15. Aboriginal heritage

This chapter provides a summary of the results of the Aboriginal heritage impact assessment. A full copy of the assessment report is provided as Technical paper 4 – Aboriginal heritage impact assessment. The Secretary's environmental assessment requirements relevant to Aboriginal heritage, together with a reference to where the results of the assessment are summarised in this chapter, are provided in Table 15.1.

Table 15.1 Secretary's environmental assessment requirements – Aboriginal heritage

Ref	Secretary's environmental assessment requirements – Aboriginal heritage	Where addressed
7. Heritage		
7.2	The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of:	A summary of the results of the Aboriginal heritage impact assessment is provided in this chapter. The full results are provided as Technical paper 4. This chapter considers impacts to Aboriginal heritage. Non-Aboriginal heritage is considered in Chapter 14.
	(a) Aboriginal places and objects, as defined under the *National Parks and Wildlife Act 1974* and in accordance with the principles and methods of assessment identified in the current guidelines	Section 15.3
	(b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan	Section 15.2.6
7.3	Where archaeological investigations of Aboriginal objects are proposed these must be conducted by a suitably qualified archaeologist, in accordance with Section 1.6 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment and Climate Change, 2010a).	Section 15.4.2
7.4	Where impacts to Aboriginal objects and/or places are proposed, consultation must be undertaken with Aboriginal people in accordance with the current guidelines. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be assessed.	Sections 15.1.3 and 15.3.3

15.1 Assessment approach

15.1.1 Legislative and policy context relevant to the assessment

The primary legislation relevant to Aboriginal heritage in NSW is the *National Parks and Wildlife Act 1974* (NP&W Act) and its supporting regulation. The NP&W Act defines an Aboriginal object as 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales'.

Under section 84 of the NP&W Act, an Aboriginal place is declared by the Minister as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.

Under the NP&W Act, it is an offence to harm or desecrate an Aboriginal object or Aboriginal place. Under section 87(1) of the Act, it is a defence to a prosecution offence if the harm or desecration of an Aboriginal object was authorised by an Aboriginal Heritage Impact Permit (AHIP) and the activities were carried out in accordance with that AHIP. As described in Chapter 3 (Planning and

assessment process), the provisions of the EP&A Act provide an exemption from the requirement for an AHIP for activities approved as critical State significant infrastructure, however, the other provisions of the NP&W Act still apply.

The *Standard Instrument – Principal Local Environmental Plan* defines an 'Aboriginal place of heritage significance' as an area of land, the general location of which is identified in an Aboriginal heritage study adopted by the Council after public exhibition, and that may be shown on the Heritage Map.

No sites or places listed under the EPBC Act were identified in the project area, and therefore there are no requirements under that Act relevant to the assessment.

The assessment was undertaken in accordance with:

- *Code of practice for archaeological investigation of Aboriginal objects in New South Wales* (DECC, 2010a)
- *Aboriginal cultural heritage consultation requirements for proponents* (DECC, 2010b)
- *Guide to investigating assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011).

15.1.2 Methodology

The methodology for the assessment involved:

- a desktop review of archaeological literature and databases to identify listed Aboriginal sites and places within the project area, including:
  - a search of the Aboriginal Heritage Information Management System (AHIMS) for listed Aboriginal sites
  - a search of relevant LEPs for listed Aboriginal places
- consulting with registered Aboriginal parties (described below)
- field surveys on 17 June 2016, and 7 and 8 March 2017, to identify visible surface evidence of Aboriginal heritage sites and landforms in the presence of representatives of the Metropolitan and Gandangara Local Aboriginal Land Councils
- developing a predictive model to assist in determining archaeological potential
- assessing the potential impacts of the project
- identifying mitigation measures to minimise the risk of impacting Aboriginal items or areas of Aboriginal cultural sensitivity.

15.1.3 Aboriginal consultation

Aboriginal consultation was undertaken in accordance with the requirements of *Aboriginal cultural heritage consultation requirements for proponents* (DECC, 2010b). Letters were sent to the relevant organisations requesting details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or places within and adjacent to the project area, including:

- Regional Operations Group, Metropolitan Region, OEH
- Metropolitan Local Aboriginal Land Council
- Gandangara Local Aboriginal Land Council
- The Registrar, *Aboriginal Land Rights Act 1983*
- National Native Title Tribunal

- NTSCORP Limited
- Canterbury-Bankstown Council
- Inner West Council
- Greater Sydney Catchment Management Authority.

Additionally, an advertisement inviting all Aboriginal persons and organisations who hold relevant cultural knowledge was placed in the Sydney Morning Herald and Koori Mail on 4 May 2016.

Fifteen Aboriginal stakeholders registered as persons or organisations that may hold cultural knowledge relevant to determining the Aboriginal cultural values of the study area.

Transport for NSW are commenced preparation of an Aboriginal Cultural Heritage Assessment Report which would include additional consultation with registered Aboriginal parties. Consultation would continue during the EIS process and as necessary during detailed design and construction, in accordance with *Aboriginal cultural heritage consultation requirements for proponents*.

15.1.4 Field surveys

For the purposes of the field surveys, the project area was divided into survey units. Each station area and associated construction compound was designated as a survey unit. The remainder of the project area was considered as a single survey unit. All survey units were covered on foot where it was safe to do so.

Potential archaeological deposits (PADs) identified during the field survey are described in Section 15.2.5.

15.2 Existing environment

15.2.1 Aboriginal historical context

Evidence of Aboriginal occupation in NSW dates back to around 50,000 to 60,000 years at Lake Mungo (in NSW's south-western region, about 110 kilometres north-east of Mildura) and up to 30,000 years at Parramatta. Aboriginal people lived in small family or clan groups that were associated with particular territories or places. The language group spoken across Sydney was known as Darug. The Darug language group is thought to have covered the area south from Port Jackson, north from Botany Bay and west from Parramatta.

The project area is located within the area thought to have been inhabited by the Wangal clan. The Wangal clan's territory extended between the Parramatta River and the Cooks River, from Darling Harbour to Rosehill. The wetlands associated with the Cooks River and Gumbramorra Swamp would have been reliable fresh water and food sources. The Hawkesbury Sandstone around the Cooks River would have provided Aboriginal people with shelter, and the surrounding environment would have provided ample materials for tools and other material culture.

15.2.2 Aboriginal material

The most common type of Aboriginal objects remaining in the archaeological record are stone artefacts, followed by bones and shells. There is potential for Aboriginal objects to occur across the landscape. The nature of the underlying geology and proximity of water sources to portions of the study area indicates the potential for the occurrence of artefact sites and/ or midden sites.

15.2.3 Previously registered Aboriginal heritage sites

The AHIMS database search identified six sites within an extended search area. No listed Aboriginal sites are located within the project area.

The closest previously recorded Aboriginal heritage site is the Fraser Park potential archaeological deposit (PAD), located about 650 metres north-east of the project area boundary at Marrickville. The Fraser Park PAD was subject to archaeological excavations for a proposed underground electricity supply project in 2003. The report indicated that the area of PAD is not in the location registered on AHIMS, but is instead located in the Fraser Park sporting complex, about 130 metres east of the project area.

15.2.4 Archaeological implications

The presence of intact Aboriginal archaeological deposits within the study area is largely dependent on the nature and extent of disturbance associated with historical construction and development activities. Subsurface disturbance such as the removal of top soil and other bulk earthworks would substantially lower the potential for intact archaeological deposits in those areas. This is especially relevant in areas of relatively shallow residual soils, which includes the majority of the study area.

Whilst the study area is likely to have been a site of Aboriginal occupation in the past, the likelihood of evidence of this occupation surviving to the present is influenced by a range of factors. These factors include the durability of the material evidence and subsequent disturbance. The large-scale removal and modification of the underlying geology and associated shallow residual soils during construction of the existing rail line and surrounding urban infrastructure is likely to have significantly impacted or removed many former natural landform contexts and associated archaeological potential in the study area.

15.2.5 Potential archaeological deposits identified during field surveys

Two areas of PADs were identified during field surveys near Belmore and Punchbowl stations (S2B PAD01 and S2B PAD02 respectively).

S2B PAD01 is located in a small park (Guide Park) outside the project area near Belmore Station and is covered by dense grass and several trees. Analysis of aerial photography indicates that the area has been used as open space since at least 1943 and no major ground disturbance has occurred.

S2B PAD02 is an area of archaeological potential within Warren Reserve adjacent to Punchbowl Station. Analysis of aerial photography from 1943 and over the past 10 years indicates that there appears to have been little subsurface disturbance. Intact soils were observed in a cutting to the north of the station.

15.2.6 Aboriginal places of heritage significance

No Aboriginal places declared under section 84 of the National Parks and Wildlife Act, or Aboriginal places of heritage significance defined by the *Standard Instrument – Principal Local Environmental Plan,* are located within or near the project area.

15.2.7 Archaeological potential and significance

An assessment of archaeological potential and significance was undertaken. The likelihood of Aboriginal heritage sites occurring in the project area is influenced by a range of factors, including the durability of the material evidence, and the subsequent level of disturbance.

The Burra Charter defines cultural significance in terms of aesthetic, scientific, historic, and social values. Aboriginal cultural heritage is typically assessed according to its social and scientific significance; however other values may also be of importance. The assessment of significance provides a guideline for determining appropriate mitigation and management strategies.

The relationship between levels of significance and management strategies can be summarised as follows:

- high significance – the site should be conserved and protected from the impacts of development, where possible
- moderate significance – the site should be protected if possible, however, if impacts to the site are unavoidable, appropriate mitigation strategies should be implemented prior to impact
- low significance – the site should be protected if possible, however, if impacts to the site are unavoidable, the presence of the site should not impede the proposed development.

Due to the extent of previous disturbance within the project area, archaeological potential is only likely to occur in areas that have not been subject to extensive sub-surface disturbance. The archaeological significance of the project area within the existing rail corridor is considered to be low as a result of the high levels of ground disturbance.

With respect to the two areas of potential archaeological deposits identified during field surveys, the assessment concluded that:

- S2B PAD01 is considered to have low to moderate significance. The area has potential to contribute to research for this portion of the Cumberland Plain.
- S2B PAD02 is considered to have moderate significance and low to moderate potential for intact archaeological deposits to be identified. The identification of Aboriginal objects within this area would contribute to a knowledge gap in the region and contribute to research for the Sydney Basin more generally.

No other sites of archaeological potential were identified.

15.3 Impact assessment

15.3.1 Risk assessment

The main risks relating to Aboriginal heritage would occur during construction. Works within the project area have the potential to directly or indirectly disturb identified Aboriginal sites and areas of archaeological potential.

The environmental risk assessment for the project, undertaken for the State Significant Infrastructure Application Report, identified the potential to inadvertently impact unrecorded Aboriginal sites and/or areas of archaeological sensitivity during project construction as the main Aboriginal heritage risk.

15.3.2 Impact assessment

An assessment of archaeological significance was prepared for each survey unit (refer to Section 15.1.4) using the significance ratings outlined in Section 15.2.7 and the following criteria:

- Research potential – does the evidence suggest potential to contribute to an understanding of the area and/or region and/or the State's natural and cultural history?
- Representativeness – how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity – is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential – does the subject area contain teaching sites or sites that might have teaching potential?

15.3.3 Assessment findings

A summary of the results of the assessment is provided in Table 15.2.

Table 15.2 Aboriginal heritage assessment findings

Study area survey unit	Archaeological potential	Archaeological significance	Assessment of potential impact
Marrickville Station	Nil to low	Nil to low	Unlikely to impact Aboriginal objects
Dulwich Hill Station	Nil to low	Nil to low	Unlikely to impact Aboriginal objects
Hurlstone Park Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Canterbury Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Campsie Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Belmore Station	Nil to low S2B PAD01 has low to moderate archaeological potential but is located outside project area	Low S2B PAD01 has low to moderate significance, but is located outside project area	Unlikely to impact Aboriginal objects S2B PAD01 would not be impacted as it is located outside project area
Lakemba Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Wiley Park Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Punchbowl Station	S2B PAD02 has moderate archaeological potential Rest of unit is nil to low	S2B PAD02 not rare but has potential to contribute to knowledge gap Rest of unit is nil to low	S2B PAD02 has the potential to be impacted by construction Work in rest of unit unlikely to impact Aboriginal objects
Bankstown Station	Nil to low	Low	Unlikely to impact Aboriginal objects
Rest of corridor	Nil to low	Low	Unlikely to impact Aboriginal objects

Construction of the project would not impact previously recorded Aboriginal heritage sites. No previously recorded items or places are located within the project area. The closest previously recorded Aboriginal heritage site is located about 650 metres outside the project area.

A portion of S2B PAD02 would be impacted by the proposed new access way from Punchbowl Road to Punchbowl Station and proposed landscaping works. S2B PAD01 would not be impacted.

Operation of the project is not expected to result in impacts on Aboriginal heritage.

There are no cumulative impacts on Aboriginal heritage predicted during construction or operation of the project.

15.4 Mitigation measures

15.4.1 Approach to mitigation and management

The overall approach to cultural heritage management that has framed development of the project is that, where possible, impacts to Aboriginal sites, places, and objects would be avoided. If conservation is not practicable, measures would be taken to mitigate potential impacts.

Potential impacts to Aboriginal heritage would be managed in accordance with the Construction Environmental Management Framework (as described in Chapter 28 Synthesis of the Environmental Impact Statement), which provides for the development of a heritage management plan in consultation with registered Aboriginal parties. Transport for NSW has also commenced preparation of an Aboriginal Cultural Heritage Assessment Report including consultation with registered stakeholders.

15.4.2 List of mitigation measures

The mitigation measures that would be implemented to address potential impacts on Aboriginal heritage sites and areas of archaeological potential are listed in Table 15.3.

Table 15.3 Mitigation measures – Aboriginal heritage

ID	Impact/issue	Mitigation measures	Relevant location(s)
Design/pre-construction			
AH1	Consultation	Aboriginal stakeholder consultation would continue to be undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECC, 2010b).	All
AH2	Avoiding impacts to Aboriginal heritage	An Aboriginal cultural heritage assessment report would be prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011). The report would include: • details of Aboriginal stakeholder consultation conducted • an assessment of cultural significance for the project area and identification of any specific areas of cultural significance based on consultation with Aboriginal stakeholders • a methodology for archaeological test excavation and salvage, to be undertaken by suitably qualified personnel • procedures for any unexpected finds.	All (this item has already commenced)
AH3	Managing impacts to identified PADs	Direct impacts to S2B PAD02 at Punchbowl Station would be avoided where practicable. If impacts to S2B PAD02 cannot be avoided, archaeological test excavation (and salvage when required) would be undertaken prior to construction in accordance with the methodology defined by the Aboriginal cultural heritage assessment report.	S2B PAD02
AH4	Interpretation	Appropriate Aboriginal heritage interpretation would be incorporated into the design in consultation with Aboriginal stakeholders.	All

ID	Impact/issue	Mitigation measures	Relevant location(s)
Construction			
AH5	Unexpected finds	If potential Aboriginal items are uncovered, works within 10 metres of the item would cease. The item would then be assessed and managed by a suitability qualified person in accordance with the unexpected finds procedure in the Aboriginal cultural heritage report. During pre-work briefings, employees would be made aware of the unexpected finds procedures and obligations under the NPW Act.	All

15.4.3 Consideration of the interactions between mitigation measures

There are no interactions between Aboriginal heritage and other project mitigation measures.

15.4.4 Managing residual impacts

There are no residual impacts on Aboriginal heritage predicted during construction or operation of the project. Implementation of the management measures included in the Construction Environmental Management Framework would reduce the likelihood of potential impacts on Aboriginal heritage as a result of the project.

16. Land use and property

This chapter assesses the potential impacts of the project on land use and property. The Secretary's environmental assessment requirements relevant to land use and property, and reference to where they are addressed in this chapter and in the Environmental Impact Statement, are provided in Table 16.1.

Table 16.1 Secretary's environmental assessment requirements – land use and property

Ref	Secretary's environmental assessment requirements – land use and property	Where addressed
10.2	The Proponent must assess impacts from construction and operation on:	
	• potentially affected properties,	Section 16.4
	• businesses,	Chapter 18 (Business impacts)
	• recreational users,	Section 16.4
	• land and water users,	Section 16.4 (existing land users). No water users would be impacted by the project
	• including property acquisitions/adjustments,	Section 16.4.2
	• access,	Chapters 10 (Construction traffic, transport and access) and 11 (Operation traffic, transport and access)
	• amenity, and	Chapter 17 (Socio-economic impacts)
	• relevant statutory rights.	The impacts of property acquisition are considered in Section 16.4.2 Potential amenity impacts are considered in Chapter 17

16.1 Assessment approach

16.1.1 Legislative and policy context to the assessment

Relevant legislation and planning instruments (including the EP&A Act, State environmental planning policies, and local environmental plans) are described in Chapter 3 (Planning and assessment process). Land use planning strategies relevant to the study area and the project are described in Chapter 5 (Project need) and Section 16.3.

16.1.2 Methodology

The assessment involved:

- describing the existing environment with reference to existing land uses and planning controls, based on a review of aerial photography, land use zones specified by applicable local environmental plans, and a site visit
- reviewing key strategic planning policies and documents relevant to the study area, to identify planned future priorities, including land uses and developments
- assessing the potential impacts of construction and operation on existing and likely future land uses, and properties in and around the project area
- identifying mitigation measures to avoid or manage potential impacts.

16.2 Existing environment

A description of the project area for the purpose of the Environmental Impact Statement is provided in Chapter 2 (Location and setting). This section describes existing land uses and properties within and immediately surrounding the project area. Future land use planning is described in Section 16.3.

The vast majority of the project area is located within the existing rail corridor, which is used for infrastructure (transport – rail and supporting infrastructure) purposes. The majority of the rail corridor is zoned SP2 Infrastructure (Rail) under the Marrickville, Canterbury, and Bankstown local environmental plans. Some sections of the rail corridor are also zoned as follows:

- B4 Mixed Use - at Bankstown Station
- B2 Local Centre - at Canterbury, Campsie, Belmore, and Lakemba stations
- SP2 Infrastructure (Classified Road) – at Canterbury.

Although the main land use of the stations is transport (rail infrastructure), there are a number of businesses operating within the stations (described in Chapter 18 (Business impacts)). The main land uses in the areas immediately surrounding the stations are commercial and residential. Most of the stations are located within/next to a local/neighbourhood centre, which provide a range of services and facilities. Further information is provided below, and in Chapter 18.

Between the stations, the rail corridor is surrounded by a mix of land uses, including residential, commercial, industrial, and recreation/open space, with pockets of education and community uses. Further information on the location of key community facilities is provided in Chapter 17 (Socio-economic impacts).

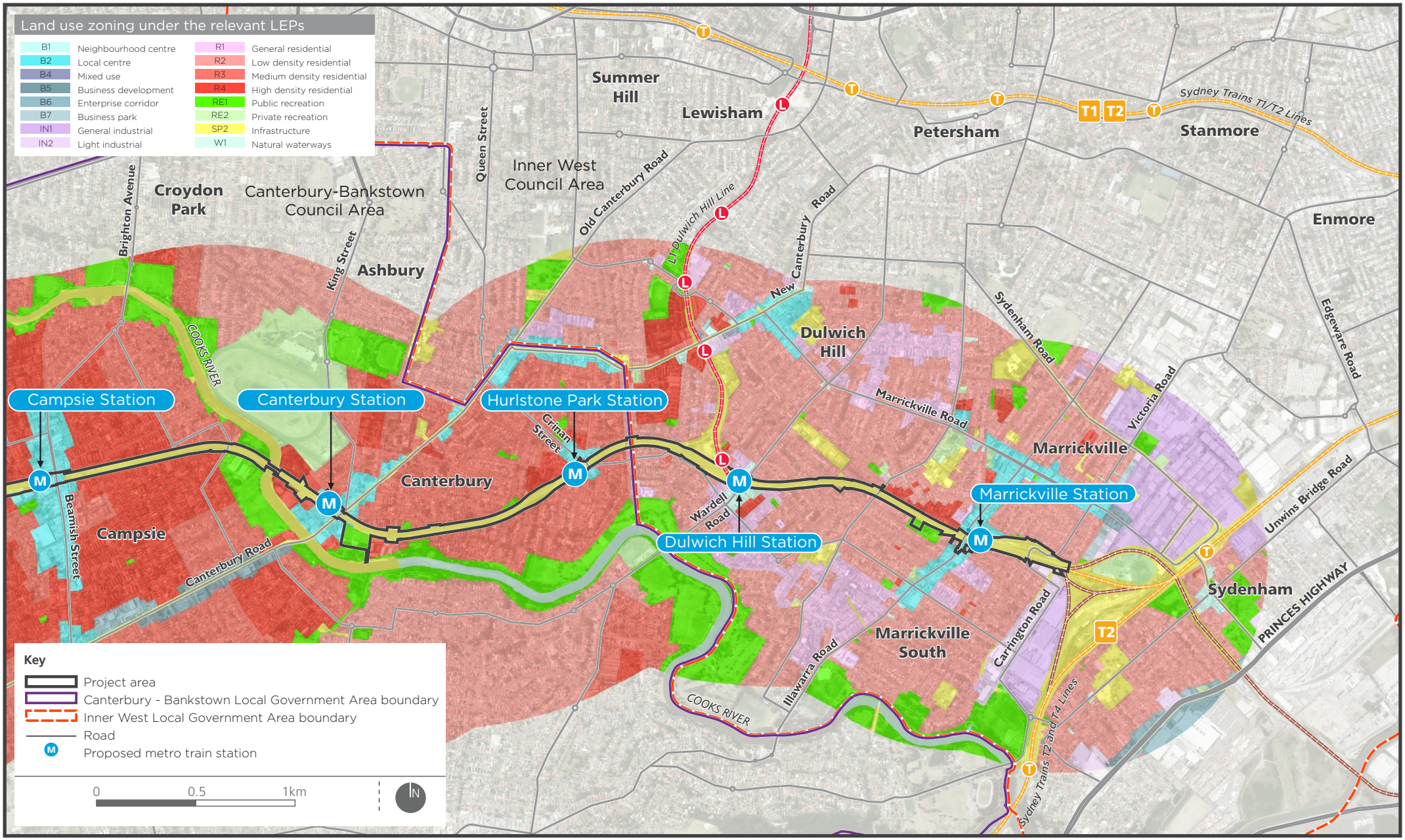
Key land uses around each station are described in the following sections. Land use zones in and around the project area are shown in Figure 16.1. Key features in and around the project area are shown in Figure 2.1.

16.2.1 Marrickville Station

Marrickville Station is located about seven kilometres south-west of the Sydney CBD. The station is located on the edge of the Marrickville town centre, which is centred on the corner of Illawarra and Marrickville roads. The town centre has a thriving and multicultural business community, and includes a wide variety of commercial and retail premises. The town centre is surrounded by a variety of housing, including detached and attached dwellings, and apartment buildings.

The station is surrounded by roads to the west (the Illawarra Road overbridge) and south (Station Street). Immediately north of the rail corridor and east of Illawarra Road is a large, relatively recent multi-storey residential apartment building, with street level commercial uses.

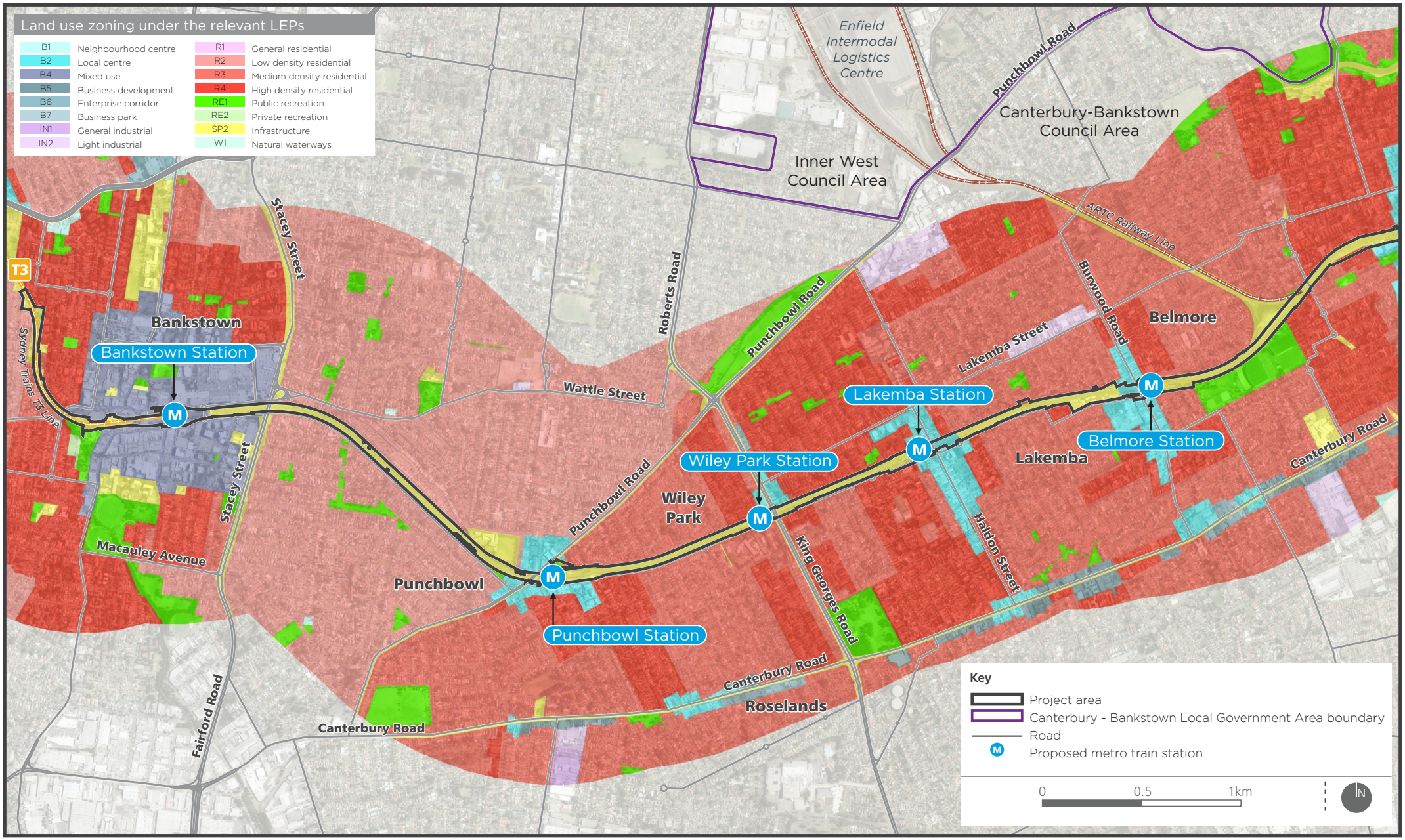
Characteristic of its near city location, land uses surrounding the station include a mix of residential, commercial, and light industrial. A recreational land use (McNeilly Park) is located about 120 metres to the west of the station.



sydney METRO | city & southwest

Land uses - map 1

FIGURE 16.1



sydney METRO | city & southwest

Land uses - map 2

FIGURE 16.1

16.2.2 Dulwich Hill Station

Dulwich Hill Station is located about 7.8 kilometres south-west of the Sydney CBD. The station is surrounded by roads to the east (the Wardell Road overbridge), north (Bedford Crescent), and south (Wardell Road and Ewart Lane). Commercial land uses associated with the Dulwich Hill town centre are located further to north and south, along Wardell Road, on either side of the rail corridor. The town centre also includes some residential uses. Areas dominated by residential land uses are located further to the north-east, north-west, and south of the station.

Recreational land uses are located about 160 metres to the north-west of the station (Jack Shanahan Park, including the Dulwich Hill Skate Park), and 400 metres to the south-west, on the Cooks River (the Marrickville Golf Club).

The Dulwich Hill light rail stop, the terminus for the L1 Dulwich Hill Line, is located about 130 metres to the north-west of the station.

16.2.3 Hurlstone Park Station

Hurlstone Park Station is located about 8.4 kilometres south-west of the Sydney CBD. The station is surrounded by roads to the north (Floss Street – with associated commuter car parking), east (the Crinian Street road overbridge), and south (Duntroon Street). Further to the north are a range of commercial land uses associated with the Hurlstone Park local centre (along Crinan Street). The local centre is located mainly to the north of the station. Residential land uses, which include a mix of apartment buildings and detached houses, are located to the north-west, north-east, and south of the station.

16.2.4 Canterbury Station

Canterbury Station is located about 9.5 kilometres south-west of the Sydney CBD. The station is surrounded by Broughton Street to the north/north-east, Canterbury Road (road overbridge) to the east, and a large mixed use development site which fronts Charles Street to the south.

Traditional commercial land uses are located to the north-east of the station, along Canterbury Road and Jeffrey Street. Residential land uses are located to the north, east, and south of the station. Substantial redevelopment activity (both residential and commercial) is occurring to the south and south-west of the station, between the station and the Cooks River foreshore (about 170 metres to the south-west). A number of multi-storey residential and mixed use apartment buildings are being constructed in this area. The new Canterbury Plaza and shops adjoin the rail corridor to the south-west.

The Close Street reserve is located about 160 metres to the south of the station, and Canterbury Racecourse is located about 400 to the north-west.

Areas of open space are located along the Cooks River foreshore further to the west of the station (on the western side of the Cooks River, about 500 metres to the west of the station), including Tasker Park, the Canterbury Aquatic and Fitness Centre, and Olympic Ice Rink.

16.2.5 Campsie Station

Campsie Station is located about 10.7 kilometres south-west of the Sydney CBD. The station is directly adjoined by a number of buildings (located on land owned by Railcorp) that are used for a variety of retail/commercial purposes. The station area is surrounded by North Parade to the north, Beamish Street to the east, and Lillian Lane to the south. The station is located in the middle of the Campsie town centre, which is a busy, vibrant, and culturally diverse retail and commercial centre. The Campsie town centre hosts a mix of commercial, retail, administrative, and civic functions, which are concentrated along Beamish Street and surrounding streets, including Anzac Mall.

Residential areas surrounding the centre consist of a mix of two to three storey walk up residential flat buildings, and detached houses.

Anzac Mall and Square and Carrington Square provide the main areas of public open space for the Campsie town centre. Other areas of open space are further away from the town centre, about one kilometre to the east and north along the Cooks River foreshore.

Campsie Public School is located about 240 metres to the south of the station.

16.2.6 Belmore Station

Belmore Station is located about 12 kilometres south-west of the Sydney CBD. The station is surrounded by car parks to the north (on Redman Parade) and south (on Tobruk Avenue), and Burwood Road (overbridge) to the west.

A range of commercial land uses extend along Burwood Road to the north and south of the station. Canterbury League Club is located about 100 metres to the south-west of the station on Bridge Road.

Residential land uses, consisting mainly of detached housing, are located further to the north-west, north-east, and south-east of the station.

Belmore Sports Ground and parkland is located about 400 metres east of the station.

16.2.7 Lakemba Station

Lakemba Station is located about 13.5 kilometres south-west of the Sydney CBD. The station is surrounded by Railway Parade to the north, Haldon Street (overbridge) further to the east, and The Boulevarde to the south.

Commercial land uses associated with the Lakemba town centre are located to the north and south of the station, mainly along Railway Parade and Haldon Street. Residential uses, including a mix of medium density apartment buildings and detached housing, surround the town centre.

The Lakemba Library and Senior Citizen's Centre is located about 80 metres to the south-west of the station. The Lakemba Uniting Church is located about 100 metres to the south-east. Jubliee Reserve is located about 100 metres to the west.

16.2.8 Wiley Park Station

Wiley Park Station is located about 14.3 kilometres south-west of the Sydney CBD. The station is surrounded by commercial land uses to the north, King Georges Road (overbridge) to the east, and The Boulevarde to the south.

A small commercial strip is located along King Georges Road to the north of the station. A number of education land uses are located to the south of the station – Wiley Park Girls High School and Wiley Park Public School are located opposite Wiley Park Station and the rail corridor on the southern side of The Boulevarde. Residential land uses (a mix of detached housing and medium density apartment buildings) are located further to the north and east of the station.

16.2.9 Punchbowl Station

Punchbowl Station is located about 15.4 kilometres south-west of the Sydney CBD. The station is surrounded by Punchbowl Road to the north-west and west, Warren Reserve to the north, and The Boulevarde and commercial land uses to the south.

A range of commercial land uses associated with the Punchbowl town centre are located along Punchbowl Road to the north and south of the station, and along The Boulevarde to the south.

Warren Reserve adjoins the station area to the north-east. The Punchbowl Community Centre is located about 150 metres south of the station on Rossmore Avenue.

Punchbowl Boys High School, which adjoins the rail corridor, is located about 300 metres north-west of the station. The Saint Jerome Catholic Church and School is located about 200 metres south of the station.

Residential land uses, consisting mainly of detached housing, are located further to the north, south, and west of the station.

16.2.10 Bankstown Station

Bankstown Station is located about 17 kilometres south-west of the Sydney CBD. The station is surrounded by the Bankstown City Plaza to the east and south, North Terrace to the north, and South Terrace further to the south-east.

The station is located within the Bankstown town centre, which is a regional centre providing administrative, retail, business, and service functions for the Canterbury-Bankstown local government area.

The Bankstown town centre includes a varied mix of land uses, and a number of community facilities, including Canterbury-Bankstown Council, Bankstown Library, and the Bankstown Arts Centre.

Bankstown Central, a large shopping mall with about 300 stores and a floor area of about 85,800 square metres, is located about 160 metres to the north-east of the station.

Bankstown Girls High School and Bankstown Public School are located to the south of the town centre, about 200 metres to the south of the station. Saint Euphemia College is located about 500 metres to the south-east of the station.

16.2.11 Traction power supply cable

The route for the proposed high voltage traction power electricity cable, between the proposed Campsie traction substation and the existing Ausgrid Canterbury electrical substation, would be mainly located within existing road reserves. The main land use surrounding the majority of the route is residential. Recreation land uses also adjoin the route, including:

- Canterbury Olympic Ice Rink
- Canterbury Aquatic and Fitness Centre
- Tasker Park
- Earlwood Park.

The route also passes through Hughes Park in Earlwood.

16.3 Future land use

16.3.1 Strategic planning

Development around the stations along the T3 Bankstown Line has predominately occurred since the line was constructed, and will continue to occur into the future. Strategic planning for the study area has and is being undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown Councils. This strategic planning is separate to the planning and approval process for the project, however the project has been informed by the broader strategic planning context.

The main strategies relevant to future land use planning for the study area are summarised below.

Sydney regional planning - A Plan for Growing Sydney

A Plan for Growing Sydney, which was released in December 2014, is the NSW Government's 20 year plan for Greater Sydney (the Sydney metropolitan area). *A Plan for Growing Sydney* is also known as the Sydney Metropolitan Strategy. The plan provides a direction for Sydney's productivity, environmental management, and liveability; and for the location of housing, employment, infrastructure, and open space.

Greater Sydney is defined as the area extending from Wyong and Gosford in the north, to the Royal National Park in the south, and west to include the Blue Mountains, Wollondilly, and Hawkesbury.

Relevant to the project, one of the key directions noted by the plan is to 'accelerate housing supply across Sydney'. An action under this direction is to 'accelerate new housing in designated infill areas (established urban areas) through the Priority Precincts and Urban Growth NSW programs' and in these precincts '… the Government is working to match population growth with investment in infrastructure, providing new schools and recreation facilities alongside improvements to roads and public services.' The Sydenham to Bankstown corridor is identified as an urban renewal corridor under the plan.

The plan also proposes a number of 'enterprise corridors', which are defined as 'an area designed to attract investment and stimulate employment-generating development that is aligned with specific sections of rail or road transport infrastructure'. Bankstown to Liverpool is nominated as an enterprise corridor by the plan.

A key direction noted by the plan is to 'invest in strategic centres across Sydney to grow jobs and housing and create vibrant hubs of activity'. The plan nominates Bankstown as a strategic centre. Another key direction is to 'expand the Global Economic Corridor', which extends from Macquarie Park through the Sydney CBD to Port Botany and Sydney Airport. Marrickville is located at the south-western edge of the Global Economic Corridor. An action under this direction is to 'invest to improve infrastructure and remove bottlenecks to grow economic activity'.

A draft amendment to the plan, *Towards our Greater Sydney 2056*, was placed on public exhibition by the Greater Sydney Commission in November 2016. *Towards our Greater Sydney 2056* sets the direction for a review of *A Plan for Growing Sydney*, and provides a linkage with the current district planning process (described below). *Towards our Greater Sydney 2056* promotes the concept of Greater Sydney as a metropolis of three cities (the established Eastern City, the developing Central City, and the emerging Western City). Relevant to the project, *Towards our Greater Sydney 2056* provides for the following priorities:

- A productive city – increasing the range of jobs and services that people can get to within 30 minutes, and improving accessibility to jobs across all districts.
- Accelerating housing opportunities and urban renewal – investigating urban renewal corridors, and providing opportunities for new housing in existing and new centres with frequent public transport, including aligning development with infrastructure investment (such as Sydney Metro).

District planning

The Greater Sydney Commission was established in 2016 to lead metropolitan planning in Greater Sydney. Greater Sydney has been divided into six districts, with a district plan being developed for each. The district plans provide the link between *A Plan for Growing Sydney* (described above) and

councils' local environmental plans. The goal of the district plans is to have well-coordinated, integrated, and effective planning for land use, transport, and infrastructure.

The plans set out the opportunities, priorities, and actions required to put *A Plan for Growing Sydney* into action at a local level. Draft plans for each district were placed on public exhibition in November 2016. The project area is located within two districts:

- central district – between east of Marrickville Station and west of Dulwich Hill Station
- south district – between west of Dulwich Hill Station to Bankstown Station.

Relevant to the future planning of the study area, the two draft district plans seek to increase the number of jobs and dwellings within each of plan areas. The plans note that urban renewal activities, such as the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*, would assist with driving this growth, particularly along the T3 Bankstown Line. The project, both individually and as part of the wider metro network, is identified as being a key driver for urban renewal.

The existing town centres in the vicinity of Campsie and Bankstown stations are identified as district centres by the South District Plan. The plan notes the need to strengthen these centres to attract people for work and recreation, through the activation of the centres, particularly at night. The plan notes that the project would provide an opportunity to grow local employment, enhance public amenity, and increase densities.

Sydenham to Bankstown Urban Renewal Corridor Strategy

The draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*, was released by the Department of Planning and Environment in 2017. The strategy was prepared to identify opportunities for urban renewal around the stations between Sydenham and Bankstown over the next 20 years.

The strategy was based on a review of existing conditions in the areas around each station, considering demographics and forecast housing and employment growth. The strategy also identifies key constraints to urban renewal and new development.

With respect to housing, the strategy notes that improvements to public transport provided by Sydney Metro should increase the attractiveness of the area as a place to live. The strategy aims to improve the overall supply of new housing within the corridor, and ensure that there is a choice of housing to meet the needs of diverse communities.

With respect to employment, the strategy aims to:

- promote the Bankstown CBD as a place for business and investment, and increase the number of people living within the CBD to drive economic growth
- support the growth of the Marrickville and Campsie town centres as destinations for retail, local business, and community functions
- encourage local services, retail, and convenience shops close to stations.

The strategy identifies opportunities for additional housing and jobs within walking distance of the stations. The strategy forecasts that over 35,000 additional dwellings could be built within the corridor by 2036, and about 8,000 jobs could be generated. This is based on a number of factors, including existing and historic growth rates, with the introduction of the project a contributing factor.

The draft vision for the area surrounding each station, and indicative development and employment increases, are summarised in Table 16.2.

The Canterbury, Campsie, Lakemba, and Belmore precincts have been identified as priority precincts along the corridor. Work would be undertaken by the Department of Planning and

Environment in conjunction with Canterbury-Bankstown Council to identify areas within these precincts that are to be the focus of more detailed planning.

Table 16.2 Draft Urban Renewal Corridor Strategy – key proposals

Station	Vision	Proposed residential development increase by 2036 (approximate)	Predicted increase in employment (number of jobs)
Marrickville	A diverse and vibrant community focused around a reinvigorated Illawarra Road	6,000 new dwellings. Accommodate an area of high rise residential and mixed use around the station	555
Dulwich Hill	A local centre that provides a high quality living environment with good transport connections	2,000 new dwellings. Small amount of medium to high rise housing on the southern side of station	275
Hurlstone Park	Retain the heritage and character of Hurlstone Park and increase the vibrancy of the local main street shops on Crinan Street	100 new dwellings. Medium rise housing west of the station on the northern side of the rail corridor.	216
Canterbury	A reinvigorated town centre that supports the role of Canterbury as a local centre in the South District of Metropolitan Sydney	4,000 new dwellings. Medium to high density surrounding the station particularly, to the north.	398
Campsie	Promote the growth of Campsie Station Precinct to reinvigorate the centre and support the role of Campsie as a district centre within the Sydney South District	6,000 new dwellings. Higher density housing in the vicinity of the station	1,765
Belmore	Burwood Road will continue to be a vibrant, popular eat street	3,000 new dwellings. Higher densities in the vicinity of the station, with high/mixed use development to the south	569
Lakemba	A centre that capitalises on its vibrant shopping strip, with great places to shop, eat, and socialise	3,000 new dwellings. Increase in densities along the rail corridor, with higher densities near the station	735
Wiley Park	A great place for families with a range of new and existing housing, good access to schools, and improved public open space	2,400 new dwellings. Increased densities along the rail corridor, with higher densities near the station and along the southern side of the corridor	364
Punchbowl	A centre that is better connected to its well-loved cosmopolitan shopping strip, with great places to shop, eat and socialise – day and night	2,400 new dwellings. Increased densities surrounding the station, with medium to high rise development close to the station	599
Bankstown	Bankstown will continue to provide shops, jobs, and community services for the wider corridor, consistent with its role as a district centre	6,000 new dwellings. Increased densities surrounding the station, with predominately high rise and mixed use development	2,493

16.3.2 Future developments within and surrounding the project area

Development surrounding the project area

As noted in Section 16.3.1, the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* predicts strong housing and employment growth within the project area. Other future development opportunities and strategies relevant to land within and in vicinity of the project area include, but are not limited to:

- *North East Local Area Plan* (Bankstown City Council, 2016) – sets the vision for the North East Local Area (which includes Punchbowl) to be a place for people, maintaining the qualities and places that encourage jobs and sustainable urban renewal, with an emphasis on urban design and connectivity. The plan identifies the 'Punchbowl Small Village Centre' as a transit-oriented centre, along the Sydenham to Bankstown urban renewal corridor, which would be well used by commuters using Sydney Metro. It provides a vision for Punchbowl Station as a focal point for local retail activity along the main streets (The Boulevarde and Punchbowl Road), and as a civic space that connects development on both sides of the rail corridor. A planning proposal (re-zoning application) giving effect to the Local Area Plan has received a gateway determination from the Department of Planning and Environment.
- *Bankstown CBD Local Area Plan* (Bankstown City Council, 2011b) – sets out the vision for the Bankstown CBD to strengthen its role as a major activity and transport hub, servicing Bankstown and the wider West Central Subregion (now part of the South District), and for it to continue to be a place of strong population and economic growth.
- *Anzac Mall Place Management Strategy* (Macroplan, 2011) – assesses commercial vitality and vibrancy in the area of the existing Anzac Mall near Campsie Station, and makes a number of recommendations for improvements.
- *Towards 2032 - City of Canterbury Economic Development and Employment Strategy* (SGS, 2009a) identifies the long-term potential for the Canterbury Racecourse site to include commercial development.
- *Bankstown Employment Lands Development Study* (SGS, 2009b) – identifies the potential for alternative development opportunities for the Bankstown town centre.
- In September 2016, the Campsie RSL Club lodged an updated Planning Proposal and Master Plan with Canterbury-Bankstown Council to guide the redevelopment of its Anglo Road landholdings in the Campsie town centre. The proposed redevelopment involves an expanded club facility, high rise residential apartments and seniors living, and a range of other facilities, including retail and childcare.
- In 2006, Canterbury Council prepared a master plan to revitalise the Canterbury town centre and riverfront precinct, and transform it into a modern, vibrant mix of commercial and residential developments. Subsequent to the release of the master plan, a package of documents to implement Council's vision for the town centre was released in 2009, including a local environmental plan to rezone land, a development control plan, and urban design plan.
- The Australian Turf Club, owners of the Canterbury Racecourse, has considered selling/redeveloping a 6.5 hectare parcel of land that they own, located across the road from the racecourse. This land is indicated as a site for future residential development by the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy.*

Development within the project area

The project has been designed to safeguard future rail corridor development opportunities. Future rail corridor development could involve commercial or mixed use development integrated with the stations, adjacent to stations, over or adjacent to the rail line, where existing in-corridor development is to be removed, or where suitable residual land is identified. Any future development proposals would be subject to a separate approvals process.

At Campsie Station, enabling works for a future rail corridor development are included as part of the project scope. These works would involve construction of an over track platform and foundations for a future development, to replace the existing retail/commercial building adjoining the Beamish Street overbridge. This over track platform would also support a lane (roadway) which would be used for a kiss and ride facility.

Provision of retail opportunities has been included as part of the project scope at most stations. The locations of these retail opportunities are shown on the station layout drawings in Chapter 8 (Project description – operation). The use of these spaces would be subject to a separate approvals process.

16.4 Impact assessment

16.4.1 Risk assessment

Potential risks

The environmental risk assessment for the project, undertaken for the State Significant Infrastructure Application Report, identified the following as the main land use and property risks:

- temporary acquisition or leasing of property to enable construction compounds to be established and/or construction work to occur
- temporary loss of public open space and car parking for construction sites
- permanent property acquisition to enable establishment and operation of project infrastructure
- indirect positive impacts and land use changes as a result of opportunities for urban renewal near stations
- rail corridor development.

How potential impacts have been avoided or minimised

Design development has included a focus on avoiding or minimising the potential for impacts during all key phases of the process. In general, potential impacts on land use and property have been avoided or minimised by:

- designing the project to minimise the potential for impacts outside the rail corridor
- designing the project to minimise the need for acquisition of private property
- designing station upgrades to minimise the impacts on, and complement, surrounding land uses
- taking a place making approach to the design process (as described in Chapter 7 (Design development and place making))
- consultation with other agencies undertaking strategic planning in the study area, to identify and maximise the benefits of the project for future land uses and development.

16.4.2 Construction

Property

Property and land requirements

As described in Chapter 8, permanent land acquisition would involve:

- full acquisition of three privately owned lots near Marrickville Station
- partial acquisition of land from three publicly owned lots near Marrickville and Punchbowl stations.

Property and land acquisition requirements are summarised in Table 16.3 and Table 16.4. The location of these properties are shown in Figure 8.23.

Table 16.3 Property acquisition requirements

Acquisition details						Number of interests affected	
Location	**Project feature**	**Lot to be acquired and address**	**Partial/full acquisition**	**Owner**	**Existing land use/occupancy**	**Free-hold**	**Lease-hold**
Marrickville Station	Station area works	Lot 10 DP 10198 1 Leofrene Avenue	Full	Private	Residential (land occupied by a residential dwelling subject to a lease)	1	1
		Lot 11 DP 746611 2 to 4 Station Street	Full	Private	Mixed use	1	1
		Lot 10 DP 710424 6 to 12 Station Street	Full	Private		1	3

Table 16.4 Public land requirements

Location	Project feature	Lot to be acquired and address	Partial/full acquisition	Owner	Existing land use/occupancy
Marrickville Station	Station area works	Untitled Carriageway Land in Station Street	Partial	Public	Infrastructure (access road)
Punchbowl Station	Station area works	Lot 7 DP 18474 Lot 76 DP 5701 752 to 764 Punchbowl Road	Partial	Public	Warren Reserve

A direct impact on property and land use is expected where land would be acquired at Marrickville and Punchbowl stations for the provision of station entrances, plazas, and shared zones. To enable development of the proposed western entrance, concourse, and shared zone at Marrickville Station, three privately owned lots (one residential and two commercial lots) would need to be acquired, and a portion of publicly owned land (in Station Street) would also need to be acquired. Similarly, to enable development of the new station entrance and concourse at Punchbowl Station, partial acquisition of two parcels of public land at Warren Reserve would be required.

The acquisition of privately owned land would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Further information is provided in Section 8.2.5.

Lease cessation

A number of existing station buildings and concourses would be altered or removed as part of the project. As a result, the project would require the cessation of commercial leases at the following six stations: Dulwich Hill, Belmore, Lakemba, Wiley Park, Canterbury, and Punchbowl. The project would also require cessation of 31 commercial leases at Campsie Station, as the buildings in which these leases are located would be removed.

These leases are with the NSW Government (RailCorp) as the owner of the relevant buildings/spaces. All the impacted leases would be ceased in accordance with lease agreements held with the NSW Government. The cessation of these leases would impact those businesses currently holding these leases. These impacts are considered in Chapter 18.

Temporary acquisition or lease of property

As described in Section 9.8, a number of compound areas and work sites would be required for temporary use during construction. The majority of these sites would be located within the rail corridor, which would minimise the potential for direct impacts on land use and property. Some areas of land would need to be temporarily leased or occupied to locate some of these compounds and work sites.

Land use

Direct impacts on land use during construction would include temporary land take and the short term presence of construction equipment, plant, vehicles, compounds, and work sites within the project area. During construction, the use of the land would change from a transport corridor (the use of the majority of land) to a partial and temporary construction site.

At Canterbury Station, the project would temporarily impact land owned by NSW Government and leased to Canterbury-Bankstown Council for use as a car park on Charles Street. While this land would not be acquired, the existing land use (parking) would temporarily change to a construction site.

At some stations, the use of some existing on-street areas (used typically for parking and loading) and some off-street parking areas, would be temporarily restricted during construction. Impacts on parking during construction is considered in Chapter 10 (Construction traffic and transport).

Table 16.5 provides a summary of the potential impacts of temporary construction sites and facilities on land uses. These impacts would be predominantly minor and short term. Table 16.5 does not consider impacts on road reserves/public land adjacent to roadways (e.g. verges), as impacts to these areas would be minor.

An underground detention basin would be constructed within McNeilly Park, on the southern side of the rail corridor, west of Marrickville Station (facility W2 in Table 16.5). The use of this area within the park would be temporarily restricted during construction of the basin. At the former Canterbury Bowling and Community Club, the majority of the site is proposed for use as a work site during construction. The use of areas occupied by the work site would be temporarily restricted during the presence of the work site. Both sites would then be returned to their existing use following completion.

During construction, land subject to acquisition would also change from its existing use (commercial, residential, public road, and reserve) to a temporary construction site. Public access would be restricted.

Typically, the temporary use of land would be secured through a lease or a memorandum of understanding with the relevant land owner or manager. In most cases, the government (e.g. Council) owns the land.

Table 16.5 Impacts of temporary construction sites and ancillary facilities on land use

Site	Location	Temporary proposed use	Owner	Potential temporary impact on land use
C2	Station Street, Marrickville	Construction compound (land is subject to permanent acquisition)	Public and Private	• temporary alterations to pedestrian access to the station • change from existing use (road) to construction compound
W2	McNeilly Park, Marrickville	Construction of flood retention basin	Public	• change from existing use (recreation) to construction area during construction of underground detention basin
C3	Ewart Lane, Dulwich Hill	Construction compound	Public	• change from existing use (parking) to construction compound
C4	Floss Street, Hurlstone Park	Construction compound	Public	• change from existing use (street/parking) to construction compound
W8	Former Canterbury bowling club (now leased for community purposes)	Support for Canterbury Station works including car parking	Public	• change from existing community use to construction use for the majority of the site, however the buildings would remain, with opportunities for some continued community use during construction
C5	Vacant land adjacent to rail corridor Broughton Street, Canterbury	Construction compound	Public	• change from existing use (vacant land) to construction compound
C14, C15, C16	Car parking around Lakemba Station	Construction compound	Public	• change from existing use (parking) to construction compound
C21	The Boulevarde, Punchbowl	Construction compound	Public	• change from existing use (parking) to construction compound

Construction of the proposed electricity supply cable would result in a temporary change of the existing land use along the route (mainly road and recreation (Hughes Park)) to a construction site. The implementation of standard construction traffic management measures, defined by the construction transport management plan (described in Section 10.5), would minimise the potential for impacts on the operation of the road and access to surrounding properties.

Within Hughes Park, use of the area required for construction of the cable would be restricted while the cable is constructed. Such impacts are considered to be relatively minor, as the works in any one location would be limited to a short period of time (likely to be less than about a week) as the works move along the alignment. Land would be restored to its pre-existing use and condition following construction.

16.4.3 Operation

Property

Property acquisition would occur during the project planning and pre-construction phases. Direct impacts to properties are not expected during operation.

Land use

Operation of the project would result in minimal direct impacts to land use. The proposal would involve the continued use of a rail corridor for transport purposes. Direct operational impacts on land use relate to the acquisition described in Section 16.4.2. By maximising the use of existing rail corridor land, the need for property acquisition has been minimised.

The three privately owned lots to be acquired at Marrickville Station would result in a negligible impact, as the change in land use would be consistent with the adjacent B2 Local Centre zoning.

The impact on land use near Punchbowl Station, which would result from the partial acquisition of public land at the adjacent Warren Reserve, has the potential to benefit the reserve. It would provide an opportunity for enhanced landscape treatment, increased public use, and activation of the surrounding area. The impacts to Warren Reserve would be limited to about 15 per cent of the overall reserve, located adjacent the existing rail corridor.

The project would also affect NSW Government (RailCorp) owned land at Charles Street, Canterbury, which is leased to Canterbury-Bankstown Council for use as a car park. The existing land use (parking) would change to rail infrastructure. The potential impacts on the availability of parking are considered in Chapter 11.

Stations

A summary of the key potential operational land use impacts, benefits, and opportunities at each station is provided in Table 16.6. Some of these changes would have the potential for beneficial impacts to local businesses. This is considered in Chapter 18.

Table 16.6 Key potential land use changes at stations

Location	Benefits and impacts
Marrickville	• improvements to the station entrance and creation of a public space in Station Street would result in a change in land use and new retail opportunities along the Station Street shared zone
Dulwich Hill	• creation of a public space providing access to the station from the commuter car park, Ewart Lane, and Wardell Road • improved connection from Bedford Crescent and the light rail stop, resulting in a more refined transition between the station and surrounding land uses • new retail opportunities at the southern station entrance forecourt
Hurlstone Park	• enlarged station entrance area at the Crinan Street overbridge with increased set back from the roadway to improve pedestrian flow, and provide new retail opportunities at the station entrance
Canterbury	• potential for small scale retail in the station plazas at the station entrances on Broughton Street and Canterbury Road • improved connections with the expanded town centre (to be located to the north) and new developments located south of the station near Canterbury Road • safeguarding of potential additional station entrance to Charles Street which would improve connections to future developments to be located south of the station
Campsie	• transformation of a portion of Lillian Lane to a shared zone, with the change in land use promoting pedestrian connectivity to the upgraded station entrance to the south of the station, and increasing space for pedestrian flows • an enlarged station entrance and forecourt and widened footpath on Beamish Street and provision of new retail opportunities would be a positive land use change • new retail opportunities and kiss and ride facilities on the eastern side of Beamish Street on a new deck over the rail corridor, which would allow for future rail corridor development

Location	Benefits and impacts
Belmore	• better integration with the nearby commercial and residential areas, including provision of new station concourse and cross corridor connection • the southern station entry and forecourt would provide an opportunity for retail development
Lakemba	• forecourt works would provide extended areas for community gathering and interaction • surrounding land uses/businesses would benefit from improved amenity and increased pedestrian traffic
Wiley Park	• positive change in land use to the north and south of the station, with two new entrances • opportunity for retail development within the new station concourse adjacent to Kings Georges Road
Punchbowl	• positive impact for the adjacent Warren Reserve, providing opportunity for enhanced landscape treatment and increased public use • surrounding land uses/businesses to the north of the station would benefit from improved amenity and increased pedestrian traffic • realigned rail line to the north would allow for a larger station entrance to the south of the station, improving the integration of the station with The Boulevarde and associated land uses • opportunity for retail development within the southern station entrance plaza
Bankstown	• provision of a new cross-corridor connection to provide more direct connection across the corridor, particularly between new development areas on the southern side of the corridor and the Bankstown Central Shopping Centre to the north

Ancillary facilities

Additional ancillary facilities such as substations or services buildings would be located within the rail corridor or on NSW Government owned land (RailCorp), which is located outside the existing operational corridor. The impact on land use and property of these facilities would be negligible.

The project includes works outside the rail corridor to adjust the road network, bus stops and kerbside facilities in the vicinity of stations. These changes would not result in any impacts on land use during operation, as the changes would be consistent with the existing use (transport for example). Overall, the project would not result in any changes to land use outside the rail corridor (including any NSW Government owned land adjacent to the rail corridor) which would result in impacts to land use.

Future land use and development opportunities

Use of residual land

The rail corridor currently contains areas of unused land. The project design has prioritised the use, wherever possible, of corridor land for project facilities. Once all project infrastructure is constructed, some space may be available for other uses.

In the event that there are competing demands for the use of this land, the following hierarchy would be adopted:

- Safeguard land for provision of an active transport corridor as described in Section 8.1.4.
- Future development opportunities (subject to separate approvals process) - promote mixed use, residential, and community use, and urban renewal that reinforces existing centres.
- Commuter parking facilities:
  - provide sufficient facilities to offset the displaced parking spaces
  - promote share parking facilities with other developments or institutions

- promote parking integrated with development where possible
- design surface parking areas that can be used for other community activities outside commuter parking hours.

Other potential uses for residual land in accordance with the hierarchy would maximise beneficial outcomes for the community, contributing to the sustainability and vitality of local centres, and the corridor generally.

Surrounding land uses

The project presents opportunities for positive change within the vicinity of the stations, supporting urban renewal, and creating attractive, vibrant, and highly accessible places (refer to Table 16.6). The relationship between the project and surrounding land uses is mainly being addressed through the planning and land use integration process that commenced with the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* (described in Section 16.3.1). This was also considered as part of the place-making work undertaken during design development (described in Chapter 7). Transport for NSW will contribute to a study being undertaken by the Department of Planning and Environment and Canterbury-Bankstown Council to determine a master plan and business case for the Bankstown town centre, including how the station fits with the centre. The study will be funded by Transport for NSW and Canterbury-Bankstown Council.

The project would have minor impacts on land that is not already used for rail infrastructure. In most cases, the project would lead to improvements in accessibility to stations and better integration of the rail network with existing and improved pedestrian, cycle, and bus networks. The project would play a part in facilitating the future development envisaged by the broader urban renewal program.

Overall, the project is anticipated to integrate positively with the initiatives proposed by the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*, by providing a public transport facility that can meet future needs.

By converting the T3 Bankstown Line to metro and delivering greater efficiency and reliability along the line, and an increase in the number of services, the project would encourage urban renewal and transit oriented urban development around stations between Sydenham and Bankstown.

16.4.4 Cumulative impacts

The assessment of potential cumulative impacts, summarised in Chapter 27 (Cumulative impacts), considered the potential for impacts taking into account other projects being undertaken.

The project results in limited changes in land use in the long term and therefore does not contribute to any cumulative land use changes in the region. Any short-term impacts on land use would also be limited, with the majority of the project located within the rail corridor, not resulting in a significant changes in land use.

16.5 Mitigation measures

16.5.1 Approach to mitigation and management

Overall, the majority of potential construction related impacts would be short term and temporary in nature. The potential for these impacts would be significantly reduced by:

- effective construction design and planning
- implementation of the mitigation measures provided in Table 16.7
- consultation with individual property owners to identify individual concerns, and develop and document strategies to address these concerns
- ongoing communication with the broader community.

To maximise the benefits resulting from any residual land and future rail development opportunities, ongoing coordination with relevant local and State government agencies would be undertaken. Any future development would be subject to a separate approvals process.

16.5.2 List of mitigation measures

The mitigation measures that would be implemented to minimise potential impacts on land use and property are listed in Table 16.7.

Table 16.7 Mitigation measures – land use and property

ID	Impact/issue	Mitigation measures	Relevant location(s)
Design/pre-construction			
LU1	Acquisition	All acquisitions/adjustments would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*.	All
LU2	Future planning	Transport for NSW will continue to work the Department of Planning and Environment and the Greater Sydney Commission in relation to future planning for the Sydenham to Bankstown corridor.	All
LU3		Transport for NSW will contribute funding towards, and work with, the Department of Planning and Environment and Canterbury-Bankstown Council, on a master plan and business case for the Bankstown town centre, including how the station fits with the centre.	Bankstown
Construction			
LU4	Temporary use	Temporary use areas, including public open space, would be restored to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner.	All

16.5.3 Consideration of the interactions between mitigation measures

Mitigation measures in other chapters that are relevant to the management of potential land use and property impacts include:

- Chapter 10 (Construction traffic, transport and access), particularly with respect to the management of traffic and property access during construction

- Chapter 12 (Construction noise and vibration) with respect to management of potential noise impacts during construction, to minimise amenity impacts
- Chapter 13 (Operation noise and vibration) with respect to management of potential noise impacts during operation, to minimise amenity impacts
- Chapter 18 (Business impacts) with respect to management of impacts to businesses during construction.

Together, all these measures would minimise the potential land use and property impacts of the project.

16.5.4 Managing residual impacts

Residual land use and property impacts following implementation of the mitigation measures described in Section 16.5.2 are predicted to include full or partial acquisition of six lots, including one residential lot, and subsequent change in land use to transport from residential, commercial, road, and open space/recreation uses.

On balance, the residual impacts described above would result in minimal direct impacts to land use.

17. Socio-economic impacts

This chapter provides a summary of the results of the social impact assessment, and the potential socio-economic impacts of the project. A full copy of the assessment report is provided as Technical paper 5 – Social impact assessment. The Secretary's environmental assessment requirements relevant to social impacts, together with a reference to where the results of the assessment are addressed, are provided in Table 16.1.

Table 17.1 Secretary's environmental assessment requirements – social impacts

Ref	Secretary's environmental assessment requirements – social impacts	Where addressed
10.1	The Proponent must assess social and economic impacts of the project. This must be done having regard to issues raised by relevant communities and businesses.	A summary of the results of the social impact assessment is provided in this chapter. The full results are provided as Technical paper 5. This chapter considers social and socio-economic impacts. Business impacts are considered in Chapter 18.

17.1 Assessment approach

17.1.1 Legislative and policy context to the assessment

The EP&A Act establishes the framework for social impacts to be formally assessed in land use planning and development assessment processes. Environment is defined in Section 4 of the EP&A Act as 'all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings'.

The assessment of social impacts was undertaken with reference to:

- *International Principles for Social Impact Assessment* (Vanclay, 2003)
- *Environmental Impact Assessment Practice Note - Socio-economic assessment* (Roads and Maritime, 2013)
- *Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects* (Vanclay F., et al, 2015)
- *Social impact assessment: Draft guidelines for State significant mining, petroleum production and extractive industry development* (Department of Planning and Environment, 2016).

17.1.2 Methodology

This section provides a summary of the approach to the social impact assessment. Further information is provided in Technical paper 5. The assessment involved:

- confirming the study area for the purposes of the assessment
- describing the existing social environment of the study area, including developing a demographic profile for communities in the study area with the potential to be affected by the project
- identifying and mapping community infrastructure and facilities with the potential to be affected by the project

- reviewing information on the project, including the indicative construction methodology, and the proposed operational features and details
- reviewing other technical papers prepared for the Environmental Impact Statement to understand the nature, scale and significance of potential impacts, and identify resultant social impacts
- assessing the potential social impacts and benefits of the project, in accordance with the principles and guidelines listed in Section 17.1.1
- taking into account issues raised by the community and relevant stakeholders (described in Chapter 4 (Stakeholder and community consultation).
- identifying measures to mitigate the potential impacts.

17.2 Existing environment

Key social characteristics of the study area are summarised in this section. The study area for the assessment stretches covers 16 suburbs in the Inner West and Canterbury-Bankstown local government areas (LGAs), including those in which the project area is located, comprising:

- St Peters
- Tempe
- Sydenham
- Marrickville
- Dulwich Hill
- Hurlstone Park
- Canterbury
- Campsie
- Belmore
- Lakemba
- Wiley Park
- Punchbowl
- Bankstown
- Yagoona
- Birrong
- Earlwood.

The study area is highly urbanised and densely populated. According to the 2011 census[1], the combined population of both LGAs was 542,514 people (ABS, 2011). About 35 per cent of the population live in the Inner West LGA, and 65 per cent in the Canterbury-Bankstown LGA. The study area is characterised by socially and culturally diverse communities.

17.2.1 Demographic characteristics

The LGAs have a combined worker population of 131,302. Almost half of the population of the Canterbury-Bankstown LGA (45.9 per cent) speak a language other than English at home, compared to 30.7 per cent of the population in the Inner West LGA, and 32 per cent in Greater Sydney.

There are also higher levels of disadvantage in the Canterbury-Bankstown LGA compared to the Inner West LGA. These measures include lower income, educational attainment, English language skills, unemployment, dwellings without motor vehicles, and higher need for assistance with self-care, communication or mobility services, due to illness, age or disability.

The key demographic characteristics of the two LGAs compared to Greater Sydney include:

- a more densely populated area (with the Inner West LGA more densely populated than the Canterbury-Bankstown LGA)
- higher proportions of people born overseas and people who speak a language other than English (in the Canterbury-Bankstown LGA)

[1] At the time of the assessment, the 2016 Census data had not yet been released

- higher levels of public transport use, with lower usage of cars, and higher levels of active transport (in the Inner West LGA)
- higher levels of disadvantage (in the Canterbury-Bankstown LGA, except in Hurlstone Park)
- lower levels of disadvantage with a higher household income and educational attainment (in the Inner West LGA, except in Sydenham, which has a higher level of disadvantage and similar household income and educational attainment)
- fewer children, people over 70 years of age, and smaller households in the Inner West LGA, while the Canterbury-Bankstown LGA has higher proportions of children and larger households.

17.2.2 Community infrastructure

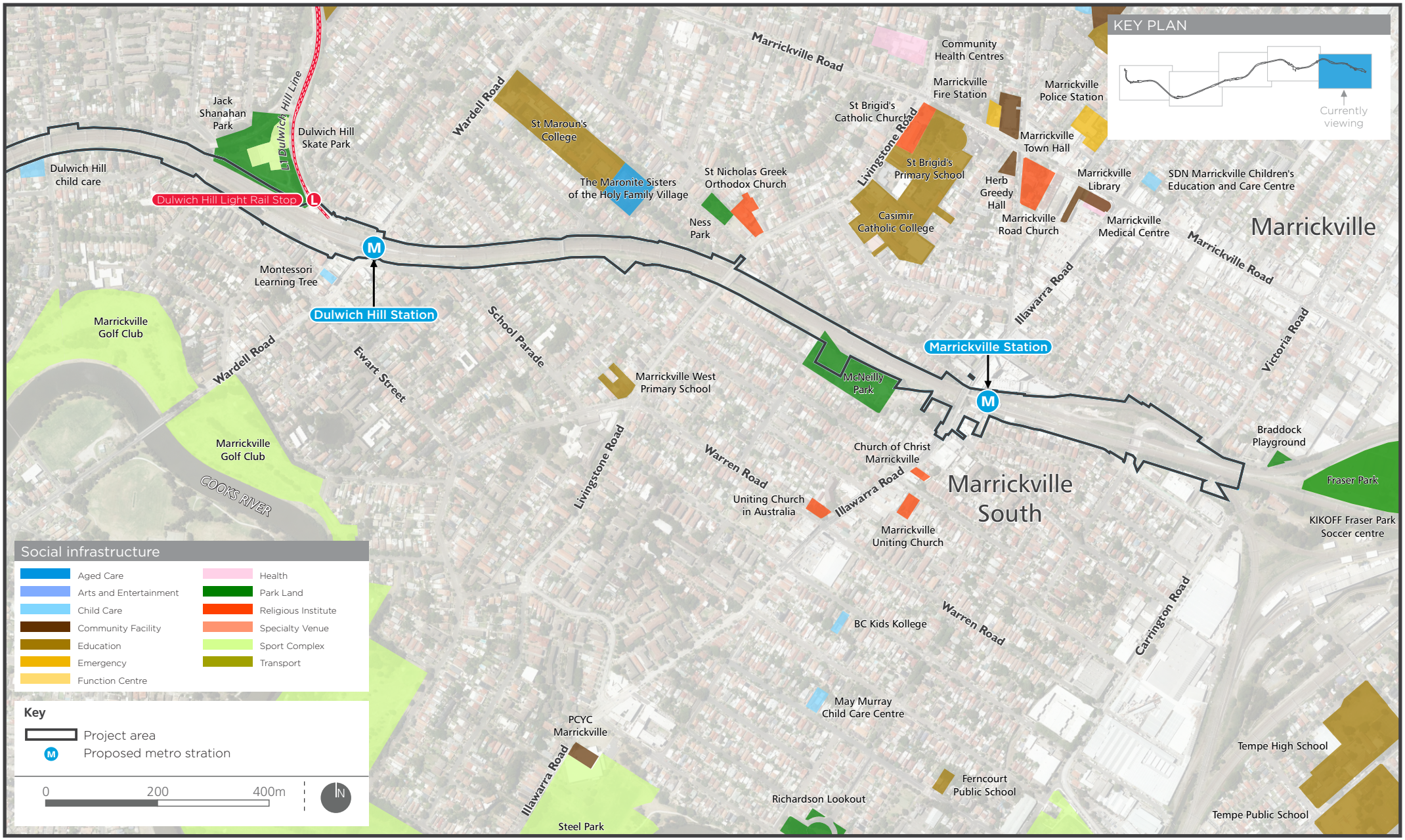
The study area is well serviced by major public transport facilities, with connections to key employment centres including the Sydney CBD, Sydney Olympic Park, Parramatta, and Liverpool.

The cycle network in the study area consists mainly of short, unmarked, on-road cycle routes. Dedicated cycle routes include the Cooks River Cycleway, which connects Campsie, Canterbury, and Tempe, and the Salt Pan Creek cycle route, which connects Bankstown to Georges Hall. Beyond the study area, the Greenway Cycleway connects Dulwich Hill to Lewisham.

Both LGAs contain a large range of community facilities and services, including educational facilities, places of worship, sport and recreational areas, health and community services. Community infrastructure is located throughout the study area. Concentrations of facilities are located in the vicinity of Campsie, Lakemba, Punchbowl, and Bankstown stations. Facilities located within or directly adjoining the project area include:

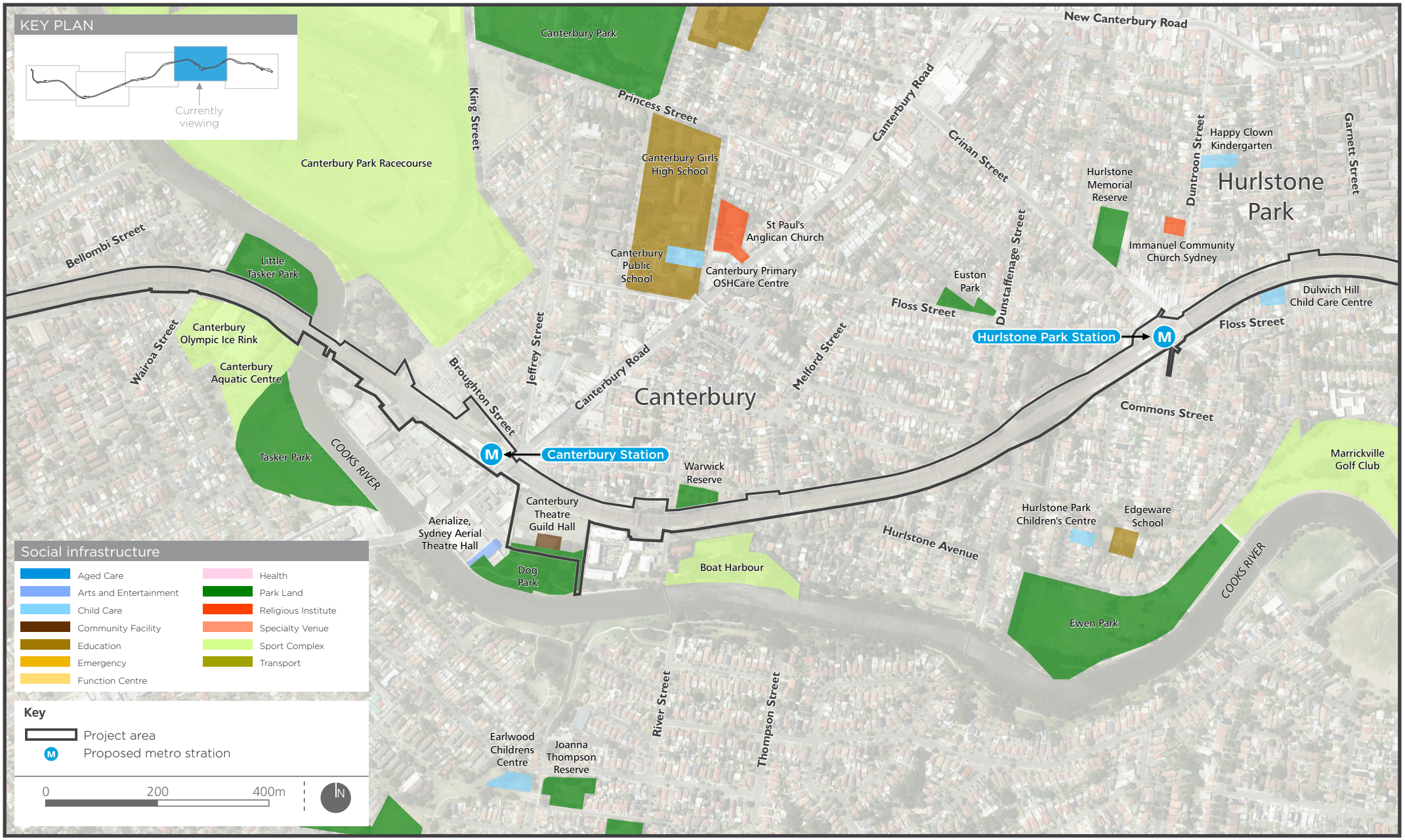
- McNeilly Park
- Jack Shanahan Park (including Dulwich Hill Skate Park)
- Dulwich Hill child care centre
- Warwick Reserve
- former Canterbury Bowling and Community Club
- Close Street Reserve
- Little Tasker Park
- Canterbury Olympic Ice Rink
- Canterbury Aquatic Centre
- Campsie Medical and Dental Centre
- Campsie RSL Club
- Campsie Day Surgery
- Campsie Police Station
- Belmore Sports Ground (including Belmore Oval)
- Belmore Youth and Resource Centre
- PCYC Belmore
- Canterbury City Community Centre
- Lakemba Senior Citizens Centre and Lakemba Branch Library
- Punchbowl Children's Centre
- Warren Reserve
- Mary Barry Park
- Punchbowl Boys High School
- Bankstown Art Centre
- Masjid Abu Bakr Bankstown Mosque
- Al Amanah College
- St Nicholas Antiochian Orthodox Church
- Park on Brancourt Avenue.

Community infrastructure and facilities in the vicinity of the study area are shown in Figure 17.1. Further information on community infrastructure in the study area is provided in Section 17.3.2 and Technical paper 5.



Community infrastructure - map 1

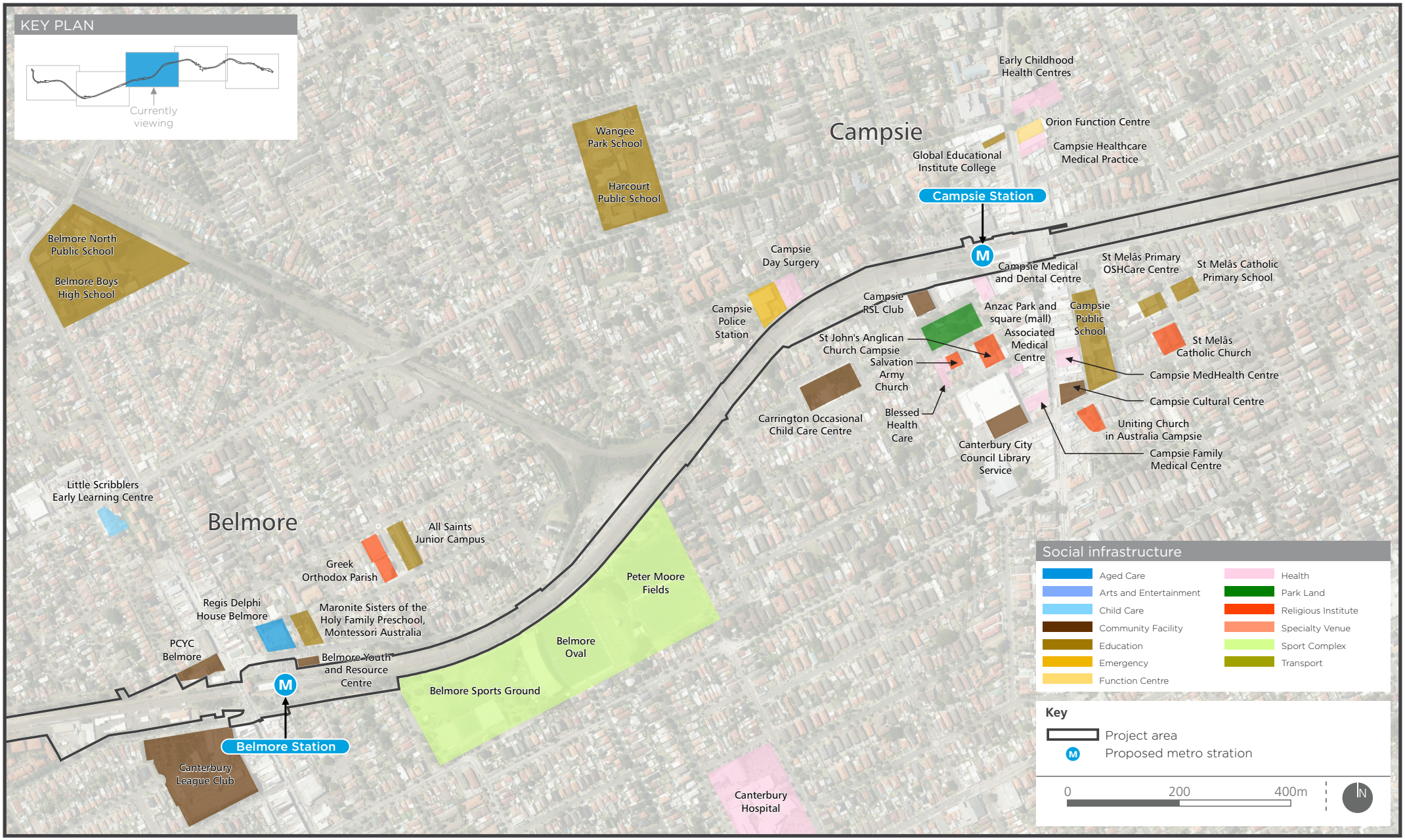
FIGURE 17.1



sydney METRO | city & southwest

Community infrastructure - map 2

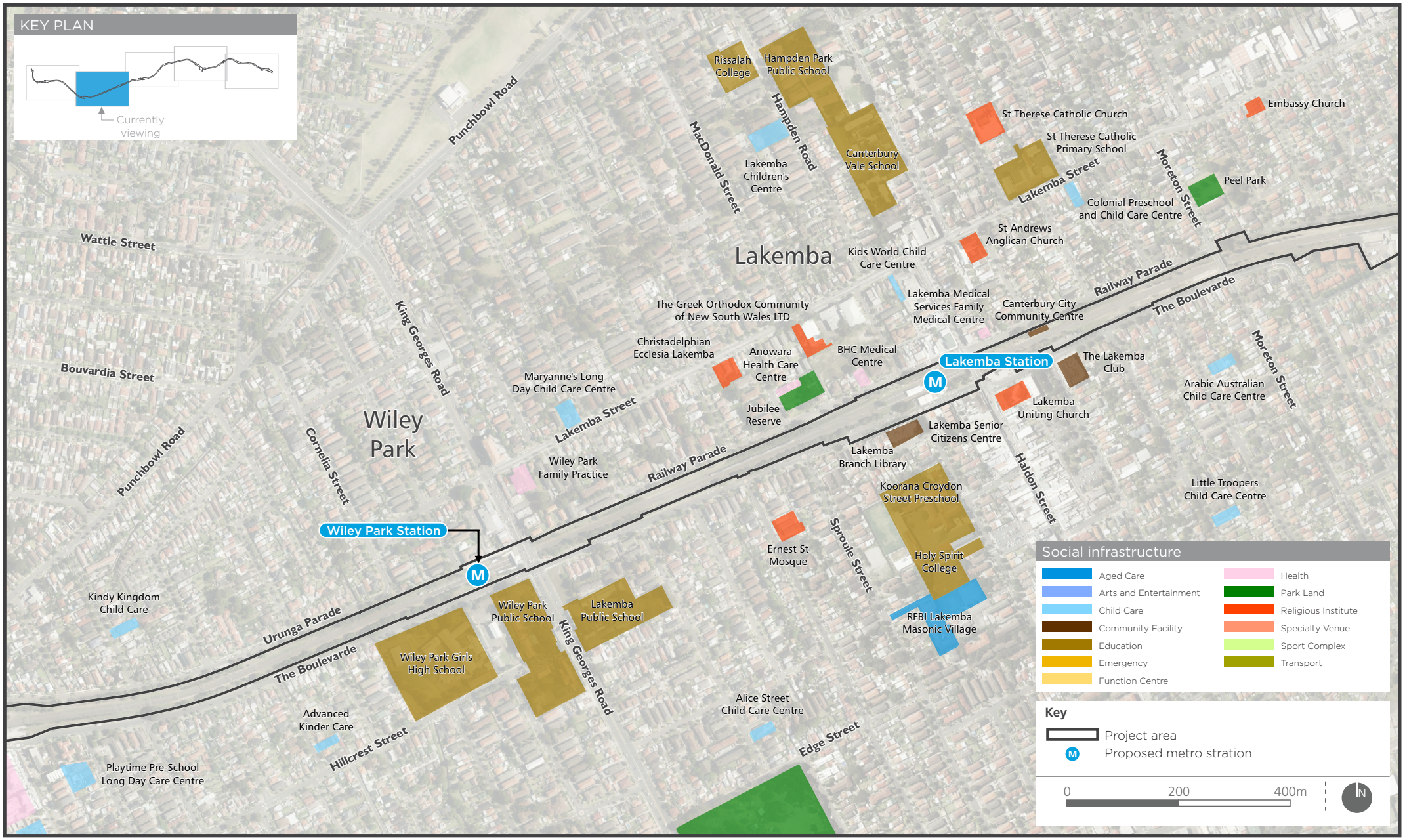
FIGURE 17.1



sydney METRO | city & southwest

Community infrastructure - map 3

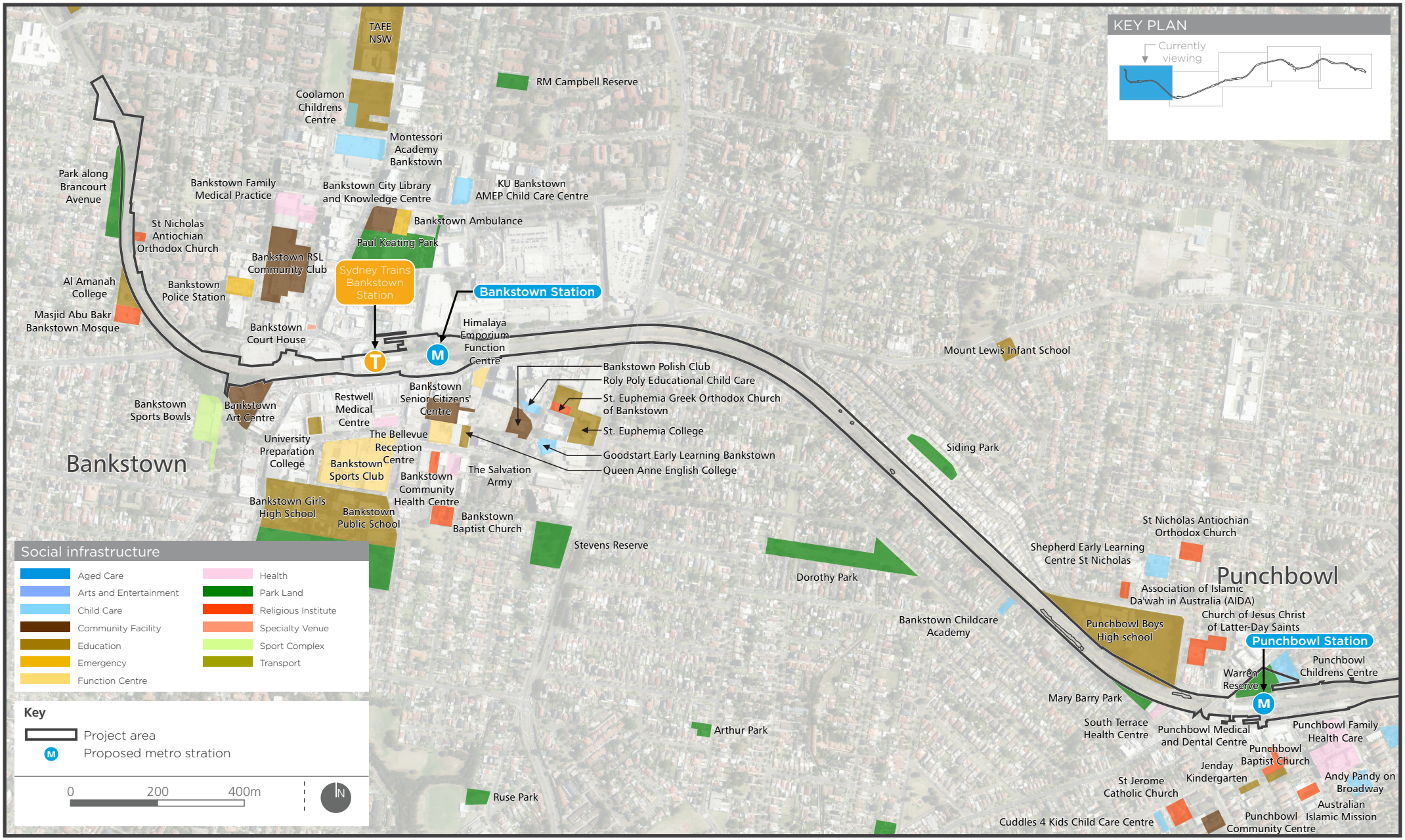
FIGURE 17.1



sydney METRO | city & southwest

Community infrastructure - map 4

FIGURE 17.1



Community infrastructure - map 5

FIGURE 17.1

17.2.3 Community values

Community values refer to tangible and intangible characteristics and aspects of a community, such as amenity, character, lifestyle, access, connectivity, community cohesion, and community health and safety. A project may affect these aspects by changing noise levels, visual amenity, traffic conditions and access, movement across the community, the use and enjoyment of community spaces, and by requiring relocation as a result of property acquisition.

The values held by communities in the study area were identified by analysing community feedback received to date (refer to Chapter 4), and reviewing relevant State and local government strategic and community planning documents such as the following documents:

- former Marrickville Council's community strategic plan, *Our Place Our Vision*
- former Canterbury Council's *Community Strategic Plan 2014-2023*
- former Bankstown City Council's *Bankstown Community Plan 2023*.

Inner West LGA

Local amenity and character

The Inner West LGA is characterised by densely populated, older, inner-city suburbs, with numerous significant heritage and cultural items, including sites of Aboriginal significance. The LGA also contains substantial industrial and commercial areas, many of these being historic areas that are gradually converting to other uses. Since the 1970s, the area has experienced significant urban renewal and gentrification.

The Cooks River provides natural amenity for the LGA. It borders a number of open spaces and sport and recreation facilities, including Marrickville Golf Club and the Mahoney Reserve Sports Field.

Community consultation has indicated that illegal graffiti on station buildings and community assets is an amenity issue. The community desires accessible and clean streets, lanes and public spaces. They would also like to minimise aircraft and other significant noise impacts on homes, businesses, and public spaces. The community feels that there is an undersupply of open space.

Access and public transport

Members of the community value connected and accessible infrastructure, which supports walking, cycling, and public transport usage. The community would like to reduce car dependency through improved accessibility, including accessible railway stations, bus stops, and well connected footpaths, cycleways, and associated facilities.

The community feels that access to public transport needs to be improved. Connected and accessible infrastructure can support increased opportunities for participation in the community, and contribute to community cohesion.

The community is concerned that the majority of train stations within the LGA are still inaccessible to many community members, affecting their ability to participate fully. The community is concerned about the reliability and frequency of train and bus services, as well as the availability of routes linking destinations within the inner west.

The condition of roads, footpaths, and parks is also a key community concern. Foot and cycle path maintenance is identified as a high priority, followed by road maintenance; reinforcing the view that the community values walking and cycling. Consultation undertaken as part of the project to date indicated that there is a lack of available bike parking at stations.

Health and safety

Members of the community have indicated that there are safety issues in the LGA. Concerns were raised about antisocial behaviour, including illegal graffiti on station buildings and community assets, which reduces the perceived safety of the area. The community desires better street lighting, and reduced occurrences of illegal graffiti.

The community aspires to be active and healthy through improved walking, cycling, and other transport infrastructure. Diversity is valued, as are opportunities for community participation through safe and accessible infrastructure. There should be safe places for people to meet and interact. The community would like to reduce accidental injuries and opportunistic crime in public places.

Canterbury-Bankstown LGA

Local amenity and character

The former Canterbury LGA is densely populated and culturally diverse. Parks, historical sites, open space, and sport and recreational facilities contribute to the amenity of the LGA. These include Belmore Sports Ground (previously known as Belmore Oval), Canterbury Racecourse, Canterbury Ice Rink, Canterbury Aquatic and Fitness Centre, and open space corridors surrounding the Cooks River, Wolli Creek, and Salt Pan Creek. A designated cycle path and walking track is located along the Cooks River.

Members of the community value attractive streetscapes and balanced development, and would like streets to be clean and tidy, with minimal graffiti and rubbish, and well maintained gardens and trees. The community notes that development within the LGA should maintain a balance of historic and modern streetscapes. People consider the natural environment could be enhanced by reducing road congestion, while improving both air quality and noise amenity. The community also values vibrant town centres with a variety of uses.

The character of the former Bankstown LGA is largely residential. It has a commercial core (the Bankstown town centre) adjacent to Bankstown Station, which is surrounded by suburbs that provide character and amenity. The community seeks to retain the character, built heritage, and village atmosphere of the area.

The community values the local centres and community assets. Clean and safe parks, public centres, and facilities are considered important to the amenity and liveability of the area.

Access and public transport

The community within the former Canterbury LGA values access to services. Public transport and road networks provide access and connectivity throughout the area. The community desires a pedestrian and cycle friendly area, with reliable public transport, adequate parking for all vehicle types, better integration with the existing road network, and less congestion.

Similarly, the community within the former Bankstown LGA desires a well-connected transport network, which serve the community's needs, whilst being sustainable, efficient, and affordable. Walking and cycling paths are valued. Residents seek a well-connected community, supported by transport, access, and connectivity.

Health and safety

Health and safety are priorities within the LGA. The community values transport options that provide access to a range of community facilities and services. Fostering access to facilities and services, such as healthcare, education, and open space, can support healthy lifestyles. People consider that traffic congestion would also improve road safety.

Providing different transport options could reduce car dependency and support a healthy natural environment. Low crime, a strong police presence, and adequate street lighting, would improve community perceptions of safety.

Within the former Bankstown LGA, consultation has indicated that members of the community perceive some areas as unsafe at night, especially around train stations. Providing clean and safe community areas, including open space and parks, would improve perceptions of safety.

17.2.4 Role of the existing stations

As described in Section 7.1, the stations within the project area have played an important role in developing the local and regional economies, while enabling people to live, trade and travel within and through the corridor to access business, family, work, recreation, culture, leisure, health, education, shopping and entertainment services. Tens of thousands of people pass through these stations each day. In most cases, the stations are located at the centre of their surrounding communities and are the focal point for intensive activity, as well as integrated transport services.

17.3 Impact assessment

17.3.1 Risk assessment

Potential risks

The project would contribute to benefits for, and potential impacts to, the community. The environmental risk assessment for the project, undertaken for the *State Significant Infrastructure Application Report*, identified the following potential social risks:

- Temporary impacts on community values and lifestyle for local residents, workers, and visitors, due to changes to travel patterns and interruptions to transport services during construction. Groups who may be particularly vulnerable to these impacts include people with limited English language skills, older people, children (including school children), and people with a disability.
- Amenity impacts (including noise, vibration, air quality and visual changes) on residents, businesses, and community infrastructure. Some residents may be more vulnerable to these impacts, and some community facilities may be more sensitive (such as childcare centres).
- Temporary access restrictions or changes resulting from construction sites and activities, which may affect how people access community infrastructure, and how they use the existing rail and road infrastructure.
- Cumulative social issues resulting from the potential for overlap with construction associated with urban renewal around train stations.

How potential impacts have been avoided or minimised

Design development has included a focus on avoiding and/or minimising the potential for impacts during key phases of the project. Potential socio-economic impacts have been avoided or minimised by:

- designing the project to minimise the potential for noise, air, and visual amenity impacts during construction and operation, including the implementation of design responses summarised in Chapters 8 and 9 (Project description – construction and operation)
- designing the project to maximise safety and accessibility, as described in Chapters 7 (Design development and place making), 8 (Project description – operation), 11 (Operational traffic, transport and access), and 25 (Hazards, risks and safety)

- minimising impacts on the community through the positioning of construction compounds and careful consideration of working periods
- implementation of the Temporary Transport Strategy (provided in Appendix G and described in Chapter 9 (Project description - construction)
- ongoing consultation with the local community and key stakeholders, as described in Chapter 4 (Stakeholder and community consultation).

17.3.2 Construction

The main potential for socio-economic impacts during construction would occur as a result of:

- changes to access arrangements and connectivity
- employment generation and other economic benefits, including increased trade
- amenity impacts as a result of construction works
- impacts to community infrastructure and facilities.

A summary of the results of the assessment in relation to these potential impacts is provided below.

Access and connectivity

As described in Chapter 10 (Construction traffic, transport and access), construction of the project would result in temporary impacts to traffic and access within the study area, and an increase in both heavy and light vehicle movements on the local and regional road network. This would result in inconvenience and disruption to existing access for residents, visitors, customers, businesses, and service providers along and around the project area. These impacts would include:

- changes to access for pedestrians, cyclists, and bus users around stations and construction work areas
- altered movement patterns and traffic routes in some areas
- changed access or increased travel time to community places and facilities
- loss of some areas of parking in the vicinity of stations, including accessible parking, kiss and ride, and taxi spaces
- changes to access across some rail overbridges during bridge upgrade works.

Changes to traffic, pedestrian, and cyclist access could result in a temporary increase in the distance travelled, increased travel times, inconvenience and delays for some community members.

These potential impacts would be temporary and would be minimised as far as possible by the implementation of the construction traffic, transport, and access management measures provided in Section 10.5. These measures would include the development and implementation of a construction traffic management plan, which would aim to:

- minimise disruption to traffic operation, road users, pedestrians, cyclists and access to adjoining properties (private and public)
- limit access restrictions, and where required, provide alternatives to maintain access for the local community.

Communication with potentially affected users and information provision would assist in reducing uncertainty and the impacts of changes to access and movement patterns. A comprehensive community and stakeholder awareness program would be implemented during construction

(as described in Chapter 4), which would assist in managing these impacts and communicating changes to relevant stakeholders.

The other key potential impact relates to the temporary closure of stations and the rail line that would occur at certain times during the construction period. As described in Chapter 9, the Sydney Trains network would remain operational during the majority of the construction period. However, some construction activities need to be undertaken during rail possession periods, when trains are not operating.

As described in Chapter 9, a Temporary Transport Strategy has been prepared to guide the implementation of temporary transport arrangements during station and rail line closures. The Temporary Transport Strategy includes provision of a fleet of rail replacement buses to cater for rail customers.

Closure of the stations at certain times during construction has the potential to impact the community, which has higher levels of public transport use compared to the Sydney average (about 85,000 movements per day were recorded during 2014). Station and rail line closures and the associated alternative public transport arrangements have the potential to lead to increased traffic generation, traffic congestion and delays and diversions with the following resultant social impacts:

- Travel time delays (compared to rail trips) for commuters, customers, and other road users, leading to the potential for anxiousness and concern, especially during peak hours or when trying to access important events. More significant delays could also reduce people's leisure or family time.
- People may be less likely to use public transport or access retail and commercial establishments near the project area, thereby reducing participation in the community. The reduced likelihood to use public transport could particularly affect vulnerable groups, such as the elderly, economically disadvantaged, and people with disabilities.
- Commuters would need to keep informed about changes in traffic and transport conditions. This may be more difficult for vulnerable groups within the community, including the elderly, disabled, and those from linguistically and culturally diverse backgrounds (this is a key characteristic of the Canterbury-Bankstown LGA, as described in Section 17.2).
- A reduction in connectivity between stations and adjoining retail, employment and community areas could limit the community's access to these areas for people journeying from locations outside the study area.

The implementation of temporary transport management plans would assist in mitigating the impacts associated with station and rail line closures. The potential significance of impacts would depend on how closely the rail replacement buses are able to replicate similar levels of service provided by the rail network, as well as other important factors such as customer disposition to bus travel, convenience of facilities, availability of seats, etc. Each subsequent temporary transport management plan would incorporate learnings from the previous plan, and the feedback of any affected stakeholders, so that any issues experienced would be addressed in future plans. It is recognised that these impacts would be temporary, and would be limited to regular, defined intervals each year.

Employment and other economic benefits

Construction of the project would generate employment. It is estimated that the peak workforce required would range from 705 up to 1,540 people.

This could benefit the local community, as the workforce is likely to include local. These jobs are only limited to the workforce that would be directly employed to construct the project, and do not include additional jobs or increased demand stimulated by the project to downstream providers of

goods and services. Industries that support construction of the project would also experience economic benefits.

New employment opportunities would also provide the opportunity for training and the development of new skills, which has the potential to benefit the local area and region.

A Workforce Development and Industry Participation Strategy has been developed for Sydney Metro. The strategy includes objectives to support local employment and business opportunities, provide skills development, and increase workplace diversity. Initiatives of the strategy would include:

- assessing current and future workforce skill needs and workforce profiles including a skills and workforce gap plan
- increasing local employment, local business opportunities, and involvement of local small and medium enterprises
- provision of relevant Nationally Recognised Accredited Training
- increasing workforce diversity and inclusion, targeting indigenous workers and businesses, female representation in non-traditional trades and the long-term unemployed
- participation in work placement and education programs for young people
- increasing participation of apprentices and trainees.

Construction activities also have the potential to result in increased trade for local businesses. Potential impacts on local businesses are considered in Chapter 18 (Business impacts).

Amenity

'Amenity' refers to the pleasant or normally satisfactory aspects of a location which contribute to its overall character and the enjoyment of residents or visitors. Construction of the project may result in the following amenity impacts being experienced by members of the community surrounding the project area:

- increase in noise levels as a result of construction plant and equipment
- increase in traffic movements and congestion (and associated road traffic noise), around work areas, compounds and work sites, corridor access points, and construction haulage routes
- increase in dust generated during construction
- changes in the visual outlook in the vicinity of compounds and construction work areas – particularly potential impacts on existing character, introduction of additional visual clutter, and interruption of existing sight lines.

These potential impacts and relevant mitigation measures are considered in Chapters 10 (Construction traffic, transport and access), 12 (Construction noise and vibration), 19 (Landscape and visual impacts), and 23 (Air quality). Amenity impacts would be temporary, and managed by the mitigation measures outlined in these chapters.

Community infrastructure and facilities

Construction has the potential to affect community infrastructure and facilities located near the project area, as a result of changes in amenity, local access, or requirements for acquisition or temporary use. Key impacts are summarised in Table 17.2.

The amenity impacts noted above may affect the enjoyment of community facilities located close to the project area, particularly outdoor areas.

In addition to the impacts noted in Table 17.2, changes to traffic and transport conditions in the vicinity of the project area could also affect the time and route taken to travel to community facilities. Further information on potential social impacts as a result of access changes is provided above (under access and connectivity). These potential impacts would be temporary, and would be minimised as far as possible by the implementation of the construction traffic, transport, and access management measures provided in Section 10.5.

Impacts to specific community facilities in the project area are summarised in Table 17.2.

Table 17.2 Community facilities potentially affected by the project

Community facility	Impact overview
Marrickville	
Fraser Park (includes the Fraser Park Football Club and the KIKOFF Soccer Centre - Fraser Park)	Fraser Park is an active recreation area located close to the eastern boundary of the project area. Amenity impacts (noise and visual) may affect the outdoor enjoyment of Fraser Park and its associated sporting facilities, however are not expected to restrict use or function of these facilities.
McNeilly Park	McNeilly Park is a well-used park with a playground, paths, small basketball court, open grassed areas, an off-leash dog exercise area, and a Girl Guides hall, located adjacent to the project area. The north-west section of park (where the off-leash area is located) would be directly affected during construction. An underground detention basin is proposed to be constructed in this area. The work site to construct the basin would affect about 35 per cent of the park. An indicative layout of the proposed work site is shown in Figure 9.4. Construction of the basin would mean that the grassed area in this location (and potentially sections of the existing path) would not be available for use for the duration of construction of the basin. The presence of the work site (work site 2) also has the potential to affect the amenity of adjoining areas. The playground area of the park (which was recently updated) would not be directly impacted, and would be accessible by the public at all times. The area subject to works would be restored and returned to public use when works are complete.
Ness Park	Ness Park is a passive recreation area with a small playground, located to the north of the project area. There may be potential for noise impacts to affect the outdoor enjoyment of Ness Park, however these are not expected to restrict use or function of the park.
Maronite Sisters of the Holy Family Village (aged care).	The facility is located to the north of the project area. Construction activities have the potential to result in temporary noise impacts on the facility. However, potential impacts would mainly occur from corridor works given the distance to Dulwich Hill Station (about 400 metres) and Marrickville Station (about 700 metres).
St Nicholas Greek Orthodox Church	The church is located to the north of the project area (around 90 metres) and adjacent to Ness Park. Construction activities have the potential to result in amenity (noise) impacts on the church.
Braddock Playground	Braddock Playground is passive recreation area with a playground, located to the north of the project area (rail corridor). There may be potential for noise impacts to affect the outdoor enjoyment of the playground, however it is not expected to restrict its use or function.
Dulwich Hill	
Jack Shanahan Park (includes various sporting facilities, including Dulwich Hill Skate Park)	Jack Shanahan Park, which includes a range of active and passive recreation facilities, adjoins the project area (rail corridor). Construction activities in the project area are likely to be audible by users, and amenity impacts (mainly noise and visual) have the potential to affect the outdoor enjoyment of this facility. However, these impacts would be restricted to the duration of any track works in the vicinity of the park. Given the distance to Dulwich Hill Station (about 40 metres) works at the station are less likely to impact users of the park.

Community facility	Impact overview
Hurlstone Park	
Dulwich Hill Child Care Centre	Dulwich Hill Child Care Centre adjoins the project area (rail corridor). In this location, the rail corridor is in a cutting, which would limit the potential for visual impacts. While there would be the potential for noise impacts, particularly to outdoor play areas, given the distance to Hurlstone Park Station (about 200 metres), these impacts are expected to be limited to any track works required in the vicinity of the centre. The centre would be subject to consideration of additional noise mitigation measures during construction.
Warwick Reserve	Warwick Reserve is a passive recreation area with a playground that adjoins the project area. The topography and existing vegetation in the reserve would limit the potential for visual impacts, however noise impacts have the potential to affect the outdoor enjoyment of this facility. It is expected that such impacts would be restricted to the duration of any track works required in the vicinity of the reserve.
Canterbury	
Former Canterbury Bowling and Community Club (Canterbury Theatre Guild Hall)	The former Canterbury Bowling and Community Club facility would be impacted during construction. This facility is used for a number of community purposes (including the Canterbury Theatre Guild and a play group) under lease from Canterbury-Bankstown Council. Areas within the club building and the surrounding open space are proposed for use as a construction compound and site office (work site 8). An area within the building would remain available for community use. An indicative layout of the proposed work site is shown in Figure 9.4. There is the potential for amenity impacts (mainly noise and visual) to be experienced by users of the facility. Transport for NSW would work closely with Canterbury-Bankstown Council and users of the facility to manage how it would be used during construction.
Little Tasker Park	Little Tasker Park is a passive recreation area that adjoins the project area. Existing vegetation would limit the potential for visual impacts during construction. However, noise impacts have the potential to affect the outdoor enjoyment of the facility. It is expected that such impacts would be restricted to the duration of any track works required in the vicinity of the park.
Tasker Park	Tasker Park is an active recreation area that adjoins the project area. The park includes sports fields, basketball courts and a playground area. Noise and visual impacts may affect the outdoor enjoyment of the facility, however impacts are not expected to restrict the use or function of the park.
Canterbury Olympic Ice Rink	Canterbury Olympic Ice Rink is located in Tasker Park. Track works are likely to be audible from the facility due to its proximity to the project area. Visual impacts would be limited as the facility is enclosed and is visually separated from the rail corridor by vegetation.
Canterbury Aquatic and Fitness Centre	Canterbury Aquatic and Fitness Centre is located adjacent to the Canterbury Olympic Ice Rink in Tasker Park. Amenity impacts (e.g. noise and dust) have the potential to affect users of the facility, particularly during works to the Wairoa Street underbridge and any track works (including activities at work site 10 and construction compound 7). Amenity impacts are not expected to restrict the use or function of the centre.
Close Street Reserve	Close Street reserve is a passive recreation area and off leash dog exercise park located off Close Street to the south of the project area. There may be potential for noise and visual impacts to affect the outdoor enjoyment of the park, particularly while work site 8 (located directly to the north of the park) is in use.
Aerialize - Sydney Aerial Theatre	Aerialize is located to the south of the project area. Construction activities in the project area are likely to be audible at the facility. However, impacts are not expected to restrict the use or function of the facility given the distance from the project area (about 100 metres).

Community facility	Impact overview
Boat Harbour	Boat Harbour is a passive recreation reserve on the Cooks River, which contains a constructed inlet of water. The reserve is connected to the Close Street Reserve and Sutton Park by a walkway. There is potential for noise and visual impacts on the outdoor enjoyment of the reserve. It is expected that such impacts would be restricted to the duration of any track works required in the vicinity. Amenity impacts are not expected to restrict the use or function of the reserve.
Campsie	
Campsie RSL Club	Campsie RSL Club adjoins the project area. Noise impacts have the potential to affect users of the facility. There is the potential for impacts during most of the construction period, as the club is located close to the station. Amenity impacts are not expected to restrict the use or function of the club.
Anzac Park	Anzac Park is a passive recreation area with playground facilitates located to the south of the project area. Noise impacts have the potential to affect the outdoor enjoyment of this facility. Amenity impacts are not expected to restrict the use or function of the park.
Campsie Day Surgery	The Campsie Day Surgery adjoins the project area. Users and staff may experience reduced amenity during construction as a result of increases in noise. However, these are not expected to restrict the use or function of the facility.
Campsie Police Station	Campsie Police Station adjoins the project area. The station is predicted to be affected by noise during certain construction activities. The centre would be subject to consideration of additional noise mitigation measures during construction.
Campsie Medical and Dental Centre	The medical centre is located to the south of the project area. Users and staff may experience temporary reduced amenity during construction as a result of increased noise. These impacts are not expected to restrict the use or function of these facilities.
Carrington Occasional Child Care Centre	Carrington Occasional Care Centre is located to the south of the project area. There would be potential noise impacts during construction. Potential noise impacts would be most relevant for children playing outdoors. Such impacts are not expected to restrict the use or function of the facility.
Belmore	
Belmore Youth and Resource Centre, Belmore Early Childhood Health Centre and Belmore Community Centre	These community facilities adjoin the project area (station). In this location, the rail corridor is located in a cutting, which would limit the potential for visual impacts during construction. However, there would be the potential for noise impacts. The centre would be subject to consideration of additional noise mitigation measures during construction.
Regis Delphi House Belmore (aged care)	This facility is located to the north of the project area. Construction activities have the potential to result in temporary noise impacts on residents of the facility. Visual impacts are unlikely due to the distance and visual buffers between the facility and the project area. Potential noise impacts are not expected to restrict the use or function of the facility.
Maronite Sisters of the Holy Family Montessori Preschool	The preschool is located to the north of the project area. Construction activities would have the potential to result in temporary noise impacts. Potential noise impacts would be most relevant when children are outdoors. Visual impacts are unlikely due to the distance and visual buffers between the preschool and the project area. Amenity impacts are not expected to restrict the use or function of the preschool.
PCYC Belmore	PCYC Belmore is a youth club adjoining the project area. Construction activities would have the potential to result in temporary noise impacts on the facility. Visual impacts are unlikely due to the visual buffers between the facility and the project area. Amenity impacts are not expected to restrict the use or function of the facility.

Community facility	Impact overview
Belmore Sports Ground (including Belmore Oval)	Belmore Sports Ground is an active recreation area adjoining the project area. The sports ground contains a sporting stadium (Belmore Oval – the home ground of the Canterbury Bulldogs), Peter Moore Fields, and Belmore Bowling Club. Amenity impacts (noise and visual) during construction may affect the outdoor enjoyment of the facility, however are not expected to restrict its use or function. A key potential impact would be access to the facility, particularly during games at Belmore Oval. Potential access impacts (including during special events) are considered in Chapter 10, and relevant mitigation measures are provided in Section 10.5. Further information on potential social impacts as a result of access changes is provided above (under access and connectivity).
Peter Moore Fields	Peter Moore Fields are an active recreation area adjoining the project area. Amenity impacts (noise and visual) during construction may affect the outdoor enjoyment of the fields and its associated sporting facilities, however the impacts are not expected to restrict use or function of the fields.
Canterbury League Club	Canterbury League Club is located to the south of the project area. Construction activities in the project area are likely to be audible at the club. However, impacts are not expected to restrict use or function of the facility given the distance from the project area (about 100 metres).
Lakemba	
The Lakemba Club	The Lakemba Club is located on the southern side of The Boulevarde opposite the project area. Construction activities in the project area are predicted to be audible at the club particularly from the nearby construction compound (C14) or any track works. However, impacts are not expected to restrict the use of the club.
Canterbury City Community Centre	Canterbury City Community Centre is located adjacent to the project area east of Lakemba Station. Noise impacts are predicted due to its close proximity to corridor works and construction compound (C14) on the southern side of the corridor. The centre would be subject to consideration of additional noise mitigation measures during construction.
Lakemba Uniting Church	The Lakemba Uniting Church is located on the opposite side of The Boulevarde to the project area (east of Lakemba Station). Due to the proximity of the church to the project area, and the presence of construction compound (C14), construction noise impacts are predicted. The centre would be subject to consideration of additional noise mitigation measures during construction.
BHC Medical Centre	The BHC Medical Centre is located north of the project area on the northern side of Railway Parade. The centre would be potentially subject to amenity impacts (noise, air quality and visual) as a result of its proximity to the station and rail corridor. Amenity impacts are not expected to restrict the use of the centre.
Jubilee Reserve	Jubilee Reserve is a passive recreation area including a playground. The reserve is located north of the project area west of Lakemba Station. Amenity impacts (such as noise, visual and dust) may affect the outdoor enjoyment of the reserve, however are not expected to restrict its use or function.
Anowara Health Care Centre	Anowara Health Care Centre is located in Bellevue Street to the north of Jubilee Reserve, this facility includes a surgery. With the implementation of reasonable and feasible noise mitigation, these impacts are not expected to restrict the use or function of the facility. Visual impacts would be limited due to the orientation of the facility parallel to the project area.
Lakemba Senior Citizen's Centre and Lakemba Library	These facilities occupy a single building located south of the corridor near Lakemba Station. There is the potential for amenity impacts (particularly noise) to be experienced at the facilities, however such impacts are not expected to restrict the use or function of the facilities.
Lakemba Medical Services Family Medical Centre	The Lakemba Medical Services Family Medical Centre is located north of the project area on Railway Parade. The centre would be subject to consideration of additional noise mitigation measures during construction.

Community facility	Impact overview
Wiley Park	
Wiley Park Girls High School	Wiley Park Girls High School is located adjacent to the project area, on the southern side of The Boulevarde. It is predicted that some buildings within the school would be subject to noise impacts during construction. The centre would be subject to consideration of additional noise mitigation measures during construction.
Wiley Park Public School	Wiley Park Public School is located adjacent to the project area, on the southern side of The Boulevarde. There is the potential for amenity impacts (noise and visual) to be experienced at the school, which may be subject to consideration of additional noise mitigation measures during construction.
Lakemba Public School	Lakemba Public School is located on King Georges Road and is set back from the project area. There is the potential for amenity impacts (noise) to be experienced at the school, which may be subject to consideration of additional noise mitigation measures during construction.
Punchbowl	
Punchbowl Children's Centre	Punchbowl Children's Centre is located on the northern side of Warren Reserve. Due to the positioning of the centre north of the works at Punchbowl Station, there is the potential for noise impacts. The centre would be subject to consideration of additional noise mitigation measures during construction.
Warren Reserve	Warren Reserve is a passive recreation area located to the north of Punchbowl Station. About 15% of the reserve along its southern edge would be acquired for a new station entrance. As this area is located adjacent to the rail corridor, acquisition would not impact highly used areas. There would be potential for amenity impacts (noise and visual) to other areas of the reserve during construction. Amenity impacts may affect the outdoor enjoyment of this reserve, but are not expected to restrict its use or function.
Punchbowl Boys High School	Punchbowl Boys High School is located directly adjacent to the northern side of the project area, to the west of Punchbowl Road. There is the potential for amenity impacts (particularly noise) at this school due to its proximity to the project area. The school would be subject to consideration of additional noise mitigation measures during construction.
Mary Barry Park	Mary Barry Park is located on the northern side of South Terrace (west of Punchbowl Road) and is located adjacent to the rail corridor. Amenity impacts may affect the outdoor enjoyment of this reserve, but are not expected to restrict its use or function
Church of Jesus Christ of Latter-Day Saints	The Church of Jesus Christ and Latter-Day Saints is located about 60 metres north of the project area. There is the potential for amenity (noise) impacts at this location, however these are not expected to impact on the use or function of the church.
Punchbowl Family Health Care	The Punchbowl Family Health Care is located within the Broadway Plaza shopping centre on the southern side of The Boulevarde at Punchbowl Station. Amenity impacts at this facility are expected due to its proximity to the rail corridor and proposed construction compound (C21). Amenity impacts are not expected to impact on the use or function of this facility.
Bankstown Childcare Academy	The Bankstown Childcare Academy is located on the southern side of South Terrace opposite the project area. There would be the potential for noise impacts, particularly to outdoor play areas, during construction. The academy would be subject to consideration of additional noise mitigation measures during construction.
Playtime Pre-School Long Day Care Centre	The Playtime Pre-School Long Day Care Centre is located about 90 metres south of the rail corridor. Visual amenity impacts are not expected with no direct views of the project area. There would be the potential for noise impacts, particularly to outdoor play areas, during construction. The centre would be subject to consideration of additional noise mitigation measures during construction.
South Terrace Health Centre	South Terrace Health Centre is located adjacent to the southern side of the project area to the west of Punchbowl Road. There would be the potential for noise impacts during construction. The centre would be subject to consideration of additional noise mitigation measures during construction.

Community facility	Impact overview
Bankstown	
Bankstown Arts Centre	The Bankstown Arts Centre is located directly adjacent to the rail corridor to the west of Bankstown City Plaza. The project would involve track work in this area, which would have the potential for amenity impacts. Though works are likely to be minimal in this location, the works would result in potential noise impacts. The centre would be subject to consideration of additional noise mitigation measures during construction.
Himalaya Emporium Function Centre	The Himalaya Emporium Function Centre is located on the southern side of South Terrace adjacent to the project area. Due to the positioning of this facility opposite the upgraded station, some potential amenity impacts (both visual and noise) are expected. These impacts are not expected to impact on the use or function of the function centre.
The Bellevue Reception Centre	The Bellevue Reception Centre is located on Restwell Street to the south of the project area and is setback from the project area. As a result, visual impacts are unlikely, however potential noise impacts may result. Noise impacts are not considered likely to result in any impacts on the use or function of this centre.
Bankstown Sports Bowls	Bankstown Sports Bowls is located west of Bankstown City Plaza south of the corridor, however it is setback from the rail corridor with the car park between it and project area. Due to the limited works in this area, there is unlikely to be any impact on the use or function of these facilities.
Al Amanah College	Al Amanah College is located adjacent to the project area just north and towards the western end of the Marion Street overbridge. Works in this area would be limited to track adjustments and therefore potential amenity impacts, in particular noise may occur but only during limited periods. The college would be subject to consideration of additional noise mitigation measures during construction.
Masjid Abu Bakr Bankstown Mosque	The Masjid Abu Bakr Bankstown Mosque is located adjacent to the project area just north of the Marion Street overbridge towards the western end of the project area. Works in this area would be limited to track adjustments and therefore potential amenity impacts may result. Such impacts are not considered to impact the use or function of the mosque.
St Nicholas Antiochian Orthodox Church	The St Nicholas Antiochian Orthodox Church is located adjacent to the project area just north and towards the western end of the Marion Street overbridge. Works in this area would be limited to track adjustments and therefore potential amenity impacts may result. Such impacts are not expected to impact the use of function of the church.
Park along Brancourt Avenue	A small park located between Brancourt Avenue and the project area is using for passive recreation including a playground. Amenity impacts would potentially affect the outdoor enjoyment of this park; however these impacts are not expected to restrict the use or function of the park, particularly due to the small scale and nature of works in the vicinity of the park.
St. Euphemia Greek Orthodox Church of Bankstown	The St. Euphemia Greek Orthodox Church of Bankstown while over 100 metres from the project area would potentially experience some noise impacts. The church would be subject to consideration of additional noise mitigation measures during construction.
Roly Poly Educational Childcare	The Roly Poly Educational Childcare, while over 100 metres from the project area, would potentially experience some noise impacts. The child care would be subject to consideration of additional noise mitigation measures during construction.
Traction supply cable	
Earlwood Children's Centre	Earlwood Children's Centre is located on Fore Street adjacent to Cup and Saucer Creek. There would be potential amenity and access impacts at this facility due to the trenching works along Fore Street. Works would however progressively move along the alignment meaning impacts would be limited to a short period only. These impacts are not considered to impact the use or function of the facility.

Community facility	Impact overview
Joanna Thompson Reserve	Joanna Thompson Reserve is located on the corner of Burlington Avenue and Woolcott Street and is a passive recreation space with no playgrounds or sports fields. Potential amenity impacts may affect the outdoor enjoyment of this reserve; however these impacts are not expected to restrict the use or function of the reserve. Any impacts would be short term as the works move along the alignment.
Montgomery Reserve	Montgomery Reserve is located west of Karool Avenue, and is a passive recreation area with a small playground. Potential amenity impacts may affect the outdoor enjoyment of this reserve; however these impacts are not expected to restrict the use or function of the reserve. Any impacts would be short term as the works move along the alignment.
Earlwood Oval and Earlwood-Bardwell Park RSL and Sports Club	These facilities are located between Spark Street and Doris Avenue. The site contains a sports club and also an oval, bowling greens and tennis courts. There would be potential amenity impacts at these facilities. Such amenity impacts may affect the outdoor enjoyment of this reserve; however these impacts are not expected to restrict the use or function of the reserve. Any impacts would be short term as the works move along the alignment.
Hughes Park	Hughes Park is an active recreation area containing sports fields. The alignment of the feeder cable would result in direct impacts on the oval. Further review of the route alignment would seek to minimise impacts by potentially realigning around the oval. Any necessary impacts on this space would be discussed with Canterbury-Bankstown Council to confirm the management approach required during construction. Potential noise impacts would also arise when adjacent works are located near to the park including within the adjacent substation. These amenity impacts may affect the outdoor enjoyment of this reserve.

17.3.3 Operation

The main potential for socio-economic impacts and benefits during operation would occur as a result of:

- improved public transport facilities and services, promoting access and connectivity
- community amenity benefits and impacts
- economic impacts and benefits
- health and safety benefits
- impacts to community infrastructure
- the place-making role of the stations, and future socio-economic opportunities the project would provide.

A summary of the results of the assessment in relation to these potential impacts is provided below.

Access and connectivity

Accessibility and connectivity have formed one of the foundation elements for design of the project. The relevant design principle has been to ensure the stations and associated spaces are safe, efficient, universally accessible, legible, and easy to use for customers and pedestrians.

Design development has included an emphasis on ensuring that:

- connections to and from the stations and between all transport modes are easy, and intuitive for all metro customers
- there is equality of access for all people within the stations.

The project would improve access for people of all ages and mobility levels. During operation, community access and connectivity are expected to improve through the provision of efficient public transport and accessible station designs.

Increased frequency of services, improved reliability, and shorter journey times would reduce overall commuting times for customers. This would enable customers to potentially participate in community activities that further afield or on a more frequent basis, providing better access to local and city-wide employment opportunities, housing choices and other services.

New trains would provide wheelchair spaces and separate priority seating to improve accessibility for customers, as well as multi-purpose areas for people with prams, luggage, and bicycles. There would be level access between the platform and train for easier and safer accessibility. These features would improve the accessibility and connectivity for customers of the T3 Bankstown Line, as well as other parts of the transport network. Improved public transport access would particularly benefit those groups that currently experience transport or mobility difficulties, such as elderly people, youth, people with a disability, non-drivers, people travelling with small children or prams, and people without access to a private vehicle.

Pedestrian and cyclist infrastructure enhancements are expected to improve community access and connectivity between the stations and surrounding areas. These improvements may encourage more pedestrian activity and the potential for social interactions. Provision of new or upgraded station concourses and cross-corridor access would also offer more opportunities for communities on both sides of the rail corridor to connect and interact, contributing to community and social cohesion.

Consultation with the Inner West Council identified that there is currently a shortage of bike parking at stations reducing access for cyclists. The project includes the provision of additional bike parking facilities at each station.

In addition, as described in Section 8.1.4, Transport for NSW will work with the Department of Planning and Environment to support the development of an active transport corridor, including walking and cycling infrastructure. Transport for NSW will deliver sections of the active transport corridor around stations.

These facilities would promote active transport along the corridor, integrating with bike parking facilities at stations to enhance integration between public and active transport modes. This would support community aspirations for the provision of cycling infrastructure, promoting healthy and active lifestyles.

Adjacent to the stations, new, upgraded, or relocated parking and kerb side facilities, including accessible parking, kiss and ride, and taxi facilities, would be provided. This would improve access and connectivity within the area surrounding the stations.

Amenity

In line with community aspirations for well-planned and attractive urban environments, the operation of the project has the potential to enhance local amenity and character in the areas immediately surrounding the stations. New stations, which are integrated with their surroundings, would provide a positive experience for customers, while maintaining and improving the character of areas surrounding the stations. Improvements to the station areas, including improved lighting, landscaped areas at entrances, and new and enlarged concourses with retail opportunities are expected to encourage greater customer activity, improve the customer experience, and provide spaces for people to meet.

Through an improved, safer customer experience combined with more frequent services, the project also has the potential to stimulate growth, new development, and urban renewal around stations, including new housing, employment opportunities, public places, community facilities, and

integration with other transport infrastructure. This would enhance the overall local amenity around each station, benefitting the local community.

The communities in the study area value heritage conservation and maintaining the built form of the area. Chapter 7 documents the effort undertaken during design development to integrate consideration of heritage impacts into the station upgrade options considered. The project provides opportunities to enhance the amenity and character of stations and surrounding areas with new structures, spaces, and materials, which are sympathetic to the existing heritage items. However, it is recognised that some members of the community may object to these new items. Some members of the community may also attach less value to future urban renewal and associated growth and development.

There is the potential for operational noise impacts in selected locations along the corridor. While the character of the noise experience would be similar to the existing situation, noise levels are predicted to increase compared to the existing situation. Noise impacts from the project would be further assessed during detailed design, and where necessary, reasonable and feasible mitigation measures would be incorporated into the final design and project delivery. Further information is provided in Chapter 13 (Operational noise and vibration).

The project would also result in the need to remove trees both in the vicinity of station areas and more broadly, along the corridor between Marrickville and Bankstown stations, to facilitate the range of works proposed. Chapter 9 provides indicative information on the number of trees predicted to be removed as a result of the project, however further work is being undertaken to quantify these impacts more accurately. Similar to the commitments made as part of the Chatswood to Sydenham project, Transport for NSW will be implementing a tree management strategy (described in Section 9.3.2) to preserve the maximum number of trees possible, including a commitment to replace removed trees in consultation with relevant stakeholders.

Economic benefits

Sydney Metro City & Southwest as whole, including the project, would contribute to economic growth by providing improved reach and faster access to education, employment opportunities, and access to a wider potential workforce.

Planning being carried out by the Department of Planning and Environment as part of the Sydenham to Bankstown urban renewal corridor indicates that the project would help to support about 650,000 jobs within 800 metres of stations by 2036.

Despite these substantial benefits, the business impact assessment (described in Chapter 18) indicates that the project has the potential to result in a small loss of local employment, due to the cessation of commercial leases at Dulwich Hill, Canterbury, Campsie, Belmore, Lakemba, Wiley Park, and Punchbowl stations. However it is likely that some of these employment losses would be able to be replaced locally. Further information is provided in Chapter 18.

The NSW Government's planned expansion of rail services would result in ongoing opportunities for train drivers across the Sydney Trains network.

Health and safety benefits

The project has been designed to promote walking and cycling and provide improved interchange facilities for customers, pedestrians and cyclists. The adopted transport access hierarchy specifically promotes station access by active transport modes (particularly pedestrians and cyclists). The opportunity for an active transport corridor has been identified, and the project has been designed to incorporate parts of this within the station areas. Further information is provided in Section 8.1.4.

Secure bike parking facilities would be provided at stations. These facilities have been designed to enable future expansion as demand increases.

Improved pedestrian and cycling facilities are expected to improve community access and connectivity between stations and surrounding areas and across the rail line. Improvements may encourage more pedestrian and cyclist activity, and potential for social interactions. More people, combined with better station design, lighting in and outside stations, and the application of CPTED principles during design development, would improve the perception of safety in the station environments. Improved active and passive surveillance would also discourage antisocial behaviour, such as graffiti and vandalism.

Overall, the project is expected to contribute to healthier and safer environments by increasing public and active transport opportunities, and potentially reducing private vehicle use. This would respond to community expectations to reduce environmental footprints, improve local air quality, reduce anti-social behaviour, and protect the environment.

Community infrastructure and facilities

Operation of the project would improve public transport access and connectivity to community infrastructure and social services, such as health, education, sport, recreation and leisure facilities, and community support services across the wider Sydney region. This could support:

- improved long term economic opportunities through better access to education and employment opportunities
- increased opportunities for social interaction, by encouraging people to take trips that they may have avoided due to unacceptable travel times, and improved access to meeting places at stations and within the wider Sydney region
- increased physical activity through improved access to sport, recreation, and leisure facilities
- enhanced community health outcomes, through improved access to health, medical, and community support facilities.

These outcomes would be augmented by the provision of those parts of the active transport corridor that would be delivered by the project (as described in Section 8.1.4). This corridor (once complete) would function as a key piece of community infrastructure in itself, enabling strategic walking and cycling connections to a number of important destinations.

Indirectly, the project would also provide opportunities for transformation and renewal around the stations. This could include new or improved community facilities to support future growth, such as arts and cultural facilities, community centres, meeting halls and libraries.

Further work by State government agencies, local government, and other stakeholders would inform more detailed social infrastructure planning as urban renewal activities progress along the Sydenham to Bankstown corridor.

Social benefits

As described in section 7.2, the design development process has been based on the recognition and reinforcement of the important role of the stations for communities in the project area, with two key elements adopted:

- The stations would have important functions as community places, in their own right and as a focal point within, or in close proximity to a town centre, thereby attracting a range of benefits and land uses, including:
  - reducing dependence on private vehicles

  - providing a public place for gathering, commercial/retail uses, and human interaction, and a focal point for surrounding communities
  - encouraging exercise, by promoting walking and cycling as an attractive form of transport to and from stations.
- The stations would contribute to the surrounding urban environment or 'place' in which they are located, and would:
  - act a catalyst for the nature and form of development within each of their catchments
  - attract people wanting to live close to, or who are dependent on, public transport facilities
  - operate as a transfer point between other transport modes, increasing mode share for more sustainable transport and meeting the increasing demand for public transport
  - act as a focal point in the local community which can draw people to an area, and enliven adjoining areas and support local businesses.

Social benefits anticipated to be delivered at each station are summarised in Table 17.3.

Table 17.3 Social benefits at each station

Location	Social benefits delivered by the project
All stations	• All stations are designed to be fully accessible, with station entrances and concourses that comply fully with DDA requirements. • The provision of bike facilities at each station would help make bikes an attractive mode of transport to and from stations.
Marrickville	• Improved safety (CPTED) outcomes and passive surveillance of the station plaza and Station Street. • Improved access to Schwebel Street and Illawarra Road via an accessible ramp on Station Street (west).
Dulwich Hill	• Improved access across the corridor through a new concourse and accessible cross corridor link, facilitating community cohesion. • Opportunity for greater community interaction and identity through the provision of a new paved forecourt area and station entrance. • The new station entrance would be closer to the light rail stop to improve interchange between the two transport modes. • Improved access to the station via a new pavement on Ewart Lane.
Hurlstone Park	• Provision of an enlarged station forecourt for community gathering and interaction, and improved safety and pedestrian movements in this area. • New pedestrian crossings would improve access to surrounding areas, including the Crinan Street commercial area, facilitating community cohesion.
Canterbury	• Improved access to potential new town centre and future development areas in the vicinity of the station through a new station entrance on Broughton Street, promoting accessibility, community interaction, and cohesion. • Provision of fully accessible access to existing bus stops on Canterbury Road to improve accessibility to public transport. • Opportunities for community interaction away from the busy Canterbury Road thoroughfare. • Potential improved access across the corridor through the provision of a new concourse and accessible corridor link should the safeguarded station entrance at Charles Street be constructed. This connection would improve permeability and the accessibility of the station precinct, and facilitate community cohesion.

Location	Social benefits delivered by the project
Campsie	• The new station entrance would be more open to Beamish Street, which would further consolidate the station as a focal point for the community. • The upgrade of Lilian Lane to a shared zone with improved lighting and wayfinding would contribute to the public realm and the safety of pedestrians, and improve integration. • The wider entry forecourt would significantly improve pedestrian amenity and enable greater community interaction.
Belmore	• New concourse would provide a new accessible cross corridor link, improving access, and facilitating community cohesion. • New station plaza would promote community gathering and interaction. • Accessible paths from Redman Parade would provide safe passage to Burwood Road and the existing pedestrian crossing, improving community connectivity.
Lakemba	• The new station entrance forecourts, and upgrades to the existing courtyard and memorial space on The Boulevarde, would maintain the existing sense of local pride and community identity. • Forecourt works, including new paving, would provide accessible access and extended areas for community gathering and interaction. • Improved access and integration would present opportunities for community interaction and a greater village identity.
Wiley Park	• New station entrance and associated public domain improvements would be set back further from busy King Georges Road, presenting a more comfortable, safe entrance, facilitating access, and community gathering and interaction. • The upgrade of pedestrian paths and bike parking would activate surrounding streets, providing increased opportunities for passive surveillance, and addressing perceived community safety issues.
Punchbowl	• The new station entrance, to be located further east along The Boulevarde away from busy Punchbowl Road, would create a safer, more spacious entrance, to better address emerging changes in Punchbowl's town centre, provide comfort and amenity for the community, and facilitate community integration. • The new station concourse would provide a new accessible cross corridor link, improving access to the town centre, and facilitating community cohesion. • The new northern entrance and interchange plaza would activate the southern edge of Warren Reserve, and improve pedestrian amenity, safety, and access across the park. • Accessible pedestrian links to and along The Boulevarde would enable easy access for pedestrians to other areas, enhancing community cohesion.
Bankstown	• New concourse would provide a new accessible cross corridor link, improving access, and facilitating community cohesion and integration. • New metro station entrances on North and South Terrace, with legible station entry points and spacious plazas, would reinforce the station's identity within the community. • Public domain improvements would provide comfort and amenity to meeting and waiting areas, facilitating community contact and interactions. • Presents opportunity for greater community interaction and an enhanced village identity.

17.3.4 Cumulative impacts

A number of major projects are either currently occurring in Sydney, or are scheduled to occur at the same time as the project. These include the Sydney Metro Chatswood to Sydenham project, various WestConnex projects and the Sydenham to Bankstown Urban Renewal Corridor. Potential cumulative social impacts during construction could include safety risks as a result of increased traffic, and increased amenity impacts as a result of noise, visual change, and dust emissions.

Cumulative traffic and access impacts leading to delays in travel time or difficulties accessing public transport during construction could also lead to indirect social impacts such anxiousness and concern during the construction period. Genuine consultation with the affected communities and

provision of adequate, advance information in different languages, will be critical to maintain trust. The Sydney Metro Place Managers would play a key role in this engagement and ongoing communication process.

The cumulative benefit of the project with other transport projects during operation is expected to result in a substantial net benefit for the community. Considered together with these other projects, the project would provide:

- increased capacity of the rail and arterial road networks
- faster, more frequent, and reliable public transport services
- improved accessibility at stations and connectivity with the public transport network overall
- improved access to employment areas and housing across Sydney
- an increase in economic activity, businesses and employment opportunities, particularly around stations.

This project and others currently occurring in Sydney are anticipated to complement urban renewal opportunities, being investigated by the NSW Department of Planning and Environment. The urban renewal initiatives would encourage development including new housing, employment areas, town centres and community infrastructure close to existing public transport networks. This would support population growth and increases to the supply of housing along the corridor, promoting transit-oriented development.

As a result, the following cumulative impacts could occur during operation of this and other projects and could be perceived as either negative, or positive impacts:

- increased housing density, population increases, and demographic changes as the projects provide improved connections and greater reach within Sydney
- changes to community values, including changes to the existing amenity and character
- changes to access, connectivity, and community cohesion
- changes to community infrastructure and services provision due to population increases and increased opportunities for communities to access infrastructure.

Urban renewal opportunities would need to balance perceived conflicts between demand and these potential impacts and the community reaction to them by careful planning and consultation.

17.4 Mitigation measures

17.4.1 Approach to mitigation and management

Implementation of a comprehensive approach to consultation, communication, and environmental management during construction, together with a rigorous monitoring program, would assist in minimising the potential for socio-economic impacts.

Temporary transport management plans would be prepared and implemented, guided by the Temporary Transport Strategy, to manage the movement of people during closures of stations and/or possessions, in order to minimise the potential impacts on the community. Further information on alternative transport arrangements during possessions and station closures, the Temporary Transport Strategy, is provided in Section 9.11.

Environmental management during construction would be guided by the Construction Environmental Management Framework (provided in Appendix D). The framework requires preparation and implementation of a workforce development plan as one of the components of a construction sustainability management plan. The aim of the plan would be to support local

employment and business opportunities, provide skills development, and increase workplace diversity.

As noted in Section 17.3.2, the framework would also require preparation of construction traffic management plans, which would be implemented to minimise disruption to the community, and manage access arrangements during construction.

17.4.2 List of mitigation measures

The mitigation measures that would be implemented to address potential socio-economic impacts are listed in Table 17.4.

Table 17.4 Mitigation measures – socio-economic impacts

ID	Impact/issue	Mitigation measures	Relevant location(s)
Design/pre-construction			
SO1	Socio-economic impacts	Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback to the project team. The existing community contact and information tools would remain in place throughout the duration of the project. Consultation prior to and during construction would involve the use of appropriate tools, including, but not limited to, tools such as community information sessions, forums, briefings, and displays; distribution of project materials in a variety of languages; door knocks; Place Managers; and site signage.	All
SO2	Community facilities	Prior to construction, consultation would be undertaken with sensitive community facilities (including aged care, childcare centres, educational institutions, and places of worship). Consultation would aim to identify and develop measures to manage the specific construction impacts for individual sensitive community facilities. These measures would be incorporated into the relevant management plans.	All
Construction			
SO3	Community facilities and infrastructure	Access to community facilities and infrastructure would be maintained during construction. Where alternative access arrangements need to be made, these would be developed in consultation with relevant service providers, and communicated to users.	All
SO4	Employment	A workforce development plan would be prepared and implemented during construction, to support local employment and business opportunities, provide skills development, and increase workplace diversity.	All

17.4.3 Consideration of the interactions between mitigation measures

Mitigation measures in other chapters that are relevant to the management of potential socio-economic impacts include:

- Chapter 4 (Stakeholder and community consultation) with respect to ongoing consultation during the EIS process, construction and operation phases
- Chapter 10 (Construction traffic, transport and access), particularly with respect to the management of traffic, public transport arrangements, and access during construction, including the implementation of temporary transport arrangements

- Chapter 11 (Operation traffic, transport and access) particularly with respect to the management of public transport, pedestrian and cyclist integration during operation
- Chapter 12 (Construction noise and vibration) with respect to management of potential noise impacts during construction, to minimise amenity impacts
- Chapter 13 (Operation noise and vibration) with respect to management of potential noise impacts during operation, to minimise amenity impacts
- Chapter 19 (Landscape character and visual amenity) with respect to management of potential visual amenity impacts during construction and operation
- Chapter 23 (Air quality) with respect to management of potential air quality impacts during construction
- Chapter 25 (Hazards, risk and safety) with respect to managing potential risks to the community during construction and operation.

Together, all these measures would minimise the potential socio-economic impacts of the project.

17.4.4 Managing residual impacts

Residual impacts and benefits following implementation of the mitigation measures described in Section 17.4.2, and those provided in other chapters, are predicted to include:

- increased employment, business, and development opportunities in the study area in both the short and long term
- small loss of local employment and provision of goods and services due to the cessation of commercial leases, some of which would be expected to be replaced
- improved amenity and access to transport facilities and community infrastructure
- visual and character changes within and around the stations, which may be considered to be either detrimental or beneficial by different members of the community
- improved customer and community safety, and opportunities for community interaction
- health benefits due to better access to public transport and options for active transport
- broader economic benefits.

On balance, it is considered that the residual impacts described above would result in a positive improvement for the local community.

18. Business impacts

This chapter provides a summary of the results of the business impact assessment. A full copy of the assessment report is provided as Technical paper 6 – Business impact assessment. The Secretary's environmental assessment requirements relevant to business impacts, together with a reference to where they are addressed, are provided in Table 18.1.

Table 18.1 Secretary's environmental assessment requirements – business impacts

Ref	Secretary's environmental assessment requirements – business impacts	Where addressed
10.1	The Proponent must assess social and economic impacts of the project. This must be done having regard to issues raised by relevant communities and businesses.	A summary of the results of the business impact assessment is provided in this chapter. The full results are provided as Technical paper 6. This chapter considers potential impacts to businesses. Land use and property impacts are considered in Chapter 16. Socio-economic impacts are considered in Chapter 17.
10.2	The Proponent must assess impacts from construction and operation on potentially affected properties, businesses, recreational users and land and water users including property acquisitions/adjustments, access, amenity and relevant statutory rights.	

18.1 Assessment approach

18.1.1 Legislative and policy context to the assessment

The EP&A Act establishes the framework for social and economic impacts to be formally assessed in land use planning and development assessment processes. 'Environment' is defined in the EP&A Act as, 'all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings'.

The assessment of business impacts was undertaken with regard to the aims, objectives, and actions, as they relate to local business planning, of the relevant local environmental plans and strategic plans for the study area, as described in Chapter 16 (Land use and property).

18.1.2 Methodology

This section provides a summary of the methodology for the business impact assessment. Further information is provided in Technical paper 6. The assessment involved:

- defining the study area and local business precincts for the purpose of the assessment
- reviewing data and reports from the Australian Bureau of Statistics, Transport for NSW's Transport Performance and Analytics unit, and the Inner West and Canterbury-Bankstown councils
- preparing a profile of existing business precincts that may be affected by the project
- consultation with businesses as described below, to identify relevant characteristics and issues
- analysing the outcomes of broader consultation undertaken (described in Chapter 4 (Stakeholder and community consultation)) with regard to potential issues and concerns for businesses
- assessing the potential impacts of construction and operation on businesses

- identifying measures to mitigate and manage potential impacts.

Study area and local business precincts

The study area for the assessment includes the project area and areas defined as 'local business precincts' for the purpose of the assessment. The local business precincts were identified using Transport Performance and Analytics travel zone data, which generally conforms to an area within a 400 metre radius of the stations. Within the study area, 10 local business precincts were identified, as described in Section 18.2.2 and shown in Figure 18.1.

Consultation for the business impact assessment

A representative survey of 100 businesses in the study area was undertaken in June 2016 for this assessment. The aim of the survey was to identify key business characteristics, and issues and concerns regarding the potential impacts of the project. The survey included a range of questions relating to awareness of the project, existing access and delivery requirements, and issues associated with the construction and operational phases of the project. The results of the survey identified information and issues used to focus the study, and to inform the impact assessment.

Assessment framework

The assessment involved identifying and evaluating potential changes to existing business conditions as a result of the construction and operation of the project. This included assessing both direct and indirect benefits and impacts. The assessment considered potential impacts such as the effect on passing trade, employment and recruitment prospects, access and connectivity to business premises, disruption to utilities, and business revenue.

18.2 Existing environment

18.2.1 Local business precincts

The local business precincts identified for the assessment are shown in Figure 18.1. The key business and employment characteristics of each precinct are summarised in Table 18.2 and in the following sections. A more detailed description of each precinct is provided in Appendix B of Technical Paper 6.

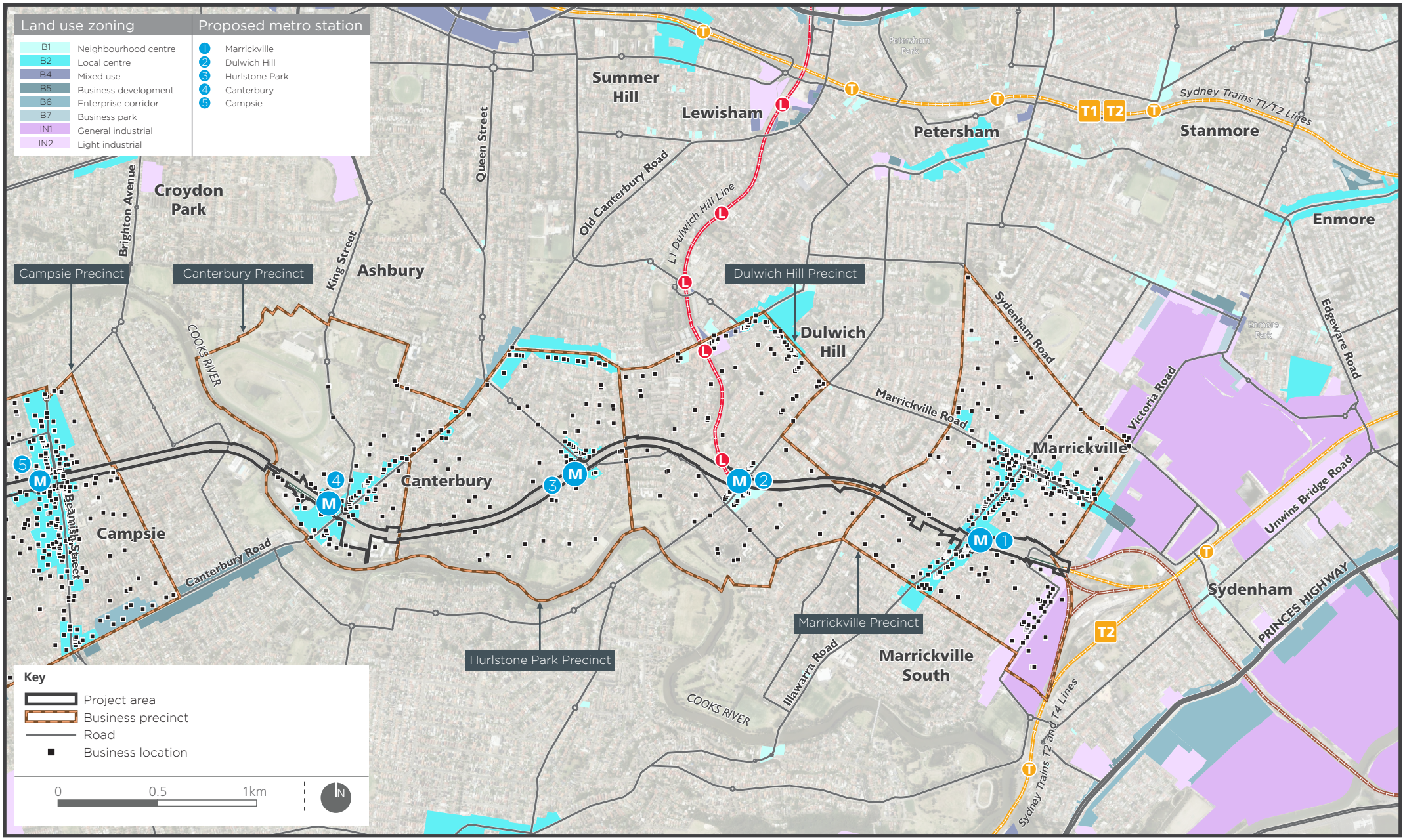
18.2.2 Business and employment profile

The local business precincts vary in size, as does the proportion of land used for business purposes, with distinct differences in business and industry profiles. In 2011, the Sydenham to Bankstown corridor hosted about 19,700 jobs. About 45 per cent of the employment was attributed to three major industries: health care and social assistance (18 per cent); retail trade (16 per cent); and accommodation and food services (11 per cent).

Bankstown's status as a regional centre is reflected in its role as the largest retail employer in the study area, employing about 1,670 people.

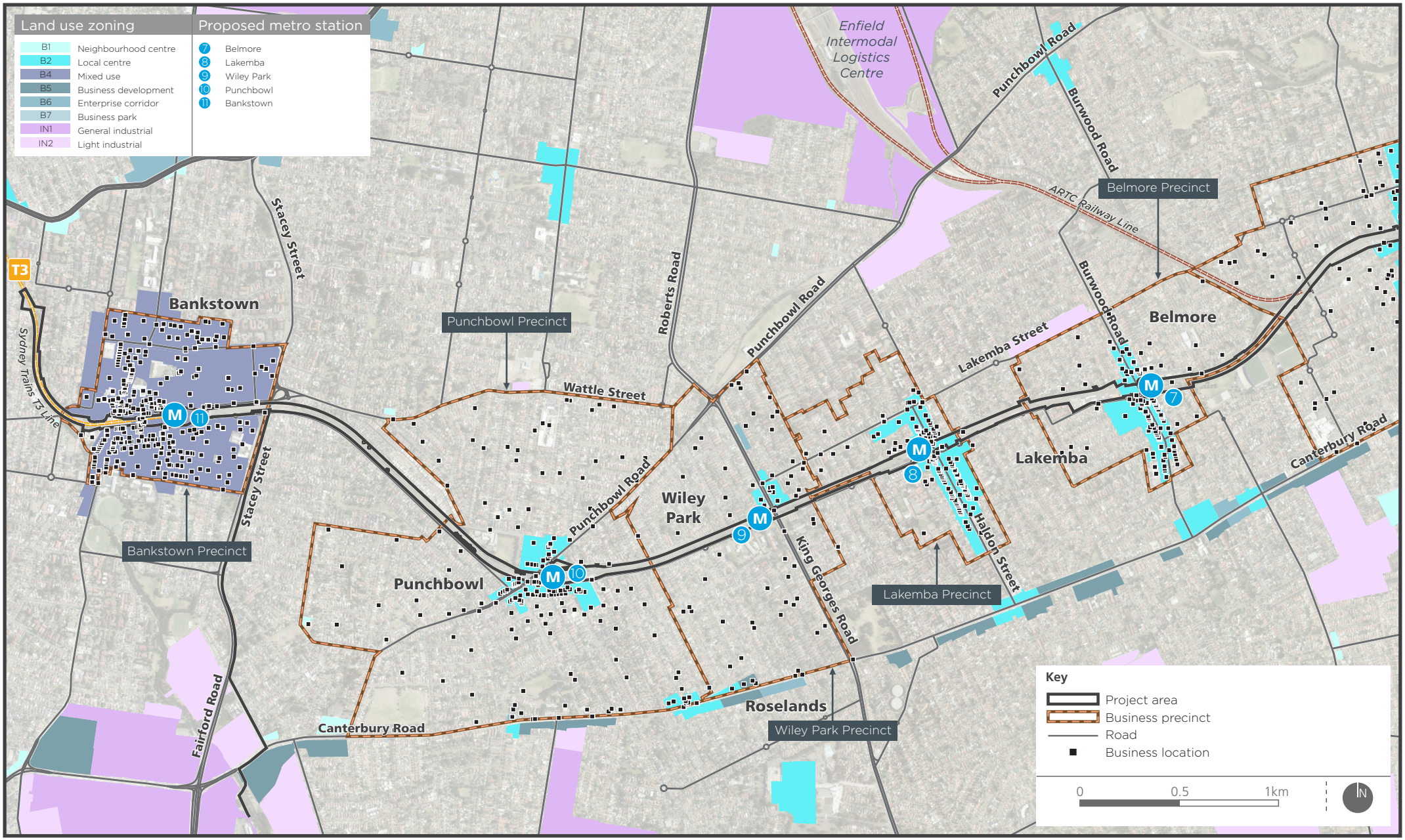
Campsie, which has the largest percentage of employment by industries, is the second largest centre along the rail corridor (behind Bankstown).

As shown in Table 18.2, the majority of local industries service household and local business consumption.



Local business precincts- map 1

FIGURE 18.1



Local business precincts - map 2

FIGURE 18.1

Table 18.2 Business and employment profile of local business precincts

Local business precinct	Size (ha)	% zoned for business or industry[1]	Number of businesses	Local business precinct employment	Main employment industries in the precinct by industry code[2]
Marrickville	131	21	590	1,645	Retail trade Health care and social assistance Manufacturing
Dulwich Hill	111	4	130	575	Health care and social assistance Accommodation and food services Professional, scientific and technical services
Hurlstone Park	109	5	85	580	Accommodation and food services Health care and social assistance Professional, scientific and technical services
Canterbury	97	7	160	796	Education and training Manufacturing Retail trade
Campsie	155	13	510	4,079	Health care and social assistance Retail trade Public administration and safety
Belmore	80	13	205	1,164	Accommodation and food services Health care and social assistance Retail trade
Lakemba	55	24	255	1,040	Health care and social assistance Education and training Retail trade
Wiley Park	117	3	70	488	Education and training Accommodation and food services Transport, postal and warehousing
Punchbowl	246	4	195	1,179	Education and training Health care and social assistance Retail trade
Bankstown	71	89	1,090	8,159	Retail trade Health care and social assistance Public administration and safety

Notes: 1. Includes B1, B2, B4, B5, B6, B7, IN1 and IN2 land use zones.
2. Based on the number of employees, with industry classifications as per ABS publication 1292.0 - Australian and New Zealand Standard Industrial Classification (ANZSIC).
3. Precincts are shown on Figure 18.1.

18.2.3 Employee travel method and place of origin

Journey to work data provides information about employment travel characteristics. The data indicates that a significant proportion of people employed in the study area live relatively close to the business precincts. Despite this however, the majority of people choose to travel to work by private vehicle.

Table 18.3 provides a breakdown of the preferred travel method for the 10 identified local business precincts for residents and employees. As shown in the table, the majority (about 60 per cent) of people use private vehicles to travel to work. Punchbowl, Lakemba, Wiley Park, Bankstown and Belmore have the highest private vehicle usage, while Marrickville and Dulwich Hill have the lowest. In all cases, more employees use private vehicles than residents do.

The second most popular travel mode to work is by train (about 17 per cent). A larger proportion of residents use the train to travel to work compared with employees across each of the business precincts. Punchbowl, Wiley Park, and Hurlstone Park precincts have the lowest train usage, while Marrickville has the highest. The next most popular journey to work mode is walking (about five per cent) and bus (about three per cent), with the remainder either working from home/not working (12 per cent) or using another mode (two per cent).

Journey to work data is important in determining the potential for passing trade, as people walking or catching public transport within or surrounding a local business precinct are generally more likely to contribute to passing trade. Precincts with potentially higher proportions of passing trade (that is, those with a higher proportion of residents or employees who travel to work by walking or catching public transport) are Marrickville, Dulwich Hill, and Campsie.

Table 18.3 Business precinct resident and employee preferred travel modes

Precinct		Travel method (as % of total number surveyed)					
		Train	Bus	Private vehicle	Other mode	Walked only	Worked at home/ did not work
Marrickville	Residents	35	6	40	3	5	11
	Employees	13	2	63	3	8	11
Dulwich Hill	Residents	29	6	47	3	3	12
	Employees	8	2	57	1	8	24
Hurlstone Park	Residents	26	4	53	2	3	12
	Employees	5	2	62	4	8	19
Canterbury	Residents	29	6	49	2	2	12
	Employees	8	3	71	1	4	13
Campsie	Residents	30	5	50	1	6	8
	Employees	8	3	67	1	8	13
Belmore	Residents	26	2	57	2	4	9
	Employees	9	1	71	3	6	10
Lakemba	Residents	31	2	54	1	4	8
	Employees	6	2	74	1	8	9
Wiley Park	Residents	26	1	62	2	2	7
	Employees	5	1	64	4	7	19
Punchbowl	Residents	20	1	68	1	2	8
	Employees	7	0	74	4	4	11
Bankstown	Residents	25	4	56	1	6	8
	Employees	7	3	73	1	4	12

18.2.4 Survey findings

Key findings of the business survey undertaken as part of the assessment include:

- Over 59 per cent of the businesses that responded to the survey were supportive or very supportive of the project.
- The majority of respondents (58 per cent) considered that key project benefits, including reduced traffic, more frequent and reliable public transport, improved pedestrian access to stations, and an improved direct rail system, would be beneficial for business.
- 79 per cent of the respondents thought that construction of the project would affect their business, with the main issues relating to customer access by vehicle, parking availability, revenue, traffic congestion, and general disturbance.
- 78 per cent of the respondents thought that operation of the project would affect their business, with the majority stating that increased revenues were likely.
- 49 per cent stated that property and land values would improve once the project was operational, 27 per cent thought that it would have no impact, and 23 per cent were unsure.

Further information on the survey results is provided in Appendix A of Technical paper 6.

18.3 Impact assessment

18.3.1 Risk assessment

Potential risks

The environmental risk assessment for the project, undertaken for the State Significant Infrastructure Application Report, identified the following as the main risks to businesses surrounding the project area:

- acquisition or lease cessation
- impacts on property values and rent return
- maintaining access and connectivity (including alterations to rail services, traffic network, servicing and delivery, pedestrian and cyclist movement, public transport, and parking)
- other impacts, including disruptions to utilities, noise and vibration, air quality, and visual amenity.

How potential impacts have been avoided or minimised

In general, potential impacts on businesses have been avoided or minimised by:

- designing the project to maximise opportunities to activate existing local centres, with regard to urban design and place-making considerations, as described in Chapter 7 (Design development and place making)
- minimising the need for private land acquisition outside the rail corridor
- retaining existing station locations and access to local centres
- maintaining connectivity on key routes in and around the local centres
- ongoing consultation with business owners as part of the community consultation strategy, as described in Chapter 4 (Stakeholder and community consultation)
- providing compensation to businesses subject to acquisition in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*.

18.3.2 Construction

Chapter 8 (Project description – operation) describes the works required to construct the project. This broadly includes works at stations, including works to upgrade road overbridges, works along the corridor between stations, and ancillary infrastructure. As described, the nature and scale of works to be completed would require temporary closure of stations as well as closures of the T3 Bankstown Line as a whole.

During periods when trains are not operating, alternative transport arrangements (in the form of rail replacement buses) would be implemented. Associated with these arrangements, and to facilitate construction more generally, a range of adjustments to the transport network and infrastructure would be required, including:

- temporary adjustments to vehicle, pedestrian and bike routes, including detours and some lane closures
- relocation of bus stops and taxi/loading zones
- changes to parking
- temporary lane/road closures and kerb adjustments
- changes to the scheduling of train services on other lines.

These changes would result in the potential for impacts and opportunities for existing businesses, particularly those close to the work. Consistent with the results of the business survey, the key potential impacts to businesses are:

- land requirements (acquisition and lease cessation)
- change in property values and rental return
- changes to access arrangements and connectivity, including parking
- amenity impacts
- loss or disruption to utilities
- increased demand for goods and services.

These potential impacts are considered below.

Land requirements (acquisition and lease cessation)

Land requirements for the project would affect business interests as follows:

- acquisition of two privately owned commercial lots near Marrickville Station
- cessation of six commercial leases at each of the following stations: Dulwich Hill, Belmore, Lakemba, Wiley Park, Canterbury, and Punchbowl
- cessation of 31 commercial leases at Campsie Station, as the buildings in which these leases are located would be removed.

Potential impacts on businesses affected by acquisition and lease cessation include:

- difficultly finding alternative properties, particularly for those businesses with very specific requirements
- limitations for some businesses to relocate, particularly those offering services at stations
- inconvenience and loss of productivity during relocation
- expense of relocating or purchasing another property
- potential shift in trade catchment and need to re-establish a customer base.

The majority of the commercial lease cessations would occur at Campsie Station, where the project would result in a loss of 31 businesses in one location immediately adjacent to the station. Businesses who have their leases ceased may choose to relocate to another location within the same catchment and continue trading. There may be the opportunity for businesses to re-establish in the same area following construction. Alternatively, they could move out of the catchment altogether, resulting in a permanent loss to the local economy, including revenue, employment opportunities, and specific services provided to the community.

It is considered unlikely that all the businesses would be able to relocate into the local area of the station. Other businesses may benefit as a result. While the impact on individual businesses would be significant, the notification and proposed compensation process (for acquired properties) would aim to ameliorate this impact as far as practicable.

Compensation paid to landowners where land or property is to be acquired would be in accordance with relevant legislation. Transport for NSW recognises that each business has specific and individual needs. Therefore, the property acquisition process includes the establishment of individual tenancy agreements between the business owner and Transport for NSW. Where compensation is payable, consideration is given to the following, where reasonable, for inclusion in the compensation payment:

- legal costs
- valuation fees
- lease transfer fees
- outsourcing costs for relocation services and other costs directly associated with the move
- other financial costs incurred as a direct result of the acquisition of the leasehold interest including re-establishment costs on a like for like basis.

The significance of property acquisition or lease cessation on business interests would vary in scale across the local business precincts, depending on

- the number of businesses acquired
- their contribution to the local economy
- their ability to re-establish in the local area
- the ability of the remaining businesses and local business precinct to absorb the changes.

Land acquisition and lease cessation associated with the project is considered to result in a moderate adverse impact, which would be reduced to only a slight adverse impact following implementation of the proposed business management plan (described in Section 18.4.1) and following consideration of compensation in accordance with legislation.

Property values and rental return

Property and rent values have a tendency to change in response to various positive and negative influences in a given area. Extended periods of construction, whether individual or cumulative due to other development, can place downward pressure on prices and returns in the short term. However, general market forces remain the key influence in the medium to long term.

The impact of construction on property value or rent returns would be based on the perceived project benefits or impacts. Perceived impact is based on uncertainty, and is difficult to quantify. The more information people have about the risks to business, property, and their immediate environment, the less of a risk it is perceived to be.

The choice of a business to close or relocate during a project is due to a long term view that the property value or rental return may be detrimentally affected as a result of the project. A multi-year

construction project can affect a person's ability to sell a property within the construction period – the property may take longer to sell, or construction may limit the market to longer term investors.

Of business survey respondents, 41 per cent thought that an increase in land values would be likely as a reflection of future development opportunities and improved future access to the area. However, this perception did not correlate with the rental return on properties, with respondents suggesting that rent should or would decrease during construction to compensate businesses for reduced amenity and disruptions to operations.

As potential buyers are usually aware of the temporary nature of construction and the longer term strategic benefits of infrastructure projects, the impact on property values is likely to be minimal, with the market more likely to reflect broader trends.

In summary, there is considered to be only a slight temporary potential for impacts to property values and rental return, and long term impacts as a result of construction are considered unlikely.

Access and connectivity

Temporary changes to public transport provision, road transport infrastructure, and active transport networks have the potential to affect customer travel patterns, and access to, and servicing of, businesses. These potential impacts are considered below.

Station closures and possessions

As outlined above and described in Section 9.7, construction would involve periodic temporary closures of the T3 Bankstown Line as well as stations during the construction period. The temporary transport management plans to be implemented would detail the frequency and routing of replacement buses, the effect on transport infrastructure (such as bus stops, road closures, and diversions) and the modifications required.

Closures of stations and changes to rail services would temporarily alter commuter travel patterns, which could affect the amount of passing trade for businesses. It is expected that a small proportion of commuters would choose not to use rail replacement buses and instead drive to work. Additionally, changes to bus stops may reduce trade at particular locations, while at other locations (such as temporary bus stops) there may be an increase in trade during the possession period.

Changes to rail service arrangements and the use of rail replacement buses would increase the amount of traffic on key roads, which has the potential to affect employee travel times and access patterns. It is noted that only a third of the business survey respondents believed that staff travel times would be affected.

It is predicted that station and track closures would have the potential to affect mainly those businesses located close to the stations that have a higher reliance on passing trade, including food services and some retail stores, particularly during the longer duration possessions. Overall, the potential impacts would range from slightly negative to moderately negative. A summary of the key potential issues and impacts associated with station and track closures is provided in Table 18.4.

Table 18.4 Potential impacts of station and track closures

Key issue	Potential impacts
Provision of rail replacement buses	• temporary change in customer travel patterns • may affect passing trade • increase in road congestion and delays, with the potential to impact the efficient provisioning of businesses (i.e. deliveries) • increased customer or employee travel times (compared to current rail services), which may lead to reduced productivity as employees may be late to work or need to leave earlier
Changes to key infrastructure locations, such as temporary bus stops	• increase in trade near temporary bus stops • decrease in trade at some businesses, due to temporary closure of station and changed pedestrian routes
Increases in number of buses and layover facilities	• reduced business visibility if buses are parked outside of businesses • may reduce access to business for deliveries and customer convenience as a result of changes to loading zones, parking etc • reduced amenity around bus stops, including as a result of potential noise and visual impacts

Road and pedestrian network changes

The project would require a number of temporary changes to the road network to facilitate construction. In particular, these would be required to undertake works to road overbridges crossing the rail corridor, which are important means of access for business customers, employees, and deliveries. Depending on the business, temporary changes to the road network could result in inefficiencies, potentially reducing revenue and providing a disincentive for visiting the area.

Table 18.5 outlines how different industry types may be affected by road network changes.

Table 18.5 Sensitivity to road network changes

Type of industry[1]	Sensitivity/ impact
Manufacturing Transport, postal and warehouse Wholesale trade	These industries are generally more dependent on deliveries and the distribution of goods. Alterations to local road networks may result in: • extended travel times and vehicle operation costs • delays in receiving or distributing goods • reduced transport efficiency and reliability of deliveries to customers • increased overheads for businesses.
Retail trade Accommodation and food service	These industries are generally more reliant on passing trade. Alterations to local road networks may result in: • reduction in passing trade and subsequent sales • loss of trade to more accessible centres, with the potential for long term changes in consumer behaviour • reduction in amenity due to traffic congestion, and subsequent reduction in business revenue and potential repeat customers • delays in receiving goods.
Education and training Health care and social assistance Public administration and safety	These industries generally have large workforces or a large client/student/visitor base. Alterations to local road networks may result in increased travel time for employees, students, clients, and visitors.

Note: 1. Industry classifications as per ABS publication 1292.0 - Australian and New Zealand Standard Industrial Classification (ANZSIC)

The main potential impacts as a result of bridge works are summarised in Table 18.6.

Table 18.6 Potential impacts as a result of bridge works

Precinct	Bridge	Potential impacts
Marrickville	Illawarra Road Charlotte Avenue Livingstone Road	Diversions may affect peak weekday traffic volumes along Illawarra Road and Marrickville Road, increasing traffic congestion, reducing delivery and servicing efficiency, and in some instances, diverting vehicles away from the town centre. Businesses close to Marrickville Station, such those as along Illawarra Road and Station Street, would be particularly affected by the works to the Illawarra Road overbridge.
Dulwich Hill	Wardell Road Ness Avenue/ Terrace Road	Diversions may affect business visibility and passing trade, with traffic directed away from the local centre.
Hurlstone Park	Crinian/Duntroon Street	Diversions may affect business visibility and passing trade, with traffic directed away from the local centre.
Campsie	Beamish Street Loch Street	Diversions may increase congestion through the local centre, affecting business servicing and delivery efficiency. Diversions may also affect the visibility of businesses and passing trade along Beamish Street, south of Campsie Street and north of Evaline Street.
Belmore	Burwood Road Moreton Street	Diversions may affect business servicing and delivery efficiency, business visibility, and passing trade, with traffic directed towards or away from the local centre.
Lakemba and Punchbowl	Haldon Street	Diversions may affect business visibility and passing trade for businesses along Haldon Street, between Lakemba Street and Gillies Street. Increased traffic congestion may affect business servicing and delivery efficiency for businesses along Haldon Street.

Changes to the road network as a result of construction activities has the potential to impact the business precincts and the transport efficiency of the broader region. Local traffic congestion was raised as a concern by about 64 per cent of businesses surveyed. Businesses that are more heavily reliant on deliveries and distribution as well as those dependent on amenity (such as cafes/restaurants with outdoor dining) would generally be the most affected.

Parking

About 68 per cent of business survey respondents identified parking as a major perceived issue during construction. A number of respondents noted that they have no access to a designated or off-street loading area, relying on on-street loading zones or parking for deliveries and services.

During construction, some on and off-street parking spaces would be unavailable, either intermittently, or for the duration of the construction period. These spaces are typically located immediately adjacent to the rail corridor, and the impacts of the temporary loss of these spaces for businesses in most precincts would be minor. However, at some stations this loss is likely to be more pronounced. For example, about 48 short-term parking spaces around Belmore Station would be unavailable during construction and would also not be reinstated when the project commences operation (potential operational impacts are considered in Section 18.3.3). This has the potential to affect any businesses on Burwood Road and Bridge Road that depend on easy access to nearby parking. It is noted that surrounding streets contained timed parking areas that are currently not fully utilised, which would provide opportunities for customers to find alternative parking.

Implementation of the alternative transport arrangements during possession periods would also affect a small number of additional on-street parking spaces (to accommodate temporary bus

zones) near Campsie, Belmore, Lakemba, Wiley Park, Punchbowl, and Bankstown stations. In addition, some loading zones could be temporarily affected during these periods.

While construction workers would be encouraged to take public transport to work, it is likely that some would drive and require parking. This may result in increased competition for parking near stations. A review of the parking capacity near each station was undertaken as part of the traffic, transport and access assessment (Technical paper 1). The results of the review indicated that there is the potential for parking near Marrickville, Campsie, Lakemba, and Bankstown stations to be more constrained by any increase in parking demand during construction. There is considered to be sufficient capacity to absorb additional worker parking requirements near other stations.

Changes to parking arrangements, include the temporary removal of some existing parking spaces, has the potential to affect deliveries and convenience for business employees and customers. Convenient and accessible parking is particularly important for retail and service-based businesses, which require quick and efficient access for customers. Survey respondents suggested that changes in parking arrangements could potentially lead to decisions by customers/clients to visit other businesses/locations or to use alternative services. This could impact business revenue and the productivity of the local economy.

Temporary changes to parking in the local business precincts near the stations has the potential to result in a slight to moderately adverse impact on some businesses. The more impacted businesses would be those in areas where parking is already in short supply, those located close to stations, and/or retail or service-oriented businesses that require quick and efficient access for customers.

Amenity impacts

Construction has the potential to result in the following amenity impacts for businesses and their customers:

- increase in noise as a result of the operation of construction plant and equipment
- increase in road traffic, and associated noise for businesses around the project area and along construction access routes
- increase in dust generated during construction
- visual impacts due to interruption of existing sight lines, reduced natural light, loss of business visibility, removal of trees, and other changes to streetscapes.

Concerns regarding the potential for noise, vibration, and dust during construction were raised by 65 per cent of the business survey respondents, with noise identified as the main concern. Amenity impacts could affect customer behaviour, reduce trade, and impact on business operation and productivity. Businesses in the following industry sectors are more likely to affected by amenity impacts:

- accommodation and food services
- retail trade
- health care and social assistance.

Based on the proximity of works, businesses in the following areas may be exposed to adverse amenity (noise and vibration) impacts during construction:

- Marrickville – works, including station and bridge works are proposed close to local businesses on Station Street and Illawarra Road, including businesses providing health care, accommodation, and food services

- Campsie – station, bridge, track, and substation works have the potential to result in amenity impacts to businesses on North Parade, South Parade, and Lilian Lane. This may affect businesses providing accommodation and food service, retail trade, and health care and beauty services.
- Lakemba – station and track works have the potential to result in amenity impacts, particularly to businesses involved in accommodation and food services, retail trade, and health care and social assistance located on Railway Parade and The Boulevarde.
- Punchbowl – station and track works have the potential to result in amenity impacts to businesses on The Boulevarde and Urunga Parade, including businesses providing accommodation and food services, retail trade, and health care and social assistance.
- Bankstown – the regional centre surrounds the station, works have the potential to result in amenity impacts to businesses along North Terrace, South Terrace, and Bankstown City Plaza, including businesses providing accommodation and food services, retail trade, and health care and social assistance.

Visual amenity issues have the potential to be neutral or slightly adverse across all business precincts and areas.

Potential amenity impacts are considered in more detail in Chapters 12 (Construction noise and vibration), 19 (Landscape and visual impacts), and 23 (Air quality). Amenity impacts would be temporary during construction, and would be managed by the implementation of industry standard mitigation measures, as outlined in those chapters.

Utility disruptions

Businesses depend on the availability of services, particularly the supply of electricity and water. Disruption to utility services, arising from accidental or planned shutdowns, was a concern raised during the business survey. The disruption of services, even for short periods, can cause inconvenience, and impact on productivity and revenue. Disruptions due to utility outages could potentially impact on:

- businesses that rely on electronic transactions (e.g. using an EFTPOS machine)
- businesses such as manufacturing or industrial that are more reliant on electricity and communication networks to run computers, machinery, equipment, and/or communication systems
- businesses such as restaurants and cafes that rely on clean potable water, refrigeration, electricity, and gas for the preparation and operation of food and beverage services.

To some extent, all businesses may be affected by the accidental disruption of services. However, some businesses may be particularly sensitive to disruptions at any time, including health care providers, accommodation and food services, retail and wholesale trade, and manufacturing. The longer the outage, the greater the impact would on productivity and revenue.

To minimise the potential for impacts and inconvenience to businesses, interruptions to utilities would be planned and communicated in advance to affected premises. The Utilities Management Framework (provided in Appendix I) would be implemented to minimise the potential for impacts to businesses. The framework requires consideration of all potentially affected businesses prior to changes to utilities, and for those changes to be discussed with any business owners likely to be affected.

Increased demand for goods and services

Some businesses may benefit from an increase in workers in the local area, and potential diversions in pedestrian and vehicle travel routes during construction. These benefits include:

- benefits for businesses located close to construction sites or along access routes, particularly those that sell goods or services to construction workers or related industries (for example, cafes, coffee shops, takeaway food, service stations and convenience stores)
- in certain local business precincts, diversions may lead people into local business precincts, potentially increasing passing trade opportunities and exposure of businesses
- generation of regional demand for services, such as construction recruitment agencies, construction companies, and resource suppliers.

Most of the local business precincts have convenience retail and food service businesses located close to the project area. These businesses may benefit from the presence of the construction workforce.

Potential increases in demand for goods and services are likely to result in a slight to moderate positive impact, potentially resulting in an increase in trade and revenue.

18.3.3 Operation

Operation of the project would largely result in major benefits to businesses at the local and regional level, as a result of the enhanced capacity and frequency of rail services, which would improve access to the global economic corridor of the Sydney CBD, North Sydney, Chatswood, and Macquarie Park. Adverse impacts to local businesses would be more limited, and would include the potential for increased commercial rents and increased levels of competition.

The key potential impacts during operation relate to the following, and are considered below:

- access and connectivity
- amenity impacts
- land use impacts
- increased urban renewal and development capacity.

Access and connectivity

Changes to public transport, road networks, and active transport networks during operation have the potential to result in both benefits and negative impacts on access and connectivity for business owners, employees, and customers.

Improved rail capacity and increased service frequency

The project would provide high frequency, high capacity, direct rail services between the study area and the global economic corridor. It has the potential to result in the following benefits for local businesses:

- Increased capacity for businesses to attract a larger customer market. The frequency, reliability, and efficiency of metro services may encourage short trips between local business precincts, improve customer access, and improve passing trade.
- Potentially longer peak times may provide opportunities for businesses. About 39 per cent of survey respondents acknowledged the potential positive impact of the project on enhanced customer access.

- Enhanced connectivity may support the clustering of businesses (such as start-ups and entrepreneurs) that are looking for more affordable locations, which are highly connected and well supported and serviced.
- Larger business precincts, such as Campsie and Bankstown, may become more attractive for national and multi-national brands as a place for new business investment and growth. The vast majority (94 per cent) of survey respondents believed that a direct, high frequency, and more reliable rail service between the Sydney CBD and Bankstown would enhance business opportunity, and would be better for business operations.
- Enhanced workforce accessibility may create a larger employment pool, increase staff choice, and broaden the available skill set to businesses.

An increase in rail service capacity and frequency is expected to benefit businesses across all 10 business precincts.

Active transport networks

The project has been designed to promote active transport modes to and from stations. Changes to pedestrian and cyclist movements through the local business precincts have the potential to impact passing trade, customer numbers, and business visibility. The changed location of station entries, transport interchange improvements, and new pedestrian paths and crossings have the potential to impact passing trade, drawing people towards some businesses and away from others. Improved safety and accessibility of businesses via new accessible paths and cross-corridor connections could also facilitate improved access to local centres, encouraging people to visit centres more often, and increasing the likelihood of additional expenditure.

Improvements in active transport connections to the stations could result in improvements across all local business precincts in terms of passing trade, business exposure, connectivity, and business revenue. The increase in patronage would potentially benefit the majority of businesses, however, those types of business that benefit from passing trade (such as convenience stores, cafes, pharmacies) are likely to experience the greatest potential revenue growth. This may also result in improved property prices and rental return.

The improved cycling facilities and accessible pedestrian paths and spaces would result in a slight to large positive impact in each business precinct.

Connectivity

The project design integrates transport options at each station, by providing for taxi, buses, light rail (at Dulwich Hill Station), and private vehicle facilities in close proximity. This would improve the ease by which people are able to access the public transport network, and connect with rail and other transport modes. Improved connections for active transport to and from stations would also be provided at each station.

Improved connectivity, and higher capacity and frequency rail services, would be attractive to more customers, increasing the exposure of businesses, and the overall vibrancy of local business precincts. Improved public transport integration can also act as a catalyst for development investment, attracting more residents and businesses to a location, increasing potential trade opportunities.

Improved transport integration and connectivity with local businesses is considered to provide a moderately positive impact to all businesses in the study area.

Parking

Convenient and accessible parking plays a critical function for most businesses. A reduction in parking availability potentially deters customers from visiting a shopping area, affecting business revenues.

The business survey identified that parking availability was one of the biggest issues of concern across the local business precincts. Consequently, there were mixed opinions regarding the availability of parking and customer access once the project becomes operational. Of the business survey respondents, one quarter believed that parking would worsen, and 45 per cent stated that it would not improve from current levels. These concerns were largely related to the permanent loss of on-street parking and the likely addition of more commuters wanting to park close to stations.

Transport for NSW has committed to maintaining the same number of dedicated commuter car parking spaces across the whole corridor. However, the project would result in an increase in the number of dedicated commuter parking spaces across the corridor, with an additional 80 spaces proposed to be provided at Campsie Station. As a result of proposed station area improvements, reconfiguration of kerbside areas at stations, and better integration of transport modes, there would be some losses to on-street and off-street parking immediately surrounding stations. The resulting impact on off-street parking would be the loss of about 58 spaces in total at Belmore and Bankstown stations, plus about 20 spaces at Campsie. These spaces are located adjacent to the stations and/or the rail corridor, and are not designated commuter parking.

The parking review undertaken for the traffic, transport and access assessment concluded that there is considered to be sufficient parking in surrounding areas to accommodate the predicted loss of parking at Belmore and Bankstown stations. However, at Campsie Station, there is already limited availability of parking, and the potential loss of parking may increase competition for employee and customer parking.

Overall, the impact of these changes to the availability of parking is considered to be neutral at most stations, although could be slightly adverse for some businesses at Campsie Station.

Amenity impacts

Noise and vibration

Operational noise and vibration is considered in Chapter 13 (Operational noise and vibration). Businesses can be sensitive to noise if it exceeds comfortable levels or continues for extended periods of time. An exceedance of comfortable noise levels can affect employee health and wellbeing, employee productivity, the ability to communicate and interact, and workplace ambiance.

The operational noise assessment predicts that noise levels may increase in some areas. However, there would be limited impacts to amenity in the majority of areas. In summary, there is expected to be a slightly adverse impact on business amenity in areas closest to the rail corridor.

Visual amenity

The impact of the project on visual amenity is considered in Chapter 19. The project would result in changes to local visual amenity due to the presence of new and upgraded infrastructure, public gathering spaces, landscaping, and urban design features. The majority of these features would be located in and around stations.

All local business precincts are expected to experience changes in visual amenity due to the upgraded stations, plaza areas, and ancillary facilities. In the majority of cases, the changes would be considered to be positive compared to the existing environment. Enhancements to the visual amenity of stations (including improved night-time lighting) are expected to lead to an improved experience, generally resulting in people choosing to stay for longer periods and returning in the future.

Overall, the changes to the station areas are expected to result in a neutral to moderately positive impact to local business in the immediate vicinity of stations.

Retail opportunities

As a result of the station upgrades and ancillary works, the project would result in the provision of potential retail opportunities at each station. These are shown in the station layout drawings provided in Chapter 8. These also have the potential to benefit local businesses and owners. Some of these retail opportunities may be considered or possibly taken up by businesses that would be acquired. Potential opportunities identified include:

- Marrickville – new retail/hospitality opportunities along the Station Street shared zone.
- Canterbury – potential for small scale retail in the northern plaza and retail at the new Canterbury Road entrance. The new northern plaza would complement plans for a new town centre along Robert Street North adjacent to the station.
- Campsie – transformation of a portion of Lillian Lane to a shared zone, promoting pedestrian connectivity. The larger public plaza off Beamish Street would provide new retail opportunities.
- Belmore – better integration with nearby commercial and residential areas. The southern public plaza would provide an opportunity for a new retail development.
- Lakemba – the proposed new plaza to the north of the station would provide an opportunity for a small scale retail development.
- Wiley Park – the proposed new plaza at the entrance to King Georges Road would provide an opportunity for a small scale retail development.
- Punchbowl – surrounding land uses to the north of the station would benefit from improved amenity and increased pedestrian traffic. Existing retail to the south of the station would benefit from the improved plaza off The Boulevarde. There would also be an opportunity for a small retail development within the southern station entrance forecourt adjacent to The Boulevarde and existing retail spaces.
- Bankstown – provision of a new cross-corridor connection to the east of the existing station entrance would enhance the integration of the station with surrounding land uses (including businesses). Upgrades of the southern and northern plazas would promote revitalisation of surrounding land uses, including opportunities for business.

Retail development can increase the revitalisation of an area, attract new ‘anchor tenants’ (which in turn can raise the profile of a location), and increase the visibility and opportunity for existing retailers to capture passing trade. It is considered that these retail opportunities would result in a moderate positive impact for local businesses.

Urban renewal and land development

The draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* identifies opportunities for urban renewal along the Sydenham to Bankstown corridor over the next 20 years. The strategy identifies opportunities for additional housing and employment within walking distance of each of the stations.

This renewal and development may act as a catalyst for increased retail investment, as a result of the enlarged customer market. The predicted increase in population around the stations identified in the strategy would provide opportunities for redevelopment within the local business precincts, and subsequent opportunities for businesses to leverage a growing resident and employer population.

While these opportunities could be considered to be a moderately positive impact for new and existing businesses, renewal and population growth might also result in increased business

competition, greater demand for parking, and a potential stimulant for rental increases. A long term positive impact on property values may also result.

18.3.4 Cumulative impacts

Potential cumulative impacts to businesses as a result of other projects being undertaken simultaneously in the surrounding area could include:

- temporary changes and general disruption to transport services
- interruption of utilities
- temporary changes to property access
- reduction in parking availability for customers and/or staff
- increased travel times for workers
- reduction in amenity (as a result of construction noise, traffic congestion, changes to visibility, and construction dust).

Measures to avoid, reduce, or mitigate the potential impacts of the project are collated in Chapter 28 (Synthesis of the Environmental Impact Statement). These measures would reduce the likelihood and severity of cumulative impacts should they occur. Construction planning and co-ordination would aim to ensure that the project is scheduled and managed to minimise the potential for cumulative impacts to occur.

The cumulative impact of the project during operation is expected to be a substantial net positive impact for the community. Considered together with other major transport initiatives in Sydney, such as WestConnex and the broader Sydney Metro project, the project would provide:

- increased business opportunities and enlarged customer markets
- improved local amenity
- improved access and connectivity within the project area and to other areas in the Sydney region
- improved transport options and integration
- improved safety, health benefits, and access to active transport options
- stimulus for the provision of new services and facilities.

18.4 Mitigation measures

18.4.1 Approach to mitigation and management

A business management plan would be developed, documenting key issues relating to business impacts by locality, with a particular focus on proactive consultation with affected businesses by Place Managers. It would include:

- identification of specific businesses which are sensitive to construction activity disturbances
- a summary of the commercial character of the locality, its general trading profile (daily and annually) and information gained from the business profiling such as:
  - operating hours
  - main delivery times
  - reliance on passing trade
  - signage or advertising that may be affected
  - customer origin

  - other specific information that will need to be considered in construction scheduling and planning
- locality-specific business mitigation measures, including:
  - business management strategies for each construction site (and/or activity), identifying affected businesses and associated management strategies, including the employment of Place Managers, and specific measures to be put in place to assist small business owners adversely impacted by construction
  - other matters raised in consultation with affected business
- a business consultation forum linked to the consultation strategy for the project (described in Chapter 4)
- definition of the roles and responsibilities in relation to the control and monitoring of business disturbances
- written notifications confirming in advance the dates and timing of construction works being planned, including maps and diagrams to illustrate the information for easy identification of the measures that would be implemented
- when required, noise, dust, and vibration monitoring, auditing, and reporting procedures
- procedure for reviewing performance and implementing corrective actions
- description of the complaints handling process.

In conjunction with the business management plan, a small business owners' support program would provide assistance to small business owners adversely impacted by construction. The assistance provided would involve working with small business owners to identify ways of minimising the impacts of construction by providing wayfinding signage, maintaining visibility where practicable, and facilitating access and deliveries at critical times. The program would be administered by a retail advisory/support panel established by Transport for NSW.

18.4.2 List of mitigation measures

The mitigation measures that would be implemented to address potential business impacts are provided in Table 18.7.

Table 18.7 Mitigation measures – business impacts

ID	Impact/issue	Mitigation measures	Relevant location(s)
Pre-construction and construction			
BI1	Managing construction impacts	A business management plan would be prepared and implemented during construction, to define the location specific measures and strategies to minimise impacts on individual businesses during construction. The plan would also include: • a business consultation forum • roles and responsibilities • monitoring, auditing, reporting, and complaints management procedures.	All
BI2	Supporting businesses during construction	A small business owners support program would be developed and implemented to provide assistance to small business owners adversely impacted by construction. The program would be administered by a retail advisory/support panel established by Transport for NSW.	All

18.4.3 Consideration of the interactions between mitigation measures

As described in Section 28.4, the Construction Environmental Management Framework requires preparation of a workforce development plan as one of the components of a construction sustainability management plan. The workforce development plan would be prepared to support local employment and business opportunities, provide skills development, and increase workplace diversity. Together, the workforce development plan and the business management plan would assist in minimising the potential impacts of construction on businesses.

Mitigation measures identified in other chapters that are relevant to the management of potential business impacts include:

- Chapter 4 (Stakeholder and community consultation), with respect to ongoing consultation with affected communities prior to and during construction
- Chapter 10 (Construction traffic, transport and access), particularly with respect to the management of traffic, public transport arrangements, and access during construction, including the implementation of temporary transport arrangements
- Chapter 12 (Construction noise and vibration), with respect to management of potential noise and vibration impacts during construction, to minimise amenity impacts
- Chapter 13 (Operational noise and vibration), with respect to management of potential noise and vibration impacts during operation, to minimise amenity impacts
- Chapter 16 (Land use and property), with respect to land acquisition process and temporary use of areas for construction
- Chapter 19 (Landscape character and visual amenity), with respect to management of potential visual amenity impacts during construction and operation
- Chapter 23 (Air quality), with respect to management of potential air quality impacts during construction.

Collectively, these measures would minimise the potential business related impacts of the project.

18.4.4 Managing residual impacts

The main potential for residual impacts to businesses would result from impacts to access and connectivity during construction, and impacts to the availability of on-street parking during operation.

19. Landscape character and visual amenity

This chapter provides a summary of the results of the landscape and visual impact assessment. A full copy of the assessment report is provided as Technical paper 7 – Landscape and visual impact assessment. The Secretary's environmental assessment requirements relevant to landscape and visual impacts, together with a reference to where the results of the assessment are summarised in this chapter, are provided in Table 19.1.

The chapter also considers the potential impacts of the project on the existing urban fabric (requirement 14.1(d). The potential for visual impacts on heritage items (in terms of heritage significance) was assessed by the non-Aboriginal heritage impact assessment (Technical paper 3), and the results of this assessment are summarised in Chapter 14 (Non-Aboriginal heritage).

Table 19.1 Secretary's environmental assessment requirements – visual and landscape

Ref	Secretary's environmental assessment requirements – visual and landscape	Where addressed
14.3	The Proponent must assess the visual and landscape impacts of the project and ancillary infrastructure on:	A summary of the results of the landscape and visual impact assessment is provided in this chapter. The full results are provided as Technical paper 7.
	(a) views and vistas;	Section 19.3
	(b) streetscapes, key sites and buildings;	Section 19.3
	(c) landscaping, green spaces and existing trees;	Section 19.3
	(d) heritage items, including Aboriginal places and environmental heritage; and	The project would not impact any Aboriginal places. Visual impacts on environmental heritage are considered in Chapter 14 (Non-Aboriginal heritage).
	(e) the local community	Section 19.3

19.1 Assessment approach

19.1.1 Policy context to the assessment

The landscape and visual impact assessment was undertaken with reference to the following guidelines, policies, and standards:

- *Environmental Impact Assessment Guidance Note – Guidelines for landscape character and visual impact assessment* (Roads and Maritime, 2013b)
- *Beyond the Pavement: urban design policy, procedures and design principles* (Roads and Maritime, 2014)
- *Guidelines for Landscape and Visual Impact Assessment,* (Landscape Institute and Institute of Environmental Management and Assessment, 2013)
- *AS 4282-1997 Control of the obtrusive effects of outdoor lighting*
- *Better Placed: A design led approach: developing an Architecture and Design Policy for New South Wales* (Government Architect NSW, 2016)

- *Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW* (Roads and Maritime, 2012)
- *Creating Places for People: An Urban Design Protocol for Australian Cities* (Infrastructure Australia, 2011)
- *NSW Sustainable Design Guidelines* (Transport for NSW, 2013b)
- *Urban Green Cover in NSW Technical Guidelines* (OEH, 2015).

Reference was also made to relevant local environmental plans, development control plans, and planning strategies.

19.1.2 Methodology

A summary of the approach to the assessment is provided in this section. Further information is provided in Technical paper 7.

As described below, the assessment considered the potential for impacts to overall landscape character, and visual amenity near the main project features. Potential impacts on visual amenity were considered during both the day and night. Potential landscape character and visual amenity impacts were assessed prior to the implementation of any form of mitigation.

Landscape character impact assessment

In the urban context, landscape refers to the overall character and function of a place. It includes all elements within the public realm and the interrelationship between these elements and the people who use it. The landscape character assessment identified key landscapes in the existing environment, and determined landscape sensitivity using the definitions provided in Table 19.2.

The potential levels of landscape modification as a result of the project (defined in Table 19.3) were identified. Landscape modification refers to the change in public realm or landscape element that would occur as a result of the project. This includes direct impacts, such as the removal of trees or other existing landscape features, and indirect impacts, such as a change in the function of an area as a result of changes to land use and access. Potential impacts could be adverse or beneficial. The overall levels of potential landscape impacts were determined by assessing the extent of modification in combination with sensitivity, using the ratings shown in Figure 19.1.

Visual amenity impact assessment

The visual impact assessment considered the range of views that may be impacted, including views from residential areas, offices, parks, and streets. Viewpoints were selected to illustrate the visual influence of the project. These represent publically accessible views and vistas from a range of locations and viewing situations. Particular attention was paid to views from places where viewers are expected to congregate, such as plazas, parks, public transport nodes, and commercial areas, as well as views to and from heritage items.

The daytime assessment identified existing visual conditions, representative views, and the sensitivity of each view using the definitions provided in Table 19.2. The potential levels of visual modification as a result of the project (defined in Table 19.3) were identified, and the overall levels of potential impacts to visual amenity were determined by assessing the extent of modification in combination with sensitivity, using the ratings shown in Figure 19.1.

The assessment of potential impacts to visual amenity during the night-time involved a similar methodology to the daytime assessment. The assessment had regard to *AS4282-1997 Control of the obtrusive effects of outdoor lighting*. The sensitivity ratings for the night-time assessment are defined in Table 19.4. The ratings were assigned by identifying existing night-time visual environmental zones, based on characteristics such as sky glow, glare, and the amount of existing light. The overall levels of potential impacts to night-time visual amenity were determined by

assessing the extent of modification (defined in Table 19.3) in combination with sensitivity, using the night-time assessment ratings shown in Figure 19.2.

Table 19.2 Sensitivity level definitions

	Description	
Sensitivity	**Landscape character**	**Visual amenity**
National	Landscape feature protected with national or international legislation, e.g. the Sydney Opera House.	Heavily experienced view to a national icon, e.g. the view to Sydney Opera House from Circular Quay or Lady Macquarie's Chair.
State	Landscape feature or urban place that is heavily used and is iconic to the State, for example Martin Place and Hyde Park.	Heavily experienced view to a feature or landscape that is iconic to the State, for example the view along the main avenue in Hyde Park.
Regional	Landscape feature that is heavily used and valued by residents of a region, for example, Belmore Sports Ground.	Heavily experienced view to a feature or landscape that is iconic to a region, or an important view from an area of regional open space, for example, views to the Cooks River.
Local	Landscape feature valued and experienced by concentrations of residents and/or local recreational users, for example, Jubilee Reserve in Lakemba.	High quality view experienced by concentrations of residents and/or local recreational users, users of local commercial areas, and/or large numbers of road or rail users, for example, the view from McNeilly Park in Marrickville.
Neighbour-hood	Landscape feature valued and appreciated mainly by local residents, such as street trees in a local street.	Views important to the local community and not particularly valued by the wider community.

Table 19.3 Modification level definitions

	Description	
Modification	**Landscape character**	**Visual amenity**
Considerable reduction or improvement	A substantial portion of the landscape is changed. This may include substantial changes to parkland function, footpath continuity, building access, permeability of local streets, and/or street tree cover. Involves substantial changes to level of comfort, vibrancy, safety and walkability, connectivity, and diversity.	Alternations to a substantial portion of the view. The project contrasts substantially with surrounding landscape.
Noticeable reduction or improvement	A portion of the landscape is changed. This may include the alteration of parkland function, footpath continuity, building access, permeability of local streets, and/or street tree cover. Involves some alteration to level of comfort, vibrancy, safety and walkability, connectivity, and diversity.	Alterations to the view are clearly visible. The project contrasts with surrounding landscape.
No perceived reduction or improvement	Either the landscape quality is unchanged, or if it is, changes are mitigated by proposed public realm improvements. Does not alter or noticeably alter level of comfort, vibrancy, safety and walkability, connectivity, and diversity.	Either the view is unchanged, or if it is, changes are generally unlikely to be perceived by viewers. The project does not contrast with the surrounding landscape.

Table 19.4 Environmental zone sensitivity – night-time

Sensitivity	Description
E1: Intrinsically dark landscapes	Very high sensitivity visual settings at night, including national parks, state forests etc.
E2: Low district brightness areas	Highly sensitive visual settings at night, including rural, small village, or relatively dark urban locations.
E3: Medium district brightness areas	Moderately sensitive visual settings at night, including small town centres or urban locations.
E4: High district brightness areas	Low sensitivity visual settings at night, including town/city centres with high levels of night-time activity.

Level of modification	Sensitivity: National	State	Regional	Local	Neighbour-hood
Consideration reduction	Very high adverse	Very high adverse	High adverse	Moderate adverse	Minor adverse
Noticeable reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse	Negligible
No perceived change	Negligible	Negligible	Negligible	Negligible	Negligible
Noticeable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial	Negligible
Considerable improvement	Very high beneficial	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

Figure 19.1 Impact ratings for the daytime visual amenity assessment

Level of modification	Sensitivity: E1 Intrinsically dark landscapes	E2 Low district brightness	E3 Medium district brightness	E4 High district brightness
Consideration reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse
Noticeable reduction	High adverse	Moderate adverse	Minor adverse	Negligible
No perceived change	Negligible	Negligible	Negligible	Negligible
Noticeable improvement	High beneficial	Moderate beneficial	Minor beneficial	Negligible
Considerable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

Figure 19.2 Impact ratings for the night-time visual amenity assessment

19.2 Existing environment

19.2.1 Landscape and visual sensitivity

The landscape character areas at each station and at other locations in the project area were determined. A landscape sensitivity rating for each character area was then determined, based on the sensitivity ratings provided in Table 19.2. The landscape character areas and ratings are listed in Table 19.5. All stations are heritage listed, with three stations (Marrickville, Canterbury, and Belmore) listed on the State Heritage Register. The heritage features of the project area (including the stations) are described in Chapter 14 (Non-Aboriginal heritage). Land uses within and surrounding the project area are described in Chapter 16 (Land use and property).

Table 19.5 Landscape character areas and sensitivity

Location	Landscape character area	Landscape and visual sensitivity rating
Marrickville Station	Marrickville Station	Local
	Illawarra Road commercial precinct	Local
	Rail corridor to Schwebel Street residential area	Neighbourhood
	O'Hara Street playground	Neighbourhood
Dulwich Hill Station	Dulwich Hill Station	Local
	Dulwich Hill light rail stop	Local
	Jack Shanahan Park	Local
	Wardell Road commercial precinct	Local
	South Dulwich Hill heritage residential area	Local
	Dulwich Hill residential areas	Neighbourhood
Hurlstone Park Station	Hurlstone Park Station	Local
	Crinan Street commercial precinct	Local
	Hurlstone Park residential precinct	Neighbourhood
Canterbury Station	Canterbury Station	Local
	Canterbury Road commercial precinct	Local
	Canterbury residential area	Neighbourhood
Campsie Station	Campsie Station	Local
	Beamish Street commercial precinct	Local
	Campsie residential area	Neighbourhood
Belmore Station	Belmore Station	Local
	Belmore Station linear park	Neighbourhood
	Burwood Road commercial precinct	Local
	Belmore residential area	Neighbourhood
Lakemba Station	Lakemba Station	Local
	Haldon Street commercial precinct	Local
	Lakemba residential	Neighbourhood
Wiley Park Station	Wiley Park Station	Local
	King Georges Road commercial precinct	Local
	Wiley Park residential area and schools	Neighbourhood
Punchbowl Station	Punchbowl Station	Local
	Warren Reserve	Local
	Punchbowl Road commercial precinct	Local

Location	Landscape character area	Landscape and visual sensitivity rating
	Punchbowl residential area	Neighbourhood
Bankstown Station	Bankstown Station	Local
	Bankstown commercial precinct	Local
Project area	Local Parks - Fraser Park, Tillman Park, McNeilly Park, Tasker Park, Belmore Sports Ground, and Terry Lamb Reserve	Local
	Neighbourhood Parks - Sawyer Reserve, Acton Street, Warwick Reserve	Neighbourhood
	Other State heritage items - Sydney Water sewage pumping station 271, Electrical substation no. 275	Local
	Church Street pedestrian bridge	Neighbourhood
	Rail corridor	Local
	Esplanade roads and adjacent residential areas	Neighbourhood

19.2.2 Daytime viewpoint locations and sensitivity

Table 19.6 lists the viewpoints assessed by the visual amenity impact assessment and their visual sensitivity rating. The locations of these viewpoints are shown on Figure 19.3.

Table 19.6 Daytime viewpoint locations and sensitivity

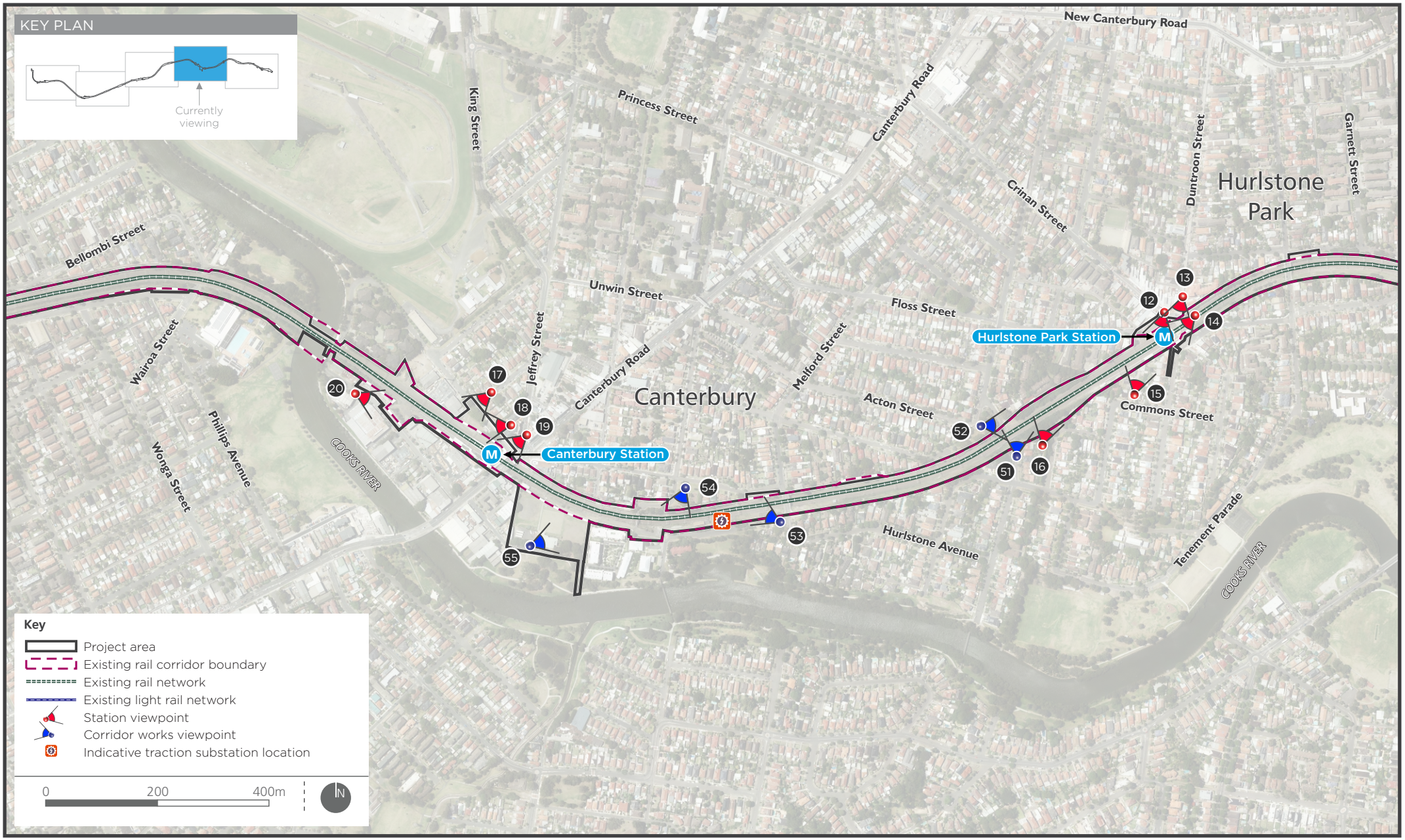
Location	No.	Viewpoint	Sensitivity
Marrickville Station	1	View south-east from Illawarra Road	Local
	2	View south-west from O'Hara Street playground	Neighbourhood
	3	View north from Riverdale Road	Neighbourhood
	4	View north from Leofrene Avenue	Neighbourhood
	5	View north from Station Street	Local
Dulwich Hill Station	6	View south from Jack Shanahan Reserve	Local
	7	View south-east from Dulwich Hill light rail stop	Local
	8	View south from Bedford Crescent to Dulwich Hill light rail stop entrance	Neighbourhood
	9	View west to Dulwich Hill Station from Wardell Road overbridge	Local
	10	View west from corner of Wardell Road and Dudley Street	Local
	11	View south-east from Ewart Lane	Neighbourhood
Hurlstone Park Station	12	View south-west from the Floss Street commuter car park	Local
	13	View south-west across Floss Street	Local
	14	View south-west from the Crinian Street overbridge	Local
	15	View north from Commons Street	Neighbourhood
	16	View from Railway Street	Neighbourhood
Canterbury Station	17	View south-west from Robert Street	Neighbourhood
	18	View north-west from Broughton Street	Local
	19	View south-west from corner of Broughton Street and Canterbury Road	Local
	20	View north-east from Charles Street	Neighbourhood

Location	No.	Viewpoint	Sensitivity
Campsie Station	21	View south-east from corner of Wilfred Avenue and London Street	Neighbourhood
	22	View west along North Parade	Neighbourhood
	23	View south-west from Beamish Street	Local
	24	View north-east from Lilian Lane	Neighbourhood
	25	View west from Lilian Street	Neighbourhood
	26	View east Lilian Street	Neighbourhood
Belmore Station	27	View east from Burwood Road overbridge	Local
	28	View north-east from Tobruk Avenue	Local
	29	View north-west from shared path to the Terry Lamb Reserve	Neighbourhood
	30	View west from the Terry Lamb Reserve	Neighbourhood
	31	View south-west from Redman Parade	Local
Lakemba	32	View north-east from Railway Parade	Local
	33	View south-west along The Boulevarde	Local
	34	View south-west from The Boulevarde commuter car park	Neighbourhood
	35	View south-east from Jubilee Reserve	Neighbourhood
Wiley Park	36	View south-west from laneway at King Georges Road	Local
	37	View north-west across King Georges Road	Local
	38	View north-west along The Boulevarde	Neighbourhood
	39	View north-east from The Boulevarde	Neighbourhood
Punchbowl	40	View south from Warren Reserve	Local
	41	View west along Urunga Parade	Neighbourhood
	42	View west along The Boulevarde at Matthew Street	Local
	43	View north from The Boulevarde	Local
Bankstown	44	View east along North Terrace	Local
	45	View south-west from North Terrace	Local
	46	View north-east from South Terrace	Local
Rail corridor	47	View north-west in McNeilly Park, Marrickville	Local
	48	View west from the Livingstone Road overbridge, Marrickville	Neighbourhood
	49	View east from Challis Avenue, Dulwich Hill	Neighbourhood
	50	View east from Wardell Road overbridge, Dulwich Hill	Local
	51	View north from Foord Avenue, Hurlstone Park	Neighbourhood
	52	View north-east from Sawyer Reserve, Hurlstone Park	Neighbourhood
	53	View west along Hutton Street, Hurlstone Park	Neighbourhood
	54	View south from Church Street Park, Hurlstone Park	Neighbourhood
	55	View north-east from Close Street, Canterbury	Local
	56	View east from the Terry Lamb Reserve, Belmore	Local
	57	View north-east from The Boulevarde, Lakemba	Neighbourhood
	58	View east from Scott Street, Punchbowl	Neighbourhood
	59	View north from the Bankstown Arts Centre courtyard	Local

sydney METRO | city & southwest

Representative viewpoints - map 1

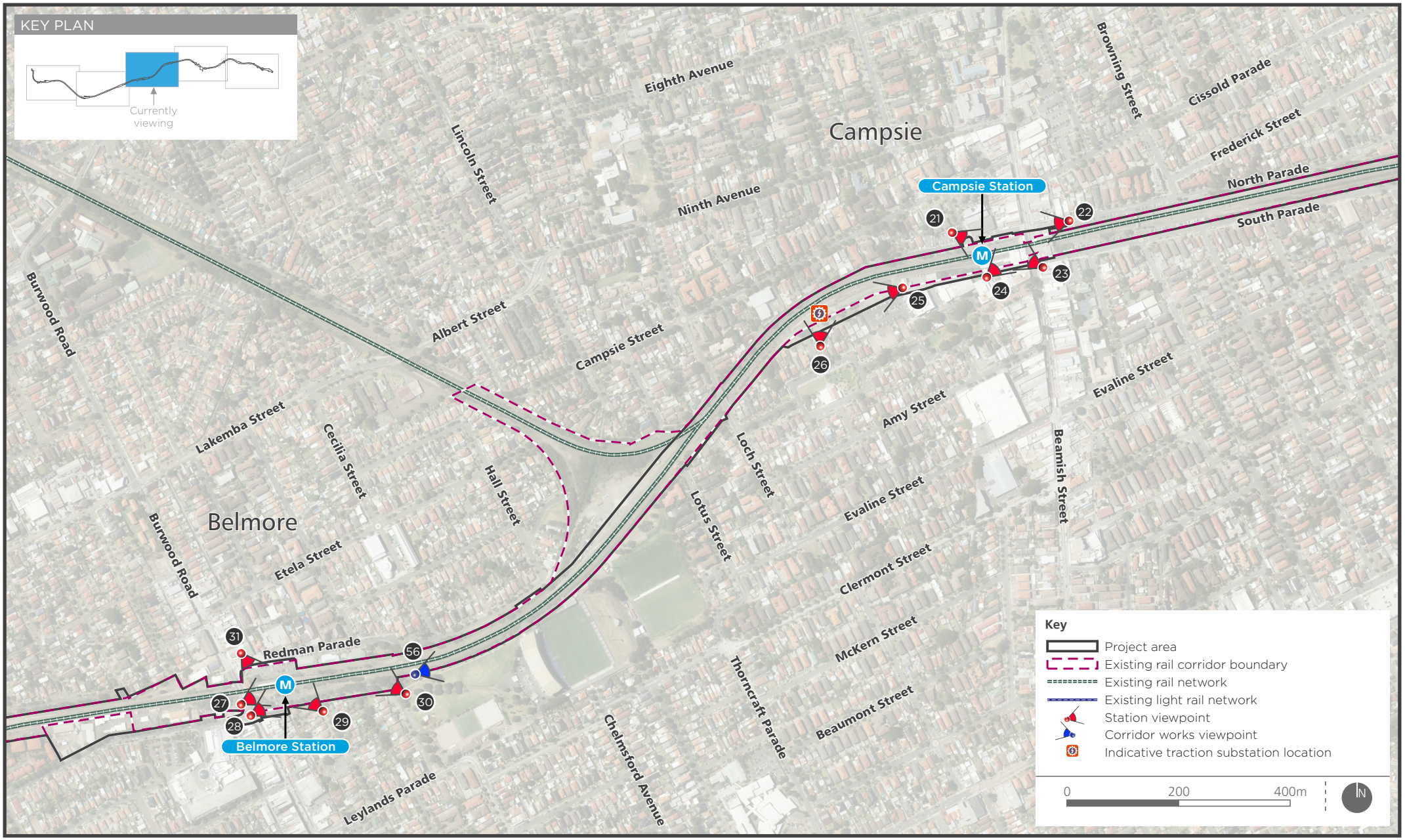
FIGURE 19.3



sydney METRO | city & southwest

Representative viewpoints - map 2

FIGURE 19.3



sydney METRO | city & southwest

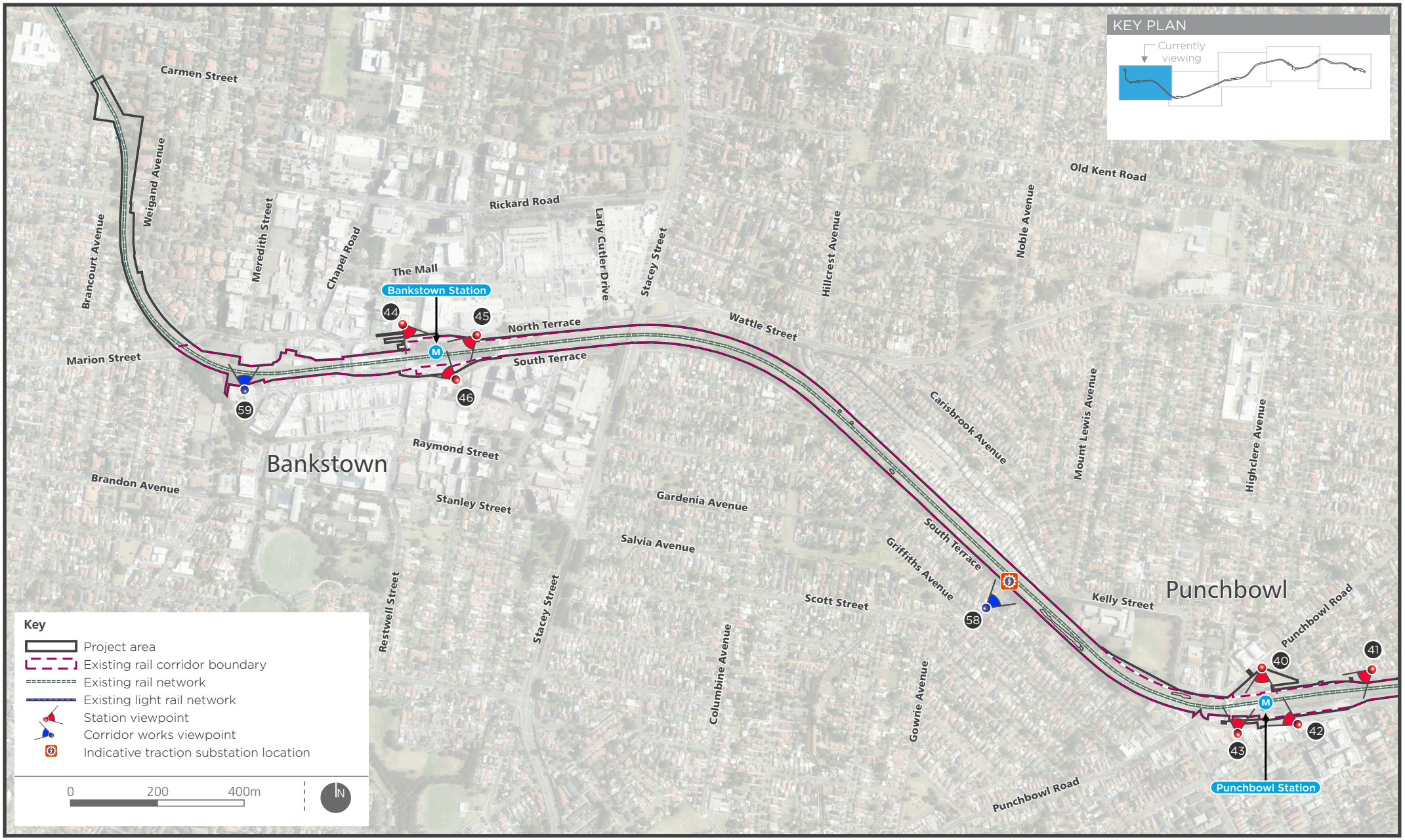
Representative viewpoints - map 3

FIGURE 19.3

sydney METRO | city & southwest

Representative viewpoints - map 4

FIGURE 19.3



sydney METRO | city & southwest

Representative viewpoints - map 5

FIGURE 19.3

19.2.3 Night-time settings

The night-time environmental zone sensitivity (as described in Table 19.4) of all locations was rated as E3: Medium district brightness. The exception to this was Bankstown Station and the rail corridor in the vicinity of the station, where the sensitivity was rated as E4: High district brightness.

19.2.4 Trees and vegetation

Within the project area, there are street trees located in the vicinity of each station, and vegetation within the rail corridor between stations. In some locations, the existing trees and vegetation contribute to landscape character and amenity, and provide visual screening of the rail corridor, in particular of the tracks and trains. The biodiversity characteristics of existing vegetation is described in Chapter 22 (Biodiversity).

19.3 Impact assessment

19.3.1 Risk assessment

Potential risks

The environmental risk assessment for the project, undertaken for the State Significant Infrastructure Application Report, identified the following as the main landscape and visual risks:

- visual impacts from the presence of construction activities
- impacts on landscape character during construction
- light-spill on sensitive receivers during night-time construction works
- visual impacts associated with the introduction of new station buildings and concourses, and associated infrastructure including noise barriers
- light spill from upgraded stations during operation
- impacts on landscape character from operation of the project, which could include improvements to the public domain around station facilities.

How potential impacts have been and would be avoided/minimised

Place making, urban design, and the appearance and visual form of the visible features of the project have been important considerations in the design process. The design has been prepared in accordance with the Sydney Metro City & Southwest Sydenham to Bankstown Design Guidelines (provided in Appendix C). Developing the design involved a comprehensive urban design analysis. For each station, the design has taken local conditions and place making opportunities into account to develop unique solutions, unified by an architectural style that supports the future prospects for each centre.

Further information on how the design developed, including a description of the key place making and urban design considerations, is provided in Chapter 7 (Design development and place making).

The design would continue to be refined during the detailed design phase, which would integrate all relevant design considerations, including:

- the design guidelines
- place making and urban design
- security and safety (including consideration of CPTED principles)
- functional and operational requirements, such as the accessibility of the stations

- community and stakeholder input
- relevant land use plans and strategies (described in Chapter 16)
- environmental constraints and sustainability
- access and maintenance requirements
- minimising impacts to heritage
- mitigation measures provided in Section 19.4.

19.3.2 General construction impacts

The general impacts that would potentially be experienced during construction are summarised in this section. A summary of the assessment results for each station and other key locations in the project area is provided in Sections 19.3.4 to 19.3.14.

Visual amenity

The project would have the potential to affect visual amenity during construction. Potential impacts would be experienced by sensitive visual receivers (including residents, pedestrians, cyclists, motorists, and local workers) in the vicinity of works and from the identified representative viewpoints. During construction, visible elements would include compounds and work sites, machinery and equipment, fencing, soil stockpiles, waste materials, and partially constructed structures.

The potential visual impact of the project would depend on the nature and intensity of the construction works. The change in the visual environment would generally be experienced from a relatively short distance. Visual impacts would also be more significant at locations where residential or other sensitive receivers have an unscreened view of the project area. However, the impacts would be temporary and limited to the construction period. In addition, the majority of the construction works would be viewed within the context of a highly developed and dynamic urban environment, where construction and associated works are frequent occurrences.

The areas with the most potential for visual impacts during construction include areas surrounding stations. However, these impacts would be temporary and limited to the construction phase of the project.

Trees

The project would require removal of some vegetation within the project area. This would include removal of street trees (described in Section 9.3.2), and clearing of rail corridor vegetation (described in Chapter 22). Some of these trees and vegetation contribute to the amenity and character of the local area and/or screen views from properties surrounding the project area. The removal of this vegetation would have the potential to reduce some screening between residential dwellings and the rail corridor, and impact on existing amenity.

The final number of trees impacted would be confirmed during detailed design and final construction planning. Impacts to trees would be minimised where practicable. Where removal of trees is unavoidable, the tree management strategy (described in Section 9.3.2) would be implemented to mitigate the loss of trees. In addition, as described in Section 22.5, biodiversity offsets are proposed to mitigate the loss of ecological values as a result of clearing in the rail corridor.

Lighting

The use of lighting for works outside standard working hours may result in light spill impacting neighbouring properties and residents.

Potential construction impacts would be minimised by implementing the mitigation measures provided in Section 19.4.

19.3.3 General operational impacts

With the introduction of upgraded stations and new infrastructure in the project area, the project has the potential to result in changes to landscape character, visual amenity, and the urban fabric. The project would result in changes to the appearance (to differing degrees) of stations, and the introduction of new infrastructure along the rail corridor. However, as the corridor is currently used for rail purposes, in most instances the changes would not be substantial, as rail infrastructure is visible from a number of receivers and would be considered in the context of the existing rail environment. The project would result in changes to views for a number of visual receivers, with the level of impact varying depending on the works within the viewshed of receivers.

As described in Section 19.3.1, the design of the project has been, and would continue to be, developed with consideration given to its place making role and consideration of agreed design objectives and principles. The design guidelines emphasise the need to respond to place and context, acknowledge the existing conditions, and promote the need to improve the urban interfaces at each station. A key project design principle is to 'create welcoming, secure and well maintained public domain spaces and station buildings with an attractive sense of place that responds to the distinct cultures of each station precinct.'

The design of the stations and associated facilities has been undertaken to reinforce their role. As new vibrant spaces and destinations, the stations would fit with the NSW Government's transformation and renewal vision for the Sydenham to Bankstown corridor. The station upgrades could serve as a catalyst for regeneration in the surrounding neighbourhoods and along connecting road corridors, reflecting a high level of land use and transport integration. The detailed design of the project would include measures to integrate the changes to the stations into the surrounding urban fabric.

The results of the assessment of potential operational impacts for each assessment area is provided in sections 19.3.4 to 19.3.14. Potential visual impacts during operation would be minimised by implementing the mitigation measures provided in Section 19.4.

19.3.4 Marrickville Station

Landscape character impacts

Impacts during construction have the potential to be moderately adverse as shown in Table 19.7. This is largely due to the introduction of works and the closure of the Station Street access to the station, which makes the station less visible from areas to the south-east of the station.

The presence of works would improve surveillance in the station area during construction due to increased lighting and passive surveillance from workers.

The project has the potential to result in minor beneficial impacts, as the works would involve improving the existing access from Station Street. Although the new station and station services building would be visible from areas to the north of the station, there would be no direct landscape impacts, and no change to the O'Hara Street playground.

Table 19.7 Marrickville Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Marrickville Station precinct	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial

Daytime visual amenity impacts

The following viewpoints were selected as representative of views to the Marrickville Station site:

1. view south-east from Illawarra Road
2. view south-west from O'Hara Street playground
3. view north from Riverdale Avenue
4. view north from Leofrene Avenue
5. view north from Station Street.

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.8. Construction has the potential to result in moderate adverse impacts. The construction compound and other construction activities are predicted to impact on existing views, and would appear in contrast with the surrounding landscape for each of the viewpoints.

Views from Illawarra Road would be consistent with the existing entrance. There is the potential for some impacts to views from the O'Hara Street playground and Riverdale Avenue due to the change in the size of the new station compared to the existing station. Views from Station Street would improve, as the station entrance would be upgraded, views to the entrance opened up, and the proposed new forecourt area and shared zone would include street trees and new pavement. The space would also be activated with retail uses. These changes would result in a noticeable improvement in the amenity of this view.

Table 19.8 Marrickville Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-east from Illawarra Road	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
View south-west from O'Hara Street playground	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View north from Riverdale Avenue	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View north from Leofrene Avenue	Neighbourhood	Considerable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View north from Station Street	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible

Night-time visual amenity impacts

Changes in lighting during both construction and operation in the vicinity of Marrickville Station would have a minor adverse impact on amenity as a result of light spill onto adjacent properties, as shown in Table 19.9.

Table 19.9 Marrickville Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Marrickville Station precinct	E3: Medium district brightness	Considerable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.5 Dulwich Hill Station

Landscape character impacts

As summarised in Table 19.10, construction is predicted to have a moderate adverse impact. This is due to the removal of street trees, closure of car parks, temporary diversion of pedestrians, and the presence of construction activities, which would reduce the connectivity, legibility, and amenity of the station precinct.

Impacts during operation are considered to be minor beneficial, even with the removal of the heritage listed overhead booking office. There is the potential for an improvement in landscape quality, from improvements to the legibility of the station, sense of place, and character in the surrounding streetscapes. Some heritage buildings and structures would be retained to maintain the heritage component of the station.

Table 19.10 Dulwich Hill Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Dulwich Hill Station precinct	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial

The following viewpoints were selected as representative of views to Dulwich Hill Station:

6. view south from Jack Shanahan Reserve
7. view south-east from the Dulwich Hill light rail stop
8. view south from Bedford Crescent to the entrance of the Dulwich Hill light rail stop
9. view west to Dulwich Hill Station from the Wardell Road bridge
10. view west from the corner of Wardell Road and Dudley Street
11. view south-east from Ewart Lane.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.11. During construction, there would be a potential reduction in visual amenity from all views due to the visibility of construction activities, which would obstruct some existing views.

The footbridge and canopy structure over the rail corridor would be a prominent skyline feature. However, the new structures would be generally consistent with the character of the existing station

and rail corridor, and there would not be a perceived change in the amenity of this view, resulting in a negligible operational impact. Minor adverse impacts are predicted for the view from the Wardell Road bridge, as the scale of the structure would increase.

Table 19.11 Dulwich Hill Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south from Jack Shanahan Reserve	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
View south-east from Dulwich light rail stop	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
View south from Bedford Crescent to Dulwich Hill light rail stop entrance	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
View west to Dulwich Hill stop from Wardell Road bridge	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
View west from corner of Wardell Road and Dudley Street	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View south-east from Ewart Lane	Neighbour-hood	Considerable reduction	Minor adverse	Noticeable improvement	Negligible

Night-time visual amenity impacts

As summarised in Table 19.12, construction has the potential to impact on receivers with direct views of light sources or glow from the station.

During operation, lighting impacts would be similar to the existing situation. However, there would be an increase in lighting intensity near residences on Ewart Lane, Wardell Road, and Bedford Crescent, due to the relocated station entrances, and a corresponding noticeable reduction in visual amenity.

Table 19.12 Dulwich Hill Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Dulwich Hill Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse impact

19.3.6 Hurlstone Park Station

Landscape character impacts

The removal of commuter parking and the closure and diversion of footpaths in some areas would reduce the legibility and accessibility of this precinct by vehicles and for pedestrians. Due to the scale of works, construction would result in a considerable reduction in the landscape quality and functionality of this precinct, and result in a moderate adverse impact during construction (refer to Table 19.13).

Operation has the potential to result in moderate beneficial impacts, even though the removal of the heritage listed overhead booking office, footbridge, and stairs would reduce legibility. Other improvements would result in an overall beneficial impact. These include improvements to access, safety, and amenity, due to the new station entrances, the overall station design with a greater visual presence in the village, and conservation of the heritage listed rock face to the rear of the Platform 2 building.

Table 19.13 Hurlstone Park Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Hurlstone Park Station	Local	Considerable reduction	Moderate adverse	Considerable improvement	Moderate beneficial

The following viewpoints were selected as representative of views to Hurlstone Park Station:

12. view south-west from the Floss Street commuter car park
13. view south-west across Floss Street
14. view south-west from the Crinian Street overbridge
15. view north from Commons Street
16. view from Railway Street.

Daytime visual amenity impacts

Potential impacts on representative viewpoints are summarised in Table 19.14.

During construction, views of construction activities would obstruct some existing views and would be in contrast with the surrounding landscape. Potential impacts are rated from minor to moderate adverse, depending on the location of the view. Some views would have construction activities in the foreground, resulting in greater impacts.

Operation would have a negligible impact on all viewpoints. In this location, the rail corridor is considered to have the capacity to absorb the new structures, which would be consistent with the existing views of railway infrastructure. The proximity of the new structures to residents has the potential to reduce the amenity of the view north from Commons Street. The visual containment of the station due to the cutting, intervening vegetation, and buildings, would allow for the absorption of the new station into the view. The proximity of new structures to residences would create a considerable reduction in the amenity of this view, and have an minor adverse visual impact during operation.

Table 19.14 Hurlstone Park Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-west to rail corridor and Floss Street commuter car park	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
View south-west across Floss Street	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-west from Crinian Street overbridge	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
View north from Commons Street	Neighbour-hood	Considerable reduction	Minor adverse	Considerable reduction	Minor Adverse
View from Railway Street	Neighbour-hood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse

Night-time visual amenity impacts

There is the potential for construction impacts to receivers adjacent to the rail corridor who have direct views of light sources or the glow from the station.

During operation, lighting from the new station structures and the headlights of metro trains would be generally consistent with the intensity of lighting at the existing station, and would be absorbed by the surrounding commercial precinct. However, the new entrance plaza on Crinian/Duntroon Street would increase lighting intensity for nearby residents with minor adverse impacts (refer to Table 19.15).

Table 19.15 Hurlstone Park Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Hurlstone Park Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.7 Canterbury Station

Landscape character impacts

As summarised in Table 19.16, construction impacts are rated as moderate adverse, due to the changes to station access, removal of vegetation, diversion of pedestrians, and the presence of construction compounds and work sites.

There is the potential for moderate beneficial impacts during operation as Canterbury Station would be transformed by the project, with the station set back from Canterbury Road and comprising an entirely new concourse structure. The introduction of prominent new station architecture and plazas connecting to the existing and emerging urban renewal precincts would create a new place with a distinct identity within Canterbury.

Although the relocated station entrance on Broughton Street would change the legibility and character of this station precinct, the new entrance and associated access would provide for greater street activation and level of comfort. The community would also be able to view heritage buildings in close proximity. Overall, there would be a considerable improvement in the functioning and quality of this landscape resulting in a moderate beneficial landscape impact.

Table 19.16 Canterbury Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Canterbury Station precinct	Local	Considerable reduction	Moderate adverse	Considerable improvement	Moderate beneficial

The following viewing locations were selected as representative of views to Canterbury Station:

17. view south-west from Robert Street
18. view north-west from Broughton Street
19. view south-west from corner of Broughton Street and Canterbury Road
20. view north-east from Charles Street.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.17. Construction has the potential to impact views due to the visibility of construction, including compounds and work sites, and the associated removal of vegetation.

The new station entrance and associated features would be generally consistent with the surrounding environment, and would result in improvements to visual amenity for some views. Overall, the new station would integrate with the surrounding urban environment, with a number of multi-storey apartment developments under construction with negligible visual impacts.

Table 19.17 Canterbury Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-west from Robert Street	Neighbour-hood	Considerable reduction	Minor adverse	No perceived change	Negligible
View north-west from Broughton Street	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
View south-west from corner of Broughton Street and Canterbury Road	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Negligible
View north-east from Charles Street	Neighbour-hood	Noticeable reduction	Negligible	No perceived change	Negligible

Night-time visual amenity impacts

There is the potential for construction impacts for receivers adjacent to the rail corridor, including the units overlooking the rail corridor on Charles and Broughton streets and several detached houses and townhouse buildings on Broughton Street who have views of direct light sources or the sky glow above the station (refer Table 19.18).

During operation as summarised in Table 19.18, the project would result in an intensification of light sources for nearby receivers, resulting in a minor adverse impact.

Table 19.18 Canterbury Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Canterbury Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.8 Campsie Station

Landscape character impacts

As summarised in Table 19.19, there is the potential for moderate adverse construction impacts as a result of the extent of construction works on Beamish Street, reduction in the accessible platform area, closure of footpaths, temporary closure of Lilian Lane and the temporary diversion of pedestrian and vehicular traffic. Legibility of the station precinct would be reduced during this time while new routes and connections are established.

Much of the station architecture would be replaced with a contemporary structure with would have a greater visual presence on the street. The station entry would be more open to Beamish Street surrounded by high quality plazas, including Lilian Lane. On balance, the improved plaza and station entry would result in a noticeable improvement in landscape quality and functionality of the precinct and have a minor beneficial landscape impact during operation.

Table 19.19 Campsie Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Campsie Station precinct	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial

The following viewing locations were selected as representative of views to the Campsie Station site:

21. view south-east from corner of Wilfred Avenue and London Street
22. view west along North Parade
23. view south-west from Beamish Street
24. view north-east from Lilian Lane
25. view west from Lilian Street
26. view east from Lilian Street.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.20. During construction, the construction compound and temporary station access structure, and reconstruction of the new station entrance on Beamish Street, would impact on views. Construction activities would also be visible above the temporary hoarding

The concourse and overhead booking office would be visible extending across the corridor and rising above the surrounding development. The scale of these structures would reflect the importance of the station entry and be a prominent feature in the view. Overall the increased scale and more open form of the new station structures, would provide a level of prominence which

marks it as an entry to the station, whilst being visually consistent with the character of the surrounding commercial precinct. This change would result in a noticeable improvement in the amenity of this view and a minor beneficial visual impact.

Table 19.20 Campsie Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-east from corner of Wilfred Avenue and London Street	Neighbourhood	Considerable reduction	Minor adverse	Noticeable improvement	Negligible
View west along North Parade	Neighbourhood	Considerable reduction	Minor adverse	No perceived change	Negligible
View south-west from Beamish Street	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial
View north-east from Lilian Lane	Neighbourhood	Considerable reduction	Minor adverse	Noticeable improvement	Negligible
View west from Lilian Street	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View east Lilian Street	Neighbourhood	Considerable reduction	Minor adverse	No perceived change	Negligible

Night-time visual amenity impacts

As summarised in Table 19.21, there is the potential for a reduction in night-time amenity during construction due to an increase in lighting. These impacts would be experienced on Lilian Street, Wilfred Avenue, North Parade, and South Parade, as well as at retail buildings on Beamish Street and North Parade.

During operation, there is the potential for a reduction in amenity due to an intensification of lighting at the upgraded station. These impacts would be most noticeable for receivers adjacent to the station.

Table 19.21 Campsie Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Campsie Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.9 Belmore Station

Landscape character impacts

Construction would result in a considerable reduction in landscape quality and functionality, and have a moderate adverse impact, as summarised in Table 19.22.

The redevelopment along Tobruk Avenue and new station entrances would alter the character of the area. However, historic landmark buildings would remain, including the main station building on Burwood Road, Art Deco post war bus shelter, and public lavatories building in Redman Parade.

These heritage buildings maintain the legacy and contribute to the vibrancy and built form of the precinct. Overall, the new station entrances would lead to a noticeable improvement in the landscape quality and functionality and a minor beneficial landscape impact during operation.

Table 19.22 Belmore Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Belmore Station precinct	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial

The following viewpoints were selected as representative of views to Belmore Station:

27. view east from Burwood Road overbridge
28. view north-east from Tobruk Avenue
29. view north-west from shared path linking to the Terry Lamb Reserve
30. view west from the Terry Lamb Reserve
31. view south-west from Redman Parade.

Daytime visual amenity impacts

Potential daytime visual impacts are summarised in Table 19.23. Construction impacts are rated as minor to moderate adverse. The view north-west from the pathway linking to the Belmore Sports Ground would be impacted by removal of vegetation and the presence of construction activities. All other views would be impacted as a result of the presence of the construction compound and construction of the station platform.

During operation, the impacts to most viewpoints are rated as minor adverse or negligible. Impacts on views would be a result of the new station buildings and entrance, widening of the rail corridor, and vegetation removal. The views from Tobruk Avenue would improve due to the new shared zone, the retention of existing vegetation, and the new station entry forecourt.

Table 19.23 Belmore Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View east from Burwood Road overbridge	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
View north-east from Tobruk Avenue	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial
View north-west from shared path linking to the Terry Lamb Reserve	Neighbour-hood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
View west from the Terry Lamb Reserve	Neighbour-hood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
View south-west from Redman Parade	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible

Night-time visual amenity impacts

Night works would occur within the station as well as the adjacent construction compounds, extending the works into the commuter car parks in Redman Parade and Tobruk Avenue, and the work site on Myall Street. At these sites there would be views to direct light sources and sky glow above the sites. As summarised in Table 19.24, there is the potential for a noticeable reduction in amenity of views from residences in Redman Parade, upper Acacia Lane, Acacia Street, and Myall Street during construction, resulting in minor adverse visual impact at night.

During operation, the station would be brightly lit at night around the station entries, new elevated concourse, and platforms. Much of the light within the station would be contained by the adjacent cutting and consistent with the lighting seen at the existing station. However, lighting from the elevated footbridge would be visible above the cuttings and from surrounding areas. Lighting from the platforms would also be visible in areas to the east, as the new platforms would be generally level with the surrounding landform.

Table 19.24 Belmore Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Belmore Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.10 Lakemba Station

Landscape character impacts

As summarised in Table 19.25, there is the potential for moderately adverse impacts during construction due to the presence of construction works close to the station. Construction would result in temporary station access structures, and potential temporary diversion of pedestrian routes, which would reduce pedestrian connectivity and legibility of the station precinct.

The location of the station buildings would be unchanged, however, minor additions to widen the concourse area, and the new roof and platform canopies, would alter the character of the station and surrounding streetscapes. The strong architectural statement and consistency of form of the station architecture would improve the prominence and legibility of the station entries. The provision of new plazas, and upgrades to the existing square and memorial space on The Boulevarde, would maintain the sense of local identity. Overall, as the facilities have been recently upgraded, although some minor improvements have been made, the project would result in a noticeable improvement in the landscape functioning of the precinct and a minor beneficial landscape impact.

Table 19.25 Lakemba Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Lakemba Station precinct	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial

The following viewpoints were selected as representative of views to Lakemba Station:

32. view north-east from Railway Parade
33. view south-west along The Boulevarde

34. view south-west from The Boulevarde commuter car park

35. view south-east from Jubilee Reserve.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.26. During construction, there is the potential for moderately adverse visual impacts due to the construction work areas being highly visible to all viewpoints. The removal of vegetation would reduce visual amenity and increase views of the construction work areas.

During operation, there would be improvements to the view south-west along The Boulevarde, as the new station building would create a focal point. The war memorial and park setting would continue to filter views to the platforms and rail corridor. There is the potential for a reduction in the amenity of other views, due to the loss of mature vegetation (some of which currently filter views of the rail corridor) and the introduction of more prominent structures.

Table 19.26 Lakemba Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View north-east from Railway Parade	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
View south-west along The Boulevarde	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View south-west from The Boulevarde commuter car park	Neighbour-hood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View south-east from Jubilee Reserve	Neighbour-hood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible

Night-time visual amenity impacts

Much of the night works would occur within the station and adjacent areas including construction compounds south-east of the station on The Boulevarde and north-west on Railway Parade. This activity may result in some additional light visible from residences adjacent to the rail corridor, and the potential for a reduction in amenity for receivers on Railway Parade and The Boulevarde, as summarised in Table 19.27.

The new station entrances in railway parade and The Boulevarde would increase and extend the lighting beyond the existing station area during operation. However, it is expected that this lighting is generally consistent with the intensity of lighting seen at the existing station, and it would be absorbed into the surrounding commercial precinct. The platform lighting and train headlights would extend the brightly lit station environment west, in a location that is elevated above the surrounding residential area to the south of The Boulevarde and north of Railway Parade. It is expected there would be a noticeable reduction in the amenity of views at night from these locations, and a minor adverse visual impact.

Table 19.27 Lakemba Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Lakemba Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.11 Wiley Park Station

Landscape character impacts

As summarised in Table 19.28, there is the potential for minor adverse impacts during construction due to the relocation of station entrances, removal of heritage listed platform buildings, temporary diversion of pedestrian and vehicular traffic, and the presence of construction activities.

During operation, the permeability and accessibility of the station would be improved by the station entrance on King Georges Road, with two additional station entrances on Stanlea Parade and The Boulevarde. The loss of heritage listed items on the platforms and King Georges Road would alter the sense of place and character of the station and surrounding streetscape. However, the new station entrances and overall design would have a recognisable style, with simple forms, large plaza spaces, and canopies.

Table 19.28 Wiley Park Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Wiley Park Station precinct	Local	Noticeable reduction	Minor adverse	Considerable improvement	Minor beneficial

The following viewpoints were selected as representative of views to Wiley Park Station:

36. view south-west from laneway at King Georges Road
37. view north-west across King Georges Road
38. view north-west along The Boulevarde
39. view north-east from The Boulevarde.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.29. During construction, minor adverse impacts to most views are predicted. Views of the rail corridor would be obstructed in some locations due to the visibility of construction works, particularly the construction compound and hoarding. Temporary station access structures would be established followed by the demolition of platform buildings and ramped canopy, resulting in a considerable reduction in the amenity of the view on The Boulevarde.

During operation, minor adverse impacts are predicted for the view south-west from the laneway at King Georges Road, due to the addition of new infrastructure, which would be different from the existing station character, with an increased scale and height. The new station entry building would create a strong architectural statement, highlighting the new entrance. The station would be consistent with the height of the adjacent commercial development to the north, maintaining the predominant scale of the built form along King Georges Road. There would be a noticeable improvement in the amenity of this view, and a minor beneficial visual impact.

Table 19.29 Wiley Park Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south-west from laneway at King Georges Road	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
View north-west across King Georges Road	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View north-west along The Boulevarde	Neighbour-hood	Noticeable reduction	Negligible	Noticeable improvement	Negligible
View north-east from The Boulevarde	Neighbour-hood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible

Night-time visual amenity impacts

As summarised in Table 19.30, there would be the potential for a reduction in amenity due to an increase in lighting during construction for residences located in The Boulevarde, Stanlea Parade, Wiley Lane, Shadforth Street, and Urunga Parade.

During operation, lighting would be visible beyond the existing station area. A general sky glow would be seen from residences to the north and south of the corridor. From King Georges Road, additional lighting would be generally consistent with the intensity of lighting at the existing station, and would be absorbed into the nearby commercial precinct.

Table 19.30 Wiley Park Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Wiley Park Station	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.12 Punchbowl Station

Landscape character impacts

There is the potential for moderately adverse impacts during construction due to the changes to the station buildings and removal of adjacent vegetation, altering the character of the precinct and sense of place. The location of construction works, including compounds and work sites, would impact the visual landscape in the vicinity of the station, with a moderate adverse landscape impact, as shown in Table 19.31.

While the existing station would be upgraded, changing the sense of place, character, and legibility, the upgraded station has the potential to result in an overall improvement to the visual appearance of the surroundings. At night, the additional lighting provided at the station entries and plaza areas would improve the safety and security of the station precinct. In particular, in areas between the station and the adjacent interchange on The Boulevarde, where the station entry would be located on the street, rather than behind commercial properties, safety and legibility would improve.

Although the removal of existing station platforms, platform buildings, and associated entrances would alter the character and legibility of the location, the new station entrances and overall design would result in a considerable improvement in landscape quality and functionality, and would have a moderate beneficial landscape impact.

Table 19.31 Punchbowl Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Punchbowl Station precinct	Local	Considerable reduction	Moderate adverse	Considerable improvement	Moderate beneficial

The following viewpoints were selected as representative of views to Punchbowl Station:

40. view south from Warren Reserve
41. view east along Urunga Parade
42. view west along The Boulevarde at Matthew Street
43. view north from The Boulevarde.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.32. During construction, views would be impacted due to the visibility of the construction activities, and the removal of vegetation, opening up views to the commercial areas.

During operation, minor adverse impacts are predicted for the view west along Urunga Parade, as the addition of new station infrastructure (such as the services building and retaining wall) would result in a more developed, open character to this view. Beneficial impacts are predicted for views from Warren Reserve and The Boulevarde (at Matthew Street).

Table 19.32 Punchbowl Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View south from Warren Reserve	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View west along Urunga Parade	Neighbour-hood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
View west along The Boulevarde at Matthew Street	Local	Noticeable reduction	Minor adverse	Considerable improvement	Moderate beneficial
View north from The Boulevarde	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible

Night-time visual amenity impacts

As summarised in Table 19.33, there is the potential for a noticeable reduction in amenity during construction due to an increase in lighting in the vicinity of the station.

During operation, lighting at the main station building would be generally consistent with the intensity of lighting at the existing station. However, the project would introduce additional lighting towards residential areas on Urunga Parade.

Table 19.33 Punchbowl Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Punchbowl Station precinct	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

19.3.13 Bankstown Station

Landscape character impacts

To the east of the station, construction compounds and a work site would be established between North and South terraces, and would extend east across the North/South terrace underbridge. The establishment of these sites would require removal of trees and vegetation along the corridor. There would also temporary closure of grassed areas at the station, and commuter car parks and footpaths along both North and South terraces. During this time, there would be impacts to pedestrian and vehicular movement, as well as visual impacts, reducing accessibility and legibility. This would lead to a noticeable reduction in landscape quality and functionality, and minor adverse landscape impacts as summarised in Table 19.34.

During operation, the new station design, streetscape upgrades, and improved lighting at night would result in a noticeable improvement in overall landscape quality and functionality, and a minor beneficial impact during operation, as shown in Table 19.34. The retention of heritage buildings in the vicinity of the station would maintain the existing character of the station area.

Table 19.34 Bankstown Station – landscape character impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Bankstown Station precinct	Regional	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial

The following viewpoints were selected as representative of views to Bankstown Station:

44. view east along North Terrace
45. view south-west from North Terrace
46. view north-east from South Terrace.

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.35. During construction, views would be affected by the removal of vegetation and the presence of construction activities. Construction works would be seen above the hoardings.

Minor beneficial impacts are predicted during operation. The new station building would be a contemporary architectural structure, which would be visually appropriate within the existing commercial setting. The removal of vegetation would open up views to this structure and the large Fig tree would be retained within a new pedestrian plaza.

Table 19.35 Bankstown Station – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View east along North Terrace	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor beneficial
View south-west from North Terrace	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
View north-east from South Terrace	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial

Night-time visual amenity impacts

Negligible impacts are predicted, as the existing area around the station is well lit. During operation, additional lighting would be generally consistent with the surrounding high district brightness environment with negligible visual impact (refer to Table 19.36).

Table 19.36 Bankstown Station – night-time visual amenity impacts

Location	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Bankstown Station precinct	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible

19.3.14 Ancillary facilities along the rail corridor

Landscape character impacts

Table 19.37 summarises the landscape character impacts for nominated sections of the rail corridor. Construction would result in minor adverse impacts due to the presence of construction works, compounds and work sites, and the removal of vegetation. The exception to this would be between Marrickville and Dulwich Hill stations, where a moderate adverse impact is expected. This is a result of the works within McNeilly Park for the new detention basin, and other works in visually prominent areas at this location.

During construction, there would be an overall change in character due to the removal of vegetation and the presence of construction works along the corridor, which would contrast with adjacent receivers.

During operation, there would be additional rail infrastructure along the rail corridor altering the character of the corridor and reducing the visual amenity for adjacent residential areas.

Table 19.37 Rail corridor – landscape character impacts

Viewpoint (along rail corridor unless indicated)	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Marrickville Station to Dulwich Hill Station	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
Dulwich Hill Station to Hurlstone Park Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Hurlstone Park Station to Canterbury Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Canterbury Station to Campsie Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Power supply feeder south of Canterbury	Local	Noticeable reduction	Minor adverse	No perceived reduction	Negligible
Campsie Station to Belmore Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Belmore Station to Lakemba Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Lakemba Station to Wiley Park Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Wiley Park Station to Punchbowl Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Punchbowl Station to Bankstown Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Areas west of Bankstown Station	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

Daytime visual amenity impacts

Potential daytime visual impacts on representative viewpoints are summarised in Table 19.38. Construction has the potential to result in a minor adverse impact to all viewpoints, due to the visibility of construction works, compounds, work sites and the removal of vegetation.

Operation has the potential to impact some viewpoints, as the project would result in the introduction of new structures. In general, changes would be minimal, as existing views already feature rail infrastructure.

The introduction of the five proposed traction substations, at Dulwich Hill, Canterbury, Campsie, Lakemba, and Punchbowl, would have a minor impact on visual amenity. Potential visual impacts relate to the presence of a new structure in the landscape. However, substations are common features/land uses in urban areas. The appearance of the substations would be consistent with the surrounding rail corridor/infrastructure uses, which include existing buildings and other rail infrastructure (including overhead power lines). In some locations, such as Punchbowl, the new substations would screen the surrounding area from the railway operations. The detailed design of the substations would ensure that the facilities incorporate appropriate architectural treatments and landscaping, guided by the design guidelines, to minimise the potential for visual impacts.

Table 19.38 Corridor and ancillary development – daytime visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
View north-west in McNeilly Park, Marrickville	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
View west from the Livingstone Road rail bridge, Marrickville	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View east from Challis Avenue, Dulwich Hill	Neighbourhood	Considerable reduction	Minor adverse	No perceived change	Negligible
View east from Wardell Road overbridge, Dulwich Hill	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
View north from Foord Avenue, Hurlstone Park	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View north-east from Sawyer Reserve, Hurlstone Park	Neighbourhood	Noticeable reduction	Negligible	Noticeable reduction	Negligible
View west along Hutton Street, Hurlstone Park	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
View south from Church Street Park, Hurlstone Park	Neighbourhood	Noticeable reduction	Negligible	Noticeable reduction	Negligible
View north-east from Close Street, Canterbury	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
View east from the Terry Lamb Reserve, Belmore	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
View north-east from The Boulevarde, Lakemba	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
View east from Scott Street, Punchbowl	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
View north from the Bankstown Arts Centre courtyard	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible

Night-time visual amenity impacts

As summarised in Table 19.39, construction has the potential to result in minor adverse impacts as some lighting would be required. Light spill would potentially impact on receivers along the edge of the rail corridor.

During operation, impacts would be limited to lighting from the movement of metro trains, which would be similar to the existing situation.

Table 19.39 Rail corridor – night-time visual amenity impacts

Viewpoint	Sensitivity rating	Construction impact		Operation impact	
		Modification rating	Impact rating	Modification rating	Impact rating
Rail corridor (excluding Bankstown)	E3: Medium district brightness	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
Rail corridor through Bankstown	E4: High district brightness	Noticeable reduction	Negligible	Noticeable reduction	Negligible

19.3.15 Cumulative impacts

The urban corridor between Sydenham and Bankstown has been identified as an urban renewal corridor with development proposed to occur at key locations along the corridor. Many of the adverse impacts outlined in this chapter would potentially decrease with development of the surrounding area, which would involve increasing densities and introduction of new buildings and structures in urban renewal areas. The increase in densities and the modernisation of development would mean that the upgraded stations would better integrate with the surrounding development compared to the existing situation.

19.4 Mitigation measures

19.4.1 Approach to mitigation and management

Construction

In addition to consideration of visual impacts through design development, construction planning would continue to be undertaken in a way that visual impacts are minimised. The Construction Environmental Management Framework (provided in Appendix D) provides for development and implementation of a visual amenity management plan, to include (as a minimum):

- visual mitigation measures, including those provided in the framework
- input from an experienced landscape or urban designer
- maintenance of outward facing elements of site hoarding or noise barriers
- measures to minimise lighting impacts on sensitive receivers
- applying relevant CPTED principles
- monitoring
- compliance record generation and management.

Where removal of trees is unavoidable, trees would be replaced in accordance with a tree management strategy, which would be prepared in consultation with relevant stakeholders (including local councils). The strategy would to guide the management of trees that need to be

removed, including options for their replacement. Further information on the proposed tree management strategy is provided in Section 9.3.2.

Operation

Design development has included a focus on avoiding and/or minimising the potential for visual impacts during all key phases of the process. Implementation of the Sydney Metro Sydenham to Bankstown Design Guidelines (Appendix C) would continue to ensure that the project meets the design criteria (established by the guidelines) and that the project is designed to minimise the potential for visual impacts. Further information on key design considerations, including urban design and place making, and how these have been integrated in the design process to date, is provided in Chapter 7.

To manage and mitigate the potential for visual impacts during operation, the detailed design would be developed in accordance with the design guidelines, and would take into account relevant requirements, including:

- use of a high quality landscape buffers (with street trees and planting) where practicable along the corridor, in consultation with relevant stakeholders, to integrate with the new infrastructure and improve the visual experience
- strategic use of materials that blend, enhance and/or complement existing surfaces, and improve the visual coherence of the project and its context
- materials, finishes, colour schemes and maintenance procedures, including graffiti control for new walls, barriers, and fences
- strategic location of signage to maintain sensitive sight lines, avoid unnecessary intrusion into receivers' views, and enhance legibility
- design of barriers (railings, fences or walls) required for safety to complement the existing visual environment
- the heritage significance of stations, heritage conservation areas, and other listed heritage items
- safety and security requirements, including CPTED requirements.

19.4.2 List of mitigation measures

The mitigation measures that would be implemented to address potential landscape and visual amenity impacts are listed in Table 19.40.

Table 19.40 Mitigation measures – landscape and visual amenity

ID	Impact/issue	Mitigation measures	Relevant location(s)
Design/pre-construction			
LV1	General visual impacts	The design would continue to be guided by the *Sydney Metro City & Southwest Sydenham to Bankstown Design Guidelines*.	All
LV2		Urban design and landscaping would be incorporated as part of the detailed station designs and precinct plans to provide a consistent approach to the management and mitigation of landscape and visual impacts across the project, and implementation of the proposed mitigation strategies.	All
LV3		Fencing would be designed to be of a high quality urban finish near stations.	All stations

ID	Impact/issue	Mitigation measures	Relevant location(s)
LV4	Impacts to trees and screening vegetation	The management of trees during detailed design and construction planning would be guided by the project's tree management strategy. Where removal cannot be avoided, trees would be replaced in accordance with the tree management strategy. Opportunities to retain and protect existing trees would be defined during detailed design and construction planning, in accordance with the project's tree management strategy. The design would aim to reduce tree removal to the extent practicable, particularly where they contribute to screening vegetation or landscape character.	All
LV5	Light spill	Lighting for the project would be designed in accordance with *AS 4282 Control of the Obtrusive Effects of Outdoor Lighting*. Lighting would be designed to minimise glare and light spill into adjoining areas.	Entire corridor, stations and other ancillary infrastructure
LV6	Impacts of noise barriers	The selection of materials and colours for noise barriers and hoardings would aim to minimise their visual prominence.	Noise barrier locations
LV7		The use of transparent panels in noise barriers would be considered where views to local landscape features and district views would be obstructed.	Noise barrier locations
LV8	Substations	The detailed design of the substations would ensure that they incorporate appropriate architectural treatments and landscaping, guided by the design guidelines, to minimise the potential for visual impacts.	Substations
Construction			
LV9	Visual impacts	A visual amenity management plan would be prepared and implemented during construction, to define the measures to minimise visual impacts during construction. The plan would include requirements in relation to construction site remediation.	All
LV10		Mitigation measures for landscape and visual impacts would be implemented as soon as feasible and reasonable after the commencement of construction, and remain for the duration of the construction period.	All
LV11	Impacts to trees	Trees to be retained would be protected prior to the commencement of construction in accordance with *AS4970-2009 Protection of trees on development sites* and the project's tree management and replacement strategy. Any tree pruning would be undertaken in accordance with the project's tree management strategy, guided by a tree report prepared by a qualified arborist.	All
LV12	Impacts from construction, including compounds and work sites	The design and maintenance of construction compound hoardings would aim to minimise visual amenity and landscape character impacts. Graffiti would be removed promptly, and public art opportunities would be considered.	All
LV13		The selection of materials and colours would aim to minimise their visual prominence.	All
LV14		Lighting of work areas, compounds, and work sites would be oriented to minimise glare and light spill impact on adjacent receivers.	All

ID	Impact/issue	Mitigation measures	Relevant location(s)
LV15		Following completion of construction, site restoration would be undertaken in accordance with the visual amenity management plan. Temporary impacts to public open space would be rehabilitated in consultation with the relevant local council and/or landowner.	All

19.4.3 Consideration of the interactions between mitigation measures

Noise barriers proposed to mitigate noise impacts have the potential to result in visual impacts. Mitigation measures are provided in Table 19.40 to minimise the potential impacts of noise barriers.

Potential visual impacts on heritage items, and relevant mitigation measures, are provided in Chapter 14.

19.4.4 Managing residual impacts

The proposed new structures would be visible from surrounding areas. The potential for residual impacts would be minimised as far as possible during detailed design, with further consideration of screening opportunities.

20. Soils and contamination

This chapter provides an assessment of the potential soil and contamination impacts of the project. The Secretary's environmental assessment requirements addressed in this chapter are listed in Table 20.1.

Table 20.1 Secretary's environmental assessment requirements – soils

Ref	Secretary's environmental assessment requirements - soils	Where addressed
11.1	The Proponent must assess whether the land is likely to be contaminated and identify if remediation of the land is required, having regard to the ecological and human health risks posed by the contamination in the context of past, existing and future land uses. Where assessment and/or remediation is required, the Proponent must document how the assessment and/or remediation would be undertaken in accordance with current guidelines.	The potential for contamination is considered in Section 20.2.4. The need for remediation would be confirmed as an outcome of the more detailed contamination assessment to be undertaken for the detailed design, as described in Sections 20.3.2 and 20.4.1.

20.1 Assessment approach

20.1.1 Legislation and policy context for the assessment

Legislation and policies relevant to the assessment and management of contaminated land include:

- *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and the Environment Protection Authority, 1998)
- *Acid Sulfate Soil Manual* (ASSMAC, 1998)
- *AS4482:2005 Guide to the investigation and sampling of sites with potentially contaminated soil*
- *Guidelines for Consultants Reporting on Contaminated Sites* (Office of Environment and Heritage, 2011)
- *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1)* (National Environment Protection Council (NEPC), 2013)
- *Waste Classification Guidelines* (EPA, 2014a)
- *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015a).

20.1.2 Methodology

The assessment generally involved:

- a review of available contamination assessments relevant to the study area, including a preliminary contamination ('environmental site') assessment undertaken as an input to the design
- a review of available geotechnical information relevant to the study area, including information on soil characteristics

- a review of publicly available data and web-based information searches, including:
  - the Contaminated Sites Register and Record of Notices under Section 58 of the *Contaminated Land Management Act 1997*, maintained by the NSW Environment Protection Authority
  - environment protection licences, applications, notices, audits or pollution studies and reduction programs
  - Australian Soil Resource Information System (maintained by the Commonwealth Scientific and Industrial Research Organisation (CSIRO))
  - *Sydney 1:100,000 Geological Map 9130* (NSW Department of Mineral Resources, 1983)
  - *Soil Landscapes of the Sydney 1:100,000 Sheet map (9130)* (Chapman, G.A. et al, 2009)
  - NSW Soil and Land Information System (maintained by the Office of Environment and Heritage)
- identification of the potential to disturb acid sulfate soils and areas of salinity
- recommendations for additional investigations, where necessary
- identification of mitigation measures to address potential soil and contamination impacts.

It is noted that the contamination assessment undertaken as an input to the design was a preliminary assessment only. The purpose of the assessment was to identify areas of potential contamination, and provide recommendations for future more detailed investigations if required. It did not involve any soil sampling, or identify the need for any remediation. This would be undertaken as part of a more detailed contamination assessment, to be undertaken at the detailed design stage.

20.2 Existing environment

20.2.1 Topography

The project area ranges in elevation from the lowest point, which is about 3.5 metres above Australian height datum near Marrickville Station, to the highest point, which is about 36 metres above Australian height datum near Wiley Park Station. Bankstown Station is located about 23 metres above Australian height datum.

Between Punchbowl and Bankstown stations, the project area is located on or near a localised ridgeline. East of Punchbowl Station, the natural topography varies through a series of ridges and gullies. Between Marrickville and Sydenham stations, the project area is located in low-lying terrain.

20.2.2 Geology

The project area traverses six regional geological units, summarised in Table 20.2.

Table 20.2 Geology along the project alignment

Geological unit	Description
Fill	Located in former industrial sites and embankments along the T3 Bankstown Line (e.g. at Marrickville, Dulwich Hill, Wiley Park, and Lakemba stations), below track level within the existing rail corridor, and a thin layer at the top of most cuttings.
Quaternary sediments	Alluvium and estuarine deposits – ranging from sands to sandy clays, to clays, located in vicinity of Marrickville station, and the Cooks River.

Geological unit	Description
Wianamatta Group	Comprising: • Bringelly Shale - siltstone and claystone interbedded with fine sandstone • Minchinbury Sandstone - fine to medium sandstone, bedrock outcropping identified in vicinity of Wiley Park Station • Ashfield Shale – with bedrock outcropping identified between Canterbury and Punchbowl stations.
Mittagong Formation	Interbedded fine to medium sandstone and shale, often disturbed. Bedrock outcropping identified between Dulwich Hill and Canterbury stations.
Hawkesbury Sandstone	Medium to coarse quartzic sandstone, either massive, cross bedded or with occasional shale interbeds. Bedrock outcropping identified between Marrickville and Canterbury stations.
Dykes	Volcanic intrusions - dykes are located at Marrickville, Canterbury and Belmore. Faults and joint swarms (which act as preferential drainage paths) are located near Canterbury, Marrickville, and Bankstown stations.

20.2.3 Soils

The following soil types underlie the project area:

- Blacktown, mapped across most of the project area
- Gymea, mapped as a larger patch between Canterbury and Dulwich Hill stations, and a smaller area between Dulwich Hill and Marrickville stations
- Glenorie, mapped north of Bankstown Station
- Birrong, mapped west of Cooks River, and local occurrences in Belmore and Wiley Park
- disturbed terrain, mapped west of Punchbowl Station.

There is a substantial amount of fill material along and within 100 metres of the project area, including railway ballast, gravel, building debris, and excavated soil material. The majority of the project area consists of fill associated with railway embankments, or exposed bedrock associated with cuttings and overlain with rail ballast or fill.

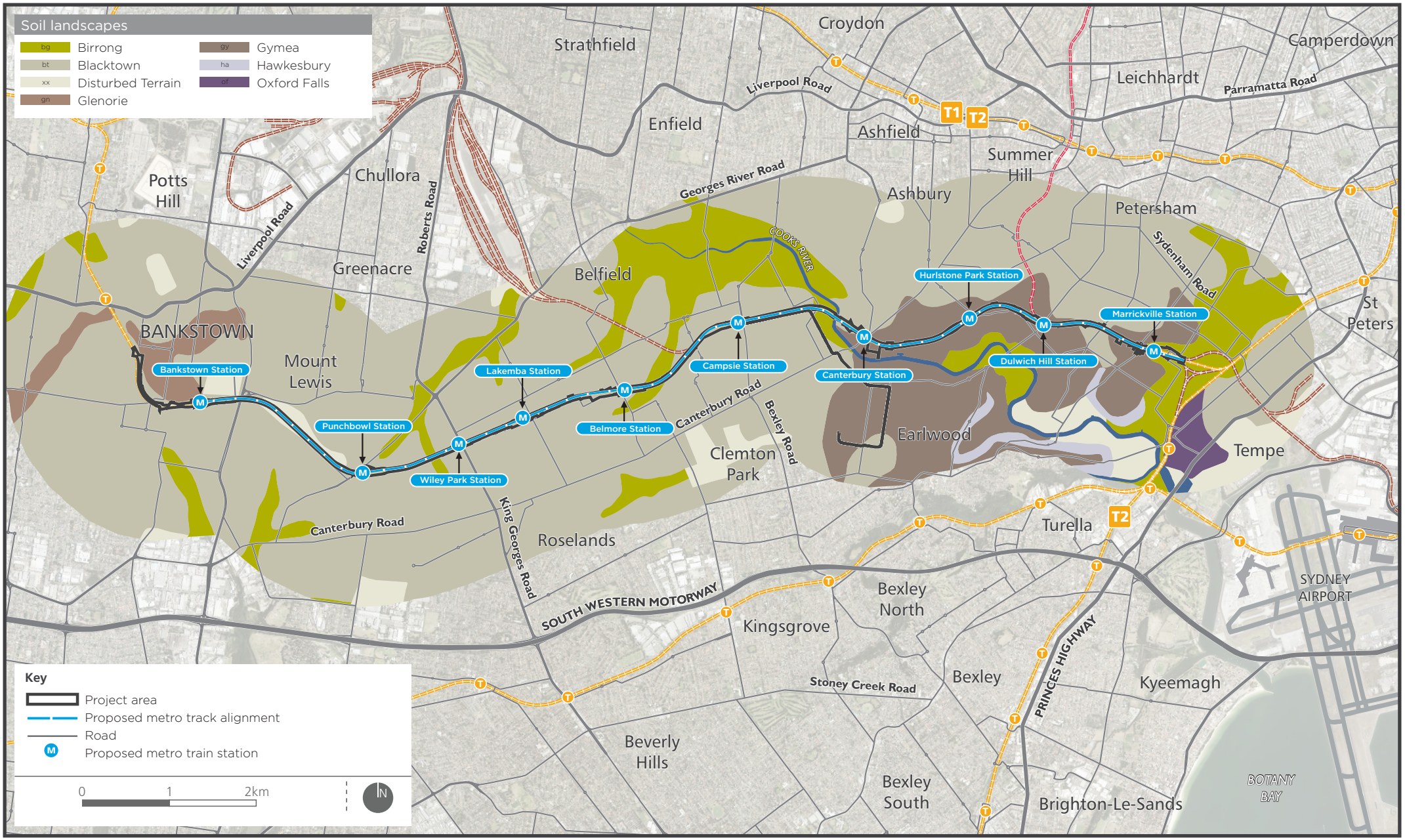
Soil types are shown on Figure 20.1.

Soil salinity

Areas prone to salinity are usually located at low points in the landscape, such as floodplains, valley floors, or at the foot of a ridge. As shown in Figure 20.2, potential saline soils are located west of Punchbowl Station, including:

- high salinity potential soils on either side of Stacey Street and north of Gordon Street
- moderate salinity potential soils between Punchbowl and Bankstown stations.

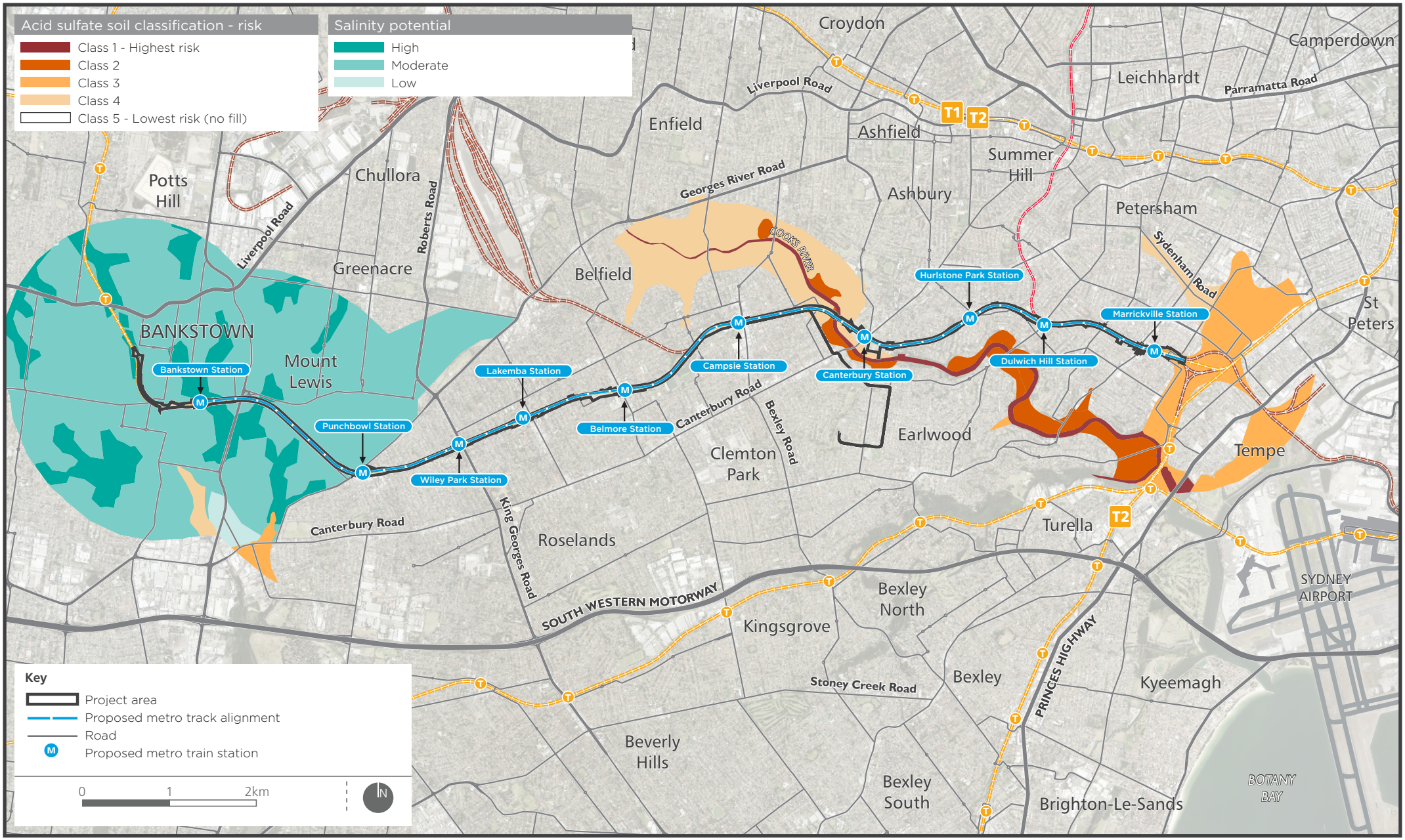
The remainder of the project area is not mapped as having salinity potential. However, there may be areas of salinity potential in these areas.



sydney METRO | city & southwest

Soils types along the project alignment

FIGURE 20.1



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Salinity potential and acid sulfate soils risk

FIGURE 20.2

Acid sulfate soils

Acid sulfate soils are naturally occurring soils containing iron sulfides, which, on exposure to air, oxidise and create sulfuric acid. This increase in acidity can result in the mobilisation of aluminium, iron, and manganese from the soils. As shown in Figure 20.2, potential acid sulfate soils are located near the Cooks River at Canterbury, which is mapped as having a high likelihood of acid sulfate soils. Areas mapped with a low likelihood of acid sulfate soils are located between Canterbury and Campsie stations. Acid sulfate soils may also be encountered in areas mapped as 'disturbed terrain', including around Canterbury Station, and between Canterbury and Campsie stations.

20.2.4 Potential for contamination

Contaminated sites

No site listed on the EPA's contaminated land register are located within 100 metres of the project area. However, three sites which have been notified to the EPA are located within 100 metres of the project area, as listed in Table 20.3.

Table 20.3 Registered contamination sites

Suburb	Site name and address	Site activity	Contamination status	Location in relation to the project area
Marrickville	Way Street	XPT Maintenance Facility, other industry	Regulation under CLM Act not required	East of the project area between Sydenham and Marrickville stations
Marrickville	2 Carrington Road	Unclassified	Regulation under CLM Act not required	Within the project area between Sydenham and Marrickville stations
Belmore	348 Burwood Road	Rail land, unclassified	Regulation under CLM Act not required	Within the project area between Belmore and Lakemba stations

Note: 1: CLM Act - *Contaminated Land Management Act 1997*

Potentially contaminated areas

The preliminary environmental site assessment identified the potential risk of contamination along the project area. The assessment concluded that there is a risk of contamination along the length of the project area, albeit a low to medium risk for the majority of the project area, with potential contamination sources being historical rail activities, and commercial and residential land use in surrounding areas. Potential contaminants identified in low to medium risk areas included:

- asbestos
- hydrocarbons
- heavy metals
- herbicides.

Sections of the project area are suspected have a medium to high risk of contamination are listed in Table 20.4.

Table 20.4 Areas with a medium to high contamination risk in the project area

Location	Potential contamination sources	Potential contaminants present
Between Sydenham and Marrickville stations	• previous site investigations identified asbestos in soil and petroleum aromatic hydrocarbons in groundwater north of the project area, at 361 Victoria Road	Within the vicinity of 361 Victoria Road: • asbestos in soil • petroleum aromatic hydrocarbons in groundwater
Between Campsie and Belmore stations (triangular area within the rail corridor)	• historical rail activities • historical commercial and residential land use	• arsenic in ballast • asbestos • hydrocarbons (including chlorinated hydrocarbons in fill) • heavy metals (including in groundwater) • herbicides
Between Punchbowl and Bankstown stations (car park at North Terrace)	• historical rail activities • historical commercial and residential land use	• asbestos • hydrocarbons (in soil and groundwater) • heavy metals • herbicides

20.3 Impact assessment

20.3.1 Risk assessment

Potential risks

The environmental risk assessment for the project, undertaken for the State Significant Infrastructure Application Report, identified the following as the main soil and contamination risks:

- exposure of acid sulfate soils during construction
- disturbance of contaminated land during construction
- encountering contaminated building structures during demolition works
- contamination of land, groundwater or waterways due to leaks and spills.

Other potential risks include ground disturbance as a result of vegetation removal and the creation of embankments, increasing the potential for erosion and sedimentation.

How potential impacts would be avoided

In general, potential soils and contamination impacts would be avoided by:

- managing risks associated with contamination in accordance with relevant legislative and policy requirements, as described in Section 20.4
- designing, constructing, and operating the project in a way to minimise impacts associated with soils and contamination
- implementing standard soil and contamination mitigation measures described in Section 20.4.

20.3.2 Construction

Excavation and ground disturbance activities would expose and disturb soils, which, if not adequately managed, could result in:

- erosion of exposed soil and stockpiled materials
- dust generation
- an increase in sediment loads entering the stormwater system and/or local runoff, and therefore nearby receiving waterways
- increase in salinity levels in soil
- acid sulfate soil conditions
- mobilisation of contaminated sediments, with resultant potential for environmental and human health impacts.

Potential impacts as they relate to soils and contamination are considered below. Potential water quality impacts, including impacts caused by increased sediment loads, are considered in Chapter 21 (Hydrology, flooding and water quality), air quality (dust) impacts are considered in Chapter 23 (Air quality), and health and safety risks, including as a result of contamination and hazardous materials, are considered in Chapter 25 (Hazards, risks and safety).

Soils

Soil erosion

Construction of the project would temporarily expose the natural ground surface and sub-surface through the removal of vegetation, overlying structures (such as buildings and footpaths), and excavation. The exposure of soil to runoff and wind can increase soil erosion potential, particularly where construction activities are undertaken in soil landscapes characterised by a high and extreme erosion hazard. These include the:

- Birrong landscape, which underlies the project area west of Cooks River, and local occurrences in Belmore and Wiley Park
- Glenorie landscape, which underlies the area north of Bankstown Station.

Soil erosion impacts are expected to be minimal for the majority of project as a result of the relatively limited areas of excavation and earthworks, the overall topography of the project area, and the temporary nature of exposure.

Regardless of the amount of excavation required, the potential for erosion impacts would be minimised by implementing standard soil erosion management measures during construction, as described in Section 20.4.

Acid sulfate soils

The exposure of acid sulfate soils can impact water quality and structures. Soils excavated from potential acid sulphate areas would be subject to the provisions of an acid sulphate soil management plan. Once acid sulphate soils have been treated, depending on the results of testing, they could either be reused on site, or disposed of at an appropriate facility.

Salinity

Excavation would be undertaken in areas with high to moderate potential for salinity surrounding Bankstown and Punchbowl stations. In addition, construction may also disturb soils in areas with unidentified salinity potential in the rest of the project area.

Impacts may occur as a result of the erosion and off-site transport of saline sediments, resulting in impacts on the receiving environment.

The potential for impacts would be minimised by implementing the mitigation measures provided in Section 20.4.

Contamination

Excavation may disturb any contamination and hazardous materials present in soil. If inadequately managed, the disturbance of areas of contamination has the potential for:

- direct contact and/or inhalation by site workers, users, and visitors
- impacts to surrounding environmental receivers (including surrounding ecosystems and flora and fauna, where present)
- mobilisation and migration of surface and subsurface contaminants via leaching, runoff and/or subsurface flow, impacting nearby soils, surface water, and groundwater.

Prior to the disturbance of areas identified to have the potential for contamination (described in Section 20.2.4), further investigation and testing would be undertaken in accordance with the recommendations of the preliminary contamination assessment and any subsequent assessments, to determine the likely risk and appropriate management protocols. This may include the requirement for remediation in certain areas. Relevant mitigation measures are provided in Section 20.4. The need for any remediation would be determined as an outcome of a future, more detailed site assessments.

If inadequately managed, construction activities have the potential to result in the contamination of soil due to spills and leaks of fuel, oils, and other hazardous materials. These potential impacts would be minimal with the implementation of standard mitigation measures, provided in Section 20.4.

Hazardous materials

The demolition of buildings and structures may result in disturbance of hazardous materials. Mishandling of hazardous material waste has the potential to contaminate soils. Mitigation measures are provided in Section 20.4.2 and Chapter 25 (Hazards, risks and safety) to minimise the potential impacts of hazardous materials.

20.3.3 Operation

Contamination

Operation has the potential to result in contamination of soils due to any spills and leaks of fuel, oils, and other hazardous materials from the routine operation of trains, maintenance vehicles, and other project infrastructure, including operation and maintenance activities at substations.

The potential for contamination as a result of general maintenance activities is considered to be low, based on the amount of vehicles and equipment which would likely be used during maintenance. This impact would be minimised by implementing procedures to manage spills during operation of the rail network similar to those used on existing Sydney Trains/Transport for NSW operations.

Bunding designed in accordance with the applicable standards and guidelines would be incorporated into the design of relevant facilities, including substations, to contain any chemical spills or leaks.

20.4 Mitigation measures

20.4.1 Approach to mitigation and management

Site-specific investigations and analysis would be undertaken during detailed design as an input to the design of the project and identification of appropriate treatment measures (as required) prior to construction.

Soils

Construction erosion and sediment control measures would be developed and implemented in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (Department of Environment and Climate Change, 2008). Measures would be designed as a minimum for the 80th percentile; five-day rainfall event.

As described in Section 9.1.2, environmental management during construction would be guided by the Construction Environmental Management Framework (provided in Appendix D). The framework requires preparation of a soil and water management plan as one of the components of the Construction Environmental Management Plan. The soil and water management plan is required to define the management and monitoring measures that would be implemented to manage, in accordance with relevant guidelines:

- surface and groundwater impacts
- contaminated material
- erosion and sediment control.

Further information on the approach to environmental management during construction is provided in Section 28.4.

Contamination and the need for remediation

Further contamination assessments would be undertaken based on the results of the preliminary assessment, to confirm the risk of contamination and management requirements. This would include intrusive soil investigations in areas known or suspected to be contaminated, to confirm the extent of contamination, and identify appropriate management and remediation requirements. Hazardous material surveys would also be undertaken for structures to be removed.

Requirements for remediation would be driven by the site specific exposure scenarios and environmental risk. Where contamination cannot be managed appropriately in accordance with standard construction processes, a remediation action plan (RAP) would be developed, and an Environment Protection Authority Accredited Site Auditor would be engaged to audit the works. Triggers for a RAP and the involvement of an auditor include the management of hazardous waste or contaminated groundwater remediation for the purposes of managing human health or environmental risk. The excavation and disposal of waste to a licenced facility for construction and operational purposes does not trigger the need for a RAP, and this be managed as described in Chapter 26 (Waste Management). Where practicable, any remediation required would be integrated with construction activities to achieve efficiencies in the use of plant, equipment, and materials.

20.4.2 List of mitigation measures

The mitigation measures that would be implemented to address potential soil and contamination impacts are listed in Table 20.5.

Table 20.5 Mitigation measures – soils and contamination

ID	Impact/issue	Mitigation measures	Relevant locations(s)
Design/pre-construction			
SC1	General soil and erosion management	Erosion and sediment control measures would be implemented in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (DECC, 2008). Measures would be designed as a minimum for the 80th percentile, five day rainfall event.	All
SC2	Acid sulfate soils	Prior to ground disturbance in high probability acid sulfate areas, testing would be carried out to determine the presence of acid sulfate soils. If acid sulfate soils are encountered, they would be managed in accordance with the *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998), and the *Waste Classification Guidelines* - Part 4: Acid Sulfate Soils (EPA, 2014).	Canterbury station, and sections between Sydenham and Marrickville stations, and Canterbury and Campsie stations
SC3	Saline soils	Prior to ground disturbance in areas of potential soil salinity, testing would be carried out to confirm the presence of saline soils. If saline soils are encountered, they would be managed in accordance with *Site Investigations for Urban Salinity* (DLWC, 2002).	Area surrounding Bankstown and Punchbowl stations
SC4	Contamination	WorkCover dangerous goods searches would be carried out for properties that have potential contamination near Belmore Station, to provide additional site characterisation and identify the risk of contamination in these areas.	Belmore Station
SC5		A detailed contamination assessment would be undertaken in areas with a medium to high risk of contamination, to confirm the nature and extent of contamination, specific requirements for further investigation and any remediation, and/or management requirements of any contamination.	Between Sydenham and Marrickville stations, Campsie and Belmore stations; and Punchbowl and Bankstown stations
SC6		Hazardous materials surveys would be undertaken during detailed design for all proposed demolition activities, and for utility adjustments as required.	All
SC7		In the event a remediation action plan is required, it would be developed in accordance with *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998), and a NSW Environment Protection Authority Accredited site auditor would be engaged to audit the works.	Between Sydenham and Marrickville stations, Campsie and Belmore stations; and Punchbowl and Bankstown stations

ID	Impact/issue	Mitigation measures	Relevant locations(s)
Construction			
SC8	Unexpected contamination	In the event that indicators of contamination are encountered during construction (such as odours or visually contaminated materials), work in the area would cease, and the finds would be managed in accordance with the unexpected contamination finds procedure.	All
Operation			
SC9	Soil erosion and sedimentation	During any maintenance work where soils are exposed, sediment and erosion control devices would be installed in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004).	All

20.4.3 Consideration of the interactions between mitigation measures

There are interactions between the mitigation measures for soils and contamination (summarised in Section 20.4) and those for water quality (Chapter 21), waste (Chapter 26), and hazardous materials (Chapter 25). Together, all these measures would ensure appropriate management of soil, including contaminated soils and materials, to minimise the potential for impacts to the community and environment.

The implementation of erosion control measures and devices during construction has the potential to result in some potential impacts on overland flow paths. Impacts on overland flow paths are considered to be manageable, as all measures would be installed in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* and *Managing Urban Stormwater: Soils and Construction Volume 2A*.

20.4.4 Managing residual impacts

The mitigation measures provided in Section 20.4.2 are expected to reduce the potential for soil and contamination impacts during construction and operation. With the implementation of these measures, residual impacts are expected to be minimal.