

13 Land use and property

This chapter assesses land use and property impacts associated with the project. The assessment includes:

- Identification of the local land uses, existing access arrangements and potential property acquisition for both public and private land affected by the project
- Assessment of the potential impacts of the project on property, land use and access arrangements during construction and operation of the project
- Identification of appropriate management and safeguard measures to minimise these impacts.

Table 13-1 sets out the Secretary's Environmental Assessment Requirements (SEARs) as they relate to land use and property, and where in the environmental impact statement (EIS) these have been addressed.

Table 13-1 SEARs – land use and property

Secretary's Environmental Assessment Requirement	Where addressed
Land use changes as a result of the proposal and the acquisition of privately owned, Council and Crown lands, and impacts to Council and Crown lands,	Land use changes as a result of the proposal and the acquisition of privately owned, council and Crown lands, and impacts to council and Crown lands are detailed in Section 13.3 .
An analysis of the proposal including an assessment, with a particular focus on the requirements of the listed key issues, in accordance with clause 7(1)(d) of Schedule 2 of the Regulation (where relevant), including an identification of how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment (direct, indirect and cumulative impacts) and/or in developing mitigation measures (to avoid, manage, offset and monitor impacts and where relevant, improve the existing environment)...	An assessment of the project's potential impacts on land use and property is included in Section 13.3 and mitigation measures are presented in Section 13.4. A full description of the project is provided in Chapter 5 (Project description). Chapter 6 (Construction work) identifies the land to be used for the project. A list of approvals for the project is provided in Chapter 2 (Assessment process). Indirect impacts are considered to be mainly social and economic related and therefore covered in Chapter 15 (Social and economic). Chapter 27 (Cumulative) provides the cumulative impact assessment. Chapter 30 provides a summary of the environmental management and mitigation measures for the project.
The EIS must also address the following specific matters: • impacts on directly affected properties and land uses, including impacts related to access, land use, settlement and subsidence associated with tunnel excavation, property acquisition (including relocations and expenses for those properties acquired) and amenity related changes;	Potential impacts of the project on property access, land use, settlement and subsidence associated with tunnel excavation, property acquisition are discussed in Section 13.3. Amenity related changes are addressed in Chapter 14 (Visual impacts and urban design).

Secretary's Environmental Assessment Requirement	Where addressed
opportunities for local centre and street revitalisation near the St Peters interchange;	Opportunities for local centre and street revitalisation are provided in the Urban Design Report (Appendix L).
an assessment of the impact of the proposal on community facilities, including open space and recreational facilities. The assessment must include the use of existing facilities impacted by the proposal, and options and opportunities for the relocation and/or reconfiguration of the community facilities, both temporary and permanent;	Impacts of the proposal on community facilities is describes in Section 13.3 and Chapter 15 (Social and economic)
where there are potential impacts to the OEH estate reserved under the National Parks and Wildlife Act 1974 or where the proposal is located upstream of OEH estate, an assessment of the matters to be considered outlined in the <i>Guidelines for developments adjoining land and water managed by Department of Environment, Climate Change and Water</i> (DECCW 2010);	The project would not directly impact any OEH estate reserved under the <i>National Parks and Wildlife Act 1974</i> . Impacts of the project on land use and property during construction and operation are described in Section 13.3.1 and Section 13.3.2 .
potential impacts on utilities (including communications, electricity, gas, and water and sewerage) and the relocation of these utilities	Potential impacts of the project on utilities are described in Section 13.3 .

13.1 Assessment methodology

The assessment of impacts from the project on property and land use included:

- Providing an overview of the existing character, land use and zoning in the vicinity of the project components
- Reviewing the zoning and minimum lot size provisions of the relevant local environment plans
- Identifying the properties and land uses that would be impacted by the project
- Assessing the potential for land used for construction of the project, but not proposed to include permanent operational infrastructure (surplus or residual land) to be redeveloped following construction
- Identifying potential impacts of the project on future development within the project area
- Compiling mitigation measures that would assist in reducing impacts on land use and property.

13.2 Existing environment

The existing environment for land use and property has been described in terms of the broader, regional environment of the project corridor within Sydney, as well as the local environment relevant to each of the specific elements of the project.

13.2.1 Regional context

The project corridor spans the Hurstville, Canterbury, Rockdale, Marrickville, Botany Bay and City of Sydney local government areas (LGAs). Land use and existing development within and around the project corridor is urban (eastern end of the project corridor) and suburban (western end of the project corridor) in nature, containing a mix of residential, commercial, industrial and open space uses. There are several major transport corridors and other infrastructure located in or adjacent to the project corridor, including the M5 East Motorway, the Princes Highway, the Sydney Trains suburban railway network and the Sydney Airport.

Land uses within the project corridor include a mix of:

- Residential land: Predominately low density residential, with medium and high density residential land uses in areas close to public transport, along arterial roads and at the eastern extent of the project corridor. Land use changes are occurring within the project corridor as older industrial areas are redeveloped for residential purposes. This includes the significant mixed use redevelopment at Wolli Creek within the Rockdale LGA
- Open space: Nature reserves, active recreational uses (such as golf courses and sports grounds) and passive recreational uses are located throughout the project corridor. This includes the Canterbury Golf Course, Beverly Grove Park, Wolli Creek Regional Park, Cahill Park, Barton Park, the Kogarah Golf Course, Tempe Recreation Reserve and Sydney Park. Continuous open space corridors, consisting of a series of smaller open spaces, are located along Bardwell Creek, Wolli Creek and the Cooks River
- Industrial and commercial land: Concentrated in the suburbs of Kingsgrove, Turrella, Wolli Creek, Arncliffe, Tempe, St Peters, Mascot and Alexandria. Commercial uses are typically concentrated along arterial roads (such as the Princes Highway) and at railway stations and, alongside medium and high density residential uses. Community facilities, churches, schools, medical and veterinary centres are located along the length of the project corridor.

Land use zonings within the project corridor are set by the following environmental planning instruments:

- *Sydney Regional Environmental Plan No. 33 – Cooks Cove (Cooks Cove SREP)*
- *Hurstville Local Environmental Plan 2012 (Hurstville LEP)*
- *Canterbury Local Environmental Plan 2012 (Canterbury LEP)*
- *Rockdale Local Environmental Plan 2011 (Rockdale LEP)*
- *Botany Bay Local Environmental Plan 2013 (Botany Bay LEP)*
- *Marrickville Local Environmental Plan 2011 (Marrickville LEP)*
- *Sydney Local Environmental Plan 2012 (Sydney LEP).*

The regional land use zoning context of the project is shown **Figure 13-1**. The land use zoning generally aligns with existing development types within the project corridor and includes:

- General and light industrial
- Business (commercial) zones, including centres, enterprise corridors along major road and business parks
- Residential zones, ranging from low to high density
- Mixed use zones (commercial and residential)
- Special infrastructure zones, which align with major transport infrastructure and corridors, as well as drainage, electricity infrastructure and educational establishments
- Recreational zones (private and public)
- Conservation and waterways zones, including national parks and nature reserves.

Transitional areas where the land use zonings and current development types are not fully aligned include industrial areas in Wolli Creek, Sydenham, St Peters and Alexandria undergoing redevelopment and conversion to residential areas.

A number of strategic planning initiatives are also underway within and around the project corridor. These include:

- The *Princes Highway Corridor Strategy* (Rockdale City Council)
- The Cooks Cove Growth Centre, on land subject to *Sydney Regional Environmental Plan No. 33 – Cooks Cove* (Cooks Cover SREP)
- The Mascot Station Town Centre Precinct (City of Botany Bay Council)
- Sydenham Green (Marrickville Council)
- The Sydney Gateway, a future part of the WestConnex program of works (Transport for NSW)
- Southern and northern extensions to the WestConnex program of works (Transport for NSW)
- The Sydney Metro projects (Transport for NSW)
- Zoned employment lands.

The *Princes Highway Corridor Strategy*, an initiative of Rockdale City Council, was adopted by the Council in late 2013. The strategy focuses on revitalising the corridor within the Rockdale local government area for employment uses and growing the Arncliffe town centre. This strategy targets changes to the distribution of residential, mixed use and business zones, as well as increased development densities.

The Cooks Cove Growth Centre is a 100 hectare precinct, which is bounded by the Cooks River and Muddy Creek, Marsh Street, West Botany Street and Bestic Street, and is subject to the Cooks Cover SREP. Historical master planning for the site identified an area for potential employment uses near Marsh Street with the remainder of the site to be set aside for conservation, open space and recreational purposes. Planning for the site is currently being managed by the Urban Growth Development Corporation.

The Mascot Station Town Centre Precinct, an initiative of the City of Botany Bay Council, is centred on the Mascot railway station and is partially located within the project corridor. The area has been rezoned as part of the *Botany Bay Local Environmental Plan 2013*, allowing for the intensification of residential and commercial land uses.

Sydenham Green is a local park in Sydenham, which is partially located within the project corridor. Sydenham Green is bounded by Unwins Bridge Road, George Street, Henry Street, Railway Road, Stewart Lane, Park Road, Rowe Lane, and Reilly Lane. Sydenham Green was created through the demolition of houses in the mid-1990s as a result of a Commonwealth Government property acquisition program associated with the building of the third runway at Sydney Airport, and management of aircraft noise. More recently, Marrickville Council has developed the *Sydenham Green Master Plan* (ASPECT Studios, 2013) and the *Sydenham Green Draft Plan of Management* (Marrickville Council, 2013) to provide the basis for a future upgrade of the park to improve its amenity.

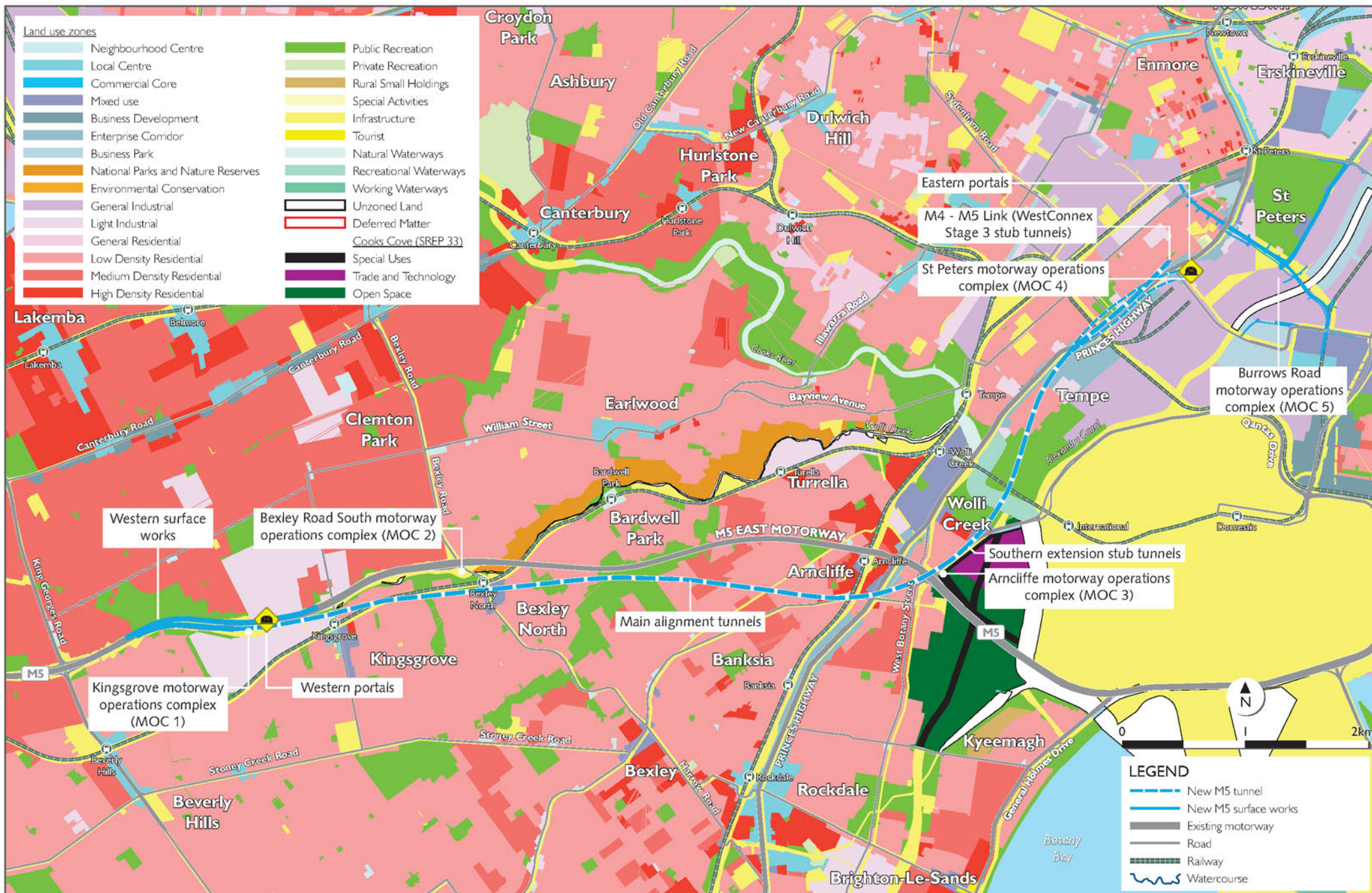


Figure 13-1 Regional zoning context of the project

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Sydney Gateway, a future part of the WestConnex program of works, would link the WestConnex motorway projects to the Sydney Airport and Port Botany. The future Sydney Gateway would comprise a mix of existing roads, upgraded roads and new infrastructure. Consultation with Sydney Airport and other strategic landholders is underway to develop a detailed proposal for the connection of the WestConnex motorways from the St Peters interchange to the airport and port precinct.

The NSW Government is currently considering potential Northern and Southern connections to the WestConnex program of works. The extensions, one north from the WestConnex M4 East project and the other south from the WestConnex New M5 project (the Southern extension), would create broader connections between the WestConnex motorways and the Sydney metropolitan road network. This may include a connection to Sydney's North Shore via a third harbour crossing, and a connection towards the F6 corridor in the south. Both potential extensions have been identified in the NSW Government's 2012 *Long Term Transport Master Plan* as vital to Sydney's infrastructure and would provide an uninterrupted motorway corridor from Sydney's south to the Anzac Bridge, the CBD at Darling Harbour and North Sydney.

The Sydney Metro projects would connect and extend a separate railway line from the North West Rail Link under Sydney Harbour, through the CBD, through Sydenham and west to Bankstown, with capacity to run up to 30 trains per hour in each direction on the new line (Transport for NSW, 2014). Investigations are currently underway to develop the design and alignment for a series of projects to complete the Sydney Metro connection.

Zoned employment lands within the project corridor include light industrial lands at Kingsgrove, mixed use and enterprise corridor land along the Princes Highway at Arncliffe and general industrial areas in St Peters and Alexandria.

13.2.2 Local context

The project would comprise an underground road tunnel and would therefore avoid direct impacts to the majority of land uses and properties within the project corridor. Impacts to land use and property would mainly occur at locations where surface works are proposed. Consequently, the local context is described below in terms of the land use surrounding each of the following surface sites:

- The western surface works, including:
 - The M5 East Motorway integration works during construction and operation
 - The Kingsgrove North construction compound (C1), the Kingsgrove South construction compound (C2) and the Commercial Road construction compound (C3) during construction
 - The Kingsgrove motorway operations complex (MOC1) during operation.
- The Kingsgrove Road surface works including installation of toll infrastructure on the M5 East Motorway.
- The Bexley Road surface works, including:
 - The Bexley Road North construction compound (C4), the Bexley Road South construction compound (C5) and the Bexley Road East construction compound (C6) during construction
 - The Bexley Road South motorway operations complex (MOC2) during operation.
- The Arncliffe surface works, including:
 - The Arncliffe construction compound (C7) during construction
 - The Arncliffe motorway operations complex (MOC3) during operation.
- The St Peters interchange and local road upgrade surface works, including:
 - The St Peters interchange works during construction and operation

- The Canal Road construction compound (C8), the Campbell Road construction compound (C9), the Landfill closure construction compound (C10), the Burrows Road construction compound (C11) and the Campbell Road bridge construction compound (C12), Gardeners Road bridge construction compound (C13) and Sydney Park construction compound (C14)
- The St Peters motorway operations complex (MOC4) and the Burrows Road motorway operations complex (MOC5) during operation
- Local road upgrade works during construction and operation.

A full list of community facilities that were identified in proximity to the project are provided in the Technical working paper: Social and Economic (**Appendix M**)

Western surface works

The western surface works would be located in a corridor along the M5 East Motorway, between King Georges Road and Kingsgrove Road. Land use zonings and development controls in this area are regulated under:

- The Canterbury LEP to the north of the M5 East Motorway
- The Hurstville LEP to the south of the M5 East Motorway.

The land use zonings within and around each the sites forming part of the western surface works are summarised in **Table 13-2** and shown in **Figure 13-2**.

Existing land uses in the immediate vicinity of the western surface works include the M5 East Motorway corridor, the local and regional road network, residential lands and industrial lands. The East Hills, Airport and Inner West railway line passes in an east-west direction, about 300 metres to the south of the M5 East Motorway.

Public recreation areas and infrastructure located around the western surface works include:

- A shared pedestrian and bicycle path within Beverley Grove Park, part of the M5 Linear Park, located on the northern and southern side of the M5 East Motorway corridor. This shared path would be directly affected by the Kingsgrove North construction compound (C1) and Kingsgrove South construction compound (C2) and would be relocated around the northern perimeter of that site at the start of construction, so that a path remains accessible during construction
- Canterbury Municipal Golf Course, located adjacent and to the north of the M5 East Motorway. Part of the golf course would be directly affected by the Kingsgrove North construction compound (C1)
- Smith Park, located about 300 metres to the south east of the western surface works, across the East Hills, Airport and Inner West railway lines. The park includes netball courts and the Kingsgrove early childhood health centre
- Beverly Hills Park, located about 350 metres to the south east of the western surface works. The park contains a narrow strip of native vegetation (Sydney Turpentine-Ironbark Forest) and further to the south east, open space and tennis courts
- Several other smaller parks within around one kilometre of the western surface works.

Sensitive and other special land uses (zoned as SP1 Special Uses) around the western surface works include:

- McCallums Hill Public School, located about 700 metres to the north of the western surface works
- Brethren Church and an adjacent cemetery, located about 550 metres to the north of the western surface works
- Kingsgrove High School, located about 850 metres to the north east of the western surface works

- Regina Coeli Catholic Church and School, Beverly Hills Uniting Church and a Baptist Church, located between 1.3 kilometres and 1.5 kilometres to the south west of the western surface works
- Beverly Hills Girls High School and Beverly Hills North Public School, located on the western side of King Georges Road, around one to 1.5 kilometres to the west of the western surface works.

A small neighbourhood centre is located about 550 metres to the north of the western surface works, near Moorefields Road.

An important local business centre is located along Kingsgrove Road, to the south of the M5 East Motorway and straddling the boundary between the Hurstville and Rockdale LGAs. This local centre is around 300 metres to the east of the Commercial Road construction compound (C3), to the south of the East Hills, Airport and Inner West railway line. The local centre includes:

- Kingsgrove railway station
- Our Lady of Fatima Church and school
- St Ursula's College
- Kingsgrove Police Station
- Kingsgrove Post Office
- The South-West Chinese Christian Church.

Further details of sensitive receivers and community infrastructure located around the Western surface works are provided in the Technical working paper: Social and economic (**Appendix M**).

Table 13-2 Western surface works land use zonings and development

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Surface road works (M5 East Motorway integration works and western portals)				
M5 East Motorway integration works and western portals.	The site is zoned SP2 Infrastructure (Road) under the Canterbury and Hurstville LEPs.	Surface road construction works and continued operation of the M5 East Motorway.	Operational road infrastructure (the New M5 and the M5 East Motorway).	The site is located within the existing motorway corridor. For most of the length of the M5 East Motorway integration works, surrounding land is zoned and used for public recreation (RE1 Public Recreation under the Canterbury and Hurstville LEPs). In addition, at the western end of the integration works the site is flanked by: • Medium density residential areas (R3 under the Canterbury LEP) to the north • Low density residential areas (R2 Low Density Residential under the Hurstville LEP) to the south. Around the western portals, adjacent land is zoned and used for industrial development (IN2 Light Industrial under the Canterbury and Hurstville LEPs).
Construction ancillary facilities				
Kingsgrove North construction compound (C1).	Part of the site (within the existing motorway corridor) is zoned SP2 Infrastructure (Road) under the Canterbury LEP. Outside of the existing motorway corridor, the site is zoned RE1 Public Recreation. The eastern end of the site is zoned IN2 Light Industrial.	The site would be used as a construction compound for civil infrastructure works and tunnelling support activities.	The site would be rehabilitated and returned to use as public open space, or in areas currently zoned as N2 Light Industrial, the land may be made available for redevelopment.	The site is bounded to the north by land zoned and used for medium density residential (R3 Medium Density Residential under the Canterbury LEP) and to the south by land currently occupied by the M5 East Motorway (SP2 Infrastructure (Road)). The site interfaces with land zoned as RE1 Public Recreation (Canterbury Golf Course) in the west and IN2 Light Industrial in the east.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Kingsgrove South construction compound (C2).	The site is zoned IN2 Light Industrial under the Hurstville LEP.	The site would be used as a construction compound for civil infrastructure works.	Part of the site would be occupied by the Kingsgrove motorway operations complex (MOC1) (refer below). The remainder of the site would be rehabilitated and returned to use as public open space.	The site is bounded to the south by land zoned and used for light industry (IN2 Light Industrial under the Hurstville LEP) and to the north by land currently occupied by the M5 East Motorway (SP2 Infrastructure (Road)). A relatively thin strip of land associated with the Wolli Creek channel (RE1 Public Recreation under the Hurstville LEP) lies adjacent to the south west boundary of the site.
Commercial Road construction compound (C3).	The site is zoned SP2 Infrastructure (Road) under the Hurstville LEP.	The site would be used as a construction compound for tunnelling support activities.	The site would be rehabilitated and returned to use as public open space.	The majority of the site is surrounded by land zoned and used for light industry (IN2 Light Industrial under the Hurstville LEP). The exceptions are to the north, where the site is bounded by the M5 East Motorway (SP2 Infrastructure (Road)) and thin strip of land zoned RE1 Public Recreation along the motorway corridor. A small area of land zoned RE1 Public Recreation is also located to the south east of the site, adjacent to the site access point.
Operation ancillary facilities				
Kingsgrove motorway operations complex (MOC1).	The site is zoned IN2 Light Industrial under the Hurstville LEP.	The site would be occupied by the Kingsgrove South construction compound (C2).	Operational ancillary infrastructure associated with the Kingsgrove motorway operations complex (MOC1), including the western ventilation facility.	The site is bounded to the south by land zoned and used for light industry (IN2 Light Industrial under the Hurstville LEP) and to the north by land currently occupied by the M5 East Motorway (SP2 Infrastructure (Road)). A relatively thin strip of land associated with the Wolli Creek channel (RE1 Public Recreation under the Hurstville LEP) lies adjacent to the south west boundary of the site.

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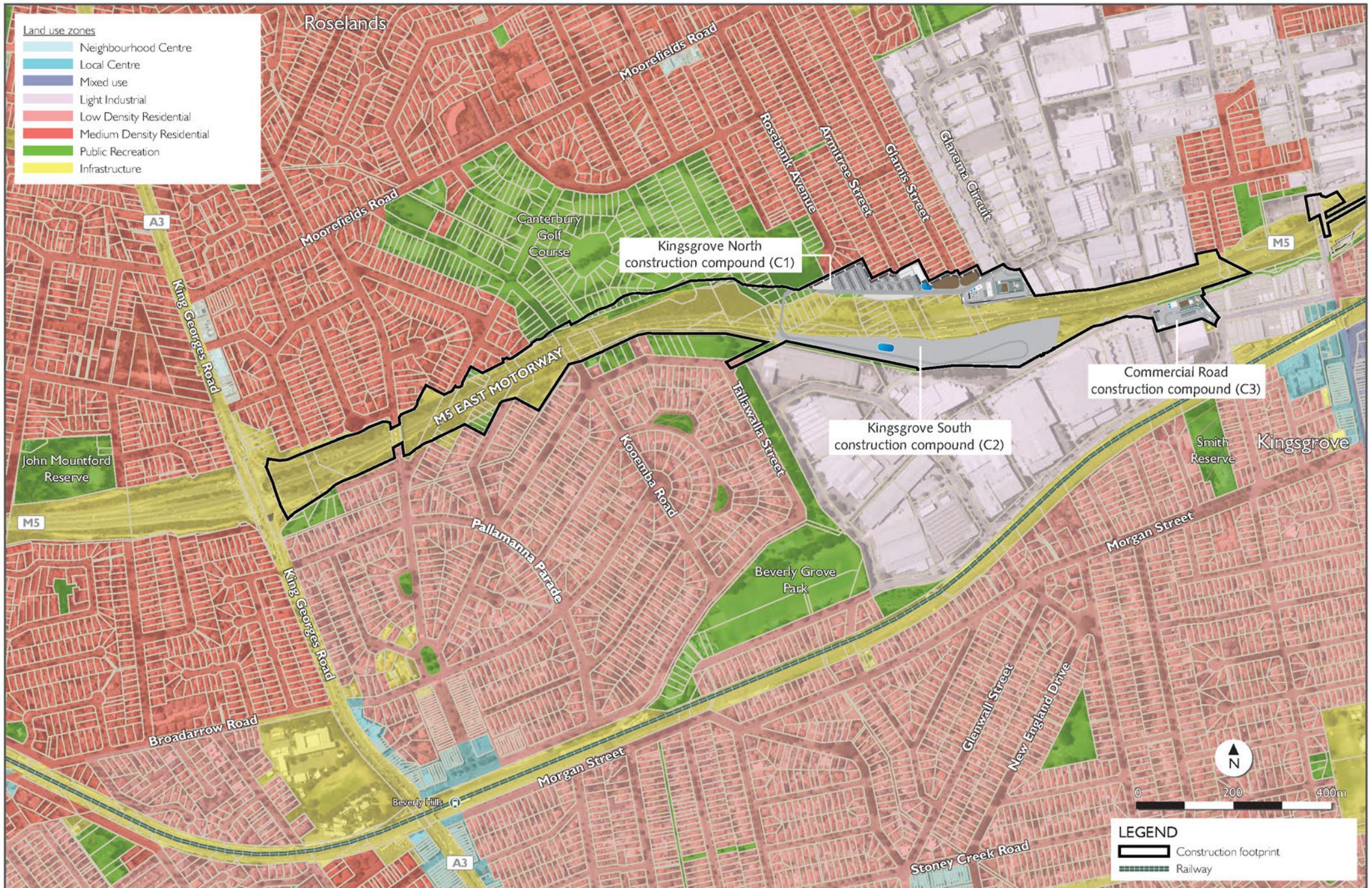


Figure 13-2 Western surface works land use zonings

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Kingsgrove Road surface works

The Kingsgrove Road surface works are immediately east of the western surface works and would be located in a corridor along the M5 East Motorway, east of Kingsgrove Road. All land used for the Kingsgrove Road surface works is owned by Roads and Maritime Services. Land use zonings and development controls in this area are regulated under:

- The Canterbury LEP to the north of the M5 East Motorway
- The Hurstville LEP to the south of the M5 East Motorway
- The Rockdale LEP to the south of the M5 East Motorway.

The land use zonings within and around each the sites forming part of the Kingsgrove Road surface works are summarised in Table 13-3.

Existing land uses in the immediate vicinity of the Kingsgrove Road surface works include the M5 East Motorway corridor, the local and regional road network, residential lands and industrial lands. The East Hills, Airport and Inner West railway line passes in an east-west direction, about 300 metres to the south of the M5 East Motorway.

Public recreation areas and infrastructure located around the Kingsgrove Road surface works include:

- A shared pedestrian and bicycle path within a linear park located on the northern and southern side of the M5 East Motorway corridor. Construction of the tolling infrastructure may result in a temporary short term disruption, however there would be no impact on the path once construction has finished
- Forrester Reserve and Kingsbury Reserve, located adjacent and to the north of the M5 East Motorway
- Several other smaller parks within around one kilometre of the Kingsgrove Road surface works.

Sensitive and other special land uses (zoned as SP1 Special Uses) around the Kingsbury Road surface works include:

- Our Lady of Fatima Church, located about 230 metres to the south of the Kingsgrove Road surface works
- St Ursula's College, located about 350 metres to the south of the Kingsgrove Road surface works
- Kingsgrove High School, located about 450 metres to the north of the Kingsgrove Road surface works.

Table 13-3 Kingsgrove Road surface works land use zonings and development

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Construction and operation of tolling infrastructure				
Toll point on the M5 East Motorway at Kingsgrove Road	The site is zoned SP2 Infrastructure (Road) under the Canterbury LEP.	Construction and operation of toll gantries over the M5 East Motorway.	The site would continue to be used as a motorway.	The site is located within land zoned as SP2 Infrastructure (under both the Canterbury LEP and Rockdale LEP) and IN2 Light Industrial (under both the Canterbury LEP and Hurstville LEP). Areas of land zoned as RE1 Public Recreation (under Canterbury LEP and Rockdale LEP) are located adjacent to the M5 East Motorway.

Bexley Road surface works

The Bexley Road surface works would be located around the Bexley Road / M5 East Motorway interchange. Land use zonings and development controls in this area are regulated under the Canterbury LEP. Land to the south of the Bexley Road surface works is subject to the Rockdale LEP.

The land use zonings within and around each of the sites forming part of the Bexley Road surface works are summarised in **Table 13-4** and shown in **Figure 13-3**.

Existing land uses in the immediate vicinity of the Bexley Road surface works include the M5 East Motorway corridor and the M5 East Motorway western tunnel portals, the local and regional road network, residential lands, public recreation lands and land zoned for environmental conservation. The East Hills, Airport and Inner West railway line passes in an east-west direction to the south of the Bexley Road surface works, with the Bexley North railway station located on the railway line to the south east of the Bexley Road South construction compound (C5).

Public recreation areas and infrastructure located around the Bexley Road surface works include:

- Illoura Park / Wolli Creek corridor (which connects to the Wolli Creek Regional Park further east), located immediately to the east of the Bexley Road East construction compound (C6)
- Beaumont Reserve, across Poole Street to the north of the Bexley Road North construction compound (C4)
- Kingsgrove Avenue Reserve, immediately to the south of the Bexley Road South construction compound (C5)
- Kingsbury Reserve (within M5 Linear Park) located about 700 metres to the west of the Bexley Road surface works, on the northern side of the M5 East Motorway
- Junee Crescent Reserve located about 650 metres to the north west of the Bexley Road North construction compound (C4)
- SJ Harrison Reserve located about 800 metres to the north east of the Bexley Road East construction compound (C6)
- Stotts Reserve, about 600 metres south east of the Bexley Road East construction compound (C6)
- Bexley North Park and Gilchrist Reserve, which are located about 350 metres south of the Bexley Road South construction compound (C5). These public recreation areas contain the Kingsgrove Bexley North Community Centre in the north, and Bexley Bowls Club in the south
- Several other, smaller, parks within one kilometre of the Bexley Road surface works.

Sensitive and other special land uses (zoned as SP1 Special Uses) around the Bexley Road surface works include:

- Uniting Church on Miller Street, located about 850 metres north west of the Bexley Road North construction compound (C4)
- Clemton Park Public School, located about 750 metres to the north of the Bexley Road North construction compound (C4)
- Uniting Church on Barnsbury Grove, about 950 metres to the east of the Bexley Road East construction compound (C6)
- Booth College School for Christian Studies Bexley North, about 600 metres to the south-east of the Bexley Road South (C5) construction compound.

The Bexley North mixed use centre is located along Bexley Road, about 300 metres to the Bexley Road South construction compound (C5). The mixed use centre is an important local focus for commerce and is associated with the Bexley North railway station.

Further details of sensitive receivers and community infrastructure located around the Bexley surface works are provided in the Technical working paper: Social and economic (**Appendix M**).

Table 13-4 Bexley Road surface works land use zonings and development

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Construction ancillary facilities				
Bexley Road North construction compound (C4).	The site is zoned SP2 Infrastructure (Road) under the Canterbury LEP.	The site would be used as a construction compound for tunnelling support activities.	The site would be rehabilitated and returned to use as public open space.	The site is bounded by Bexley Road to the east and the M5 East Motorway to the south, both of which are zoned SP2 Infrastructure (Road) under the Canterbury LEP. Immediately to the west of the site is land zoned R3 Medium Density Residential, and to the east across Bexley Road is land zoned R2 Low Density Residential. A parcel of RE1 Public Recreation land (Beaumont Park) lies to the north of the site, across Poole Street.
Bexley Road South construction compound (C5).	The site is partly zoned IN2 Light Industrial and partly zoned SP2 Infrastructure (Road) under the Canterbury LEP.	The site would be used as a construction compound for tunnelling support activities.	The site would be occupied by the Bexley Road motorway operations complex (MOC2) (refer below).	The site is bounded by Bexley Road to the east and the M5 East Motorway to the north, both of which are zoned SP2 Infrastructure (Road) under the Canterbury LEP. Land to the south and west is zoned RE1 Public Recreation under the Canterbury and Rockdale LEPS and is associated with Kingsgrove Avenue Reserve and the Wolli Creek canal.
Bexley Road East construction compound (C6).	The majority of the site is zoned SP2 Infrastructure (Road) under the Canterbury LEP. Small areas of the site encroach onto land zoned R3 Medium Density Residential along the northern boundary of the site.	The site would be used as a construction compound for ancillary works and car parking.	The site would be rehabilitated and returned to use as public open space.	The site lies between land zoned SP2 Infrastructure (Road) to the west and south (Bexley Road and the M5 East Motorway), R2 Low Density Residential to the north, and E1 National Parks and Nature Reserves to the east (Illoura Park, as western part of the Wolli Creek corridor).

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Operation ancillary facilities				
Bexley Road South motorway operations complex (MOC2).	The site is partly zoned IN2 Light Industrial and partly zoned SP2 Infrastructure (Road) under the Canterbury LEP.	The site would be occupied by the Kingsgrove South construction compound (C2).	Operational ancillary infrastructure associated with the Bexley Road South motorway operations complex (MOC2), including the Bexley Road South emergency smoke extraction facility.	The site is bounded by Bexley Road to the east and the M5 East Motorway to the north, both of which are zoned SP2 Infrastructure (Road) under the Canterbury LEP. Land to the south and west is zoned RE1 Public Recreation under the Canterbury and Rockdale LEPs and is associated with Kingsgrove Avenue Reserve and the Wolli Creek canal.

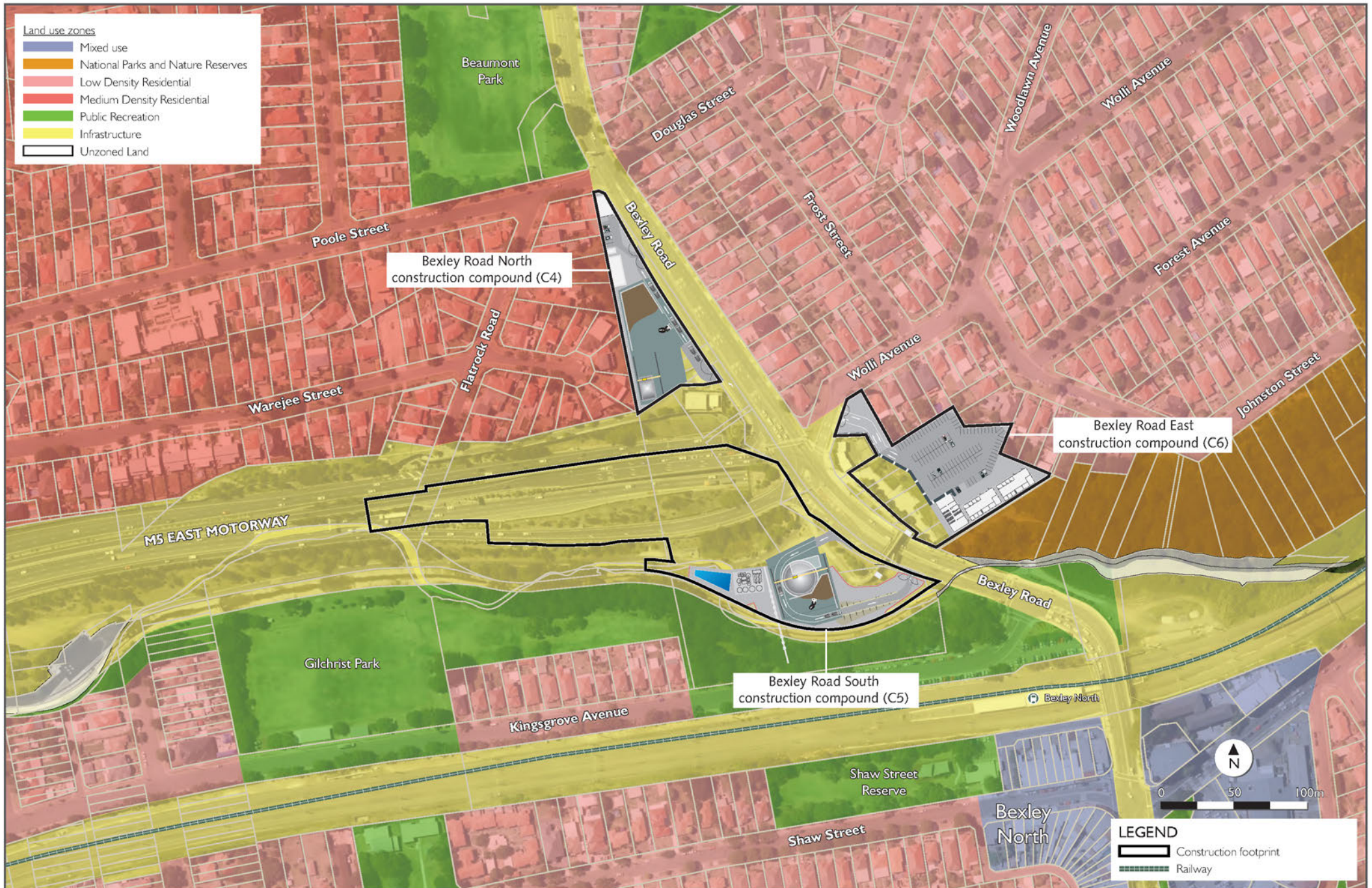


Figure 13-3 Bexley Road surface works land use zonings

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Arncliffe surface works

The Arncliffe surface works would be located on land currently used as the Kogarah Golf Course. Land use zonings and development controls applicable to the Kogarah Golf Course (and to land south to around Bay Street) are detailed in the Cooks Cove SREP. Land around the golf course site is subject to Rockdale LEP south of the Cooks River and Marrickville LEP north of the Cooks River.

The Arncliffe surface works would be located on land intended for land use transition in the future. The site is currently occupied by the Kogarah Golf Course, but is zoned under the Cooks Cove SREP for future infrastructure (special uses), employment (trade and technology) and open space uses. Action has not been taken at this time to give effect to these proposed future uses of the site.

The land use zonings within and around each of the sites forming part of the Arncliffe surface works are summarised in **Table 13-5** and shown in **Figure 13-4**.

Existing land uses in the immediate vicinity of the Arncliffe surface works include the M5 East Motorway corridor, the local and regional road network, residential lands, public and private recreation lands.

Sydney Airport lies east of the site, across the Cooks River. The Main Southern railway line passes in a north-south direction west of the Arncliffe surface works, with the Arncliffe railway station located around 500 metres west of the Arncliffe construction compound (C7).

Public recreation areas and infrastructure located around the Arncliffe surface works include:

- Cahill Park immediately to the north of the Arncliffe surface works, across Marsh Street
- Tempe Recreation Reserve to north of the Arncliffe surface works, across the Cooks River
- Riverine Park to the south of the Arncliffe surface works, across the M5 East Motorway corridor
- Kyeemagh, Barton Park, Banksia Field, Muddy Creek and White Oak Reserves around 500 metres to one kilometre to the south, around Muddy Creek
- Arncliffe Park on Wollongong Road, around one kilometre to the west of the Arncliffe surface works
- Several other, smaller, parks within one kilometre of the Arncliffe surface works

Sensitive and other special land uses around the Arncliffe surface works include:

- St George Rowing Club to the north of the Arncliffe surface works, within Cahill Park and adjacent to the Cooks River
- Wolli Creek Islamic Mosque, around 400 metres to the west of the Arncliffe surface works
- Arncliffe Scots Sports and Social Club, around 600 metres to the west of the Arncliffe surface works
- Arncliffe Fire Station, around 400 metres to the south west of the Arncliffe surface works
- St Francis Xavier's Catholic Primary School around 650 metres to the south west of the Arncliffe surface works
- Arncliffe Public School, around 750 metres to the south west of the Arncliffe surface works.

Significant areas of commercial land use zonings and development stretch along a corridor to the west and south west of the Arncliffe surface works, from around Arncliffe in the north to around Rockdale in the south. These commercial areas are associated with the Princes Highway and the Main Southern railway line, with more extensive development located around the Rockdale town centre.

Further details of sensitive receivers and community infrastructure located around the Arncliffe surface works are provided in the Technical working paper: Social and economic (**Appendix M**).

Table 13-5 Arncliffe surface works land use zonings and development

Project site	Land use zoning	Use during construction	Use during operation	Surrounding land use zonings and developments
Construction ancillary facilities				
Arncliffe construction compound (C7).	The north of the site zoned Trade and Technology. The south of the site is zoned Open Space under the Cooks River SREP. A corridor zoned for Special Uses (as part of the historical F6 corridor) bisects the site.	The site would be used as a construction compound for civil infrastructure works and tunnelling support activities.	Part of the site would be occupied by the Arncliffe motorway operations complex (MOC3). The remainder would be rehabilitated and returned for ongoing recreational uses or potential development as a permissible use(s) under the Cooks Cove SREP (trade and technology, or open space).	The site is bounded along the north west by Marsh Road, which is zoned SP2 Infrastructure (Road) under the Rockdale LEP. Between Marsh Street and Cahill Park (zoned RE1 Public Recreation) are residential areas zoned as R2 Low Density Residential and R4 High Density Residential. Two pockets of B4 Mixed Use land are located adjacent to the southern boundary of Cahill Park, on the eastern and western sides of the high density residential area. The Cooks River is unzoned (subject to the Cooks River SREP). Land further to the east forms the Sydney Airport site, which is zoned SP2 Infrastructure (Airport) under the Rockdale LEP. To the south of the site, across the corridor occupied by the M5 East Motorway are areas zoned for Open Space under the Cooks River SREP. An area of R2 Low Density Residential is located along West Botany Street.
Operation ancillary facilities				
Arncliffe motorway operations complex (MOC3).	The north of the site zoned Trade and Technology. The south of the site is zoned Open Space under the Cooks River SREP. Land along the southern boundary of the site is zoned Special Uses.	The site would be occupied by the Arncliffe construction compound (C7).	Operational ancillary infrastructure associated with the Arncliffe motorway operations complex (MOC3), including the Arncliffe emergency smoke extraction facility and a ventilation facility.	The site is bounded along the north west by Marsh Road, which is zoned SP2 Infrastructure (Road) under the Rockdale LEP. Between Marsh Street and Cahill Park (zoned RE1 Public Recreation) are residential areas zoned as R2 Low Density Residential and R4 High Density Residential. Two pockets of B4 Mixed Use land are located adjacent to the southern boundary of Cahill Park, on the eastern and western sides of the high density residential area. Land immediately to the east of the site is zoned for Trade and Technology, and for Open Space under the Cooks Cove SREP. These zonings continue eastward until the unzoned Cooks River, and the Sydney Airport (SP2 Infrastructure (Airport)) beyond that. To the south of the site, across the corridor occupied by the M5 East Motorway are areas zoned for Open Space under the Cooks River SREP. An area of R2 Low Density Residential is located along West Botany Street.

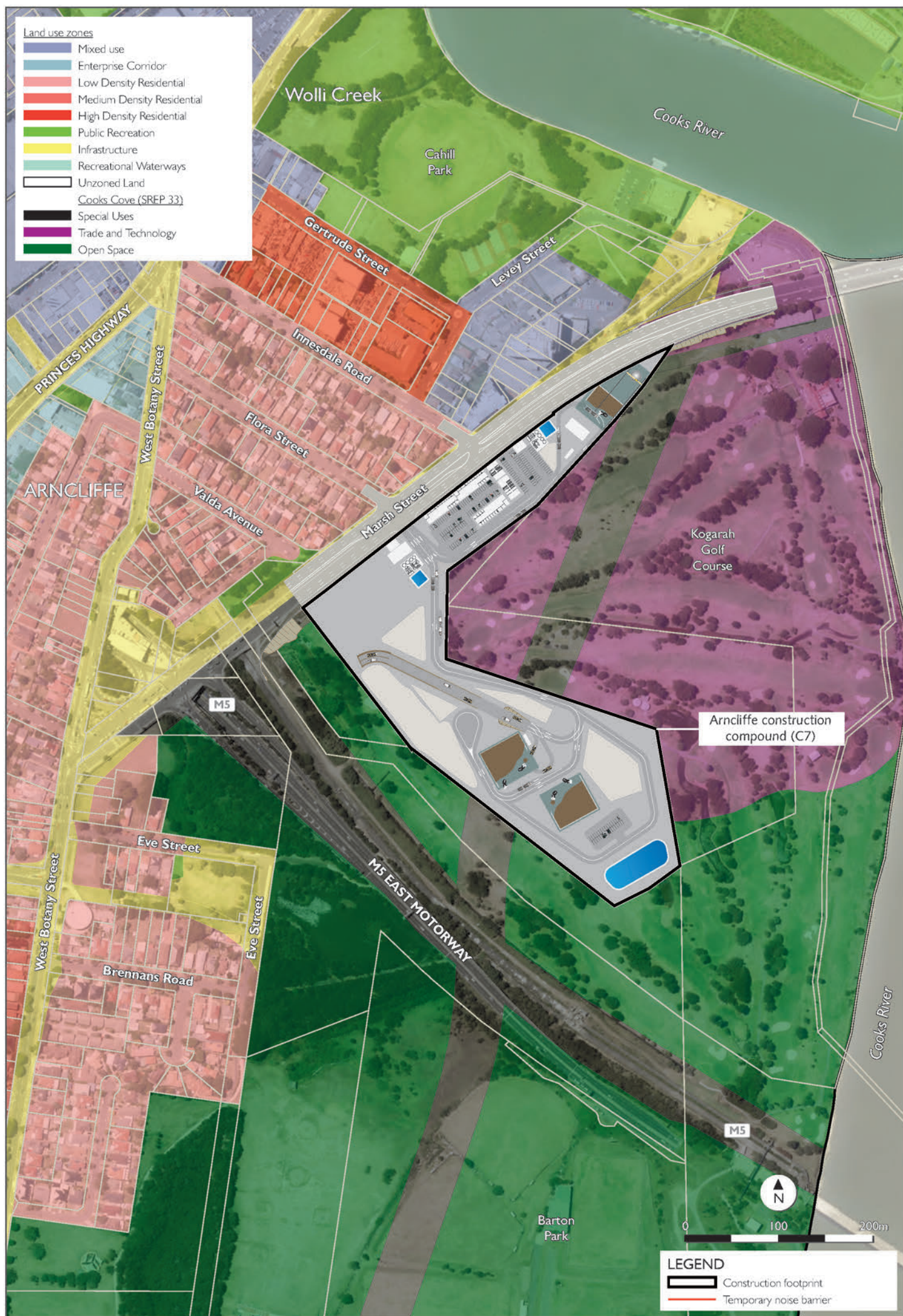


Figure 13-4 Arncliffe surface works and land use zonings

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St Peters interchange and local road upgrade surface works

The St Peters interchange and local road upgrade surface works would be centred on the St Peters interchange (former Alexandria Landfill site) and local roads around the south and east of Sydney Park. The St Peters interchange would span the local government boundary between Marrickville and Sydney that broadly bisects the Alexandria Landfill site in a north east to south west direction. Local road upgrade works would also cross the local government area boundary between Sydney and Botany Bay, which lies along Gardeners Road, to the east of Alexandra Canal.

Land use zonings and development controls in this area are regulated under:

- The Marrickville LEP for the western portion of the Alexandria Landfill site, and areas to the south and west.
- The Sydney LEP for the eastern portion of the Alexandria Landfill site, and areas to the north and east (and north of Gardeners Road).
- The Botany Bay LEP for areas to the south of Gardeners Road.

The land use zonings within and around each of the sites forming part of the St Peters interchange and local road upgrade surface works are summarised in **Table 13-6** and shown in **Figure 13-5**.

Existing land uses in the immediate vicinity of the St Peters interchange and local road upgrade surface works include the Alexandria Landfill (to be closed as part of the project), which currently occupies the majority of the St Peters interchange works site and industrial lands. Adjacent land uses include an enterprise corridor along the Princes Highway, general industrial lands, local and arterial roads, Sydney Park to the north and Alexandra Canal to the east. Surrounding land uses include the residential neighbourhoods of St Peters, Sydenham and Newtown, as well as general residential and industrial areas of Alexandria to the east.

Public recreation areas and infrastructure include:

- Sydney Park, in which the Sydney Park construction compound (C14) would be located, is to the north of the St Peters interchange
- Simpson Park, to the north of local road upgrade works along Campbell Street
- May Street Reserve, on the corner of May Street / Unwins Bridge Road / Campbell Street
- Camdenville Park, to the north of local upgrade works along Bedwin Road and to the west of May Street
- Roswell Playground, around 180 metres to the west of the Canal Road construction compound (C8) and the St Peters motorway operations complex (MOC4)
- Sydenham Green, around 500 metres to the south west of the Canal Road construction compound (C8) and the St Peters motorway operations complex (MOC4).

Sensitive and other special land uses include:

- St Peters Public School, around 150 metres to the west of the St Peters interchange (former Alexandria Landfill) site
- The St Peters Church of England, around 150 metres to the west of the St Peters interchange (former Alexandria Landfill) site
- Camdenville Public School, around 250 metres to the north of local road upgrades at Bedwin Road.
- The Building Blocks Early Childhood, to the north of local road upgrade works along Bourke Road/ Bourke Street
- Hotel Ibis Budget, on the Princes Highway, immediately adjacent to the St Peters interchange (Alexandria Landfill) site.

An important commercial enterprise corridor is established along the Princes Highway, immediately to the west of the St Peters interchange and local road upgrade surface works. Other significant areas of commercial activity include those around the Bourke Road/ Bourke Street/ Gardeners Road intersection, and associated with the Sydney Airport.

Further details of sensitive receivers and community infrastructure located around the Arncliffe surface works are provided in the Technical working paper: Social and economic (**Appendix M**).

Table 13-6 St Peters interchange and local road upgrade surface works land use zonings and development

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Surface road works (St Peters interchange local road upgrades)				
St Peters interchange	Within the Marrickville LGA, the majority of the site is zoned IN1 General Industrial, with pockets of IN2 Light Industrial land in the north west and south west corners and a strip of B6 Enterprise Corridor along the Princes Highway frontage. Within the Sydney LGA, the site is a mix of SP2 Infrastructure (Road) and IN1 General Industrial land.	Surface road construction works.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped. Subject to future detailed design and the requirements of the future M4-M5 Link, parts of the site not required for road infrastructure may be contemplated for separate future redevelopment.	Most land to the north east, east and south of the site is zoned IN1 General Industrial, with some pockets of B7 Business Park located along Alexandra Canal to the north east and around Canal Road to the south east. The site is bounded to the east by an unzoned section of Alexandra Canal. A strip of B6 Enterprise Corridor land lies along the Princes Highway to the west of the site, beyond which land is mostly zoned R2 Low Density Residential with some areas of IN1 General Industrial and IN2 Light Industrial along the Main Southern Railway line. To the north of the site, the principal land use is Sydney Park (RE1 Public Recreation), with a triangle of R1 General Residential and B4 Mixed use land near the intersection of the Princes Highway and Campbell Street.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Upgrade and widening of Euston Road.	The site is zoned SP2 Infrastructure (Road) under the Sydney LEP for a short distance north of Campbell Road and north from the Sydney Park Road/ Huntley Street intersection. Between these areas, generally along Sydney Park, the site is zone IN1 General Industrial.	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Land along the eastern side of Euston Road is zoned IN1 General Industrial. Along the western side, zonings include RE1 Public Recreation (Sydney Park) south of Sydney Park Road and a combination of B4 Mixed Use and IN2 Light Industrial to the north of Sydney Park Road.
Upgrade, widening and extension of Bedwin Road / Campbell Street / Campbell Road.	Within the Marrickville LGA (from Bedwin Road east to the western boundary of Sydney Park), the site includes a mix of IN1 General Industrial, R1 Low Density Residential, RE1 Public Recreation, B4 Mixed Use and IN2 Light Industrial land use zonings. In these areas the existing road corridor has been zoned consistent with adjacent land use zonings. Within the Sydney LGA (west of the western boundary of Sydney Park), the site is zoned SP2 Infrastructure (Road). The land comprising Alexandra Canal is unzoned.	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Bedwin Road is flanked by RE1 Public Recreation (Camdenville Park) to the north and IN1 General Industrial to the south. Land uses adjacent to Campbell Street are varied, with land along the south including R2 Low Density Residential west of the Princes Highway and a mix of B4 Mixed Use, IN1 General Industrial and IN2 Light Industrial to the east of the Princes Highway. Along its northern side including R1 General Residential, B4 Mixed Use, B7 Business Park and RE1 Public Recreation (Simpson Park). Campbell Road is generally surrounded by land zoned IN1 General Industrial and B7 Business Park. The key exceptions are Sydney Park (RE1 Public Recreation) to the north, and the unzoned section of Alexandra Canal.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Upgrade and widening of Bourke Road / Bourke Street.	The majority of the site is zoned IN1 General Industrial under the Sydney LEP, consistent with the zoning of adjacent land. The part of the site from the new intersection between the Campbell Road extension and Bourke Road/ Bourke Street south to Gardeners Road is zoned SP2 Infrastructure (Road).	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Bourke Road is mainly adjacent to IN1 Industrial land, with some small areas of B7 Business Park and SP2 Infrastructure (Road) (at the site of the new intersection between the Campbell Road extension and Bourke Road). Bourke Street to the south of Gardeners Road is flanked by land zoned B4 Mixed Use.
Minor upgrade works on Unwins Bridge Road and May Street.	The site is partly zoned R2 Low Density Residential (Unwins Bridge Road) and partly zoned IN2 Light Industrial (May Street) under the Marrickville LEP, consistent with the zoning of adjacent land.	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Unwins Bridge Road is adjacent to R2 Low Density Residential land to the east and a mix of IN1 General Industrial and IN2 Light Industrial land to the west. May Street is adjacent to Camdenville Park (RE1 Public Recreation), R2 Low Density Residential and B5 Business Development land use zonings to the west. To the east, it is adjacent to a mix of R1 General Residential, R2 Low Density Residential, B5 Business Development and B7 Business Park land use zonings.
Minor upgrade works on Albert Street.	The site is zoned a mix of B6 Enterprise Corridor, IN2 Light Industrial and IN1 General Industrial under the Marrickville LEP.	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Albert Street is surrounded on both sides by a mix of B6 Enterprise Corridor, IN2 Light Industrial and IN1 General Industrial land.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Permanent road and intersection closures at: Harber Street Campbell Lane Woodley Street Holland Street The Campbell Road / Woodley Street intersection.	The site is zoned SP2 Infrastructure (Road) under the Sydney LEP.	Surface road closure works.	Disturbed areas would be rehabilitated and returned for permissible uses consistent with land use zonings or open space.	Road and intersection closures are surrounded by land zoned SP2 Infrastructure (Road).
Widening and extension of Gardeners Road.	The site is zoned SP2 Infrastructure (Road) under the Sydney LEP and Botany Bay LEP.	Surface road construction works and continued operation of local surface roads.	Operational road infrastructure. Disturbed areas adjacent to operational road infrastructure would be rehabilitated and landscaped consistent with the existing road corridor.	Gardeners Road is adjacent to IN1 Industrial land to the north, and B4 Mixed Use land to the south.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Construction ancillary facilities				
Canal Road construction compound (C8).	The site is zoned IN1 General Industrial and IN2 Light Industrial under the Marrickville LEP.	The site would be used as a construction compound for civil infrastructure works and tunnelling support activities.	Part of the site would be occupied by the St Peters motorway operations complex (MOC4) (refer below) and road infrastructure associated with the St Peters interchange. Disturbed areas adjacent to the motorway operations complex and operational road infrastructure would be rehabilitated and landscaped. Subject to future detailed design and the requirements of the future M4-M5 Link, parts of the site not required for the motorway operations complex and road infrastructure may be contemplated for separate future redevelopment.	Most land around the site is zoned IN1 General Industrial. A strip of B6 Enterprise Corridor land lies along the Princes Highway to the west of the site, beyond which land is mostly zoned R2 Low Density Residential with some areas of IN1 General Industrial and IN2 Light Industrial along the Main Southern Railway line.
Campbell Road construction compound (C9).	The site is zoned SP2 Infrastructure (Road) under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works.	The site would be rehabilitated and landscaped. Subject to future detailed design and the requirements of the future M4-M5 Link, parts of the site may be contemplated for separate future redevelopment.	The site fronts Campbell Road (zoned SP2 Infrastructure (Road)) to the north, beyond which is Sydney Park (RE1 Public Recreation). Other land around the site includes SP2 Infrastructure (Road) to the south east and IN1 General Industrial to the south west.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Landfill closure construction compound (C10).	The site is zoned IN1 General Industrial under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works, administration and Alexandria landfill closure works.	The site would be landscaped. Parts of the site not required for road infrastructure may be contemplated for separate future redevelopment.	The site is surrounded by IN1 General Industrial, and IN2 Light Industrial and B6 Enterprise to the north.
Burrows Road construction compound (C11).	The site is zoned SP2 Infrastructure (Road) and IN1 General Industrial under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works, administration and car parking.	The site would be used as the Burrows Road motorway operations complex (MOC5)	Most of the land around the site is zoned IN1 General Industrial, with the exception of land immediately to the north, which is zoned SP2 Infrastructure (Road).
Campbell Road bridge construction compound (C12).	The site is zoned IN1 General Industrial under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works.	The site would be rehabilitated and returned to use as public open space or other permissible uses.	Most of the land around the site is zoned IN1 General Industrial, with the exception of land immediately to the east, which is an unzoned portion of Alexandra Canal.
Gardeners Road Bridge construction compound (C13)	The site is zoned IN1 General Industrial under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works.	The site would be rehabilitated and returned to use as public open space.	Most of the land around the site is zoned IN1 General Industrial, with the exception of land immediately to the east, which is an unzoned portion of Alexandra Canal.
Sydney Park construction compound (C14)	The site is zoned RE1 Public Recreation under the Sydney LEP.	The site would be used as a construction compound for civil infrastructure works, administration and car parking.	The site would be rehabilitated returned to use as public open space or other permissible uses.	Land to the north is zoned as RE1 Public Recreation (Sydney Park) and SP2 Infrastructure (Road) to the south. Most of the remaining land is zoned as IN1 General industrial. Pockets of R1 (General residential) occur to the east and west.

Project site	Land use zoning of the project site	Use of the project site during construction	Use of the project site during operation	Surrounding land use zonings and developments
Operation ancillary facilities				
St Peters motorway operations complex (MOC4).	The site is zoned IN1 General Industrial and IN2 Light Industrial under the Marrickville LEP.	The site would be occupied by the Canal Road construction compound (C8).	Operational ancillary infrastructure associated with the St Peters motorway operations complex (MOC1), including the eastern ventilation facility.	Most land around the site is zoned IN1 General Industrial. A strip of B6 Enterprise Corridor land lies along the Princes Highway to the west of the site, beyond which land is mostly zoned R2 Low Density Residential with some areas of IN1 General Industrial and IN2 Light Industrial along the Main Southern Railway line.
Burrows Road motorway operations complex (MOC5)	The site is zoned SP2 Infrastructure (Road) and IN1 General Industrial under the Sydney LEP.	The site would be occupied by the Burrows Road construction compound (C11).	Operational ancillary infrastructure associated with the Burrows Road motorway operations complex (MOC5)	Most of the land around the site is zoned IN1 General Industrial, with the exception of land immediately to the north, which is zoned SP2 Infrastructure (Road).

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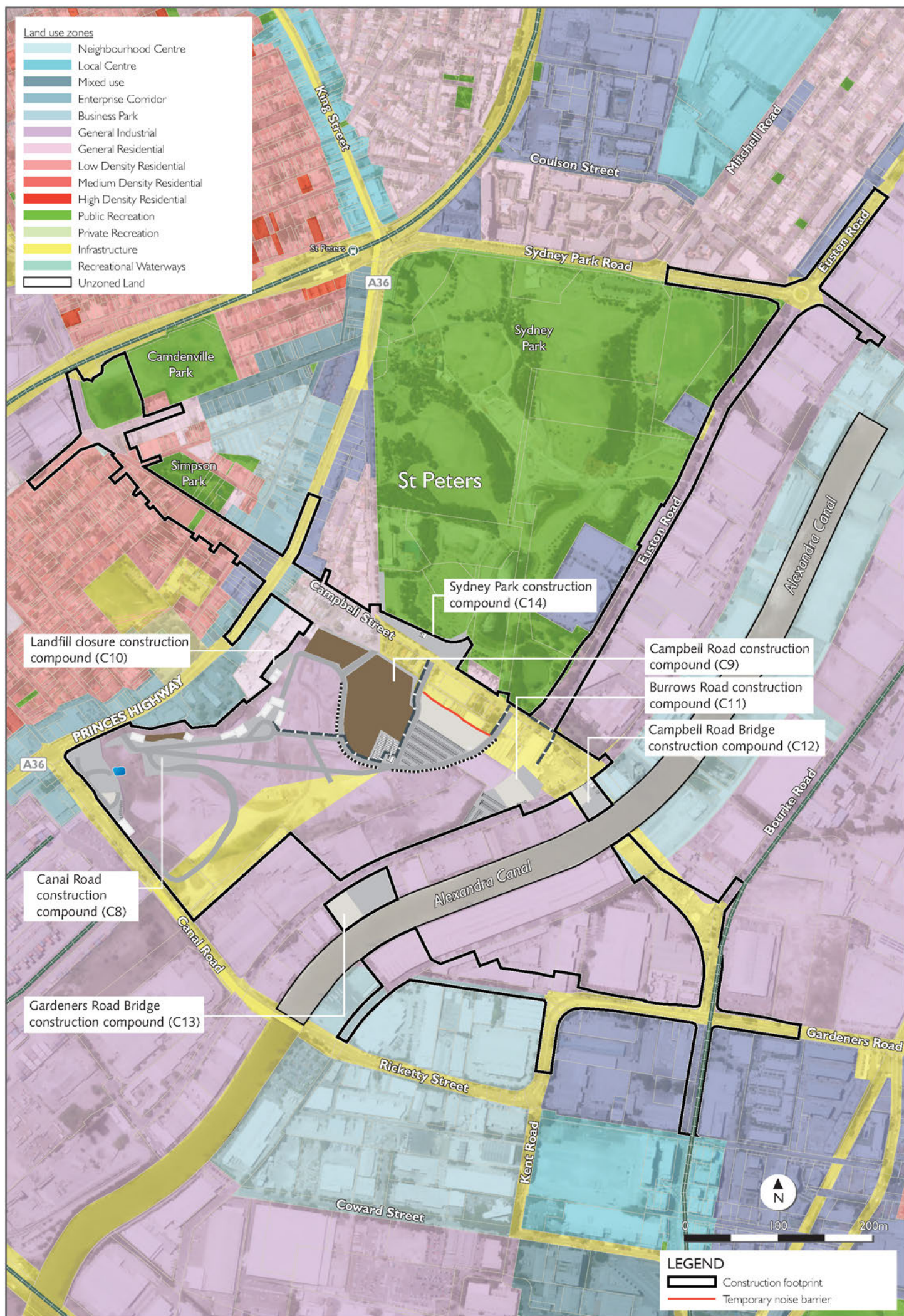


Figure 13-5 St Peters interchange and local road upgrade surface works land use zonings

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13.3 Assessment of potential impacts

The preferred design for the project has been developed such that it minimises the need for surface property acquisition and other impacts to residential properties and public open space and reserves where reasonable and feasible to do so. This has been balanced with maximising opportunities for beneficial re-use of the properties required for construction that would be surplus to operational needs. Notwithstanding this design intent, construction and operation of the project would result in temporary and permanent impacts on land use and property.

Properties requiring acquisition to allow for the construction and operation of the project are referred to as directly affected land, and include:

- Properties requiring partial acquisition, where only a portion of the property is required
- Properties requiring full acquisition, where the majority of the property would be directly impacted by the project.

In the event that land is required that is not currently owned by the NSW Government, discussions would be held with the affected property owner concerning the purchase or lease of the land required during construction. All compulsory acquisition required for the project would be undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Relocation and some other categories of expenses would be claimable under this Act.

13.3.1 Construction

Potential land use and property impacts associated with construction of the project would include:

- Changes to land use and property resulting from acquisition of properties in order to construct the project
- Temporary alteration and / or temporary disruption to property accesses resulting from traffic diversions for road construction
- Temporary occupation of land, to allow for construction of the project, which would temporarily restrict the development potential of that land
- Settlement of the surface as a result of tunnelling activities.
- OEH estate reserved under the *National Parks and Wildlife Act 1974*

Potential indirect impacts as a result of changes to land use and property are considered to predominantly relate to social and economic values. **Chapter 15** (Social and economic) provides detail relating to these potential impacts.

OEH estate

The project would not directly impact any OEH estate reserved under the *National Parks and Wildlife Act 1974*. The project would be located upstream of the Towra Point Wetlands and therefore the following matters outlined in the *Guidelines for developments adjoining land and water managed by Department of Environment, Climate Change and Water* (DECCW 2010) were given consideration:

- Erosion and sediment control
- Stormwater runoff
- Wastewater

Erosion, sedimentation and drainage controls would be implemented during construction of the project and include construction water treatment plants, sediment fencing, check dams, temporary ground stabilisation, diversions berms or site regrading. These controls would be consistent with Managing Urban Stormwater – Soils and Construction Volumes 1 and 2, 4th Edition (the Blue Book) (Landcom, 2004).

Stormwater runoff and construction water would be diverted to water treatment plants that would treat construction water, surface water runoff and groundwater inflows. Based on the design of the project, it is anticipated that the discharged water quality would be higher than the current water quality of the receiving environments. Water quality of the treated construction wastewater and outflow velocities

would be in accordance with the requirements of the relevant agencies and local councils, including Sydney Water and the EPA. Water quality criteria and targets are provided in **Chapter 16** (Soil and water quality).

Residual impacts to downstream OEH estates are therefore considered to be unlikely and not significant. Further information relating to erosion and sediment control, stormwater runoff and construction wastewater quality criteria / targets can be found in **Chapter 16** (Soil and water quality) and **Chapter 18** (Flooding and drainage).

Temporary occupation

Temporary occupation of land would be required to allow for construction of the project. Occupation of land would restrict the development potential of that land for the duration of construction.

Table 13-7 summarises the potential implication of construction compounds and construction activities on existing land use zonings and development potential. Further assessment of residual lots during construction and operation is provided in **Section 13.2.1** and **Section 13.2.2**.

In most cases, land that is occupied for construction compounds and construction activities would be rehabilitated at the end of the construction period and returned for potential development for permissible uses under land use zoning provisions. The key exception would be where land used for construction purposes is required permanently such as for one of the five motorway operations complexes.

Where land affected by construction is not required for the ongoing operation of the New M5, it would be rehabilitated and made available for potential sale and/ or redevelopment for a permissible use. In some cases, including the Landfill closure construction compound site and the surplus land around the St Peters interchange, there may be an opportunity to review the current land use zoning of the affected land. The relevant local council would be consulted in these areas to determine whether current land use zonings and permissible land use types remain appropriate following construction of the New M5.

Temporary construction compounds located outside of the road reserve would occupy land temporarily, resulting in a temporary change in land use during construction works. Existing land uses, site accessibility and potential opportunities to co-locate construction compounds near or within the footprint of permanent operational facilities have been considered when determining the size and location of construction facilities.

The 30 properties (115 parcels of land) that would be directly impacted by construction are detailed in **Appendix D**. Some of these properties would also be directly impacted by operational infrastructure (refer to **Section 13.3.2**). Of these 30 properties:

- Five properties (51 parcels of land) are already owned by Roads and Maritime
- Four properties (6 parcels of land) are owned by other NSW Government agencies
- Six properties (7 parcels of land) are privately owned.
- Fifteen properties (51 parcels of land) are owned by Local Government.

Figure 13-6 to Figure 13-9 show the land parcels currently anticipated to be directly impacted during construction of the project, including partial and full acquisitions. The extent of property acquisition would be reviewed and confirmed during detailed design of the project.

All acquisitions would be carried out consistently with the principles in the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) and the *Land Acquisition Information Guide* (Roads and Maritime, 2012c).

Existing uses and development of sites that would be directly impacted by construction and returned / modified to a non-project related land use include:

- Four properties that are currently not occupied by significant development and used for open space adjacent to the M5 East Motorway corridor (ie properties within M5 Linear Park)
- Three properties currently occupied by industrial developments
- Three properties currently used for the Kogarah Golf Course.

Temporary access impacts

Construction works and the location of temporary construction compounds may result in temporary impacts to access to adjacent properties. Impacts to property access would be avoided where possible, and where unavoidable, property owners would be consulted in order to develop an appropriate alternative access arrangement.

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Figure 13-6 Western surface works - land parcels to be temporarily occupied for construction

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Figure 13-7 Bexley surface works - land parcels to be temporarily occupied for construction

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Figure 13-8 Arncliffe surface works - land parcels to be temporarily occupied for construction

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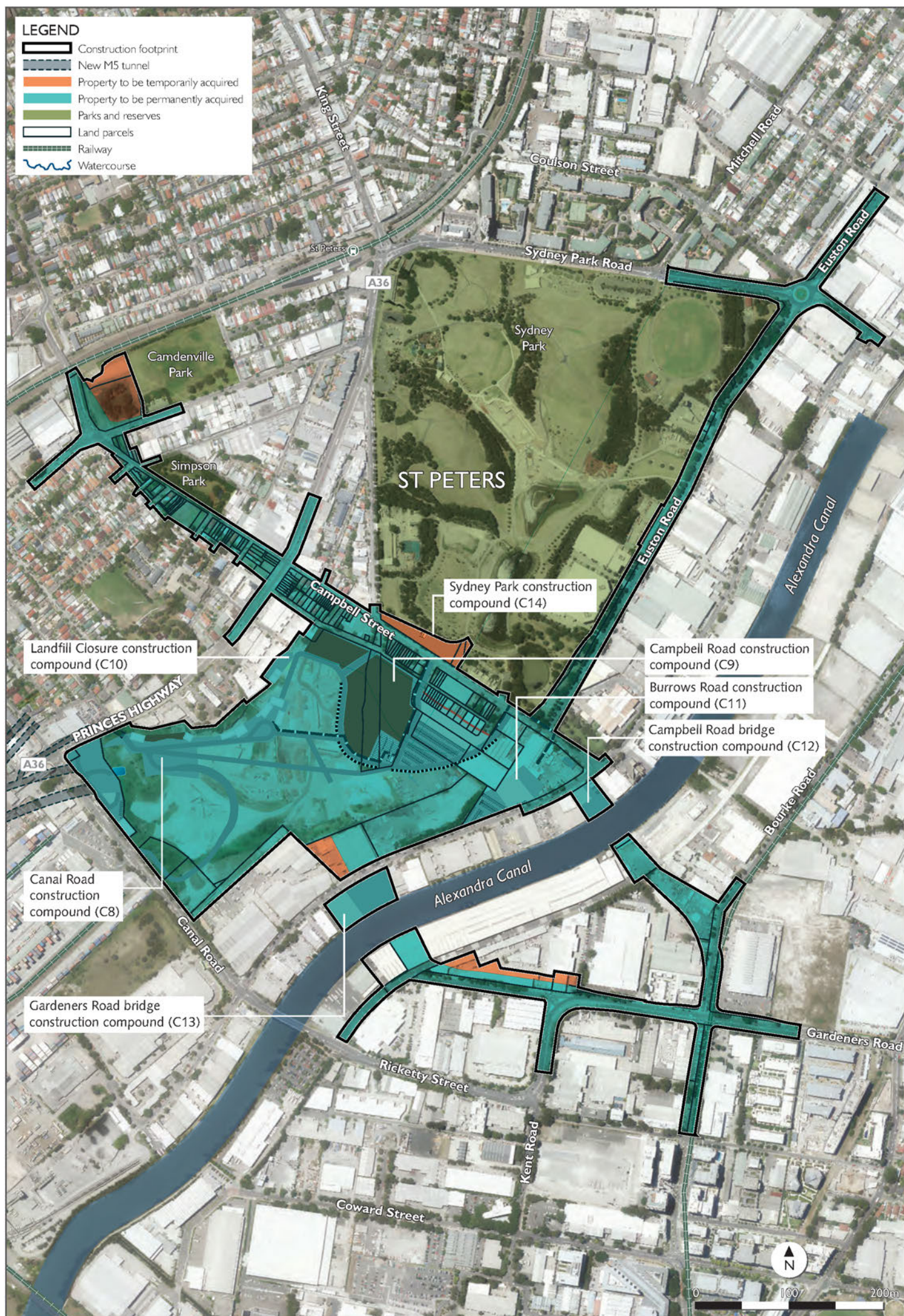


Figure 13-9 St Peters interchange and local road upgrades - land parcels to be temporarily occupied for construction

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Table 13-7 Potential temporary impacts on land use and development potential

Project site	Potential impacts on land use and development potential
Western surface works	
M5 East Motorway integration works and western portals.	The M5 East Motorway integration works and construction of the western portals would be carried out within the existing motorway road reserve. These construction works would be consistent with the current and future use of the land as road infrastructure, and would not adversely impact on land use or development potential. The potential impact of the M5 East Motorway integration works and construction of the western portals is therefore not considered to be significant.
Kingsgrove North construction compound (C1).	The Kingsgrove North construction compound would be partly located within the existing M5 East Motorway corridor, and partly on land currently zoned and used for public recreation and light industrial development. The area of land currently used for public recreation (Beverly Grove Park) would not be available during construction of the project. Alternative pedestrian and bicycle access arrangements would be provided around the northern boundary of the construction compound during this period. The use of Beverly Grove Park would be temporarily restricted during construction, and would be rehabilitated and returned for public recreation at the end of construction. Other public recreation sites in the area, including Beverly Hills Park and Clemton Park would remain and would not be affected during construction. The potential impact to users is therefore considered to be not significant. The current zoning and use of Beverly Grove Park for public recreation limits the potential for development of the site for other permissible uses. The potential for construction of the project to significantly affect the development potential of the site would therefore be low. The eastern end of the Kingsgrove North construction compound would occupy land currently zoned and occupied by light industrial development. This light industrial development would need to be relocated, and current infrastructure on the site demolished in the initial stages of the construction program. The project would therefore restrict the use of this land for permissible uses, including as light industrial development, for the duration of the construction period. The majority of the site would be returned for use as light industrial and or other permissible development at the end of the construction period. Given the temporary duration of the construction works, impacts to this land used for light industrial development is not considered to be significant.
Kingsgrove South construction compound (C2).	The Kingsgrove South construction compound would affect land within the existing motorway road reserve (which includes M5 Linear Park). These construction works would be consistent with the current and future use of the land as road infrastructure, and would not adversely impact on land use or development potential. Impacts are therefore not considered to be significant.
Commercial Road construction compound (C3).	The Commercial Road construction compound would occupy land currently zoned and occupied by light industrial development. This light industrial development would need to be relocated, and current infrastructure on the site demolished in the initial stages of the construction program. The project would therefore restrict the use of this land for permissible uses, including as light industrial development, for the duration of the construction period. The site would be returned for use as light industrial and or other permissible development at the end of the construction period and therefore impacts are not considered to be significant.

Project site Potential impacts on land use and development potential	
Bexley Road surface works	
Bexley Road North construction compound (C4).	The Bexley Road North construction compound would affect currently undeveloped land within an existing road reserve. These construction works would be consistent with the current and future use of the land as road infrastructure, and would not adversely impact on land use or development potential. Impacts are therefore not considered to be significant.
Bexley Road South construction compound (C5).	The Bexley Road South construction compound would affect currently undeveloped land within an existing road reserve (which includes M5 Linear Park). These construction works would be consistent with the current and future use of the land as road infrastructure, and would not adversely impact on land use or development potential. Impacts are therefore not considered to be significant.
Bexley Road East construction compound (C6).	Most of the Bexley Road East construction compound would affect currently undeveloped land within an existing road reserve (which includes existing M5 East filtration plant). These construction works would be consistent with the current and future use of the land as road infrastructure, and would not adversely impact on land use or development potential. Impacts are therefore not considered to be significant. Those small areas of the compound that would encroach onto adjacent residential land would not affect existing developments on the land. There would be a temporary loss of development potential on the affected land for the duration of the construction works. As the construction works are only temporary, the impact is not considered to be significant.
Arncliffe surface works	
Arncliffe construction compound (C7).	The Arncliffe construction compound would be located on land currently used for the Kogarah Golf Course. Location of the construction compound on this site would affect the operation of the golf course and would require the golf course to operate as a 9 hole course rather than an 18 hole course for the duration of construction. The site is not currently developed for other permissible uses under the Cooks Cove SREP. The potential for such development would be restricted within the footprint of the construction compound for the duration of construction activities. Those parts of the disturbed site not required for the Arncliffe motorway operations complex (MOC3) would be rehabilitated and returned for potential future development consistent with land use zoning provisions. Therefore, impacts are not considered to be significant.
St Peters interchange and local road upgrade surface works	
St Peters interchange	The St Peters interchange would be located mostly on land currently used for the Alexandria Landfill. The potential continued operation of the landfill or other permissible industrial uses on the site would not be possible during construction. Surplus land on the site not used for road infrastructure in the future may be considered for redevelopment for a permissible use (which would not be for the purpose of continued landfilling). The change in land use is considered to be beneficial with land comprising road infrastructure, operational facilities, and open space. Part of the St Peters interchange would affect land subject to planning controls which expressly contemplate a road. The construction works on the site and the St Peters interchange itself are consistent with these controls and therefore the impact is not considered to be significant.

Project site	Potential impacts on land use and development potential
Local road upgrades	Most of the local road upgrades would be conducted on land currently zoned and used for road infrastructure. In some cases minor encroachment into attached land use zonings may be required during construction and for ancillary infrastructure (such as footpaths and bicycle paths) during operation. Local road upgrades would therefore be consistent with the current land use zoning and development of land in these areas. As the construction works are only temporary, the impact is not considered to be significant. In some cases, particularly with the Marrickville local government area, existing roads have adopted the land use zoning of adjacent residual land for example landscaping / open spaces / car parks on Campbell Road. In these areas, the land affected by the project is currently occupied by or immediately adjacent to existing roads. Continued use of this land, in an upgraded form, would be consistent with current land use and development patterns and therefore impacts are not considered to be significant.
Canal Road construction compound (C8).	The Canal Road construction compound would be located on land currently used for the Alexandria Landfill and commercial / industrial purposes. The potential continued operation of the landfill or other permissible industrial uses on the site would not be possible during construction. Most of the construction compound site would be used for the St Peters motorway operations complex (MOC4) during operation and there would be limited potential for further development of the site in the future. The change in use is not considered to represent a significant adverse impact to the development potential of the land given the small land take of the motorway operations complex.
Campbell Road construction compound (C9).	The Campbell Road construction compound would be located on land currently used for the Alexandria Landfill, and subject to planning controls which expressly contemplate road infrastructure. The potential continued operation of the landfill would not be possible during construction. The closure of the Alexandria Landfill and use of the land for the construction of road infrastructure would be consistent with the current planning controls for the land on which the construction compound would be located. Potential impacts are therefore not considered to be significant.
Landfill closure construction compound (C10).	The Landfill closure construction compound would be located on the Alexandria Landfill and is currently zoned as General Industrial. The potential continued operation of the landfill would not be possible during construction. The existing hardstand area for the construction compound would be utilised for site office, amenities, laydown and material storage areas. Upon completion of the project the compound components would demobilise and landscaping would occur. Surplus land on the site may be considered for redevelopment for a permissible use (which would not be for the purpose of continued landfilling). The change in use following completion of the project is considered to be beneficial to the land. No significant adverse impacts are anticipated.
Burrows Road construction compound (C11).	The Burrows Road construction compound would be located on land currently used for commercial / industrial purposes. The potential continued operation of the landfill or other permissible industrial uses on the site would not be possible during construction. Surplus land on the site not subject to planning controls which expressly contemplate road infrastructure in the future may be considered for redevelopment for a permissible use (which would not be for the purpose of continued landfilling). The change in use following completion of the project is considered to be beneficial to the land. No significant adverse impacts are anticipated.
Campbell Road bridge construction compound (C12).	The Campbell Road bridge construction compound would be located on land currently zoned and occupied by industrial development. Use of the land for the construction compound would require relocation of the existing industrial operations and demolition of existing development on the site. Continued use of the site for these uses would not be possible during the construction period. The site would be rehabilitated and returned for potential future development of permissible uses under the land use zoning. As the construction works are only temporary, the impact on industrial operations is not considered to be significant.

Project site	Potential impacts on land use and development potential
Gardeners Road bridge construction compound (C13)	The Gardeners Road bridge construction compound would be located on land currently zoned and occupied by industrial development. Use of the land for the construction compound would require relocation of the existing industrial operations and demolition of existing development on the site. Continued use of the site for these uses would not be possible during the construction period. The site would be rehabilitated and returned for potential future development of permissible uses under the land use zoning. As the construction works are only temporary, the impact on land use and the development potential on the land is not considered to be significant.
Sydney Park construction compound (C14)	The Sydney Park construction compound would be located on land currently used for public recreation. Continued use of the site for permissible uses would not be possible during the construction period. The site would be rehabilitated and returned for potential future development of permissible uses under the current land use zoning (ie open space within Sydney Park). At the end of the construction period, the site would be rehabilitated. As the construction works are only temporary, the impact on recreational users is not considered to be significant.

Settlement and subsidence

Settlement along the tunnel route may occur in some areas as a result of volume loss during tunnel excavation, groundwater drawdown and subsequent ground consolidation. Areas most likely to be affected by settlement are usually where tunnelling is closest to the ground surface, around the main alignment tunnel portals and on and off ramps.

Settlement of the surface can create tensile strains in buildings above and around the settlement. The extent of settlement, and the resultant strains affecting buildings, has been calculated for the project. Affected buildings have been assigned an indicative damage category, from 'negligible' to 'very severe', based on the risk of damage to the buildings as a result of settlement. Damage categories of 'negligible' to 'slight' are acceptable as they represent potential aesthetic damage only (for example, minor cracking of plaster). Damage categories of 'moderate' to 'very severe' are related to serviceability and stability damage and therefore present significant risk of damage, potentially requiring major remedial works or demolition of the structure.

Further details of the settlement assessment and anticipated damage categories for reference buildings are provided in **Chapter 17** (Groundwater), in **Section 19.4.6**.

It is expected that settlement would stabilise within about two months of tunnel excavation occurring under a structure. A building condition survey would be undertaken within the preferred project corridor (the zone on the surface equal to 50 metres from the outer edge of the tunnels) and within 50 metres of surface works.

Building condition surveys of potentially affected structures would be completed both before and after the works to identify existing damage and any damage due to the works. Where project induced settlement is deemed the cause of cracking, cracks would be filled, new external masonry cracks would be repointed for weather tightness, and depressions created by depressions would be rectified. A monitoring program would also be undertaken to ensure that settlement has stabilised before monitoring is completed.

Relocation of Utilities

It is likely that utilities and services located within or close to the project, including electricity, telecommunications (including optic fibre cables), sewer and water mains, would need to be relocated or realigned as part of construction of the project. This is particularly the case around areas of surface or shallow soil disturbance.

The nature and extent of utility changes would be confirmed during the detailed design of the project, with appropriate relocation or replacement alternatives identified in consultation with the relevant utility provider. A summary of utilities that have been identified that would be protected or require adjustment / relocation is provided in **Table 13-8**.

Changes to utilities outside of the project footprint would be subject to separate environmental assessment and approval processes. Details on the provision of utilities to supply the project can be found in **Chapter 5** (Project description).

Table 13-8 Changes to access for the local road upgrades

Zone	Service Authority	Summary of utilities potentially affected	Potential action
Western surface works	Ausgrid	Low-voltage supply for lighting on shared pathway	The asset would be relocated where affected by the works.
	Telstra	Optic fibre and copper cables	Combination of protect in place where feasible to do so and relocation.
	Sydney Water	Sewers	Combination of protect in place, where feasible to do so, and relocation.
Arncliffe surface works	Ausgrid	Low-voltage cables	The asset would be relocated where affected by the works.
	Jemena Gas	Steel secondary gas main	The asset would be protected in place.
	Sydney Water	Desalination pipeline	The asset would be protected in place.
	Telstra	Optic fibre and copper cable	The asset would be protected in place.
Main alignment tunnels	Gorodok	Ethane and ethylene gas pipeline	The project has been designed to avoid impacts to these assets.
	Jemena Gas	Gas main	The project has been designed to avoid impacts to these assets.
	Optus	Optic fibre cables	The project has been generally designed to avoid impacts to these assets. However, where avoidance is not possible, they would be protected in place.
	Shell	High pressure multi-product pipeline	The project has been designed to avoid impacts to these assets.
	Viva Energy	High pressure oil pipeline	The project has been designed to avoid impacts to these assets.
	Sydney Water	The South western suburbs ocean outfall sewer (SWSOOS) and five other sewers	The project has been designed to avoid impacts to the SWSOOS. Other sewers would be protected in place.
	Transgrid	330kV feeder cables	The project has been designed to avoid impacts to these assets.
St Peters interchange	Ausgrid	33kV and 132kV high voltage transmission cable	The asset would be protected in place
	Disconnections	Various gas, water, sewer, power and communications assets	Utility connections would be disconnected prior to demolition works.
	Jemena Gas	Gas main	The asset would be protected in place.
	Optus	Optic fibre cable	The asset would be protected in place.
	Sydney Water	Desalinisation pipeline, two sewers, and three water mains	The asset would be protected in place.
	Telstra	Optic fibre and copper cables	The asset would be protected in place.
	Transgrid	330kV high voltage cable	The asset would be protected in place.
Canal Road	AARNet	Optic fibre cable	The asset would be protected in place.
	Ausgrid	33kV and 132kV high voltage cables and a low voltage cable	The asset would be protected in place.
	Optus	Optic fibre cable	The asset would be protected in place.

Zone	Service Authority	Summary of utilities potentially affected	Potential action
	Sydney Water	Desalinisation pipeline and water mains	The asset would be protected in place.
	Telstra	Optic fibre and copper cable	The asset would be protected in place.
	Transgrid	330kV feeder cable	The project has been designed to avoid impacts to these assets. However, activities would be monitored and the assets would be protected in place where required.
Gardeners Road extension	AARNet	Optic fibre cable	The asset would be relocated where affected by the works.
	Ausgrid	132kV high voltage and low voltage cables	The 132kV transmission cable would be monitored and protected in place. Low voltage cables would be relocated.
	Jemena Gas	Secondary gas main and two nylon gas mains	An integrity test would be undertaken for the secondary gas main and permanent protection provided where necessary. The nylon gas mains would be relocated where required.
	Luminet	Optic fibre cable	The cable would be monitored and temporary protection provided during construction where necessary.
	NBN	Optic fibre cable	The assets would be monitored and either relocated where affected or protected in place during construction.
	Nextgen	Optic fibre cable	The assets would be monitored and either relocated where affected or protected in place during construction.
	Optus	Southern cross international optic fibre cable including cable station, and an ordinary optic fibre cable	Temporary or permanent protection would be provided as necessary for the Southern cross international optic fibre cable. The ordinary optic fibre cable would be relocated where affected by works, and monitored and protected in place for other locations.
	Pipe Networks	Optic fibre cable	The asset would be monitored and protected in place.
	Primus	Optic fibre cable	The asset would be monitored and protected in place.
	Sydney Water	Sewers and water mains	The assets would be monitored and either relocated/ re-laid where affected or protected in place during construction.
	Telstra	Optic fibre and copper cables	The assets would be monitored and either relocated where affected or protected in place during construction.
	Uecomm	Optic fibre cable	The assets would be monitored and either relocated where affected or protected in place during construction.
	Verizon	Optic fibre cable	The assets would be monitored and either relocated where affected or protected in place during construction.
	Vocus	Optic fibre cable	The assets would be monitored and either relocated where affected or protected in place during construction.

13.3.2 Operation

Potential impacts on land use associated with operation of the project would include:

- Permanent acquisition of properties
- Changes to site accessibility
- Formation of residual lots, with potential implications for the development potential of those lots.
- Changes to development patterns on the project's operational sites
- Implications for development patterns beyond the boundaries of the project's operational sites.

Properties required for the project

A number of properties would be required to accommodate the following operational components for the project:

- Around the western portals, where the existing motorway road corridor needs to be widened
- The five motorway operations complexes for the project, at Kingsgrove (MOC1), Bexley Road (MOC2), Arncliffe (MOC3), St Peters (MOC4) and at Burrows Road (MOC5)
- The St Peters interchange works
- In some areas along local road upgrade works, where road widening or realignment works extend beyond the existing road reserve and/ or road infrastructure footprint.

There are 143 properties (364 parcels of land) that would be directly impacted by operational infrastructure. These are detailed in **Appendix D** and consist of:

- Thirty nine properties (218 parcels of land) already owned by Roads and Maritime
- Six properties (10 parcels of land) to be acquired from other NSW Government agencies
- Seventy six properties (102 parcels of land) to be acquired from private owners
- Five properties are owned by utility providers (6 parcels of land)
- Seventeen properties (28 parcels of land) are owned by councils.

Figure 13-10 to **Figure 13-13** show the properties currently anticipated to be directly impacted during operation of the project. Where a property is not owned by Roads and Maritime, full or partial acquisition of the property would be required. The extent of property acquisition would be reviewed and confirmed during detailed design of the project.

All acquisitions would be undertaken consistently with the principles in the *Land Acquisition (Just Terms Compensation) Act 1991* and the *Land Acquisition Information Guide* (Roads and Maritime, 2012c).

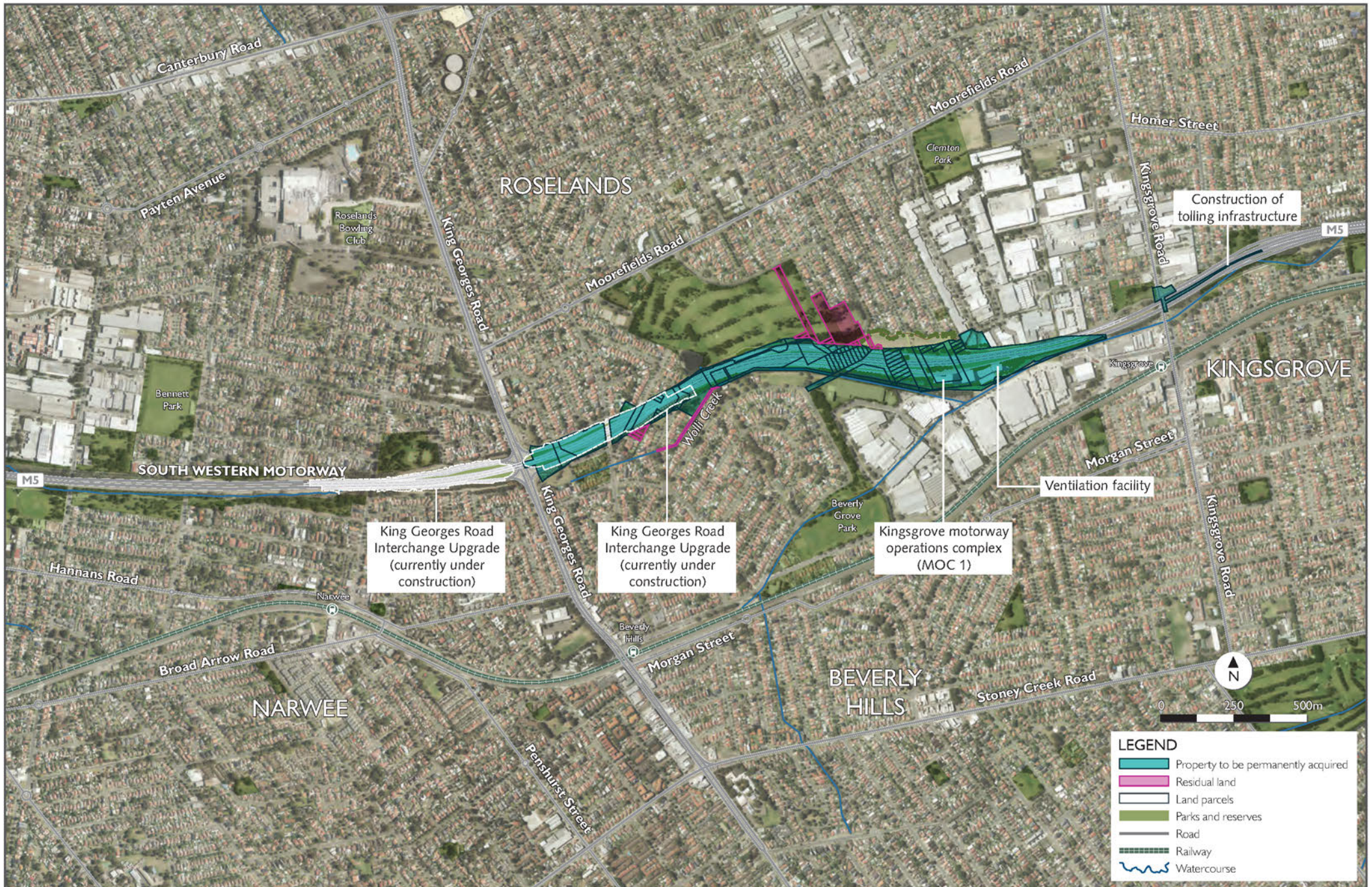


Figure 13-10 Land parcels to be permanently acquired for operation around the Western surface works

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Figure 13-11 Land parcels to be permanently acquired for operation around the Bexley surface works

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Figure 13-12 Land parcels to be permanently acquired for operation around the Arncliffe surface works

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Figure 13-13 Land parcels to be permanently acquired for operation around the St Peters interchange

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Subsurface acquisition

In addition to the properties affected by surface activities, land (or interests in land such as easements) below the surface of the ground would be acquired. This is called subsurface acquisition and is illustrated in **Figure 13-14**.

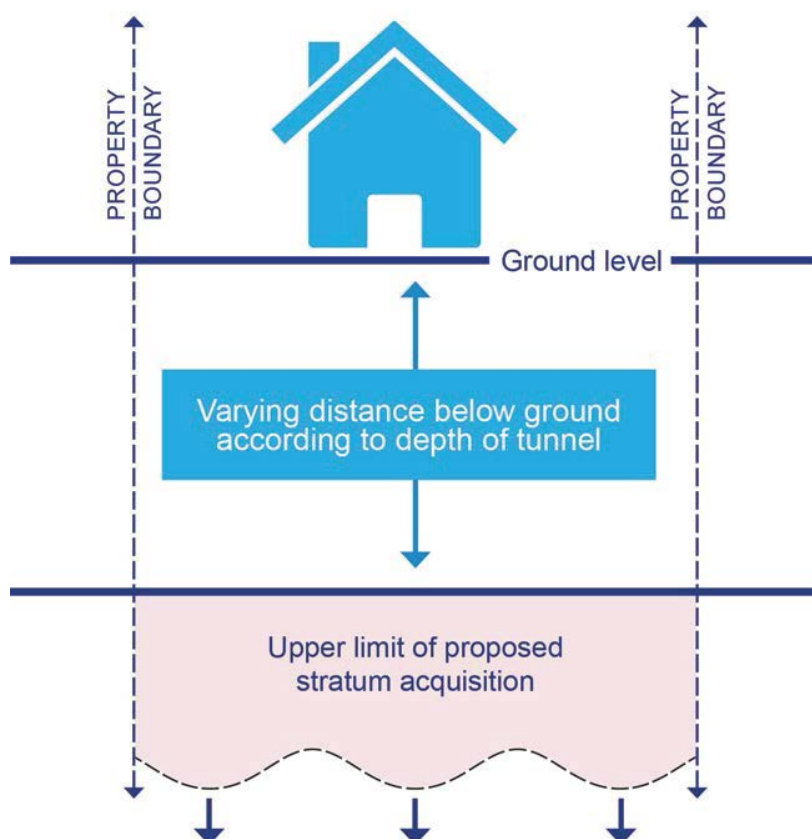


Figure 13-14 Example of sub-surface stratum acquisition

The *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) provides that compensation is not payable for the majority of subsurface acquisition of land or easements, unless specific circumstances as detailed in that Act apply. Appendix C of the *Roads and Maritime Land Acquisition Information Guide* (Roads and Maritime 2014d) sets out in detail the compensation provisions of the Act relating to subsurface acquisition.

In most cases, subsurface acquisition would not affect the future use of property at the surface. Subject to council regulations and approvals, property owners would generally be able to:

- Carry out improvements such as installing a swimming pool
- Dig deeper foundations for a new building or second storey additions
- Undertake property development.

All property acquisition requirements would be confirmed during detailed design.

Changes to accessibility

The operation of the project has the potential to restrict local access and connectivity between the various land uses around the surface components of the project. Restrictions are most likely to occur at the western surface works, St Peters interchange and local roads upgrades.

The western surface works would be located within a linear infrastructure corridor, which already contains the M5 East Motorway. Therefore, the main impacts of the project on connectivity of land would be along the corridor during construction within the M5 Linear Park. Following completion of construction, access to the linear pedestrian and cycle paths would be reinstated and therefore the project is unlikely to generate connectivity impacts at the western surface works during operation.

The project has the potential to restrict access and connectivity around the St Peters interchange and local roads upgrades. The project has been designed to enhance pedestrian and cyclist access around the St Peters interchange and would connect with existing cycle paths to Sydney Park via a Campbell Road pedestrian and cyclist bridge.

The property adjustments required for the local road upgrades consist typically of driveway adjustments / extensions to suit the realignment of Euston Road, Campbell Street / Campbell Road and Gardeners Road. Where the works have an impact on a structure such as a residential or commercial building, it is generally assumed that the entire property has been acquired. The exception is along Euston Road and Gardeners Road at St Peters where the partial demolition of buildings would be required on some properties.

The details of property adjustments required for the local road upgrades are provided in **Table 13-9**.

Table 13-9 Changes to access for the local road upgrades

Location	Changes to access arrangements
225 Euston Road	Modification of existing driveway to suit Euston Road widening
215 Euston Road	Modification of existing driveway to suit Euston Road widening
201 Euston Road	Modification of existing driveway to suit Euston Road widening
Camdenville Park (corner of Bedwin Road and May Street)	Upgrade of existing access to suit modification to basin
67 Campbell Street	Extension of concrete driveway to suit new kerb line
65 Campbell Street	Extension of concrete driveway to suit new kerb line
63 Campbell Street	Extension of concrete driveway to suit new kerb line
61 Campbell Street	Extension of concrete driveway to suit new kerb line
59 Campbell Street	Extension of concrete driveway to suit new kerb line
129 Pacific Highway	Extension of concrete driveway to suit new kerb line
36 Burrows Road	Provision of new concrete driveway to suit new kerb line resulting from the modifications to the Campbell Road / Burrows Road intersection
200 Bourke Road	Minor adjustments likely to suit new road alignment
697 Gardeners Road	Site split by new connection between Gardeners Road and St Peters interchange Access for southern portion of site via Venice Street to Ricketty Street Access for northern portion of site via new intersection on Campbell Road extension
691 Gardeners Road	Access from Gardeners Road would be left-in-left-out only. Traffic would exit site via Venice Street to Ricketty Street Modification of concrete driveway to suit new local roads arrangements
566 Gardeners Road	Existing western property access to be closed Modification of concrete driveway at eastern end of site required to suit new kerb line

Location	Changes to access arrangements
562 Gardeners Road	Modification of concrete driveway at eastern end of site required to suit new kerb line
538 Gardeners Road	Modification of concrete driveway at eastern end of site required to suit new kerb line
530 Gardeners Road	Modification of concrete driveway at eastern end of site required to suit new kerb line
520 Gardeners Road (Bunnings Mascot)	Modification to two existing accesses to suit widening of Bourke Road and Gardeners Road Modification of existing car park following partial acquisition
655 Gardeners Road	There is currently no access off Bourke Street for this property. However, the widening works would result in the loss of existing parking areas on the property, and would potentially narrow the driveway along the eastern side of the property. This may restrict access to the rear of the property and may require access off Bourke Street to be provided.
Sydney Park	Provision of a new pedestrian and cyclist access across Campbell Road into Sydney Park (Campbell Road pedestrian and cyclist bridge)
1 Ricketty Street	Modification of existing access arrangements following the construction of Venice Street including a new access off Venice Street

Formation of residual lots

Residual lots are the fragments of a property left over when part of the property is acquired or occupied by development. There are two types of residual lots that would be generated:

- Surplus lots that are the left over parcels of land that were acquired or occupied during construction, but are not required for operational infrastructure. Surplus lots provide an opportunity for future development, either for a similar use of the site prior to construction of the project, or a different use depending on the land use zoning of the land
- Residual lots that are the left over parcels of land when only part of a property is acquired for construction or operation of the project. Many local environmental plans place restrictions on the minimum size of lots that can be developed for specified uses, so the number and size of residual lots are an important consideration.

Surplus lots that remain following construction of the project would, in most cases, be rehabilitated and sold or otherwise made available for development consistent with permissible land uses. In some cases, for example the surplus land around the St Peters interchange (ie Sydney Park construction compound (C14)), there may be an opportunity to review the current land use zoning of the affected land. The relevant local council would be consulted in these areas to determine whether current land use zonings and permissible land use types remain appropriate following construction of the New M5.

For the purposes of assessing any potential change in the permissible use of residual land, **Table 13-10** sets out the minimum subdivision sizes in the LGAs where there would be residual land. Larger minimum lot sizes exist in other areas within the relevant LGAs. However, for those areas impacted by the project these are the identified minimum lot sizes. Minimum subdivision sizes have not been adopted in the LEPs of Marrickville, Botany Bay and Sydney.

Table 13-10 Relevant minimum lot sizes

LGA	Relevant minimum lot size (square metres)
Canterbury	460
Hurstville	450
Marrickville	Not available
Rockdale	450
Botany Bay	Not available
Sydney	Not available

Where residual lots remain that are smaller than the minimum lot requirements set by the relevant LEP, the following options would be considered:

- Where lots are adjacent to each other, the lots may be able to be combined to create a lot area suitable for development
- Where lots are not adjacent to each other, the lots may be incorporated into the road reserve landscaping
- Opportunities to sell smaller lots to adjacent land owners may also be investigated.

Table 13-11 lists the residual lots which would be left over when a property is partially acquired outside the road reserve, the relevant zoning, the residual lot size and whether this complies with the minimum lot size restrictions under the provisions of the applicable environmental planning instrument.

Table 13-11 Residual lots

Lot number	Land use zoning	Minimum lot size (square metres)	Approx. residual land size (square metres)	Complies with minimum lot size?
Western surface works				
1/DP1079064	RE1 Public Recreation	460 (Canterbury LEP)	175	No
1/DP224270	RE1 Public Recreation	460 (Canterbury LEP)	15,305	Yes
1/DP456521	RE1 Public Recreation	460 (Canterbury LEP)	5,562	Yes
1044/DP13705	SP2 Infrastructure	460 (Canterbury LEP)	384	No
1045/DP13705	SP2 Infrastructure	460 (Canterbury LEP)	482	Yes
34/DP15737	RE1 Public Recreation	460 (Canterbury LEP)	502	Yes
41/DP1076996	SP2 Infrastructure	460 (Canterbury LEP)	485	Yes
N/A	RE1 Public Recreation	450 (Hurstville LEP)	280	No
43/DP15737	RE1 Public Recreation	460 (Canterbury LEP)	195	No
44/DP15737	RE1 Public Recreation	460 (Canterbury LEP)	404	No
5/DP1038625	RE1 Public Recreation	450 (Hurstville LEP)	235	No
6/DP1038625	RE1 Public Recreation	450 (Hurstville LEP)	128	No
7/DP1038625	RE1 Public Recreation	450 (Hurstville LEP)	26	No
711/DP13496	RE1 Public Recreation	450 (Hurstville LEP)	665	Yes
N/A	R2 Low Density Residential	460 (Canterbury LEP)	47	No
29/DP1076996	R2 Low Density Residential	460 (Canterbury LEP)	1,883	Yes
Arncliffe surface works				
1/DP108492	Non-Standard	450 (Rockdale LEP)	121,130	Yes
1/DP329283	Non-Standard	450 (Rockdale LEP)	17,024	Yes
14/DP213314	Non-Standard	450 (Rockdale LEP)	28,893	Yes
St Peters interchange and local road upgrades				
1/DP1040114	RE1 Public Recreation	Not adopted (Sydney LEP)	1288	N/A
1/DP543708	B4 Mixed Use	Not adopted (Sydney LEP)	1380	N/A
16/DP270785	SP2 Infrastructure	Not adopted (Sydney LEP)	1090	N/A
17/DP270785	B7 Business Park	Not adopted (Sydney LEP)	4577	N/A
2/DP543708	B4 Mixed Use	Not adopted (Sydney LEP)	1322	N/A
3/DP543708	B4 Mixed Use	Not adopted (Sydney LEP)	1530	N/A
52/DP605290	RE1 Public Recreation	Not adopted (Sydney LEP)	13,415	N/A
6/DP810522	RE1 Public Recreation	Not adopted (Sydney LEP)	12,559	N/A
80/DP1033767	RE1 Public Recreation	Not adopted (Sydney LEP)	5,636	N/A
9/DP879483	RE1 Public Recreation	Not adopted (Marrickville LEP)	31,969	N/A
SP62691	IN1 General Industrial	Not adopted (Sydney LEP)	4,611	N/A

Lot number	Land use zoning	Minimum lot size (square metres)	Approx. residual land size (square metres)	Complies with minimum lot size?
1/DP1056652	SP2 Infrastructure	Not adopted (Marrickville LEP)	41,894	N/A
81/DP1033767	RE1 Public Recreation	Not adopted (Sydney LEP)	564	N/A
2/DP1105933	RE1 Public Recreation	Not adopted (Sydney LEP)	69	N/A
2/DP775391	RE1 Public Recreation	Not adopted (Sydney LEP)	419	N/A
1/DP864698	RE1 Public Recreation	Not adopted (Sydney LEP)	6,973	N/A
SP36878	IN1 General Industrial	Not adopted (Sydney LEP)	13,614	N/A
SP45388	IN1 General Industrial	Not adopted (Sydney LEP)	6,568	N/A
2/DP547069	IN1 General Industrial	Not adopted (Sydney LEP)	24,926	N/A
B1/DP430291	IN1 General Industrial	Not adopted (Sydney LEP)	4,152	N/A
1/DP397364	B4 Mixed Use	Not adopted (Botany Bay LEP)	3,250	N/A
1/DP405527	IN1 General Industrial	Not adopted (Sydney LEP)	1,193	N/A
100/DP864502	IN1 General Industrial	Not adopted (Sydney LEP)	18,601	N/A
A/DP430291	IN1 General Industrial	Not adopted (Sydney LEP)	7,962	N/A
101/DP864502	IN1 General Industrial	Not adopted (Sydney LEP)	4,250	N/A
12/DP606737	IN1 General Industrial	Not adopted (Sydney LEP)	3141	N/A
1/DP91123	IN1 General Industrial	Not adopted (Sydney LEP)	37,664	N/A

Changes to development patterns – project operational sites

Within its operational surface footprint, the project would result in a change in some land use to be consistent with road infrastructure. The operational surface footprint has been generally located along existing roads, and within existing infrastructure corridors, so that the new infrastructure would generally be consistent with the surrounding land use.

Closure of the Alexandra Landfill, as part of the project, would result in a positive land use change by re-using the site as the St Peters interchange. The redevelopment of this site would also enhance pedestrian and cycle path connectivity between Sydney's south and Sydney Park as well as providing an opportunity to create additional public open space. The Campbell Road cycle and pedestrian bridge and local road upgrades have been designed to avoid impacts to the development of City of Sydney's City Farm.

The project would occupy a portion of the Kogarah Golf Course during construction and operation. The construction footprint has been minimised so that nine holes would remain open during construction and reduce impacts on the recreation value of the land. The footprint of the permanent facilities has been restricted and appropriately sited to minimise impacts to the future use or development potential of the golf course site.

Additional offset habitat for the Green and Golden Bell Frog would be required. The ongoing use of this land as habitat would need to be considered in the future land use planning for this area. However, the use of the land as habitat is consistent with the surrounding land use, which is for public recreation. **Chapter 21** (Biodiversity) provides further detail on the offset habitat requirements.

Changes to development patterns – around project operational sites

The project has the potential to affect or influence development in three key ways:

- For development at ground level, through changes in existing amenity around surface components of the project
- For receivers above ground level (for example, residential receivers on higher floors of residential buildings) in proximity to the project's ventilation outlets
- For operation of the nearby Sydney Airport.

Ground level development

Potential changes in amenity for ground level receivers have been assessed in the relevant parts of this EIS, including **Chapter 9** (Traffic and transport), **Chapter 10** (Air quality, in particular **Section 10.4**), **Chapter 12** (Noise and vibration), **Chapter 14** (Visual impacts and urban design) and **Chapter 18** (Flooding and drainage). In each case, the impacts of the project on local amenity have been demonstrated as manageable within acceptable limits subject to the application of appropriate mitigation and management measures. These mitigation and management measures are outlined in each chapter, and summarised in a consolidated form in **Chapter 28** (Summary of environmental management measures).

The project would result in an increase in flood levels for the Probable Maximum Flood (PMF) event in the vicinity of Canterbury Golf Course (refer to Chapter 18) (Flooding and drainage)). The increase in flood levels during the PMF would constrain development in at least one residential property, in Elouera Street, Beverley Hills. This property would be constrained from being developed as a vulnerable land use such as a child or aged care facility as these land uses are restricted in land affected by the PMF.

The ventilation facilities for the project would be located as far from existing residential dwellings as possible. The operation of the ventilation facilities would not prevent continued use of surrounding land for residential and related purposes. The potential air quality impacts and human health impacts associated with the ventilation facilities are discussed in **Section 10.8** of **Chapter 10** (Air quality) and **Chapter 11** (Human health).

Notwithstanding, it is recognised that decisions will be made by individual landowners about existing and future developments based on their own assessment of the impacts presented in this EIS. Such individual assessments may affect decisions around land development beyond the outcomes of the statutory environmental impact assessment of the project.

The provision of a new motorway standard connection between St Peters and Kingsgrove, and the possible future connection to the rest of the WestConnex program of works, is likely to increase the desirability of residential, commercial and industrial developments particularly around motorway access points. This improved connectivity and reduced traffic congestion may make some areas more desirable for living and working than is currently the case. Changes in desirability are likely to gradually affect the nature and scale of development around key project connection points over time.

Elevated receiver locations

The project has the potential to influence development patterns for existing and future elevated receiver locations (for example, those receivers within multi-storey residential buildings) as a consequence of operation of the project's ventilation outlets. Elevated receivers have the potential to experience higher air quality impacts because emissions from the ventilation outlets have less time to disperse compared with potential impacts at ground level. **Section 10.8** of **Chapter 10** (Air quality) includes an assessment of potential air quality impacts for ground level and elevated receiver locations.

The future development of land (including re-zonings) in the vicinity of the ventilation facilities that may involve multi-story buildings would need to consider the air dispersion performance of the Arncliffe ventilation facility. Roads and Maritime would assist local councils, or the Department of Planning and Environment (in relation to Cooks Cove), in determining any relevant land use considerations applicable to future development for inclusion in local environmental plans or development control plans, where required.

Potential impacts on elevated receivers are relevant around:

- The Kingsgrove ventilation facility. Development patterns and height restrictions for developments in this area are regulated under the Hurstville LEP and the Canterbury LEP. Current building height controls applying around the Kingsgrove ventilation facility are:
 - Most development is residential and limited to a height of 8.5 metres (in Canterbury LGA) or nine metres (in Hurstville LGA). This is equivalent to two storeys plus a roof structure

- Land occupied by the Canterbury Golf Course and the industrial areas around Garema Circuit in the Canterbury LGA are currently not subject to statutory building height controls
- The industrial areas around The Crescent in the Hurstville LGA have a building height limit of 10 metres
- The business and medium density residential development in Hurstville LGA, along King Georges Road between the railway line and Stoney Creek Road, is limited in height to 10 metres (residential development) and 15 metres (business development). These building heights are equivalent to around three to four storeys
- The Arncliffe ventilation facility. Development patterns and height restrictions for developments in this area are regulated under the *Rockdale Local Environmental Plan 2011* and *Sydney Regional Environmental Plan No. 33 – Cooks Cove*. Current building height controls applying around the Arncliffe ventilation facility are:
 - Land currently occupied by the Kogarah Golf Course is restricted to six storeys, except within 120 metres of the Cooks River where the building height limit is five storeys. The Cooks Cove (SREP) allows for one building within the Trade and Technology Zone to be up to 11 storeys provided it is not closer than 10 metres from the zone boundary. In addition to statutory environmental planning controls, development will need to satisfy the requirements for safe operation of the Sydney Airport including restrictions on intrusion into regulated airspace
 - Land immediately around to and the west of the ventilation facility is zoned for low or medium density residential development and is restricted to a building height of 8.5 metres (two storeys plus roof structure)
 - Business and medium to high density residential development along the Princes Highway to the west of the ventilation facility and further west towards the railway line, is limited in height to 14.5 metres, increasing to 28 metres near the intersection of the Princes Highway and Wickham Street/ Forest Road. This is around four to nine storeys in height
 - To the north, where West Botany Street meets the Princes Highway, building heights are limited to 28 to 29.5 metres for residential development with some building height limits up to 46 metres for business development. This is around nine to 15 storeys
- The St Peters ventilation facility. Development patterns and height restrictions for developments in this area are regulated under the *Marrickville Local Environmental Plan 2011* and the Sydney LEP. Current building height controls applying around the Arncliffe ventilation facility are:
 - Development around the ventilation facility and within the Sydney LGA (to the north and east) is generally industrial in nature and subject to an 18 metre building height limit. Some areas along the Alexandra Canal have building height limits up to 22 metres.
 - There are no statutory building height limits that apply to Sydney Park.
 - Most land immediately around the St Peters ventilation facility in the Marrickville LGA is not currently subject to a statutory building height limit. Residential development further to the west, between the Princes Highway and Unwins Bridge Road is limited to a building height of 9.5 metres, which is around two storeys plus a roof structure.

Refer to **Section 10.8 of Chapter 10** (Air Quality) for further information on potential impacts to elevated receivers.

Operation of the Sydney Airport

As detailed in Section 5.8.2 the air quality within longitudinally ventilated road tunnels is most effectively and efficiently managed through a ventilation outlet located at the end of the tunnel, as close as reasonably possible to the tunnel portal. In the case of the New M5, which includes twin road tunnels, this means a ventilation outlet at each end of the project as close as possible to the tunnel portals would be the optimum approach to management of in tunnel air quality.

The St Peters ventilation facility, located near the eastern tunnel portals, would be situated on land that is regulated to ensure the ongoing safe operation of the Sydney Airport. In this area, restrictions are placed on the height of structures as well as the velocity of discharges from activities such as road tunnel ventilation facilities and industrial emissions stacks. Through detailed consultation with the Civil Aviation Safety Authority (CASA) during the development of the ventilation design for the project, WDA has identified that operation of a single ventilation outlet at St Peters near the eastern portals could not at the same time comply with both:

- The discharge velocity / air turbulence requirements to ensure safe ongoing operations at Sydney Airport without the potential for changes being required to aircraft operations.
- The ventilation requirements of the project to ensure acceptable in tunnel air quality and good dispersion of ambient emissions.

For this reason, an additional ventilation outlet is required at Arncliffe (the Arncliffe ventilation facility, in the south-western corner of the Kogarah Golf Course site). This approach would allow both in tunnel and ambient air quality requirements to be met, without compromising the safety of aircraft operations at Sydney airport.

The operation of three ventilation facilities is a necessary and unavoidable requirement, driven by a balanced approach to minimising environmental and land use impacts while avoiding adverse impacts on airspace and the viable operation of Sydney Airport. Details of the *Airports Act 1996* is provided in **Section 2.4.2**.

13.4 Environmental management measures

Development of the project would minimise the requirement for property acquisition, by optimising the use of land already owned by Roads and Maritime, or otherwise already identified for a future road. Notwithstanding, the project would impact on land use and property through the full and partial acquisition of properties, impacts to access and changes to land use planning requirements for future developments. **Table 13-12** provides the environmental management measures that would be implemented through the construction and operational phases of the project to minimise potential impacts.

Table 13-12 Environmental management measures – land use and property

Impact	No.	Environmental management measure	Timing
Construction			
Full and partial acquisition	LP01	The relevant property owners would be consulted in relation to the acquisition of properties required to facilitate construction of the project. Acquisition would be undertaken consistently with the principles in the Land Acquisition Information Guide (Roads and Maritime, 2012) and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW).	Construction
Property access	LP02	Prior to any impact to access, alternative arrangements would be negotiated with the affected parties in order to enable continued access and to minimise disruption as much as reasonably possible.	Pre-construction and construction

Impact	No.	Environmental management measure	Timing
	LP03	Affected property owners and community facilities would be provided with advanced notification of relevant project schedules, construction works and changes to access arrangements.	Construction
	LP04	Community updates would be provided on changes to the local road network within the project area during construction.	Construction
	LP05	Appropriate signage would be provided advising of walking track closures and alternative walking routes.	Construction
Settlement	LP06	A Settlement Monitoring Plan would be prepared that would provide details on: - Location of monitoring points - Duration of monitoring - Data collection and review - Roles and responsibilities for review of data - Triggers and actions for corrective actions.	Construction
	LP07	Building condition surveys would be undertaken on properties and structures within the preferred project corridor (the zone on the surface equal to 50 metres from the outer edge of the tunnels) and within 50 metres of surface.	Construction
	LP08	Services in locations where differential / angular settlement is anticipated would be identified. A monitoring plan, triggers and actions would be agreed with the utilities owner prior to potential impacts occurring	Construction
	LP09	A monitoring program, undertaken as part of the Settlement Management Plan, would be undertaken to ensure that settlement has stabilised before monitoring is completed.	Construction
Utilities	LP10	Utilities requiring adjustment or relocation would be confirmed during detailed design and would be adjusted according to utility provider requirements.	Detailed design / preconstruction
Operation			
Permanent acquisition	OpLP01	Land acquisition for the project would be undertaken consistently with the principles in the Land Acquisition Information Guide (Roads and Maritime, 2012c) and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW).	Detailed design / preconstruction
Loss of land use and property access	OpLP02	Property accesses that are affected as a result of the project would be reinstated in consultation with the affected landowners including relocation if required.	Detailed design / construction

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