Part B

Pyrmont Station

14

14.0 Pyrmont Station

This chapter provides a description of Pyrmont Station and its precinct during operation and construction of this proposal. This chapter also provides an assessment of potential impacts during operation and construction that relate to Pyrmont and identifies mitigation measures to address these impacts.

14.1 Overview

Pyrmont Station would be located at the centre of the Pyrmont peninsula, across a western and eastern site. The Pyrmont Station western site would be located between Paternoster Row and Pyrmont Street, immediately north of Pyrmont Bridge Road, and the Pyrmont Station eastern site would be located between Edward Street, Union Street and Pyrmont Bridge Road. Entrances would be located on Pyrmont Bridge Road at the western site, and Union Street at the eastern site.

The area surrounding the Pyrmont Station western site includes low- and medium-rise character terrace buildings, former warehouse buildings and local hotels at prominent corner sites. There are some remnant buildings that exhibit a heritage character. The Pyrmont Station eastern site is located near The Star Sydney, a casino that is subject to a proposed redevelopment application. There are also several heritage buildings in the vicinity of this site.

Pyrmont Station would be located on the western fringe of the Sydney CBD, containing commercial, residential and retail development, and extensive foreshore areas with parks and waterside boardwalks. The precinct has been identified for collaborative planning between the NSW Government and the City of Sydney Council, with the intention of 'facilitating an economic and jobs hub' and a 'gateway to the CBD' (City of Sydney, 2020).

The station would support the aims of the Pyrmont Peninsula Place Strategy (NSW Department of Planning, Industry and Environment, 2020b), which includes a transition to a place where people walk and use public transport to connect to other places. The station would also support existing and proposed residential, employment, tourism, and entertainment land use in the area.

14.1.1 Operation

The vision for the Pyrmont Station and its surrounds is for a new harbour-side precinct enabled by the metro station, focused on knowledge-intensive employment and supported by public domain, retail and residential activities.

Customers would be able to access the station via two entrances, one on Union Street and one on Pyrmont Bridge Road.

Pyrmont Station would support the precinct's role as a significant employment and entertainment destination and urban renewal area connected to the Sydney CBD, The Bays Precinct and Western Sydney. It would provide a direct rail service to Pyrmont to support a catchment not currently serviced by the Sydney Trains network. It would also facilitate efficient interchange with bus and light rail and enable comfortable and safe connections for pedestrians and cyclists, including on Union Street, Pyrmont Street and Pyrmont Bridge Road. It would provide a high-quality public domain contributing to the streetscape, complementing the surrounding context and heritage character.

The existing transport network, such as the separate cycle path on Union Street and the shared zone on Paternoster Row, would provide good access to the station.

The Pyrmont Station western site would be located within the Pyrmont Heritage Conservation Area. Overall, impacts on the heritage conservation area would be localised to the immediate streetscapes rather than the whole heritage conservation area, which expands over about five hectares of the Pyrmont area. All other potential impacts on important heritage features would be neutral or negligible.

This proposal would improve the character and visual amenity of the area due to the new metro station and the associated accessibility and placemaking outcomes. These improvements would also result in social benefits associated with increased accessibility to jobs, education and services and improved amenity, and provide some opportunities for local businesses such as increased passing trade and improved accessibility.

Key potential impacts anticipated during operation of Pyrmont Station include:

- while the majority of intersections around the station are expected to operate with capacity or improve with the station, there is forecast to be a reduction in performance at the Pyrmont Bridge Road and Union Street intersection due to high pedestrian demands at the zebra crossing. Sydney Metro is investigating potential measures to improve overall performance for both pedestrians and vehicles at this intersection in consultation with the City of Sydney Council and Transport for NSW
- the proposal would generally comply with all relevant noise and vibration criteria; however, there would be minor non-compliances of the amenity target criteria during the night-time. These noise levels comply with the amenity acceptance criteria that is considered appropriate in this location. Attenuation measures would be further developed throughout the detailed design phase
- potential flooding impacts at the station as the proposed station entry surface levels are below the flood protection level and would require active protection measures.

Potential impacts associated with other environmental matters such as Aboriginal heritage, groundwater, social and business would comply with the relevant criteria and/or be minor to negligible.

14.1.2 Construction

Major civil construction including station excavation and tunnelling work at Pyrmont was assessed under a previous Sydney Metro West planning application and does not form part of this proposal. This proposal includes the construction activities required to complete Pyrmont Station, and associated precinct work required for the operation of Sydney Metro West.

Construction of Pyrmont Station would require the continued use of the two construction sites established under the previous Sydney Metro West planning application. The proposed work is expected to have a total duration of about four years.

Construction transport arrangements would largely be a continuation of those established under the previous Sydney Metro West planning application, including temporary closure of the footpath and loss of parking along the southern side of Union Street between Edward Street and Pyrmont Bridge Road.

The performance of some intersections around the site would temporarily decline during peak periods due to the construction works and vehicles, including at Pyrmont Bridge Road / Union Street, Union Street / Pyrmont Street and Harris Street / Allen Street. Potential construction traffic impacts would be managed in accordance with the measures in the Construction Traffic Management Framework (CTMF).

‘Moderate’ to ‘high’ noise impacts are predicted at the nearest residential receivers during a worst-case situation, particularly surrounding the western construction site. ‘Moderate’ sleep disturbance impacts are predicted during a worst-case situation at a small number of nearby residential receivers during external fit-out activities, such as during the installation of cladding. The number of potential sleep disturbance impacts would depend on several factors, including the type of equipment being used and the duration of noisy work. There would be periods when construction noise levels are much lower than the worst-case levels predicted and there would be times when no equipment is in use and no impacts occur. The Sydney Metro Construction Noise and Vibration Standard (CNVS) would be implemented to manage these temporary impacts and further investigation of minimising sleep disturbance would be completed as detailed construction planning information becomes available.

The Pyrmont Station western construction site is located within the Pyrmont Heritage Conservation Area, surrounded by a high proportion of intact mid- to late-19th century terrace housing. Temporary structures and activities associated with construction would be visually prominent and would temporarily overshadow significant views of nearby terrace housing and worker’s houses on Pyrmont Street and Paternoster Row. This would result in temporary minor indirect impacts to the conservation area.

Two planted London Plane street trees on Edward Street would be removed as part of this proposal which, combined with the trees removed as part of the previous Sydney Metro West planning application, would have negligible biodiversity impacts. The combination of trees removed by this proposal and the previous Sydney Metro West planning applications would be replaced to provide a net increase in the number of mature trees at a ratio of 2:1 across the entire Sydney Metro West project.

Other key potential impacts during construction would include:

- temporary minor to moderate impacts to landscape character and visual amenity associated with the continued presence of construction work
- temporary low social impacts due to construction-related disruptions and potential amenity impacts
- temporary slight to moderate negative impacts to local businesses, mainly associated with changed traffic conditions and potential amenity impacts.

Potential impacts associated with other environmental matters such as Aboriginal heritage, contamination, groundwater and flooding would be minor to negligible.

These impacts would be managed through the implementation of the Sydney Metro management frameworks and standard mitigation measures including the Construction Environmental Management Framework (CEMF), Overarching Community Communications Strategy (OCCS), CTMF and CNVS.

14.2 Station and precinct description

14.2.1 Design development

Development of the design has involved ongoing consultation with stakeholders and the Design Advisory Panel. This has included:

- ongoing meetings and design workshops held with the City of Sydney Council and NSW Department of Planning and Environment
- meetings and advice from the Design Advisory Panel.

Key features or changes to the design to avoid or minimise impacts, and respond to feedback from stakeholders and the Design Advisory Panel include:

- the provision of setbacks to the station entry buildings on Union Street and Pyrmont Bridge Road to provide widened footpaths and improved pedestrian amenity, responding to feedback from the City of Sydney Council and supported by the Design Advisory Panel
- the scale of the western station entry building to respond to buildings across Pyrmont Bridge Road and Paternoster Row and respect the heritage conservation area.

14.2.2 Station design

The indicative layout and key design elements of Pyrmont Station are shown in Figure 14-1 with a long-section and cross-section shown in Figure 14-2 and Figure 14-3 respectively. The design of the metro station is subject to detailed design development.

The key features of Pyrmont Station are provided in Table 14-1.

Table 14-1 Key features – Pyrmont Station

Key features	Description
Proposed station entry	• entry to the eastern station site on Union Street • entry to the western station site on Pyrmont Bridge Road.
Customers	• residents within walking and cycling distance • employees travelling to and from nearby employment and commercial areas • visitors to local entertainment, retail, dining or recreational attractions • customers transferring to and from other transport modes.
Primary station function	Destination and origin.
Catchment	Residential, employment, recreation and tourism.
Transport interchange	• walk • cycle • bus • light rail (indirect connection) • point-to-point transport • kiss and ride.

Pyrmont Station would consist of an underground station with an island platform in an east-west orientation.

Customers would be able to access the station via two entrances, one on Union Street and one on Pyrmont Bridge Road, with connections to an underground concourse level within the station cavern with a central platform.

The western station site would include an entrance on Pyrmont Bridge Road. Escalators and/or stairs and lifts would provide access to the station platforms from the surface.

The eastern station site would include a station entrance on Union Street. The station would provide for an active frontage on Union Street (with fit-out and use of these spaces subject to separate approval).

At both sites, station plant and equipment would be located underground, above the station entry and at ground level.

The aboveground station infrastructure (including the station services, space for non-station use and concourse) would be approximately three to five storeys above street level.

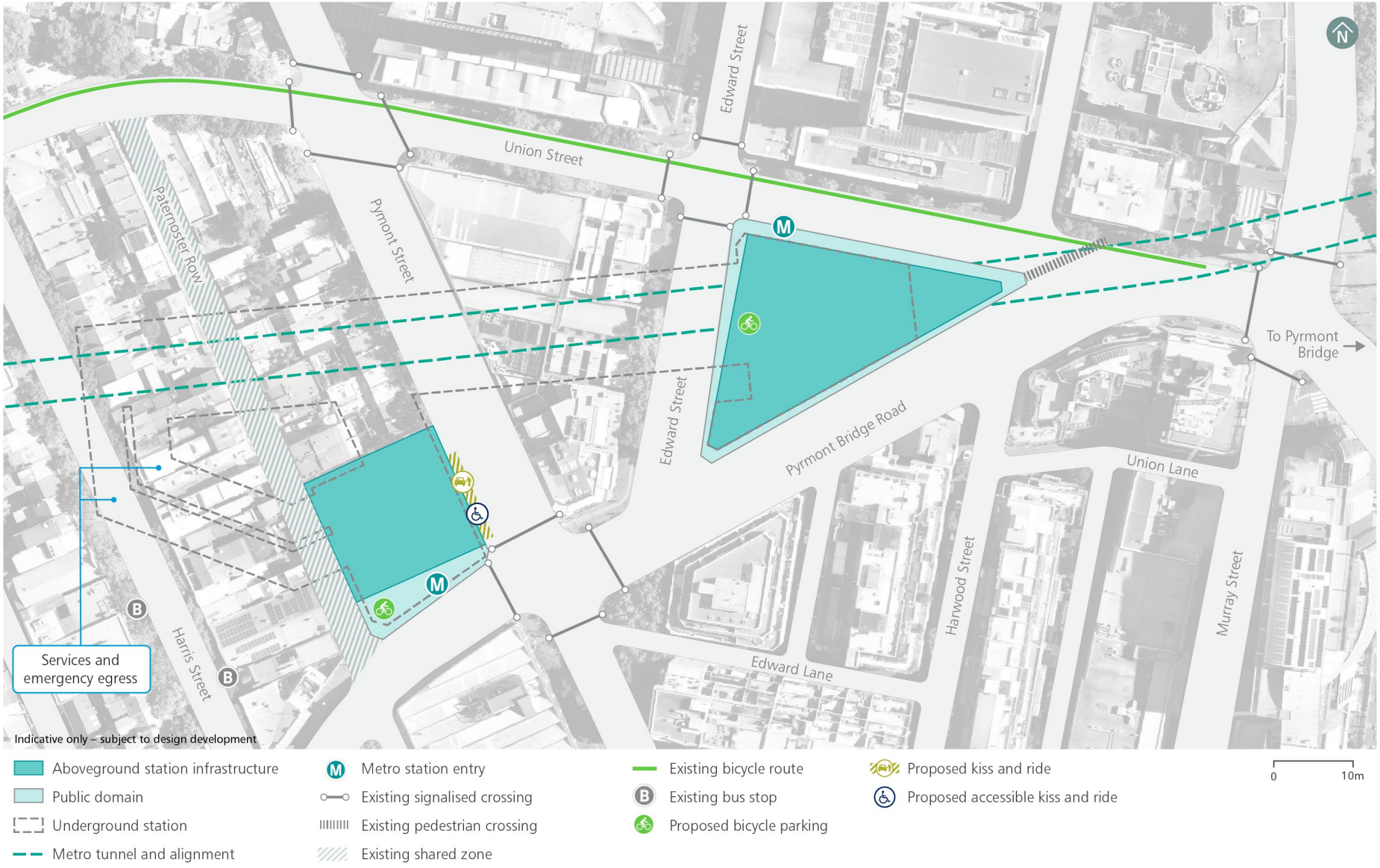

Figure 14-1 Indicative layout and key design elements – Pyrmont Station

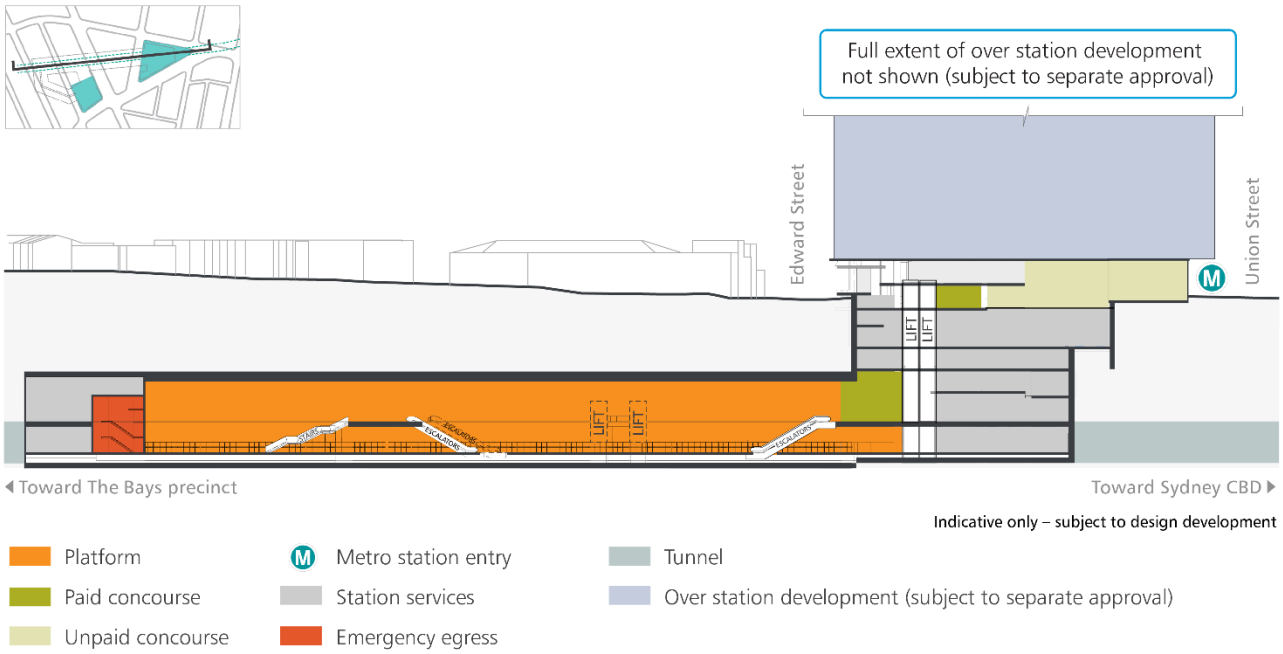

Figure 14-2 Indicative long-section – Pyrmont Station

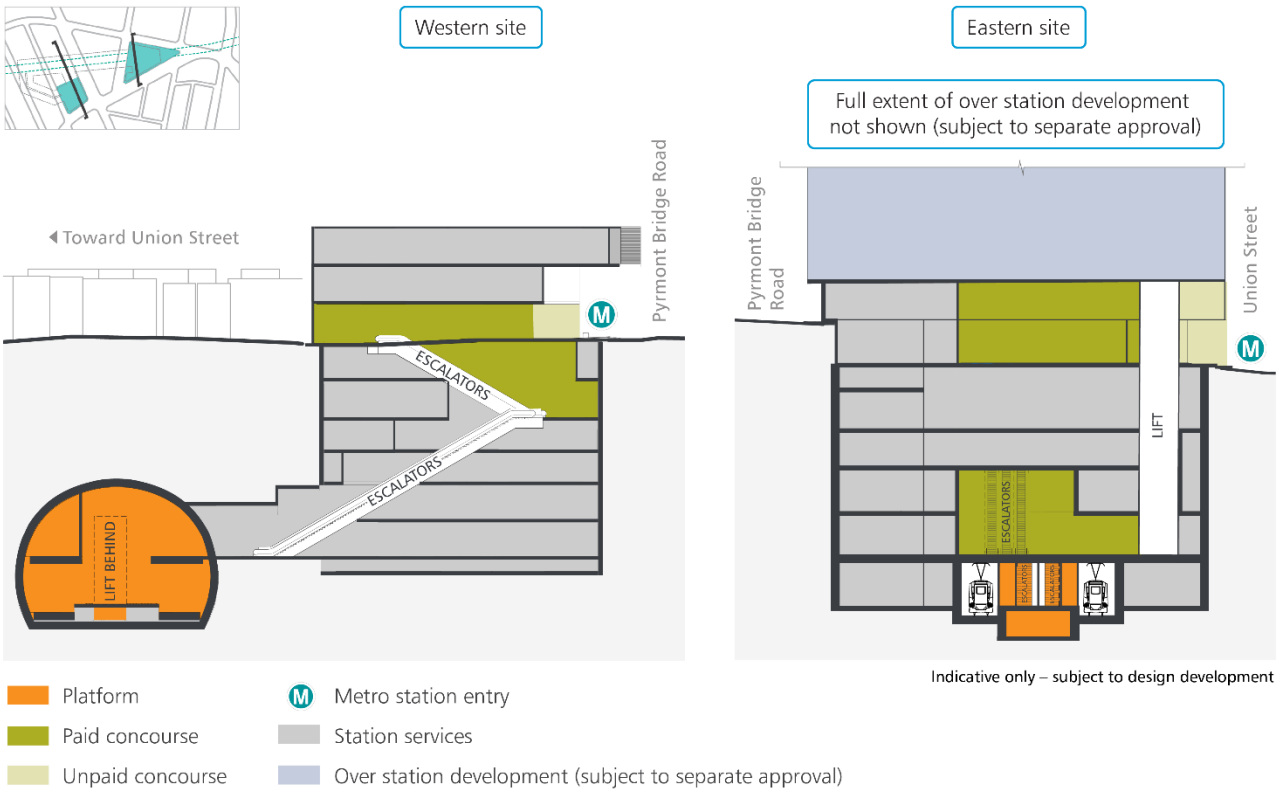

Figure 14-3 Indicative cross-sections – Pyrmont Station

14.2.3 Station precinct and interchange facilities

Pyrmont Station would include a series of precinct and interchange elements such as:

- bicycle parking
- accessible kiss and ride
- public domain areas at the station entrances
- built elements and provision of utilities and services to provide space for future non-station uses (e.g., retail, commercial and/or community facilities), within the aboveground station infrastructure. Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 5.4.3 (Structures and spaces for non-station uses) for further detail.

14.2.4 Provisioning for over station development

As shown in Figure 14-2 and Figure 14-3, following the completion of construction, over station development would be proposed at the eastern station site. Over station development is not proposed at the western station site.

This proposal would include and has assessed the following to support the future over station development:

- structural elements to enable the construction of future over station development, up to a podium level that future development would be constructed above
- space for future lobbies, lift cores, access, parking, loading docks and building services for future over station development
- subdivision.

The potential extent of the over station development is provided on Figure 14-4 and is discussed further in Section 5.4.5 (Related development) of this Environmental Impact Statement.

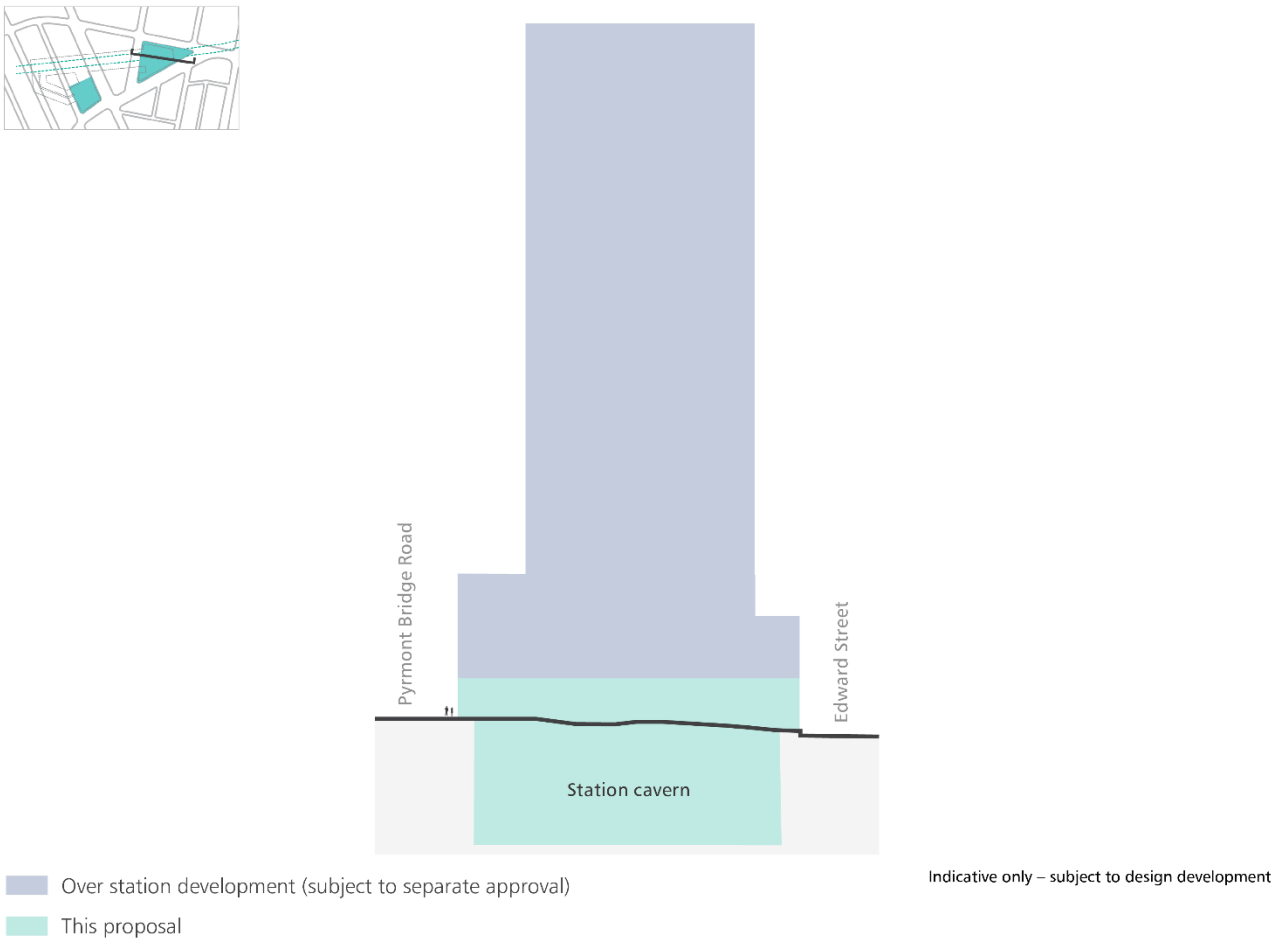

Figure 14-4 Potential over station development extent – Pyrmont Station

Delivery of the over station development does not form part of this proposal and would be subject to separate assessment and approval (with the exception of the provisioning elements listed above).

14.3 Placemaking

The vision for Pyrmont Station and its surrounds is for:

A new harbourside precinct enabled by the metro station, focused on knowledge-intensive employment and supported by public domain, retail and residential activities.

14.3.1 Integration with strategic planning

The Eastern City District Plan (Greater Sydney Commission, 2018b) identifies Pyrmont as part of the Harbour CBD metropolitan centre and the emerging innovation corridor along the western and southern fringes of the CBD. Since the release of the District Plan, a number of plans and strategies have been developed to capitalise on this opportunity, which have informed the development of Pyrmont Station and would guide the future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 5.2 (Placemaking and design) of this Environmental Impact Statement. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist).

City Plan 2036: Local Strategic Planning Statement

City Plan 2036: Local Strategic Planning Statement (City of Sydney, 2020) identifies the Pyrmont peninsula as part of the City Fringe Innovation Corridor. Pyrmont Station would be located in the Harris Street village, on the western fringe of the city, containing commercial, residential and retail development, and extensive foreshore areas with parks and waterside boardwalks. The Plan identifies that a metro station at Pyrmont would be a catalyst for economic and employment growth in the area and would create a continuous employment corridor linking Central Sydney, Pyrmont and The Bays.

The Pyrmont peninsula is also identified as a precinct for collaborative planning between the NSW Government and the City of Sydney Council, with the intention of 'facilitating an economic and jobs hub' and a 'gateway to the CBD' (City of Sydney, 2020). Sydney Metro West would support the vision for economic and employment growth at Pyrmont.

Pyrmont Peninsula Place Strategy

The Pyrmont Peninsula Place Strategy (NSW Department of Planning, Industry and Environment, 2020b) sets out a vision for Pyrmont at the forefront of the future of work, a place enlivened by innovation, creativity and design thinking, and a globally connected place. The Strategy identifies a Sydney Metro Station in Pyrmont as they key catalyst for public transport connectivity and a key enabler for growth and change.

The Strategy identifies areas that can accommodate future growth in Darling Island, Blackwattle Bay, Tumbalong Park and Ultimo sub-precincts, while enabling more gradual growth in the Pirrama, Pyrmont Village and Wentworth Park sub-precincts. The Strategy also includes measures to protect solar access, heritage and local character.

The Strategy provides a Structure Plan that sets out the spatial interface of the vision, key Peninsula-wide directions and identifies the areas capable of change, which includes the Pyrmont Station eastern site. It sets a framework for the future of the peninsula with indicative movement and open space networks linking distinct neighbourhoods and places.

Seven sub-precincts in the peninsula have been defined, based on existing (as well as potential) uses and character. The Pyrmont Station western entry would be located in the Pyrmont village sub-precinct, a place of history, innovation and culture. To retain the heritage nature and character of this area, significant change is not anticipated in Pyrmont village, outside of new space for jobs and some limited residential growth. The design of the Pyrmont Station western site would respond to and respect the existing heritage and character of this precinct through the height, scale and materiality of the building.

The Pyrmont Station eastern entry is located on the edge of the Darling Island precinct, an area set to evolve over the next 20 years, where tourism, visitor and innovation businesses will attract, invest and reinvent their offerings within a globally-focused entertainment destination. The eastern station entry would directly support these opportunities.

Pyrmont Peninsula Place Strategy Urban Design Report (including sub-precinct master plans)

The Pyrmont Peninsula Place Strategy Urban Design Report Vol. 3 Sub-precinct master planning (NSW Department of Planning, Industry and Environment, 2021c) documents the precinct master planning that has been undertaken to support and build on the priorities set out in the Pyrmont Peninsula Place Strategy. This includes high-level guidance on how the seven sub-precincts (including the Pyrmont Village and Darling Island sub-precincts) could develop over the next 20 years to create unique and liveable places. The Pyrmont Station eastern site is located within the Darling Island sub-precinct and the Union Street character area. The metro station is identified as providing the primary gateway into the peninsula. The master plan includes options for the conversion of Union Street into the civic heart of the peninsula such as improvements to pedestrian space and amenity.

The Pyrmont Station western site is located within the Pyrmont Village sub-precinct and adjacent to the Elizabeth Healey Reserve character area. This character area includes the objective to 'integrate with Pyrmont Bridge Road to enhance pedestrian arrival experience through the future metro station'.

The objectives and guidance in the Pyrmont Peninsula Place Strategy Urban Design Report (including sub-precinct master plans) will be considered, where relevant, as part of ongoing design development for Pyrmont Station.

Draft Pyrmont Peninsula Design Guidelines

The Draft Pyrmont Peninsula Design Guidelines (NSW Department of Planning, Industry and Environment, 2021d) was exhibited between November 2021 and February 2022 alongside the Pyrmont Peninsula sub-precinct master plans.

The Draft Pyrmont Peninsula Design Guidelines provide detailed planning guidance and controls for key sites and future metro sites in Pyrmont, to supplement the provisions of the Sydney Local Environmental Plan 2012. This includes objectives and design guidance for the Pyrmont Station western site ('Metro site west') and eastern site ('Metro site east').

The objectives identified for the metro sites focus on the provision of safe, legible and equitable access to the metro station; and a high-quality design which minimises potential impacts on local character, amenity, heritage and public domain. The guidelines will be considered, where relevant, as part of ongoing design development for Pyrmont Station.

Sustainable Sydney 2030: Community strategic plan

Sustainable Sydney 2030 (City of Sydney, 2017) is a plan for a green, global and connected city and expresses the City's commitment to the sustainable development of the city to 2030 and beyond. The plan focuses on physical, economic, social and cultural environments. Pyrmont Station would support the strategic directions outlined in the plan, including the objectives associated with establishing integrated transport for a connected city.

Blackwattle Bay State Significant Precinct Study

The Blackwattle Bay State Significant Precinct Study (NSW Department of Planning, Industry and Environment, 2021e) provides guidance on the intended urban renewal of Blackwattle Bay following the relocation of the Sydney Fish Market. The study describes strategies to make the harbour foreshore more accessible and attractive, including the intended provision of around three hectares of new parks and plazas.

Pyrmont Station would be located to the east of Blackwattle Bay. The western station entry would support improved access and realisation of urban renewal at Blackwattle Bay via a short walk.

14.3.2 Place and design principles

Place and design principles for Pyrmont Station were identified in Section 5.2 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 5.2 (Placemaking and design) of this Environmental Impact Statement). Table 14-2 outlines how these principles have been achieved in the Pyrmont Station design.

Table 14-2 Design responses to Pyrmont Station place and design principles

Place and design principle	Design response
Support Pyrmont's role as a significant employment and entertainment destination and urban renewal area with a new metro station, connected to the Sydney CBD, The Bays Precinct and Western Sydney	• the provision of a metro station at Pyrmont would directly support employment, entertainment and urban renewal through improved connectivity • the eastern entry is strategically positioned on the edge of an area 'capable of change' and provides the opportunity for a visual connection with the western CBD skyline (through a future over station development) • the western entry provides enhanced connectivity to the cultural centre of Pyrmont on the ridge line, and a potential connection to urban renewal at Blackwattle Bay through a short walk.
Provide a direct rail service to Pyrmont to support a catchment not currently serviced by the Sydney Trains network	• a new metro station at Pyrmont would provide enhanced transport connectivity and a new rail catchment for an area not currently serviced by the Sydney Train network • connectivity would be enhanced by connections to nearby transport infrastructure, such as light rail and buses.
Align with the strategic directions of the Pyrmont Peninsula Place Strategy to deliver a metro station that will reinvigorate investment, and facilitate a future integrated development which achieves design excellence, responds to context and delivers Place Strategy aspirations	• the proposed station entries have been sited and designed to directly respond to the Pyrmont Peninsula Place Strategy • the eastern entry is located in an area capable of change and offer an opportunity (through a future over station development) to provide a gateway to Pyrmont and a connection to the Sydney CBD skyline • the western entry located in the Pyrmont village sub-precinct would not include any over station development. The height of western building would generally align with existing buildings across Pyrmont Bridge Road and Paternoster Row. Subject to design development, there is the opportunity to set back this building at its northern extent along Pyrmont Street to respond to adjacent terrace houses.
Facilitate efficient interchange with bus and light rail, and enable comfortable and safe connections for pedestrians and cyclists, including Union Street, Pyrmont Street and Pyrmont Bridge Road	• efficient interchange would be provided to the bus network on Harris Street (via the western station entry), which could be enhanced by potential changes to the bus network serving Pyrmont • efficient interchange would be possible to the L1 Dulwich Hill Line through a short walk between the eastern station entry and the Pyrmont Bay stop • the main eastern entry on Union Street provides for each connection to the key active transport corridor along Miller Street, Union Street and across Pyrmont Bridge • the western station entry would be set back from Pyrmont Bridge Road and a shared zone would be provided on Paternoster Row to provide more space and prioritisation for pedestrians.
Deliver an activated ground plane and high quality public domain that contributes to the streetscape, complements the surrounding context and heritage character and offers a welcoming place for people.	• the station design provides opportunities for activation in key locations including along Union Street at the eastern entry and on the corner of Pyrmont Street and Pyrmont Bridge Road at the western entry • the height and scale of the western entry building would generally align with existing buildings across Pyrmont Bridge Road and Paternoster Row. Subject to design development, there is the opportunity to set back this building at its northern extent along Pyrmont Street to respond to adjacent terrace houses.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 14-5, Figure 14-6 and Figure 14-7.

Figure 14-5 Land use and function urban design strategies – Pyrmont Station

Figure 14-6 Access and connectivity urban design strategies – Pyrmont Station

Figure 14-7 Built form urban design strategies – Pyrmont Station

The Pyrmont Station design includes the following key movement and place features:

- responding to the key pedestrian and cyclist movement corridor along Miller Street, Union Street and across Pyrmont Bridge. The eastern station entry would face Union Street to provide easy access along this key active transport link
- an opportunity to provide a small area of public open space around the Union Street / Pyrmont Bridge Road intersection. This would respond to the aims of the Place Strategy to rejuvenate and connect the smaller public spaces throughout Pyrmont
- setting back the western station entry from Pyrmont Bridge Road to provide more space and prioritisation for pedestrians
- providing opportunities for activation in key locations, including along Union Street at the eastern entry and on the corner of Pyrmont Street and Pyrmont Bridge Road at the western entry
- recognising Pyrmont Bridge Road as a key vehicle movement corridor through Pyrmont and orientating the main entry and key pedestrian movements away from this busy road.

Sydney Metro would continue engagement with other parts of Transport for NSW, the NSW Department of Planning and Environment, and other key stakeholders regarding the development of wider pedestrian infrastructure planning for the area; and would consider integration with any proposed upgrades as part of future design development.

14.3.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding Pyrmont Station. The delivery of a metro station at Pyrmont would provide a substantial improvement to access to and from the Pyrmont peninsula and key urban renewal opportunities such as Blackwattle Bay.

Examples of how the Pyrmont Station design integrates with other transport modes and improves access for customers and the community include:

- the existing pedestrian network would allow for good connectivity within the station precinct and would respond to all pedestrian desire lines, creating safe and walkable streets that are designed for people and that provide easy access for all customers including those with disabilities

- existing cycling paths (particularly the separated path along Union Street) would facilitate direct connection to the eastern station entry and connections with the wider strategic cycle network. Bicycle parking facilities would be provided at both station entries. Sydney Metro would continue to work with the NSW Department of Planning and Environment to identify opportunities to connect to potential future cycle links identified in the Pyrmont Peninsula Place Strategy Urban Design Report and the Infrastructure Delivery Plan
- the L1 Dulwich Hill Line Pyrmont Bay stop is located a short walk from the eastern station entry with connections possible via an existing pedestrian-only route between Union Street and Pirrama Road
- existing bus stops are located on Harris Street, a short walk from the western station entry. Transport for NSW are currently investigating changes to the bus network in Pyrmont that may involve new bus routes and bus stops along Pyrmont Bridge Road in the vicinity of the station. If progressed, this would enhance bus interchange with the station.

For further information on transport interchange, access and connectivity features of Pyrmont Station, see Section 14.5.

14.4 Construction description

This section provides a description of the construction activities required to complete Pyrmont Station, and associated precinct work required for the operation of Sydney Metro West.

Major civil construction including station excavation and tunnelling work at Pyrmont was assessed under *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) and does not form part of this proposal.

14.4.1 Overview

Construction of Pyrmont Station would require the continued use of two construction sites established under the previous Sydney Metro West planning application, including a western construction site and an eastern construction site. The land for these construction sites would be consistent with those described in the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a).

The western construction site would be located between Paternoster Row and Pyrmont Street, immediately north of Pyrmont Bridge Road, and the eastern construction site would be located between Edward Street, Union Street and Pyrmont Bridge Road.

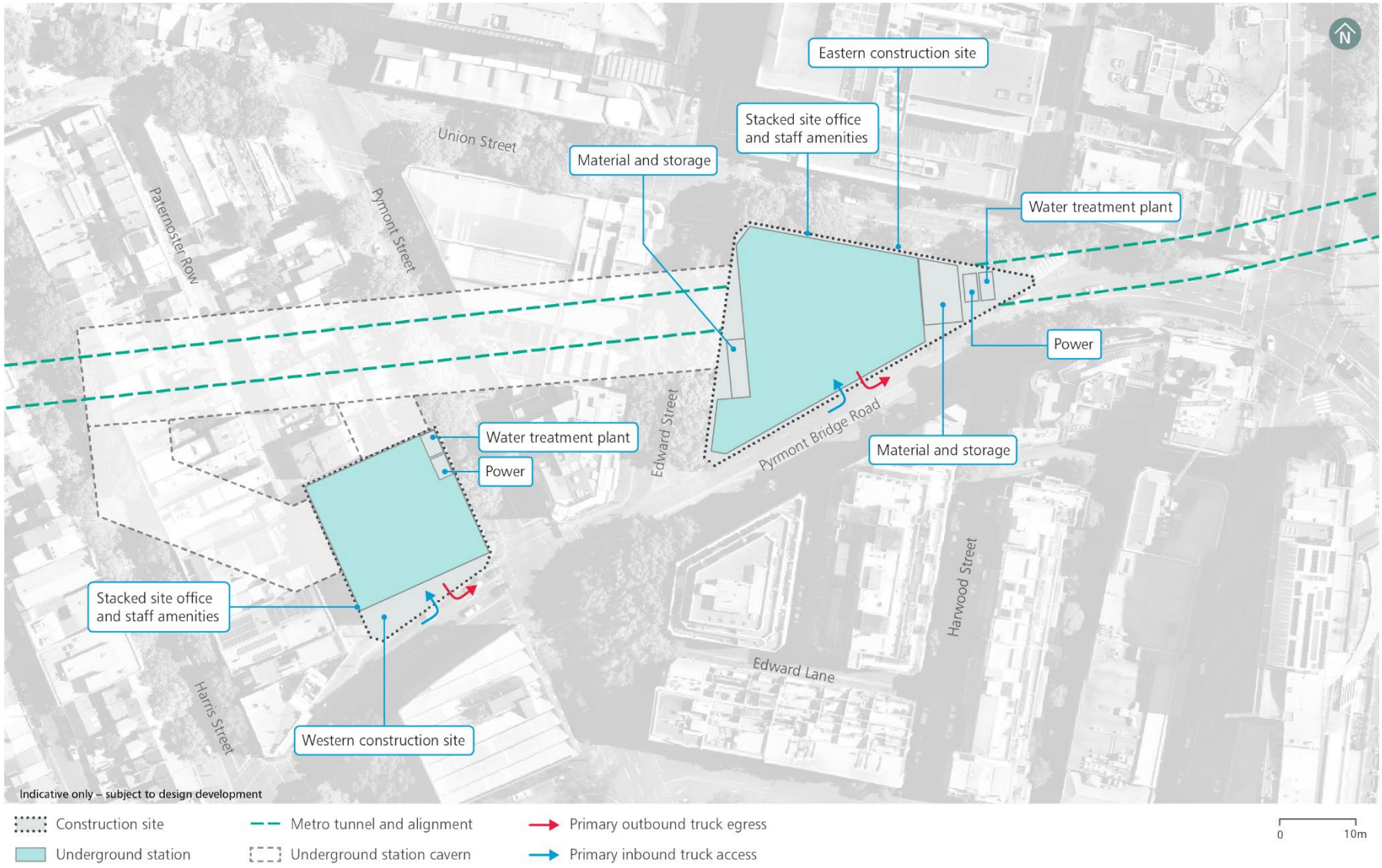

Figure 14-8 Indicative construction sites layout – Pyrmont Station

14.4.2 Construction work

Key construction work at the Pyrmont Station construction sites would include:

- enabling and site establishment work
- construction of the station and structures for non-station use
- station fit-out
- construction of station precinct and interchange facilities, including provisioning for over station development
- finishing work, testing and commissioning.

The indicative construction program for the Pyrmont Station construction sites is shown in Figure 14-9.

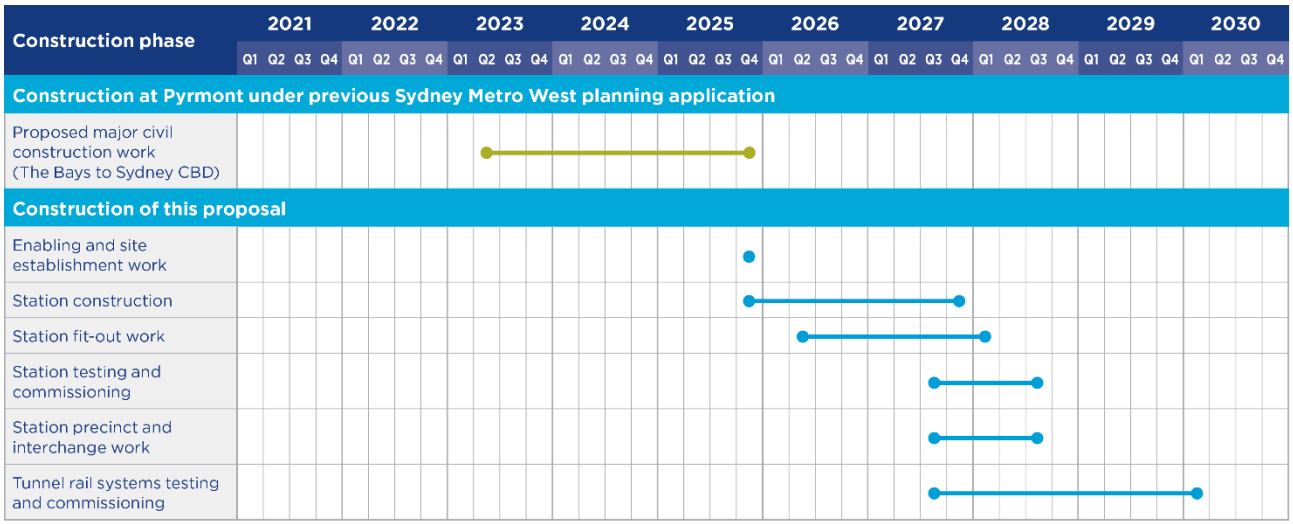

Figure 14-9 Indicative construction program – Pyrmont Station

Other construction elements specific to Pyrmont Station are shown in Table 14-3. Indicative construction hours, plant and equipment and workforce for the Pyrmont Station construction sites are provided in Section 6.5 (Other construction elements) of this Environmental Impact Statement. Key elements specific to Pyrmont Station as described in the table below, are also depicted on Figure 14-8.

Table 14-3 Other construction elements – Pyrmont Station

Construction element	Description
Construction traffic access and egress	Continued primary access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to and egress from both the western and eastern construction sites via left-in from and left-out to Pyrmont Bridge Road.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • secondary access to and egress from the eastern construction site via left-in and left-out from Union Street.
Peak daily traffic movements	Western construction site: • about 168 daily heavy vehicle movements • about 228 daily light vehicle movements. Eastern construction site: • about 168 daily heavy vehicle movements • about 244 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.

Construction element	Description
Transport network modifications	Continued temporary transport network modifications that would be established under the previous Sydney Metro West planning application that would be maintained during construction include: • temporary closure of the southern footpath on Union Street between Edward Street and Pyrmont Bridge Road • temporary removal of around 27 on-street car parking spaces and a loading zone on Union Street between Pyrmont Street and Pyrmont Bridge Road • temporary decommissioning of the bus stop on Pyrmont Bridge Road, adjacent to the Pyrmont Station western construction site. This stop is not used by any public transport bus services.
	No additional temporary transport network modifications would be introduced as part of this proposal.

14.5 Transport

Further details of the operational and construction transport assessment, including the approach and methodology, is provided in Technical Paper 1 (Operational transport) and Technical Paper 2 (Construction transport).

Potential benefits and impacts at a regional level or where impacts are common across precincts are assessed in Chapter 18 (Proposal-wide) of this Environmental Impact Statement. This includes strategic transport benefits during operation, and potential impacts in relation to road user safety, construction worker parking, emergency vehicles and road condition during construction.

14.5.1 Baseline environment

The baseline transport environment described for Pyrmont Station includes the existing transport environment as well as adjustments made under the previous Sydney Metro West planning application.

Active transport network

Pedestrian activity in Pyrmont is high as the surrounding land use is primarily residential, commercial, educational and retail. Key pedestrian facilities surrounding Pyrmont Station include:

- footpaths along the majority of roads surrounding Pyrmont Station with the exception of the Western Distributor and Darling Drive
- signalised crossings on all approaches of the following intersections:
  - Pyrmont Bridge Road / Bank Street
  - Pyrmont Bridge Road / Harris Street
  - Pyrmont Bridge Road / Pyrmont Street
  - Union Street / Murray Street / Darling Drive
  - Union Street / Edward Street
  - Pyrmont Street / Union Street
- a zebra crossing across Union Street at the Pyrmont Bridge Road / Union Street intersection
- high pedestrian activity areas (with a signposted speed limit of 40 kilometres per hour) on roads near the Pyrmont Bay light rail stop, Harbourside Shopping Centre, Pyrmont Bridge and The Star
- a shared zone on Paternoster Row.

Under the previous Sydney Metro West planning application, the footpath and kerbside lane on the southern side of Union Street between Pyrmont Street and Pyrmont Bridge Road would be temporarily closed to allow for two-way traffic flow along Union Street, with the footpath on the northern side of Union Street to be maintained.

The cycle network surrounding Pyrmont Station includes:

- separated cycleways along Union Street, Miller Street and Saunders Street
- off-road shared paths on Pyrmont Bridge, along Darling Drive south of the Convention light rail stop and through the Darling Harbour precinct
- on-road cycle routes on Pyrmont Bridge Road, Bridge Road, Darling Drive (north of the Convention light rail stop), Bulwarra Road, Allen Street and Murray Street, providing connectivity to the wider cycling network.

Public transport network

A summary of the public transport services around Pyrmont Station is provided in Table 14-4.

Table 14-4 Public transport services – Pyrmont Station

Mode	Description
Rail	• L1 Dulwich Hill Line on the Sydney light rail network via Convention, Pyrmont Bay, The Star, John Street Square, Fish Market and Wentworth Park light rail stops.
Bus	• two bus routes servicing the Sydney CBD, Bondi Junction, Rozelle, Drummoyne, Ryde and Parramatta • under the previous Sydney Metro West planning application, the bus stop (not currently used) on Pyrmont Bridge Road adjacent to the station would be temporarily decommissioned.
Ferry	• F4 Pyrmont Bay route via Pyrmont Bay wharf about 300 metres east.

Parking, loading, servicing and pick-up arrangements

The parking environment around Pyrmont Station includes:

- peak hour clearways at the following locations:
  - Pyrmont Bridge Road in the eastbound direction west of Pyrmont Street
  - Harris Street in the northbound direction between Allen Street and Pyrmont Bridge Road
  - Harris Street in the southbound direction south of Allen Street
  - Harris Street in the northbound direction between Allen Street and Thomas Street
- on-street ticketed and time-restricted parking on Harris Street, Pyrmont Street, Union Street, Miller Street and Edward Street (outside of clearway restrictions)
- loading zones at various times on Pyrmont Street, Miller Street, Union Street and Harris Street
- mail zones on Harris Street
- a point-to-point zone on the eastern side of Harris Street, south of William Henry Street and on the western side of Darling Drive near the Convention light rail stop.

Under the previous Sydney Metro West planning application, about 27 on-street parking spaces and a loading zone along Union Street between Pyrmont Street and Pyrmont Bridge Road would be temporarily removed.

Traffic volumes and patterns

Approximate peak-hour midblock volumes on key access roads surrounding Pyrmont Station are shown in Table 14-5. The key access roads carry traffic volumes generally commensurate with their function.

Table 14-5 Existing peak hour traffic volumes (mid-block) by direction (2021) – Pyrmont Station

Road	Direction	AM peak hour volume (vehicles per hour)	PM peak hour volume (vehicles per hour)
Pyrmont Bridge Road east of Bank Street	Eastbound	1,270	760
	Westbound	380	530
Union Street west of Edward Street	Eastbound	40	120
	Westbound	50	160
Harris Street north of Pyrmont Bridge Road	Northbound	470	350
	Southbound	210	270
Harris Street north of Fig Street	Northbound	600	520
	Southbound	910	780
Pyrmont Street north of Pyrmont Bridge Road	Northbound	200	150
	Southbound	290	490
Darling Drive east of Murray Street	Northbound	310	280
	Southbound	210	170

Intersection performance

Modelled intersection performance during the AM and PM peak hours for key intersections in the vicinity of Pyrmont Station is shown in Table 14-6.

Modelled intersection performance indicates that the following intersections currently perform at level of service E or F:

- Pyrmont Bridge Road / Bank Street / Western Distributor ramps during the AM peak hour, which is due to a high number of conflicting movements through the interchange and high traffic volumes entering and exiting the Western Distributor
- Bank Street / Western Distributor ramps during the AM peak hour, which is also due to a high number of conflicting movements through the interchange and high traffic volumes entering and exiting the Western Distributor
- Harris Street / Fig Street / Western Distributor ramps during the AM peak hour, which is due to high traffic volumes on all approaches.

Table 14-6 Modelled peak hour baseline intersection performance (2021) – Pyrmont Station

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Pyrmont Bridge Road / Bank Street / Western Distributor EB entry ramp and WB exit ramp (signalised)					
AM peak	3,279	77	F	NB	275
				EB	175
				SB	80
				WB	10
PM peak	2,894	53	D	NB	150
				EB	155
				SB	70
				WB	10

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Bank Street / Western Distributor WB entry ramp and EB exit ramp (signalised)					
AM peak	1,332	69	E	NB	50
				EB	-
				SB	150
				WB	115
PM peak	906	49	D	NB	15
				EB	-
				SB	120
				WB	45
Pyrmont Bridge Road / Western Distributor EB exit ramp (priority controlled)					
AM peak	1,855	10	A	NB	-
				EB	<5
				SB	35
				WB	85
PM peak	1,396	7	A	NB	-
				EB	<5
				SB	15
				WB	105
Pyrmont Bridge Road / Harris Street (signalised)					
AM peak	2,232	22	B	NB	75
				EB	160
				SB	85
				WB	35
PM peak	1,817	25	B	NB	55
				EB	85
				SB	70
				WB	45
Pyrmont Bridge Road / Pyrmont Street (signalised)					
AM peak	1,665	23	B	NB	-
				EB	65
				SB	90
				WB	25
PM peak	1,561	26	B	NB	-
				EB	35
				SB	95
				WB	25
Pyrmont Bridge Road / Union Street (priority controlled)					
AM peak	704	12	A	NB	-
				EB	<5
				SB	<5
				WB	<5

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
PM peak	675	12	A	NB	-
				EB	<5
				SB	<5
				WB	<5
Darling Drive / Union Street / Murray Street (signalised)					
AM peak	1,066	28	B	NB	20
				EB	40
				SB	15
				WB	25
PM peak	997	32	C	NB	15
				EB	25
				SB	50
				WB	40
Darling Drive / Harbourside access road (roundabout)					
AM peak	580	10	A	NB	10
				EB	-
				SB	5
				WB	<5
PM peak	469	10	A	NB	10
				EB	-
				SB	<5
				WB	<5
Union Street / Edward Street (signalised)					
AM peak	496	16	B	NB	15
				EB	5
				SB	<5
				WB	<5
PM peak	674	17	B	NB	20
				EB	10
				SB	20
				WB	<5
Union Street / Pyrmont Street (signalised)					
AM peak	831	24	B	NB	40
				EB	10
				SB	55
				WB	10
PM peak	1,053	29	C	NB	35
				EB	10
				SB	110
				WB	35

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Harris Street / Allen Street (signalised)					
AM peak	1,809	38	C	NB	85
				EB	225
				SB	60
				WB	-
PM peak	1,446	24	B	NB	25
				EB	105
				SB	75
				WB	-
Harris Street / Fig Street / Western Distributor ramps (signalised)					
AM peak	3,841	84	F	NB	55
				EB	270
				SB	205
				WB	335
PM peak	3,742	36	C	NB	50
				EB	255
				SB	150
				WB	105

14.5.2 Operational impact assessment

This section outlines the transport interchange provisions proposed at Pyrmont Station as shown in Figure 14-1.

The transport interchange provisions have been designed to maximise the seamless travel experience for all customer groups transferring between this proposal and other transport modes. Stations have been designed for ease of interchange from the different modes including pedestrian and cycle facilities and to minimise disruptions to public transport users and the surrounding road network.

This section also discusses the potential impact of the transport interchange provisions on the transport network during operation.

Passenger demand

Station passenger demand forecast for the 2036 AM peak hour (8am to 9am) indicates about 1,026 customers accessing Pyrmont Station and 3,944 customers egressing Pyrmont Station during the AM peak hour. This indicates this station would be used as an origin and destination station.

The 2036 modal breakdown of access and egress during the AM peak hour is presented in Table 14-7. The key observation from this analysis indicates the majority of access and egress trips are forecast to be via walking, with almost all exits being walking trips to local commercial land uses. Night-time land uses around Pyrmont Station would contribute to demand; however, these trips are not expected to be larger than during the AM and/or PM peak hours.

Table 14-7 2036 forecast mode of access and egress – Pyrmont Station

Mode	Walk	Cycle	Bus	Light rail	Kiss and ride
Access	55%	3%	19%	19%	4%
Egress	99%	0%	0%	11%	0%

Integration with other transport modes

A description of how Pyrmont Station would integrate with existing transport modes during operation is provided in Table 14-8. Appropriate signage and wayfinding would be provided within the precinct to provide easy customer transfer and access to the station.

Table 14-8 Network integration - Pyrmont Station

Network	Description
Pedestrian network	Two station entries are proposed at Pyrmont Station – an eastern entry from Union Street and a western entry from Pyrmont Bridge Road. The existing and proposed pedestrian network around Pyrmont Station would allow for good connectivity and would create safe, walkable streets, designed for people. Existing pedestrian facilities that would also assist with providing access to the station include: • the shared zone on Paternoster Row near the western station entry • signalised crossings at surrounding intersections • the zebra crossing of Union Street at Pyrmont Bridge Road. 2036 pedestrian modelling indicates all footpaths are forecast to operate sufficiently at level of service A for both the AM and PM peaks respectively with no crowding expected.
Cycle network	New cycling facilities proposed to be provided as part of the station and precinct include: • bicycle parking at both station entrances • safe cycle crossing at the existing and proposed crossings described above. The existing cycling links on Union and Miller streets, the shared zone on Paternoster Row as well as a future potential cycling link on Pyrmont Bridge Road (to be delivered by others) would provide good cycle access directly to the station entries. Sydney Metro would continue to work with the NSW Department of Planning and Environment to identify opportunities to connect to potential future cycle links identified in the Pyrmont Peninsula Place Strategy Urban Design Report and the Infrastructure Delivery Plan.
Public transport network	Public transport integration at Pyrmont Station would include: • connection to the existing Harris Street bus interchange • customers would be able to transfer between bus stops at the station entries using walkways and crossing points. Transport for NSW is currently investigating potential changes to the bus network in Pyrmont, including potential bus routes along Pyrmont Bridge Road, with associated bus stops in the vicinity of the metro station entries. These potential changes would enhance bus interchange with the metro station.
Road network	Based on the low volumes of customers forecast to access the station by car, these trips would not impact road network and intersection performance. An accessible kiss and ride space would be provided on Pyrmont Street close to the western station entry for these customers.

Road network performance

Intersection performance results for the ‘2036 without proposal’ and ‘2036 with proposal’ scenarios during the AM and PM peak hours for key intersections in the vicinity of Pyrmont Station are shown in Figure 14-10.

All intersections are expected to operate at level of service C or better with and without the station, except for the intersection of Pyrmont Bridge Road and Union Street, which is expected to reduce from level of service A to F with the station in both the AM and PM peaks. This is due to high pedestrian demand at Union Street, resulting in insufficient gaps for vehicles and failure of the intersection.

Sydney Metro is investigating potential measures to improve overall performance for both pedestrians and vehicles at this intersection in consultation with City of Sydney Council and Transport for NSW. Potential solutions could involve:

- restricting eastbound movements on Union Street between Pyrmont Bridge Road and Edward Street, eliminating vehicles queuing at the intersection in the eastbound direction
- pedestrianisation of Union Street between Pyrmont Bridge Road and Edward Street
- signalisation of the intersection of Union Street and Pyrmont Bridge Road.

These options would require further investigation and modelling to determine their feasibility.

Figure 14-10 Pyrmont Station operational intersection performance – Pyrmont Station (2036)

Parking and property access

Several on-street and off-street parking spaces would be removed around Pyrmont Station as part of this proposal including about:

- two on-street spaces on Pyrmont Street to accommodate the proposed accessible kiss and ride space
- one on-street space on Union Street fronting the proposed eastern station entry to provide additional pedestrian space near the station entry
- four on-street spaces on Edward Street to accommodate proposed vehicular accesses.

Parking strategies to address potential parking impacts would be developed in consultation with City of Sydney Council.

Access to all nearby properties would be maintained during operation.

14.5.3 Construction impact assessment

Construction haul routes

The primary construction haul routes for Pyrmont Station are shown in Figure 14-11. A secondary haul route may also involve the use of Union Street, Pyrmont Street and Harris Street. Construction site access and egress locations, as well as the number of daily traffic movements anticipated at Pyrmont Station construction sites, are outlined in Section 14.4. The left turn outbound movement from Union Street into Pyrmont Street may be limited to vehicles of a certain size, which would be further examined during detailed construction planning in accordance with the CTMF and detailed construction traffic management plans. Sydney Metro are also investigating the use of Pyrmont Street south of Pyrmont Bridge Road, rather than Harris Street, to access the Western Distributor.

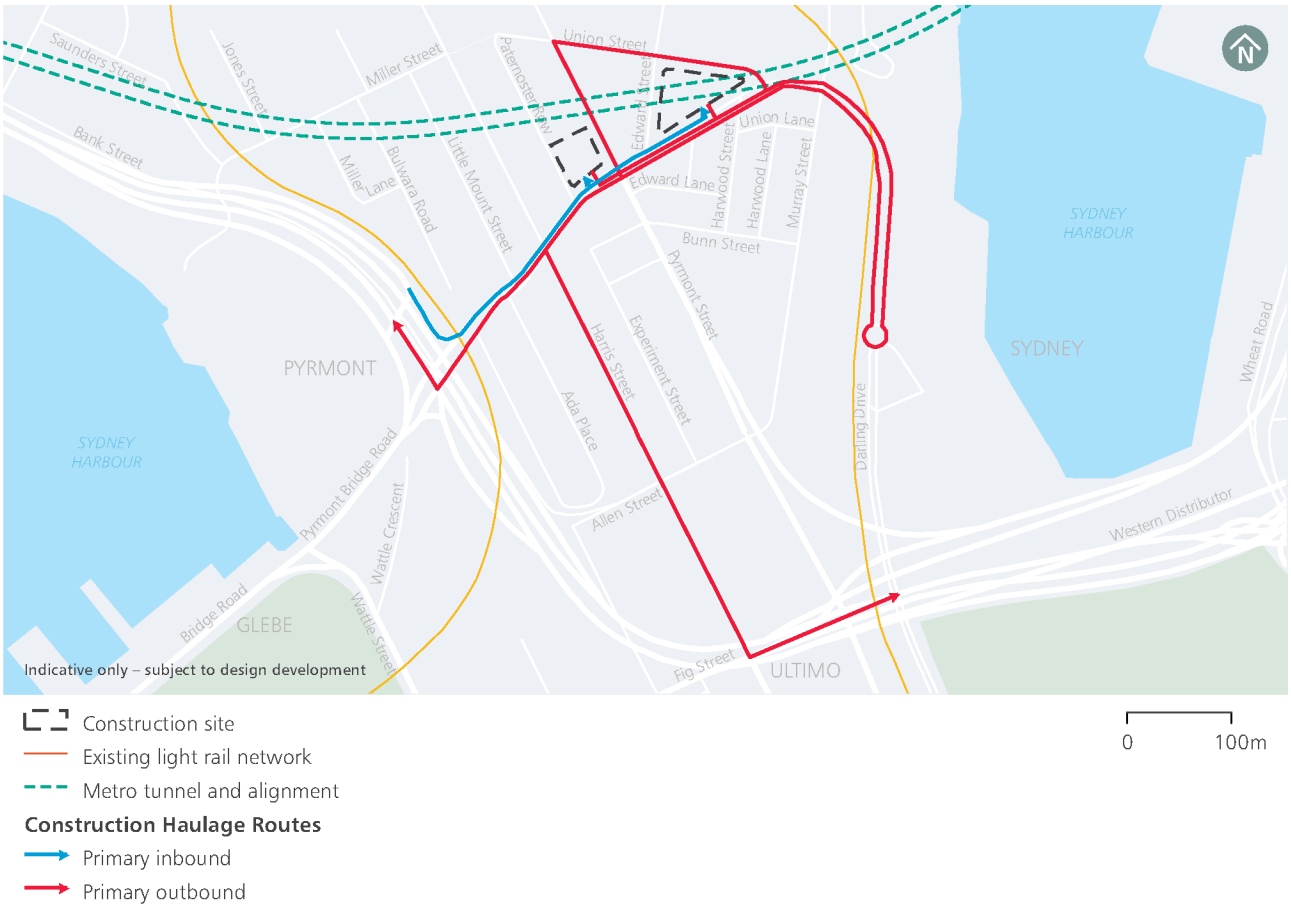

Figure 14-11 Primary construction haul routes – Pyrmont Station

Active transport network

The footpath on the southern side of Union Street and the kerbside lane adjacent to the eastern construction site (closed under the previous Sydney Metro West planning application) would continue to be temporarily closed for the duration of construction of this proposal. The impact of this closure would be minimal given that east-west connectivity would be maintained via the footpath on the northern side of Union Street.

Precinct construction work for the new kiss and ride zone and pedestrian crossing may require short-term closures (for around a few months) of sections of footpaths, which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Pyrmont Bridge Road and Darling Drive are designated on-road cycle routes that would also be used by construction vehicles travelling from the Pyrmont Station construction sites. Construction vehicles would also travel adjacent to the cycle path along Union Street. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures outlined in the CTMF would be implemented during construction.

Public transport network

Roads forming part of the construction haul route also used by buses include Harris Street and Pyrmont Bridge Road. The proposed use of Harris Street for construction site access would be further examined during detailed construction planning in accordance with the CTMF and detailed construction traffic management plans. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

The currently unused bus stop on Pyrmont Bridge Road adjacent to the western construction site that would be temporarily decommissioned under the previous Sydney Metro West planning application would continue to be temporarily decommissioned during construction of this proposal.

No impacts on the light rail network or ferry network are anticipated during construction.

Parking and property access

The 27 on-street parking spaces and a loading zone on Union Street that would be removed under the previous Sydney Metro West planning application would continue to be removed during construction of this proposal. This would have minor impacts given the availability of parking on other local roads nearby and loading zones nearby such as on Edward Street.

To facilitate precinct construction work, there may be short-term removal (for around a few months) of some on-street parking spaces on Pyrmont Street to establish a new kiss and ride zone. Impacts are anticipated to be minor given that these parking spaces would be removed for a short duration.

Where existing parking is removed to facilitate construction activities, a parking management plan would be developed in accordance with the requirements of the CTMF. This would include consultation with City of Sydney Council to investigate opportunities to provide alternative parking facilities.

Road network performance

Intersection performance results for the ‘2026 without proposal’ (without construction vehicles) and ‘2026 with proposal’ (with construction vehicles) scenarios are shown in Figure 14-12.

During the AM peak hour (8:15am to 9:15am) and PM peak hour (4:30pm to 5:30pm), it is forecast that during the peak construction activity, the:

- Pyrmont Station western construction site would generate a total of 32 light vehicle movements and 24 heavy vehicle movements
- Pyrmont Station eastern construction site would generate a total of 36 light vehicle movements and 26 heavy vehicle movements.

These vehicle movement forecasts were assumed for the intersection performance modelling. Peak hours were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance during construction indicates the following intersections would experience a deterioration in level of service:

- Pyrmont Bridge Road / Union Street during the AM and PM peak hours from level of service A to B. The intersection would still operate with spare capacity with the addition of construction traffic
- Union Street / Pyrmont Street during the AM and PM peak hours from level of service B to D and C to F, respectively. This is due to the additional construction vehicles travelling on Union Street in the westbound direction, resulting in a redistribution of green times and increased average delays on the Pyrmont Street approaches. During the evening peak hour, the intersection would already operate close to capacity without construction traffic
- Harris Street / Allen Street during the AM peak hour from level of service C to D. This is due to the additional construction vehicles travelling on Harris Street in the southbound direction, resulting in a redistribution of green times and increased average delays on the west approach. The intersection would still operate with spare capacity with the addition of construction traffic.

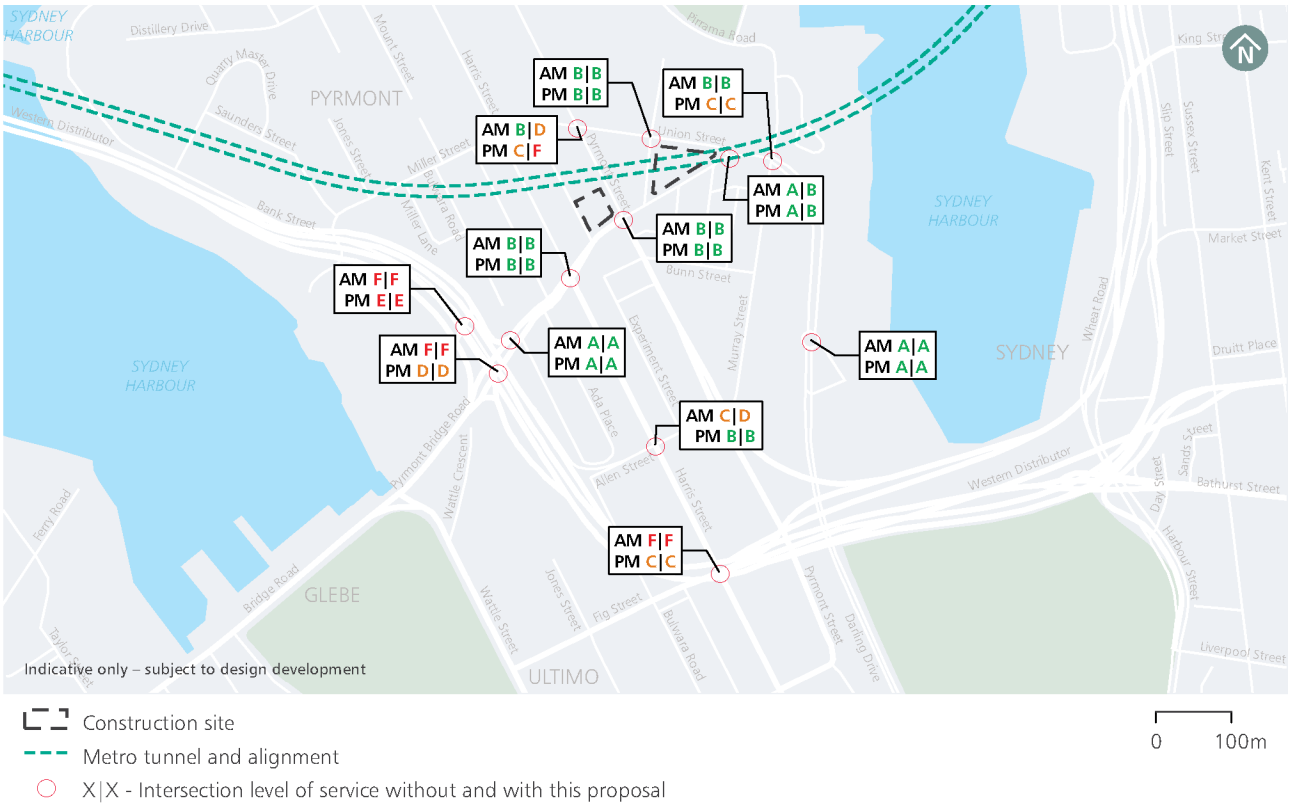

Figure 14-12 Pyrmont Station construction sites intersection performance – Pyrmont Station (2026)

Special events

Special events in the vicinity of the Pyrmont Station construction sites are centred in the Darling Harbour precinct and Sydney CBD, which is accessible via Pyrmont Bridge. Pedestrian activity increases significantly during these special events, particularly at the Darling Drive / Union Street / Murray Street intersection, which provides pedestrian access between Pyrmont and the Darling Harbour precinct, and between Pyrmont and Sydney CBD via Pyrmont Bridge.

There is potential for conflict between pedestrians and construction vehicles and impacts on pedestrian movement and accessibility during construction. During special events these impacts would require mitigation. Further, Pyrmont Bridge Road, Pyrmont Bridge, Darling Drive, Union Street and Murray Street form part of the route for the Sydney Running Festival that is held every year in September. Event organisers would be consulted about the proposed construction works to allow sufficient time to consider the event's interaction with this proposal. The planning and development of appropriate restrictions to minimise impacts on the transport and traffic network during special events would be determined in consultation with Transport for NSW and other relevant agencies.

The CTMF outlines mitigation measures that would be implemented to minimise impacts during special events, which would be detailed in future Construction Traffic Management Plans.

14.5.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal

The approach to transport and traffic management during the construction phase, including the process for the development of all construction traffic management plans is outlined in the CTMF, provided in Appendix G.

The CTMF provides the overall strategy and approach for construction traffic management for Sydney Metro West, and an outline of the traffic management requirements, mitigation measures and processes that would be common to each of the proposed construction sites. It establishes the traffic management processes and acceptable criteria to be considered and followed in managing roads and footpaths adjacent to construction sites.

Mitigation measures that are specific to address the operation and construction of Pyrmont Station are listed in Table 14-9.

Table 14-9 Transport mitigation measures – Pyrmont Station

Ref	Impact/issue	Mitigation measure	Timing
Transport			
EIS-TT11	Pyrmont Bridge Road / Union Street intersection performance	Measures to improve overall performance for both pedestrians and vehicles at the intersection of Pyrmont Bridge Road and Union Street would be investigated in consultation with City of Sydney Council and Transport for NSW.	Operation

14.6 Noise and vibration

Further details on the operational and construction noise and vibration assessment, including the approach and methodology, are provided in Technical Paper 3 (Operational noise and vibration) and Technical Paper 4 (Construction noise and vibration).

14.6.1 Baseline environment

Existing noise levels around Pyrmont Station are controlled by road traffic noise on the surrounding road network. The area surrounding Pyrmont Station is mostly residential and commercial. The nearest receivers to the east of the station are commercial; however, residential buildings are located on the southern side of Pyrmont Bridge Road overlooking the proposed eastern station building. The Sebel Hotel is also located nearby.

This precinct is covered by two noise catchment areas (NCAs) for the construction noise assessment – NCA23 and NCA24. The site and NCAs are shown in Figure 14-13.

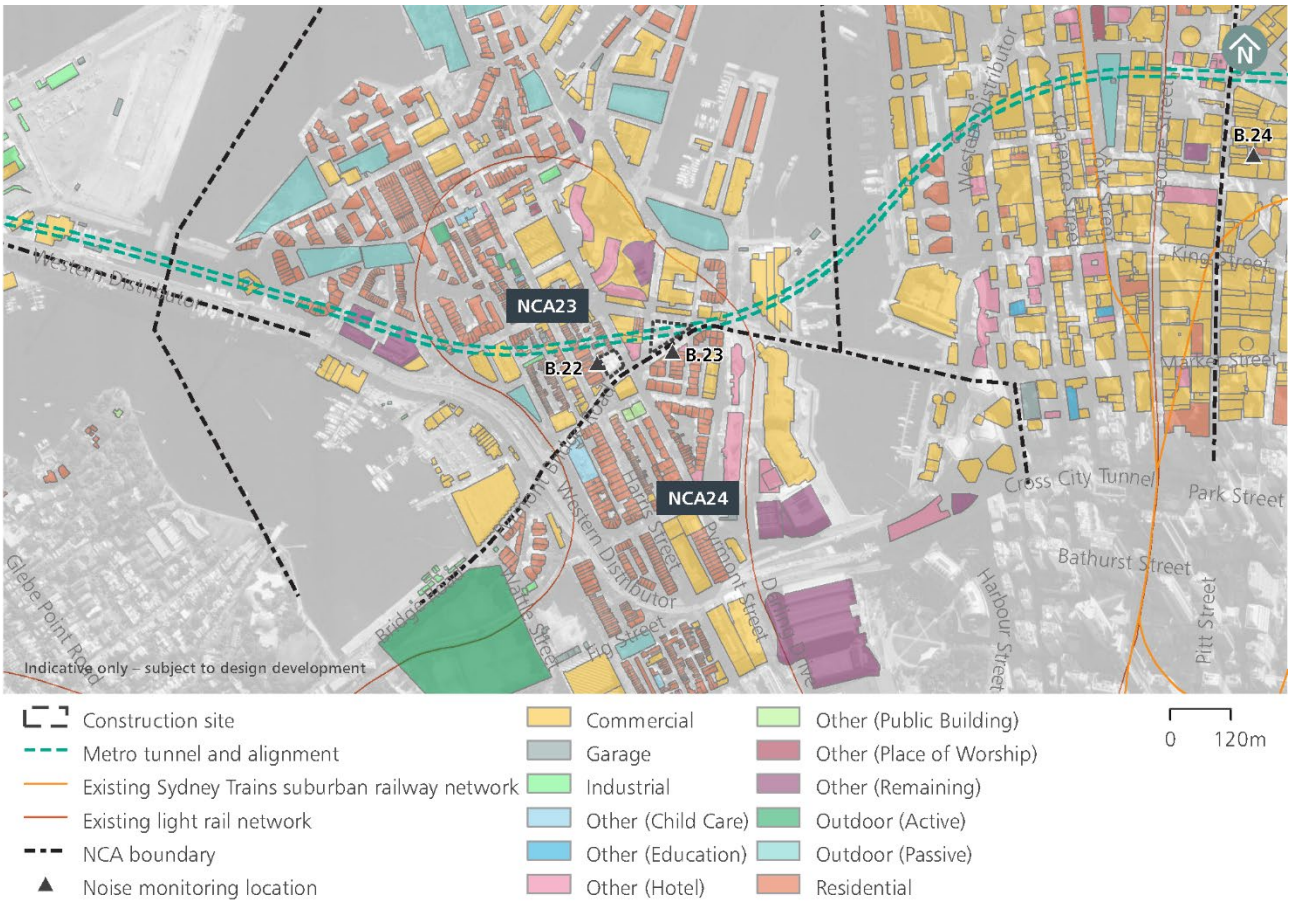

Figure 14-13 Location of sensitive receivers near Pyrmont Station and NCAs

Unattended noise monitoring was carried out at sensitive receiver locations near Pyrmont Station in June 2021 as part of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). This data represents the noise environment prior to the commencement of the previous Sydney Metro West planning application and was used to inform this assessment.

The results of the unattended noise monitoring are summarised in Table 14-10 and indicate that background noise levels generally reflect the commercial and residential nature of the area.

Short-term attended noise monitoring was also carried out at Pyrmont Station in June 2021. The results were generally found to be consistent with the unattended noise monitoring. Detailed observations from the attended monitoring are provided in Technical Paper 4 (Construction noise and vibration).

Table 14-10 Summary of unattended noise monitoring – Pyrmont Station

Location ID	Noise logger location	Noise level (dBA)[1,2]					
		Background noise (RBL)			Average noise level (L_{Aeq})		
		Day	Evening	Night	Day	Evening	Night
B.22	200 Paternoster Row, Pyrmont	50	47	45	56	50	47
B.23	1-5 Harwood Street, Pyrmont	52	49	46	61	59	56

Notes:
1. The RBL and L_{Aeq} noise levels have been determined with reference to the procedures in the Noise Policy for Industry (NSW Environment Protection Authority, 2017)
2. Daytime is 7am to 6pm, evening is 6pm to 10pm, and night-time is 10pm to 7am

14.6.2 Operational impact assessment

The operational noise associated with eastern and western sites for Pyrmont Station has been assessed for the nearest and most noise affected residential and commercial receivers for each source type as presented in Table 14-11 and Table 14-12.

The results indicate that the predicted noise levels would be compliant with the design noise criteria during the daytime and evening period; however, there would be minor non-compliances of the amenity target criteria during the night-time. Noise attenuation has been incorporated into the design to determine the predicted noise levels and includes consideration of the use of large fan attenuators, vent orientation, acoustic louvres and appropriate plant selection. These measures would be further developed throughout the detailed design phase.

To meet the amenity target criteria, an additional floor would be required to accommodate another attenuator. Larger fans may also be required to account for the increased pressure loss from the additional attenuators. This could also result in other impacts such as visual and overshadowing. Given the scope for future industrial development in Pyrmont is limited, the amenity acceptance criteria are considered to be more appropriate at this location. Noise impacts outlined above comply with the amenity acceptance criteria.

At Pyrmont Station the sleep disturbance noise criteria is L_{AFmax} 60 dB(A) and 61 dB(A) for the east and west services buildings respectively. The highest predicted noise level from the draught relief shaft is L_{AFmax} 59 dB(A), which is compliant with the noise criteria. Given compliance with the applicable noise criteria is achieved, further consideration of noise attenuation measures is not required.

There would be no sources of vibration as part of operation of the station that would impact nearby receivers. Potential operational vibration impacts from trains operating in the tunnels are addressed in Chapter 16 (Tunnels) of this Environmental Impact Statement.

Table 14-11 Operational noise levels – Pyrmont Station (eastern site)

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Edward Street (west) – residential		
Daytime	55	47
Evening	48	47
Night-time	43	37
Emergency mode	48	47

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Draught relief noise impacts	65 L_{Amax}	60
Union Street (north) – residential		
Daytime	55	45
Evening	48	45
Night-time	43 (48[2])	**45**
Emergency mode	48	47
Draught relief noise impacts	65 L_{Amax}	59
Pyrmont Bridge Road (south) – residential		
Daytime	55	45
Evening	48	45
Night-time	43 (48[2])	**45**
Emergency mode	48	47
Draught relief noise impacts	65 L_{Amax}	59

Notes:

1. Criteria differs between operational noise source type (refer Technical Paper 3 (Operational noise and vibration))
2. Where the amenity target level is the controlling criterion and cannot reasonably be achieved, the lower of the intrusive or amenity acceptance noise level is used
3. Noise levels in bold identify predicted noise levels over the amenity target level

Table 14-12 Operational noise levels – Pyrmont Station (western site)

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Harris Street (west) – residential		
Daytime	55	43
Evening	48 (52[2])	43
Night-time	43 (48[2])	42
Emergency mode	48 (53[2])	47
Draught relief noise impacts	65 L_{Amax}	59
Pyrmont Street (north) – residential		
Daytime	55	44
Evening	48 (52[2])	44
Night-time	43 (48[2])	43
Emergency mode	48 (53[2])	47
Draught relief noise impacts	65 L_{Amax}	59
Pyrmont Street (east) – residential		
Daytime	55	45
Evening	48 (52[2])	45
Night-time	43 (48[2])	**45**
Emergency mode	48 (53[2])	47
Draught relief noise impacts	65 L_{Amax}	59

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Pyrmont Street (south) – commercial		
Daytime	60 (65[2])	50
Evening	60 (65[2])	50
Night-time	60 (65[2])	50
Emergency mode	75 (70[2])	52

Notes:
1. Criteria differs between operational noise source type (refer Technical Paper 3 (Operational noise and vibration))
2. Where the amenity target level is the controlling criterion and cannot reasonably be achieved, the lower of the intrusive or amenity acceptance noise level is used
3. Noise levels in bold identify predicted noise levels over the amenity target level

14.6.3 Construction impact assessment

The construction scenarios and anticipated working hours at the Pyrmont Station construction sites are shown in Table 14-13. The estimated duration of each activity is also provided, noting that most activities would be intermittent and would not occur on a continual basis during every day of the activity.

The proposed work is anticipated to have a total duration of about four years. Refer to Figure 14-9 for the indicative construction program at Pyrmont Station.

Temporary construction noise and vibration impacts would be managed through the implementation of standard and additional mitigation measures in accordance with the Sydney Metro CNVS.

Table 14-13 Construction activities and working hours – Pyrmont Station

Scenario	Activity		Indicative duration (months)	Hours of work[1]			
				Std. day	Out of hours works		
					Day OOH	Evening	Night
Site establishment and public domain work	Typical	Deliveries and general work	18	✓	✓	-	-
	Peak	Construction/decommissioning of facilities and hoarding		✓	✓	-	-
Piling	Typical	Supporting work	1	✓	✓	-	-
	Peak	Bored piling with support plant		✓	✓	-	-
Station/facility construction	Typical	Internal construction and fit-out	24	✓	✓	✓	✓
	Peak 1	Installation of framing and structure		✓	✓	✓	-
	Peak 2	Concrete work		✓	✓	✓	-

Notes:
1. OOH = out-of-hours

Airborne construction noise

The predicted airborne NML exceedances from the Pyrmont Station construction sites are summarised in Table 14-14 for all residential receivers and in Table 14-15 for commercial and other sensitive receivers. The predictions are representative of the highest noise levels that would be experienced when the works are nearest to the sensitive receiver.

The number of receivers predicted to experience exceedances of the NMLs are summarised in bands of 10 dB and are separated into day, evening and night-time periods, as appropriate.

During the daytime, the highest construction noise impacts are predicted during station/facility construction when noise-intensive equipment such as a concrete saw would be in use. The highest impact work is expected to last for around 24 months; however, concrete saws would only be used intermittently as required when concrete slabs are poured.

During the night-time, the highest construction noise impacts are predicted for internal construction and fit-out during station/facility construction. The majority of this work would occur inside the built station structure and does not require noise-intensive equipment. This work would be expected to last for around 24 months.

Table 14-14 Overview of NML exceedances (residential receivers) during construction – Pyrmont Station

Scenario	Activity	Indicative duration (months)	Number of receivers exceeding NML														
			Standard hours daytime			Out of hours											
						Daytime out of hours			Evening			Night time			Sleep disturbance		
			1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB
Site establishment and public domain work	Typical	18	25	9	-	28	21	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Peak		31	24	2	55	27	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling	Typical	1	33	4	2	34	20	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Peak		34	20	2	56	33	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Station/facility construction	Typical	24	20	2	-	33	4	2	31	14	2	36	21	2	28	3	-
	Peak 1		31	7	2	35	25	2	47	31	5	n/a	n/a	n/a	n/a	n/a	n/a
	Peak 2		75	33	10	134	36	29	225	56	39	n/a	n/a	n/a	n/a	n/a	n/a

Table 14-15 Overview of NML exceedances (other sensitive receivers) during construction – Pyrmont Station

Scenario	Activity	Indicative duration (months)	Number of receivers exceeding NML																	
			Commercial			Child care			Hotel			Hotel (night)			Public building			Theatre		
			1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB	1 10 dB	10 20 dB	>20 dB
Site establishment and public domain work	Typical	18	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	1	-	-
	Peak		8	-	-	2	-	-	3	-	-	1	3	-	-	-	-	1	-	-
Piling	Typical	1	-	-	-	1	-	-	1	-	-	2	1	-	-	-	-	1	-	-
	Peak		4	-	-	1	-	-	3	-	-	2	3	-	-	-	-	1	-	-
Station/facility construction	Typical	24	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
	Peak 1		1	-	-	1	-	-	2	-	-	1	2	-	-	-	-	1	-	-
	Peak 2		10	1		2	1		1	2		3	1	2	1			1	1	-

The findings of the worst-case construction noise impact assessment at the Pyrmont Station construction sites during the daytime indicate:

- the nearest residential receivers would be relatively close to the construction sites and impacts are predicted to be 'moderate' to 'high' during outside work, particularly when noise-intensive equipment such as concrete saws are being used as part of station/facility construction work. Concrete saws are expected to be infrequently used throughout the 24-month construction period
- impacts during 'typical' work that does not require noise-intensive equipment or is inside the station are predicted to substantially reduce, with noise levels generally predicted to comply with the noise management levels or result in 'moderate' or 'low' impacts
- the 'peak' scenarios would generate more noise and result in more exceedances than the 'typical' scenarios, which would result from the 'peak' scenarios using noise intensive (or noisier) equipment
- the nearest commercial and 'other sensitive' receivers are predicted to be impacted during some of the noisier outdoor work activities. The highest impacts at these receivers are predicted when concrete saws are being used as part of station/facility construction. 'Moderate' worst-case impacts are predicted at:
    - Sydney Lyric Theatre
    - Sebel Hotel
    - Pegg Legg Inn
    - Bliss Early Learning.

The findings of the worst-case construction noise impact assessment at the Pyrmont Station construction sites during the night-time indicate:

- 'high' to 'moderate' impacts are predicted at the nearest residential receivers, particularly surrounding the western construction site
- more distant residential receivers are predicted to have 'moderate' to 'low' impacts
- these worst-case impacts are expected to occur only during external fit-out activities, such as during the installation of cladding.

Based on current construction planning, access points for tunnel fit-out and rail systems work would likely be via the Parramatta metro station, Clyde stabling and maintenance facility (including Rosehill services facility), Burwood North Station and The Bays Station construction sites. However, depending on construction staging, other construction sites would be used to access the tunnels to carry out tunnel fit-out and rail systems work. If Pyrmont Station is used to support rail systems fit-out work, this would likely result in the following potential impacts:

- high exceedances of the noise management level at the nearest residential receivers during the daytime, which could be reduced to low with the use of an acoustic shed (or other acoustic measures)
- high exceedances of the noise management level at the nearest residential receivers during the night-time, which could be reduced to moderate with the use of an acoustic shed (or other acoustic measures)
- low exceedances of the noise management level at the nearest commercial receivers, which could be reduced to negligible with the use of an acoustic shed (or other acoustic measures).

The impacts presented above are based on all equipment working simultaneously in each assessed scenario. There would be periods when construction noise levels are much lower than the worst-case levels predicted and there would be times when no equipment is in use and no impacts occur.

Highly affected residential receivers

Several nearby residential receivers are expected to be highly noise affected during daytime, evening and night-time.

Sleep disturbance

A sleep disturbance screening assessment has been completed for the construction work and is summarised in Table 14-14.

'Moderate' sleep disturbance impacts are predicted at a small number of nearby residential receivers during station/facility construction.

The number of potential instances of sleep disturbance would depend on several factors, including the type of equipment being used and the duration of noisy work.

During detailed construction planning, sleep disturbance would continue to be investigated to identify opportunities to minimise sleep disturbance impacts.

Vibration impacts

Construction work for this proposal at Pyrmont Station would not involve major sources of vibration-generating equipment. As such, potential vibration impacts are anticipated to be negligible and would be managed through the Sydney Metro CNVS.

Ground-borne noise

Ground-borne noise impacts would only arise where ground-borne noise levels are higher than the corresponding airborne noise levels. This can occur where work is underground or where surface work is shielded by noise barriers or other structures. For all scenarios at Pyrmont Station construction sites, airborne noise is anticipated to be higher than ground-borne noise levels and, as such, a ground-borne noise assessment is not required.

Construction traffic noise

Construction related traffic has the potential to temporarily increase road traffic noise levels at receivers that are adjacent to the construction sites haul routes. The forecast construction traffic volumes outlined in Section 14.5.3 have been used to determine where potentially noticeable increases in road traffic noise (i.e. a greater than 2 dB increase above the existing noise level) is likely. No roads around the Pyrmont Station construction sites are anticipated to have a greater than 2 dB increase.

14.6.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

The approach to noise and vibration management during the construction phase, including the process for the development of all construction noise and vibration statements is outlined in the CNVS (Appendix H).

The CNVS provides the overall strategy and approach for construction noise and vibration management for Sydney Metro West, and an outline of the noise and vibration management requirements and processes that would be common to each of the proposed construction sites.

In addition, the Sydney Metro CEMF (refer to Appendix F (Construction Environmental Management Framework)) outlines the construction noise and vibration mitigation measures to minimise impacts as relevant to this proposal as a whole.

The CNVS and CEMF are discussed further in Chapter 20 (Synthesis) of this Environmental Impact Statement.

14.7 Non-Aboriginal heritage

Further details on the non-Aboriginal heritage assessment, including the approach and methodology, are provided in Technical Paper 5 (Non-Aboriginal heritage).

14.7.1 Baseline environment

The assessment of non-Aboriginal heritage impacts in Chapter 8 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) included a description of the existing environment. The non-Aboriginal heritage assessment for this proposal has predominantly used the baseline environment that would be established following the completion of the work carried out under the previous Sydney Metro West planning application.

During the work carried out under the previous Sydney Metro West planning application, areas within the proposed Pyrmont Station construction sites would have been cleared of existing structures and vegetation, with the station cavern excavated.

As part of the work carried out under the previous Sydney Metro West planning application, and subject to approval, all archaeological investigations would have been carried out within the approved Pyrmont Station construction sites.

Pyrmont Station includes two sites – the Pyrmont Station western site and the Pyrmont Station eastern site. For the purpose of this heritage assessment, the study area for Pyrmont Station has been defined as a 25-metre buffer around the full extent of each of the sites. This takes into account the potential for direct impacts and limited visual catchment of the sites. Items have been considered beyond this buffer area where there are clear view lines to the sites.

Existing setting

The Pyrmont Station western site is located within the Pyrmont Heritage Conservation Area and is surrounded by a high proportion of intact mid- to late-19th century terrace housing. The Pyrmont Station eastern site is surrounded by a variety of development, being a mix of residential and commercial development. The surrounding developments are generally four to five storeys in height toward Edward Street, gradually increasing in height to Union Street and Pyrmont Bridge Road, which contains industrial premises. The Pyrmont Station study area and existing heritage items within the study area are shown in Figure 14-14.

Site history

The Pyrmont Station western construction site was originally part of a 24-acre grant to John Malone by Governor Francis Grose in 1794. Although it passed through the hands of different owners, the City of Sydney Trigonometry Plans show the site as undeveloped in 1855-1865 and being progressively developed in the proceeding decades. In 1883, a row of eight terraces with rear yards was constructed on the northern side of Pyrmont Bridge Road, comprising the southern portion of the construction site. However, in 1914, the Sydney Municipal Council compulsorily acquired all of these terraces, and in 1915 most were demolished to facilitate the widening of Pyrmont Bridge Road. The extant terraces were demolished sometime in the 1920s and the property was later used as a gin distillery in 1947 and then as an office space. The 1947 building is still extant, albeit modified.

The Pyrmont Station eastern construction site was also part of the 24-acre grant to John Malone. By the 1890s, the site contained brick terrace shops and housing. Imagery from the 1940s to 1950s depicts substantial demolition of the site, with a large open yard containing associated outbuildings and about five substantial attached buildings or terraces on the north-eastern corner of the triangular site to Union Street. By 1965, there appears to be hard surface on the majority of the eastern half of the site, with significant changes occurring to the layout of the site as a whole. The present building was built sometime between 1986 and 1991, and has generally been used as an office building.

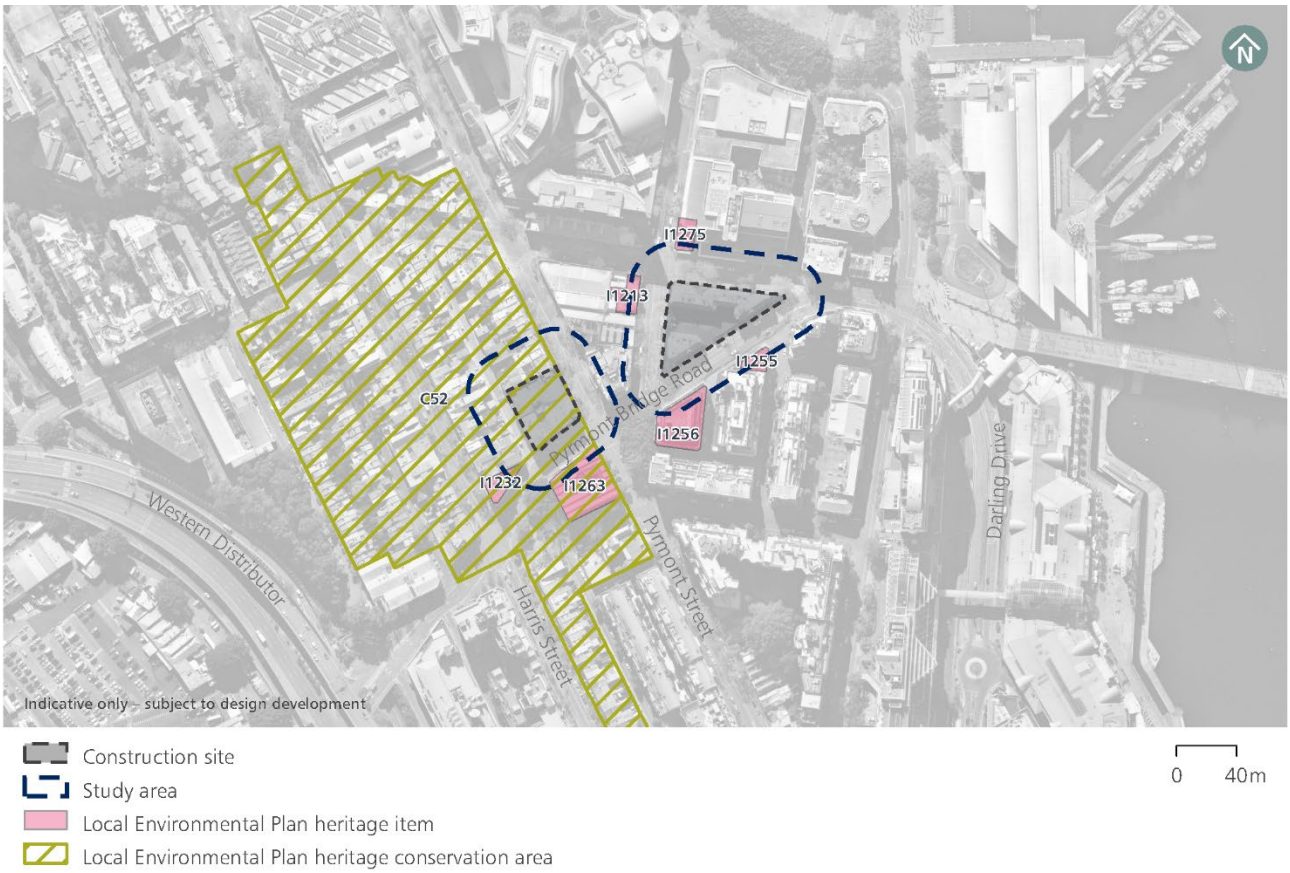

Figure 14-14 Heritage items within the study area – Pyrmont Station

14.7.2 Impact assessment

Built heritage impact assessment

Table 14-16 summarises the potential impacts of construction and operation of this proposal on built heritage items within the study area at Pyrmont Station.

Potential impacts to built heritage items at Pyrmont Station would generally be minor or neutral. Management of potential impacts is outlined in Section 14.7.3. A draft Heritage Interpretation Strategy (Appendix K (Draft Heritage Interpretation Strategy) has been prepared for this proposal. Where heritage items, including significant archaeology are impacted by this proposal, they would be considered for inclusion in the Heritage Interpretation Strategy or place specific interpretation plans prepared as part of this proposal.

Table 14-16 Impacts on significance of built heritage items – Pyrmont Station

Item, listing and significance	Potential impact	Magnitude
Pyrmont Heritage Conservation Area SLEP 2012 Item no. C52 Local	**Direct impact** The Pyrmont Station western site would be located within the heritage conservation area. This proposal would include the introduction of the Pyrmont Station building, including western station entry. The northern boundary of the Pyrmont Station western construction site would abut a contributory building within the heritage conservation area, although no physical modifications to this item are anticipated.	**Neutral**
	Settlement and vibration impacts The construction of the station services infrastructure would be the closest source of construction vibration to this item; however, these activities are not considered to be vibration intensive. Potential direct impacts associated with vibration are not anticipated.	**Neutral**

Item, listing and significance	Potential impact	Magnitude
	Temporary indirect (visual) impact During construction, stacked site offices and amenities would be established within the Pyrmont Station western construction site facing Pyrmont Bridge Road. The site would be surrounded by construction hoarding, and plant and machinery would be visible from outside of the site. Ancillary construction support elements, such as a temporary water treatment plant and power supply, would be established along the north-eastern boundary of the western construction site. These temporary structures and activities would be prominent on the corner of Pyrmont Bridge Road and Pyrmont Street and would temporarily overshadow significant views of nearby terrace housing and worker's houses on Pyrmont Street and Paternoster Row.	**Minor**
	Permanent indirect (visual) impact The Pyrmont Station western site would be located at the corner of Pyrmont Street and Paternoster Row. Both streets have been assessed with a street rating of A (high value to the significance of the conservation area overall) under the heritage conservation area curtilage. The proposed station entry and services building would be about four to five storeys in height. While the station entry would be set back from the streetscape and public domain provided between the station entry and Pyrmont Bridge Road, the introduction of an about four to five-storey station services building would visually dominate the Pyrmont Bridge Road and Pyrmont Street corner and overshadow heritage significance views of contributory buildings on Pyrmont Street and the rear of worker's housing on Paternoster Row. However, the station building would be similar in height to the previous building on the site and the existing development to the south-east (Pyrmont Bridge Road) of the western construction site. As the proposed location is on the boundary of the heritage conservation area, any visual dominance likely to impact the heritage conservation area would be localised to the immediate streetscapes rather than the whole heritage conservation area, which expands over about five hectares of the Pyrmont area.	**Minor**
Former New York Hotel SLEP 2012 Item no. I1275 SREP 2005 (City West) Item no. 67 RNE Place ID 100709 Local	**Direct impact** The heritage item is located about 15 metres north of the Pyrmont Station eastern construction site. Elements introduced as part of this proposal would not be located within the heritage curtilage of the item and there would be no direct (physical) impacts to the item.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Stacked site offices and amenities would be established directly opposite the heritage item during the construction phase of this proposal. These temporary structures would be of sufficient elevation to overshadow the heritage item across the road and diminish the significance of the building within the streetscape during the construction phase.	**Minor**

Item, listing and significance	Potential impact	Magnitude
	Permanent indirect (visual) impact The Pyrmont Station eastern site would be located directly opposite the heritage item. The Former New York Hotel makes a positive contribution to the streetscape as a substantial late Victorian structure of sandstone construction. This proposal would include the introduction of a two-storey station services at Edward Street and three to four-storeys at the Union Street eastern entrance. While the station services building would be directly facing the heritage item, it would not overshadow or obstruct significant views of the building's street frontage, nor diminish the item's prominence in the streetscape.	**Negligible**
Quarryman's Hotel SLEP 2012 Item no. I1232 SREP 2005 (City West) Item no. 56 RNE Place ID 100706 Local	**Direct impact** The heritage item is located about 15 metres south-west of the Pyrmont Station western construction site. Elements introduced as part of this proposal would not be located within the heritage curtilage of the item and there would be no direct (physical) impacts to the item.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Construction facilities (including stacked site office and ancillary structures along Pyrmont Bridge Road) would be visible from the heritage item; however, they would not overshadow, obstruct or diminish from the heritage significant views of the hotel's Harris Street and Pyrmont Bridge Road corner frontage.	**Neutral**
	Permanent indirect (visual) impact The item is a good example of a Federation Arts and Crafts style hotel, at a prominent corner site, which makes a positive contribution to the streetscape. The station services building, western station entry and associated public domain would be located directly north-east of the item and would not obstruct existing views towards the aesthetically significant facades of the building from the surrounding streetscape, nor would it significantly alter the visual setting of the item.	**Neutral**
Former Warehouse 'Bank of NSW Stores' SLEP 2012 Item no. I1256 SREP 2005 (City West) Item no. 53 RNE Place ID 100704 Local	**Direct impact** The heritage item is located 20 metres south of the Pyrmont Station eastern construction site and over 50 metres east of the Pyrmont Station western construction site. No elements of this proposal would be located within the heritage curtilage of the item and there would be no direct (physical) impact to the item.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Construction facilities would be visible from the heritage item however they would not overshadow, obstruct or diminish from the heritage significant views of the warehouse's five-storey prominent street corner frontage.	**Negligible**
	Permanent indirect (visual) impact The Former Warehouse 'Bank of NSW Stores' building makes a positive contribution to the streetscape and is located on a prominent corner site, views and vistas are part of the heritage significance of the item. The western station services building 20 metres to the north of this heritage item would be similar in scale than the five-storey heritage item, and this proposal would not impede or overshadow significant views of its corner street frontage.	**Negligible**

Item, listing and significance	Potential impact	Magnitude
Corner Shop and Residence 'Charmelu' SLEP 2012 Item no. I1213 SREP 2005 (City West) Item no. 68 Local	**Direct impact** The heritage item is located 20 metres west of the proposed Pyrmont Station eastern construction site. No work would be required within the heritage curtilage of the item and there would be no direct (physical) impact to the item as a result of this proposal.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Stacked site offices and amenities would be established directly opposite the heritage item during the construction phase of this proposal. These temporary structures would be of sufficient elevation to overshadow the heritage item across the road and diminish the prominence of the building within the streetscape during the construction phase.	**Minor**
	Permanent indirect (visual) impact The Corner Shop and Residence 'Charmelu' makes a positive contribution to the streetscape and as it is located on a prominent corner site, views and vistas are part of the heritage significance of the item. Station services infrastructure and public domain elements would be located directly east of the heritage item. Due to the siting and scale of the proposed station services infrastructure, this proposal would not obstruct views towards the aesthetically significant Victorian façade of the item along Edward and Union Streets, nor would it significantly alter the visual setting of the item. Additionally, the low-level scale of the station services infrastructure would not overshadow the item located about 20 metres to the west.	**Negligible**
Terrace Group SLEP 2012 Item no. I1274 SREP 2005 (City West) Item no. 122 Local	**Direct impact** The heritage item is located about 20 metres west of the Pyrmont Station eastern construction site. No work would be required within the heritage curtilage of the item and there would be no direct (physical) impact to the item as a result of this proposal.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Construction facilities and activities would not be clearly visible from this heritage item and works during the construction phase would not interrupt or overshadow significant views of the street frontage of the heritage item.	**Neutral**
	Permanent indirect (visual) impact The eastern station services building and station entry, including public domain, would be located directly east of the item. The item is a good example of a mid-Victorian terrace that makes a positive contribution to the streetscape. Due to the location of the item and the siting of the metro station to the east, views towards the aesthetically significant Victorian filigree terraces would not be obstructed or overshadowed by this proposal.	**Neutral**
Pyrmont Bridge Road Hotel SLEP 2012 Item no. I1255	**Direct impact** The heritage item is located about 20 metres south of the Pyrmont Station eastern construction site. Elements introduced as part of this proposal would not be located within the heritage curtilage of the item and there would be no direct (physical) impacts to the item.	**Neutral**

Item, listing and significance	Potential impact	Magnitude
SREP 2005 (City West) Item no. 52 RNE Place ID100703 Local	**Settlement and vibration impacts** Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact The Pyrmont Station eastern construction site would be located directly across the road from the heritage item and include ancillary construction facilities and construction plant and equipment, behind construction hoarding and fencing. These facilities are not anticipated to obstruct or overshadow significant views of the heritage item facing Pyrmont Bridge Road.	**Negligible**
	Permanent indirect (visual) impact The Pyrmont Bridge Road Hotel is located on a prominent corner site, about 20 metres south of the eastern station entry building. The building's distinctive chamfered corner presentation is a landmark in the area, and is of high significance externally, making a positive contribution to the streetscape. The proposed eastern station entrance building would be integrated with station services and be about four to five storeys high, fronting Pyrmont Bridge Road, facing the heritage item and would not interrupt significant views or overshadow the street-corner prominence of this heritage item.	**Negligible**
Former Industrial Building 'Waite and Bull' Also known as 'John Taylor Wool Stores' SLEP 2012 Item no. I1263 SREP 2005 (City West) Item no. 54. RNE Place ID2036 NTR no. 10858 Local	**Direct impact** The item is located directly south of the Pyrmont Station western construction site and about 50 metres to the south-west of the eastern construction site. Elements introduced as part of this proposal would not be located within the heritage curtilage of the item and there would be no direct (physical) impacts to the item.	**Neutral**
	Settlement and vibration impacts Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	**Neutral**
	Temporary indirect (visual) impact Stacked site offices and staff amenities would be established within the western construction site directly opposite the heritage item. These structures are anticipated to be several storeys tall. Despite the elevation of these facilities, they are not anticipated to be greater than the five-storey masonry heritage item and would not block significant views of the item from the perspective of Pyrmont Bridge Road or the intersection at Pyrmont Street.	**Negligible**
	Permanent indirect (visual) impact The large distinctive brick warehouse building with curved treatment of the corner presentation is a landmark feature in the Pyrmont area. The building makes a positive contribution to the streetscape, with views and vistas contributing to the heritage significance of the item. The Pyrmont Station western station entry and services infrastructure would be located directly north of the heritage item. The Pyrmont Station eastern station entry and services infrastructure would be located about 50 metres to the north-east of the item. This proposal, including the introduction of station services infrastructure at the western and eastern sites would not obstruct over overshadow the primary views and vistas towards the item from these locations.	**Negligible**

Archaeological impact assessment

The area within the Pyrmont Station construction sites has been assessed in Chapter 8 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). Subject to approval of those works, all archaeological investigations would be completed prior to the construction of this proposal. As such, no new archaeological impacts are anticipated as part of this proposal, as potential archaeological resources would be identified and managed during the work carried out under the previous Sydney Metro West planning application.

14.7.3 Management and mitigation measures

Environmental management for this proposal would be carried out through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, non-Aboriginal heritage would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes heritage management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

Mitigation measures that are specific to the operation and construction of Pyrmont Station to address potential impacts are listed in Table 14-17.

Table 14-17 Non-Aboriginal heritage mitigation measures – Pyrmont Station

Ref	Impact/issue	Proposed mitigation measure	Timing
Non-Aboriginal heritage			
EIS-NAH2	Permanent indirect (visual) impact	Detailed design for aboveground station elements, ancillary facilities and public domain and landscaping work located in or near to heritage significant items, would respond to the following heritage guidelines during design development in order to minimise indirect (visual) impacts to heritage items identified under this proposal: • The Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance (2013), Australia ICOMOS • Better Placed – Design Guide for Heritage (2019), prepared by the NSW Government Architect • Design in Context (2005), prepared by the NSW Heritage Office and the Royal Australian Institute of Architects NSW Chapter • New Uses for Heritage Places (2008), prepared by the Heritage Council of NSW and the Royal Australian Institute of Architects • Draft Connecting with Country Framework (2020), Government Architect NSW. Detailed design would also respond to guidelines and policies outlined in existing Conservation Management Plans or other relevant heritage assessment documents for relevant heritage items (State Abattoir, White Bay Power Station), with particular focus on preserving significant views towards the item.	Operation

14.8 Aboriginal heritage

The approach and methodology for the Aboriginal heritage assessment are provided in Chapter 4 (Methodology) of this Environmental Impact Statement. The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

14.8.1 Baseline environment

The previous Sydney Metro West planning application assessed the potential impacts of the establishment of the Pyrmont Station construction sites.

This section provides a summary of the existing environment at Pyrmont to provide context for this proposal. No additional footprint beyond that already assessed under the previous Sydney Metro West planning application is required for this proposal at the Pyrmont Station construction sites.

Landscape and archaeological context

The Pyrmont Station construction sites are located within the Sydney Harbour foreshore area, a physical geographic region of the Sydney Basin. Topographically the Pyrmont Station construction sites lie along a north-east to south-west trending ridgeline which forms the spine of the Pyrmont peninsula, running roughly the length of Harris Street and Bulwara Road (Kelleher Nightingale Consulting Pty Ltd (2020). The ridge is flanked by moderate to steep slopes and localised sandstone escarpments dropping down to the low-lying areas associated with the former estuarine Blackwattle Bay and Cockle Bay/Darling Harbour embayment/s. Prior to European habitation of the area, the Pyrmont peninsula comprised a narrow, undulating ridge flanked by steep slopes dropping down to an irregular and rocky shoreline.

Reference to the 1:100,000 Geological Map Sheet for Sydney (9130) indicates the Pyrmont construction sites are underlain by Hawkesbury Sandstone, characterised by fine to coarse grained, quartz-lithic sands within a siliceous matrix. Prone to block failure (fracturing along linear cracks to produce blocky fragments) and susceptible to wind and water erosion, areas dominated by Hawkesbury Sandstone geology are often characterised by steep escarpments and deeply dissected terrain, the former generating overhangs suitable for occupation. Occupation of the area by Aboriginal peoples is more commonly associated with rockshelters that were used as campsites, for habitation, and often contained charcoal and pigment art.

Chapman & Murphy (1989), map the soils of the Pyrmont Station construction sites as belonging to the Gymea soil landscape. Comprising shallow to moderately deep (30 to 100 centimetres) earthy sands on crests and inside of benches; shallow (less than 20 centimetres) siliceous sands on leading edges of benches; localised gleyed podzolic soils and podzolic soils on shale lenses; shallow to moderately deep (less than 100 centimetres) siliceous sands and leached sands along drainage lines.

While no permanent watercourses are evident on the Pyrmont peninsula today, Cockle Creek (also known as Darling Creek) was a small watercourse that began in the vicinity of present-day Foveaux and Riley Streets, following the alignment of Sophia Street then flowing north in front of the Albion Brewery to present-day Belmore Park. Additionally, ‘Tinker’s Well’, was a spring located near Distillery Drive, about 450 metres north-west of the Pyrmont Station construction sites. Located within a prominent sandstone overhang, the spring discharged through cracks in the sandstone and was collected in a natural dish in the sandstone.

Previous Aboriginal cultural heritage assessments

The following summarises key investigations undertaken in the local environs that are relevant to this proposal:

- Comber Consultants Pty Ltd (2013) undertook a due diligence assessment for the Sydney international Convention, Exhibition and Entertainment Precinct. Background research concluded that there was potential for subsurface deposits containing artefact scatters and/or shell midden along what would have been the original shoreline of Cockle Bay. Potential for other forms of Aboriginal archaeological sites including rock engravings, culturally modified trees or rockshelters were considered unlikely
- Kelleher Nightingale Consulting Pty Ltd (2020) undertook an Aboriginal Heritage Assessment to inform the development and finalisation of the Pyrmont Peninsula Strategy. Background research identified six Aboriginal archaeological sites within the study area, comprising five areas of Potential Archaeological Deposits and one shell midden with artefact. ’Tinker’s Well’ was also identified as an Aboriginal heritage feature, though unmapped or registered as such
- Artefact Heritage Services Pty Ltd (2021) prepared an Aboriginal Heritage Interpretation Plan for the site of the new Sydney Fish Markets development, located on Bridge Road about 200 metres west of the Pyrmont Station construction sites. While not an archaeological investigation, the assessment included a review of proximal Aboriginal sites and a consideration of Aboriginal cultural values, including an examination of the significance of the Pyrmont area to Aboriginal peoples
- Artefact Heritage Services Pty Ltd undertook archaeological survey of the area as part of *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). This report identified that within the Pyrmont Station construction sites there are no Aboriginal sites or predicted areas of Aboriginal archaeological sensitivity, or site-specific cultural values within the Pyrmont Station construction sites.

Recorded Aboriginal sites

The *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) identified previously recorded Aboriginal sites outside of the Pyrmont Station construction sites.

No AHIMS sites are registered within the boundaries of the Pyrmont Station construction sites.

An updated search of the AHIMS database was undertaken on 21 August 2021 (Search ID 609566), which identified the same AHIMS sites, including one Aboriginal site (AHIMS 45-6-3339) comprising of an area of Potential Archaeological Deposit located in Lot 2 DP 827434 and covering an area of 70 x 70 metres. The site is outside of and about 300 metres to the south-west of the Pyrmont Station construction sites.

Aboriginal community consultation and cultural heritage values

Consultation undertaken with Registered Aboriginal Parties for the previous Sydney Metro West planning application did not identify any site-specific cultural values at the Pyrmont Station construction sites. However Registered Aboriginal Party representatives did note that the Pyrmont area is part of a wider cultural landscape of high cultural significance to the local Aboriginal community, noting the importance of Sydney Harbour as both a location of ceremonial activities and resource gathering place. Of particular relevance to the Pyrmont area, sandstone features were noted for their cultural connections to Aboriginal lore and its potential to hold engravings depicting lore stories.

Ongoing consultation with Aboriginal heritage knowledge holders is underway as part of design development for this proposal, including for the purposes of better understanding cultural values and addressing the Connecting with Country framework.

Field investigation results

The *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) included a survey of the Pyrmont Station construction sites undertaken with participation from a Registered Aboriginal Party representative from Metropolitan Local Aboriginal Land Council. No areas of surface visibility were observed during this field investigation.

Further field investigation has not been undertaken at the Pyrmont Station construction sites for this proposal as the land required for this proposal would be consistent with the site assessed under the previous Sydney Metro West planning application.

14.8.2 Operational impact assessment

Direct impacts

No identified Aboriginal sites, objects and/or site-specific cultural heritage values would be directly impacted during operation of this proposal at Pyrmont Station.

Indirect impacts

No identified Aboriginal sites, objects and/or site-specific cultural heritage values would be indirectly impacted during operation of this proposal at Pyrmont Station.

During development of Sydney Metro West, consultation was undertaken with knowledge holders to inform the project development as part of the Connecting with Country Pilot program. This consultation will continue during further development of the project.

In accordance with Concept conditions of approval CB4, CB5 and CB6, a draft Heritage Interpretation Strategy has been prepared for this proposal (refer to Appendix K) which details how Aboriginal heritage values would be interpreted (if archaeological remains are encountered) and reflected within the design of this proposal.

Further details regarding Sydney Metro's approach to Connecting with Country, and heritage and archaeology design guidelines are provided in the station and precinct Design Guidelines in Appendix E (Design Guidelines).

14.8.3 Construction impact assessment

Direct impacts

No registered Aboriginal heritage sites, objects or site-specific cultural values were identified within the Pyrmont Station construction sites and the closest site is around 300 metres to the south-west. No additional footprint is required for this proposal at the Pyrmont Station construction sites.

Therefore, no identified Aboriginal sites, objects and/or site-specific cultural heritage values would be directly impacted during construction of this proposal at the Pyrmont Station construction sites.

Indirect impacts

No identified Aboriginal sites, objects and/or site-specific cultural heritage values would be indirectly impacted during construction of this proposal at the Pyrmont Station construction sites.

14.8.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, Aboriginal heritage would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

14.9 Landscape and visual amenity

Further details on the landscape and visual amenity assessment, including the approach and methodology, are provided in Technical Paper 6 (Landscape and visual amenity).

14.9.1 Baseline environment

Pyrmont Station would be situated across two construction sites – the western site and eastern site. The western site would be located to the north of Pyrmont Bridge Road, between Pyrmont Street and Paternoster Row. The eastern site would be located on a triangular block between Pyrmont Bridge Road, Union Street and Edward Street.

Under the previous Sydney Metro West planning application, existing buildings and vegetation within the sites would be removed. This would include removal of the former Gilbey's Gin Distillery, a building with heritage character located within the western site, several small trees along Pyrmont Bridge Road (within the vicinity of the western site) and construction hoarding established around the sites.

Pyrmont Bridge Road extends east-west through the centre of Pyrmont, providing access between Glebe and Darling Harbour, and onwards to the Sydney CBD. Pyrmont Bridge Road is four lanes wide in the vicinity of the sites.

The area surrounding the western site, includes low- and medium-rise character terrace buildings, former warehouse buildings and local hotels at prominent corner sites. There are some remnant buildings that exhibit a heritage character. There is also the local heritage listed Quarryman's Hotel on the corner of Pyrmont Bridge Road and Harris Street and former wool store building (former 'Waite & Bull' building) located opposite the proposed Pyrmont Station western site, at the corner of Pyrmont Street and Pyrmont Bridge Road.

The proposed Pyrmont Station western site is located within the Pyrmont Heritage Conservation Area (refer to Section 14.7 for further detail). The Heritage Conservation Area includes buildings, structures and public open spaces that collectively provide an example of the Victorian working-class community. There are several mature fig trees along Pyrmont Bridge Road that provide shade and character to the area.

The proposed Pyrmont Station eastern site is located near The Star Sydney, which is subject to a proposed redevelopment application. There are also several heritage buildings in the vicinity of this site including the former New York Hotel, residence 'Charmelu', a group of terraces, the former Pyrmont Bridge Road Hotel on Union Street, the current Pyrmont Bridge Hotel, and former warehouse 'Bank of NSW Stores' on Pyrmont Bridge Road, which provide visual interest and variety to this area of Pyrmont.

Section 14.3 provides further discussion of the intended future character and local strategic plans relevant to Pyrmont. A detailed review of local planning guidance relevant to landscape and visual context is provided in Technical Paper 6 (Landscape and visual amenity).

Landscapes and public realm areas

The landscapes and public realm areas potentially impacted by this proposal, and the landscape sensitivity level for these areas, are outlined in Table 14-18.

Table 14-18 Landscapes and public realm areas – Pyrmont Station

Location	Baseline environment	Landscape sensitivity level
Pyrmont Street and Pyrmont Bridge Road streetscapes	These streetscapes border the eastern and southern sides of the proposed Pyrmont Station western site. An avenue of mature London Plane trees along both sides of Pyrmont Street contribute to the character of this street. The large fig trees located in nearby public open spaces, such as Elizabeth Healey Reserve at the corner of Harris Street and the square at Edward Lane on the corner of Pyrmont Street and Pyrmont Bridge Road, providing shade and amenity. The Samuel Hordern Fountain, a local heritage listed item located on the corner of Pyrmont Bridge Road and Pyrmont Street, is also a visual feature. Heritage listed buildings add to the streetscape character, providing visual interest and reinforcing the character of the area.	Local
Paternoster Row laneway	Paternoster Row is a narrow laneway, extending north-south between Pyrmont Bridge Road and Union Street. It is located within the Pyrmont Heritage Conservation Area and includes predominantly 19th century two-storey terrace buildings. The eastern side of the street is characterised by the rear of residential properties fronting Pyrmont Street. The western side includes two-storey Victorian terraces at the northern end, and the rear of several commercial properties that face Harris Street. This laneway provides one-way vehicle movement and is paved to present a shared pedestrian and vehicular environment. There are a few small street trees adjacent to the site.	Local
Union Street, Edward Street and Pyrmont Bridge Road streetscapes	These streetscapes form a triangular block, surrounding the eastern site. Pyrmont Bridge Road includes several mature street trees and heritage listed buildings, which contribute to the streetscape character. Union and Edward Streets are narrower streets, which also include several heritage buildings with decorative facades. There is a dedicated cycle lane along the northern side of Union Street, and awnings, mature street trees and gardens provide amenity to these streetscapes. These streets are activated with a mix of uses.	Local

Representative viewpoints

Representative viewpoints that have been selected to inform the daytime visual impact assessment are shown in Figure 14-15. These viewpoints are of local sensitivity, with the exception of viewpoint 9, which is of regional sensitivity.

While the impact ratings for all 10 viewpoints are provided, the following four have been selected as the most representative for this station to be discussed in this section, taking into account their degree of sensitivity and potential operational and construction elements that would be visible:

- **viewpoint 3: view west across Pyrmont Bridge Road and Pyrmont Street intersection** – presents the built form, scale and character of buildings at the Pyrmont Street and Pyrmont Bridge Road intersection. This view is also in the vicinity of a 'key view' identified in the Draft Pyrmont Peninsula Design Guidelines (NSW Department of Planning, Industry and Environment, 2021d). The former Gilbey's Gin Distillery would have been removed from this view (subject to approval of the previous Sydney Metro West planning application)
- **viewpoint 4: view south along Pyrmont Street** – presents the interface of this proposal with heritage and heritage-character items, including the former wool store building at the corner of Pyrmont Street and Pyrmont Bridge Road (a local heritage item, left of view)
- **viewpoint 5: view east along Union Street** – presents the interface of this proposal with surrounding low- to medium-scale commercial and residential development. This view is also a 'key view' identified in the Draft Pyrmont Peninsula Design Guidelines (NSW Department of Planning, Industry and Environment, 2021d)

- **viewpoint 9: view west from Pyrmont Bridge** – presents potential impacts from an important bridge structure, as well as from the Pyrmont Bridge Hotel, a local heritage item and landmark.

A detailed assessment of all viewpoints is provided in in Technical Paper 6 (Landscape and visual amenity).

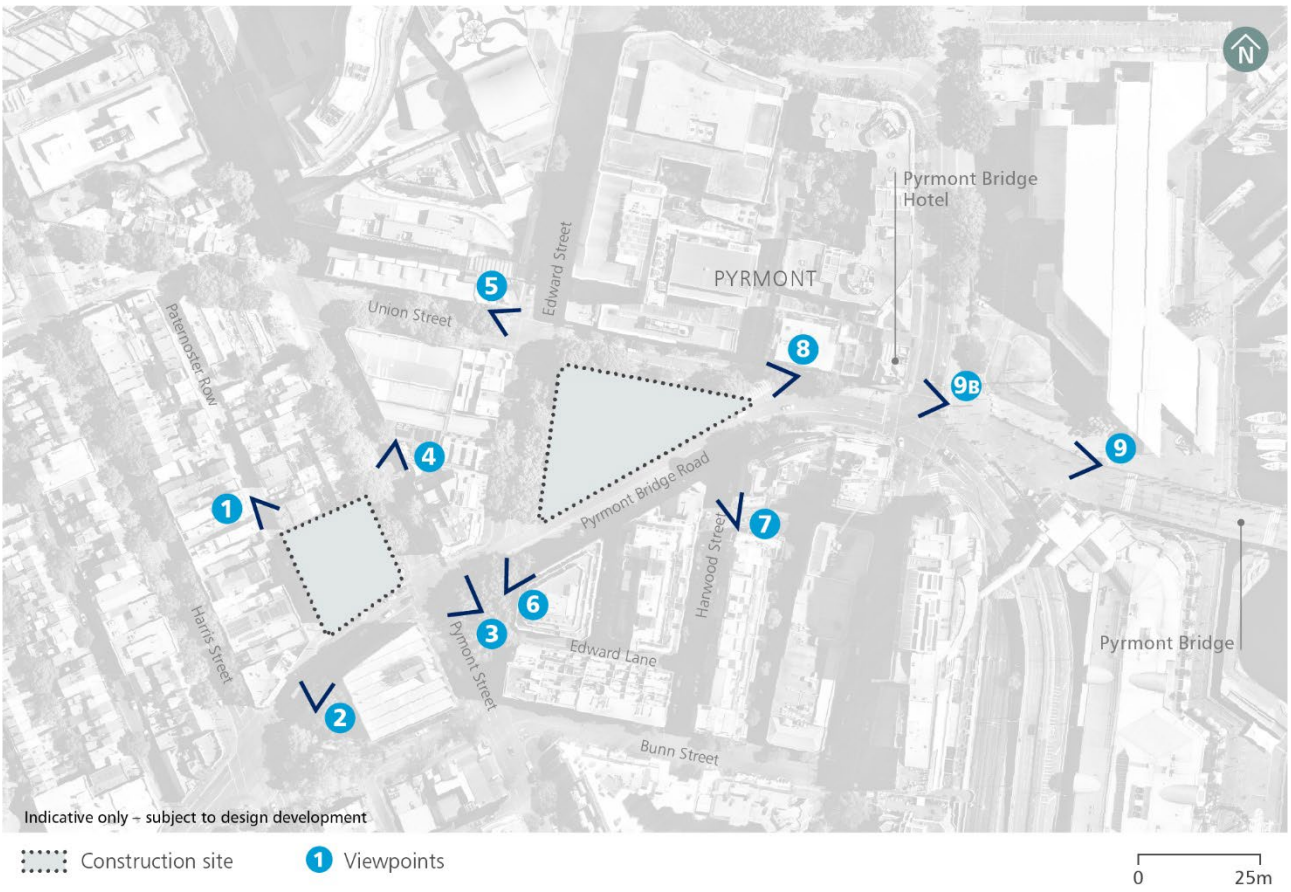

Figure 14-15 Representative viewpoints – Pyrmont Station

Night-time visual sensitivity

Pyrmont Station would be located in an area of high district brightness (A4), which is of very low sensitivity. This lighting level is due to the densely packed commercial and residential buildings, brightly lit public domain and entertainment facilities surrounding the site in Pyrmont and at Darling Harbour. Streetlights and headlights from traffic, particularly along Pyrmont Bridge Road, also contribute both static and moving light sources to the night scene. There would be some remaining security lighting from the previous Sydney Metro West planning application.

14.9.2 Operational impact assessment

Operation of this proposal at Pyrmont Station would comprise underground and surface elements. The key elements of this proposal that would be visible are described in Section 14.2.

Landscape impact

Landscape impacts anticipated as a result of the operation of this proposal are summarised in Table 14-19.

There would generally be minor beneficial or negligible landscape impacts during operation of this proposal as the provision of proposed public domain areas would improve the landscape quality and functioning of the adjacent streets.

The heritage listed buildings adjacent to the sites and the mature street trees along Pyrmont Street would be retained. There would be a new area of public domain along both Pyrmont Street and Pyrmont Bridge Road, improving the streetscape amenity and level of comfort for pedestrians. Street trees would also improve the canopy cover along Pyrmont Bridge Road, providing shade and amenity along this section of the road. The proposed western station entrance would face Pyrmont Bridge Road, providing activation at street level. The new station entry would be a local visual landmark on this prominent street corner, improving legibility and accessibility within the local area.

The character and amenity of Paternoster Row would be restored from construction phase impacts, with impacted areas of the laneway being reinstated with public domain areas. The western aboveground station building would be located along the former building line along Paternoster Row. It would rise about four to five storeys and would be slightly taller than the existing buildings to the east of the site.

There would be a new station entrance at the eastern site facing Union Street, near the Edward Street intersection. The station entrance would be set back from the street with an expanded area of public domain along Union Street. The new station entrance would provide a focal point, visible from areas east and west along Union Street and improving local legibility. There would be potential for future non-station uses to the east of the station entrance, potentially activating the streetscape in this location.

There would be a station services and a loading zone along Edward Street. With the exception of two trees removed for this proposal, street trees in this location would be retained, maintaining the streetscape character and softening the appearance of this new built form.

At the Pyrmont Station eastern site there would be some existing shadows cast to the public domain areas to the west, the south and the east of the site. At the eastern site, this proposal would increase the existing shadow cast throughout the day in mid-winter. Properties to the west and east of the site would not experience an overshadowing effect that reduces these properties' access to sunlight. To the south of the site, along Pyrmont Bridge Road, the residences to the east of the site would maintain access to sunlight during mid-winter. There is one property located at 110 Pyrmont Bridge Road, with some north facing residential apartments that would be impacted by overshadowing such that there would not be any sunlight cast on the eastern end of the façade of this building during mid-winter. This would affect a small number of north facing units within this building, although there would be no change in access to sunlight for units that face east and west.

At the western site, there would not be any additional overshadowing of the residences to the west or buildings to the south and east of the site. There would also not be any overshadowing impact on Elizabeth Healy Reserve.

Overall, due to the existing setting of medium and high-density development, and future scale of development planned for this location, there would be relatively small areas of additional shading of the residences at 110 Pyrmont Bridge Road. This impact is considered to result in a minor adverse landscape impact. Further detail on the potential overshadowing impacts is provided in Technical Paper 6 (Landscape and visual amenity).

Table 14-19 Landscape impacts during operation – Pyrmont Station

Location	Landscape sensitivity level	Magnitude of change	Impact rating
Pyrmont Street and Pyrmont Bridge Road streetscapes	Local	Noticeable improvement	Minor beneficial
Paternoster Row laneway	Local	No perceived change	Negligible
Union Street, Edward Street and Pyrmont Bridge Road streetscapes	Local	Noticeable improvement	Minor beneficial

Daytime visual amenity impact

Visual amenity impacts at representative viewpoints anticipated as a result of the operation are summarised in Table 14-20. Management of potential impacts is discussed in Section 14.9.4. An artist's impression of Pyrmont Station during operation is shown in Figure 14-16. Potential station finishes would be identified as part of design development and would be consistent with the principles and outcomes presented in the Design Guidelines (Appendix E).

Generally, there would be moderate beneficial to minor adverse visual impacts, due to the provision of new high-quality, activated frontages and the integration of the new contemporary station structures into what is generally a highly urban view.

Table 14-20 Daytime visual impacts during operation – Pyrmont Station

Location	Sensitivity rating	Magnitude of change	Impact rating
Viewpoint 1: view south along Paternoster Row	Local	Noticeable reduction	Minor adverse
Viewpoint 2: view north along Pyrmont Bridge Road	Local	Noticeable improvement	Minor beneficial
Viewpoint 3: view west across the Pyrmont Bridge Road and Pyrmont Street intersection	Local	Noticeable improvement	Minor beneficial
Viewpoint 4: view south along Pyrmont Street	Local	Noticeable improvement	Minor beneficial
Viewpoint 5: view east along Union Street	Local	Noticeable improvement	Minor beneficial
Viewpoint 6: view north-east to Edward Street and Pyrmont Bridge Road	Local	Noticeable improvement	Minor beneficial
Viewpoint 7: view north along Harwood Street	Local	Noticeable improvement	Minor beneficial
Viewpoint 8: view west from Union Street	Local	Noticeable improvement	Minor beneficial
Viewpoint 9: view west from Pyrmont Bridge	Regional	Noticeable improvement	Moderate beneficial

As noted in Section 14.9.1, the most representative viewpoints have been described in detail in this section. Potential impacts from these viewpoints would include the following:

- **viewpoint 3: view west across Pyrmont Bridge Road and Pyrmont Street intersection** – this view would experience a minor beneficial visual impact during operation, due to improvements in the quality of adjacent public domain areas and the presence of a high-quality architectural station entry that would address the street corner. The southern and eastern façade of the western aboveground station and services building would be visible, extending along Pyrmont Bridge Road and Pyrmont Street, in the middle ground of this view. The station entrance would create a new focal point within an area of high-quality public domain along Pyrmont Bridge Road. There would be space for future non-station uses on Pyrmont Street, providing opportunity for increased activation. The station services structure would also be visible above the station entrance, rising to about four to five storeys, with a contemporary appearance, and contrasting in scale and character with the heritage warehouse building and adjacent character terraces along Pyrmont Street. The existing view and a photomontage of this proposal during operation at viewpoint 3 is provided in Figure 14-17 and Figure 14-18, respectively
- **viewpoint 4: view south along Pyrmont Street** – this view would experience a minor beneficial visual impact during operation. This proposal would introduce contemporary structures into this view that would step up in mass and scale from the adjacent heritage character buildings. However, due to the larger scale buildings along Pyrmont Bridge Road and the prominence of this corner site, this increased scale would be absorbed into this view. The aboveground station building at the western site would be visible in the middle ground of this view. The building would be set back from Pyrmont Bridge Road within a new area of public domain. The street trees would be retained, and streetscape improvements would be visible, including new pavements and street furniture, providing a setting to the station and supporting increased pedestrian activity and movement in this location
- **viewpoint 5: view east along Union Street** – this view would experience a minor beneficial visual impact during operation due to the provision of public domain areas visible along Union and Edward Streets and would improve the streetscape amenity. The proposed eastern metro station entrance would be visible in the middle ground of this view, facing Union Street. It would be a new contemporary structure, rising around twice the height of the previous built form on the site, to about five storeys. The upper section of Union Street, beyond the station entrance, would be potentially activated with space for future non-station use, further increasing the level of movement and activity in this view. There would be station services facing Edward Street, screened from this view by intervening trees and built form

- **viewpoint 9: view west from Pyrmont Bridge** – this view would experience a moderate beneficial visual impact during operation as the height, scale and contemporary character of the metro station would be compatible with surrounding medium- and high-rise buildings and the site. The aboveground station building at the eastern site would be visible in the background of view, at the corner of Pyrmont Bridge Road and Union Street. In closer proximity to the site, from Murray Street adjacent to the Pyrmont Bridge (refer to viewpoint 9B shown on Figure 14-15), the building would be more prominent, visible in the middle ground of view. The station and services building would be set back from the corner and there would be space for future non-station uses at street level and extending along Union Street, adding pedestrian movement and activity to this view. The building would rise to about five storeys, similar to the height of the residential and commercial buildings in the vicinity of the site. There would also be public domain upgrades along both Pyrmont Bridge Road and Union Street, improving the streetscape amenity.

Indicative only – subject to design development

Figure 14-16 Artist's impression of Pyrmont Station (eastern site) during operation

Figure 14-17 Existing view from viewpoint 3 (view west across Pyrmont Bridge Road and Pyrmont Street intersection) – Pyrmont Station. Indicative extent of Pyrmont Station western site shown by blue shading

Indicative only – subject to design development

Figure 14-18 Photomontage from viewpoint 3 (view west across Pyrmont Bridge Road and Pyrmont Street intersection) – Pyrmont Station

Night-time visual amenity impact

The anticipated night-time visual impacts during operation are summarised in Table 14-21.

The station and public domain areas would be brightly lit to provide for customer safety. This would include lighting at the station entries, the point-to-point zone, and where station activation opportunities are established. These station entries would be oriented towards Pyrmont Bridge Road at the western site, and Union Street at the eastern site, both oriented away from nearby residential properties, reducing the potential for light to reduce the amenity of these properties.

All station lighting would be designed to minimise light spill and directed away from neighbouring properties. This proposal would, however, contribute to the general skyglow and direct light sources that would be seen from surrounding streets and properties. While the level of lighting required to provide for safety for customers at night would increase the light levels around the precinct, this light would be consistent with the bright lighting levels in this area.

Table 14-21 Night-time visual amenity impacts during operation – Pyrmont Station

Location	Sensitivity rating	Magnitude of change	Impact rating
Pyrmont Station	A4: High district brightness	No perceived change	Negligible

14.9.3 Construction impact assessment

Construction of Pyrmont Station would require the continued use of the construction sites established under the previous Sydney Metro West planning application. The main elements of this proposal that would be visible include the proposed works, construction site features, equipment and vehicle access routes as described in Chapter 6 (Proposal description – construction) and Section 14.4.

Landscape impact

Landscape impacts anticipated as a result of the construction of this proposal are summarised in Table 14-22. Management of potential impacts is discussed in Section 14.9.4.

There would generally be potential minor adverse temporary impacts during construction of this proposal at Pyrmont, due to the continued presence of construction activities.

The continuation of construction activity on the sites, lack of street trees along Pyrmont Bridge Road, and additional construction vehicles travelling along Pyrmont Bridge Road, including the vehicle access crossings of the footpath and accessing the sites, would maintain a temporarily reduced level of comfort and amenity for pedestrians.

Construction of the aboveground station building at the western construction site along Paternoster Row would rise about four to five stories above the street corner, temporarily reducing the level amenity in this section of the lane. Existing vehicle and pedestrian access along the lane would be maintained.

Construction at the eastern construction site would continue to contribute to a temporarily reduced level of streetscape activation and reduced amenity of the adjacent footpaths. The continuation of construction site access and the use of Pyrmont Bridge Road and Union Street as proposed construction haulage routes would also continue to reduce pedestrian amenity along the footpaths adjoining the eastern construction site, particularly at the site access points on Pyrmont Bridge Road. There would be two trees removed along Edward Street for this proposal, further reducing the amenity and shade cover of the streets surrounding this construction site.

Table 14-22 Landscape impacts during construction – Pyrmont Station

Location	Landscape sensitivity level	Magnitude of change	Impact rating
Pyrmont Street and Pyrmont Bridge Road streetscapes	Local	Noticeable reduction	Minor adverse
Paternoster Row laneway	Local	Noticeable reduction	Minor adverse
Union Street, Edward Street and Pyrmont Bridge Road streetscapes	Local	Noticeable reduction	Minor adverse

Daytime visual amenity impact

Visual amenity impacts at representative viewpoints anticipated as a result of the construction of this proposal are summarised in Table 14-23. Viewpoints would generally experience moderate to minor adverse temporary visual impacts during construction, due to the continued presence of construction sites and the scale of the works, which would rise above the existing streetscape. Management of potential impacts is discussed in Section 14.9.4.

Table 14-23 Daytime visual impacts during construction – Pyrmont Station

Location	Sensitivity rating	Magnitude of change	Impact rating
Viewpoint 1: view south along Paternoster Row	Local	Noticeable reduction	Minor adverse
Viewpoint 2: view north along Pyrmont Bridge Road	Local	Noticeable reduction	Minor adverse
Viewpoint 3: view west across the Pyrmont Bridge Road and Pyrmont Street intersection	Local	Noticeable reduction	Minor adverse
Viewpoint 4: view south along Pyrmont Street	Local	Noticeable reduction	Minor adverse
Viewpoint 5: view east along Union Street	Local	Considerable reduction	Moderate adverse
Viewpoint 6: view north-east to Edward Street and Pyrmont Bridge Road	Local	Noticeable reduction	Minor adverse
Viewpoint 7: view north along Harwood Street	Local	Noticeable reduction	Minor adverse
Viewpoint 8: view west from Union Street	Local	Noticeable reduction	Minor adverse
Viewpoint 9: view west from Pyrmont Bridge	Regional	Noticeable reduction	Moderate adverse

As noted in Section 14.9.1, the most representative viewpoints have been discussed in detail in this section. Potential temporary impacts for the duration of construction from these representative viewpoints would include the following:

- **viewpoint 3: view west across Pyrmont Bridge Road and Pyrmont Street intersection** – this view would experience a temporary minor adverse impact during construction, due to the continued presence and scale of construction work in a heritage character setting. There would be construction hoarding visible along the boundary of the western construction site and works to construct the new station and services building would be prominent. Construction vehicles would be visible accessing the site via Pyrmont Bridge Road (left of view) and travelling along Pyrmont Bridge Road and potentially along Pyrmont Street (right of view). The mature street trees along Pyrmont Street would be retained, partially softening the views to the Pyrmont Street side of the western construction site during the summer months. Construction of the new station and services building would progressively rise about four to five storeys and above the surrounding buildings, contrasting with the height of the two-storey terraces along Pyrmont Street
- **viewpoint 4: view south along Pyrmont Street** – this view would experience a temporary minor adverse temporary impact during construction, due to the continued presence of visible construction activity, extending north from the corner of Pyrmont Bridge Road, along the western side of the Pyrmont Street (centre of view). Site hoarding would continue to be visible along the former building line of Pyrmont Street. Construction of the aboveground station building would be visible rising above the western construction site, with large equipment and construction of the proposed building rising up to about five storeys. Construction vehicles may be visible travelling along Pyrmont Street in the foreground and Pyrmont Bridge Road in the background of this view. The street trees along Pyrmont Street would be protected and retained, filtering views to construction activity and maintaining the leafy character of this view. The character terrace buildings along Pyrmont Street and views to the former wool store building beyond would also remain

- **viewpoint 5: view east along Union Street** – this view would experience a temporary moderate adverse visual impact during construction, due to the scale and prominence of visible construction work. Construction work at the Pyrmont Station eastern construction site would continue to be visible in the middle ground of this view (centre-right of view). The three mature London Plane street trees removed under the previous Sydney Metro West planning application would allow clear views to the construction activity along Union Street. From this location, works to construct the aboveground station building at the corner of Union and Edward Street would be prominent, including large-scale construction equipment and the construction of built form rising about five storeys. Works would extend to Union Street and there would potentially be construction vehicles visible accessing the site
- **viewpoint 9: view west from Pyrmont Bridge** – this view would experience a temporary moderate adverse visual impact during construction, due to the scale of work in an area of regional sensitivity. The Pyrmont Station eastern construction site would continue to be visible at the corner of Union Street and Pyrmont Bridge Road (centre of view). The existing street tree on this corner would filter the views to the eastern construction site, including large-scale construction equipment and potential for storage areas and a water treatment plant. Beyond this, construction of the aboveground station building, and adjacent station services building would be visible rising about five storeys. Construction vehicles would also be visible accessing and egressing the site via Pyrmont Bridge Road, in the middle and background of view. Construction vehicles may also be seen turning onto and then travelling west along Union Street.

To manage these potential impacts, management and mitigation measures are provided in Section 14.9.4 and Chapter 20 (Synthesis) of this Environmental Impact Statement. These sections include measures to locate elements of construction sites to minimise visual impact, where feasible and reasonable.

Night-time visual amenity impact

The anticipated night-time visual impacts as a result of the construction of this proposal are summarised in Table 14-24.

Night work would be required for underground work at both the eastern and western construction sites. This would require lighting of much of the site including site offices, staff amenities, laydown areas and workshops, internal access routes and car parking areas. There would be additional headlights from heavy vehicles accessing the site and moving along Pyrmont Bridge Road. All lighting within the construction sites would be designed to minimise light spill and directed away from neighbouring property. There would, however, be a general skyglow above the site and a view to direct light sources from surrounding areas. This lighting would be largely consistent with the light levels within the area where the light levels are that of a dense urban setting.

Table 14-24 Night-time visual amenity impacts during construction – Pyrmont Station

Location	Sensitivity rating	Magnitude of change	Impact rating
Pyrmont Station	A4: High district brightness	No perceived change	Negligible

14.9.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and outlining performance outcomes for the operation and construction of this proposal.

During construction of this proposal, landscape and visual amenity impacts would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes landscape and visual amenity management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

The design of this proposal would also be consistent with the principles and outcomes presented in the Design Guidelines (Appendix E).

14.10 Soils, contamination and groundwater

Further details on the contamination assessment, including the approach and methodology, are provided in Technical Paper 7 (Contamination). The approach and methodology for the soils and groundwater assessments are provided in Chapter 4 (Methodology) and Appendix D (Detailed assessment methodologies) of this Environmental Impact Statement. The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

14.10.1 Baseline environment

The baseline environment as relevant to soils, contamination and groundwater is described in the following sections.

Prior to the commencement of this proposal, the buildings and infrastructure on the land required for the Pyrmont Station construction sites would be demolished, and bulk excavation work for the station would have occurred under the previous Sydney Metro West planning application.

Soils

The existing soils environment is described in detail in Chapter 15 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) and is summarised in the following sections.

Soil and geology types

The geological units expected to be encountered at the Pyrmont Station construction sites include fill material (0 – 3 metres below ground level and Hawkesbury Sandstone (greater than 3 metres below ground level)).

The Soil Landscapes of Sydney 1:100,000 Sheet (Chapman et al., 2009) and Penrith 1:100,000 Sheet (Bannerman et al., 2010) identify Gymea soil units in the vicinity of Pyrmont Station (generally consists of localised steep slopes, high soil erosion hazards, shallow highly permeable soil and very low soil fertility).

Soil salinity

The *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) identified there is the potential to encounter saline soils at Pyrmont Station.

Acid sulfate soils

Potential acid sulfate soils risk maps obtained from the former Office of Environment and Heritage (now part of NSW Department of Planning and Environment) were reviewed to assess the probability of potential acid sulfate soils being present in proximity to Pyrmont Station. No potential acid sulfate soils were identified within the construction sites and immediate vicinity. However, some areas within and around Pyrmont Station are identified as ‘disturbed terrain’ (see Figure 14-19), which are often located on reclaimed land or land subject to dredging or mining, with the potential presence of acid sulfate soils. These areas are associated with fill and/or alluvium that extends from harbour shores up local drainage lines.

Contamination

Work carried out under the previous Sydney Metro West planning application would include the investigation and remediation of soil and/or groundwater contamination where required in accordance with the applicable mitigation measures.

Areas of environmental interest identified in Chapter 16 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) at Pyrmont Station construction sites are described below:

- AEI 1(2) – Former Pyrmont Power Station (north of the construction sites) – low risk of groundwater contamination from per- and poly-fluoroalkyl substances, hydrocarbons, polychlorinated biphenyls and volatile organic compounds as a result of fuel/oil storage and use and firefighting activities
- AEI 3(2) – Above ground bulk fuel storage site (500 metres north-west of construction sites) – low risk of groundwater contamination from hydrocarbons and per- and poly-fluoroalkyl substances as a result of fuel/oil spills or leaks for firefighting activities
- AEI 7(2) – Former Pyrmont incinerator (500 metres north-west of the construction sites) – low risk of groundwater contamination from heavy metals, hydrocarbons, pesticides, PCB, and asbestos

- AEI 10(2) – Historical land reclamation (adjacent to the construction sites surrounding Darling Harbour and Blackwattle Bay) – low risk of groundwater contamination from heavy metals, hydrocarbons, benzene, toluene, ethylbenzene and xylene compounds, polycyclic aromatic carbons, volatile organic compounds, and per- and poly-fluoroalkyl substances
- AEI 11(2) – General historical commercial/industrial in surrounding locality (outside of construction sites) – moderate risk of groundwater contamination from heavy metals, hydrocarbons, benzene, toluene, ethylbenzene and xylene compounds, polycyclic aromatic carbons, volatile organic compounds, and per- and poly-fluoroalkyl substances
- AEI 13(2) – Dry cleaning and laundry facilities (west of the construction sites) - very low risk of groundwater contamination from spills and leaks of dry-cleaning solvents (containing volatile organic compounds and chlorinated hydrocarbons).

Overall, the risk of shallow soil contamination or encountering previously dumped construction waste within the existing construction sites is expected to be low as it would have been removed or managed prior to construction of this proposal, under the previous Sydney Metro West planning application.

The ingress of contaminated groundwater to subsurface infrastructure is expected to be partially or fully mitigated through remediation performed under the previous Sydney Metro West planning application. An additional review of residual contaminant concentrations and rates of inflow will be required during implementation of this proposal to determine the need for additional groundwater remediation.

The conceptual site model and risk ranking for the areas of environmental interest at Pyrmont Station are detailed in Appendix C of Technical Paper 7 (Contamination).

Groundwater

The work carried out under the previous Sydney Metro West planning application would include the excavation of:

- two untanked access shafts (excavation that allows groundwater to flow into the structure)
- a tanked cavern station (excavation/cavern constructed with an impermeable casing/membrane that minimises groundwater inflows to negligible rates).

The baseline groundwater environment for this proposal is described in Table 14-25 and shown in Figure 14-19.

Table 14-25 Groundwater baseline environment – groundwater – The Bays Station

Aspect	Description
Groundwater levels and flow	As a result of the previous Sydney Metro West planning application, the groundwater level is predicted to reduce to about 31 metres below ground level within the immediate station area (Sydney Metro, 2021a) (see Figure 14-19 for groundwater drawdown extent). This groundwater level is assumed to remain at the commencement of the construction of this proposal. The predicted groundwater inflows to the shafts of up to about 0.30 litres per second are expected to continue at the commencement of construction for this proposal. Localised groundwater flow is expected to be towards the untanked shafts.
Groundwater quality	The baseline groundwater quality may be impacted by a change in the groundwater flow direction, towards the untanked shafts (which has the potential to induce groundwater seepage). Potential contaminants of concern include hydrocarbons and volatile organic compounds as detailed in Section 5.7.4 of Technical Paper 7 (Hydrogeology) of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). Groundwater level drawdown in the vicinity of saltwater bodies has the potential to cause saltwater to intrude into fresh groundwater systems. It is expected that saline water from Darling Harbour would be drawn to the station as discussed in Section 5.7.9 of Technical Paper 7 (Hydrogeology) of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a).

Aspect	Description
Groundwater users	Nine registered bores reported to be used for monitoring purposes are expected to have a reduced groundwater level at the commencement of the construction of this proposal. No registered water supply bores were identified within the groundwater drawdown extent and therefore are not likely to be impacted. As such, potential impacts to groundwater users as a result of this proposal are not expected and have not been discussed further.
Groundwater dependent ecosystems	No groundwater dependent ecosystems have been identified within the predicted extent of groundwater level drawdown at the commencement of construction for this proposal. As such, potential impacts to groundwater dependent ecosystems as a result of this proposal are not expected and have not been discussed further.
Surface water and groundwater interaction	The interaction between surface water and groundwater in proximity to the Pyrmont Station construction sites is considered limited due to the anthropogenic alteration of the area. The primary interactions include: • surface water acting as recharge to underlying groundwater units, where hydraulic gradients and modified environments (e.g. concrete-lined waterways/channels) allow • groundwater discharging to surface water as baseflow, especially in areas of low elevation (where hydraulic gradients and modified environments allow) • induced flow of surface water into groundwater due to the predicted groundwater drawdown under the previous Sydney Metro West planning application. The surrounding area is highly urbanised with predominantly impervious surfaces across the catchments prior to the commencement of work for this proposal, which reduces possible surface water infiltration into soils and underlying groundwater. Groundwater drawdown is not expected in proximity to creeks or drainage lines associated with Cockle Bay and Blackwattle Bay at the commencement of construction of this proposal.

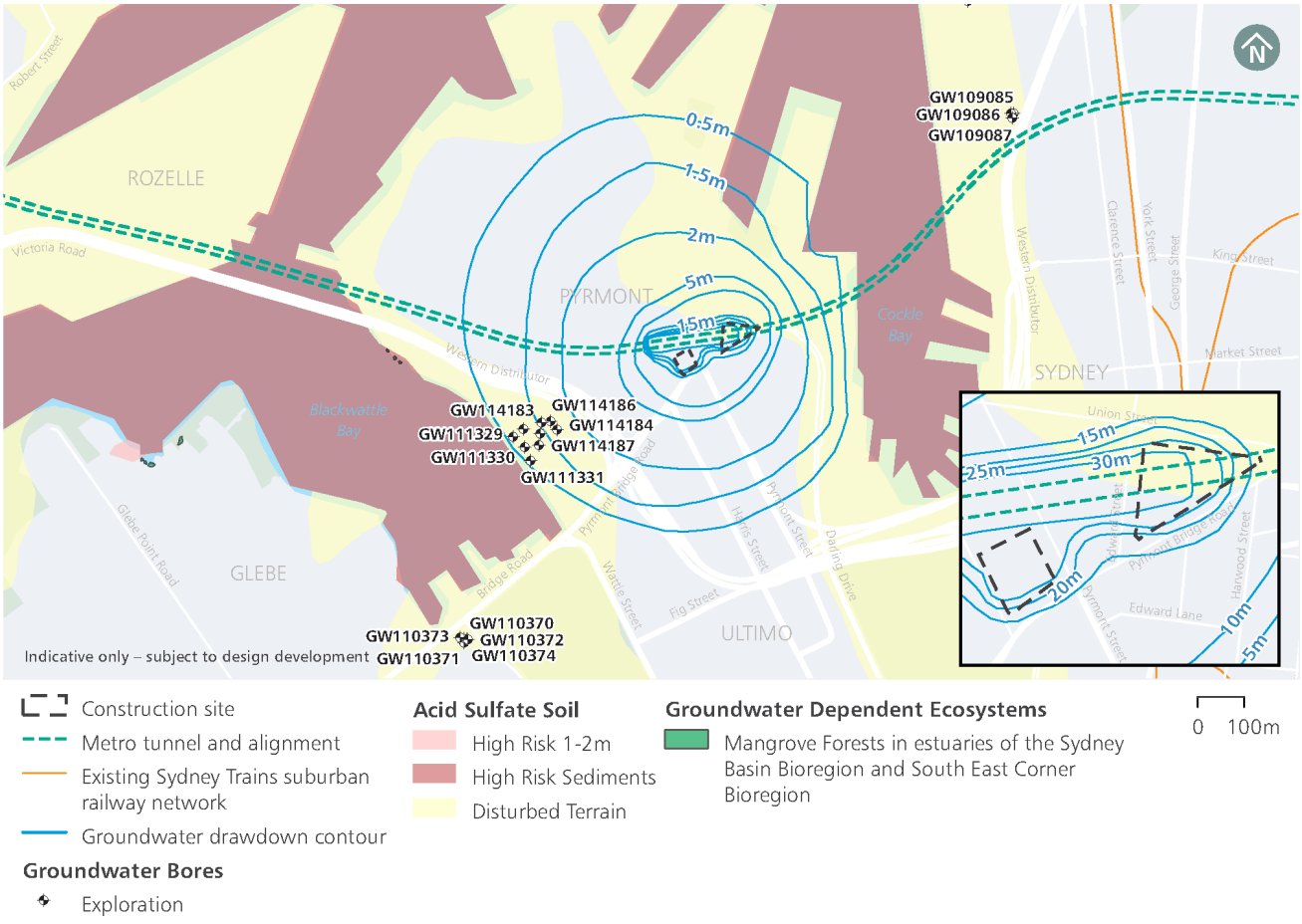

Figure 14-19 Groundwater baseline environment - Pyrmont Station

14.10.2 Operational impact assessment

Soils

The operation of Pyrmont Station is not expected to have any further impact on soils, including from saline soils, as there would be no excavation after completion of construction. Acid sulfate soil investigations would be undertaken under the previous Sydney Metro West planning application within the zone of groundwater drawdown to assess potential impacts and decide whether an Acid Sulfate Soils Management Plan (ASSMP) is required for operation of this proposal.

Contamination

Soil and groundwater contamination where present would be investigated and remediated (where required) during work carried out under the previous Sydney Metro West planning application in accordance with the relevant mitigation measures and conditions of approval. Groundwater drawdown from the untanked access shafts could result in contaminated groundwater inflows. The station cavern would be tanked and therefore groundwater inflows would be expected to be negligible. Any contaminated groundwater inflows would be collected, pumped to the operational water treatment plant at the Clyde stabling and maintenance facility and treated in accordance with the water quality requirements outlined in Section 18.9 (Hydrology and water quality).

Operation of Pyrmont Station would require limited use and storage of chemicals, oils, or fuels. There are no significant sources of contamination or impacts anticipated from the operation of the station or public domain. Management measures associated with the use and storage of chemicals during operation would be implemented (refer to Chapter 20 (Synthesis) of this Environmental Impact Statement).

Groundwater

Potential impacts to groundwater during operation at Pyrmont Station are described further in Table 14-26.

Table 14-26 Potential impacts to groundwater during operation – Pyrmont Station

Potential impact	Discussion
Groundwater recharge	The surface area of impervious surfaces at Pyrmont Station is not expected to substantially increase due to the operational elements for this proposal, as the construction site prior to commencement of work for this proposal would comprise predominately paved (impervious) surfaces.
Groundwater levels, inflows, and flow patterns	During the operation of this proposal, the tanked cavern would minimise groundwater inflows. Groundwater inflows to the untanked shafts would continue through operation at roughly the modelled inflow rates identified as part of the baseline environment (refer to Figure 14-19). Groundwater flow would be towards the untanked shafts. In the long term, the tanked station cavern would promote the reduction in drawdown until a new groundwater level is achieved around the station.
Groundwater quality	Groundwater quality impacts during operation are expected to remain consistent with the baseline conditions. However, the volume of potentially contaminated groundwater to be managed during the operation of this proposal would be less than the volume predicted for the work carried out under the previous Sydney Metro West planning application. This is due to the station cavern being tanked, which would reduce the groundwater drawdown and associated inflow until a new groundwater level is achieved around the station. Saltwater intrusion could occur due to ongoing de-watering of the untanked shafts at Pyrmont Station during operation. Further groundwater modelling would be carried out for the work under the previous Sydney Metro West planning application to assess whether saltwater intrusion during the operation phase could occur. Mitigation or monitoring measures developed based on this modelling would be implemented for this proposal, where required. Any potentially contaminated groundwater inflows would be collected, treated at the operational water treatment plant at the Clyde stabling and maintenance facility, and discharged in accordance with the water quality requirements outlined in Section 18.9 (Hydrology and water quality) of this Environmental Impact Statement.

Potential impact	Discussion
Surface water – groundwater interaction	Groundwater acting as baseflow to surface water features is considered to be a minor component of recharge in area. Groundwater is not likely to contribute to drainage lines and channels associated with Cockle Bay and Blackwattle Bay as they are concrete-lined channels that serve mainly as stormwater discharge. These channels fall outside the area of predicted drawdown.
Policy compliance	The minimal harm criteria in the NSW Aquifer Interference Policy (NSW Department of Primary Industries, 2012) and Water Sharing Plan rules (NSW Department of Industry, 2011) adopted for the work carried out under the previous Sydney Metro West planning application are expected to be complied with during the operation of this proposal. Impacts from the alteration of groundwater levels and flow regime would be reduced (relative to baseline conditions) during operation of this proposal.

14.10.3 Construction impact assessment

Soils

There may be potential temporary minor soil erosion from the exposure of soil to water runoff and wind during minor excavation works required for this proposal. This would be adequately managed with the implementation of standard erosion and sediment controls.

There is the potential to disturb saline soils at the Pyrmont Station construction sites. Any potential salinity impacts would be managed in accordance with *Book 4 Dryland Salinity: Productive Use of Saline Land and Water* (NSW Department of Environment and Climate Change, 2008b).

There is potential for acid sulfate soils within the predicted groundwater drawdown extent during construction. The drawdown could potentially expose acid sulfate soils to oxidation adjacent to the Pyrmont Station construction sites. The exposure of acid sulfate soils during construction could result in the release of acid sulfates, which could pollute downstream watercourses. Further investigation of acid sulfate soils would be undertaken under the previous Sydney Metro West planning application. This would be reviewed for this proposal to identify the potential need for further measures to manage acid sulfate soils, if present.

Contamination

Existing contamination

Surface soil contamination within the construction sites would be removed or remediated in accordance with the mitigation measures described in *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a).

Based on the assessment, all areas of environmental interest were ranked as low risk, except for AEI 11(2) which was moderate risk. Deeper residual soil and groundwater contamination from off-site sources could remain in the rest of the construction sites that could require remediation during the construction of this proposal. Groundwater drawdown from the untanked access shafts could result in contaminated groundwater inflows. The station cavern would be tanked and therefore groundwater inflows would be expected to be negligible. Any contaminated groundwater inflows would be collected, treated at construction water treatment plants and discharged in accordance with the water quality criteria outlined in Section 18.9 (Hydrology and water quality) of this Environmental Impact Statement.

New contamination

With the exception of the use and storage of chemicals associated with construction activities (e.g. fuels and oils associated with the operation of plant and equipment), the construction activities associated with this proposal are unlikely to represent a significant source of contamination. Management measures associated with the use and storage of chemicals during construction activities would be implemented (refer to Chapter 20 (Synthesis) of this Environmental Impact Statement).

Groundwater

Potential impacts to groundwater during construction at Pyrmont Station are outlined in Table 14-27.

Table 14-27 Potential impacts to groundwater during construction – Pyrmont Station

Potential impact	Discussion
Groundwater recharge	Almost all of the surface area within the construction sites is expected to be impervious surfaces at the commencement of this proposal and therefore the net impact on regional groundwater recharge due to the construction of this proposal is considered negligible.
Groundwater levels, inflows, and flow patterns	The tanked cavern would minimise groundwater flows which would help reduce groundwater inflows during construction of this proposal compared to the inflow rates for work carried out under the previous Sydney Metro West planning application. This would promote recovery of groundwater levels around the cavern over time (including during the construction phase of this proposal). The untanked shafts would maintain the groundwater inflows modelled for the previous Sydney Metro West planning application (refer to Figure 14-19) throughout construction of this proposal. The potential impacts from construction of this proposal are expected to be reduced compared with the impacts to baseline groundwater levels, inflows, and flow regime, through the continuation of the adopted mitigation measures, application of the CEMF and relevant sub-plans.
Groundwater quality	Groundwater quality is expected to remain consistent with the baseline conditions under the previous Sydney Metro West planning application. However, the volume of potentially impacted groundwater to be managed during construction of this proposal would be reduced by comparison to the baseline conditions, as the cavern would be tanked prior to the construction of this proposal. Groundwater de-watering would cause groundwater level drawdown, potentially resulting in saltwater intrusion from Darling Harbour. Further assessment of potential impacts would be undertaken under the previous Sydney Metro West planning application. Mitigation or monitoring measures for saltwater intrusion developed based on this assessment would be implemented for this proposal, where required (refer to Section 14.10.4 for further detail). Groundwater inflows would be collected, treated at construction water treatment plants, and discharged in accordance with the water quality requirements outlined in Section 18.9 (Hydrology and water quality) of this Environmental Impact Statement.
Surface water – groundwater interaction	Groundwater acting as baseflow to surface water features is considered to be a minor component of recharge in the station area. Groundwater is not likely to contribute to drainage lines and channels associated with Cockle Bay and Blackwattle Bay as they are concrete-lined channels that serve mainly as stormwater discharge. These channels fall outside the area of predicted drawdown.
Policy compliance	The minimal harm criteria in the NSW Aquifer Interference Policy (NSW Department of Primary Industries, 2012) and Water Sharing Plan rules (NSW Department of Industry, 2011) adopted under the previous Sydney Metro West planning application are expected to be complied with during construction of this proposal. Impacts from the alteration of groundwater levels and flow regime are likely to be reduced for this proposal compared to the baseline.
Ground movement	The potential for ground movement (and therefore potential impacts to buildings and structures) as a result of construction of this proposal would be reduced compared to work carried out under the previous Sydney Metro West planning application, as the previous work would include excavation of the shafts and station. As such, the extent of ground movement is expected to be negligible as a result of construction of this proposal.

14.10.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, soils, contamination and groundwater would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes soil, contamination and groundwater management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

14.11 Flooding

Further details on the flooding assessment, including the approach and methodology, are provided in Technical Paper 8 (Hydrology, flooding and water quality). The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

14.11.1 Baseline environment

Pyrmont Station would be located in an area that generally slopes east to west and drains towards Pyrmont Bay to the east of the sites. The sites range from around 10 to 15 metres Australian Height Datum (AHD).

Flood mapping and the previous Sydney Metro West planning application identified that during the one per cent Annual Exceedance Probability (AEP) event and the Probable Maximum Flood (PMF), existing flood levels within both sites are mapped as being generally low hazard.

Flood modelling for this proposal has determined that the roadways adjacent to the western site are affected by up to 0.05 metres flood depth in the five per cent AEP (with climate change) and one per cent AEP (with climate change) events, and by up to 0.12 metres along Pyrmont Bridge Road in the PMF event.

Flood depths of up to 0.3 metres within parts of, and adjacent to, the eastern site are mapped during the five per cent AEP (with climate change) and one per cent AEP (with climate change) event, and up to 0.4 metres during the PMF event.

Flood hazard in the five per cent AEP (with climate change) and one per cent AEP (with climate change) events would be low within the western site, the vast majority of the eastern site and within adjacent roadways. In the PMF event, flood hazard would be high in the roadways adjacent to the sites (Union Street, Pyrmont Street and Pyrmont Bridge Road) and low to moderate hazard within some areas of the eastern site.

There are no mainstream flooding or coastal inundation risks relevant to the sites and immediate surrounds.

Modelling suggests that some private properties would be expected to already experience a degree of flooding in the baseline PMF event.

The station cavern and shafts at Pyrmont Station would have been excavated as part of the work carried out under the previous Sydney Metro West planning application.

The previous Sydney Metro West planning application identified that flood levels, duration of inundation and flood hazard were not anticipated to increase at the Pyrmont Station construction sites. Potential impacts at the sites predicted under the previous Sydney Metro West planning application include:

- floodwater ingress into excavated areas could occur as a result of overland flooding (although the station excavation would be protected)
- direct intense rainfall onto the site may exacerbate nuisance flooding and drainage issues.

14.11.2 Operational impact assessment

The flood protection levels for Pyrmont Station are driven by the one per cent AEP (with climate change) event (plus 0.5 metres freeboard), which is 15.47 metres AHD at the western station entrance and 9.07 metres AHD at the eastern station entrance. The existing site levels are around 14.7 and 9.03 metres AHD. Flood mitigation measures would be required at this station to protect the station against the flood protection level.

Operational flood impact criteria established for this proposal are described in Section 3.1.4 of Technical Paper 8 (Hydrology, flooding and water quality). An assessment of potential flooding impacts at Pyrmont Station is provided in Table 14-28 and shown in Figure 14-20. The operational flooding assessment considers the flooding extent for the one per cent AEP (with climate change) and PMF events. The five per cent AEP (with climate change) is also considered in Technical Paper 8 (Hydrology, flooding and water quality). Figures showing the modelling for a range of flooding events are provided in Appendix B and C of Technical Paper 8 (Hydrology, flooding and water quality).

Potential impacts during operation of this proposal at Pyrmont Station are generally expected to be minor in all flooding events. Mitigation measures to manage potential impacts are outlined in Section 14.11.4.

Table 14-28 Potential flooding impacts for the modelled one per cent AEP and PMF flood events – Pyrmont Station

Potential impact	Description
Change in peak flooding levels	• flood modelling undertaken indicates this proposal would have limited localised impacts on flood levels, including an increase at Union Street, Edward Street and Pyrmont Bridge Road of about 0.05 metres in the PMF • as set out in the mitigation measures (refer to Section 14.11.4), further design refinement would occur to manage potential local flooding impacts.
Change in flood extent	• a slight increase in potential flood extent at the western site where it borders Pyrmont Street and Pyrmont Bridge Road in both the one per cent AEP and PMF events. This is shown in Figure 14-20 for the one per cent AEP event.
Compatibility with the flood hazard of the land	• flood risk and potential impacts from this proposal are considered manageable and therefore are considered compatible with the flood hazard of the site • hazard categories would be largely unchanged. Pyrmont Station would be protected from inundation in the PMF flood event. Potential hazard to people and vehicles accessing the metro station as flood barriers operate would be managed through emergency response planning • Pyrmont Station would provide shelter in place arrangements during extreme flood events as surrounding streets would be high hazard.
Change in duration of inundation	• change in duration of inundation would be negligible for all flood events.
Potential property impacts	• there would be no newly flood-affected private properties as a result of this proposal.
Consistency with floodplain risk management	• flood modelling results are generally consistent with the Darling Harbour Catchment Floodplain Risk Management Plan (WMA Water, 2016a) noting the hazard categorisation used in the plan is consistent with the NSW Floodplain Development Manual (NSW Government, 2005) rather than Australian Rainfall and Runoff Guidelines 2019.
Potential impacts to critical infrastructure and emergency management arrangements for flooding	• the City of Sydney Council Flood Emergency Sub Plan (City of Sydney, 2021a) indicates that evacuation is the primary response strategy for people impacted by flooding. The City of Sydney Local Emergency Management Plan (City of Sydney, 2021b) requires that transport agencies inform the State Emergency Services when their infrastructure is impacted by localised flooding. Sydney and North Sydney Central Business Districts Evacuation Management Subplan (NSW Government, 2015) does not specifically list routes owing to the large number of people to coordinate. There would be no major changes to flood behaviour on major roadways around the site. It is likely that this proposal could be involved in evacuation arrangements under this plan. Consultation would occur with NSW State Emergency Services and the City of Sydney council in relation to potential impacts on existing community emergency management arrangements for flooding (refer to Section 14.11.4).
Potential social and economic costs from flooding impacts	• given the generally low flood affectation at Pyrmont Station and the expected low impact on flood behaviour on surrounding properties and infrastructure as a result of this proposal, the potential social and economic costs from flooding impacts are considered low.

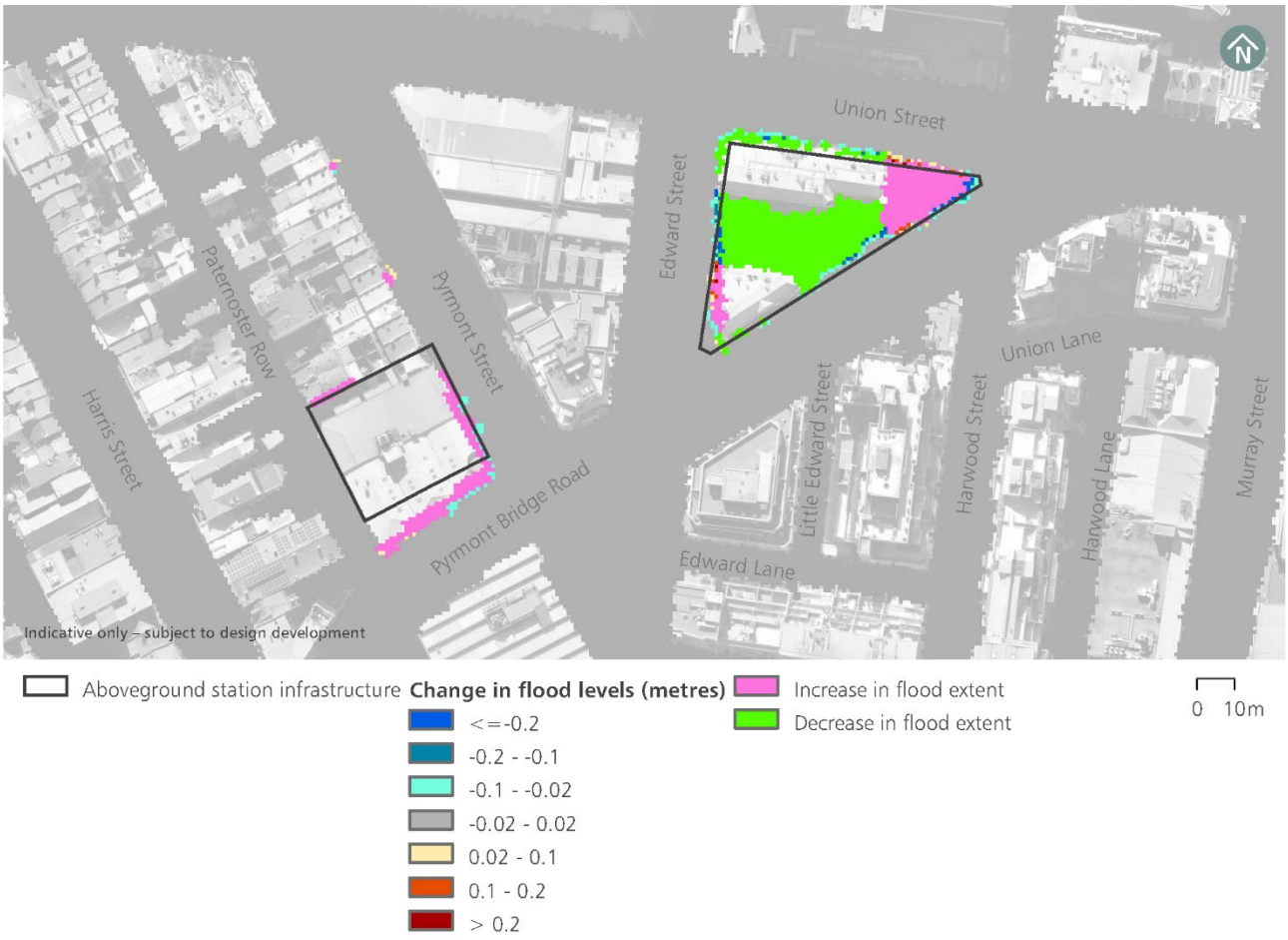

Figure 14-20 Potential change in flood levels (one per cent AEP event) – Pyrmont Station

14.11.3 Construction impact assessment

The duration of construction at the Pyrmont Station construction sites would be about four years (see Figure 14-9). In general, the potential construction phase flood risks would be a continuation of the potential flooding risks associated with the previous Sydney Metro West planning application. These include:

- direct intense rainfall onto the site may cause nuisance flooding and drainage issues
- potential interruption of overland flow paths by installation of temporary construction site infrastructure (i.e. noise barriers, acoustic sheds, retaining walls) and/or modifications to landforms (i.e. placement of fill materials, stockpiles)
- potential temporary changes to flooding behaviour around the construction sites due to alteration of the built form or the provision of temporary structures surrounding the construction sites
- the interruption or diversion of existing flood routes away from the location of bunding or spoil within construction sites, resulting in a reduction of flood storage and an increased flood risk to adjacent areas
- disruption of street kerb and gutter at construction site vehicle entry locations which may result in localised ponding
- blocking of drainage networks through increased sedimentation of surface water.

The flood hazard within the Pyrmont Station construction sites during the five per cent AEP and one per cent AEP events is predominantly low and due to the temporary nature of potential impacts, the overall risk of flooding impacts from the proposal is considered low.

The CEMF (refer to Appendix F) requires the preparation of a Soil and Water Management Plan that would include consideration of surface water and flooding measures and progressive erosion and sediment control plans to manage potential impacts.

Compatibility of construction sites with flood conditions

The previous Sydney Metro West planning application identified Pyrmont Station construction sites as compatible with flood conditions due to existing predominantly low hazard across both construction sites and exposure to flooding.

Consistency with floodplain risk management plans

A review of the Darling Harbour Catchment Floodplain Risk Management Plan (WMA Water, 2016a) did not identify conflicts or inconsistencies with flood hazard categorisation for this proposal. The floodplain risk management presented in this document is not inconsistent with the mitigation measures presented in Section 14.11.4.

Potential impacts to emergency management arrangements for flooding

The City of Sydney Council Flood Emergency Sub Plan (City of Sydney, 2021a) indicates that evacuation is the primary response strategy for people impacted by flooding. Sydney and North Sydney Central Business Districts Evacuation Management Subplan (NSW Government, 2015) does not specifically list routes owing to the large number of people to coordinate.

Potential impacts during construction would be managed through measures outlined in the CEMF.

Potential social and economic costs from flooding impacts

Similar to the operations phase, potential social and economic costs from flooding impacts during construction at Pyrmont as a result of this proposal are considered low given the low flood affectation during the five per cent AEP (with climate change) and one per cent AEP (with climate change) events and the expected low impact on flood behaviour on surrounding properties and infrastructure. The CEMF (refer to Appendix F) requires the preparation of a Soil and Water Management Plan that would include consideration of surface water and flooding measures and progressive erosion and sediment control plans to manage potential impacts.

14.11.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

Potential flood risks during construction of this proposal would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes flooding management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

Specific mitigation measures proposed for Pyrmont Station in relation to flooding are provided in Table 14-29.

Table 14-29 Flooding mitigation measures – Pyrmont Station

Ref.	Impact/issue	Proposed mitigation measure	Timing
Flooding			
EIS-HF3	Residual impacts during operations	Ongoing consultation would occur with State Emergency Services and relevant councils in relation to potential impacts to existing community emergency management arrangements for flooding.	Operation

14.12 Social impacts

Further details on the social impact assessment, including the approach and methodology, are provided in Technical Paper 9 (Social impacts). A discussion of potential broader proposal-wide and regional social impacts (both benefits and disbenefits) are provided in Chapter 18 (Proposal-wide) of this Environmental Impact Statement.

14.12.1 Baseline environment

The characteristics of the communities within the social locality is described as the social baseline. The social baseline has been analysed by considering the human, social, economic, physical, and natural capital present around Pyrmont Station.

Statistical analysis of the social baseline has been carried out by considering the primary geographical areas of interest as defined by the Australian Bureau of Statistics (ABS). These areas of interest have been termed as:

- **the proximal area:** Statistical Area level 1 (SA1s) have been chosen as the closest approximation of each of the localities along the corridor
- **suburb:** Statistical Area level 2 (SA2s) have been chosen to prepare community profiles for this proposal corridor
- **region:** The Greater Sydney area has been chosen to assist with the assessment of the broader social impacts. It has also been used for comparative purposes.

A summary of each type of community capitals related to the Pyrmont Station is discussed in Table 14-30. This summary considers the proximal area of analysis only. A discussion of potential broader corridor-wide and regional social impacts (both benefits and disbenefits) is provided in Chapter 18 (Proposal-wide) of this Environmental Impact Statement.

Table 14-30 Community capitals summary – Pyrmont Station

Capital	Summary
Human	In 2016, the Pyrmont locality had the second highest share of residents between the age of 20 to 64 (82.9 per cent), second only to Sydney Olympic Park. The share of residents in Pyrmont aged between 20 to 34 years was 47.3 per cent, indicating that the locality is an attractive location for younger residents. In 2016, 20 per cent per cent of all residents in the Pyrmont locality were attending an educational facility, including preschool, infants/primary and secondary school, university, TAFE or other educational facilities. Of the residents attending an educational facility, the majority were attending post-secondary institutions, including university or other tertiary institution.
Social	The Pyrmont locality had the highest number of group households when compared to other corridor localities (17.5 per cent), and almost four times that of Greater Sydney (4.6 per cent). It also had a relatively high percentage of lone person households (28.8 per cent), reflective of the young professionals living in the area. A high proportion of the population was born overseas (63.6 per cent) with 49.6 per cent spoke English only at home. The second most dominant language being Mandarin (9.4 per cent). The length of residence in the Pyrmont locality was relatively low, with 33 per cent of residents in the same address as 2011 and 68 per cent in 2015.
Economic	Overall, households were relatively more advantaged compared to other corridor localities, with almost 40 per cent of households earning above $2,500 per week. A high proportion of households were rented in the area (65.9 per cent) with 83 per cent paying in the highest quartile (paying greater than $443 per week). The locality also had high occupancy rates (92.1 per cent). Unemployment levels in the Pyrmont locality were relatively low when compared to the whole corridor and Greater Sydney, at 5.4 per cent, compared to 6.8 per cent and 6 per cent respectively. Unemployment levels are calculated based on those of eligible age (between the ages of 16 and 65), who are not engaged in secondary education and who are able to work. It also had a relatively high percentage of labour force participants (79.9 per cent of the eligible working aged population). Of those that were employed, the dominant industry was accommodation and food services (16.2 per cent) and professional, scientific and technical services (15.8 per cent).
Physical	To travel to work, employed residents of the Pyrmont locality tended to rely on active transport, including walking and cycling (49.8 per cent). The next largest shares were car as a driver (17.9 per cent) or train or bus (15.6 per cent).

Capital	Summary
	Within the Pyrmont locality, the dwelling type of profile was similar the Parramatta, Sydney Olympic Park and Sydney CBD localities, with 92.6 per cent of dwelling types being flat, unit or apartment, compared to 60.8 per cent of dwellings across the corridor. The average household size was comparable to the other localities at 2 persons per household. The Darling Harbour recreational precinct is located nearby, alongside the Sydney Lyric Theatre, and the Australian National Maritime Museum. There are also man-made parks nearby, such as Pyrmont Bay Park, Darling Island Metcalfe Park, Pirrama Park, Giba Park, Waterfront Park, Wentworth Park, Chinese Garden of Friendship, and Carmichael Park.
Natural	Pyrmont Bay, Johnstons Bay, Jones Bay, and Blackwattle Bay are all located in immediate proximity to Pyrmont Station.

14.12.2 Operational impact assessment

Social impacts would be experienced at different geographies or spatial extents. A large proportion of operational social impacts associated with Pyrmont Station would be felt at a regional and a suburb level; however, some would be experienced at a proximal level. This section focuses on the operational impacts at the proximal level, while a region- and suburb-based analysis, including potential beneficial social impacts, is provided in Chapter 18 (Proposal-wide) of this Environmental Impact Statement.

An assessment of the potential social impacts, both positive (benefits) and negative (disbenefits), of the operation of Pyrmont Station are outlined in Table 14-31.

The identified potential impacts are presented in Table 14-31 are unmitigated and would be appropriately managed through the implementation of the OCCS and the mitigation measures outlined in Section 14.12.4, and through the performance outcomes detailed in Chapter 20 (Synthesis of Environmental Impact Statement) of this Environmental Impact Statement. Sydney Metro would also develop a Community Benefit Plan to guide the development of community benefit initiatives (by Principal Contractors).

A residual impact rating has been assigned to each pre-mitigated impact in Table 14-31 to quantify the impacts after mitigation measures have been applied.

Table 14-31 Summary of operational social impacts – Pyrmont Station

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
Increased access to jobs, education, services, and social facilities improving social cohesion and social health for the whole community, including vulnerable persons.	Health and wellbeing Way of life Accessibility	Positive	High
Social amenity and placemaking benefits, including improvements to the aesthetic value of the area by creating attractive and active public spaces that reflect the existing or desired future scale and character of local areas.	Surroundings	Positive	High
Potential decline in social amenity and ability to experience surroundings in the way the community have done in the past to due to ongoing operational noise to sensitive receivers on Edward Street. While there is not expected to be any noise exceedance in relation to the operational railway airborne noise, without mitigation, there may be potential for some exceedance of the applicable noise criteria relating to station noise for nearby residences, generally during the night.	Way of life	Negative	Low
Potential decline in how people experience their living environments due to light spill and permanent changes to visual amenity.	Way of life	Negative	Low

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
In terms of visual amenity, Technical Paper 6 (Landscape and visual amenity) found that the height and scale of the station and services building would be compatible with nearby medium-rise buildings and the site is intended for significant renewal in the Pyrmont Peninsular Place Strategy. In terms of lighting, Pyrmont Station is an area that already experience high district brightness and there would be no perceived change to the amenity of this area at night.			

Overall, the assessment found that Pyrmont is already an attractive and active public space that would be further enhanced by the operation of Sydney Metro West. Key findings from community engagement relating to Pyrmont Station included strong support for more public transport options in the area, support for increased development density around public transport, support for the opportunities a metro station could bring to Pyrmont in terms of urban growth and renewal, employment growth, development and tourism. Feedback also reinforced the importance of Pyrmont as a major employment hub connecting The Bays, Ultimo and Sydney CBD, and that a metro station could draw further companies and organisations to the suburb and encourage investment and development.

There would be some residual negative social impacts with respect to noise and a decline in social amenity; however, these would be managed to an acceptable level through the mitigation measures as identified in Chapter 20 (Synthesis) of this Environmental Impact Statement.

14.12.3 Construction impact assessment

Construction activities would be carried out within the same construction sites required for the work carried out under the previous Sydney Metro West planning application. Anticipated construction impacts are expected to be similar and would be a continuation of those from the work carried out under the previous Sydney Metro West planning application. During this proposal, local amenity impacts such as noise, vibration, and air quality would reduce compared to the work carried out under the previous Sydney Metro West planning application due to the nature of the construction activities for this proposal.

An assessment of the potential social impacts, of constructing this proposal at Pyrmont Station are outlined in Table 14-32.

The potential impacts presented in Table 14-32 are unmitigated and would be appropriately managed through the implementation of the OCCS and the mitigation measures outlined in Section 14.12.4, and through the performance outcomes detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. Sydney Metro would also develop a Community Benefit Plan to guide the development of community benefit initiatives (by Principal Contractors).

A residual impact rating has been assigned to each pre-mitigated impact to quantify the impacts after these mitigation measures have been applied.

Table 14-32 Summary of construction social impacts – Pyrmont Station

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
Continued temporary changes to the way of life for people living, working, visiting or accessing services near the construction sites due to additional temporary removal of parking spaces, temporary footpath closures and the closure of the westbound traffic lane on Union Street.	Way of life Accessibility	Negative	Low
Potential time delays related stress as a result of road works, increased construction traffic and impacts to the road network.	Health and wellbeing	Negative	Low
Continued changes to the community character of the area due to changing visual amenity and streetscape changes.	Community Surroundings	Negative	Low

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
Continued changes to how people access local social infrastructure and services including cultural infrastructure and cycling infrastructure within the locality and potential disruption to way of life.	Accessibility Way of life	Negative	Low
Continued changes to the appearance and use of the site potentially impacting on local heritage items and cultural infrastructure, such as the Sydney Lyric Theatre and Australian National Maritime Museum.	Culture	Negative	Low

The assessment indicates that the social impacts of this proposal would effectively represent a continuation of the impacts identified under the previous Sydney Metro West planning application, though generally at a lower level of intensity and extent. Key negative impacts would be largely related to way of life, health and wellbeing, and accessibility, and would be temporary and short term in nature. These impacts would be managed to an acceptable level through proven mitigation measures as identified in Chapter 20 (Synthesis) of this Environmental Impact Statement.

14.12.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, social impacts would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes social impact management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

The OCCS (Appendix C) also specifies that a Community Communication Strategy would be prepared and implemented during construction which would define the location specific measures to be implemented to minimise impacts on people during construction.

Design refinements that have occurred to avoid or minimise social impacts, and to respond to stakeholder feedback are provided in Technical Paper 9 (Social impacts). Monitoring commitments during the operation and construction of this proposal, including adaptive management measures, are provided in Technical Paper 9 (Social impacts).

14.13 Local business impacts

The approach and methodology for the local business assessment are provided in Chapter 4 (Methodology) of this Environmental Impact Statement. The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

14.13.1 Baseline environment

The Pyrmont Station construction sites would be established under the previous Sydney Metro West planning application. This included a description of the existing environment as it relates to this local business impact assessment, based on the ABS Census 2016 data. As updated census data is not yet available, the broad existing environment described in Chapter 12 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) is considered to remain largely relevant to this assessment.

To verify this, a desktop gap analysis was carried out with respect to any new data available and the specific scope of this proposal. The baseline environment is summarised in the sections below and more detail is provided in Chapter 12 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a).

Local business profile

The Pyrmont local business study area is a highly diverse commercial, retail and tourism precinct. Dominant business types in this area include retail, cafes, pubs, restaurants, hotels, serviced apartments, and commercial offices. The Harbourside Shopping Centre is located immediately to the south-east of the Pyrmont Station eastern construction site.

The main business areas are focused along Harris Street to the west and north-west of the construction sites, and towards Pyrmont Bay/Darling Harbour to the east and north-east. Businesses experience a high degree of passing pedestrian traffic along Union Street, Pyrmont Bridge Road and Harris Street. This is augmented by the tourist, cultural and entertainment facilities in the broader precinct that attract a high number of visitors.

Table 14-33 identifies the types of existing businesses within the local business impacts study area.

Table 14-33 Businesses within the local business impacts study area – Pyrmont Station

Impact area	Types of businesses	Approximate number of businesses
Within 100 metres of the site	Commercial, food outlets, pubs, clubs and bars, cafes and restaurants, education and training, financial and insurance services, health care, retail trading, convenience stores, entertainment facilities, fitness and recreation, apparel stores, other retail goods and service providers, tourist and cultural facilities, and entertainment facilities	20 to 30
Between 100 and 400 metres of the site	Commercial, food outlets, pubs and clubs, cafes and restaurants, education and training, financial and insurance services, health care, retail trading, convenience stores, entertainment facilities, fitness and recreation, apparel stores, other retail goods and service providers, tourist and cultural facilities, and entertainment facilities	40 to 60

Employment

At the 2016 Census, about 21,900 people were employed within the destination zones relevant to the Pyrmont Station local business impacts study area. 'Destination zones' are the spatial unit used to code 'place of work' by the Australian Bureau of Statistics. Employment within the local business impacts study area was highly concentrated in 'knowledge workers' and 'population serving' industries. These types of businesses are primarily destination businesses and are not reliant on passing trade. Jobs in information, media and telecommunications, professional, scientific and technical services, and arts and recreation services accounted for over half of all jobs within the local business impacts study area.

Travel patterns

Australian Bureau of Statistics 2016 Census data indicates workers within the area primarily rely on public transport or car (as driver) with 45.6 per cent of workers using public transport to get to work and 32.9 per cent using car (as driver). Modes of public transport available to workers include bus, light rail and ferry services. A number of workers also walk from nearby Sydney Trains stations such as Town Hall Station (around 800 metres east of the study area) or Central Station (around 1.2 kilometres south-east of the study area).

The Western Distributor is one of Sydney's major arterial roads that connects the Sydney CBD to Sydney's west and runs through the local business impacts study area. It provides excellent access to labour markets and supports the use of car for commuting.

Since the 2016 Census, it is likely that the share of workers working from home in the local business study area has increased, with this trend likely to be accelerated in a post-COVID-19 environment.

14.13.2 Operational impact assessment

A qualitative assessment of the potential indirect operational changes to local businesses at Pyrmont Station are provided in Table 14-34. There are no direct impacts anticipated for local businesses during operation. Potential opportunities for local businesses during operation are also provided in Table 14-34.

Pyrmont Station would support the vision for the Pyrmont suburb as the western gateway to the Sydney CBD, forming a continuous innovation corridor between The Bays and Eveleigh. The station would also support the NSW Department of Planning and Environment's Pyrmont Peninsula Place Strategy (2020a) that positions Pyrmont as an attractor for global investment driven by connectivity to the Sydney CBD.

Table 14-34 Local business impacts (operation) – Pyrmont Station

Potential impact operation	Risk assessment	
	Likelihood	Significance
Potential opportunities		
Increase passing trade for businesses Some businesses (such as retail, cafes and restaurants) located around Pyrmont Station may benefit from an increase in passing trade from customers accessing the station.	Likely	Moderate positive
Improved accessibility Some businesses may experience increased accessibility (both those reliant on passing trade and destination businesses, for example those that are visited by appointment) bringing in new customers who previously could not easily access the area. Not only would the new station encourage this, but the provision of a potential pedestrian crossing on Edward Street near the intersection of Pyrmont Bridge Road may encourage more customers to access the area on foot, thereby increasing the amount of foot traffic moving past local businesses that rely on passing trade.	Likely	Moderate positive
Improved amenity related benefits around station precincts Improved local amenity (such as visual amenity) of the area around Pyrmont Station would make the area a more attractive place. This could contribute to improved customer experiences (for a range of business types) throughout the area and increased foot traffic for those businesses reliant on passing trade.	Likely	Moderate positive
Potential indirect impacts		
Impacts on accessibility Some businesses may experience reduced accessibility due to altered parking conditions. Changed traffic arrangements could collectively restrict and hinder access opportunities, resulting in time and vehicle related costs. About 7 parking spaces would be removed to accommodate operational aspects such as kiss and ride and the new station entrance/exit. There is sufficient parking on nearby streets, providing customers with alternative opportunities to park elsewhere.	Rare	Neutral

14.13.3 Construction impact assessment

A qualitative assessment of potential indirect construction impacts to local businesses at Pyrmont Station is provided in Table 14-35. There are no direct impacts anticipated for local businesses during construction. Potential opportunities for local businesses during construction are also provided in Table 14-35.

Overall, the nature of the businesses within the Pyrmont Station local business study area and the existing environment suggests that most of the businesses would be resilient to construction impacts. This is because a large portion of them are destination businesses that do not rely on passing trade or amenity to a significant degree.

Additionally, anticipated construction impacts are expected to be similar and would be a continuation of those identifies by the previous Sydney Metro West planning application. During this proposal, local amenity impacts such as noise, vibration, and air quality would reduce compared to the work carried out under the previous Sydney Metro West planning application due to the nature of this proposal's activities.

Table 14-35 Local business impacts (construction) – Pyrmont Station

Potential impact construction	Risk assessment	
	Likelihood	Significance
Potential opportunities		
Continued increase in passing trade Local businesses such as retail and cafes and restaurants may continue to benefit from an increase in the number of customers (construction workers), in comparison to pre-construction numbers.	Likely	Slight positive
Continued redistribution of trade The work carried out under the previous Sydney Metro West planning application may cause customers to redistribute their trade due to accessibility or amenity reasons. The businesses that have benefited from this redistribution would continue to benefit throughout construction of this proposal.	Possible	Slight positive
Potential indirect impacts		
Continued temporary traffic congestion and parking impacts Some businesses surrounding the construction sites may have experienced impacts associated with traffic congestion and increased travel times during the work carried out under the previous Sydney Metro West planning application, although these are anticipated to be minor. These impacts may continue during construction of this proposal. Businesses along Pyrmont Bridge Road and Union Street generally rely on customers travelling via car and walking, making them more susceptible to local traffic congestion. However, customers accessing businesses along this corridor would be accustomed to large volumes of traffic and traffic congestion currently present within Pyrmont. As such, increases in traffic congestion and travel times would not be expected to affect most customers accessing businesses within the local business study area. Impacts could be more pronounced for visitors to tourist, cultural and entertainment facilities. Some businesses surrounding the construction sites may have experienced impacts associated with temporary loss of parking during the work carried out under the previous Sydney Metro West planning application, although these are anticipated to be minor. Continued parking impacts would involve the loss of a small number of parking spaces on Union Street. Impacts would be more significant for venues with patronage outside of business hours, such as weekends, that would typically rely on a segment of the customer base using a car.	Likely	Slight negative
Continued temporary reduced local amenity Some businesses surrounding the construction sites may have experienced impacts associated with reduced local amenity and visibility during the work carried out under the previous Sydney Metro West planning application, although these are anticipated to be unlikely. These impacts may continue during construction of this proposal. Businesses along Union Street are most likely to be affected by continued reduced amenity. Businesses along Pyrmont Bridge Road are already subject to reduced amenity from being located on a busy major road and mostly separated from the construction sites by existing roads. Most of these businesses are also generally not of a type that are dependent on urban amenity.	Unlikely	Slight negative

Potential impact construction	Risk assessment	
	Likelihood	Significance
Noise impacts arising during construction may potentially have some impact on nearby cafes and restaurants, pubs and bars, and entertainment facilities. In addition, construction hours over weekends could cause impact to businesses, particularly cafes, restaurants and entertainment venues.		
Temporary loss of power and utilities Unplanned power and utility interruptions could result in business impacts during interruptions. Given most utility works would be completed during the work carried out under the previous Sydney Metro West planning application, any substantial impact from unplanned power and utility interruptions is very unlikely.	Almost unprecedented	Slight negative
Continued reduced safety and security impacts There is potential for businesses to experience a temporary reduction in patronage due to perceptions related to safety and security when travelling through the local business study area. Safety and security could relate to the perception of potentially becoming a victim of crime. These perceived impacts are likely to be limited to retail and cafes and restaurants located near the Pyrmont Station construction sites that would normally continue trading into the evening. This is because safety and security impacts tend to become more prevalent outside of daylight hours when any reduction in visibility decreases surveillance and the ability to see and navigate hazards. Businesses along Pyrmont Street, Edward Street and Union Street already have a relatively low level of street activation. There is potential that signage and hoarding could create a perception of reduced safety and security when travelling through the local business study area. Consequently, businesses operating as part of the night-time economy could experience a reduction in patronage. Businesses most likely to be potentially impacted are within 100 metres of a construction site.	Possible	Slight negative

14.13.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, local business impacts would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F).

The OCCS (Appendix C) also specifies that a Community Communications Strategy would be prepared and implemented during construction and includes requirements related to small business engagement. The Community Communication Strategy would define the location specific measures to be implemented to minimise impacts on individual businesses during construction, taking into account the commercial character of the locality, its general trading profile (daily and annually), and information gained from the business profiling.

14.14 Biodiversity

The approach and methodology for the biodiversity assessment are provided in Chapter 4 (Methodology) of this Environmental Impact Statement. The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

14.14.1 Baseline environment

Site context

The area immediately surrounding the proposed location of Pyrmont Station is highly urbanised, with a history of clearing and development over the past 200 years. This includes the previous use of the area for agriculture, with subsequent redevelopment for industrial, residential, commercial, tourism and entertainment land uses.

Vegetation characteristics

Vegetation in the area surrounding the proposed location of Pyrmont Station is limited to landscape and ornamental plantings only. No remnant native vegetation is present. All vegetation within the Pyrmont Station construction sites would be removed by the work carried out under the previous Sydney Metro West planning application.

Vegetation in the surrounding area is similarly comprised solely of landscape planting and street trees and is not remnant. The majority of vegetation would not be affected by this proposal. The removal of two London Plane street trees would be required for this proposal to enable access to the Pyrmont Station eastern construction site (refer to Section 14.14.3 and Figure 14-21).

Figure 14-21 Vegetation - Pyrmont Station

Threatened ecological communities

There are no threatened ecological communities present within the Pyrmont Station construction sites.

Groundwater dependent ecosystems

There are no groundwater dependent ecosystems present within the Pyrmont Station construction sites.

Threatened flora species

There are no threatened flora species present within the Pyrmont Station construction sites.

Threatened fauna species

The Pyrmont Station construction sites would be cleared (including demolition of existing buildings and structures) under the previous Sydney Metro West planning application. As such, at the commencement of work associated with this proposal no roosting habitat would be present for microbats. No potential impacts to microbats are therefore anticipated and impacts have not been assessed further.

Migratory species

There is no habitat associated with migratory species present within the Pyrmont Station construction sites.

Aquatic ecology

There is no aquatic habitat present within the Pyrmont Station construction sites.

14.14.2 Operational impact assessment

Direct impacts

Direct impacts related to the operation of Pyrmont Station would be limited to the disruption of fauna due to noise, light and human activity. As the majority of activity would be underground at this location, impacts would only include those associated with surface activities such as people moving in and out of the station, additional street-level lighting and the increased movement of private vehicles, buses and taxis. In the context of the locality, these impacts would be minor.

Indirect impacts

Indirect impacts associated with the operation of Pyrmont Station would be limited to the management of stormwater runoff and its impacts to local waterways. This may include changes in the quantity and quality of stormwater runoff leaving the Pyrmont Station site, resulting in subsequent impacts to nearby aquatic systems such as Darling Harbour and Pyrmont Bay, and Sydney Harbour more generally. Biodiversity impacts associated with such changes include temporary or permanent inundation of wetland habitat, changes in water chemistry affecting sensitive breeding habitat (such as pH changes affecting amphibian breeding and foraging habitat) and changes in turbidity affecting the overall health and productivity of aquatic plants and animals.

This proposal is located within an area that is already highly urbanised and the existing stormwater systems are likely to already be contributing to the impacts described above. This proposal would seek to manage operational stormwater effectively and manage the quantity and quality of water leaving Pyrmont Station (refer to Chapter 18 (Proposal-wide) of this Environmental Impact Statement).

14.14.3 Construction impact assessment

Direct impacts

As described in Section 14.14.1, construction activities associated with Pyrmont Station would take place entirely within the Pyrmont Station construction sites established under the previous Sydney Metro West planning application.

As part of this proposal, two planted London Plane street trees on Edward Street would be removed. This vegetation does not represent a coherent plant community types. No threatened flora is present within this location and the habitat value of this area for threatened fauna is considered to be very low. As such there would be no significant impact on threatened species or ecological communities associated with the removal of this vegetation.

Construction of Pyrmont Station would also result in disruption to fauna due to noise, light and human activity. In the context of the highly urbanised local context including a mixed commercial and residential area, the impact of this direct disturbance is not anticipated to be significant.

Indirect impacts

Potential changes to the quantity and quality of stormwater runoff leaving the Pyrmont Station construction sites, sediment-laden runoff and spills could result in indirect adverse impacts to nearby aquatic systems such as Darling Harbour. Biodiversity impacts associated with this would include temporary or permanent inundation of wetland habitat, changes in water chemistry affecting breeding habitat (e.g. pH changes affecting amphibian breeding and foraging habitat) and changes in turbidity affecting the overall health and productivity of aquatic plants and animals.

The mobilisation of sediment and contaminants from the construction sites would be managed through the implementation of mitigation measures outlined in Appendix F (Construction Environmental Management Framework). Potential water quality and quantity impacts would be managed through the measures included in Chapter 18 (Proposal-wide) of this Environmental Impact Statement. As such the potential for indirect downstream biodiversity impacts is expected to be low.

14.14.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. This includes operational mitigation measures (where relevant) and performance outcomes for the operation and construction of this proposal.

During construction of this proposal, biodiversity would be managed in accordance with Sydney Metro's CEMF (refer to Appendix F). The CEMF includes biodiversity management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.