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WestConnex

Urban Design Report

New M5

November 2015

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Executive Summary

WestConnex is a 33 kilometre motorway that is intended to link Sydney's west with the airport and the Port Botany precinct. The component projects of the WestConnex program of works are:

- M4 Widening – Pitt Street, Parramatta to Homebush Bay Drive, Homebush (planning approval granted on 21 December 2014 and under construction)
- M4 East – Homebush Bay Drive, Homebush to Parramatta Road and City West Link (Wattle Street) at Haberfield (planning application lodged and subject to planning approval)
- New M5 – (the subject of this EIS)
- King Georges Road Interchange Upgrade (planning approval granted on 3 March 2015 and under construction)
- M4-M5 Link – Haberfield to St Peters (undergoing concept development and subject to planning approval)
- Sydney Gateway (is the subject of further investigations by the NSW Government and would be subject to separate planning approval).

Separate planning applications have or will be lodged for each component project. Each project will be assessed separately, but the impact of each project will also be considered in the context of the wider WestConnex program of works.

A proposed southern extension from Arncliffe to Kogarah is currently being investigated by the NSW Government, and would connect the New M5 to the southern and bayside suburbs of Sydney, and the proposed F6 motorway.

Urban and landscape design is a key component of the project. A number of publications and guidelines have informed the urban design concept contained in this report. The concept is based on the following objectives as outlined in the WestConnex Urban Design Framework:

- Leading edge environmental responsiveness
- Connectivity and legibility
- Place making
- Urban renewal and liveability
- Memorable identity and a safe, enjoyable experience
- A new quality benchmark

Based on the above principles the urban and landscape concept provides a platform from which detailed designs will be produced.

This report should be read in conjuction with Appendix K Landscape and Visual Impact.

An analysis of the context and existing conditions informs the urban and landscape concept. This allows a draft material palette and design intent to be produced for the built form components of the motorway infrastructure that is sympathetic to its surrounds whilst also exhibiting a unique identity. A restrained palette of materials are proposed and composed in different manners to fit their context within Kingsgrove, Bexley, Arncliffe and St Peters.

The journey experience is enhanced through a series of in-tunnel events. Unique panel linings, location identifiers and lighting features provide the motorist with points of interests along the journey.

Landscape is a fundamental element to ensure the project connects to surrounding communities and provides opportunities for local benefits. Emphasis has been placed on provision of a green canopy throughout the corridor, especially where surface interventions occur. The St Peters interchange would benefit from provision of a new park that would extend the green space of Sydney Park. A number of new and upgraded pedestrian and cycle connections would be created that would ensure permeability.

Finally opportunities would be explored for inclusion of art and interpretation throughout the corridor. A strategy would be developed that would combine concepts for lighting, interpretation and public art to enliven the journey and create a valued sense of place.

1

Introduction

Introduction

NSW Roads and Maritime Services (Roads and Maritime) is seeking approval to construct and operate the New M5 (the project), which would comprise a new, tolled multi-lane road link between the existing M5 East Motorway, east of King Georges Road, and St Peters. The project would also include an interchange at St Peters and connections to the existing road network. The project is shown in Figure 1.

Approval is being sought under Part 5.1 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). The project is declared to be State significant infrastructure (SSI) under section 115U(2) of the EP&A Act by reason of the operation of clause 14 and Schedule 3 of the *State Environmental Planning Policy (State and Regional Development)* 2011. Accordingly, the project is subject to assessment under Part 5.1 of the EP&A Act and requires the approval of the Minister for Planning. An EIS is therefore required. For the purpose of this planning application for the project, Roads and Maritime is the proponent.

Roads and Maritime is seeking the project to be declared by the Minister for Planning as State significant infrastructure and critical State significant infrastructure under sections 115U(4) and 115V of the EP&A Act.

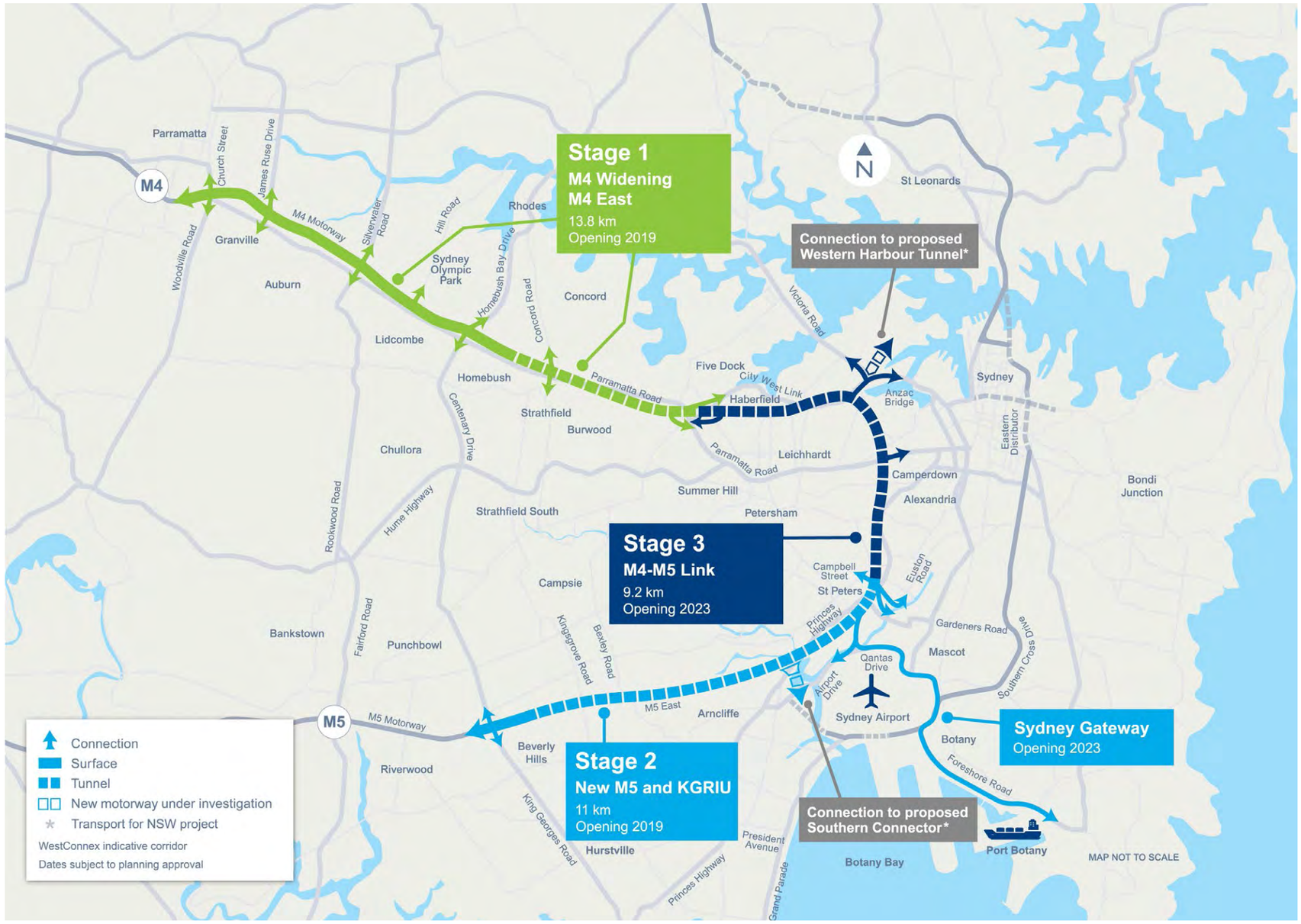

Figure 1 WestConnex program of works

On 11 August 2015, the Commonwealth Minister for the Environment determined that the project has the potential to significantly impact on a matter of national environmental significance and is therefore a 'controlled action'. This means that approval of the project will be required from the Commonwealth Minister for the Environment in addition to environmental and planning approvals required under State legislation.

Under the Bilateral Agreement relating to environmental assessment (February 2015) between the Commonwealth Government and the NSW Government, this EIS has been adopted for the purpose of meeting the assessment requirements of both the Commonwealth EPBC Act and the NSW EP&A Act.

This Urban Design Report outlines the urban design and landscape principles used to develop, describes the landscape setting and presents the urban design of the project.

1.1 Overview of WestConnex

WestConnex is a 33 kilometre motorway that is intended to link Sydney's west with the airport and the Port Botany precinct. The component projects of the WestConnex program of works are:

- M4 Widening – Pitt Street, Parramatta to Homebush Bay Drive, Homebush (planning approval granted on 21 December 2014 and under construction)
- M4 East – Homebush Bay Drive, Homebush to Parramatta Road and City West Link (Wattle Street) at Haberfield (planning application lodged and subject to planning approval)
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Separate planning applications have or will be lodged for each component project. Each project will be assessed separately, but the impact of each project will also be considered in the context of the wider WestConnex program of works.

A proposed southern extension from Arncliffe to Kogarah is currently being investigated by the NSW Government, and would connect the New M5 to the southern and bayside suburbs of Sydney, and the proposed F6 motorway.

The WestConnex Delivery Authority (WDA) was established by the NSW Government to manage the delivery of the WestConnex series of projects for Roads and Maritime on behalf of the State. The WDA was a public subsidiary corporation of the Roads and Maritime. Following the achievement of early milestones for the WestConnex program of works, the NSW Government took the opportunity to evolve this early governance model.

On 1 October 2015 the transfer of the project delivery functions of WDA to Sydney Motorway Corporation (SMC) was finalised, forming a single decision-making entity to finance and deliver the WestConnex program of works. SMC is a private corporation, the shareholders of which are the Minister for Roads, Maritime and Freight and the Treasurer, with a majority independent board of nine directors.

Roads and Maritime is the Government client agency for the WestConnex program of works. In that capacity Roads and Maritime will enter into contractual arrangements with SMC subsidiary entities which will design, build, own and operate the motorway on behalf of Roads and Maritime. Roads and Maritime and SMC are working together to manage the planning approval process for the project. However, for the purpose of the planning application for the project, Roads and Maritime is the proponent.

1.2 Overview of the project

Key components of the project would include:

- Twin motorway tunnels between the existing M5 East Motorway (between King Georges Road and Bexley Road) and St Peters. The western portals along the M5 East Motorway would be located east of King Georges Road, and the eastern portals at St Peters would be located in the vicinity of the Princes Highway and Canal Road. Each tunnel would be about nine kilometres in length and would be configured as follows:
  - Between the western portals and Arncliffe, the tunnels would be line marked for two lanes as part of the project, and built with the provision to be widened to three in the future, subject to additional assessment and approval
  - Between the Arncliffe and St Peters, the tunnels would be line marked for two lanes as part of the project, and built with the provision to be widened to five in the future, subject to additional assessment and approval.
- The western portals along the M5 East Motorway would be located east of King Georges Road, and the eastern portals at St Peters would be located in the vicinity of the Princes Highway and Canal Road
- Tunnel stubs to allow for a potential future connection to the future M4-M5 Link and a potential future connection to southern Sydney
- Surface road widening works along the M5 East Motorway between east of King Georges Road and the new tunnel portals
- A new road interchange at St Peters, which would initially provide road connections from the main alignment tunnels to Campbell Road and Euston Road, St Peters
- Two new road bridges across Alexandra Canal which would connect St Peters interchange with Gardeners Road and Bourke Road, Mascot
- Closure and remediation of the Alexandria Landfill site, to enable the construction and operation of the new St Peters interchange
- Works to enhance and upgrade local roads near the St Peters interchange
- Ancillary infrastructure and operational facilities for electronic tolling, signage (including electronic signage), ventilation structures and systems, fire and life safety systems, and emergency evacuation and smoke extraction infrastructure
- A motorway control centre that would include operation and maintenance facilities
- New service utilities and modifications to existing service utilities
- Temporary construction facilities and temporary works to facilitate the construction of the project
- Infrastructure to introduce tolling on the existing M5 East Motorway
- Surface road upgrade works within the corridor of the M5 East Motorway.

Construction activities associated with the project would generally include:

- Commencement of enabling and temporary works, including construction power, water supply, ancillary site establishment, demolition works, property and utility adjustments and public transport modifications (if required)
- Construction of the road tunnels, interchanges, intersections and roadside infrastructure
- Haulage of spoil generated during tunnelling and excavation activities
- Fitout of the road tunnels and support infrastructure, including ventilation and emergency response systems
- Construction and fitout of the motorway control centre and ancillary operations buildings
- Upgrades to surface roads and construction of bridges
- Implementation of environmental management and pollution control facilities for the project.

Subject to the project obtaining environmental planning approval, construction of the project is anticipated to commence around mid-2016 and is expected to take around three years to complete.

The M5 Motorway corridor (the M5 East Motorway and the M5 South West Motorway) is the main passenger, commercial and freight corridor between Port Botany, Sydney Airport and south-west Sydney. Traffic demands on the M5 East Motorway currently exceed the design capacity of the roadway, and as a result, present a significant bottleneck to the M5 Motorway corridor with motorists experiencing heavy congestion and unreliable journey times. The project is needed to provide additional capacity along the M5 Motorway corridor, and would allow for a more robust and reliable transport network.

1.3 Project location

The project would be located within the Canterbury, Hurstville, Rockdale, Marrickville, Sydney and Botany Bay local government areas. The project corridor is located from about five to twenty kilometres to the south and south-west of the central business district of Sydney. The project would traverse the suburbs of Beverly Hills, Kingsgrove, Bexley North, Earlwood, Bardwell Park, Bardwell Valley, Arncliffe, Wolli Creek, Tempe, Sydenham, St Peters, Alexandria and Mascot.

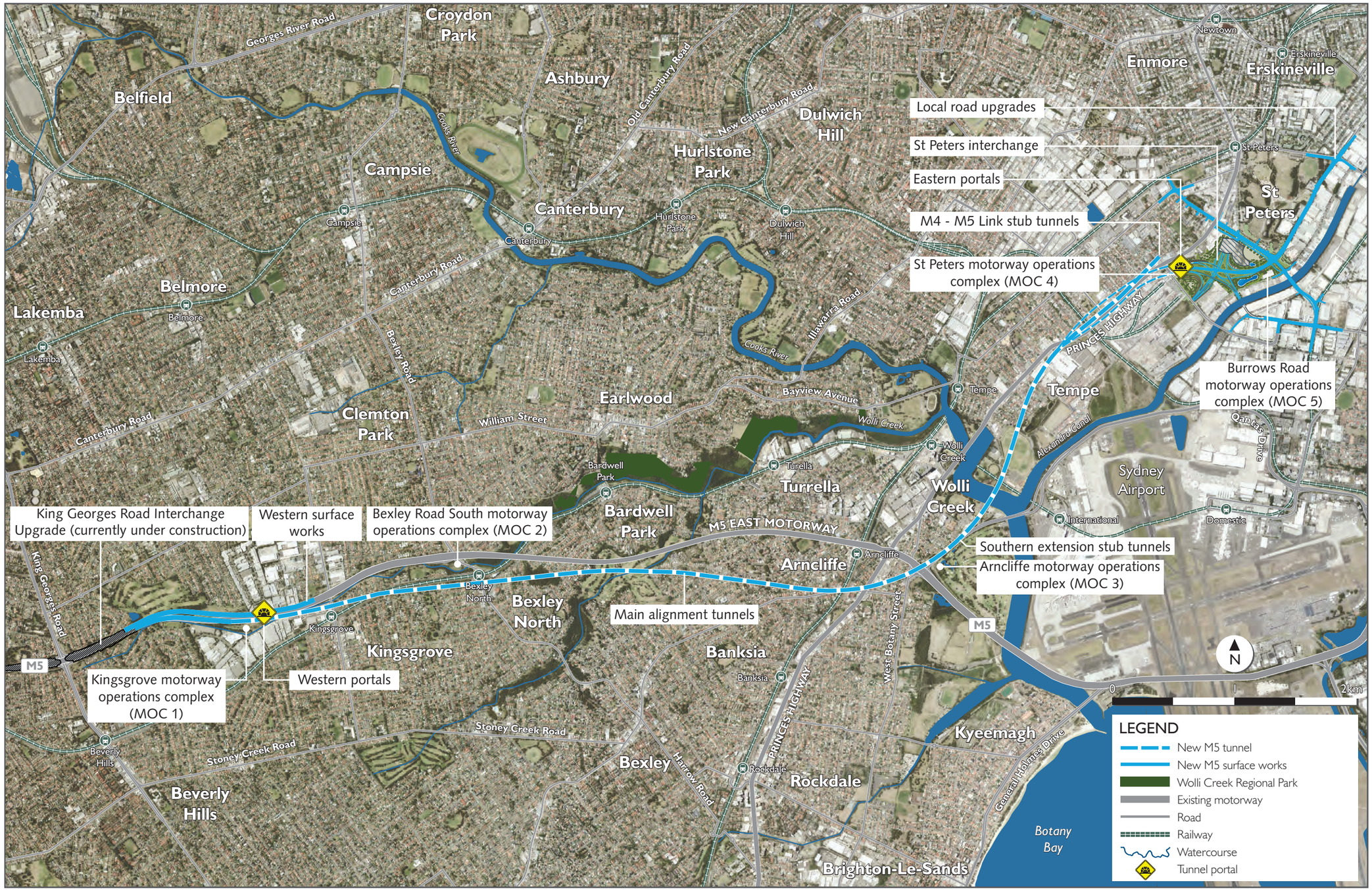


Figure 2 Project location

1.4 Secretary's Environmental Assessment Requirements

In preparing this Urban Design Report, the Secretary's Environmental Assessment Requirements (SEARs) issued for the New M5 project on 26 August have been addressed. The key matters raised by the Secretary for consideration in the Urban Design Report and where this report addresses the SEARs are outlined in Table 1.

Secretary's Environmental Assessment Requirements	Where Addressed
A consideration of the urban design and visual amenity implications of the proposal, including supporting infrastructure, during construction and operation. The assessment must identify the urban design and landscaping objectives to enhance the ventilation stacks, interchanges, tunnels, 'cut and cover' arrangements, consider resulting residual land and treatments, and demonstrate how the proposed hard and soft urban design elements of the proposal would be consistent with the existing and desired future character of the area traversed affected by the project;	Sections 5 & 6 (Also Technical Working Paper: Landscape and Visual Impacts Report)
Identification of opportunities to utilise surplus or residual land, and utilise key structures (such as stacks) for multiple uses i.e. integration with other structures.	Sections 5 & 6
Evaluation of the visual impacts and urban design aspects of the proposal (and its components) on surrounding areas, and consistency with the urban and landscape design of the M5 East Motorway and WestConnex Urban Design Corridor Framework;	Technical Working Paper: Landscape and Visual Impacts Report
A consideration of impacts on views and vistas, streetscapes, key sites and buildings, and direct amenity impacts (such as proximity and overshadowing).	See Landscape and Visual Impacts Report
Details of urban design and landscape mitigation measures, having regard to the urban design and landscape objectives for the proposal.	Section 9
Measures to manage lighting impacts both during construction and operation, in particular lighting of the St Peters interchange and impacts on the operation of Sydney Airport.	See Landscape and Visual Impacts Report
Artists' impressions and perspective visualisations of the proposal from a variety of locations along and adjacent to the route.	Sections 5 & 6

Table 1 Secretary's Environmental Assessment Requirements - urban design, landscape character and visual amenity

2

Urban Design and the New M5

Urban Design and the New M5

2.1 Urban and Landscape Design

The urban and landscape design of infrastructure projects such as the New M5 produces the legacy through which we interact with these projects on a daily basis. Whilst the functionality of the New M5 is paramount, thought and attention to design quality at the outset would ensure long-term success. Through implementation of an overarching urban design vision and careful analysis of context, the project would seamlessly integrate with and provide peripheral benefits for local and regional communities.

A number of publications and guidelines have been produced to assist with ensuring quality design is at the forefront of road infrastructure projects. The following documents have informed development of the New M5 Urban and Landscape Design:

- *Beyond the Pavement- Urban Design Policy Procedures and Design Principles*, Roads and Maritime Services,
- *Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW,* Roads and Maritime Services, January 2012
- *Noise wall design guideline: Design guidelines to improve the appearance of noise walls in NSW,* Roads and Traffic Authority, February 2007
- *Landscape Guideline: Landscape design and maintenance guidelines to improve the quality, safety and cost effectiveness of road corridor planting and seeding*, Roads and Traffic Authority, June 2008

To further reinforce the importance of urban and landscape design, Westconnex Delivery Authority produced the *Westconnex Urban Design Framework*. This framework establishes overarching principles that guide urban and landscape design for the various stages of Westconnex. The principles include:

- Leading edge environmental responsiveness
- Connectivity and legibility
- Place making
- Liveability and urban renewal
- Memorable identity and a safe, pleasant experience
- A new quality benchmark

An assessment of the project against these principles is contained in Section 8.

2.2 Urban Design Review Panel

Sydney Motorway Corporation (SMC) has constituted an Urban Design Review Panel to oversee development of urban and landscape design. The role of the Panel is to provide advice to the SMC Project Director regarding the urban design concept and its development. The panel makes recommendations in relation to architecture, urban and landscape design and artistic aspects of the project. These recommendations are utilised by the Project Director in the course of design review. Members of the Panel include:

Peter Poulet (Chair)	NSW Government Architect
Yvonne von Hartel	Peck von Hartel Architects
Kim Crestani	Order Architects
Gareth Collins	Centre for Urban Design, RMS

Biographies of Panel members are included in Appendix A.

Figure 3 Publications and guidelines used to inform urban design of New M5

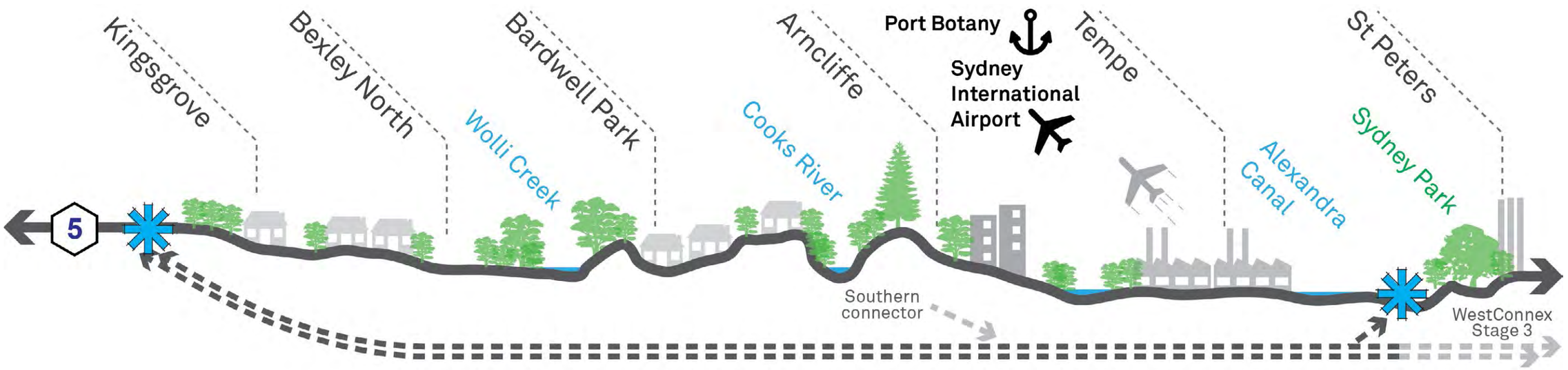


Figure 4 Indicative section illustrating the journey of the New M5

2.3 The New M5

The New M5 utilises the principles established in the *Westconnex Urban Design Framework* to ensure the motorway is constructed in a manner that limits impacts on the surrounding urban environment whilst also producing a number of benefits for communities on a local and regional level. The urban and landscape design detailed in this report are based on the following inclusions:

- Western surface works - consisting of realignment of the M5 East Motorway, the western portals for the New M5, tolling infrastructure and the Kingsgrove motorway operations complex. The Kingsgrove motorway operations complex would comprise of a maintenance facility, ventilation facility, distribution substation, deluge tanks and emergency response system on the southern edge of the motorway adjacent to Wolli Creek.
- The Bexley Road South motorway operations complex. This comprises of an emergency smoke extraction facility and distribution substation opposite existing M5 East Motorway facilities located on Bexley Road and south of the westbound motorway on ramp.
- Arncliffe motorway operations complex - consisting of a ventilation facility, an emergency smoke extraction facility, an air intake facility, distribution substation and water treatment facility adjacent Kogarah Golf Course on Marsh Street.
- Main alignment tunnels - twin nine kilometre road tunnels from Kingsgrove to St Peters
- St Peters interchange - consisting of the motorway control centre, ventilation facility, interchange road network connecting New M5 with the surrounding road network and provision for connection to the future M4-M5 Link and Sydney Gateway.
- Local road upgrades, consisting of upgrades to local roads to ensure safe and efficient connections with the New M5, and to cater for additional traffic demands. This includes two new road bridges and one pedestrian and cyclist bridge.
- Landscape and open space- consisting of landscaping upgrades to areas adjacent the motorway, active transport connectivity throughout the corridor including the creation of new publicly accessible open space at St Peters Interchange.
- Art and lighting- consisting of an artwork strategy for New M5 and preliminary lighting designs for the portals, tunnels and St Peters Interchange.

The urban and landscape design concept contained in this report provides a platform from which detailed designs would be produced. The concept ensures the New M5 blends with its surrounds while ensuring open space and connectivity benefits for surrounding communities.

3

Principles and Objectives

Principles and Objectives

3.1 Urban Design Philosophy

The quality of urban and landscape design is becoming the accepted measure of a transport scheme's success in an urban and regional environment. Good design of public domain is fundamental to quality of life in urban areas. Streets, roads, expressways and motorways constitute a large portion of our public spaces. It is via the footpath, cycleway, street, car, bus and train that we regularly interact with our living environments.

The urban design philosophy for New M5 is based on delivering high quality integrated design outcomes that display relevance, fit, durability and delight.

3.2 Urban Design Objectives and Principles

The design would integrate high quality architecture with engineering solutions to sensitively integrate New M5 with its surrounds. The following outlines the objectives and principles:

3.2.1 Leading edge environmental responsiveness

- Protect and retain as much existing vegetation as possible to minimise the footprint, maximise vegetated screening and reduce loss of green space and green links.
- Using only containerised planting stock to facilitate rapid establishment of new landscape installations.
- Include plant species that reinforce local indigenous plant communities.
- Key elements such as retaining walls and noise walls would have a textured surface where needed to discourage vandalism and contain anti-graffiti coatings to allow easy removal.
- Balance the composition of built form and landscape by maximising planting opportunities including large trees as a foil for the proposed infrastructure elements and to help in cooling, masking noise and improving air quality.
- Use of dimmable LEDs and other energy saving products for lighting.

3.2.2 Connectivity and legibility

To create a simple, legible and inviting design solution that would:

- Provide self-explanatory roads with geometry and design to match posted speeds and ease of way-finding.
- Enhance and create active transport infrastructure to provide safe and seamless journeys for pedestrians and cyclists.
- Enhance and create connections to and from public open space.
- Provide visual stimuli within the tunnel to create a progressive sequence of events for the motorist.

3.2.3 Place making

The design would add to local places, streets, structures and landscape and minimise impacts on the local community through the following design treatments:

- Use of high quality, robust and functional materials and products in the public domain.
- Activating the edges of public spaces through design by considering pedestrians and cyclists and adjacent land uses.
- Offering opportunities for the future redevelopment and renewal of land along the corridor.

3.2.4 Urban renewal and liveability

The design considers and integrates with local movement networks, places and land uses to support existing urban renewal and enable future opportunities for urban renewal through:

- Improving access to public and active transport.
- Enhancing local street, pedestrian and bus connectivity (through a regular street edge).
- Removing surface traffic creating long term improvements in air quality and noise on surface roads and streets that support pedestrian activity.
- Creation of new dedicated cycle paths, shared paths, footpaths and crossings to improve active transport connections.
- Providing extensive tree planting of endemic species to achieve canopy cover for shade, shelter and habitat.

Objective 1

Planning, design, construction and long term management shall be based upon **a natural systems approach** which is responsive to the environment and promotes the highest levels of sustainability.

Objective 2

Build **connectivity** across the city, beyond the boundaries of the motorway corridor and promote increased **legibility of places, buildings, streets and landmarks**.

Objective 3

Create beautiful places, streets, structures and landscapes that draw their form, character and materiality from local **context**, the **intrinsic natural and cultural qualities of each locale.**

Objective 4

Enable opportunities for urban renewal and provide high levels of urban amenity and livability.

Objective 5

Provide a memorable project identity and experiences for road users and adjacent stakeholders which are safe, convenient and enjoyable.

Objective 6

Provide design and construction quality of **world class standard**. WestConnex shall establish a new benchmark for integrated sustainability, engineering, art, architecture and urban design.

Figure 5 Urban design objectives for the New M5

3.2.5 Memorable identity and a safe, enjoyable experience

A memorable identity would be created with a high quality user experience for motorists and adjacent communities by:

- Keeping a simple and consistent language of built elements and components to minimise visual clutter
- Providing a secure environment including aspects such as passive surveillance, clear sight lines and lighting.
- Creating distinctive portal access points that reinforce the character of the local area and are respectful of the individual setting
- Differentiating character zones and breaking up tunnel lengths to vary the driver experience and heighten awareness of geographical location through lighting, signage and art
- Maximising opportunities to provide a well vegetated ‘green’ corridor by maintaining or improving links to open space at the western surface works and providing public open space at the St Peters interchange.

3.2.6 A new quality benchmark

A world-class solution for the New M5 would be delivered that sets a benchmark in the travel experience. The design would establish an identity for the existing M5 East and future stages by:

- Integrating the various existing and proposed built form elements such as portals, noise walls and retaining walls to reinforce an integrated design that enhances visual unity and clarity
- Utilising durable and high quality materials and providing good access to ensure the motorway maintains its identity for years to come.

4

Context

Context

4.1 Regional Context

The project is a component of the wider WestConnex scheme, which would provide a 33 kilometre motorway linking Sydney's west and south-west with Sydney Airport and the Port Botany precinct. The component projects of the WestConnex scheme are:

- M4 Widening – Pitt Street, Parramatta to Homebush Bay Drive, Homebush
- M4 East – Homebush Bay Drive, Homebush to Parramatta Road and City West Link (Wattle Street) at Haberfield
- New M5 – (the subject of this EIS)
- King Georges Road Interchange Upgrade
- M4-M5 Link – Haberfield to St Peters

Sydney's population is expected to increase by more than 1.6 million people by 2031 and without major investment in road network infrastructure this growth would result in worsening road congestion. This congestion would in turn affect Sydney's economic competitiveness as a global city in light of competition from other cities in the region. The New M5 would assist in relieving this congestion.

The New M5 is part of the second stage in the delivery of the WestConnex scheme. It is a NSW Government commitment to deliver WestConnex for Sydney in response to the recommendations from Infrastructure NSW in its State Infrastructure Strategy and Transport Master Plan.

The New M5 would provide operational benefits in relieving congestion along the M5 East Motorway, including a reduction in travel times and improvements in road safety. The investment in the New M5 and other WestConnex projects would facilitate a step change in network performance, enabling delivery of major city shaping improvements and delivering economic growth.

As part of the broader WestConnex, the New M5 would support NSW's key economic generators and provide a strategic response to the currently inadequate, and highly congested, road network. Critically, this includes a targeted response to current failures in the motorway network that support Sydney's Global Economic Corridor and Western Sydney, both of which are important to the economic development of NSW and Australia. Improvements to the transport network, including the New M5, would support the Global Economic Corridor and Western Sydney by enabling domestic and international freight and trade and therefore underpin a sustainable NSW economy and Sydney's role as a global city.

Integrated land use and transport planning initiatives are a key factor in developing a future where Sydney's growing population can reliably access jobs and services. The New M5 complements a number of other transport and freight based infrastructure initiatives identified in the Transport Master Plan, a combination of which would best address Sydney's needs.

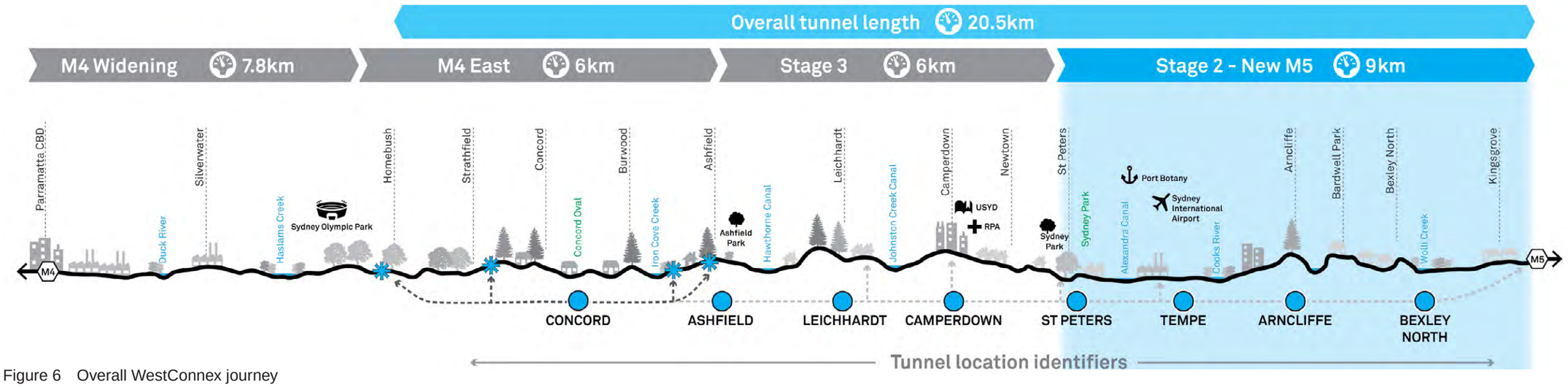


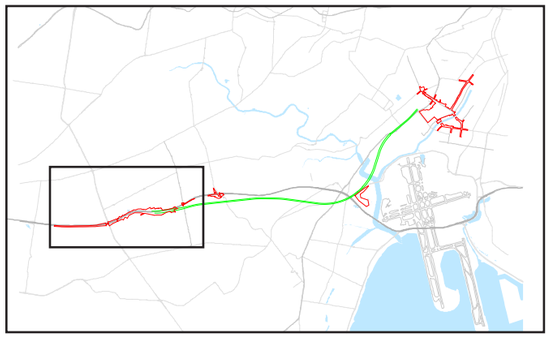
Figure 6 Overall WestConnex journey

4.2 Local context

Kingsgrove

The western reaches of the corridor traverse the suburbs of Kingsgrove and Bexley North. Kingsgrove is characterised by low density residential housing on medium to large suburban lots. Residences are a mix of existing red brick and weatherboard single storey bungalows interspersed with some newly constructed two storey brick homes. The streetscapes are characterised by wide turfed verges with mature native street trees.

Industrial uses of varying scale line the M5 East Motorway corridor further east of the residential area of Kingsgrove. The M5 Linear Park lines both sides of the corridor in varying widths between Kingsgrove and Bexley. Canterbury Golf Course and Beverly Grove Park are significant areas of open space in the western most extent of the corridor. These areas are complemented by local and pocket parks to the east along the M5 Linear Park towards Bexley. Connections across the corridor are made between areas of open space via underpasses to the existing M5 East Motorway. These underpasses are characterised by street art murals that line the walls providing a unique identity that links the open space network.

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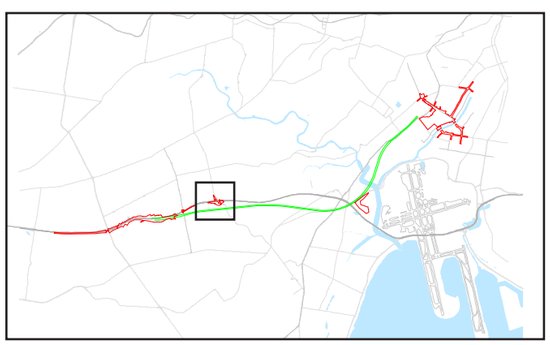
1. Kingsgrove streetscape
2. Street art
3. Site of Western surface works
4. Existing M5 East Linear Park shared path

Bexley

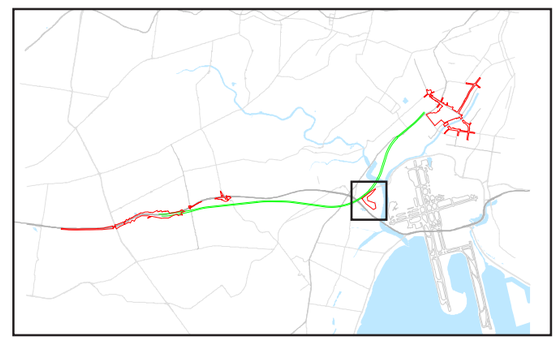
The Bexley Road interchange for the M5 East Motorway, the M5 East Motorway maintenance facility and plant associated with a ventilation filtration trial is located in the suburb of Bexley North. This suburb contains a mix of one and two storey detached bungalow dwellings. The lot size is relatively large and most homes feature established gardens with wide green verges. This area marks the eastern extent of the M5 Linear Park which provides connections between the active recreation areas of Kingsgrove Avenue Reserve in the south and Beaumont Park in the north.

1. Bexley streetscape
2. Bexley entrance to M5 Linear Park
3. Pedestrian overpass Bexley Road



Arncliffe

The eastern zone of the corridor contains the suburb of Arncliffe. The predominant land use within Arncliffe in the vicinity of the corridor is recreational, featuring the Kogarah Golf Club and Cahill Reserve on the Cooks River. Marsh Street separates the golf club from a residential area to the north bound by West Botany Street and Cahill Reserve. The existing housing stock is low density detached dwellings on medium-large blocks of land. To the east of this area, bordering Cahill Reserve, high density apartment complexes are currently under construction.



1. Kogarah Golf Course
2. Cooks River

St Peters

The eastern most extent of the corridor is located in the suburb of St Peters. The ‘St Peters interchange’ site is located on the Alexandria landfill. The site is bound by Canal Road in the west, Campbell Road in the east, Princes Highway to the north and Burrows Road in the south. Residential areas surrounding the interchange include a row of terraces on Campbell Road surrounded by Sydney Park, a triangle of residential bound by Barwon Park Road, Campbell Street and Princes Highway and terraces along Albert Street south of Princes Highway. The majority of residences within St Peters are located north of the Princes Highway. Other land uses surrounding the interchange include the 40 hectare Sydney Park to the east and industrial transport and logistics uses to the south and west.

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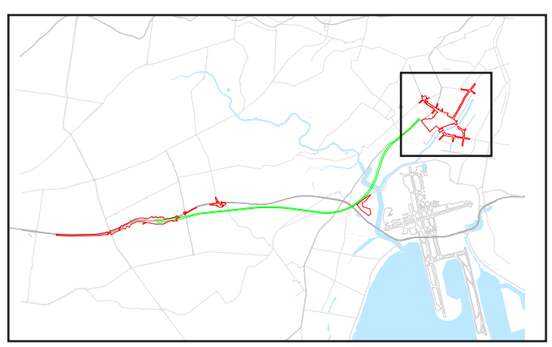

1. Campbell Road terraces
2. Dynamo Building, corner Princes Highway and Canal Road
3. Sydney Park
4. Canal Road

4.3 Existing Conditions

An analysis of the project was undertaken to understand existing conditions, with the following natural, built and community contexts examined:

4.3.1 Land use

Land use along the corridor is generally a mix of commercial, industrial and residential. The corridor west of Cooks River is dominated by parkland and residential land uses, whilst the corridor east of Cooks River is largely concerned with industrial, parkland and transport/ logistics related land uses.

A summary of the land use zones across the corridor is contained on the following page.

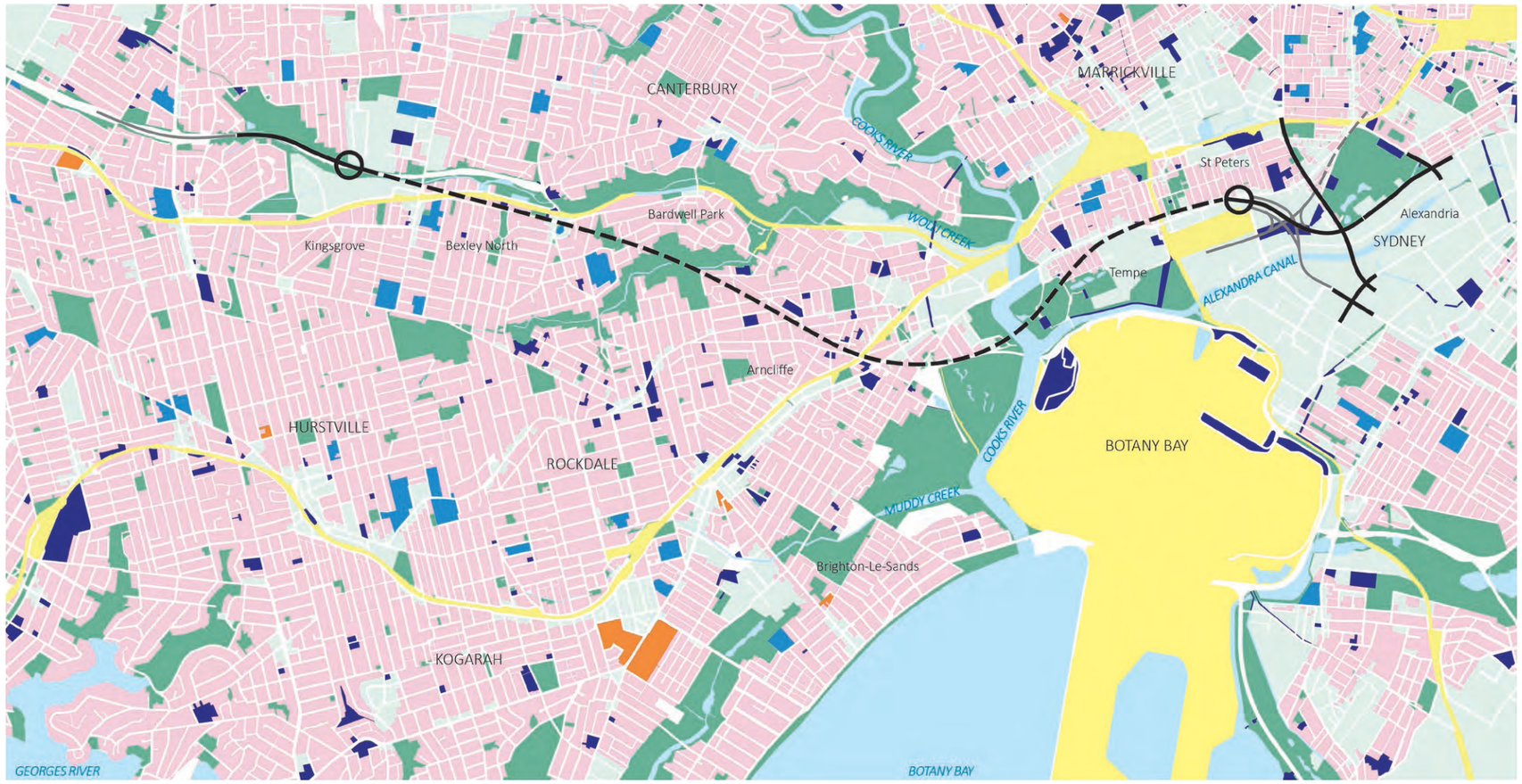

Figure 7 Land use surrounding the New M5

Landscape character zone	Description of land use zoning
Western surface works	The M5 East Motorway corridor is zoned as SP2 Infrastructure under both the *Hurstville Local Environmental Plan* (LEP) 2012 and the Canterbury LEP 2012. This zoning reflects the desire to maintain accessibility, supporting economic activity and efficient freight movement. The land to the north of the M5 East Motorway and western surface works area is zoned as RE1 Public Recreation, R3 Medium Density Residential, IN2 Light Industrial under the Canterbury LEP 2012. The land to the south of the M5 East Motorway and western surface works area is zoned as R2 Low Density Residential and IN2 Light Industrial, with some pockets of RE1 Public Recreation under the Hurstville LEP 2012. This zoning reflects the desire to maintain the existing low-medium density residential character and suburban setting of the area, with pockets of bushland.
Bexley Road motorway operations complex	The M5 East Motorway and Bexley Road are zoned as SP2 Infrastructure under the Canterbury LEP 2012. This zoning reflects the desire to maintain accessibility, supporting economic activity and efficient freight movement. North of the M5 East Motorway and west of Bexley Road is zoned as R3 Medium Density Residential and some pockets of RE1 Public Recreation under the Canterbury LEP 2012. East of Bexley Road is zoned as R2 Low Density Residential, E1 National Parks and Nature Reserves and some pockets of RE1 Public Recreation under the Canterbury LEP 2012. This zoning reflects the desire to maintain the existing low-medium density residential character and bushland setting of the area. South of the M5 East Motorway and west of Bexley Road is zoned as R2 Low Density Residential, RE1 Public Recreation, and SP2 Infrastructure (along the East Hills railway line) under the Canterbury LEP 2012. This zoning reflects the desire to maintain the existing low density residential character and bushland setting of the area, while maintaining accessibility.
Arncliffe motorway operations complex	East of the Kogarah Golf Course is Sydney Airport which is zoned as SP2 Infrastructure under the Rockdale LEP 2011. This zoning reflects a desire to maintain accessibility, supporting economic activity, tourism and efficient freight movement. Marsh Street and West Botany Street, to the north and west of the Kogarah Golf Course, are zoned as SP2 Infrastructure under the Rockdale LEP 2011. This zoning reflects the desire to maintain access and connectivity between local centres of employment and economic activity.

Landscape character zone	Description of land use zoning
Arncliffe motorway operations complex	The north of the Kogarah Golf Course, along Marsh Street, is zoned as R2 Low Density Residential, B4 Mixed Use, R4 High Density Residential and RE1 Public Recreation under the Rockdale LEP 2011. This zoning reflects the desire to maintain the residential character of the area along with integrated business development and recreational areas, in keeping with the *Sydney Regional Environmental Plan No. 33 – Cooks Cove* and the *Princes Highway Corridor Strategy.* The west of the Kogarah Golf Course, along West Botany Street, is zoned as R2 Low Density Residential. This zoning reflects the desire to maintain the existing low density residential character of the area.
St Peters interchange and surrounds	The Princes Highway is zoned as SP2 Infrastructure under the Marrickville LEP 2011 and Campbell Road is zoned as SP2 Infrastructure under Sydney LEP 2012. Canal Road is also zoned as SP2 Infrastructure under the Sydney LEP 2012 and the Marrickville LEP 2011 This zoning reflects the desire to maintain access and connectivity between local centres of employment and economic activity. The Alexandria Landfill (the future site of the St Peters interchange) is zoned as SP2 Infrastructure (Sydney LEP 2012) and IN1 General Industrial (Marrickville LEP). To the north of the Alexandria Landfill along the Princes Highway are areas zoned as B6 Enterprise Corridor and B4 Mixed Use, to the east along Campbell Street and Campbell Road are areas zoned as IN2 Light Industrial and R1 General Residential under the Marrickville LEP 2011, and RE1 Public Recreation under the Sydney LEP 2012. To the east and south along Burrows Road and the Alexandra Canal the land is zoned as IN1 General Industrial under the Sydney LEP 2012. To the west of the landfill and Canal Road is land zoned as IN1 General Industrial under the Marrickville LEP 2011. The zoning of the areas surrounding the St Peters interchange identify that the desired future character of the broader area is to retain the existing low to medium density development, whilst also continuing to encourage business development within the enterprise corridor and mixed use areas and industrial development contained within the existing industrial areas.

4.3.2 Local Government Areas and suburbs

The project would pass through six local government areas including Canterbury, Hurstville, Rockdale, Marrickville, Botany Bay and Sydney. This demonstrates the magnitude of communities surrounding the project. The urban and landscaping design would need to account for the variety of finishes and palettes between the local government areas, particularly in relation to public domain and landscape species.

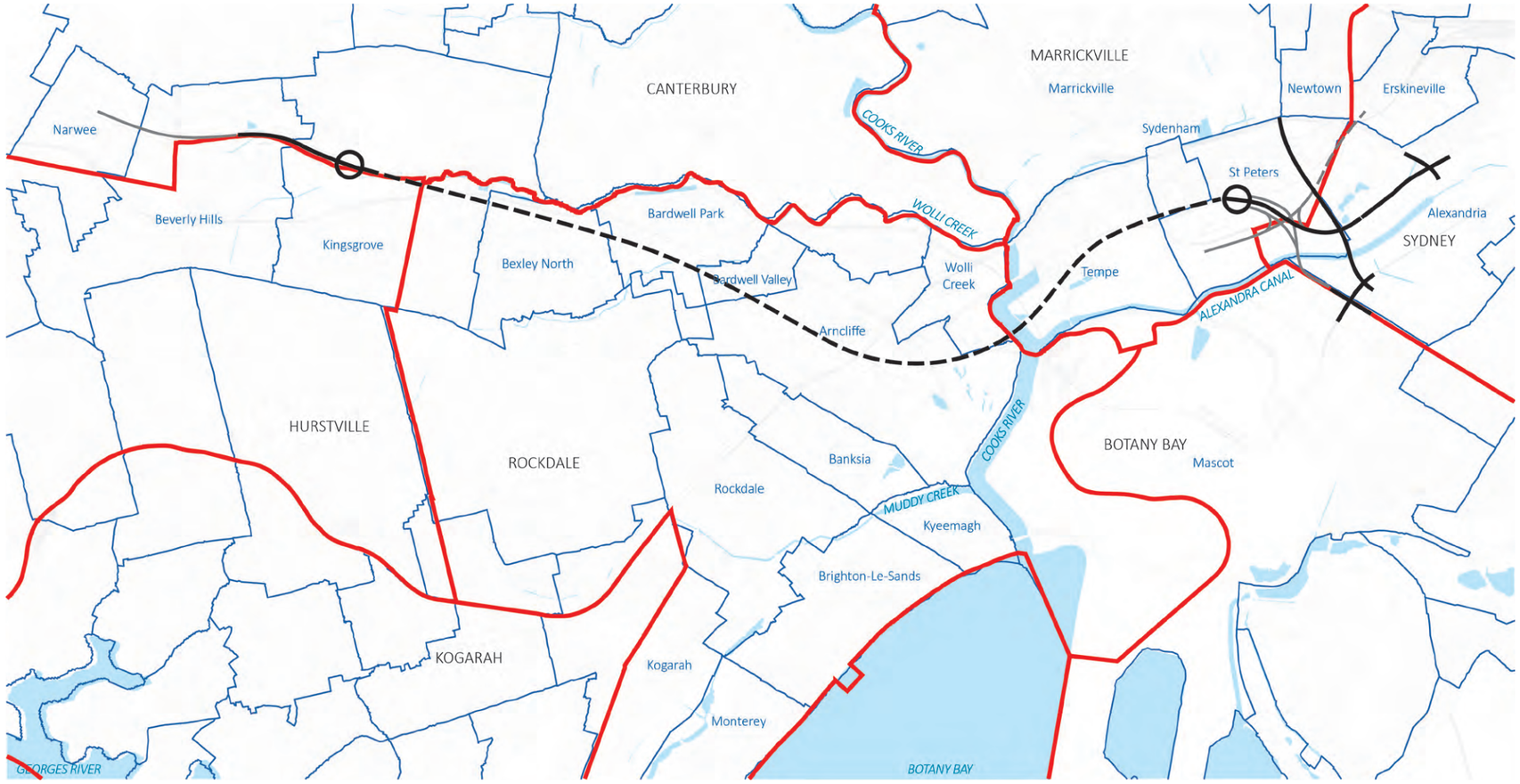

Figure 8 Local Government Areas surrounding the New M5

4.3.3 Public transport and main routes

The current M5 East Motorway corridor and the Princes Highway corridor connect a diversity of suburbs, and also form a north-south divide between suburbs, communities and open spaces. These corridors form the main vehicular connections between western and southern Sydney to the Central Business District (CBD). Port Botany and Sydney Airport form the southern reaches of Sydney's Global Economic Corridor. The New M5 would increase connectivity to these important centres within the Economic Corridor

The T2 Airport and Inner West and T4 Eastern suburbs and Illawarra train lines traverse the corridor providing mass transit transport options to the CBD and airport.

A number of bus routes traverse the corridor including the M41 and M30 regional routes.

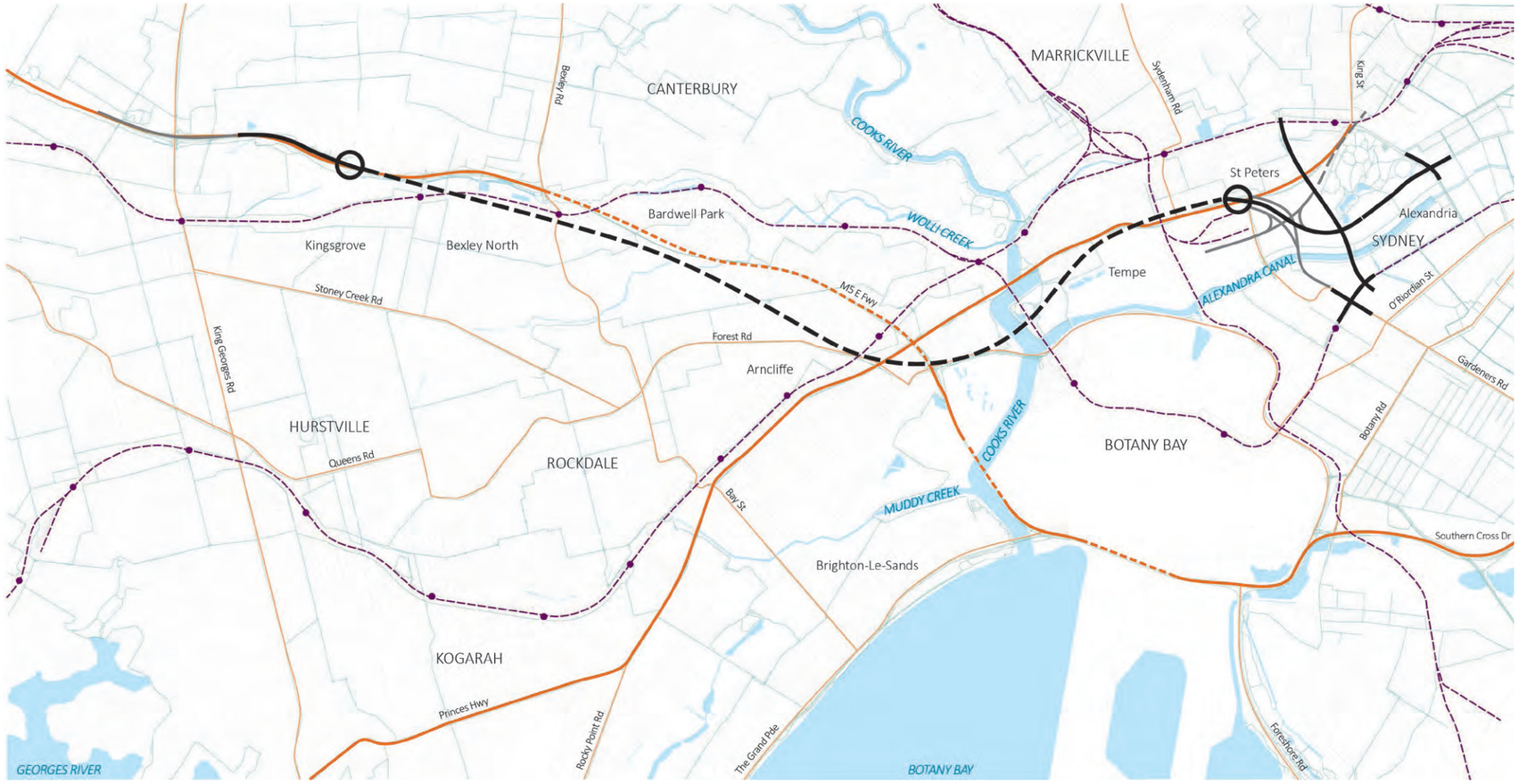

Figure 9 Public transport and main routes surrounding the New M5

4.3.4 Open space

There is a mix of local and neighbourhood parks, sporting fields, a regional park and golf courses adjacent to the corridor.

The major open space areas within the west of the corridor include Canterbury Golf Course and Beverly Grove Park. To the north of the corridor there is significant open space with the Wolli Creek Regional Park and various parks lining the Cooks River and the Kogarah Golf Course. In the east of the corridor open space is provided by the 40 hectare Sydney Park as well as smaller local parks including Camdenville and Simpson Parks in St Peters.

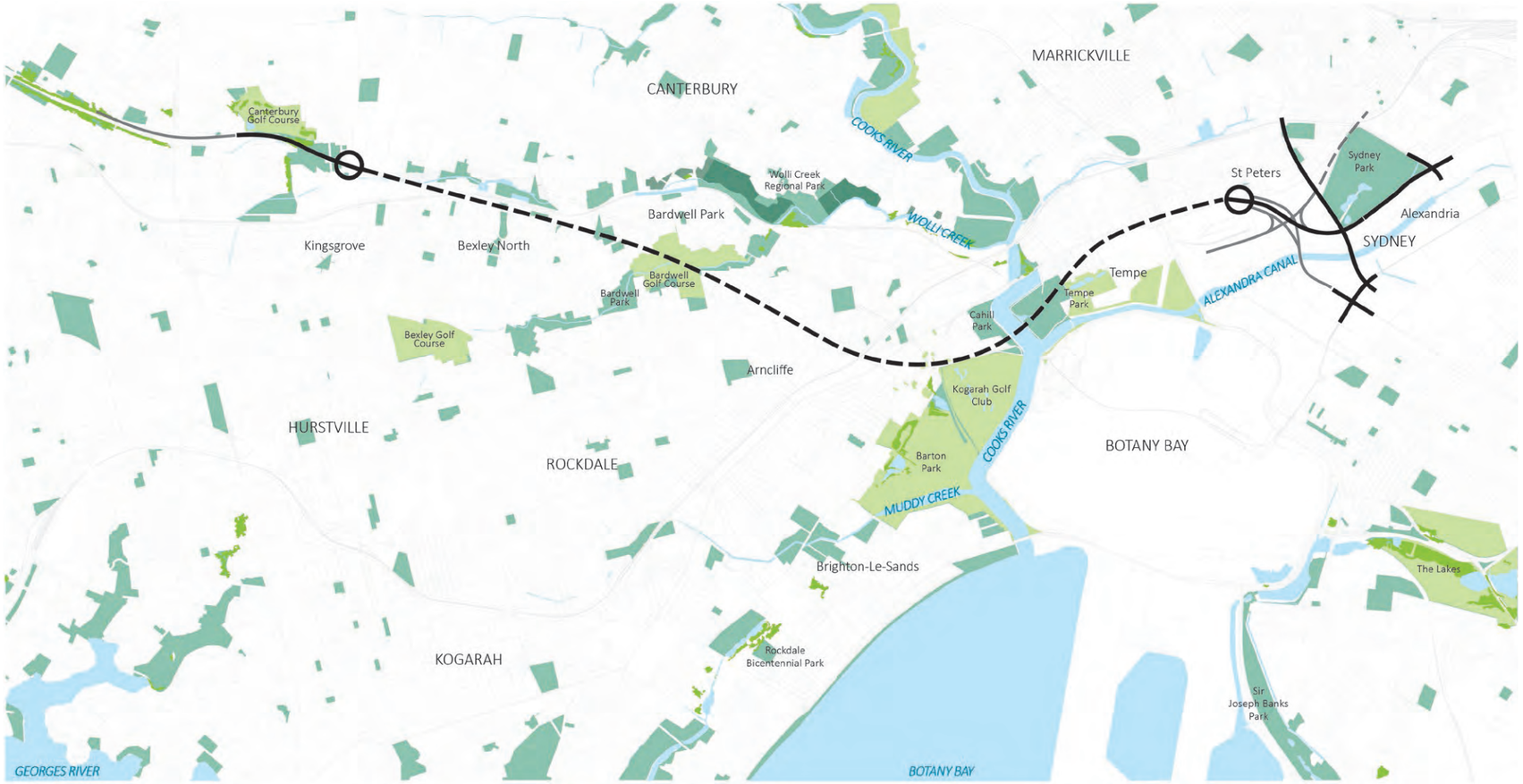

Figure 10 Open Space surrounding the New M5

4.3.5 Hydrology

The project lies within the Cooks River catchment with a number of tributaries that extend from the Cooks River into the corridor (west to east):

- Wolli Creek (Natural and formalised canal)
- Bardwell Creek
- Eastern Channel
- Alexandra Canal, which includes Sheas Creek.

In the western reaches Wolli Creek is largely formalised and bound by development. Further east, near Bexley Road, Wolli Creek returns to a more natural form and is lined by open space and bushland.

The Alexandra Canal is an artificial waterway originally designed to carry goods from brickworks, mills and foundries surrounding the waterway. Completed in 1900 the waterway never achieved its vision as a useful transport thoroughfare as it experienced problems with sedimentation, requiring continual dredging. Use for transportation ceased in the 1930s and the industries lining the canal generated significant pollution which now remains in the sediments on the bed of the canal. The canal is listed on the State Heritage Register for its aesthetic, technical and research significance as one of only two navigable canals built in NSW.

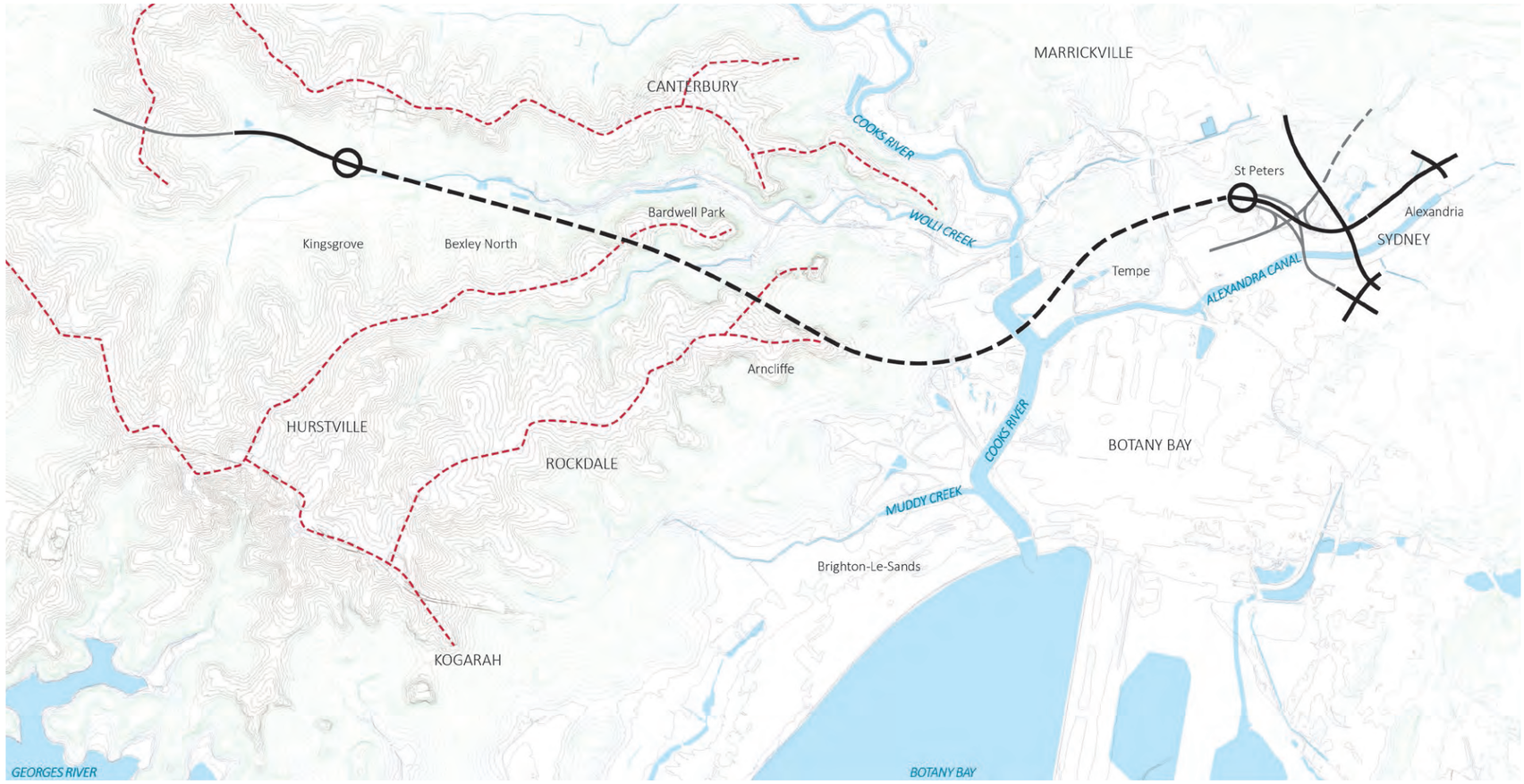

Figure 11 Hydrology surrounding the New M5

4.3.6 Non-Aboriginal heritage

A number of heritage listed items and conservation areas line the corridor. The majority of items are locally listed items or conservation areas with only five State heritage items within or adjacent to the project. More generally the heritage classification of a number of the sites within the corridor provides an opportunity for inspiration within the urban design. Sites such as St Peters interchange have a rich and varied history from brickpit to landfill. The project would commence another chapter in this site's history providing an opportunity for interpretation and celebration.

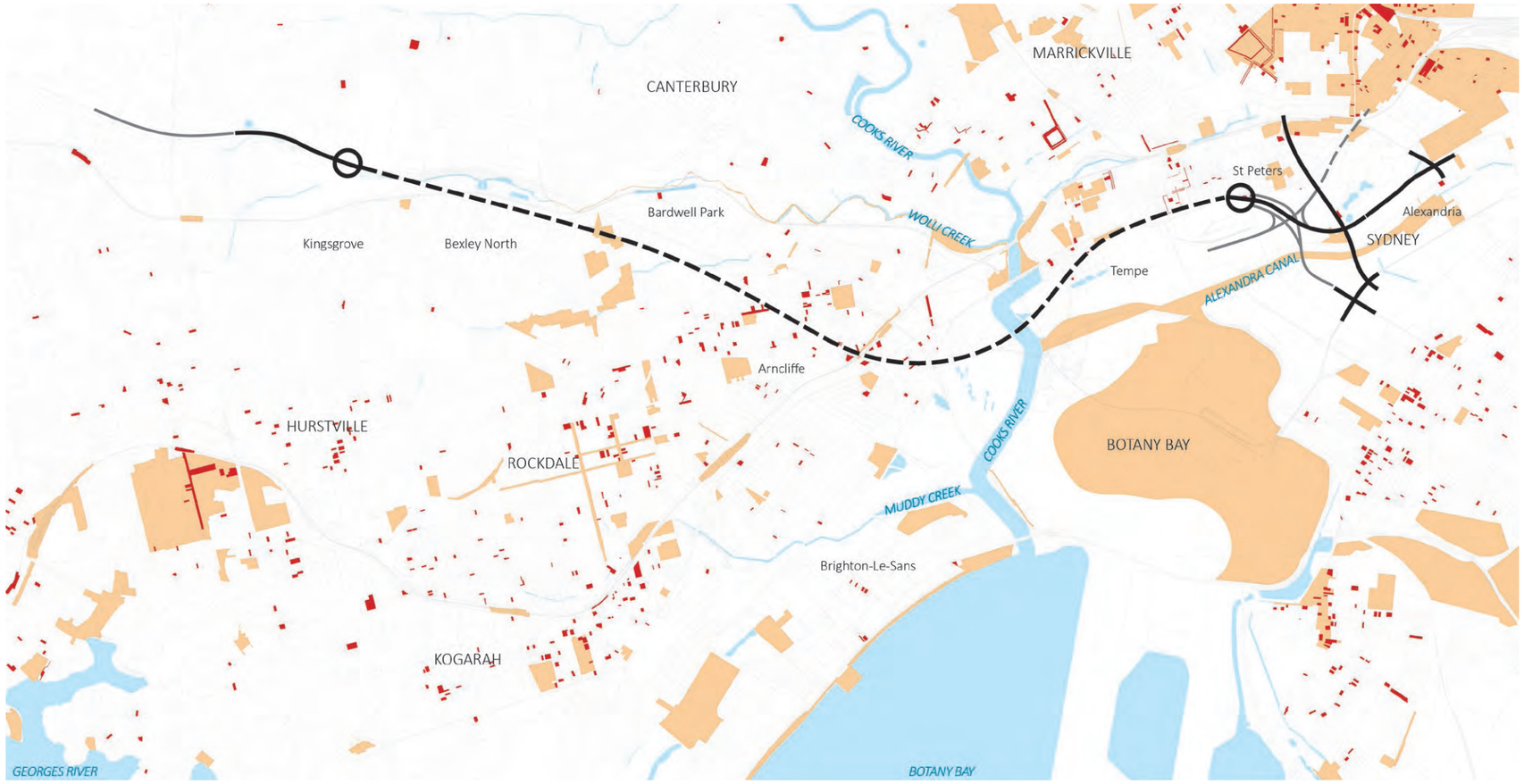

Figure 12 Non-indigenous heritage surrounding New M5