

1 Introduction

This chapter provides a brief overview of the M4-M5 Link (the project), including its location and key features. This chapter also describes the purpose and structure of this environmental impact statement (EIS).

1.1 Project overview

NSW Roads and Maritime Services (Roads and Maritime) is seeking approval to construct and operate the WestConnex M4-M5 Link (the project), which would comprise a new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters. The project would also include an interchange at Lilyfield and Rozelle (the Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link). In addition, construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project would be carried out at the Rozelle interchange.

Together with the other components of the WestConnex program of works and the proposed future Sydney Gateway, the project would facilitate improved connections between western Sydney, Sydney Airport and Port Botany and south and south-western Sydney, as well as better connectivity between the important economic centres along Sydney's Global Economic Corridor and local communities. A more comprehensive description of the project elements and construction work is provided in **Chapter 5** (Project description) and **Chapter 6** (Construction work) respectively.

The M4-M5 Link is part of the WestConnex program of works. Separate planning applications and assessments have been completed for each of the approved WestConnex projects. Roads and Maritime has commissioned Sydney Motorway Corporation (SMC) to deliver WestConnex, on behalf of the NSW Government. However, Roads and Maritime is the proponent for the project.

In addition to linking to other WestConnex projects, the M4-M5 Link would provide connections to the proposed future Western Harbour Tunnel and Beaches Link, the Sydney Gateway (via the St Peters interchange) and the F6 Extension (via the New M5). The WestConnex program of works, as well as related projects, are shown in **Figure 1-1** and described in **Table 1-1**.

Table 1-1 WestConnex and related projects

Project	Description	Status
WestConnex program of works		
M4 Widening	Widening of the existing M4 Motorway from Parramatta to Homebush.	Planning approval under the EP&A Act granted on 21 December 2014. Open to traffic.
M4 East	Extension of the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for a future connection to the M4-M5 Link at the Wattle Street interchange.	Planning approval under the EP&A Act granted on 11 February 2016. Under construction.
King Georges Road Interchange Upgrade	Upgrade of the King Georges Road interchange between the M5 West and the M5 East at Beverly Hills, in preparation for the New M5 project.	Planning approval under the EP&A Act granted on 3 March 2015. Open to traffic.

Project	Description	Status
New M5	Duplication of the M5 East from King Georges Road in Beverly Hills with tunnels from Kingsgrove to a new interchange at St Peters. The St Peters interchange allows for connections to the proposed future Sydney Gateway project and an underground connection to the M4-M5 Link. The New M5 tunnels also include provision for a future connection to the proposed future F6 Extension.	Planning approval under the EP&A Act granted on 20 April 2016. Commonwealth approval under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth) granted on 11 July 2016. Under construction.
M4-M5 Link (the project)	Tunnels connecting to the M4 East at Haberfield (via the Wattle Street interchange) and the New M5 at St Peters (via the St Peters interchange), a new interchange at Rozelle and a link to Victoria Road (the Iron Cove Link). The Rozelle interchange also includes ramps and tunnels for connections to the proposed future Western Harbour Tunnel and Beaches Link project.	The subject of this EIS.
Related projects		
Sydney Gateway	A high-capacity connection between the St Peters interchange (under construction as part of the New M5 project) and the Sydney Airport and Port Botany precinct.	Planning underway by Roads and Maritime and subject to separate environmental assessment and approval.
Western Harbour Tunnel and Beaches Link	The Western Harbour Tunnel component would connect to the M4-M5 Link at the Rozelle interchange, cross underneath Sydney Harbour between the Birchgrove and Waverton areas, and connect with the Warringah Freeway at North Sydney. The Beaches Link component would comprise a tunnel that would connect to the Warringah Freeway, cross underneath Middle Harbour and connect with the Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Seaforth. It would also involve the duplication of the Wakehurst Parkway between Seaforth and Frenchs Forest.	Planning underway by Roads and Maritime and subject to separate environmental assessment and approval.
F6 Extension	A proposed motorway link between the New M5 at Arncliffe and the existing M1 Princes Highway at Loftus, generally along the alignment known as the F6 corridor.	Planning underway by Roads and Maritime and subject to separate environmental assessment and approval.

The delivery mechanism for the design and construction of the M4-M5 Link differs from the approach adopted for the M4 East and New M5 projects. For the M4 East and New M5 projects, a design and construction contractor was appointed early and had direct input into the design development, EIS preparation and construction planning for those projects. This meant that the EIS for the M4 East and New M5 projects assessed the construction contractor's design. For the M4-M5 Link project, design and construction contractors would be appointed to undertake the detailed design and construction planning following determination of the application for project approval, should it be approved.

This means the detail of the design and construction approach presented in this EIS is indicative only based on a concept design and would be subject to detailed design and construction planning to be undertaken by the successful contractors. However, the design developed by the contractors would need to be consistent with any environmental management measures, changes identified in a Submissions and Preferred Infrastructure Report, the conditions of approval for the project and other

requirements identified during the assessment of the project. Issues raised during public consultation on the EIS or in the assessment of the project by NSW Department of Planning and Environment (DP&E) would also be taken into account during the detailed design process.

Approval is being sought under Part 5.1 of the EP&A Act for the project. A request has been made for the NSW Minister for Planning to specifically declare the project to be State significant infrastructure and also critical State significant infrastructure. An EIS is therefore required. Further details on the environmental assessment and approvals process are provided in **Chapter 2** (Assessment process).

Separate planning applications and assessments have been completed for each of the approved projects of WestConnex. In addition to linking or connecting to other WestConnex projects, the M4-M5 Link would provide connections to the proposed future Western Harbour Tunnel and Beaches Link project. The operation of these connections, as well as construction of the remainder of the proposed future Western Harbour Tunnel and Beaches Link project, does not form part of the M4-M5 Link project and would be subject to future environmental impact assessment and planning approval. These connections are described further in **Chapter 5** (Project description).

WestConnex (including the approved component projects and the M4-M5 Link) and other proposed future projects including Sydney Gateway, Western Harbour Tunnel and Beaches Link and the F6 Extension, would form a network of motorways to improve the efficiency of traffic flows between western Sydney, the Sydney central business district (CBD), Sydney Airport and Port Botany precinct, with onward connectivity to both the south and north of Sydney.

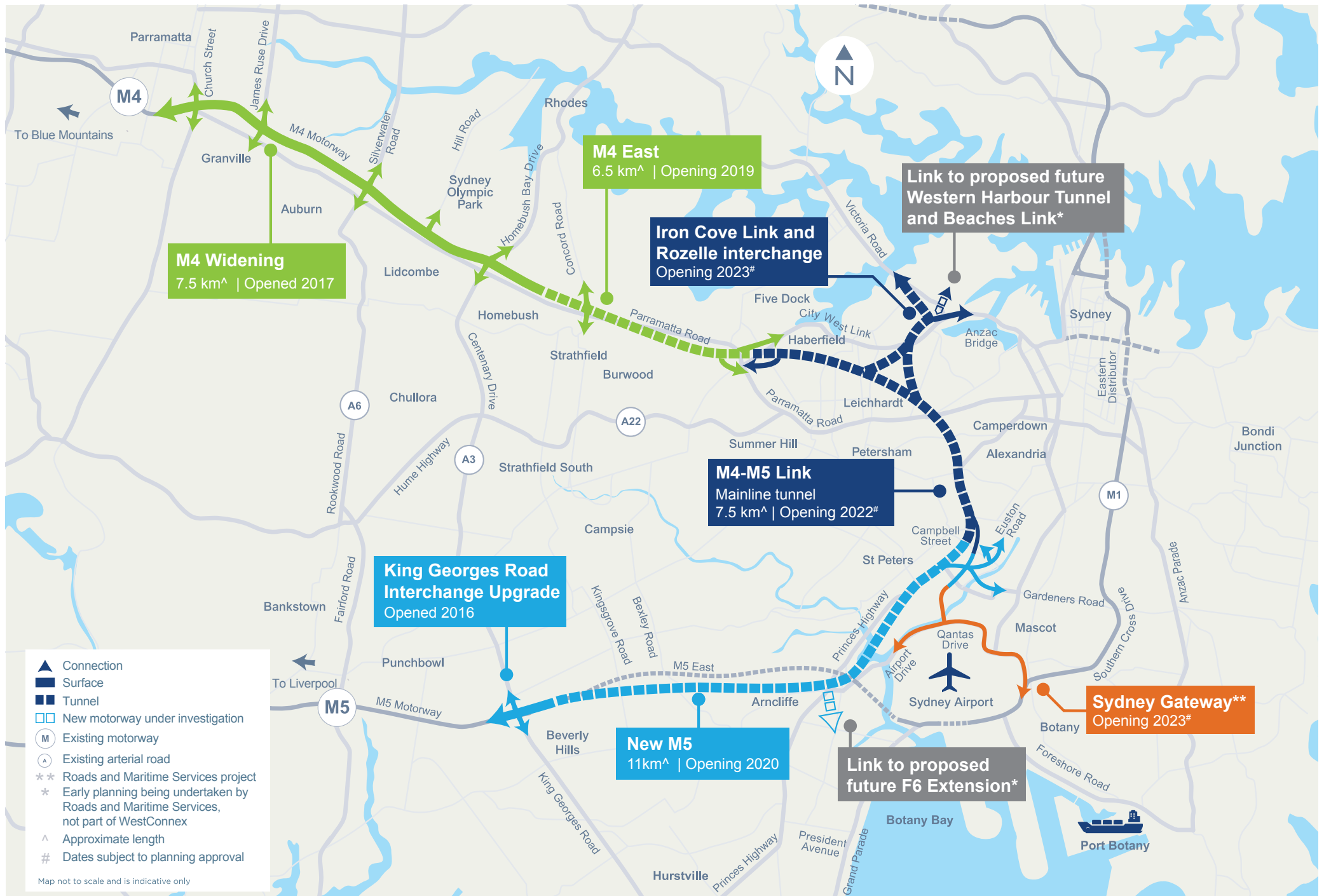


Figure 1-1 Overview of WestConnex and related projects

1.2 Project location

The project would be generally located within the City of Sydney and Inner West local government areas (LGAs). The project is located about two to seven kilometres south, southwest and west of the Sydney CBD and would cross the suburbs of Ashfield, Haberfield, Leichhardt, Lilyfield, Rozelle, Annandale, Stanmore, Camperdown, Newtown and St Peters. The local context of the project is shown in **Figure 1-2**.

1.3 Project features

Key components of the project are shown in **Figure 1-2** and would include:

- Twin mainline motorway tunnels between the M4 East at Haberfield and the New M5 at St Peters. Each tunnel would be around 7.5 kilometres long and would generally accommodate up to four lanes of traffic in each direction
- Connections of the mainline tunnels to the M4 East project, comprising:
 - A tunnel-to-tunnel connection to the M4 East mainline stub tunnels east of Parramatta Road near Alt Street at Haberfield
 - Entry and exit ramp connections between the mainline tunnels and the Wattle Street interchange at Haberfield (which is currently being constructed as part of the M4 East project)
 - Minor physical integration works with the surface road network at the Wattle Street interchange including road pavement and line marking
- Connections of the mainline tunnels to the New M5 project, comprising:
 - A tunnel-to-tunnel connection to the New M5 mainline stub tunnels north of the Princes Highway near the intersection of Mary Street and Bakers Lane at St Peters
 - Entry and exit ramp connections between the mainline tunnels and the St Peters interchange at St Peters (which is currently being constructed as part of the New M5 project)
 - Minor physical integration works with the surface road network at the St Peters interchange including road pavement and line marking
- An underground interchange at Leichhardt and Annandale (the Inner West subsurface interchange) that would link the mainline tunnels with the Rozelle interchange and the Iron Cove Link (see below)
- A new interchange at Lilyfield and Rozelle (the Rozelle interchange) that would connect the M4-M5 Link mainline tunnels with:
 - City West Link
 - Anzac Bridge
 - The Iron Cove Link (see below)
 - The proposed future Western Harbour Tunnel and Beaches Link
- Construction of connections to the proposed future Western Harbour Tunnel and Beaches Link project as part of the Rozelle interchange, including:
 - Tunnels that would allow for underground mainline connections between the M4 East and New M5 motorways and the proposed future Western Harbour Tunnel and Beaches Link (via the M4-M5 Link mainline tunnels)
 - A dive structure and tunnel portals within the Rozelle Rail Yards, north of the City West Link / The Crescent intersection
 - Entry and exit ramps that would extend north underground from the tunnel portals in the Rozelle Rail Yards to join the mainline connections to the proposed future Western Harbour Tunnel and Beaches Link

- A ventilation outlet and ancillary facilities as part of the Rozelle ventilation facility (see below)
- Twin tunnels that would connect Victoria Road near the eastern abutment of Iron Cove Bridge and Anzac Bridge (the Iron Cove Link). Underground entry and exit ramps would also provide a tunnel connection between the Iron Cove Link and the New M5 / St Peters interchange (via the M4-M5 Link mainline tunnels)
- The Rozelle surface works, including:
 - Realigning The Crescent at Annandale, including a new bridge over Whites Creek and modifications to the intersection with City West Link
 - A new intersection on City West Link around 300 metres west of the realigned position of The Crescent, which would provide a connection to and from the New M5/St Peters interchange (via the M4-M5 Link mainline tunnels)
 - Widening and improvement works to the channel and bank of Whites Creek between the light rail bridge and Rozelle Bay at Annandale, to manage flooding and drainage for the surface road network
 - Reconstructing the intersection of The Crescent and Victoria Road at Rozelle, including construction of a new bridge at Victoria Road
 - New and upgraded pedestrian and cyclist infrastructure
 - Landscaping, including the provision of new open space within the Rozelle Rail Yards
- The Iron Cove Link surface works, including:
 - Dive structures and tunnel portals between the westbound and eastbound Victoria Road carriageways, to connect Victoria Road east of Iron Cove Bridge with the Iron Cove Link
 - Realignment of the westbound (southern) carriageway of Victoria Road between Springside Street and the eastern abutment of Iron Cove Bridge
 - Modifications to the existing intersections between Victoria Road and Terry, Clubb, Toelle and Callan streets
 - Landscaping and the establishment of pedestrian and cycle infrastructure
- Five motorway operations complexes; one at Leichhardt (MOC1), three at Rozelle (Rozelle West (MOC2), Rozelle East (MOC3) and Iron Cove Link (MOC4)), and one at St Peters (MOC5). The types of facilities that would be contained within the motorway operations complexes would include substations, water treatment plants, ventilation facilities and outlets, offices, on-site storage and parking for employees
- Tunnel ventilation systems, including ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels
- Three new ventilation facilities, including:
 - The Rozelle ventilation facility at Rozelle
 - The Iron Cove Link ventilation facility at Rozelle
 - The Campbell Road ventilation facility at St Peters
- Fitout (mechanical and electrical) of part of the Parramatta Road ventilation facility at Haberfield (which is currently being constructed as part of M4 East project) for use by the M4-M5 Link project
- Drainage infrastructure to collect surface and groundwater for treatment at dedicated facilities. Water treatment would occur at
 - Two operational water treatment facilities (at Leichhardt and Rozelle)
 - The constructed wetland within the Rozelle Rail Yards
 - A bioretention facility for stormwater runoff within the informal car park at King George Park at Rozelle (adjacent to Manning Street). A section of the existing informal car park would also be

upgraded, including sealing the car park surface and landscaping

- Treated water would flow back to existing watercourses via new, upgraded and existing infrastructure
- Ancillary infrastructure and operational facilities for electronic tolling and traffic control and signage (including electronic signage)
- Emergency access and evacuation facilities, including pedestrian and vehicular cross and long passages and fire and life safety systems
- Utility works, including protection and/or adjustment of existing utilities, removal of redundant utilities and installation of new utilities. A Utilities Management Strategy has been prepared for the project that identifies management options for utilities, including relocation or adjustment. Refer to **Appendix F** (Utilities Management Strategy) of the EIS.

The project does not include:

- Site management works at the Rozelle Rail Yards. These works were separately assessed and determined by Roads and Maritime through a Review of Environmental Factors under Part 5 of the EP&A Act (refer to **Chapter 2** (Assessment process) of the EIS)
- Ongoing motorway maintenance activities during operation
- Operation of the components of the Rozelle interchange which are the tunnels, ramps and associated infrastructure being constructed to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project.

Temporary construction ancillary facilities and temporary works to facilitate the construction of the project would also be required.

1.3.1 Staged construction and opening of the project

It is anticipated the project would be constructed and opened to traffic in two stages (see **Figure 1-2**).

Stage 1 would include:

- Construction of the mainline tunnels between the M4 East at Haberfield and the New M5 at St Peters, stub tunnels to the Rozelle interchange (at the Inner West subsurface interchange) and ancillary infrastructure at the Darley Road motorway operations complex (MOC1) and Campbell Road motorway operations complex (MOC5)
- These works are anticipated to commence in 2018 with the mainline tunnels open to traffic in 2022. At the completion of Stage 1, the mainline tunnels would operate with two traffic lanes in each direction. This would increase to generally four lanes at the completion of Stage 2, when the full project is operational.

Stage 2 would include:

- Construction of the Rozelle interchange and Iron Cove Link including:
 - Connections to the stub tunnels at the Inner West subsurface interchange (built during Stage 1)
 - Ancillary infrastructure at the Rozelle West motorway operations complex (MOC2), Rozelle East motorway operations complex (MOC3) and Iron Cove Link motorway operations complex (MOC4)
 - Connections to the surface road network at Lilyfield and Rozelle
 - Construction of tunnels, ramps and associated infrastructure as part of the Rozelle interchange to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project
- Stage 2 works are expected to commence in 2019 with these components of the project open to traffic in 2023.

The total construction period for both stages of the project is expected to be around five years, which includes commissioning that would occur concurrently with the final stages of construction. Further staging details would be confirmed when construction contractors have been engaged.

The potential benefits of a staged opening of the project are detailed in **Chapter 4** (Project development and alternatives). A more detailed description of how the project would be constructed in stages is provided in **Chapter 6** (Construction work). An assessment of the traffic and transport impacts of opening the project in stages is included in **Chapter 8** (Traffic and transport).

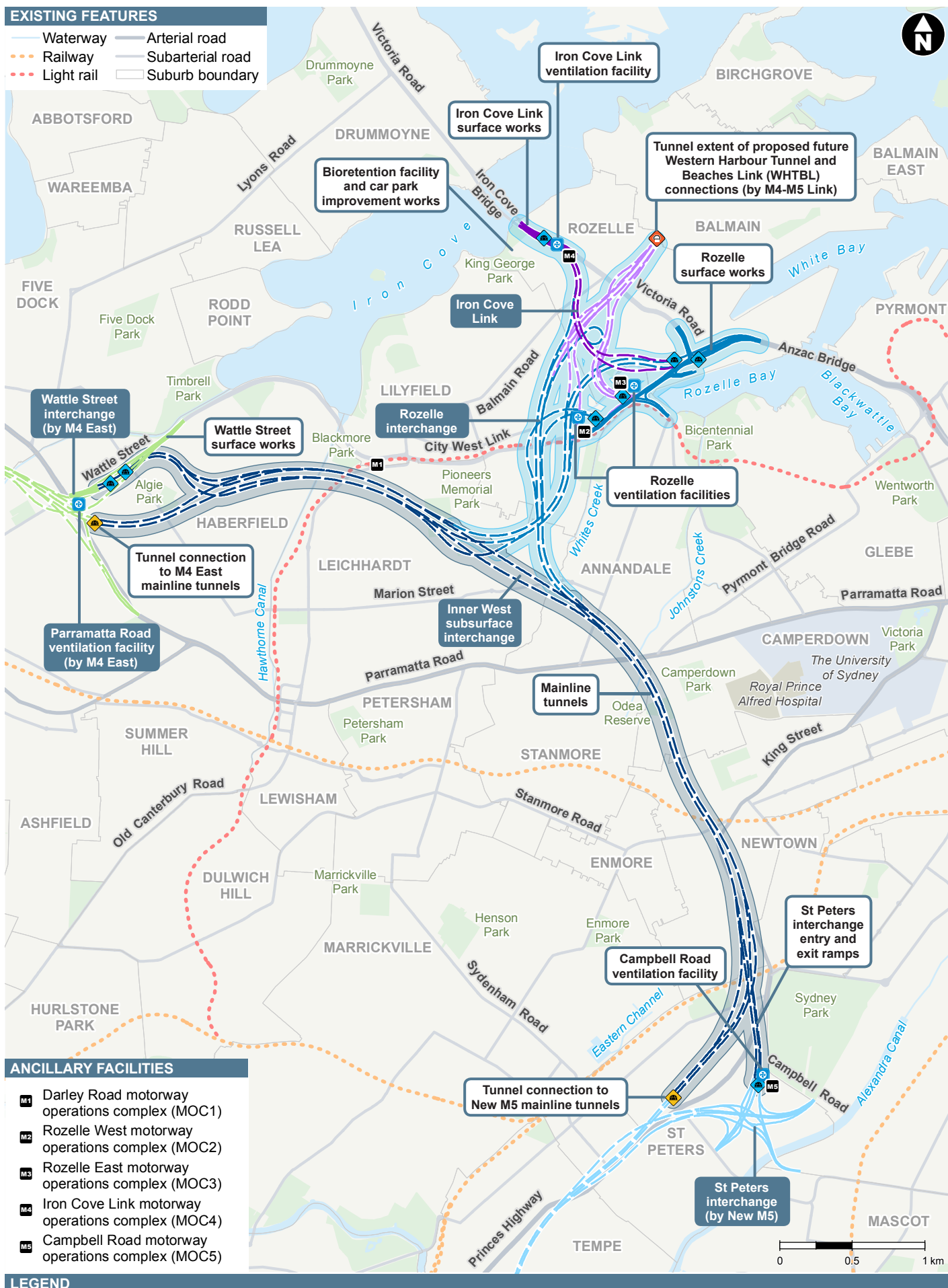


Figure 1-2 Local context of the project

1.4 Purpose of this EIS

This EIS has been prepared in accordance with the relevant provisions of the EP&A Act. It has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the Secretary of DP&E on 3 March 2016 and the relevant provisions of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (NSW). On 9 November 2016, modified SEARs were issued to Roads and Maritime to reflect project changes including the addition of the Iron Cove Link. Further modifications to the SEARs were provided to Roads and Maritime on 3 May 2017 to reflect project changes including the removal of the Camperdown interchange, changes to the Rozelle interchange and the inclusion of the construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project. The EIS has been prepared in accordance with the modified SEARs.

In accordance with Part 5.1 of the EP&A Act, this EIS presents an assessment of all potential environmental issues identified during the planning and assessment of the project. The assessment considers the areas directly or indirectly affected by construction and operation of the project, as relevant to each technical assessment.

Public exhibition of the EIS gives the community, government agencies and other interested parties an understanding of the project and provides the opportunity to comment on the project. Roads and Maritime will consider this feedback in the further development of the project and will respond to issues raised in a Submissions Report. Further details on the assessment process for the project are provided in **Chapter 2** (Assessment process).

1.5 Directions used in this EIS

In this EIS, the mainline tunnels are described as being aligned in a north–south direction for consistency, even though some parts of the tunnels are actually aligned in an east–west direction (between the Rozelle interchange and the Wattle Street interchange). References to northbound and southbound tunnels reflect the general direction of traffic flow, as shown in **Figure 1-3**.

Similarly, the alignments of components of the Rozelle interchange have been named for clarity and consistency, as shown in **Figure 1-3**.

1.6 Timing for implementation of management measures

The indicative timing for the implementation of management measures outlined in the technical issue chapters (**Chapter 8** to **Chapter 27**) and summarised in **Chapter 29** (Summary of environmental management measures) refers to the following project stages:

- Construction (including detailed design and pre-construction activities)
- Operation.

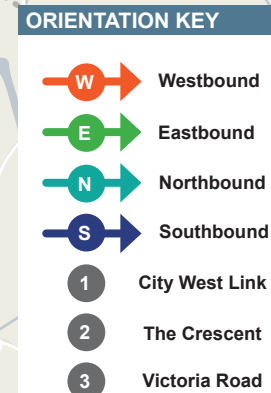
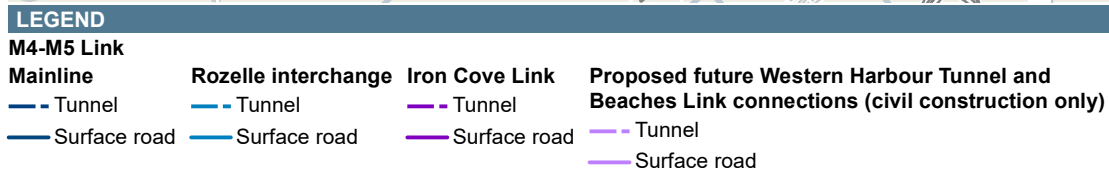
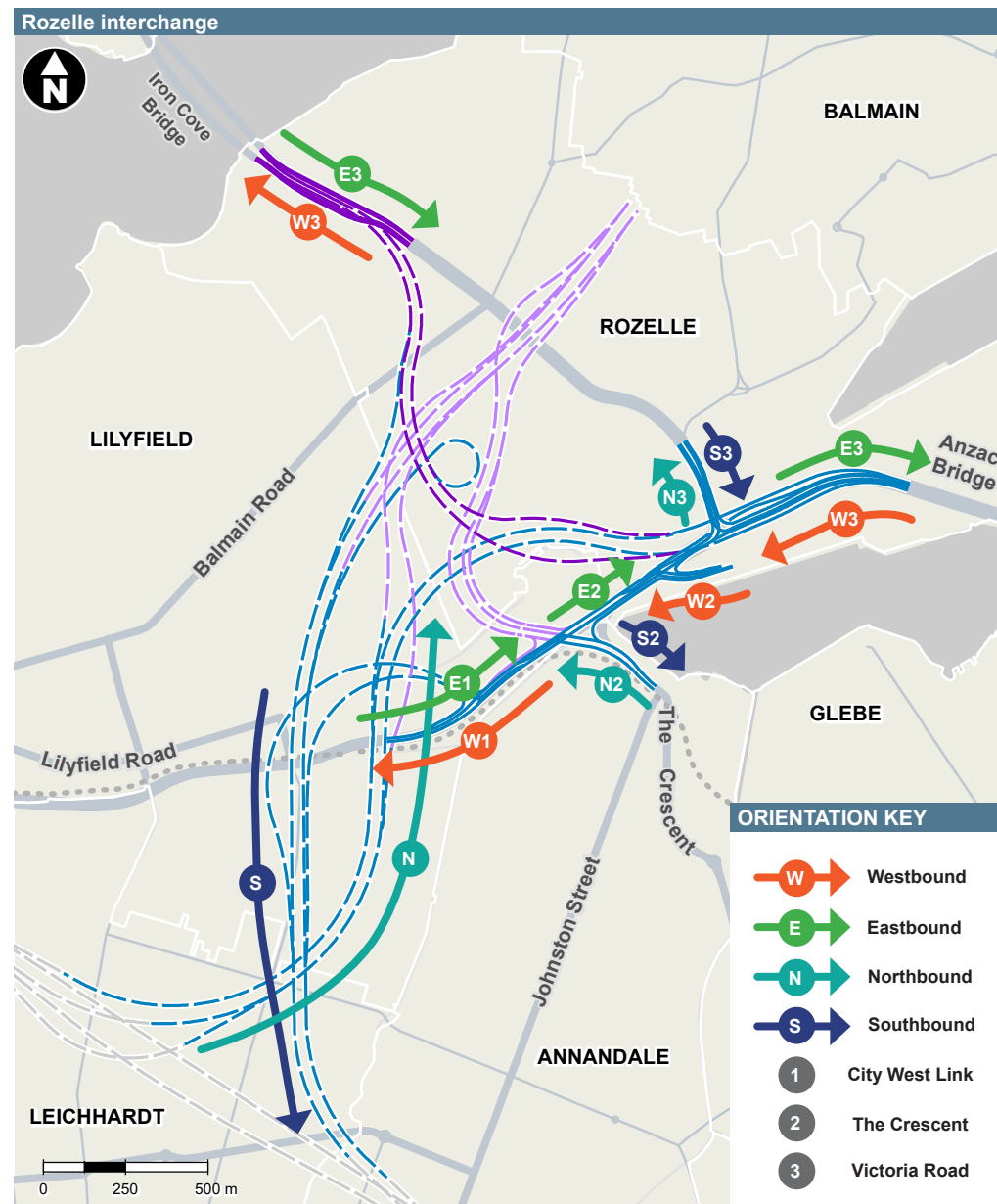
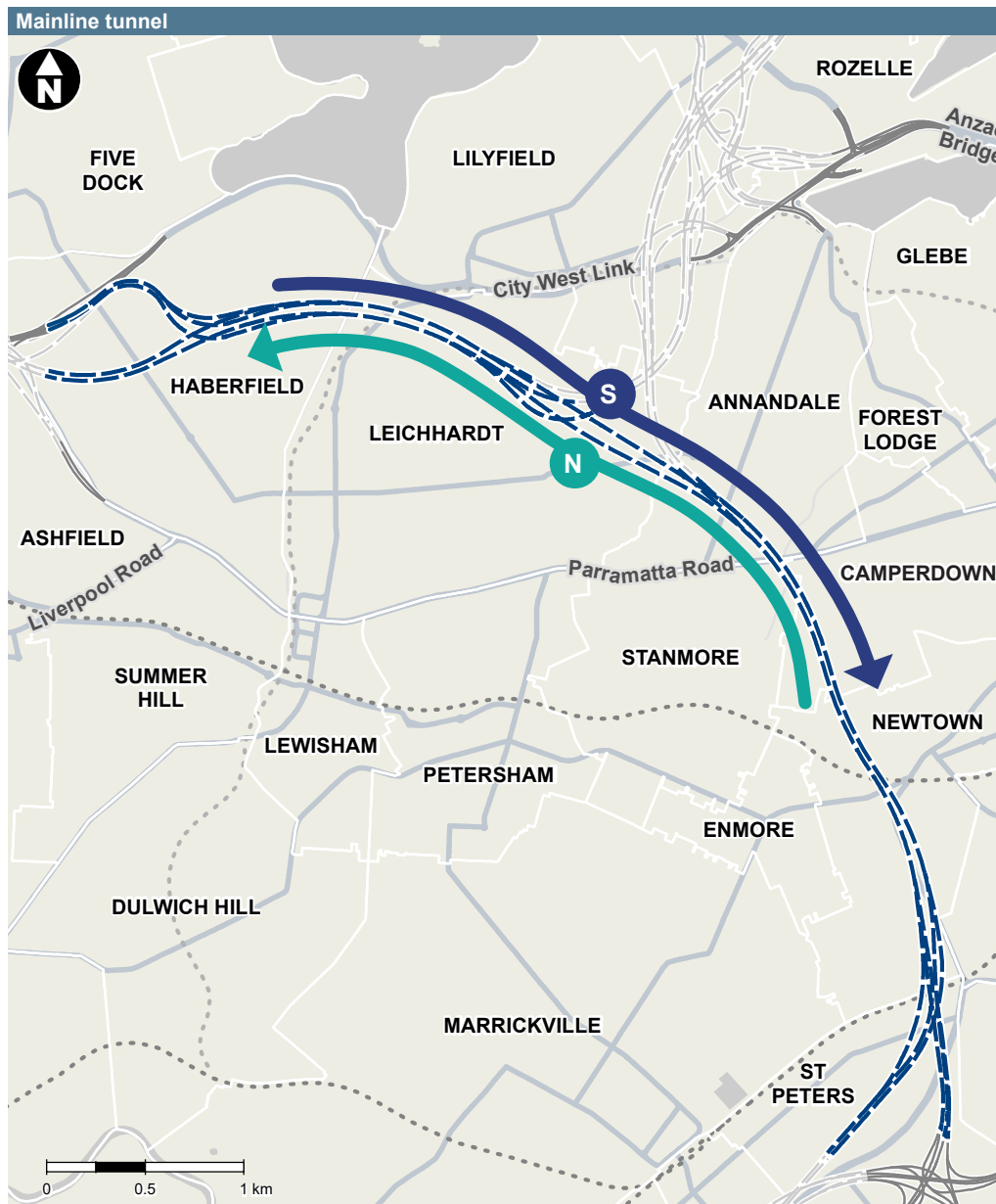


Figure 1-3 Orientation and directional description in this EIS

1.7 Structure of this EIS

This EIS is divided into two volumes.

Volume 1 comprises:

- **Chapter 1** (Introduction) provides an overview of the project, its scope and location
- **Chapter 2** (Assessment process) outlines the statutory assessment requirements and explains the steps in the assessment and approval process
- **Chapter 3** (Strategic context and project need) provides the strategic context and explains the need for the project
- **Chapter 4** (Project development and alternatives) outlines the alternatives and options considered in developing the project, including the consequences of not proceeding
- **Chapter 5** (Project description) provides a detailed description of the project including the route alignment, design standards and key design features
- **Chapter 6** (Construction work) describes the proposed construction methodologies and staging
- **Chapter 7** (Consultation) outlines the consultation activities undertaken, issues raised and how these issues have been addressed, as well as outlining the consultation activities planned during the public exhibition of the EIS and before and during the construction of the project
- **Chapter 8 to Chapter 25** (assessment of environmental issues) identify the relevant environmental issues, assess the impacts of the project and present environmental management measures in response to those impacts
- **Chapter 26** (Cumulative impacts) assesses the impacts of the project, when combined with other relevant projects
- **Chapter 27** (Sustainability) outlines how the project would be delivered in a manner that meets sustainability requirements as part of its planning, construction and operation
- **Chapter 28** (Environmental risk analysis) details the risk analysis process by which the potential environmental issues for assessment were identified
- **Chapter 29** (Summary of environmental management measures) collates the environmental management measures for the project identified through the impact assessment
- **Chapter 30** (Project justification and conclusion) presents the justification for the project, including consideration of the principles of ecologically sustainable development and the objectives of the EP&A Act.

Volume 2 comprises the following supporting appendices:

- Appendix A – Project synthesis
- Appendix B – Secretary's Environmental Assessment Requirements checklist
- Appendix C – Cumulative impact assessment methodology
- Appendix D – Environmental Planning and Assessment Regulation 2000 (NSW) requirements
- Appendix E – Geological long-sections
- Appendix F – Utilities Management Strategy
- Appendix G – Draft community consultation framework
- Appendix H – Technical working paper: Traffic and transport
- Appendix I – Technical working paper: Air quality
- Appendix J – Technical working paper: Noise and vibration
- Appendix K – Technical working paper: Human health risk assessment
- Appendix L – Technical working paper: Urban design

- Appendix M – Shadow diagrams and overshadowing
- Appendix N – Technical working paper: Active transport strategy
- Appendix O – Technical working paper: Landscape and visual impact
- Appendix P – Technical working paper: Social and economic
- Appendix Q – Technical working paper: Surface water and flooding
- Appendix R – Technical working paper: Contamination
- Appendix S – Technical working paper: Biodiversity
- Appendix T – Technical working paper: Groundwater
- Appendix U – Technical working paper: Non-Aboriginal heritage
- Appendix V – Technical working paper: Aboriginal heritage
- Appendix W – Detailed greenhouse gas calculations
- Appendix X – Climate change risk assessment framework.