regard to ARTC's north-south corridor investment strategy, a set of primary and secondary objectives for satisfying the strategic need have been developed. The primary objectives can be viewed as explaining "what needs to be done" while the secondary objectives explain "the best way to achieve the primary objectives".

2.8.1 Primary objectives

In relation to reliability and efficiency:

- improve reliability and travel times for rail freight services between Melbourne–Sydney–Brisbane.

In relation to rail competitiveness:

- improve rail freight service competitiveness compared to road freight service.

In relation to operations:

- reduce delays to passenger services resulting from conflicts with freight operations.

In relation to economic development:

- support State and National economic development with provision of key freight infrastructure.

2.8.2 Secondary objectives

In relation to environmental sustainability:

- enhance potential beneficial environmental effects and manage potential adverse environmental effects by:
 - conserving biological diversity and ecological integrity
 - eliminating the threat of serious or irreversible environmental damage
 - improving air quality and reducing greenhouse gas emissions
 - minimising use of energy and non-renewable resources
 - minimise construction and operational related impacts on the local community.

In relation to economic and financial outcomes:

- achieve acceptable economic and financial outcomes.