



Australian Government

**BUILDING OUR FUTURE**

ARTC

# CABRAMATTA LOOP PROJECT

## ENVIRONMENTAL IMPACT STATEMENT

**TECHNICAL REPORT 1 —**  
TRANSPORT, TRAFFIC AND  
ACCESS IMPACT ASSESSMENT

**TECHNICAL REPORT 2 —**  
NOISE AND VIBRATION  
IMPACT ASSESSMENT

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*

# CABRAMATTA LOOP PROJECT

## TECHNICAL REPORT

TECHNICAL REPORT 1 —  
TRANSPORT, TRAFFIC AND  
ACCESS IMPACT ASSESSMENT

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*



Australian Rail Track Corporation  
Cabramatta Loop Project  
Environmental Impact Statement  
Technical Report 1 – Traffic, Transport and Access  
Impact Assessment

August 2019

*This report has been prepared by GHD for ARTC and may only be used and relied on by ARTC for the purpose agreed between GHD and ARTC as set out in section 1.3 of this report. GHD otherwise disclaims responsibility to any person other than ARTC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.*

*Whilst every care has been taken to prepare the maps included in this report, GHD and ARTC, make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.*

# Table of contents

Glossary .....	v
Terms and abbreviations .....	vii
Executive Summary .....	ix
1. Introduction .....	1
1.1 Overview .....	1
1.2 The project .....	1
1.3 Purpose and scope of this report .....	4
1.4 Structure of this report .....	6
2. Methodology, policies and assumptions .....	7
2.1 Methodology .....	7
2.2 Legislative and policy context to the assessment .....	8
2.3 Assumptions and limitations .....	8
3. Existing conditions .....	11
3.1 Road hierarchy .....	11
3.2 Existing road network .....	14
3.3 Existing freight routes .....	18
3.4 Performance of existing road network .....	20
3.5 On and off street parking .....	26
3.6 Crash data analysis .....	31
3.7 Public transport .....	34
3.8 Active transport .....	39
3.9 Taxi and drop off facilities .....	42
4. The project .....	43
4.1 Construction .....	43
4.2 Operation .....	53
5. Construction impact assessment .....	55
5.1 Intersection performance during construction .....	55
5.2 Temporary road closures .....	58
5.3 Temporary pedestrian and bicycle path diversions .....	59
5.4 Car parking impacts .....	62
5.5 Public transport impacts .....	63
5.6 Property and access to key facilities .....	63
5.7 Emergency vehicles .....	64
5.8 Cumulative impacts .....	64
5.9 Key findings of construction impacts .....	65
6. Operational impact assessment .....	67
7. Mitigation and management measures .....	69

7.1	Construction traffic management.....	69
7.2	Operational mitigation measure .....	74
8.	Conclusions and recommendations .....	75
8.1	Construction impacts .....	75
8.2	Operation impacts .....	75
8.3	Construction traffic and pedestrian management.....	75
8.4	Conclusion .....	76

## Table index

Table 1.1	SEARs relevant to this assessment.....	4
Table 1.2	Stakeholder comments relevant to this assessment .....	5
Table 3.1	Hume Highway key features .....	14
Table 3.2	Broomfield Street key features .....	15
Table 3.3	Cabramatta Road East Street key features .....	16
Table 3.4	First Avenue key features .....	16
Table 3.5	Mannix Parade key features .....	17
Table 3.6	Liverpool Street key features .....	18
Table 3.7	Junction Street key features .....	18
Table 3.8	Functional classification of roads.....	22
Table 3.9	Mid-block traffic volumes (Weekday).....	23
Table 3.10	Mid-block traffic volumes (Saturday) .....	23
Table 3.11	Peak hour heavy vehicle ratio.....	24
Table 3.12	LoS criteria for intersections .....	24
Table 3.13	Existing intersection operations (Weekday) .....	25
Table 3.14	Existing intersection operations (Saturday) .....	26
Table 3.15	Broomfield Street on-street parking provision breakdown.....	29
Table 3.16	Crash types at intersections (2013–2017).....	33
Table 3.17	Bus services.....	34
Table 3.18	Train frequency .....	39
Table 4.1	Indicative staging .....	45
Table 4.2	Peak construction vehicle trips .....	49
Table 5.1	Intersection operations during construction (Weekday) .....	56
Table 5.2	Intersection operations during construction (Saturday).....	57
Table 5.3	Proposed road closures and impacts .....	58
Table 5.4	Proposed path closures and impacts.....	60



# Figure index

Figure 1.1	The location of the project .....	2
Figure 1.2	Key features of the project.....	3
Figure 3.1	Surrounding road network .....	13
Figure 3.2	Existing freight routes .....	19
Figure 3.3	Intersections traffic surveys locations .....	21
Figure 3.4	Parking survey extent .....	28
Figure 3.5	Broomfield Street parking utilisation .....	30
Figure 3.6	Stations parking utilisation .....	31
Figure 3.7	Locations of crashes (2013 – 2017) .....	32
Figure 3.8	Summary of crash data (2013–2017) .....	33
Figure 3.9	Bus route S1 .....	35
Figure 3.10	Bus route 904.....	36
Figure 3.11	Bus route 823.....	37
Figure 3.12	Bus route N50 .....	38
Figure 3.13	Cycleways near Cabramatta Station and Canley Vale Station .....	40
Figure 3.14	Cycleways near Warwick Farm Station .....	41
Figure 4.1	Indicative construction program.....	44
Figure 4.2	Construction stages along Broomfield Street .....	48
Figure 4.3	Haulage routes.....	51
Figure 5.1	Temporary shared path diversion (around bridge construction).....	61
Figure 5.2	Construction parking impacts .....	62

## Appendices

Appendix A – Traffic count surveys

Appendix B – SIDRA intersection results

Appendix C – Parking surveys

Appendix D – Travel time review

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*

# Glossary

Term	Definition
95 Percentile <sup>1</sup>	A value which 95 percent of the total data observed falls below and 5 percent of the total data observed is above this value.
AM peak hour	Unless otherwise stated, this refers to vehicle trips arriving at their destination during the average one hour peak period between 7:00 am to 9:00 am on a normal working weekday.
Average Delay <sup>1</sup>	The additional (excess) travel time experienced by a vehicle or pedestrian relative to a base travel time.
Classified road	Roads classified under sections 46, 47, 50 or 51 of the NSW Roads Act 1993 that have a legal class of highway, main road, secondary road or tourist road.
Construction	Includes all physical work required to construct the project.
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.
Construction environmental management plan	A site-specific plan developed for the construction phase of the project to ensure that all contractors and sub-contractors comply with the environmental conditions of approval for the project and that the environmental risks are properly managed.
Degree of Saturation <sup>1</sup>	The Degree of Saturation is the ratio of arrival (demand) flow rate to capacity during a given flow period. Also known as the volume to capacity ratio (v/c ratio), utilisation ratio, utilisation factor and traffic intensity.
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
PM peak hour	Unless otherwise stated, this refers to trips travelling on the network during the average one hour peak period between 3:00 pm to 6:00 pm on a weekday.
Project	The construction and operation of the Cabramatta Loop.
Project site	Refers to the area that would 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 location of construction activities, compounds and work sites, and the location of permanent operational infrastructure.
Work site	An area used to support other construction areas/activities.

<sup>1</sup> SIDRA Glossary of Road Traffic Analysis Terms, Akcelik and Associates Pty Ltd, March 2017

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*

# Terms and abbreviations

Term	Definition
AADT	Average Annual Daily Traffic
ARTC	Australian Rail Track Corporation
CTMP	Construction Traffic Management Plan
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	NSW Environmental Planning and Assessment Act 1979
LCC	Liverpool City Council
SEARs	Secretary Environmental Assessment Requirements
Roads and Maritime	Roads and Maritime Services
SSFL	Southern Sydney Freight Line
TCP	Traffic Control Plan
Veh/d	Vehicles per day
Veh/h	Vehicles per hour is the standard unit of measure in analysis traffic flow during peak periods

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*

# Executive Summary

Australian Rail Track Corporation proposes to construct and operate a passing loop for 1,300 metre length trains on the Southern Sydney Freight Line (SSFL) between Sydney Trains' Cabramatta and Warwick Farm stations. The Cabramatta Loop Project ('the project') would allow freight trains to pass and provide additional rail freight capacity along the SSFL.

A traffic, transport and access assessment of construction and operational activities associated with the project has been undertaken. This assessment focuses on impacts related to traffic, parking, public transport and active transport within the study area.

A construction traffic impact assessment was undertaken at a number of key intersections in the study area that were on construction traffic haulage routes. The assessment was used to determine whether the proposed construction traffic would have adverse impacts on performance at these intersections. Construction activities are proposed to be carried out during and outside standard construction hours, however a worst case traffic modelling scenario was modelled based on the morning and evening weekday peak hour periods. The traffic modelling of intersections within the study area showed there would be a minor increase in average delay at the following signalised intersections during construction activities as follows:

- Hume Highway/Mannix Parade intersection would increase from a level of service (LoS) B from LoS B to LoS C during the AM peak hour period and from LoS C to LoS D in the PM peak hour period
- The Sappho Road/Hume Highway intersection would increase from LoS A to LoS B in the PM peak hour period.

However, the road network that would be used during construction is likely to perform still within LoS D which remains at acceptable limits of level of service.

Construction traffic movements along local roads should be managed with a construction traffic management plan to limit the degree of road traffic impacts to residents and road users.

One lane of traffic on Broomfield Street would be closed for periods of time during the construction stages. The other would be kept open (either northbound or southbound) under direction of traffic controllers. These traffic impacts are expected to be minor.

There will be some impacts to parking during the construction stages of Broomfield Street, with loss of on-street parking. Parking users can utilise available spaces on the surrounding road network, or at potential parking locations under investigation by ARTC. Construction sequences will be staged to minimise loss of parking at any one time.

There are likely to be some impacts to bicycle riders and pedestrians using the shared path on Broomfield Street during the construction activities along Broomfield Street. The shared path would be temporarily realigned around work sites during the bridge construction works, however there may be a short period where access is restricted.

Train services from Cabramatta Station would be affected during weekend track possession, however this would be co-ordinated with Sydney Trains scheduled track possessions. It is therefore likely to include train replacement services for the public.

Operational impacts from the project are limited, with the only impacts being to a minor loss of permanent parking spaces on Broomfield Street after construction. However, the assessment has concluded that Broomfield Street has sufficient capacity to absorb this minor loss of parking on the surrounding road network.

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*



# 1. Introduction

## 1.1 Overview

Australian Rail Track Corporation (ARTC) proposes to construct and operate a passing loop for up to 1,300 metre length trains on the Southern Sydney Freight Line (SSFL) between Sydney Trains' Cabramatta and Warwick Farm stations. The Cabramatta Loop Project ('the project') would allow freight trains to pass and provide additional rail freight capacity along the SSFL.

The project is State significant infrastructure in accordance with Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As State significant infrastructure, the project needs approval from the NSW Minister for Planning and Public Spaces.

This report has been prepared to accompany the environmental impact statement (EIS) to support the application for approval of the project, and address the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the SEARs), issued on 17 May 2018.

## 1.2 The project

### 1.2.1 Site location

The project is generally located within the existing rail corridor between the Hume Highway and Cabramatta Road East road overbridges within the suburbs of Warwick Farm and Cabramatta. In addition, the project includes works to Broomfield Street east of the rail corridor in Cabramatta.

The rail corridor is owned by the NSW Government (RailCorp) and leased to ARTC.

The location of the project is shown on Figure 1.1.

### 1.2.2 Key features

The key features of the project include the following:

- New rail track – providing a 1.65 kilometre section of new 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 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 (indicative locations provided in the EIS).

The key features of the project are shown on Figure 1.2

Further information on the project is provided in the EIS.



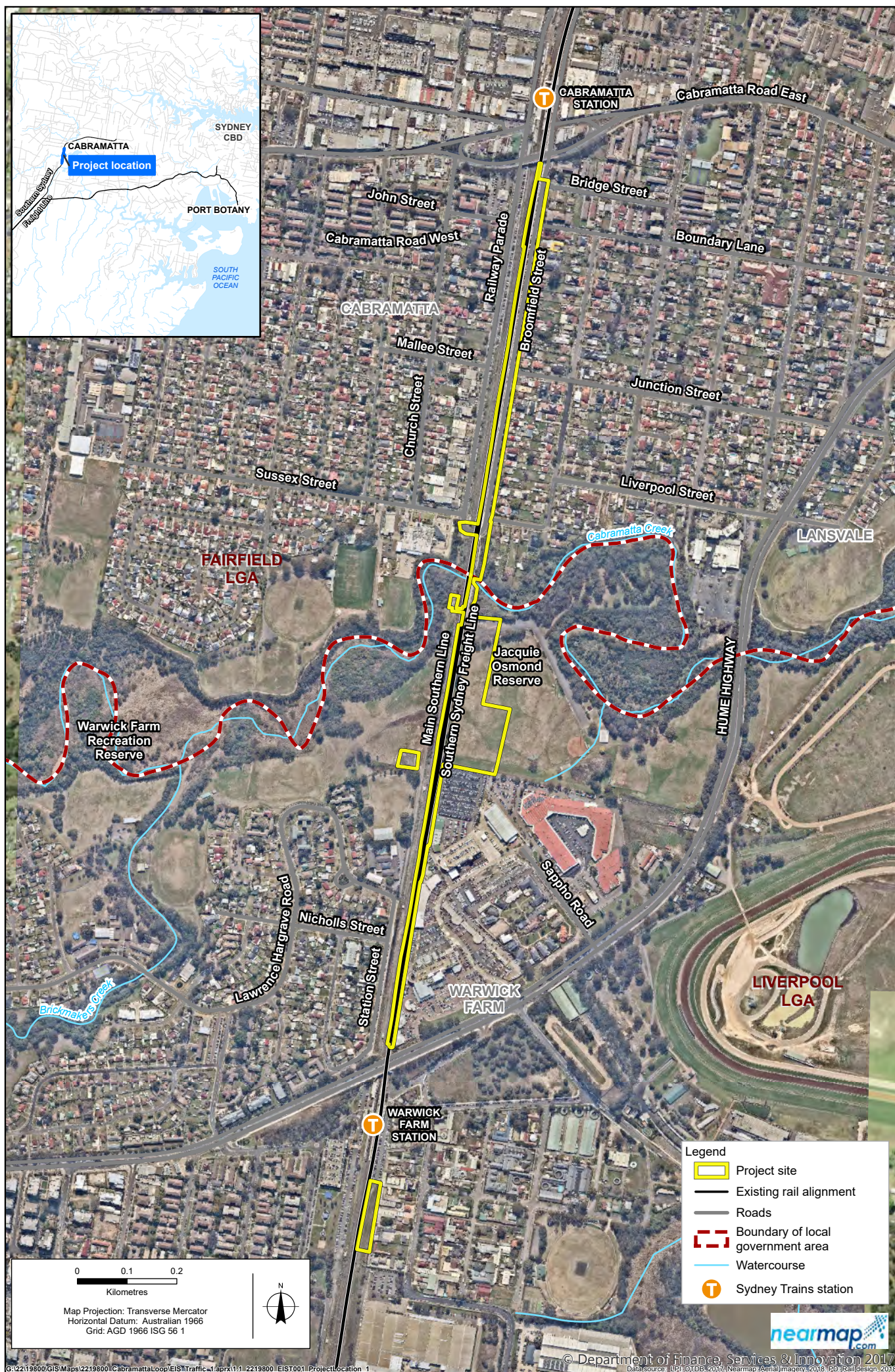


Figure 1.1 Location of the project



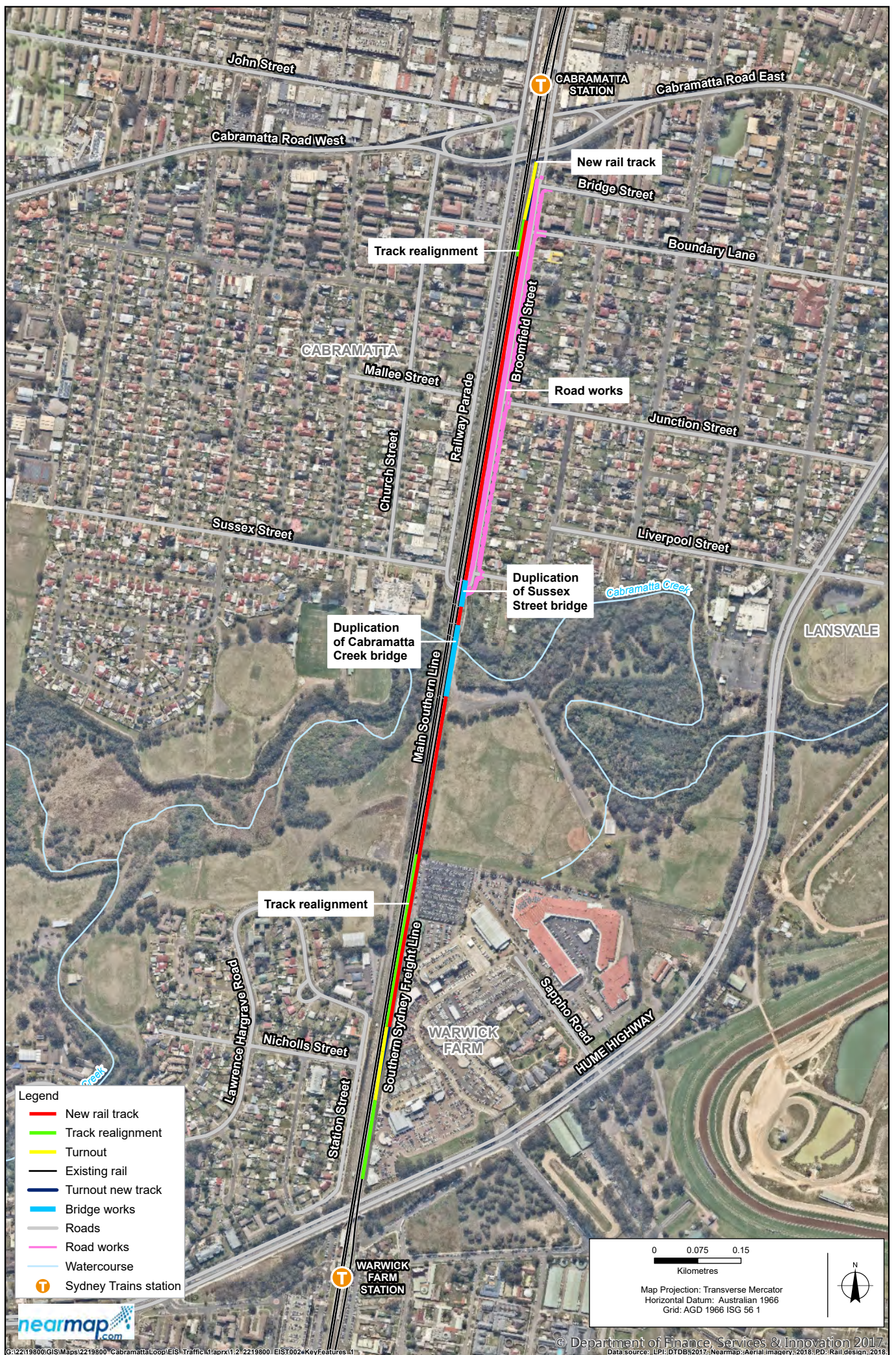


Figure 1.2 Key features of the project



### 1.2.3 Timing

Subject to approval of the project, construction is planned to start in early 2021, and is expected to take about two years. Construction is expected to be completed in early 2023.

It is anticipated that some features of the project would be constructed while the existing rail line continues to operate. Other features of the project would need to be constructed during programmed weekend rail possession periods when rail services along the line cease to operate. Possession periods typically occur for 48 hours four times per year.

### 1.2.4 Operation

The project would operate as part of the SSFL and would continue to be managed by ARTC. ARTC is not responsible for the operation of rolling stock. Train services are currently, and would continue to be, provided by a variety of operators.

Following the completion of works, the existing functionality of Broomfield Street would be restored, with one travel lane in each direction, kerb-side parking on both sides and a shared path of the western side of the street.

## 1.3 Purpose and scope of this report

The purpose of this report is to identify and assess the potential traffic, transport and access impacts from the operation and construction of the project. This traffic, transport and access assessment addresses the relevant SEARs for the EIS, as outlined in Table 1.1 and comments from Liverpool City Council and Transport for New South Wales, as outlined in Table 1.2.

Table 1.1 SEARs relevant to this assessment

Item	Requirements	Addressed in Section
3 (2)	Assessment of Key Issues	
	For each key issue the Proponent must:	
a	Describe the biophysical and socio-economic environment, as far as it is relevant to that issue	Section 3
b	Describe the legislative and policy context, as far as it is relevant to the issue	Section 2.2
c	Identify, describe and quantify (if possible) the impacts associated with the issue, including the likelihood and consequence (including worst case scenario) of the impact (comprehensive risk assessment), and the cumulative impacts	Section 5 and 6
d	demonstrate how potential impacts have been avoided (through design, or construction or operation methodologies);	Refer to the EIS
e	detail how likely impacts that have not been avoided through design will be minimised, and the predicted effectiveness of these measures (against performance criteria where relevant)	Section 7
	Traffic, Transport and Access	
1	The Proponent must assess construction transport and traffic (vehicle, pedestrian and cyclists).	Chapter 5
a	The number, frequency and size of construction related vehicles (passenger, commercial and heavy vehicles, including spoil management movements).	Section 4.1.3
b	A considered approach to route identification and scheduling of transport movements, including haulage routes.	Section 4.1.2 Section 4.1.6
c	Construction worker parking.	Section 5.4
d	Changes to parking along Broomfield Street including identification of replacement options prior to displacement.	Section 5.4

Item	Requirements	Addressed in Section
e	The nature of existing traffic (types and number of movements) on construction access routes (including consideration of peak traffic times and sensitive road users and parking arrangements).	Section 3.3
f	Access constraints and impacts on public transport, pedestrians and cyclists.	Section 5.3
g	The need to close, divert or otherwise reconfigure elements of the road and cycle network associated with construction of the project, particularly the pedestrian and cycleway along Broomfield Street, across Cabramatta Creek and the Sussex Street underpass.	Section 5.2 Section 5.3
2	The Proponent must assess (and model) the operational transport impacts of the project, including:	Section 6
a	Impact to parking along Broomfield Street and surrounding streets and the identification of replacement parking.	Section 5.4
b	Impacts on cyclists and pedestrian access and safety.	Section 5.3
c	Opportunities to integrate cycling and pedestrian elements with surrounding networks.	Section 5.3

Table 1.2 Stakeholder comments relevant to this assessment

Item	Comments	Addressed in Section
	Liverpool City Council	
3	A construction traffic management plan should be provided.	Section 7.1
4	Provide an assessment of cumulative impacts associated with other construction activities.	Section 5.8
5	Provide an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity.	Section 3.6
6	Provide details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process.	Section 4.1.1
7	Provide details of anticipated peak hour and daily construction vehicle movements to and from the site.	Section 5.1
8	Provide details of on-site car parking and access arrangements for construction vehicles, construction workers, emergency vehicles and service vehicle.	Section 5.4
9	Provide details of temporary cycling and pedestrian access during the construction.	Section 5.3 Section 7.1.6 Section 7.1.7
10	Provide haulage routes for construction vehicles.	Section 4.1.6
	Transport for NSW	
11	Proposed operational arrangements for all vehicles, pedestrians and cyclists, and measures to mitigate impacts.	Section 6
12	Details of access arrangements for emergency vehicles and protocols for emergencies.	Section 7.1.11
13	Details of loss of parking in Broomfield St (permanent and temporary) and alternate parking provision.	Section 5.4 Section 6.1.4

Item	Comments	Addressed in Section
14	Illustrate how the existing walking and cycling networks will be maintained across Cabramatta Creek and at the Sussex Street underpass during construction of the new bridges.	Section 5.3 Section 7.1.6 Section 7.1.7
15	Pedestrian and bicycle rider movements should be maintained along footways and shared paths, with adequate safety and diversion measures provided if required.	Section 5.3 Section 7.1.6 Section 7.1.7
16	Include a preliminary Construction Traffic and Pedestrian Management Plan.	Preliminary CTMP guide provided in section 7.1
17	Details of construction staging and coordination of possessions with Sydney Trains, including any potential for freight access to Sydney Trains network during an ARTC possession.	Section 1.3 with details in the EIS
18	Plans demonstrating how all vehicles associated with construction and operation can be accommodated on the site to avoid queuing in the street network.	Section 7.1.5
19	Construction impacts on the existing and future public transport network, pedestrian and bicycle networks.	Section 4
20	Swept path diagrams for vehicles entering, exiting and manoeuvring throughout the site.	Section 7.1.5
21	Address the relevant planning provisions, goals and strategic planning objectives in the listed strategies and guidelines.	Not applicable
22	Consult with Transport for NSW, Roads and Maritime Services and Sydney Trains during the preparation of the assessment.	To be completed during detailed design

## 1.4 Structure of this report

The structure of the report is outlined below.

- Section 1 – provides an introduction to the report
- Section 2 – describes the methodology for the assessment, including the legislative and policy context for the assessment, relevant guidelines and any assumptions and limitations
- Section 3 – describes the existing conditions of the road network, traffic volumes, parking conditions and public (i.e. rail/bus) and active (i.e. walking and cycling) transport options
- Section 4 – describes the project as relevant to the traffic, transport and access impact assessment
- Section 5 – describes the construction traffic, transport and access impacts associated with the project
- Section 6 – describes the traffic, transport and access impacts associated with operation of the project
- Section 7 – provides mitigation measures for the impacts identified
- Section 8 – presents the conclusions and recommendations of the assessment.

## 2. Methodology, policies and assumptions

### 2.1 Methodology

While this proposed project will not generate any additional road traffic at the operation stage, construction traffic will be generated and assessed according to the above guidelines. The methodology for this assessment is as follows:

- Review and report upon the **existing conditions** (see section 3) for traffic, parking and active transport including operations of major intersections that are assumed to be subject to significant traffic during construction. The study area for the assessment includes all local and state roads that would be affected by the proposal. These include Hume Highway and Cabramatta Road East, which act as key arterial road links that provide access / egress to local roads adjacent to works sites. Key local Roads within the study area that provide direct access to works sites are Broomfield Street, Junction Street and Liverpool Street, Sappho Road and Mannix Parade.

The purpose of the existing conditions assessment is to document the current operations within the study area as a point of reference for comparison to the construction and operational stages. Information gathered for the assessment includes:

- existing traffic turn counts for major intersections along the anticipated Haulage routes
- parking utilisation surveys to determine existing utilisation of parking spaces for Broomfield Street, First Avenue and Warwick Farm Station
- bicycle and pedestrian counts on the shared path network along Broomfield Street (south of Cabramatta Road east)
- crash history on the proposed routes within proximity of the site (i.e. Broomfield Street)
- existing public transport services in the study area (Bus and train services).
- Carry out a **construction traffic impact assessment** (see section 4) as follows:
  - desktop review of proposed construction routes for suitability for use by construction vehicles
  - estimate peak hour construction traffic generated by the worksites based on the number of workers, possession times and on information provided by these
  - estimate peak parking impacts associated with the construction activities
  - assess parking demand and controls at the railway stations around the construction site based on parking utilisation based upon on-site surveys
  - assess impacts on pedestrians, bicycle riders, bus users and other vulnerable users due to construction, based on pedestrian and cycle survey information
  - assess impacts on intersection performance as a result of the peak construction activities using SIDRA 7 analysis for identified intersections.
- Carry out an **operational traffic, transport and access impact assessment** (see section 6) as follows:
  - estimate parking impacts associated with proposed project post construction with reference to existing conditions
  - estimate impacts to traffic, pedestrians, bicycle riders and bus users post construction.
- Determine mitigation measures for any impacts identified in the assessment.

## 2.2 Legislative and policy context to the assessment

The following documents are referenced in the SEARs for this project and were considered where relevant to the assessment:

- Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2007)
- *Guide to Traffic Generating Developments Updated Traffic Surveys* (Roads and Maritime, 2013)
- Cycling Aspects of Austroads Guides (Austroads, 2014)
- *NSW Bicycle Guidelines v 1.2* (RTA, 2005)
- *Planning Guidelines for Walking and Cycling* (DIPNR, 2004)
- *NSW Sustainable Design Guidelines Version 3.0* (Transport for NSW, 2013)
- Australian Standards AS1742.3 – Traffic Control for Works on Roads (2009)
- Roads and Maritime Services *Traffic Modelling Guidelines* (2013)
- Roads and Maritime Services *Traffic Control at Worksites Manual* (Version 5.0 – 2018)
- Transport for NSW website Bus route and timetables (30 January 2019)

Additionally, the assessment referred to *The Traffic Modelling Guidelines* (Roads and Maritime Services, 2013) which were developed to provide consistency in traffic modelling practice. The intersection modelling carried out for this traffic, transport assessment aligns with the Traffic Modelling Guidelines, by including the following broad steps:

- select of computer software models (SIDRA) used for similar projects for similar intersection modelling purposes
- calibrate models under existing conditions using available current traffic survey data
- apply anticipated construction traffic demands to identify potential impacts on intersections
- develop mitigation measures if considered necessary.

The following documents were also referenced in the SEARs, and have been considered in the EIS with reference to the strategic need and development of the project:

- *Future Transport 2056* (Transport for NSW, 2018)
- *Draft NSW Freight and Ports Plan* (this has been superseded by the *NSW Freight and Ports Plan 2018 – 2023* (Transport for NSW, 2018a)).

## 2.3 Assumptions and limitations

This assessment is based on the following assumptions:

- Intersection survey counts for the AM and PM peak periods, conducted on 23 October 2018, and 22 and 24 November 2018, by Matrix Traffic and Transport Data Pty Ltd.
- An intersection survey at Sappho Road/Hume Highway intersection was also carried out by Matrix Traffic and Transport Data Pty Ltd on 24 November 2018 during the Saturday peak period. Sappho Road/Hume Highway intersection provides access and egress to car sales establishments which may have more vehicle movements (when compared to other intersections) during the Saturday period.
- Traffic surveys were undertaken and the assessment was based on traffic volumes during peak hours on weekdays as these are considered representative of the worst case scenario. Surveys were also undertaken during the Saturday period for the Sappho Road/Hume Highway intersection due to the potential influence on increase weekend traffic



activity associated with commercial operations such as the car sales establishments and Hometown Warwick Farm.

- Traffic distribution assumptions in relation to arrival and departure profiles and routes through the network are based on the traffic survey results.
- It was deemed suitable for this analysis to undertake a parking utilisation survey for one typical weekday to be representative of typical parking utilisation close to the project site. No side roads to Broomfield Street were included as part of the scope for this assessment.

This study has been limited by the following:

- The analysis is a desktop study and no site visits have been undertaken, with the exception of the parking, cycle and intersection traffic surveys undertaken by Matrix Traffic and Transport Data Pty Ltd
- The conditions of the surrounding network are based on information supplied by the traffic surveys and from Google Maps/Streetview and wider environmental team from GHD.
- Trip generation rates for construction vehicle movement, work hours, haulage routes and number of workers has been estimated and discussed in section 5. The information provided is assumed to be true and accurate and GHD will not take any responsibility for the input data supplied.
- Traffic distribution has been assumed to be evenly distributed throughout the road network during peak periods as discussed in section 5.

*THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK*