

INTRODUCTION

CHAPTER ONE

1 Introduction

This chapter provides an overview of the project, its strategic context and key features, and the structure of the Environmental Impact Statement.

1.1 Secretary's environmental assessment requirements

There are no Secretary's environmental assessment requirements that relate specifically to this chapter.

1.2 Overview

The New South Wales (NSW) Government is implementing *Sydney's Rail Future* (Transport for NSW, 2012a), a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future.

Sydney Metro is a new standalone rail network identified in *Sydney's Rail Future*. The Sydney Metro network consists of Sydney Metro Northwest (previously known as the North West Rail Link) and Sydney Metro City & Southwest. The proposed Sydney Metro network is shown in Figure 1-1.

The proposed Sydney Metro City & Southwest comprises two core components:

- The Chatswood to Sydenham project (the project), which is the subject of this Environmental Impact Statement. The project would involve construction and operation of an underground rail line, about 15.5 kilometres long, and new stations between Chatswood and Sydenham
- The second core component would involve upgrading the 13.5 kilometre rail line and existing stations from Sydenham to Bankstown which will be subject to a separate environmental assessment process.

Investigations have started on the possible extension of Sydney Metro from Bankstown to Liverpool. The potential extension would support growth in Sydney's south west by connecting communities, businesses, jobs and services as well as improving access between the south west and Sydney's CBD. It would also reduce growth pressure on road infrastructure and the rail network, including the potential to relieve crowding on the T1 Western Line, T2 South Line and T2 Airport Line.

The project is described in detail in Chapter 6 (Project description – operation) and Chapter 7 (Project description – construction) and is subject to assessment by the Department of Planning and Environment and approval by the Minister for Planning under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Sydney Metro Delivery Office has been established as part of Transport for NSW to manage the planning, procurement and delivery of the Sydney Metro network.

1.3 The metro rail network

1.3.1 The three-tier rail network

To cater for the differing and changing needs of customers, *Sydney's Rail Future* proposes a three-tiered rail network:

- Tier 1: Metro (previously known as Rapid Transit) – ‘turn-up-and-go’ services and single-deck metro trains (see Section 1.3.2)
- Tier 2: Suburban – timetabled services with double-deck trains
- Tier 3: Intercity – timetabled services with on-board amenities for long distance trips.

1.3.2 Sydney Metro

Customer journey

The customer experience underpins how Sydney Metro is being planned and designed. The customer experience incorporates all aspects of travel associated with the transport network, service and project including:

- The decision on how to travel – new metro services would be integrated with other transport modes, including interchanges with the existing Sydney railway network as well as buses, light rail and ferries
- The travel information available – state-of-the-art technology is proposed to keep customers connected at all stages of their journey, from smart phone travel apps on the way to stations to real time journey information at metro stations and onboard trains
- The speed and comfort of the journey
- The range and quantity of services available at stations, interchanges and within station precincts – the project would help customers achieve their daily tasks, whether it's getting to work or getting home, for school or education, sport, a day out or running errands.

A high quality door-to-door transport product is critical to attract and retain customers and also to meet broader transport and land use objectives. This includes providing a system that is inherently safe for customers on trains, at stations and at the interface with the public domain; providing direct, comfortable, legible and safe routes for customers between transport modes; and providing a clean, pleasant and comfortable environment for customers at stations and on trains.

Making it easy for customers at each stage of their journey is integral to the successful delivery of Sydney Metro.

Sydney Metro features

Sydney's new generation of fast, safe and reliable metro trains will first operate on Sydney Metro Northwest, Stage 1 of Sydney Metro. Sydney Metro Northwest will open to customers in the first half of 2019 with 15 trains an hour (one train every four minutes).

The extension of Sydney Metro into the Sydney CBD and beyond by 2024 would provide ultimate capacity for a metro train every two minutes in each direction through the Sydney CBD.

Sydney Metro is being delivered with a door-to-door approach for customers, integrating buses, taxi, parking, cycling and kiss-and-ride infrastructure to make the journey to and from home as seamless as possible.

The active precincts in and around Sydney's new metro railway stations would allow customers easy access to new retail shops and services to make their door-to-door journey as easy as possible. Key features of Sydney Metro include:

- No timetable – customers can just turn up and go
- Opal ticketing – fares set and controlled by the NSW Government the same as the rest of Sydney
- Customer service assistants at every station and moving through the network during the day and night
- Australian-first platform screen doors which keep people and objects away from the edge, improving customer safety and allowing trains to get in and out of stations much faster. These doors run the full length of all metro platforms and only open at the same time as the train doors
- Continuous mobile phone coverage throughout the metro network
- Operational performance requirements that include 98 per cent on time running and clean platforms and trains
- Multi-purpose areas for prams, luggage and bicycles
- Wheelchair spaces, separate priority seating and emergency intercoms inside trains
- Safety benefits including security cameras on trains and the ability for customers to see inside the train from one end to the other
- Video help points at platforms, connecting directly with train controllers – an Australian first
- Level access between the platform and train and three double doors per side per carriage for faster loading and unloading
- Heating and air-conditioning in all metro trains
- On-board real time travel information and live electronic route maps.

As Australia's first fully-automated railway, customer safety is a priority of Sydney Metro. At all times, a team of expert train controllers would monitor the system, making sure everything runs smoothly.

Sydney's current suburban system can reliably carry 24,000 people an hour per line. Sydney's new metro railway has a target capacity of more than 40,000 customers per hour in each direction, similar to other metro systems worldwide.

Components of the Sydney Metro rail network

The development of a metro rail network in Sydney is one of the key initiatives in *Sydney's Rail Future*. Sydney Metro City & Southwest would extend the metro network from Chatswood to Bankstown. This section of Sydney Metro comprises two core components: Chatswood to Sydenham (which is the subject of this Environmental Impact Statement) and the Sydenham to Bankstown upgrade, which would extend the metro network from Sydenham to Bankstown (subject to a separate environmental assessment process).

The Sydney Metro network is shown in Figure 1-1.

The first stage of the metro network is Sydney Metro Northwest (formerly the North West Rail Link), which is currently under construction. This includes a new metro rail line between Rouse Hill and Epping and conversion of the existing rail line between Epping to Chatswood to accommodate metro services. Services will start in the first half of 2019 with a metro train every four minutes in the peak from a new station at Cudgegong Road (beyond Rouse Hill) to the existing station at Chatswood.

The proposed Sydney Metro City & Southwest would extend the metro network from Chatswood to Bankstown.

The Chatswood to Sydenham project would feature:

- Twin tunnels about 15.5 kilometres long between Chatswood and Sydenham, crossing under Sydney Harbour
- New metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo
- New underground metro platforms at Central Station.



Figure 1-1 The Sydney Metro network

Capacity of the Sydney Metro rail network

The Chatswood to Sydenham project would have the capacity to run up to 30 trains per hour through the Sydney CBD in each direction, which would provide the foundation for delivering a 60 per cent increase in the number of trains operating in peak periods, and cater for an extra 100,000 customers per hour across the Sydney CBD rail lines.

1.4 Overview of the project

1.4.1 Location

The project track alignment would be mainly located underground in twin tunnels. The project would extend from Chatswood Station on Sydney's north shore, crossing under Sydney Harbour, and continue to just north of Sydenham Station. The proposed alignment, stations and operational ancillary infrastructure are shown in Figure 1-2.

1.4.2 Key features

The project involves the construction and operation of a metro rail line, around 16.5 kilometres in length, between Chatswood Station and just north of Sydenham Station. The key operational components include:

- About 15.5 kilometres of twin rail tunnels (that is, two tunnels located side-by-side) between Mowbray Road, Chatswood and Bedwin Road, Marrickville. The tunnel corridor would extend about 30 metres either side of each tunnel centre line and around all stations
- About 250 metres of aboveground metro tracks between Chatswood Station and the northern dive structure
- A northern dive structure (about 400 metres in length) and tunnel portal south of Chatswood Station and north of Mowbray Road, Chatswood
- A southern dive structure (about 400 metres in length) and tunnel portal north of Sydenham Station and south of Bedwin Road, Marrickville
- New metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo, as well as new underground platforms at Central Station
- Underground pedestrian links and connections to other modes of transport (such as the existing suburban rail network) and surrounding land uses
- Realignment of T1 North Shore Line surface track within the existing rail corridor between Chatswood Station and Brand Street, Artarmon, including a new rail bridge for a section of the 'down' (northbound) track to pass over the proposed northern dive structure
- Permanent closure and demolition of the road bridge on Nelson Street, Chatswood, and provision of an all vehicle right-turn movement from the Pacific Highway (southbound) into Mowbray Road (westbound)
- Signalisation of the Mowbray Road / Hampden Road intersection at Chatswood

- Modification (including protection) of the road bridge on Mowbray Road, Chatswood to accommodate the reconfigured T1 North Shore Line track arrangement
- Services within each of the stations, including mechanical and fresh air ventilation equipment and electrical power substations
- A permanent power supply from Pymont or Surry Hills to Pitt Street Station
- Alterations to pedestrian and traffic arrangements and public transport infrastructure around the new stations and surrounding Central Station
- Signalisation of the Edinburgh Road / Edgeware Road / Bedwin Road intersection at Marrickville
- A substation (for traction power supply) at Artarmon
- A services facility (for traction power supply and an operational water treatment plant) adjacent to the southern dive structure
- Installation and modification of existing Sydney Trains rail systems including overhead wiring, signalling, access tracks / paths, rail corridor fencing and noise walls, within surface sections at the northern end of the project at Chatswood
- Removal of the existing Sydney Trains maintenance access point from Hopetoun Avenue, Chatswood and modifications to the existing access point from Drake Street, Artarmon
- Provision of a maintenance access point from Brand Street, Artarmon on the 'down' (western) side of the T1 North Shore Line
- Provision of maintenance access stairs from Albert Avenue, Chatswood
- Temporary ancillary facilities to support the construction of the project.

Full details on the project, including construction and operational elements, are detailed in Chapter 6 (Project description – operation) and Chapter 7 (Project description – construction).

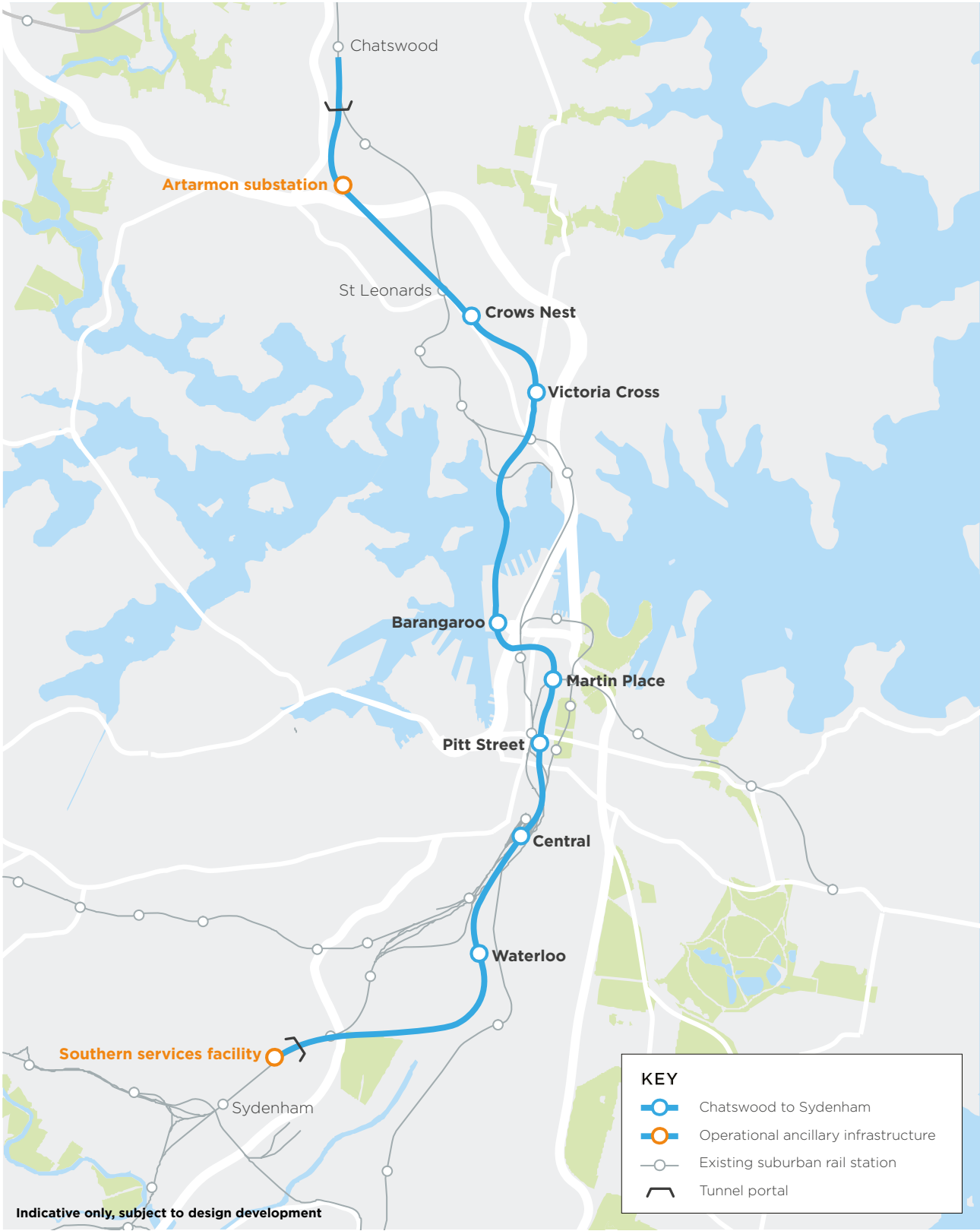


Figure 1-2 The project

1.5 Structure of the Environmental Impact Statement

This Environmental Impact Statement is presented in two volumes. Volume 1 contains the main Environmental Impact Statement (this report) and the appendices. Volume 2 provides the technical papers that form the technical basis of the information in Volume 1. The structure and content of Volume 1 are outlined in Table 1-1.

Table 1-1 Structure and content of Volume 1 of the Environmental Impact Statement

Chapter	Description
Chapter 1	Introduction (this chapter) Provides an overview of the project and the proposed metro network for Sydney. Outlines the structure and content of the Environmental Impact Statement.
Chapter 2	Planning and assessment process Provides information on the legislation and environmental planning instruments that would apply to the project. Outlines the steps involved in the assessment and approval process.
Chapter 3	Strategic need and justification Provides the strategic context, explains the need for the project and identifies the project objectives.
Chapter 4	Project development and alternatives Describes how the project was developed and reviews the strategic alternatives and options that were considered.
Chapter 5	Stakeholder and community engagement Provides an overview of the community consultation and stakeholder engagement processes that have been carried out for the project to date. Identifies issues raised during consultation and how these have been addressed.
Chapter 6	Project description - operation Identifies the physical infrastructure and built form of the project. Describes the functionality of the stations and the operation of the project.
Chapter 7	Project description - construction Outlines how the project is likely to be constructed and identifies the location and function of the main construction sites.
Chapter 8	Construction traffic and transport Identifies and assesses the potential impacts on the existing road, public transport, pedestrian and cyclist network from construction activities.
Chapter 9	Operational traffic and transport Identifies relevant station access, interchange, cyclist and pedestrian needs and the integration of the project with the wider transport network during operation.
Chapter 10	Construction noise and vibration Assesses the potential impacts of construction noise and vibration, including surface construction and tunnel excavation.
Chapter 11	Operational noise and vibration Assesses the potential impacts of noise and vibration during operation including from operating trains, stations and other fixed facilities.
Chapter 12	Land use and property Assesses the potential impacts on existing properties and land use including property acquisition and changes to land use.
Chapter 13	Business impacts Assesses the potential impacts on businesses around the project during construction and operation.

Chapter	Description
Chapter 14	Non-Aboriginal heritage Assesses the potential impacts on non-Aboriginal archaeological and built heritage during construction and operation.
Chapter 15	Aboriginal heritage Assesses the potential impacts on Aboriginal heritage during construction and operation.
Chapter 16	Landscape character and visual amenity Assesses the potential changes to landscape character during operation from the introduction of new infrastructure, and the potential visual impacts during construction and operation.
Chapter 17	Groundwater and geology Assesses the potential impacts associated with geology and groundwater such as drawdown, ground movement and groundwater treatment.
Chapter 18	Soils, contamination and water quality Assesses the potential impacts associated with soils, contamination and water quality during construction and operation.
Chapter 19	Social impacts and community infrastructure Assesses the potential direct and indirect impacts on community infrastructure.
Chapter 20	Biodiversity Assesses the potential impacts on biodiversity during construction and operation.
Chapter 21	Flooding and hydrology Assesses the potential impacts on hydrology and flooding during construction and operation.
Chapter 22	Air quality Assesses the potential impacts associated with air quality during construction and operation.
Chapter 23	Hazard and risk Assesses the hazard and risks with potential to occur during construction and operation.
Chapter 24	Waste management Assesses the potential impacts associated with waste management and resource use during construction and operation, including the management of spoil during construction.
Chapter 25	Sustainability Describes the overall approach to sustainability and how specific objectives and initiatives are being incorporated into the design, construction and operation of the project. An assessment of greenhouse gas emissions, climate change adaptation and resource use for the project is also provided.
Chapter 26	Cumulative impacts Assesses the potential for cumulative impacts with other construction projects.
Chapter 27	Consolidated environmental mitigation measures and environmental performance outcomes Provides a consolidated list of all of the mitigation measures identified in Chapters 8 to 26 and identifies the environmental performance outcomes.
Chapter 28	Environmental risk analysis Provides an environmental risk analysis taking into account the potential impacts and mitigation measures identified in Chapters 8 to 26.
Chapter 29	Justification and conclusions Confirms the justification for the project, considering the project objectives, consistency with the principles of ecologically sustainable development and the objects of the <i>Environmental Planning and Assessment Act 1979</i> .

Chapter	Description
APPENDICES	
Appendix A	Secretary's environmental assessment requirements
Appendix B	Sydney Metro Chatswood to Sydenham design guidelines
Appendix C	Stakeholder and community engagement report
Appendix D	Construction environmental management framework
Appendix E	Construction noise and vibration strategy
Appendix F	Geological long section
Appendix G	Synthesis of the Environmental Impact Statement