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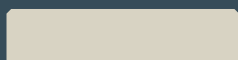
ARTC

CABRAMATTA LOOP PROJECT

ENVIRONMENTAL IMPACT STATEMENT



VOLUME 1 —
MAIN REPORT



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Volumes 2 to 5 – Technical reports

The following technical reports informed preparation of the EIS.

VOLUME 2	Technical Report 1	Traffic, transport and access impact assessment
	Technical Report 2	Noise and vibration impact assessment
VOLUME 3	Technical Report 3	Air quality impact assessment
	Technical Report 4	Biodiversity development assessment report
	Technical Report 5	Hydrology and flooding impact assessment
VOLUME 4	Technical Report 6	Soils and contamination impact assessment
	Technical Report 7	Surface water and groundwater quality impact assessment
	Technical Report 8	Historical heritage assessment and statement of heritage Impact
VOLUME 5	Technical Report 9	Aboriginal and cultural heritage impact assessment
	Technical Report 10	Landscape and visual impact assessment
	Technical Report 11	Social impact assessment
	Technical Report 12	Climate change risk assessment


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Certification

Submission of environmental impact statement

Prepared under Division 5.2 of the Environmental Planning and Assessment Act 1979 (NSW)

Environmental impact statement prepared by:

Name	Aryel Pylotis
Qualifications	Bachelor of Science (Honours)
Address	GHD Pty Ltd 133 Castlereagh Street, Sydney NSW 2000
Responsible person name and address (proponent)	Brian Green General Manager, Asset Management Interstate Division Australian Rail Track Corporation GPO Box 14 Sydney NSW 2001
The address of the land to which the statement relates	Land within the Fairfield and Liverpool local government areas as described within this environmental impact statement.
Description of the infrastructure to which this statement relates	Construction and operation of a 1.65 kilometre long section of new track adjacent to the existing Southern Sydney Freight Line track between the Hume Highway and Cabramatta Road East road overbridges in the suburbs of Warwick Farm and Cabramatta. The project also includes track realignment, bridge works and road works.
Environmental impact statement	An environmental impact statement is attached addressing all matters in accordance with Division 5.2 of the <i>Environmental Planning and Assessment Act 1979</i> (NSW) and Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i> (NSW).
Declaration	I certify that I have prepared this environmental impact statement in accordance with the Secretary's Environmental Assessment Requirements dated 17 May 2018. The environmental impact statement contains all available information that is relevant to the environmental assessment of the infrastructure to which the statement relates. To the best of my knowledge, the information contained in the environmental impact statement is neither false nor misleading.
Signature	
Name	Aryel Pylotis
Date	15 August 2019

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Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
ASS	acid sulfate soils
AEP	annual exceedance probability
AHD	Australian height datum
AHIMS	Aboriginal Heritage Information Management System
the Air NEPM	<i>National Environment Protection (Ambient Air Quality) Measure</i>
ANZECC	Australian and New Zealand Environment and Conservation Council
the Approved Methods	<i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i>
ARTC	Australian Rail Track Corporation
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASRIS	Australian Soil Resource Information System
Australian Government	Government of the Commonwealth of Australia
BAM	Biodiversity Assessment Method
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
the Blue Book	<i>Managing Urban Stormwater: Soils and Construction Volume 1</i>
the Code	Code of practice for archaeological investigation of Aboriginal objects in NSW 2010
the Cycleway	Parramatta to Liverpool Cycle Rail Trail
CEMP	Construction environmental management plan
CEEC	Critically endangered ecological community
CLM Act	<i>NSW Contaminated Land Management Act 1997</i>
CNVS	Construction Noise and Vibration Strategy
CO	Carbon monoxide
CPTED	Crime Prevention Through Environmental Design
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
dB	Decibel is the logarithmic unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics.
dBA	Frequency weighting filter used to measure 'A-weighted' sound pressure levels which confirms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.
DEE	Department of the Environment and Energy
DIRDC	Department of Infrastructure, Regional Development and Cities

Abbreviation	Definition
DPI	Department of Primary Industries
EEC	Endangered ecological community
EIS	Environmental impact statement
EIA-N04	<i>Environmental Impact Assessment Guidance Note - Guidelines for landscape character and visual impact assessment</i>
EPA	NSW Environment Protection Authority
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment protection licence
ENM	Excavated natural material
FM Act	NSW <i>Fisheries Management Act 1994</i>
g/L	Gram per litre
GHG	Greenhouse gas
GRCCC	Georges River Combined Councils Committee
HC	Hydrocarbons
ICOMOS	Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013 (Burra Charter).
ICNG	Interim Construction Noise Guideline
IMEX	Import- Export
Infrastructure SEPP	State Environmental Planning Policy (Infrastructure) 2007
LALC	Local Aboriginal Land Council
LCZs	Landscape Character Zones
LEP	Local environmental plan
LGA	Local government area
LoS	Level of Service is the a performance rating for an intersection or road has which dependent on the magnitude of delays and spare capacity experienced.
LPG	Liquid petroleum generation
µg/m ³	Micrograms (one-millionth of a gram) per cubic meter air
ug/L	Micrograms per Litre
uS/cm	Microsiemens per centimetre
MFN	Metropolitan Freight Network
MNES	Matters of National Environmental Significance
Mt CO ₂ -e	Metric tons of carbon dioxide equivalent
NCA	Noise catchment area
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure

Abbreviation	Definition
'The Air' NEPM	National Environmental Protection(Ambient Air Quality) Measure
NGER	National Greenhouse Gas and Energy Regulations
NO	Nitrogen monoxide
NO ₂	Nitrogen dioxide
NPI	National Pollutant Inventory
NPW Act	NSW <i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
NTU	Nephelometric Turbidity Units
O ₃	Ozone
OEHL	NSW Office of Environment and Heritage
PAD	Potential archaeological deposit
PCTs	Plant Community Types
PM _{2.5}	Particulate matter (airborne dust) with a size of 2.5 micrograms
PM ₁₀	Particulate matter 10 micrometres or less in diameter
PMF	Probable maximum flood
POEO Act	NSW <i>Protection of the Environment Operations Act 1974</i>
the Regulation	Environmental Planning and Assessment Regulation 2000
RAP	Registered Aboriginal Party
RailCorp	Rail Corporation NSW
RING	<i>Rail Infrastructure Noise Guideline</i>
RNP	<i>Road Noise Policy</i>
Roads and Maritime	Roads and Maritime Services
SDSA	Southern Districts Softball Association
SEARs	Secretary's environmental assessment requirements (for the EIS)
SEED	Sharing and Enabling Environmental Data
SEPP	State Environmental Planning Policy
SO ₂	Sulfur dioxide
SPRAT	Species profiles and threats database
SSFL	Southern Sydney Freight Line
TBEIA	Task Based Environmental Impact Assessment
t CO ₂ -e	tonnes of carbon dioxide equivalent emissions
TfNSW	Transport for New South Wales
TEU	Twenty foot equivalent units (used to describe cargo capacity)
TOC	Train Operating Conditions

Abbreviation	Definition
VENM	Virgin excavated natural material
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WRAP	<i>Western Regional Air Partnership Fugitive Dust Handbook</i>

Glossary

Term	Definition
Aboriginal object	Defined by the <i>National Parks and Wildlife Act 1974</i> as: 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'.
Aboriginal site	A place where physical remains or modification of the natural environment indicate past and 'traditional' activities by Aboriginal people. Site types include artefact scatters, isolated artefacts, burials, shell middens, scarred trees, quarries and contact sites. Includes sites listed on the. Also known as Aboriginal objects.
Aboriginal places of heritage significance	Defined in the Standard Instrument - Principal Local Environmental Plan as an area of land, the general location of which is identified in an Aboriginal heritage study adopted by the Council, and that may be shown on the Heritage Map. The term may include (but is not limited to) places that are declared as Aboriginal places under section 84 of the <i>National Parks and Wildlife Act 1974</i> .
Absorptive capability	Absorptive capability relates to the ability of the landscape character zones to absorb the proposal within the existing landscape setting.
Annual exceedance probability	The chance of a flood of a nominated size occurring in a particular year. The chance of the flood occurring is expressed as a percentage and, for large floods, is the reciprocal of the ARI. For example, the 1 per cent AEP flood event is equivalent to the 100 year ARI flood event.
Approved methods	<i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i> (DEC, 2005)
Aquifer	A layer of soil or rock with sufficient porosity and permeability to enable usable quantities of water to be extracted from it.
Ausplume	A software implementation of the Gaussian plume dispersion model based on the Victorian Environment Protection Authority's <i>Plume Calculation Procedure</i> (EPAV 1985).
Average recurrence interval	The long term average number of years between the occurrence of a flood of a nominated size.
Ballast	Crushed rock, stone etc used to provide a foundation for a railway track. Ballast usually provides the bed on which railway sleepers are laid, transmits the load from train movements, and restrains the track from movement.
Biophysical environment	The physical environment (water, soil etc) as well as the biological activity within it (plants, animals etc).
Botany rail line	A dedicated freight rail line that forms part of the Sydney Freight Network. The line extends from near Marrickville Station to Port Botany.
CALMET	CALMET is a meteorological model which includes a diagnostic wind field generator containing objective analysis and parameterized treatments of slope flows, kinematic terrain effects, terrain blocking effects, and a divergence minimization procedure, and a micro-meteorological model for overland and overwater boundary layers.
CALPUFF	CALPUFF is a non-steady-state Lagrangian Gaussian puff model containing modules for complex terrain effects, overwater transport, coastal interaction effects, building downwash, wet and dry removal, and simple chemical transformation.
Classified road	A road that meets the definition of a classified road and is listed as such under the <i>Roads Act 1993</i> – includes main roads, highways, freeways etc.
Climate	The average weather experienced at a site or region over a period of many years, ranging from months to many thousands of years. The relevant measured quantities are most often surface variables such as temperature, rainfall and wind.

Term	Definition
Climate scenario	A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models.
Construction compound	An area used as the base for construction activities, usually for the storage of plant, equipment and materials and/or construction site offices and worker facilities.
Culvert	A structure that allows water to flow under a road, railway, track, or similar obstruction.
Dangerous goods	Dangerous goods are substances or articles that pose a risk to people, property or the environment, due to their chemical or physical properties. They are usually classified with reference to their immediate risk.
Embankment	A raised area of earth or other materials used to carry a rail line in certain areas.
Ecologically sustainable development	Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased.
Emission	A substance discharged into the air.
Existing rail corridor	The corridor within which existing rail infrastructure, subject to works as part of the project, are located.
Formation	The earthworks/material on which the ballast, sleepers and tracks are laid.
Freight	Goods transported by truck, train, ship, or aircraft.
Haulage Routes	Routes for the movement of construction equipment and materials.
Heritage listed	An item, building or place included on statutory heritage lists maintained by local, State and/or the Australian Government.
L _{A90} (period)	The sound pressure level exceeded for 90 per cent of the measurement period.
L _{Aeq} (time)	Typically used to describe ambient (background) noise levels.
L _{Aeq} (1 hour)	The busiest 1-hour 'equivalent continuous noise level' – it represents the typical L _{Aeq} noise level from all the proposal noise events during the busiest 1-hour of the assessment period.
L _{Aeq} (9 hour)	The night-time 'equivalent continuous noise level' - it represents the cumulative effects of all the proposal noise events occurring in the night-time period from 10.00 pm to 7.00 am.
L _{Aeq} (15 hour)	The daytime 'equivalent continuous noise level' - it represents the cumulative effects of all the proposal noise events occurring in the daytime period from 7.00 am to 10.00 pm.
L _{Aeq} (24 hour)	The 'equivalent continuous noise level', sometimes also described as the 'energy-averaged noise level' – it represents the cumulative effects of all the proposal noise events occurring in one day.
L _{Amax}	The maximum sound level recorded during the measurement period.
Landscape	All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.
Landscape character	The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place.
Landscape character zone	An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately adjacent.
Landscape feature	A component, part or feature of the landscape that is prominent or eye-catching, eg hills, buildings, vegetation.

Term	Definition
Landscape quality	Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition.
Level of service	Defined by Austroads as a measure for ranking operating road and intersection conditions, based on factors such as speed, travel time, freedom to manoeuvre, interruptions, comfort and convenience.
Local road	Road used primarily to access properties located along the road.
Passing loop	A section of track off to the side of the main track/s that allows a train to move to the side.
Possession	A period of time during which a rail line is blocked to trains to permit work to be carried out on or near the line.
Project	The construction and operation of the Cabramatta Loop.
Project site	The area that would be directly affected by construction (also known as the construction footprint). It includes the location of operational project infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of the storage areas/compounds sites etc, that would be used to construct that infrastructure.
Rail corridor	The corridor within which the rail tracks and associated infrastructure are located.
Rating background level	The underlying level of noise present in an area once transient and short-term noise events are filtered out.
Sensitivity	The sensitivity of a landscape character area or view and its capacity to absorb change. In the case of visual impact this also relates to the type of viewer and number of viewers.
Spoil	Material generated by construction.
Section 170 register	Under section 170 of the <i>Heritage Act 1977</i> , all state government agencies must keep and administer a database of heritage assets called a Section 170 Heritage and Conservation Register.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
Slew ing	Track realignment.
Study area	The study area is defined as the wider area including and surrounding the project site, with the potential to be directly or indirectly affected by the project (for example, by noise and vibration, visual or traffic impacts). The actual size and extent of the study area varies according the nature and requirements of each assessment.
Sydney Freight Network	A network of dedicated railway lines for freight in Sydney, linking NSW's rural and interstate rail network with Sydney's main freight yard at Enfield and Port Botany. Its main components are the Southern Sydney Freight Line and a line from Sefton to Enfield and Port Botany. The network is managed by ARTC.
Track	The structure consisting of the rails, fasteners, sleepers and ballast, which sits on the formation.
Visual amenity	The value of a particular area or view in terms of what is seen.
Visual catchment	Extent of potential visibility to or from a specific area, feature or proposal.
View	The visual experience from the viewer's perspective.
Waste	Waste is defined by the EPA as any matter (whether liquid, solid, gaseous or radioactive) that is discharged, emitted or deposited in the environment in such volume, constituency, or manner as to cause an alteration to the environment.

Term	Definition
Waste management hierarchy	The waste management hierarchy is a set of priorities for the efficient use of resources, which underpins the objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i> . The waste management hierarchy progresses from avoidance (most preferred), to re-use/recycling, to disposal (least preferred).
Work area	Individual areas within the project site that are subject to construction at any one time.

Executive summary

Overview

Australia's freight task is set to experience significant growth over the coming decades. The existing freight infrastructure cannot support this projected growth, with increasing pressure on already congested roads and rail lines through Sydney, and increasing use of heavy trucks. The Australian and NSW Governments have identified clear objectives to increase the share of freight moved by rail – from 17.5 per cent in 2016 to 28 per cent by 2021 (Transport for NSW, 2018d, Infrastructure Australia, 2018).

Over the next 20 years, the predicted increase in container rail freight volumes on Sydney's rail freight network will put more pressure on existing rail infrastructure, which includes the Southern Sydney Freight Line (SSFL).

Australian Rail Track Corporation's *Sydney Metropolitan Freight Strategy* (ARTC, 2015) considers existing rail freight capacity issues and identifies priority actions to respond to rail freight demands on Sydney's rail freight network, including the SSFL. This includes the Cabramatta Loop Project (this project).

The project is one of a number of initiatives proposed to increase the capacity of Sydney's rail freight network. In addition to the project, ARTC is also proposing to undertake the Botany Rail Duplication Project, which would involve duplicating a section of the Botany Line.

The Australian Government has recognised the need for the Cabramatta Loop and Botany Rail Duplication projects and announced a funding commitment of \$400 million in the 2018 budget for both projects.

The project

The project would comprise the construction and operation of a passing loop on the SSFL to enable freight trains, up to 1,300 metres long and travelling in either direction, to pass each other. The project would be partly located within the existing rail corridor between the Hume Highway and Cabramatta Road East road overbridges in the suburbs of Warwick Farm and Cabramatta. In addition, the project includes works in Broomfield Street and Jacquie Osmond Reserve, adjacent to the rail corridor.

The project would involve:

- new rail track – providing a 1.65 kilometre long section of new track, adjacent to the existing track, with connections to the existing track at the northern and southern ends to form a loop
- track realignment – moving about 550 metres of existing track sideways (slewing) to make room for the new track
- bridge works – constructing two new bridge structures adjacent to the existing rail bridges over Sussex Street and Cabramatta Creek
- road works – reconfiguring Broomfield Street for a distance of about 680 metres between Sussex and Bridge streets.

Ancillary work would include communication, signalling and power upgrades, works to existing retaining and noise walls, drainage work and protecting/relocating utilities. In addition, minor works in the form of new signalling would be installed at a number of locations within the rail corridor.

The project is State significant infrastructure in accordance with Division 5.2 of the *Environmental Planning and Assessment Act 1979* by operation of State Environmental Planning Policy (State and Regional Development) 2011 and State Environment Planning Policy (Infrastructure) 2007. As State significant infrastructure the project is permissible without development consent and is subject to assessment and approval by the NSW Minister for Planning and Public Spaces.

Construction and operation of the project

Subject to approval of the project, detailed design is proposed to commence following approval and construction would likely commence in early 2021 and is expected to take about two years. Construction is expected to be completed in early 2023.

Construction of the project would broadly involve the following main work phases:

- enabling works (including site establishment and protection or relocation of utilities)
- main construction works (including the new track, track realignment, bridge works, road works at Broomfield Street and Sussex Street, and ancillary infrastructure and works such as the noise wall, retaining walls and embankment at Jacqui Osmond Reserve)
- testing and commissioning works.

In order to minimise the impact to Sydney's freight network, it is anticipated that the project would predominantly be constructed while the existing rail line continues to operate. Some features of the project would need to be constructed during programmed rail possession periods when rail services along the Southern Sydney Freight Line and, in some cases, adjacent commuter train lines, do not operate.

The project would operate as part of the SSFL and would continue to be managed by the ARTC. ARTC works with rail operators to provide access to rail for businesses and producers across Australia. Freight train services and rolling stock which utilise the ARTC network are currently, and would continue to be, owned and operated by a variety of operators.

It is estimated that once the project is operational, there may be an increase in freight train movements from 48 up to 72 per day. The passing loop and existing Southern Sydney Freight Line would continue to operate during the existing operational hours, which are 24 hours per day, 365 days per year. Operational activities would continue to be undertaken in accordance with ARTC's operating system which includes an Environmental Management System and ARTC's existing environmental protection license (EPL # 3142).

Project need and benefits

Efficient access to and from Port Botany is critical to the economic growth and prosperity of Sydney. Over the next 20 years, container freight, air freight, air travel and general traffic in and around the Port Botany area are expected to grow significantly. This will put more pressure on roads and other infrastructure and impact local communities. Without significant infrastructure investment, existing transport constraints and challenges will worsen.

The amount of container freight handled by Port Botany is predicted to significantly increase. The Australian and NSW Governments have identified clear objectives to increase the share of this freight that is moved by rail. Transporting more freight to and from Port Botany by rail will place additional demands on the existing rail line, with freight that cannot be accommodated on rail placing demands on the surrounding congested road network.

The SSFL is already operating close to capacity, limiting its ability to adequately service future demands for rail freight transport. The single track section of the SSFL between Cabramatta and Warwick Farm constrains the ability to increase the share of freight moved by rail on the line. Additional demand arising from the predicted growth in container freight has the potential to exacerbate this situation, impacting on reliability and restricting the efficient movement of freight across the broader Sydney rail network.

The primary objective of the project is to increase capacity to meet the forecast demand for container freight transport on the Southern Sydney Freight Line. Secondary objectives are to provide:

- increased reliability for freight customers
- increased operational efficiency and flexibility
- increased rail market share for containerised freight.

It is intended the project would:

- alleviate constraints on, and increase the capacity of, Sydney's freight rail network to meet existing and future demands
- support the operation of intermodal terminals, including Enfield, Chullora and Moorebank
- encourage a shift in freight transport from road to rail, and support a reduced rate of growth in truck movements and associated traffic congestion.

The project is one of a number of initiatives proposed to increase the capacity of Sydney's rail freight network. In addition to the project, ARTC is also proposing to undertake the Botany Rail Duplication Project, which would involve duplicating the Botany Line.

Environmental impact assessment

This environmental impact statement (EIS) has been prepared to support ARTC's application for approval of the project. It has been prepared in accordance with the environmental assessment requirements of the Secretary of the Department of Planning, Industry, Environment (the SEARs) dated 17 May 2018 and the form and content requirements of schedule 2 of the Environmental Planning and Assessment Regulation 2000.

Key biophysical and social aspects have been examined throughout the design development process. ARTC has also, and would continue to implement a comprehensive community and stakeholder consultation program to engage proactively with local communities and key stakeholders about the project and identify key potential impacts at an early stage. This has resulted in a number of design refinements and changes to the construction method that have mitigated potentially significant impacts.

Where impacts cannot be avoided through design refinement, appropriate and well proven mitigation and management measures have been developed and are provided in Chapter 22.

The following sections provide a summary of the main impacts identified within the EIS. The potential impacts of construction and operation of the project were assessed. Given the nature and size of the project the EIS considers the potential for impacts to the project site as well as the broader study area, where relevant.

The EIS was informed by specialist technical assessments of the key environmental issues defined by the SEARs, in addition to other relevant environmental issues.

Traffic, transport and access

Construction would generate additional vehicle movements, including light and heavy vehicles. There would also be local traffic disruptions, minor delays and short-term access restrictions and detours for road users during road and bridge works, particularly during the Broomfield Street realignment works. Most intersections potentially affected by the project would continue to operate throughout the construction period at a level of service comparable to existing conditions.

Minor access diversions would be in place for pedestrians and cyclists during works on Cabramatta Creek bridge. There may be temporary disruptions to access for properties directly fronting Broomfield Street during enabling works.

Parking impacts are likely during construction and approximately up to 46 on-street parking spaces (consisting of both formalised angled parking and informal kerbside parallel parking) would be unavailable

during works on Broomfield Street. It is anticipated that construction worker parking would be kept to designated compounds and areas designated for construction workers only. An accessible temporary at-grade parking area is being investigated to provide about 40 parking spaces within 800 metres of Cabramatta Station during construction.

There are no changes expected to occur to the existing road network (including pedestrian and cyclist networks) or access arrangements to public transport as a result of the project.

The project would result in the loss of some parking spaces on the western side of Broomfield Street as a result of angled kerb parking converted to parallel parking. Up to 11 spaces are anticipated to be impacted, however, parking surveys indicate there is sufficient capacity within Broomfield Street to absorb this loss.

Noise and vibration

Given the nature and duration of works and close proximity of receivers, airborne noise during construction is expected to exceed noise management levels along the alignment. This would be consistent for works during and outside standard construction hours. The highest construction noise impacts are expected during road earthworks, noise wall construction and track installation.

Receivers located along Railway Parade, Broomfield Street, Station Street, Lawrence Hargrave Road, Todman Road and Sappho Road would be expected to experience the worst-case noise impacts as they are located directly adjacent to the construction works. In general, construction activities would move along the construction alignment. Impacted receivers would only experience the predicted worst case noise levels when construction works are located closest to the receiver.

Construction works would be required outside standard construction hours, due to the need to minimise impacts on the road network. During the night time period, airborne noise levels are expected to exceed the sleep disturbance criteria at some locations during certain activities.

Residential receivers within 140 metres of vibration intensive works have the potential to experience impacts on human comfort. However, this is considered conservative and the construction vibration would be intermittent. No residential or commercial sensitive receivers are predicted to be impacted by vibration during operation.

The existing noise wall would be replaced as part of the project. The predicted noise levels during operation would be exceeded for one sensitive receiver with the replacement noise wall in place. This receiver will be considered for mitigation.

Biodiversity

The project site does not contain native vegetation and clearing required for the project would result in 3.5 hectares of non-native vegetation. This vegetation has low biodiversity value given its context and habitat value for threatened species. The clearing would involve the removal of some individual native plants, including mature planted street trees and trees in parkland. The project would result in the removal of 43 planted trees with the majority of these located along Broomfield Street.

Construction of the project would remove a very small area of fauna habitat, as most of the project site is already cleared land. The vegetation that would be removed or modified would have little value for native fauna species given its structure, condition and proximity to the heavy rail corridor.

No endangered aquatic communities, aquatic fauna or marine vegetation occur in the project site and no significant impacts on riparian vegetation or habitats downstream of the project site are anticipated as a result of the project. There would be minor, if any impacts on Key Fish Habitat in Cabramatta Creek as a result of the project.

The wider study area contains some land with biodiversity value, including a threatened flora species, *Acacia pubescens*, and threatened ecological community, River-flat Eucalypt Forest. This species would not be

impacted by the project and the project site has been designed to avoid any vegetation removal of the threatened ecological community.

Hydrology, flooding and water quality

The project site, particularly near Cabramatta Creek, would be located in an area that is currently subject to flooding conditions. Any flood impacts during construction are expected to be localised and relatively minor and would be effectively managed through the implementation of mitigation measure. The locations of compounds, work sites and undertaking of activities within designated flood hazard areas would not result in flood affectation of other properties, assets and infrastructure

Construction activities could impact also water quality if soil or watercourses are disturbed, contamination is generated, or uncontrolled discharges of substances to watercourses occur.

Based on the flooding assessment undertaken the inclusion of structures as part of the project (with the exception of the proposed drainage works) would have a minimal impact on the flooding of Cabramatta Creek for the full range of flood events. Minimal increases (of less than 11 millimetres) in flood levels are expected in the majority of the study area for the one per cent annual exceedance probability (AEP) and the one per cent AEP plus climate change event. However, in the probable maximum flood event, an extremely rare event, these impacts are more pronounced at around 75 mm, but occur only in areas where the rail formation is already predicted to be flooded by several metres depth.

With regards to the proposed drainage changes along Broomfield Street the flooding assessment indicated that the project would have a minimal impact on the flooding of the majority of properties along Broomfield Street during the one per cent AEP flood event. Eight properties that currently experience flooding along Broomfield Street would experience flooding levels beyond the flooding criteria adopted for the assessment. However, for the majority of these eight properties the flooding impact due to the project would be confined to the front yard of and the flood level increase would be marginal (up to 8 millimetres greater than the proposed design criteria). Further refinements of the drainage design will be undertaken during detailed design to mitigate the flood impacts noted above. These design refinements could include changing the proposed level of Broomfield Street to match the existing grading.

Heritage

There are multiple heritage items within and adjacent to the project site. During construction, there is potential for vibration impacts to two locally listed bridges adjacent to the proposed bridges and the archaeological remains of a locally listed federation cottage.

Once operational, there may be indirect impacts to the aesthetic significance and views of the two locally listed bridges and indirect impacts to the heritage values of the two station groups by changing the settings of the items.

A search of Aboriginal cultural heritage sites within proximity to the project site, identified the presence of archaeological sites and an Aboriginal Place. Two sites are located within 50 metres of the project site and would not be impacted as a result of the project. Impacts to the area of moderate archaeological potential within Jacquie Osmond Reserve cannot be avoided as utility works are required. Access would also be required from this location to build a retaining wall alongside the existing rail corridor.

Land use and property

Land uses within the project site include the existing rail and road corridor, open space recreational and commercial/industrial. Direct impacts on land use during construction would include temporary land take to locate some of the proposed compounds and work sites and to temporarily relocate utilities. It would also include the short term presence of construction equipment, plant, vehicles, compounds, and work sites within the project site.

Where the compound and work sites are proposed, the recreational use of Jacquie Osmond Reserve and Warwick Farm Recreation Reserve would be temporarily restricted during construction. Impacts to major utilities have been identified for the road works along Broomfield Street and for the construction of the passing loop in the southern extent of the project.

Some permanent acquisition is required to the east of the existing rail corridor to accommodate the passing loop. The project would not directly impact any local urban release areas identified for future residential or employment land. The project would enable the increase in economic productivity and economic growth by contributing to a freight and logistics network that is competitive and efficient.

Landscape and visual amenity

The existing landscape and visual environment consists of the rail and road corridor, residential areas either side of the rail corridor, commercial and industrial land uses near the rail corridor and passive (Cabramatta Creek) and active recreation (Jacquie Osmond Reserve and Warwick Farm Recreation Reserve). Sensitive visual receivers in the study area include residential properties along Broomfield and Sussex Street, users of Jacquie Osmond Reserve and pedestrians, road users and cyclists along Cabramatta Road.

Temporary visual impacts would be experienced during construction in the vicinity of construction compounds, and work sites. Visible elements would include machinery and equipment, site hoardings, partially complete structures, and other works. However, these impacts would be temporary and limited to the construction period.

The project would also result in the removal of the existing street trees and reconfiguration of Broomfield Street. Additionally trees would be removed in Jacquie Osmond Reserve and an embankment constructed parallel to the rail corridor.

A landscape concept was prepared as part of the reference design through an iterative design process that considered the urban landscape as well as the findings of a preliminary landscape and visual impact analysis. The resulting landscape and visual impact assessment took the landscape concept plan into consideration in the finalisation of the project impacts.

The assessment found that the visual impacts from the project range from moderate-to-low to high-to-moderate. The most significant impact is from the works along Broomfield Street due to the residential receiver type, their proximity to the project and the amount of visual change due to the project.

Mitigation measures have been developed to minimise the potential landscape and visual impacts of the project. These measures include the preparation of an urban design and landscape plan which would build on the existing landscape concept.

Other

In addition to the above, other environmental issues, including socio-economic, air quality, soils and contamination, health, safety and hazards, and waste management, were also considered to develop a comprehensive environmental management framework for the project.

Potential impacts resulting from the project are considered manageable through the implementation of the proposed mitigation measures.

The detailed design for the project would be developed with the objective of minimising potential impacts on the local and regional environment, and the local community. The design and construction methodology would continue to be developed with this overriding objective in mind, taking into account the input of stakeholders.

Next steps

The Department of Planning, Industry and Environment (formerly the Department of Planning and Environment) will place the EIS on exhibition for a minimum of 28 days. During the exhibition period, government agencies, project stakeholders and the community will be able to review the EIS and make a written submission to the Department of Planning, Industry and Environment for consideration in its assessment of the project.

Advertisements will be placed in newspapers to advise of the exhibition period, where the EIS can be viewed, and provide contact details.

Following the exhibition period, ARTC will consider the issues raised in submissions and will respond to community feedback in a submissions report. The report will also document the outcomes of any ongoing investigations and design work identified following the exhibition of the EIS.

Should changes to the project be proposed during the exhibition period, a preferred project report would be prepared to assess the impacts of any changes. The submissions report would be integrated into this report.

If the project is approved, it would be undertaken in accordance with the mitigation measures proposed in the EIS, the submissions/preferred infrastructure report, and the conditions of approval.

ARTC is implementing a comprehensive community and stakeholder consultation program to engage proactively with local communities and key stakeholders about the project. Consultation with stakeholders and the community would continue throughout the detailed design and construction phase.

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PART A

BACKGROUND AND PROJECT DESCRIPTION



**CABRAMATTA
LOOP PROJECT**

—
ENVIRONMENTAL
IMPACT STATEMENT

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1 Introduction

1.1 Background

The Australian and NSW Governments have identified clear objectives to increase the share of freight moved by rail – from 17.5 per cent in 2016 to 28 per cent by 2021 (Transport for NSW, 2018d; Infrastructure Australia, 2016).

Over the next 20 years, container rail freight volumes on Sydney's rail freight network are predicted to increase substantially. The major drivers of this increase will be population growth, economic growth (resulting in increases in freight movements over and above the rate of population growth) and growth in global community demand (Transport for NSW, 2018d). This will put more pressure on existing rail infrastructure, which includes the Southern Sydney Freight Line (SSFL).

The SSFL was commissioned in 2013 and is a 36 kilometre long single bi-directional track dedicated freight line located between Macarthur and Sefton, adjacent to the Main Southern Line in Sydney's south-western suburbs. The SSFL is managed and maintained by the Australian Rail Track Corporation (ARTC).

In 2015 ARTC prepared the Sydney Metropolitan Freight Strategy (ARTC, 2015) which considered existing rail freight capacity issues and identified priority actions to respond to rail freight demands on Sydney's rail freight network. This strategy recommended a number of infrastructure projects to enhance the capacity of the freight network, including a passing loop at Warwick Farm and the duplication of the Botany Rail line. Based on the outcomes of this strategy in 2015, the then Department of Infrastructure and Regional Development made a recommendation to develop a rail loop aligned with the existing rail corridor between Cabramatta and Warwick Farm stations.

In May 2018, the Australian Prime Minister announced the Federal government's commitment to the Botany Rail Duplication Project, including the Cabramatta Loop Project, to the value of \$400 million. Consistent with this commitment ARTC proposes to construct and operate a passing loop for up to 1,300 metre length trains on the SSFL between Cabramatta and Warwick Farm stations (the Cabramatta Loop Project).

The Cabramatta Loop Project would allow freight trains to pass and provide additional rail freight capacity along the SSFL.

1.2 Project overview

To provide additional rail freight capacity along the SSFL, ARTC ('the proponent') is seeking approval to construct and operate the Cabramatta Loop Project ('the project').

The project would comprise the construction and operation of a passing loop on the SSFL to enable freight trains, up to 1,300 metres long and travelling in either direction, to pass each other. The project would be partly located within the existing rail corridor between the Hume Highway and Cabramatta Road East road overbridges in the suburbs of Warwick Farm and Cabramatta. In addition, the project includes works in Broomfield Street and Jacquie Osmond Reserve, adjacent to the rail corridor.

The location of the project is shown on Figure 1.1. Further information on the location and a description of the project site for the purposes of this environmental impact statement (EIS) is provided in Chapter 2 (Location and setting).

The project would operate as part of the SSFL and would continue to be managed by ARTC. ARTC manages and maintains the SSFL as part of its rail network across five states. ARTC works with rail operators to provide access to rail for businesses and producers across Australia. Freight train services and rolling stock which utilise the ARTC network are currently, and would continue to be, owned and operated by a variety of operators.

It is estimated that once the project is operational, there may be an increase in freight train movements from 48 up to 72 per day by 2033.

Further information on the project features, construction and operation is included in Chapter 6 (Project features and operation) and Chapter 7 (Construction).

The project is State significant infrastructure in accordance with Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), by operation of State Environmental Planning Policy (State and Regional Development) 2011 (the State and Regional Development SEPP) and State Environment Planning Policy (Infrastructure) 2007 (the Infrastructure SEPP). As State significant infrastructure the project the project is permissible without development consent and is subject to assessment and approval by the NSW Minister for Planning and Public Spaces.

Further information on the approval requirements is provided in Chapter 3 (Approval and assessment requirements).

1.2.1 Key features

Key features of the project include:

- new rail track – providing a 1.65 kilometre long section of new track adjacent to the existing track, with connections to the existing track at the northern and southern ends
- track realignment – moving about 550 metres of existing track sideways (slewing) to make room for the new track
- bridge works – constructing two new bridge structures adjacent to the existing rail bridges over Sussex Street and Cabramatta Creek
- road works – reconfiguring Broomfield Street for a distance of about 680 metres between Sussex and Bridge streets.

Ancillary work would include communication, signalling and power upgrades, works to existing retaining and noise walls, drainage work and protecting/relocating utilities. In addition, minor works in the form of new signalling would be installed at a number of locations within the rail corridor.

The key features of the project are shown on Figure 1.2.

1.2.2 Delivery of the project

The project as described in this EIS is based on the outcomes of the reference design for the project. Subject to approval of the project, detailed design is proposed to commence following approval and construction would likely commence in early 2021 and is expected to take about two years. Construction is expected to be completed in early 2023.

In order to minimise the impact to Sydney's freight network, it is anticipated that the project would predominantly be constructed while the existing rail line continues to operate. Some features of the project would need to be constructed during programmed rail possession periods when rail services along the SSFL and, in some cases, adjacent commuter train lines, do not operate. Possession periods typically occur for 48 hours over a weekend, four times per year.

1.3 Project objectives

The primary objective of the project is to increase capacity to meet the forecast demand for container freight transport on the SSFL. Secondary objectives are to provide:

- increased reliability for freight customers
- increased operational efficiency and flexibility
- increased rail market share for containerised freight.

It is intended that the project would:

- alleviate constraints on, and increase the capacity of, Sydney's freight rail network to meet existing and future demands
- support the operation of intermodal terminals, including Enfield, Chullora and Moorebank
- encourage a shift in freight transport from road to rail, and support a reduced rate of growth in truck movements and associated traffic congestion.

The project is one of a number of initiatives proposed to increase the capacity of Sydney's rail freight network. In addition to the project, ARTC is also proposing to undertake the Botany Rail Duplication Project, which would involve duplicating the Botany Line.

The Australian Government has recognised the need for the Cabramatta Loop and Botany Rail Duplication projects and announced a funding commitment of \$400 million in the 2018 budget for both projects. The Botany Rail Duplication Project is subject to a separate assessment and approval process, which is currently underway.

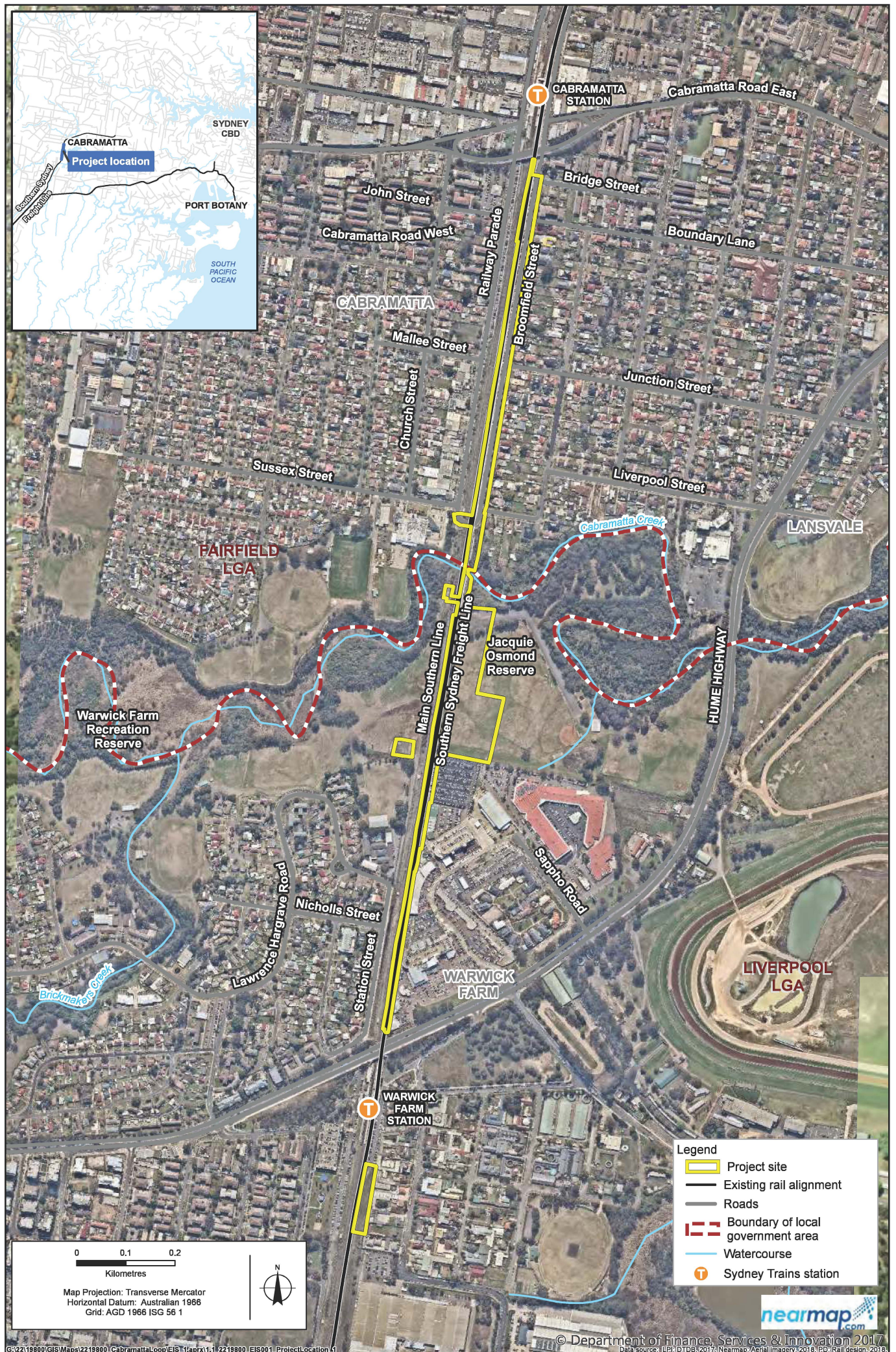


Figure 1.1 Location of the project

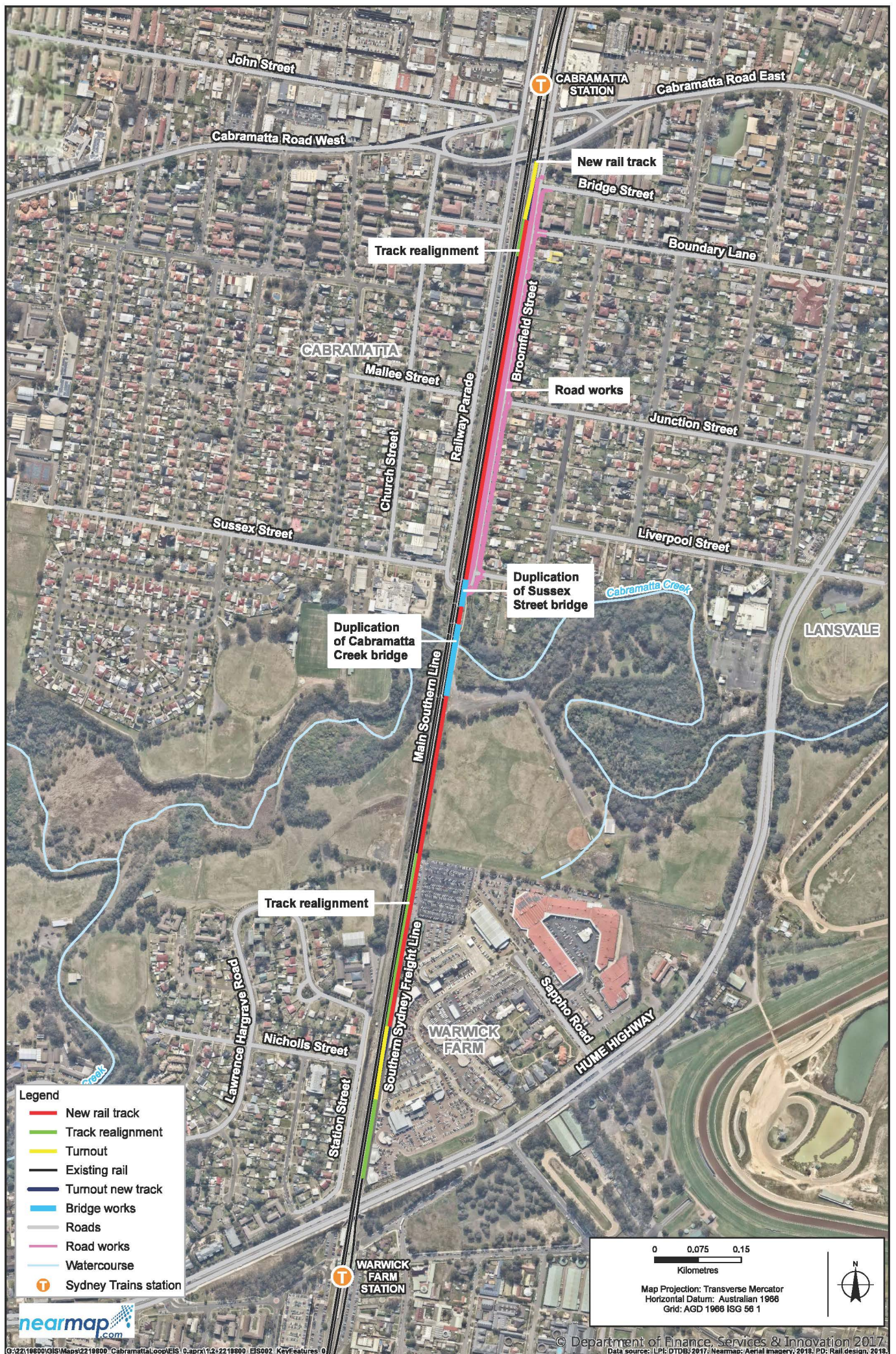


Figure 1.2 Key features of the project

1.4 The proponent

ARTC is the proponent of the project. ARTC is an Australian Government owned statutory corporation that manages more than 8,500 kilometres of rail track in NSW, Queensland, South Australia, Victoria and Western Australia. ARTC is responsible for:

- selling access to the rail network to train operators
- capital investment in the network
- managing train operations
- maintaining the network
- developing new business.

1.5 EIS purpose and structure

The EIS has been prepared to support the application for approval of the project as State significant infrastructure under Division 5.2 of the EP&A Act. It has been prepared in accordance with the environmental assessment requirements of the Secretary of the Department of Planning, Industry and Environment (the SEARs) dated 17 May 2018 and the form and content requirements of schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). The SEARs and requirements of the Regulation, as well as how they have been addressed in this EIS, are provided in Appendix A and Appendix B, respectively.

The EIS also documents the consultation undertaken by ARTC with the community and key stakeholders about the project and associated potential impacts. This is discussed in Chapter 4. The process, and the consideration of public submissions received as part of the EIS public exhibition, provides the basis for stakeholders to have their views on the project heard and considered, subsequently providing a mechanism for design refinements to further reduce potential impacts.

The EIS takes a local level approach to the assessment of potential environmental impacts due to the nature and size of the project.

The EIS is presented across a series of volumes. Volume 1 contains the EIS (this report) and its appendices. Volumes 2 to 5 provide the technical papers that inform the EIS. The EIS is structured as follows:

- Part A Background and project information:
 - an introduction to the EIS (Chapter 1)
 - a description of the project site and the general biophysical and socio-economic environment within which the project would be located (Chapter 2)
 - an overview of the statutory context and approval requirements for the project (Chapter 3)
 - a summary of the consultation that has occurred and is proposed for future project stages (Chapter 4)
 - a description of the background to the project, including the project need, alternatives to the project as a whole, how the design has developed, and the options considered as part of the design process (Chapter 5)
 - a description of the project features and operation (Chapter 6), including the design features and infrastructure proposed, operation, maintenance and other related information
 - a description of the indicative construction process and activities (Chapter 7).

- Part B Environmental assessment:
 - identifies potential environment impacts which may occur, including local traffic and access, heritage, visual, noise and vibration impacts (Chapters 8 to 21).
- Part C Synthesis and conclusion:
 - a consolidated summary of the key potential impacts, the proposed approach to environmental management and a compilation of the mitigation measures (Chapter 22)
 - conclusion and justification (Chapter 23)

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2 Location and setting

The EIS assesses the potential impacts of the project on the project site and, where relevant, the broader study area. This chapter describes the project site and study area for the purpose of the EIS, including a summary of its general biophysical and cultural (community, land use and socio-economic) environment.

Further information on the existing environment as it is relevant to each individual issue is provided in Chapters 8 to Chapter 21.

2.1 The project site

2.1.1 General description

The term 'project site' is used in this EIS to refer to the area that would likely be directly disturbed by construction of the project (for example, as a result of ground disturbance and the construction of foundations for structures). It includes the proposed location of construction activities, compounds and work sites, and the location of permanent operational infrastructure.

The project site is located about 35 kilometres west of the Sydney CBD in the City of Fairfield and City of Liverpool local government areas (LGAs). In the project site, the boundary of the LGAs runs along Cabramatta Creek. The northern extent of the project site is located in the vicinity of the intersection of Bridge and Broomfield streets, south of Cabramatta Station. The southern extent of the project site is located to the north of the Hume Highway and Warwick Farm Station (excluding construction compound C1 which is located to the south of Warwick Farm Station). The project site is shown on Figure 1.1.

The works associated with the project would be undertaken within and directly adjacent to the existing rail corridor (shown on Figure 1.1). The project site generally includes:

- the existing rail corridor for the SSFL (the existing rail corridor) between Cabramatta Station in Fairfield LGA and Warwick Farm train station in Liverpool LGA
- bridges crossing the rail corridor where works are proposed as part of the project (described in section 6.2.3)
- about 18,990 metres squared on Broomfield Street
- about 27,757 metres squared on Jacquie Osmond Reserve
- the proposed locations of work sites and construction compounds (described in section 7.4).

2.1.2 Land ownership

The majority of the project site (the existing rail corridor and shared path near Cabramatta Creek) is owned by the NSW Government (RailCorp). Small areas of land outside the corridor (a total of about 0.37 hectares) would be required to accommodate the passing loop and the associated widening of the rail corridor. The areas required would include:

- sections of the road corridor in Broomfield Street (owned by Fairfield City Council)
- a section of Jacquie Osmond Reserve owned by the Department of Planning, Industry and Environment (formerly the Department of Planning, Industry and Environment) but managed by Liverpool City Council
- a section of the rail corridor owned by Liverpool City Council
- a section of two privately owned commercial lots and one lot owned by Liverpool City Council in the southern part of the project site.

Additional agreements may be required for temporary use of land during construction. Further information on land requirements for the project is provided in section 6.5.

2.2 The study area

The term 'study area' is used to define the wider area, including and surrounding the project site, with the potential to be directly or indirectly affected by the project (for example, by noise and vibration, visual or traffic impacts). The actual size and extent of the study area varies according to the nature and requirements of each assessment and the relative potential for impacts. For example, the study area for the heritage assessment is generally restricted to the area with the potential for heritage impacts. In comparison, the study area for the noise and vibration assessment is based on noise catchment areas, and extends for a distance of about one kilometre on either side of the majority of the project site, and includes construction compounds.

2.2.1 General biophysical environment

A brief summary of the general biophysical characteristics of the study area is provided below.

2.2.1.1 Soils

The geology of the study area varies from Bringelly Shales in the north near Cabramatta Station, to Tertiary sediments and Quaternary alluvium in the south near the Warwick Farm end. The study area is located on the Blacktown soil landscape, which generally has low soil fertility and poor drainage.

The study area is located in an area of moderate salinity potential. Acid sulphate soils are located to the east of the project site, along Cabramatta Creek.

A contamination assessment undertaken to inform the EIS identified that there is a low risk of contamination within the project site.

Further information on geology and soils and soil contamination is provided in Chapter 12.

2.2.1.2 Water

The study area is located within the Cabramatta Creek catchment and the project site crosses Cabramatta Creek which flows eastwards to the Georges River. Within the project site water generally drains to Cabramatta Creek via stormwater drainage infrastructure.

Water quality within the catchment is generally poor because of the influence of run-off from urban areas.

The majority of the project site is subject to regular flooding from Cabramatta Creek and is located within a high flood risk precinct. Flooding issues generally result from the limited capacity of existing drainage infrastructure.

Further information on hydrology, flooding and water quality is provided in Chapter 13.

2.2.1.3 Biodiversity

The majority of the study area has been heavily modified by past and ongoing disturbances associated with urban development and the active rail and road corridor. Vegetation within the project site is dominated by planted native and exotic species. This includes vegetation in the form of street trees along Broomfield Street.

One listed ecological community, listed under *the Biodiversity Conservation Act 2016* (BC Act) occurs in the study area:

- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions' (River-Flat Eucalypt Forest).

The Cabramatta Creek Grey-headed Flying-fox (*Pteropus poliocephalus*) roost camp is located around 350 metres to the east of the project site. The Grey-headed Flying Fox is listed as a vulnerable species under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the BC Act.

The rail corridor also contains one stem of the threatened plant Downy Wattle (*Acacia pubescens*), which is listed as a vulnerable species under the EPBC Act and the BC Act.

Further information on biodiversity is provided in Chapter 11.

2.2.2 General social and cultural environment

A brief summary of the general social and cultural characteristics of the study area is provided below.

2.2.2.1 Transport infrastructure

The transport infrastructure around the project site is typical of a Sydney suburb and includes a network of regional and local roads, active transport facilities, public transport (bus and passenger trains) and the SSFL. A brief overview of key existing infrastructure in the study area is provided below. Further information on the existing traffic and transport environment in the vicinity of the project site is provided in Chapter 8.

2.2.2.2 Rail

The project site includes the SSFL, and is located directly adjacent to the Main Southern Line. The SSFL (shown on Figure 2.1) is a 36 kilometre long single track dedicated freight line located between Macarthur and Sefton. The SSFL connects with the Metropolitan Freight Network (MFN) and provides access to Sydney's main intermodal terminals (Enfield, Chullora, Moorebank and Cooks River) and Port Botany.

The Main Southern Line, which is predominantly used by passenger trains, runs between Lidcombe in Sydney and Albury at the Victorian border. Within the study area, passenger services are provided by Sydney Trains along the T2 Inner West and Leppington Line, and the T5 Cumberland Line. Two Sydney Trains stations are located in close proximity to the project site – Cabramatta Station is located about 130 metres north of the project site, and Warwick Farm Station is located about 120 metres south of the project site.

2.2.2.3 Parking

There is generally a mix of both on street and off street parking available within walking distances to Cabramatta Station, Canley Vale Station and Warwick Farm Station.

Around Cabramatta Station there is designated on street parking provided on both sides of Broomfield Street. Off street parking within Cabramatta town centre (west of the station) is provided pre-dominantly for local business activity associated with the town centre. There is a multi-storey paid car park located to the east of the station accessible via Fisher Street and a smaller free car park accessible via Cumberland Street.

There are approximately 379 parking spaces available on Broomfield Street (north and south of Cabramatta Station). Untimed on-street parking is located on both sides of Broomfield Street. For the majority of street within the project site there is currently angled parking on the western side of the road and informal kerbside parallel parking on the eastern side. North of Broomfield Lane the parking consists of parallel parking on the western side only.

Warwick Farm Station is serviced by a multi-storey off street parking facility at the western side of the station. At grade parking facilities exist adjacent to the station to the east and the west. In addition, there is on street parking available on Hart Street, located to the west of the station.

2.2.2.4 Road network

Classified roads close and/or crossing the study area via road overbridges include Governor Macquarie Drive and Hume Highway in the south and Cabramatta Road (East and West) and Railway Parade in the north.

Hume Highway runs in an east –west direction in the southern part of the study area before heading north and running roughly parallel to the project site in the eastern part of the study area. Cabramatta Road East connects to Hume Highway to the northeast of the study area.

Orange Grove Road/Joseph Street, which is located about 1.5 kilometres to the west, also runs roughly parallel to the project site.

2.2.2.5 Buses

A number of bus routes cross the study area, serving Cabramatta Station and Warwick Farm Station in the north and south of the study area, respectively.

No bus routes are located within the project site. The nearest bus routes to the project site run along Broomfield Street and Cabramatta Road to the north of the project site, stopping at Cabramatta Station.

2.2.2.6 Taxis and kiss and ride facilities

On the western side of Broomfield Street adjacent to Cabramatta Station there is a taxi rank with capacity for two cars, Directly north of this taxi rank, there is a pickup and drop off area (commonly called “kiss and ride”) with two car spaces serving Cabramatta Station. There is also a kiss and ride facility with one car space serving Cabramatta Station on the southern side of Cabramatta Road East.

At the Warwick Farm Station Remembrance Avenue/Hart Street exit there is a designated taxi zone designed to accommodate a maxi taxi located adjacent to the station access. Warwick Farm Station also has a designated kiss and ride facility with ten spaces on Remembrance Avenue, just east of Hart Street.

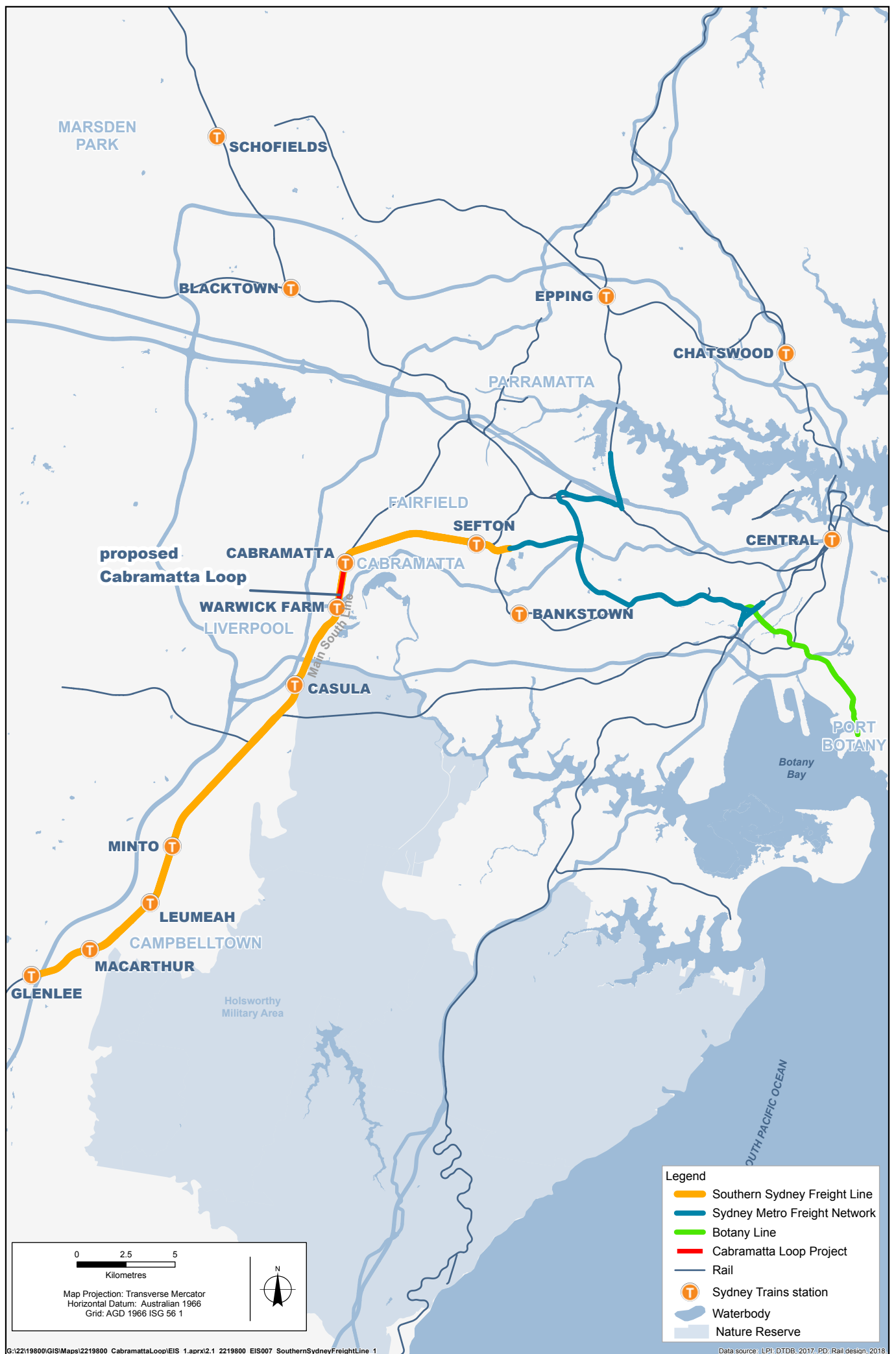


Figure 2.1 Location of the Southern Sydney Freight Line

2.2.2.7 Active transport

The study area includes active transport facilities typical of suburban streets with footpaths on both sides of local roads. The majority of local cycling connections are on-road mixed environments or pathways through recreation areas/parks with the exception of the Parramatta to Liverpool Cycle Rail Trail (the Cycleway). A formal path which forms part of the Cycleway, runs parallel to the eastern boundary of the rail corridor in the north of the study area. An informal path crosses under the rail corridor at Jacquie Osmond Reserve/Warwick Farm Recreation and runs parallel to the western boundary of the rail corridor to connect with the Cycleway south of the project site. The Cycleway runs beside the rail line between Liverpool and Parramatta train stations, providing access to railway stations, shops, schools, playing fields, parks, hospitals, industrial developments and Cabramatta's town centre and restaurant precinct.

2.2.2.8 Land use and property

The study area consists of a varied and relatively dense mix of land uses, including residential, commercial, recreation, transport infrastructure, community, health, education, and industrial.

The works are located within an active rail corridor used for transport (rail) purposes and within land directly adjacent to the rail corridor. This includes regional rail freight uses (the SSFL) and suburban rail uses (the Main Southern Line). Other land uses include a road corridor (Broomfield Street) and recreational areas (Jacquie Osmond Reserve and Warwick Farm Recreation Reserve).

Land uses surrounding the project site mainly include a mix of predominantly low density residential and recreational land uses, with other land uses scattered throughout the study area.

Commercial development is generally located in the north of the study area, near Cabramatta Station (Cabramatta CBD) and in the south of the study area near Peter Warren Automotive and Warwick Farm Station.

The vast majority of the project site is located on publicly owned land.

Further information on land use and property is provided in Chapter 16.

2.2.2.9 Socio-economic

The Fairfield and Liverpool LGAs have a combined population of 403,143 (ABS, 2016), with about 50 per cent living in each LGA. The study area is characterised by socially and culturally diverse communities.

The Fairfield LGA covers an area of 102 square kilometres and incorporates 27 suburbs. It is predominantly residential with some semi-rural areas to the west and large scale industrial parks at Wetherill Park, Fairfield East, Lansvale, Old Guildford, Yennora and Smithfield. There are also 560 recreational parks (60 of which are major parks) including one of the largest urban parks in the world, Western Sydney Parklands.

The Liverpool LGA covers an area of 306 square kilometres, with semi-rural areas to the west and mixed use and residential to the east. The population of the LGA is growing significantly due to urban land release for development and redevelopment of established areas. Within the LGA a number of major developments are proposed, including the Western Sydney Airport at Badgerys Creek.

The Liverpool LGA is one of the oldest urban settlements in Australia. After the urban sprawl in the 1950s it became an outer suburb of metropolitan Sydney with a strong working-class presence and manufacturing industries. The Liverpool CBD has become the major commercial centre of southwest Sydney and includes many shopping centres, high rise office developments and the Liverpool Hospital. The LGA also contains many open spaces and natural environment areas including Georges River, Chipping Norton lakes and other bushland area that are part of Western Sydney Parklands.

Further information on the socio-economic environment is provided in Chapter 18.

2.2.2 10 Heritage

Non-Aboriginal heritage

Urban development in the vicinity of the project site increased following the early 1850s to late 1880s with the construction of the railway line from Granville to Liverpool, which formed part of the Main South railway line to Goulburn.

In 1884, land contained within the northern part of the project site (part of a 300 acre grant), was acquired by John Bloomfield who subsequently subdivided the land, establishing the town ship of Cabramatta.

One item listed on the State Heritage Register (Liverpool Railway Station Group) is located in the south of the study area. A number of other local or items listed on the Section 170 heritage register are located adjacent to, or within 25 metres of the project site, including the rail bridges at Cabramatta Creek and Sussex Street which are located directly adjacent to the existing SSFL bridges.

Further information on non-Aboriginal heritage is provided in Chapter 14.

Aboriginal heritage

The project site is in the vicinity of three language groups:

- the Dharwal who covered the south side of Botany Bay, extending as far as Shoalhaven River
- the hinterland Darug who covered the area from Appin in the south to the Hawkesbury River in the north and west of the Georges River, Parramatta, the Lane Cover River and Berowra Creek
- the Gundungurra who covered the southern rim of the Cumberland Plain west of the Georges River, as well as the southern Blue Mountains (Attenbrow, 2002).

The project site would have provided an abundance of natural resources able to be utilised in various ways by Aboriginal people. Artefacts and potential archaeological deposits have been previously recorded within the region in the vicinity of permanent sources of water such as Cabramatta Creek.

There are no listed Aboriginal heritage sites located within the project site. The closest previously recorded Aboriginal heritage sites are a potential archaeological deposit and isolated item within Warwick Farm Recreation Reserve (about 50 metres from the project site). As a result the area to the west of the project site, within Warwick Farm Recreation Reserve, is considered to have high archaeological potential. The area to the east of the rail corridor, within Jacquie Osmond Reserve, has higher levels of disturbance so is therefore considered to have moderate archaeological significance. The rest of the project site is considered to have low archaeological significance due to the existing levels of disturbance in these areas.

Further information on Aboriginal heritage is provided in Chapter 15.

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