



# **SOUTHERN SYDNEY FREIGHT LINE**

## **Project Description Report**

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## Introduction

The Australian Rail Track Corporation (the ARTC) is a Commonwealth Government-owned company responsible for operating the interstate rail freight network that links Australia's major mainland capital cities, including Perth, Brisbane, Adelaide, Melbourne and Sydney.

The ARTC is presently undertaking a program of works to improve the efficiency and cost-effectiveness of rail freight services along the North-South Rail Corridor between Melbourne, Sydney and Brisbane. A major bottleneck in the rail freight network currently exists in southern Sydney, where freight trains share existing rail lines with the Sydney metropolitan passenger services operated by RailCorp. During morning and afternoon peak periods, freight services are not permitted to run due to passenger priority. As a result, freight services cannot arrive or depart Sydney at the optimum times.

To alleviate this bottleneck, the ARTC proposes to construct the Southern Sydney Freight Line (the SSFL), which would provide a dedicated freight line for a distance of 30 kilometres between Macarthur and Sefton in southern Sydney. The SSFL would provide a third track in the rail corridor specifically for freight services, allowing passenger and freight services to operate independently.

The ARTC would construct, operate and maintain the SSFL in the Main South Line railway corridor under an agreement with RailCorp. Rail freight providers, such as Pacific National, QR National and Silverton Rail, would operate the freight trains as they currently do. The railway corridor would remain in the ownership of RailCorp.

This Summary details the key findings of the Environmental Assessment prepared for the proposed SSFL (the proposal).

## Regional planning context

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.

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. 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.

## Need for the proposal

The proposed SSFL forms part of the ARTC's North-South Corridor Strategy for the Melbourne-Sydney-Brisbane interstate rail network. The \$872 million investment program is aimed at reducing the transit times between these three capital cities, improving the availability of services to meet growing freight demand, and improving the competitiveness of rail over road freight. The program targets priority rail infrastructure along this rail corridor.

The key objective of the SSFL is to enable freight trains to enter and exit Sydney during morning and afternoon periods that coincide with passenger peak services. Access to the RailCorp network is denied to freight trains during these peak periods, which significantly reduces the competitiveness and cost-effectiveness of rail freight services. The SSFL would allow rail freight and passenger services to operate independently, thereby reducing the potential for delays to passenger train services from freight rolling stock faults and vice versa. Other benefits of the proposal would include:

- increased reliability throughout the day and night for passenger and freight services
- increased flexibility for timetabling of freight services
- a potential reduction in the growth of road freight traffic within the Sydney metropolitan area and along major highways linking capital cities. (This would reduce future road infrastructure costs and have environmental and road safety benefits for communities along these highways.)

The proposal is also complementary to other freight transport initiatives, including the recently approved Port Botany expansion and proposed and existing inter-modal facilities in southern Sydney. It would directly link to the Metropolitan Goods Line at Sefton, facilitating rail freight access to and from Port Botany.

## Proposal description

The SSFL would comprise a single dedicated rail freight track, 30 kilometres in length and extending from south of Macarthur to east of the Sefton Park Junction. It would be non-electrified and operate in a bi-directional mode (see [Figures 1 and 2](#)).

The new track would be located on the western side of the existing RailCorp passenger lines between Macarthur and the junction with the East Hills Line at Glenfield. At Glenfield it would cross over via a new overpass, known as the Glenfield flyover, and continue through to Sefton on the eastern and southern side of the passenger lines. These two sections of the proposed SSFL are described in detail in [Table 1](#).

To accommodate the proposed SSFL, upgrades would be required at six railway stations and their surrounding precincts — Leumeah, Minto, Casula, Warwick Farm, Cabramatta and Sefton — with works to include:

- replacing affected station facilities and buildings (e.g. pedestrian footbridges and ticket offices)
- maintaining easy access standards at Leumeah, Minto and Cabramatta Railway Stations, including one new lift at Leumeah, two new lifts at Minto and one new lift with extra depth at Cabramatta
- providing new access over the proposed SSFL in accordance with easy access standards at Warwick Farm Railway Station, including the provision of two new lifts
- widening the rail corridor within adjoining public land through these stations, excluding at Warwick Farm Railway Station
- replacing affected commuter car parking, kiss-and-ride parking, taxi stand and bus interchange facilities, with the aim of achieving no net loss of car parking at each station
- undertaking minor roadworks to affected local roads to maintain station, public and private access
- providing new landscaping, bus shelters/canopies, pedestrian/cycle pathways, signage and street furniture where these would be affected by the proposed SSFL.

Modifications would also be needed to a number of bridges including:

- upgrading existing road bridges over the corridor at Bareena Street, Miller Road and Chester Hill Road
- providing pier protection to the Hume Highway, Newbridge Road and Cabramatta Road East bridges and underpinning the bridge abutment at Cooper Road
- potentially constructing a new road bridge over the corridor at Auburn Road
- constructing new rail bridges over Woodbrook Road, Shepherd Street, Broomfield Street (Sussex Street), Moore Street/Sandal Crescent, Hector Street and Woods Road
- upgrading pedestrian footbridges at Campbelltown and Leightonfield Railway Stations and at Canley Vale
- relocating the existing pedestrian footbridge over Prospect Creek
- constructing new rail bridges over creeks (including the Glenfield, Cabramatta and Prospect Creeks) and drainage culverts/structures over drainage tributaries.

Construction of the proposed SSFL would commence in late 2006 and continue for up to 2.5 years. Construction delivery would be through a design and construct process.

The capital value of the project is estimated at \$192 million.

**Table 1 Features of the proposed SSFL alignment**

Section of corridor	Features of the proposed alignment
Southern: Macarthur to Glenfield	<p>The SSFL would diverge from the ARTC's Main South Line to the western side of the rail corridor just north of the Hume Highway overpass.</p> <p>Between Macarthur and Ingleburn Railway Station, the SSFL would be aligned on the western side of the RailCorp rail corridor.</p> <p>At the southern end of the Campbelltown Yard and the northern end of the Campbelltown Railway Station, the alignment needs to avoid the planned future works by RailCorp to upgrade the stabling sidings. As a result of this planning constraint, the SSFL would encroach into adjoining private and public property at these locations, requiring property acquisition.</p> <p>At Leumeah and Minto Railway Stations, the SSFL would be located on the western side of the existing stations and would affect station access, buildings, facilities, car parking and interchange facilities.</p> <p>The SSFL would connect to the southern end of the existing freight passing loop (constructed in 1995) at Ingleburn Railway Station.</p> <p>Between Ingleburn Railway Station and Glenfield Junction, no new construction work is proposed as the existing non-electrified freight passing loop would become part of the SSFL.</p>

Section of corridor	Features of the proposed alignment
Northern: Glenfield to Sefton	<p>The SSFL, including a proposed 2 kilometre passing loop, would be connected to the northern end of the existing freight passing loop at Glenfield Junction on the western side of the rail corridor.</p> <p>A grade-separated crossing, known as the Glenfield flyover, would be constructed to allow the SSFL and the 2 kilometre passing loop to cross over the RailCorp tracks from the western side of the rail corridor to the eastern side, north of Glenfield Junction. The design of the southern and northern approach ramps to the flyover needs to meet the required grade and curvature limitations of the track, while aligning the crossing point at a suitable location. As a result of these design constraints, the SSFL would encroach into adjoining private and public property at this location, requiring property acquisition and de-gazettal of a portion of Leacock Regional Park from the national park estate.</p> <p>Between the Glenfield flyover and Cabramatta Railway Station, the SSFL would be constructed on the eastern side of the rail corridor.</p> <p>Between Casula and Liverpool Railway Stations, the rail corridor is relatively narrower. Due to the location of the corridor on the Georges River embankment, the slope of the land, and the need to accommodate RailCorp's proposed upgrade of the Liverpool Stabling Yard and construction of an additional platform at Liverpool Railway Station, the SSFL would encroach into adjoining public property. The SSFL would exit the Main South Line rail corridor at Riverpark Drive and then proceed along the western boundary of Lighthouse Park. The SSFL would re-enter the Main South Line rail corridor at Liverpool Hospital, approximately 200 metres north of the Elizabeth Street railway crossing.</p> <p>North of the Liverpool Railway Station, the SSFL would be aligned on the eastern side of the rail corridor at the top of a steep bank of the Georges River, between the station and the existing level crossing at Liverpool Hospital. The SSFL would be constructed on a piled slab structure along the top of the steep river bank. The structure would act to support the SSFL so that the top of the slope of the river bank is not used to support the new track.</p> <p>North of Cabramatta, it would follow the southern side of the rail corridor through to Sefton Park Junction, where it would connect via a deep cutting underneath the Bankstown Line to the Metropolitan Goods Line.</p> <p>The SSFL would be located on the eastern side of the Casula, Warwick Farm and Cabramatta Railway Stations and the southern side of Sefton Railway Station, which would affect station access, buildings, facilities, car parking and interchange facilities.</p> <p>The SSFL would connect with the RailCorp network at Casula (for freight services that need access to the SSFL coming from western Sydney via Granville and Cabramatta) and at Leightonfield Yard to service sidings in this location.</p>

The proposed SSFL would comprise a single dedicated rail freight track, 30 kilometres in length and extending from south of Macarthur to east of the Sefton Park Junction. It would be non-electrified and operate in a bi-directional mode.

The new track would be located on the western side of the existing RailCorp passenger lines between Macarthur and the junction with the East Hills Line at Glenfield. At Glenfield it would cross over via a new overpass, known as the Glenfield flyover, and continue through to Sefton on the eastern and southern side of the passenger lines.

## Statutory process

Planning approval for the proposed SSFL is required under NSW and Commonwealth legislation.

In New South Wales (NSW), the proposal requires approval under Part 3A of the *Environmental Planning and Assessment Act 1979*. The ARTC is seeking project approval under Part 3A, and the Environmental Assessment has been prepared to obtain this approval.

Prior to the introduction of Part 3A in August 2005, the SSFL would have been assessed under Part 5 of the *Environmental Planning and Assessment Act 1979*. However, Clause 23 of Schedule 1 of *State Environmental Planning Policy – Major Projects 2005* identifies 'Development that has a capital investment value of over \$30 million for the purpose of railway freight facilities' as a project to which the assessment and approval process under Part 3A of the *Environmental Planning and Assessment Act 1979* applies. The proposed SSFL meets this definition and, therefore, is to be assessed under Part 3A without the requirement for development consent.

The Director-General's requirements for an Environmental Impact Statement were previously issued under Part 5 of the Act on 29 March 2005. These have since been superseded by new Environmental Assessment requirements for a major project issued by the Department of Planning under Part 3A.

The Environmental Assessment, including a draft Statement of Commitments, will be exhibited for a minimum period of 30 days. Following exhibition, the ARTC will examine and consider the Environmental Assessment, any submissions received, and the effect of the proposed SSFL on the environment. A Submissions Report will be prepared, documenting the results of this examination and recommending any modifications to the proposed SSFL and/or the Statement of Commitments (if required) to address the matters raised in the submissions.

The ARTC will then determine whether to proceed with the proposed SSFL and, if so, whether to incorporate any modifications. If the ARTC determines to proceed, the Submissions Report, together with advice on any adopted modifications to the proposed SSFL and/or the Statement of Commitments, will be forwarded to the Minister for Planning to seek approval to undertake the project. Based on this information, the Minister will decide whether to approve the activity and will determine the Conditions of Approval that would apply.

Approval under the *Roads Act 1993* could also be required depending on the construction method for modifications to bridges on roads under the authority of the Roads and Traffic Authority of NSW. A variation would also be required to the ARTC's existing Environment Protection Licence (number 3142) under the NSW *Protection of the Environment Operations Act 1997*.

The ARTC is a Commonwealth agency and the project is a controlled action. Therefore, approval is also required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and this Environmental Assessment has been prepared to seek this approval. On 5 January 2006, the Commonwealth Minister for the Environment and Heritage decided that the environmental assessment process under Part 3A of the *Environmental Planning and Assessment Act 1979* is the accredited assessment process for this project under Commonwealth legislation. Therefore, if approval is granted by the Minister for Planning, approval will then be sought from the Commonwealth Minister for the Environment and Heritage to undertake the project.

## Stakeholder consultation

A stakeholder consultation program was conducted to inform relevant stakeholders about the proposed SSFL and its potential environmental impacts. The consultations also sought comment from stakeholders on issues of concern to be addressed in the Environmental Assessment and design of the proposed SSFL. Stakeholder groups consulted included:

- Commonwealth, NSW and local government authorities
- Commonwealth, NSW and locally elected representatives
- providers of utilities and services, such as gas, electricity, water, sewerage and telecommunications
- non-government organisations, such as Local Aboriginal Land Councils and emergency services providers
- non-government transport groups and companies, businesses and schools
- local and regional community groups, such as business groups, senior citizens groups and multicultural associations
- directly affected residents and businesses, including property owners adjacent to the rail corridor
- train commuters
- the wider community.

Consultation activities included a planning focus meeting with government authorities; separate meetings with government authorities; separate briefings with local councils, community groups, and Commonwealth, NSW and locally elected representatives; community information meetings (eight) with directly affected residents adjacent to the rail corridor; stakeholder meetings (six) in relation to station precinct upgrades; mailing of two project newsletters to directly affected residents and businesses; establishment of a 1800 project information telephone line; establishment of a project website; and individual land owner discussions.

Key issues raised by the community included:

- noise and vibration impacts during construction and operation of the SSFL
- impacts on local amenity during construction and operation, and the importance of environmental management measures such as noise walls, particularly for those residences adjacent to the railway line
- visual impacts of noise walls (and the need for ongoing management of graffiti)
- potential temporary and permanent impacts on traffic and parking arrangements associated with precinct plan changes to local road networks and parking facilities
- provision of easy access for elderly and disabled persons
- planning and design of the interchange area to facilitate local businesses and community interaction at Cabramatta Railway Station and good urban design
- impacts on passenger services
- benefits of the project and concept design
- the acquisition process for properties directly affected by the proposed SSFL north and south of Campbelltown Railway Station on Watsford Road and Farrow Road, and residents affected by the proposed flyover between Glenfield and Casula Railway Stations
- consideration of the cumulative social and environmental impacts of the proposed SSFL from a state and regional perspective
- the effectiveness of the consultation process in addressing community issues and concerns.



## The Environmental Assessment

The Environmental Assessment considers potential impacts of the proposed SSFL at both a corridor level (along the entire proposed alignment) and a precinct level (in the vicinity of the six station precincts where upgrading works are proposed). Key issues are summarised below.

### Traffic, transport and access

During construction of the proposed SSFL, the greatest potential impact on general traffic movements would occur during upgrades to affected bridges at Bareena Street (Canley Vale), Miller Road (Chester Hill), Chester Hill Road (Chester Hill) and (potentially) Auburn Road (Birrongo). The duration of these impacts would be determined during the detailed design phase. Traffic Management Reports and Traffic Management Plans would be prepared to manage these impacts as part of the overall project Construction Environmental Management Plan.

Operation of the proposed SSFL would not affect local traffic or access. There would be no change to or increase in vehicle movements from the operation of the SSFL and no additional traffic movements would be generated directly by the SSFL operations. All existing access arrangements for pedestrians and cyclists would be retained.

Proposed upgrades to the six affected station precincts would lead to changes in bus operations, parking and access arrangements at the stations. All existing bus facilities would be maintained or rebuilt to retain or improve their function. Existing easy access arrangements would be retained at Leumeah, Minto, and Cabramatta Railway Stations. New access over the SSFL in accordance with easy access standards would be provided at Warwick Farm Railway Station. Some existing parking would be relocated; however, the existing number of parking places in the vicinity of the Stations would be maintained.

### Acoustic environment

A large number of noise sensitive receivers are located within the vicinity of the proposed SSFL. Ambient noise monitoring was conducted at ten representative locations along the proposed route. The results indicated that existing noise levels already exceed the Department of Environment and Conservation's 'planning' noise criterion of  $L_{Aeq, 24hr} = 55\text{dBA}$  at most noise-sensitive locations along the corridor. Noise criteria were established for construction and operation of the proposed SSFL based on the *Environmental Noise Control Manual* (Environment Protection Authority, 1985).

During construction, maximum noise levels would be likely to exceed noise criteria at residences in the vicinity of the works. The predicted construction noise and vibration levels would be minimised through the implementation of management and mitigation measures. A Construction Noise and Vibration Management Plan would be prepared by the selected contractor prior to the commencement of construction. This would consider all 'reasonable and feasible' construction noise mitigation measures where potential noise impacts would exceed the relevant criteria.

Few of the plant items or processes proposed during the general earthworks and track works would be sources of significant vibration. The predicted level of vibration generated during construction would be well below relevant vibration criteria for structural damage to buildings. It is possible, however, that piling and demolition for bridge and flyover works would generate perceptible vibration levels. Management measures are proposed to manage these potential impacts.

Three scenarios were considered as part of the operational noise assessment:

- '2008 before SSFL' — assuming train movement numbers for 2008 with all movements on the existing tracks
- '2008 after SSFL' — assuming train movements numbers for 2008 with most freight movements on the proposed SSFL
- '2018' — assuming train movements numbers for 2018 with most freight movements on the proposed SSFL.

In summary, the results of the noise modelling indicated that, without noise barriers, most catchments situated on the SSFL side of the corridor would experience noise levels above the planning criteria of 55dBA  $L_{Aeq, 24hr}$  and 80dBA  $L_{Amax}$  in both the '2008 after SSFL' and '2018' scenarios. Permanent noise barriers of between 3 to 4 metres in height are, therefore, proposed along many parts of the alignment to provide a 'reasonable and feasible' level of noise mitigation. The noise barriers would significantly reduce predicted noise levels at most adjacent receivers.

## Biophysical environment

Assessment of the biophysical environment involved consideration of geology and soils, contaminated soils, ground and surface water, and biodiversity.

Some 158,000 cubic metres of soil would require excavation as part of the works. The material would be sourced mainly from cuts within the Sefton to Cabramatta and Ingleburn to Macarthur sections of the corridor. Of this material, approximately 61,000 cubic metres would be suitable for re-use, while approximately 97,000 cubic metres would require disposal off-site as it is likely to be unsuitable as engineered fill. Detailed geotechnical investigations would be carried out as part of the detailed design for the proposed SSFL. This would confirm any geotechnical issues, which would be incorporated into the design to avoid potential impacts.

Along the proposed SSFL route, there would be potential for the proposal to cause erosion and associated sedimentation of creeks and watercourses, particularly during construction activities such as clearing of vegetation, construction of access paths, excavations for cuttings and foundations, stockpiling of soils and construction of fill embankments. An Erosion and Sediment Control Plan would be prepared as part of the overall Construction Environmental Management Plan to avoid and mitigate potential impacts.

No adverse impacts on groundwater regimes would be expected, as the works would be largely located at or above the existing natural groundwater table. Piezometers would be installed at selected locations to monitor groundwater levels and potential impacts during construction.

The 1:25,000 Acid Sulfate Soil Risk Maps (1995) published by the Soil Conservation Service for the Liverpool region indicate that where the proposed SSFL route comes into close vicinity with alluvial and estuarine plains and saturated low-lying areas along the Georges River, Cabramatta Creek and Prospect Creek, there is a risk that acid sulfate soils would be encountered within the soil profile. An Acid Sulfate Soil Management Plan would be required for the construction phase of the project and would be prepared according to NSW Acid Sulfate Soil Management and Advisory Committee guidelines.

A Phase 1 Contamination Assessment would be undertaken along the proposed SSFL route to determine the potential presence of contaminated soils, in accordance with the NSW Environment Protection Authority's *Guidelines for Consultants Reporting on Contaminated Sites* (1997). The Phase 1 Contamination Assessment would determine whether detailed field investigations are required.

Bridge crossings over existing watercourses would be designed to match the existing hydraulic capacity so that no change to drainage or flood behaviour would occur. North of Narellan Road, a 250 metre section of Bow Bowing Creek would be realigned adjacent to the rail corridor. In this location, the creek is highly modified and disturbed. Also, at Glenfield Junction, an existing drainage gully would need to be realigned for a distance of approximately 900 metres.

Impacts of the proposed SSFL on threatened flora and fauna would not be significant due to the limited extent of native vegetation within the corridor, its highly degraded nature and ongoing threats from adjacent urban and industrial development. There are some endangered ecological communities and species within the corridor, including Cumberland Plain Woodland, Sydney Coastal River-flat Forest, *Acacia pubescens*, Green and Golden Bell Frog (*Litoria aurea*) and the Cumberland Plain Large Land Snail (*Meridolum corneovirens*). Consequently, impact assessments were completed for these communities and species. These concluded that a significant impact on threatened flora and fauna would be unlikely.

The proposed SSFL would directly affect approximately 0.4 hectares of Cumberland Plain Woodland at Leacock Regional Park south of Casula. A total of approximately 1.3 hectares of Leacock Regional Park would be acquired to accommodate the proposed SSFL. Cumberland Plain Woodland is an endangered ecological community that, in this location, has a moderate to high level of weed invasion. The area affected is a linear portion of an already highly modified remnant, and this would not constitute a significant impact on this community. As this land constitutes national park estate, de-gazettement of this land would be required to enable construction of the proposed SSFL.

Mitigation measures and safeguards proposed to manage biodiversity impacts include:

- detailed surveys of existing *Acacia pubescens* populations to accurately determine their location relative to the proposed SSFL
- detailed assessment of the impacts of bridge constructions on aquatic ecology.

## Social environment

Assessment of the social environment involved consideration of heritage, visual character, air quality and social effects.

The existing rail corridor area has low Aboriginal archaeological potential due to the nature and extent of previous disturbance and the likelihood that, if any Aboriginal objects remain within the corridor, the proposed SSFL would be unlikely to further affect these objects.

The built heritage items within the corridor that are proposed to be modified include footbridges at Campbelltown, Minto, Casula, Warwick Farm, Cabramatta, Canley Vale, Leightonfield and Sefton, which are listed on RailCorp's Section 170 Heritage and Conservation Register. Individually, these are not remarkable structures, and the footbridges at Minto, Casula and Cabramatta are fairly contemporary. Other examples of these footbridges are commonly found elsewhere. Therefore, the modifications can be justified as a necessary requirement for the proposed station precinct upgrades.

Other built heritage items in the corridor potentially affected include:

- the Glenfield Creek viaduct, south of Casula — A new rail bridge would be located adjacent to the viaduct. This would have matching spans that are visually and structurally independent
- the Casula Railway viaduct, Woodbrook Road — A new rail bridge would be located adjacent to the viaduct. This would have matching spans that are visually and structurally independent
- the railway viaduct at Mill Road and Sheppard Street in Liverpool — A new bridge structure is proposed adjacent to the existing heritage viaduct. The new structure would be separated by 3 to 4 metres, with the rhythm of the original structure maintained to ensure the new bridge is visually unobtrusive
- the Liverpool town layout, between Scott Street and the Hume Highway — The proposed SSFL would lie in the vicinity of the eastern boundary of the old town layout. An excavation permit would be required before excavation and an archaeological watching brief would be required during excavation
- the railway viaduct at Railway Parade, Cabramatta — A new rail bridge is proposed incorporating the existing pedestrian access and cycleway which would be removed from the viaduct. The new viaduct would be visually and structurally independent of the existing bridge. The rhythm of the original bridge would be maintained by matching the position of the new pylons with the existing
- the bridge/viaduct at Sandal Crescent and Prospect Creek, Carramar — The existing pedestrian/bicycle footbridge would be relocated from the eastern side of the bridge to a new steel pony truss structure bridge. The new viaduct would be structurally independent, with the rhythm of the original maintained by matching the position of new pylons with the existing structure.

A visual assessment indicated that visual effects of the proposed SSFL may be evident in local areas where the rail alignment is elevated above ground level or at the location of specific structures, such as the proposed Glenfield flyover or at Lighthorse Park. Landscaping would be used to mitigate potential visual impacts at these specific locations along the alignment. Architectural input would be provided to the design of bridge structures to ensure that these elements are designed to be sensitive to the surrounding environment.

Proposed upgrades to the six station precincts would provide the opportunity to improve the visual environment of these locations. For the upgraded stations, architectural design input would be provided for the structural elements (footbridge extensions), streetscape improvements and hard and soft landscaping.

The assessment of air quality impacts considered emissions from construction and operation of the proposed SSFL. During construction, emissions would arise from dust generation and use of construction vehicles and plant. A qualitative assessment was made of these emissions and management measures are proposed for incorporation into the Construction Environmental Management Plan.

During operation of the proposed SSFL, emissions would be generated by diesel freight train locomotives. Air quality modelling was undertaken using an AUSPLUME dispersion model to predict impacts at varying distances from the rail line. Emissions would be associated with combustion of diesel fuels and petroleum. Pollutants would be expected to include carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), sulphides (SO<sub>x</sub>), particulate matter (PM) and trace amounts of non-combustible hydrocarbons (C<sub>x</sub>H<sub>x</sub>). Scenarios for the year of opening (2008) and 10 years after opening (2018) were considered.

The air quality modelling predicted a potential exceedance of the annual average nitrogen dioxide goal of 62 micrograms per cubic metre under the 2018 scenario within 50 metres of the rail corridor. The predicted exceedance is considered to be marginal and it is anticipated that future improvements in emission controls for diesel locomotives would reduce the actual impact significantly, but would require the rail operators to work towards suitable targets over time. The proposal would also have positive impacts associated with reduced potential heavy vehicle/truck emissions, with regional air quality benefits.

Temporary social impacts would occur during the construction period, including impacts on community amenity and access across the corridor. Residents in the vicinity of the construction works would be kept informed and notified of any specific disruptions affecting access and/or amenity.

The proposed SSFL would lead to a number of significant regional, state and national economic benefits through improvements in the competitiveness of rail freight along the North-South Rail Corridor. The proposal would contribute to growth in the market share of rail freight, with improvements of this nature collectively benefiting the NSW and national economies and Sydney's freight transport infrastructure. There is unlikely to be any direct local economic benefit, other than local employment opportunities.

## Land use and property

The appropriate sequencing of construction activities would be identified to ensure that impacts on land use and property are minimised. This would include building replacement infrastructure (whether temporary or permanent) prior to demolition of existing infrastructure, where possible. This would allow operations to continue with minimal impacts. Two construction work sites would be required for construction of two major civil structures, the Glenfield flyover and a deep cutting at Sefton Park Junction. A number of other smaller work sites would be needed along the rail corridor and in the vicinity of bridge upgrades.

Limited property public and private land acquisition would be required in specific locations along the rail corridor, and would not involve residential land (see [Table 2](#)). Details of the proposed land acquisition would be confirmed during the detailed design. RailCorp would acquire land for the corridor widening on behalf of the ARTC through direct negotiations with affected land owners, where possible, and would seek to purchase the land at the applicable market rate.

A number of future residential development sites have been identified along the corridor. These sites are at a different stage in the development approval process and development consents have not been granted. All future development along the corridor and, in particular, development proposals for sensitive land uses, would be required to consider the implications of the proposed SSFL for that development.

**Table 2** Property acquisition

Property	Location	Requirement
<i>South of Campbelltown Railway Station</i>		
Public land – Campbelltown City Council	South of Narellan Road bridge	Accommodate the SSFL formation, avoid piers to the Narellan Road bridge and provide a suitable track alignment to minimise impacts to Bow Bowling Creek. A portion of land (less than 10 metres in width) would be required to the north-eastern corner of Gilchrist Park.
Public land – Narellan Road (former road)	North of Narellan Road bridge	Avoid RailCorp's future works to extend the stabling yard south of the station. A rectangular portion of land (less than 20 metres by 15 metres) would be required for acquisition.
Public land – Bow Bowling Creek	North of Narellan Road bridge	Avoid RailCorp's future works to extend the stabling yard south of the station. A strip of land (less than 5 metres in width) would be required along a short stretch of Bow Bowling Creek.
Public land – Campbelltown City Council	Between Bow Bowling Creek and Farrow Road	Avoid RailCorp's future works to extend the stabling yard south of the station. A strip of land (less than 30 metres at its widest point and extending approximately 450 metres) would be required for acquisition.
Public land – Farrow Road	South of Campbelltown Railway Station	Avoid RailCorp's future works to extend the stabling yard south of the station. A strip of land approximately 20 metres in width along Farrow Road, with the alignment of Farrow Road altered to the west.
Private land – No. 8 and 10 Farrow Road	South of Campbelltown Railway Station on Farrow Road	Avoid RailCorp's future works to extend the stabling yard south of the station. A strip of land would be required from the two industrial properties fronting Farrow Road with the width determined by the realignment of Farrow Road to the west through the front setback of the properties.
<i>North of Campbelltown Railway Station</i>		
Public land – Badgally Road	North of Campbelltown Railway Station	Avoid RailCorp's future works to extend the stabling yard north of the station. A strip of land less than 8 metres in width would be required along eastern boundary, currently used for commuter car parking.
Private land – RailCorp easement to rear of No. 2, 4, 6, 8, 10, 12 and 14 Watsford Road	North of Campbelltown Railway Station on Watsford Road	Avoid RailCorp's future works to extend the tracks for the station platforms to the north of the station. A strip of land less than 8 metres in width would be required along the rear of each identified property relating to the current RailCorp easement for the 33 kilovolt power line.
Public land – Campbelltown Road	Campbelltown Road bridge	Accommodate the SSFL formation and avoid piers of the Campbelltown Road bridge. A portion of land would be required underneath the bridge.

Property	Location	Requirement
Public land - Campbelltown City Council	Leumeah Railway Station	Accommodate the SSFL corridor and avoid the station platform and facilities. A strip of land up to 10 metres in width would be required along the eastern boundary adjacent to the station.
Public land - Somerset Street	Minto Railway Station	Accommodate the SSFL corridor and avoid the station platform and facilities. A strip of land up to 5 metres in width would be required along the eastern side of Somerset Street adjacent to station.
<i>Between Glenfield and Casula Railway Stations</i>		
Public – disused road reserve	North of Cambridge Avenue bridge	Accommodate the passing loop for the SSFL operations. A small portion of land, less than 8 metres in width, would be required.
Public land – Liverpool City Council and State of New South Wales (Leacock Regional Park)	South of Glenfield flyover	Accommodate the southern approach ramp for the Glenfield flyover structure. Approximately 1.3 hectares of land would be required along the south-eastern boundary of park, approximately 50 metres in width at the widest point.
Private land – Glenfield Waste Facility	North of Glenfield flyover	Accommodate the northern approach ramp for the Glenfield flyover structure. Land would be required along the western boundary of the landfill facility, approximately 50 metres in width at the widest point.
Public land – Commonwealth of Australia (Department of Defence)	North of Glenfield flyover to south of Casula Railway Station	Accommodate the northern approach ramp for the Glenfield flyover structure, the northern end of the passing loop and a widened embankment for the SSFL formation. A strip of land, approximately 8 metres in width at the widest point to the south of the parcel, would be required along western boundary.
<i>Between Casula and Cabramatta Railway Stations</i>		
Public land - Liverpool City Council	Casula Railway Station	Accommodate the SSFL corridor and avoid the station platform and facilities. A strip of land up to 5 metres in width would be required along the western boundary of the parkland adjacent to the station.
Public land – Liverpool City Council (former golf course and Mill Park)	North of Casula Railway Station	Accommodate the widened embankment for the SSFL formation. A strip of land less than 10 metres in width at the widest point (with an average of less than 8 metres) would be required along the majority of the western boundary of the riverfront park area and Mill Park.
Public land – Liverpool City Council, Roads and Traffic Authority and Crown land (Lighthorse Park)	Lighthorse Park, between Riverpark Drive and Liverpool Railway Station	Accommodate the SSFL and avoid RailCorp's future works to upgrade the stabling yard south of Liverpool Railway Station and construct a new platform at the Station. A strip of land (less than 25 metres at its widest point and extending approximately 420 metres) would be required along the western boundary of the park as far south as Riverpark Drive.
Public land - South West Area Health Service	Liverpool Hospital, on the eastern side of the Main South Line rail corridor and to the north of the Elizabeth Street level crossing	Accommodate the SSFL and avoid RailCorp's future works to construct a new platform at Liverpool Railway Station and associated new railway track. A strip of land (approximately 3.5 metres at its widest point and extending approximately 200 metres) would be required along the hospital's boundary with the eastern side of the rail corridor



Property	Location	Requirement
Public land - Broomfield Street	Cabramatta Railway Station	Accommodate the SSFL corridor and avoid the station platform and facilities. A strip of land up to 10 metres in width (to the north of the station) would be required along the western side of Broomfield Street adjacent to the station.
<i>Leightonfield Railway Station</i>		
Public land – Llewellyn Avenue	Leightonfield Railway Station, near the Marple Avenue intersection	Accommodate the western connection into the Leightonfield yard. A strip of land less than 8 metres in width would be required along the road reserve.
<i>Sefton Railway Station</i>		
Public land - Wellington Road	Sefton Railway Station	Accommodate the SSFL corridor and avoid the station platform and facilities. A strip of land up to 3 metres in width would be required along the northern side of Wellington Road adjacent to the station.
<i>Auburn Road Bridge</i>		
Public land – Wellington Road	Auburn Road, Birrong	Accommodate the Sefton Park Junction underpass and realignment of the Auburn Road bridge. A strip of land less than 4 metres in width would be required along the Wellington Road reserve.

## Other issues

Construction of the proposed SSFL is not considered to be potentially hazardous and/or offensive and there would be no significant off-site risks during construction. Operational risks were assessed in accordance with the Australian Standard *AS/NZS 4360:2004 Risk Management*. An increase in the frequency of train movements by approximately 130% is predicted with the proposed SSFL by 2018. Such an increase in train movements could be managed on the SSFL without significantly increasing the individual risk. Similarly, environmental risks would not significantly increase with the predicted increase in train movements. An assessment of societal risk using a methodology developed by the International Atomic Energy Association indicated that, at current and future train frequencies, most societal risks would be classed as 'as low as reasonably practicable'.

Construction and operation of the proposed SSFL would utilise non-renewable resources including construction materials, water and energy, primarily in the form of diesel fuel. The ARTC would seek to minimise impacts by utilising recycled construction materials wherever possible and implementing energy efficiencies during construction and operational maintenance activities. The projected shift of freight from road to rail would have an estimated fuel saving of between 78,330 to 81,780 litres by 2018. The estimated greenhouse gas savings during operation of the SSFL in 2018 is between 235 to 245 tonnes of carbon dioxide per annum, which is equivalent to refilling an average car fuel tank approximately 2,130 times.

## Environmental management

The ARTC is currently implementing an Environmental Management System aligned with the international standard ISO14001:2004. The system enables the ARTC to minimise impacts on the environment associated with its infrastructure management and maintenance activities. This system would be used by the ARTC to manage the SSFL project. It would provide the framework for implementing environmental management measures documented in the Environmental Assessment, and any conditions of approval, licences or permits.

The ARTC would require the contractor to develop and implement a Construction Environmental Management Plan. This Plan would address management measures that would be implemented to ensure compliance with the specific environmental issues identified in the Environmental Assessment. The Plan would cover the environmental protection practices, resources and the sequence of activities required to comply with the relevant environmental legislation, conditions of any applicable licences, approvals and permits.

On completion of the proposed SSFL, the ARTC would manage any ongoing environmental issues associated with operation and maintenance activities through its Environmental Management System and standard operational procedures.

## Justification

Justification for construction and operation of the proposed SSFL was considered against the principles of ecologically sustainable development and project objectives. The proposed SSFL is consistent with the four principles of ecologically sustainable development: the precautionary principle; intergenerational equity; conservation of biological diversity and ecological integrity; and improved valuation, pricing and incentive mechanisms. In relation to the project objectives the proposed SSFL would:

- improve the reliability and travel times for rail freight services between Melbourne, Sydney and Brisbane by allowing freight movements to operate independently of passenger services, and removing the inefficiencies created by current operational restrictions at times of peak passenger movement in the morning and afternoon
- improve rail freight service competitiveness relative to road freight services, by reducing costs and improving travel times for rail freight
- reduce delays to passenger services caused by freight operations, by providing a dedicated and independent rail line for freight services
- support state and national economic development by providing key freight infrastructure and reducing rail freight costs
- improve freight transport infrastructure for the Sydney region with flow on benefits for the NSW economy
- create environmental benefits through transfer of freight from road to rail
- reduce the consumption of non-renewable diesel fuels for each gross tonne kilometre of freight on rail compared to alternative road haulage
- manage potential environmental impacts through incorporation of sustainability principles in the design and operation of the proposed SSFL.