Part B

Hunter Street Station

15

15.0 Hunter Street Station (Sydney CBD)

This chapter provides a description of Hunter Street Station (Sydney CBD) 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 Hunter Street (Sydney CBD) and identifies mitigation measures to address these impacts.

15.1 Overview

The Hunter Street Station (Sydney CBD) precinct is situated in the heart of the Sydney CBD, near to the commercial core and is one of the busiest precincts of the Sydney CBD. The Hunter Street Station (Sydney CBD) western site would be located on the corner of Hunter Street and George Street and the Hunter Street Station (Sydney CBD) eastern site would be located adjacent to Richard Johnson Square at the corner of Hunter Street, O'Connell Street and Bligh Street.

The precinct surrounding Hunter Street Station (Sydney CBD) is characterised by a broad mix of uses including offices, retail, hotels, entertainment and night-life, as well as open space such as The Royal Botanic Garden, the Domain and Hyde Park. The precinct supports the largest office sub-market in Australia, favoured by financial, legal, property and technology services. It is well connected to Greater Sydney through the network of suburban train lines, light rail, buses and ferries.

Hunter Street Station (Sydney CBD) would provide direct access to the commercial core of the Sydney CBD. The metro station would also enable interchange with existing public transport networks, including Sydney Metro City & Southwest, the existing Sydney Trains suburban rail network, light rail and bus networks.

15.1.1 Operation

The vision for the Hunter Street Station (Sydney CBD) and its surrounds is for a landmark station that reinforces the commercial heart of the global Eastern Harbour City, unlocking public transport capacity and catalysing new economic opportunities with Greater Parramatta (the Central River City).

A western station entrance would be provided facing George Street, in proximity to the light rail stops, across from the George Street entrance to the existing Wynyard Station. Proposed north-south and east-west through site links would enable access to this entrance from the surrounding street network. An eastern station entrance would also be provided facing O'Connell Street with a through-site link enabling access to Bligh Street.

When operational, Hunter Street Station (Sydney CBD) would establish an integrated transport hub in the north of the Sydney CBD, strengthening Sydney's transport network and linking important destinations to deliver a more connected city. It would deliver a design that promotes active street frontages to support a vibrant public domain in the heart of the Sydney CBD and deliver a high-quality station entry to George Street, the CBD's north-south pedestrian boulevard.

The station precinct would include an unpaid underground connection to Wynyard Station, using an existing tunnel under George Street, and a paid underground connection to Sydney Metro City & Southwest Martin Place Station. This would improve public amenity, extend existing east-west connections between Barangaroo and Martin Place, and facilitate efficient transfer between Sydney Metro lines, the suburban rail network, and light rail, ferry and bus services. No changes to the road network are proposed and the future intersection performance for vehicles is anticipated to be similar with or without the metro station.

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 some opportunities for local businesses. The station is expected to support further business investment and growth within the Sydney CBD by providing greater connections between businesses, labour markets, customers and clients located within and near to the Sydney Metro corridor.

Key potential impacts anticipated during operation of Hunter Street Station (Sydney CBD) include:

- this proposal would generally comply with all relevant noise and vibration criteria; however, there would be minor non-compliances of the amenity target criteria for some receivers directly adjacent to the tunnel ventilation system during the daytime, evening and 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

- as the majority of customers are anticipated to access and egress the metro station by walking, a short section of footpath along Hunter Street immediately west of Pitt Street would operate at level of service D (with potential conflicts, passing and speed restrictions for pedestrians). Sydney Metro would continue to investigate improvements to the surrounding pedestrian network, including the potential for minor footpath upgrades (such as localised footpath widening) on O'Connell Street, Hunter Street and at Richard Johnson Square with key stakeholders such as City of Sydney Council and Transport for NSW, in response to increased pedestrian demand associated with the metro station
- the Hunter Street Station (Sydney CBD) sites are in proximity to a number of significant State and local heritage items and contributory buildings. The State heritage listed former Skinners Family Hotel would be incorporated into the design of the western station entry; specifically, the station building would be designed to respond to the scale of the former Skinners Family Hotel to manage any potential impacts on the visual setting of this item. The station building has the potential to visually dominate the street which could result in a minor impact to the setting of this item. Potential impact to the setting of other nearby heritage items would be neutral or negligible
- 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.

15.1.2 Construction

Major civil construction including station excavation and tunnelling work at Hunter Street (Sydney CBD) 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 Hunter Street Station (Sydney CBD), and associated precinct work required for the operation of Sydney Metro West.

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

Changes to the surrounding transport network during construction would be limited and would largely be a continuation of those established under the previous Sydney Metro West planning application. This includes the removal of some parking on roads fronting the construction sites.

The performance of some intersections around the site would temporarily decline due to construction works and vehicles. Several of these would still operate with spare capacity with the addition of construction traffic. Major temporary declines in performance are predicted at the Macquarie Street/Bent Street and Hunter Street/Macquarie Street intersections. Measures outlined in the Construction Traffic Management Framework (CTMF) would be implemented to minimise potential impacts to road network performance.

Noise levels at the majority of receivers are predicted to comply with the noise management levels. 'Moderate' impacts are predicted at a close hotel (The Comfort Hotel) receiver and 'low' impacts are predicted at three more distant hotels during a worst-case situation. No sleep disturbance impacts are predicted.

There are a number of important heritage items in proximity to this proposal, including the State heritage listed Tank Stream adjacent to the western site and the former Skinners Family Hotel which, would be retained and protected within the site. There would be no direct impacts to these items and potential indirect impacts (to the setting or from vibration) have generally been assessed as neutral or negligible.

Other key potential impacts during construction would include:

- temporary minor to moderate impacts to landscape character and visual amenity due to the continued presence of construction activity at the sites
- temporary medium 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, flooding and biodiversity 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 Construction Noise and Vibration Standard (CNVS).

15.2 Station and precinct description

15.2.1 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
- 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 through site links at both the eastern and western entries to provide enhanced pedestrian permeability, responding to feedback from City of Sydney Council and supported by the Design Advisory Panel
- a design that retains and responds to the adjacent heritage listed former Skinners Family Hotel
- the provision of direct underground connections for efficient customers transfer to Sydney Metro City & Southwest Martin Place Station and Sydney Trains Wynyard Station.

15.2.2 Station design

The indicative layout and key design elements of Hunter Street Station (Sydney CBD) are shown in Figure 15-1 with a long-section and cross-section shown in Figure 15-2 and Figure 15-3 respectively. The design of the metro station is subject to further detailed design development.

The key features of Hunter Street Station (Sydney CBD) are provided in Table 15-1.

Table 15-1 Hunter Street Station (Sydney CBD) key features

Key features	Description
Proposed station entry	• entry to the western station site on George Street and Hunter Street • entry to the eastern station site on O'Connell Streets • entry to the eastern station site on Bligh Street (via through site link) • connections to Wynyard Station on the west side of George Street and the Sydney Metro City & Southwest station at Martin Place.
Customers	• employees and visitors travelling to and from the Sydney CBD • visitors to retail, commercial, dining and recreational attractors • customers transferring to and from other transport modes.
Primary station function	Destination and interchange.
Catchment	Employment, recreation and tourism.
Transport interchange	• walk • cycle • Sydney Metro City & Southwest • suburban and intercity rail • bus via Wynyard Bus Interchange, through Wynyard Station • light rail • point-to-point transport via existing taxi stands on Carrington Street and Pitt Street.

Hunter Street Station (Sydney CBD) would comprise two sites connected by a cavern in an east-west orientation, which would include an island platform.

A western station entrance would be provided facing George Street, in proximity to the light rail stops, across from the George Street entrance to the existing Wynyard Station. Proposed north-south and east-west through site links would also enable access to this entrance from the surrounding street network.

An eastern station entrance would be provided facing O'Connell Street. Secondary access to this entrance would also be provided from Bligh Street via an accessible through-site link. Escalators and lifts would be included as part of the through-site link to allow for level access between O'Connell and Bligh Streets.

At each site, escalators and/or stairs and lifts would provide access to an underground concourse level. The underground concourse level would provide an unpaid connection into Wynyard Station (via the existing underground pedestrian connection under George Street). It would also include an underground pedestrian connection to Sydney Metro City & Southwest at Martin Place within the paid concourse.

The station plant and services would be located underground and above the station entry at each site.

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

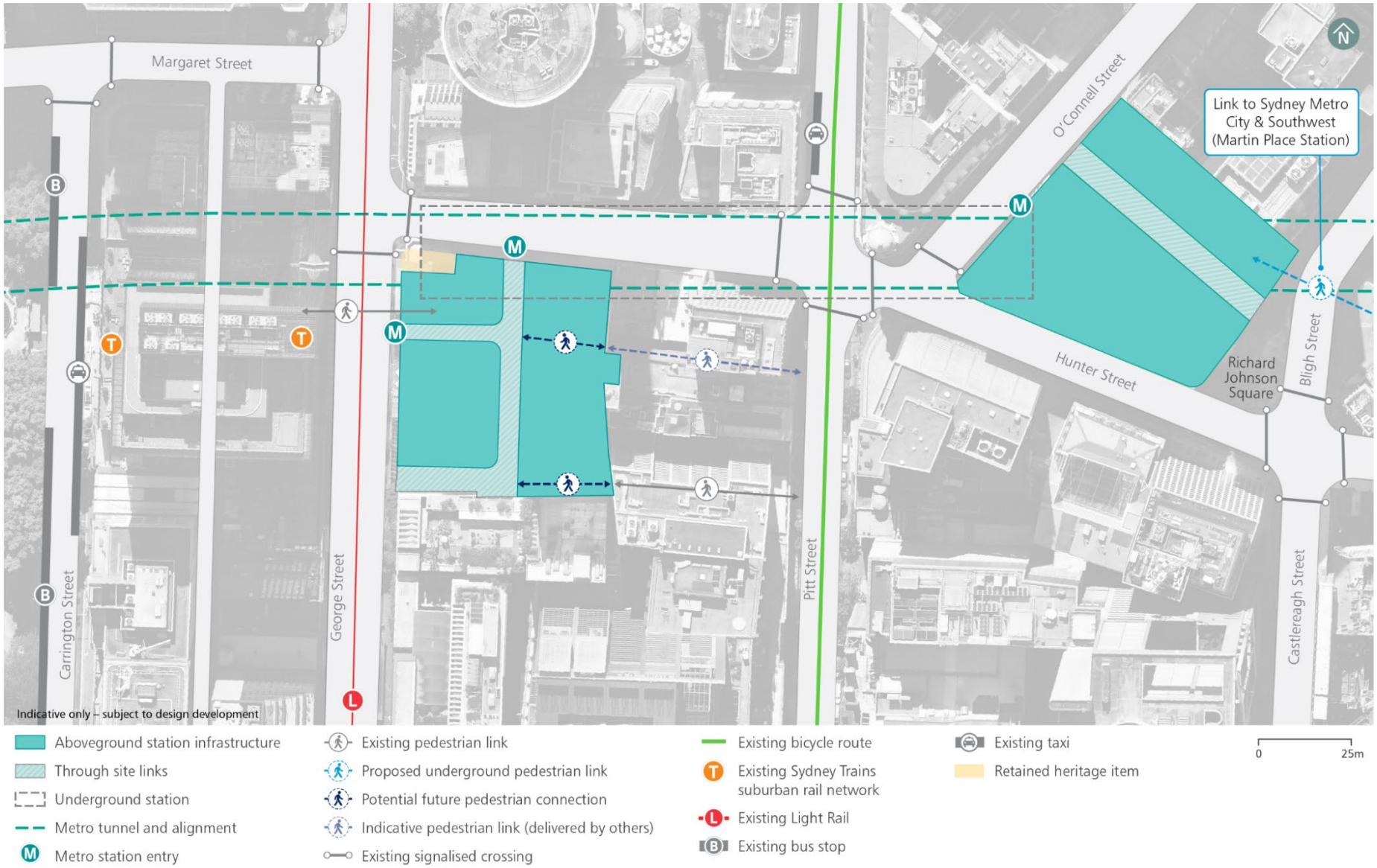

Figure 15-1 Indicative layout and key design elements – Hunter Street Station (Sydney CBD)

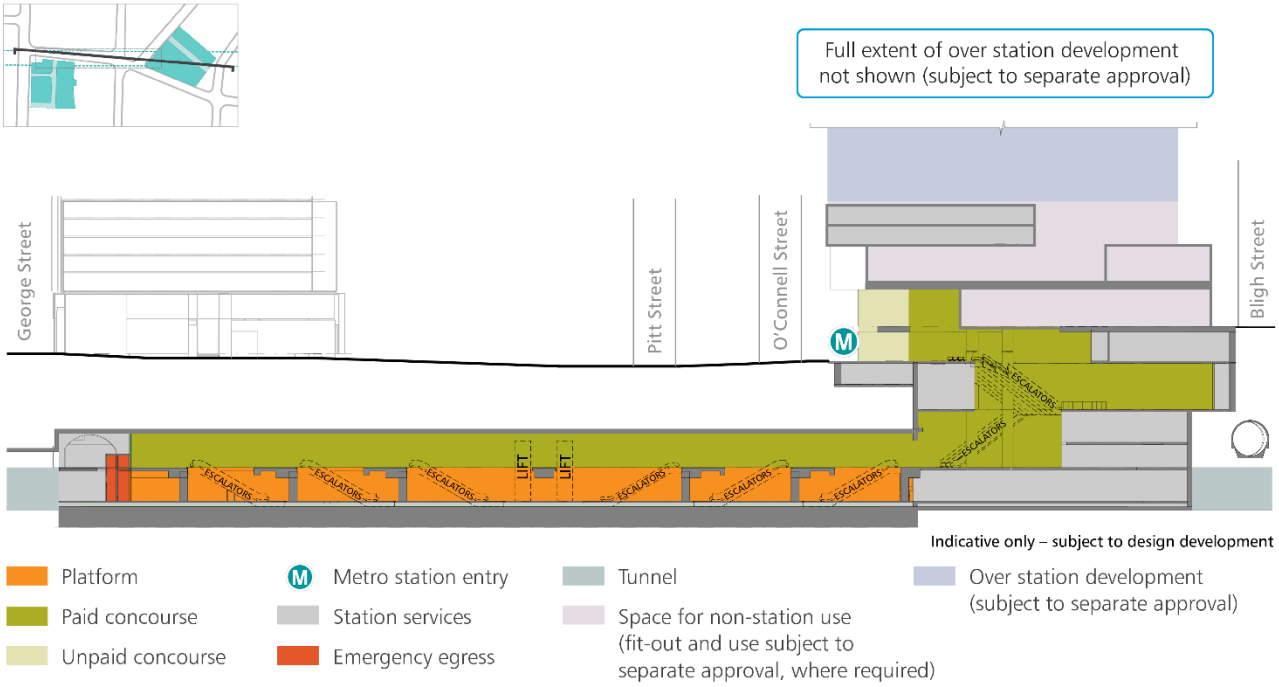

Figure 15-2 - Indicative long-section - Hunter Street Station (Sydney CBD)

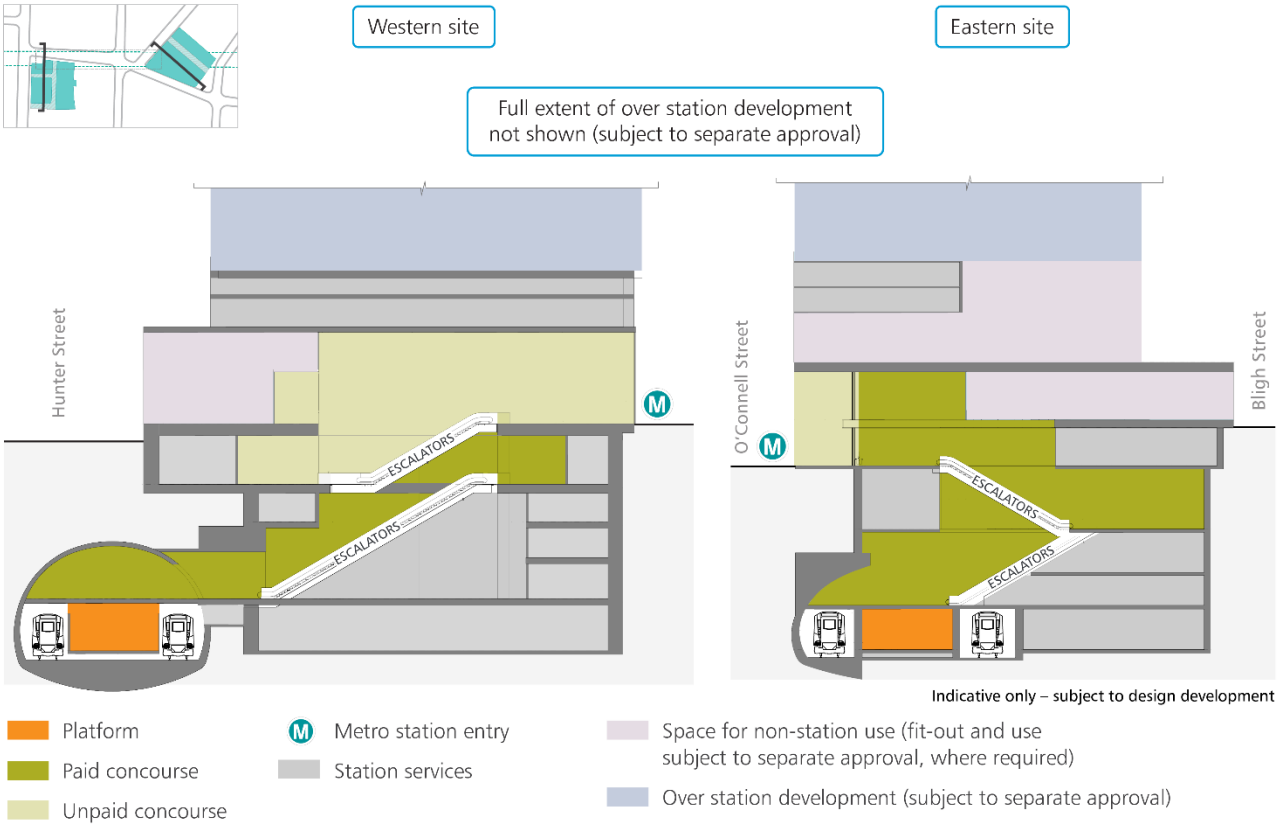

Figure 15-3 Indicative cross-sections - Hunter Street Station (Sydney CBD)

15.2.3 Station precinct and interchange facilities

Hunter Street Station (Sydney CBD) would include a series of precinct and interchange elements such as:

- underground pedestrian connections to the Sydney Trains network at Wynyard and Sydney Metro City & Southwest at Martin Place
- through-site links at the proposed station entries
- built elements and provision of utilities and services to provide space for future non-station uses (e.g. retail, commercial and/or community facilities) including within the eastern and western sites as shown in Figure 15-2 and Figure 15-3. 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.

Sydney Metro are continuing to investigate opportunities, in consultation with stakeholders, to upgrade the existing Richard Johnson Square at the corner of Bligh Street and Hunter Street.

15.2.4 Provisioning for over station development

As shown on Figure 15-2 and Figure 15-3, following the completion of construction, over station developments would be proposed at the western and eastern station sites.

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 15-4 and is discussed further in Section 5.4.5 (Related development) of this Environmental Impact Statement.

Delivery of the over station developments 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).

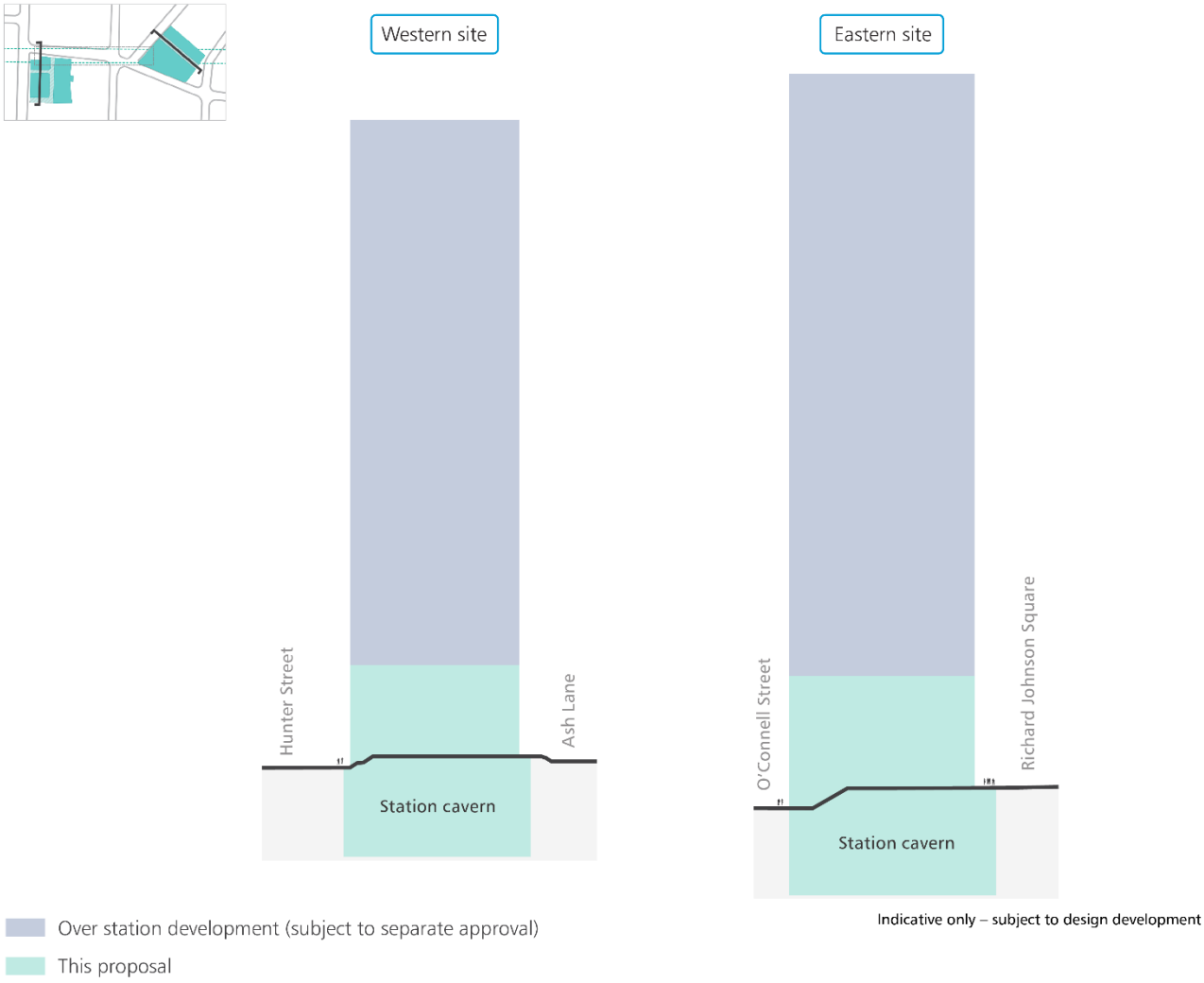

Figure 15-4 Potential over station development extent – Hunter Street Station (Sydney CBD)

15.3 Placemaking

The vision for Hunter Street Station (Sydney CBD) and its surrounds is for:

A landmark station that reinforces the commercial heart of the global Eastern Harbour City, unlocking public transport capacity and catalysing new economic opportunities with Greater Parramatta (Central River City).

15.3.1 Integration with strategic planning

The Eastern City District Plan (Greater Sydney Commission, 2018b) identifies the Sydney CBD as a metropolitan centre, the established economic heart of Greater Sydney with a strong cultural, arts and education focus. Since the release of the District Plan, a number of plans and strategies have been developed to guide the continued growth of the CBD, which have informed the development of Hunter Street Station (Sydney CBD) 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) sets out the 20-year vision for land use planning in the City of Sydney local government area. Hunter Street Station (Sydney CBD) would be located in the CBD and harbour city providing a broad mix of uses including offices, retail, hotels, entertainment and night-life, as well as open space such as The Royal Botanic Garden, the Domain and Hyde Park. It is well connected to Greater Sydney as the centre through the network of suburban train lines.

The planning statement sets priorities to deliver the vision of a 'green, global and connected' city. Hunter Street Station (Sydney CBD) would support several priorities of the plan, such as movement for walkable neighbourhoods and a connected city; aligning development and growth with supporting infrastructure; creating great places; and a stronger and more competitive Central Sydney.

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. Hunter Street Station (Sydney CBD) would support the strategic directions outlined in the plan, including the objectives associated with establishing integrated transport for a connected city.

City North Public Domain Plan

The City North Public Domain Plan (City of Sydney, 2015) outlines ideas for improving city streets and open spaces. Of relevance to Hunter Street Station (Sydney CBD), the Plan proposed the upgrade of Richard Johnson Square. The proposed metro station would support this upgrade by providing a station entry opening to the square.

15.3.2 Place and design principles

Place and design principles for Hunter Street Station (Sydney CBD) were identified in Section 5.2 of the *Sydney Metro West Environmental Impact Statement – 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 15-2 outlines how these principles have been achieved in the Hunter Street Station (Sydney CBD) design.

Table 15-2 Design responses to Hunter Street Station (Sydney CBD) place and design principles

Place and design principle	Design response
Reinforce Sydney's global standing by significantly improving public transport accessibility between the Eastern Harbour City and the Central River City, enhancing job-to-job connections and catalysing economic growth	• Hunter Street Station (Sydney CBD) would provide improved connectivity between the Sydney and Parramatta CBDs through improved travel times and a connection directly to the financial core of the Sydney CBD.
Establish an integrated transport hub in this northern CBD precinct, strengthening Sydney's rail network and linking important destinations to deliver a more connected city	• Hunter Street Station (Sydney CBD) provides a unique opportunity in relation to interchange with the existing and future public transport network by providing connections to Sydney Metro City & Southwest Martin Place Station, Sydney Trains Wynyard Station and light rail on George Street. This would provide travel time benefits and enhanced connections for customers with the Sydney Metro West corridor, and those from the North Shore and Eastern Suburbs.
Deliver highly efficient interchanges between metro and other public transport modes, with capacity to support high volumes of pedestrians aboveground and underground, while delivering a high-quality customer experience	• proposed underground and aboveground connections would provide efficient interchange opportunities between metro and other modes • generous customer space underground would provide a high-quality customer experience.
Facilitate integrated station developments that promote design excellence and contribute to the unique attributes and character of this CBD North location, aligned with the Central Sydney Planning Framework	• station design would allow for over station development that contributes to the character of the area and protects and responds to neighbouring heritage items.

Place and design principle	Design response
Deliver a design that promotes active street frontages to support a vibrant public domain in the heart of the Sydney CBD, which delivers a high-quality station address to George Street – the CBD's north-south pedestrian boulevard.	• the station design would provide active frontages to George, Hunter, O'Connell and Bligh Streets • the main western station entry would be a generous landmark entry to the pedestrianised George Street, providing a visual connection to the newly redeveloped Wynyard Station entry directly opposite.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 15-5, Figure 15-6 and Figure 15-7.

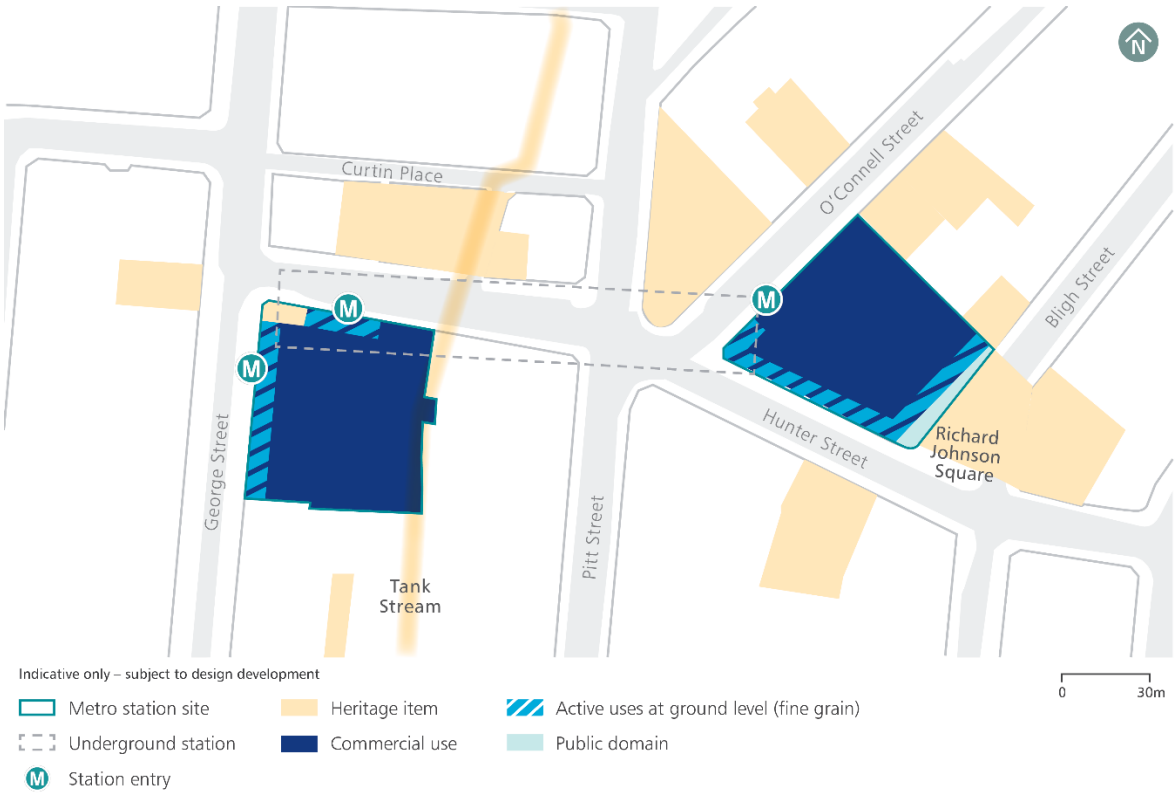

Figure 15-5 Land use and function urban design strategies – Hunter Street Station (Sydney CBD)

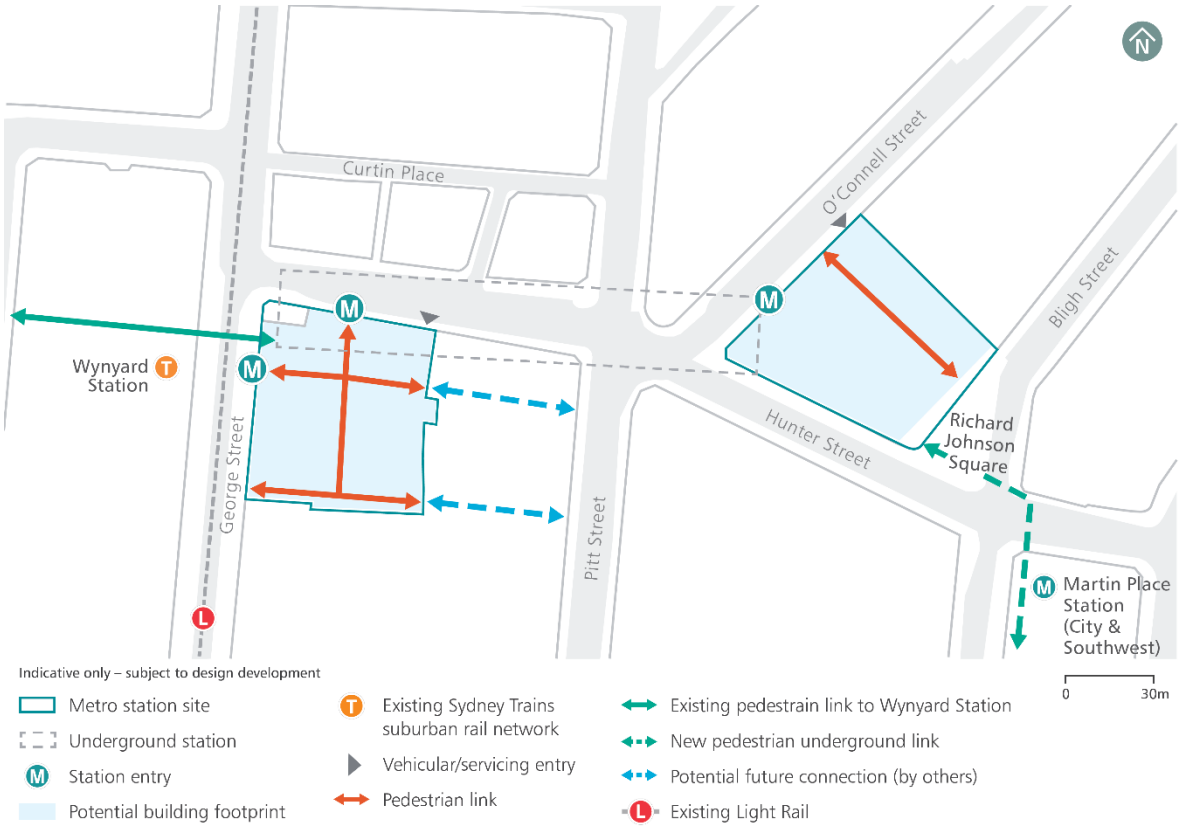

Figure 15-6 Access and connectivity urban design strategies – Hunter Street Station (Sydney CBD)

Figure 15-7 Built form urban design strategies – Hunter Street Station (Sydney CBD)

Hunter Street Station (Sydney CBD) design includes the following key movement and place features:

- the main western station entry would open up to the pedestrianised George Street and is located directly opposite the recently redeveloped Wynyard Station George Street entry, providing a strong visual connection between Sydney Metro, Sydney Trains and light rail
- the eastern entry would include a connection to, and enhancement of, Richard Johnson Square
- station entries are generally orientated away from Hunter Street, which currently provides a key east-west movement corridor
- through-site links are proposed at the western entry to enhance permeability through potential future east-west pedestrian links to Pitt Street, and a future potential north-south link planned by the City of Sydney Council
- a through-site link is proposed at the eastern entry to enhance permeability between Bligh and O'Connell Streets
- underground connections are proposed to provide efficient interchange and connections to Sydney Metro City & Southwest Martin Place Station and Sydney Trains Wynyard Station
- active frontages are proposed to all streets – George, Hunter, O'Connell and Bligh Streets.

15.3.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to public spaces and local community facilities surrounding Hunter Street Station (Sydney CBD). The delivery of a metro station at Hunter Street would improve access to the financial core of the Sydney CBD and provide an efficient interchange with Sydney Metro City & Southwest at Martin Place Station, the Sydney Trains network at Wynyard Station and light rail on George Street.

Examples of how the Hunter Street Station (Sydney CBD) 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. The western station entry would be from the pedestrianised George Street. Through site links are proposed at both the western and eastern entries to enhance pedestrian permeability
- existing cycling paths through the Sydney CBD would facilitate connection to the station entries. A planned (as part of the City of Sydney Cycling Strategy and Action Plan) regional cycle connection along Pitt Street would enhance cycle connections to the station
- Hunter Street Station (Sydney CBD) provides a unique opportunity in relation to interchange with the existing and future public transport network:
    - a direct underground connection would be provided within the paid concourse between the eastern entry and Sydney Metro City & Southwest Martin Place Station
    - an unpaid underground connection would be provided between the western entry and Wynyard Station through an existing tunnel beneath George Street. This connection would also be possible aboveground, across the pedestrianised George Street
    - the western entry would provide a connection to the Wynyard light rail stop on George Street
    - bus connections would be possible via a short walk to either Wynyard Station or Martin Place interchanges.

For further information on transport interchange, access and connectivity features of Hunter Street Station (Sydney CBD), see Section 15.5.

15.4 Construction description

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

Major civil construction including station excavation and tunnelling work at Hunter Street Station (Sydney CBD) 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.

15.4.1 Overview

Construction of Hunter Street Station (Sydney CBD) 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 that 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 on the corner of Hunter Street and George Street and would also contain DeMestre Place and the eastern construction site would be bounded by O'Connell Street, Hunter Street and Bligh Street.

The majority of the Hunter Street Station (Sydney CBD) construction sites would be demolished and excavated as a result of activities associated with the previous Sydney Metro West planning application prior to the commencement of this proposal. The State heritage listed former Skinners Family Hotel on the corner of George and Hunter Streets would be retained and protected. The State heritage listed tank stream is located along the eastern boundary of the western construction site and would be retained and protected.

The location and indicative layout of the Hunter Street Station (Sydney CBD) construction sites are shown on Figure 15-8. Some activities would occur outside this construction footprint, such as delivery of construction equipment and station precinct and interchange work.

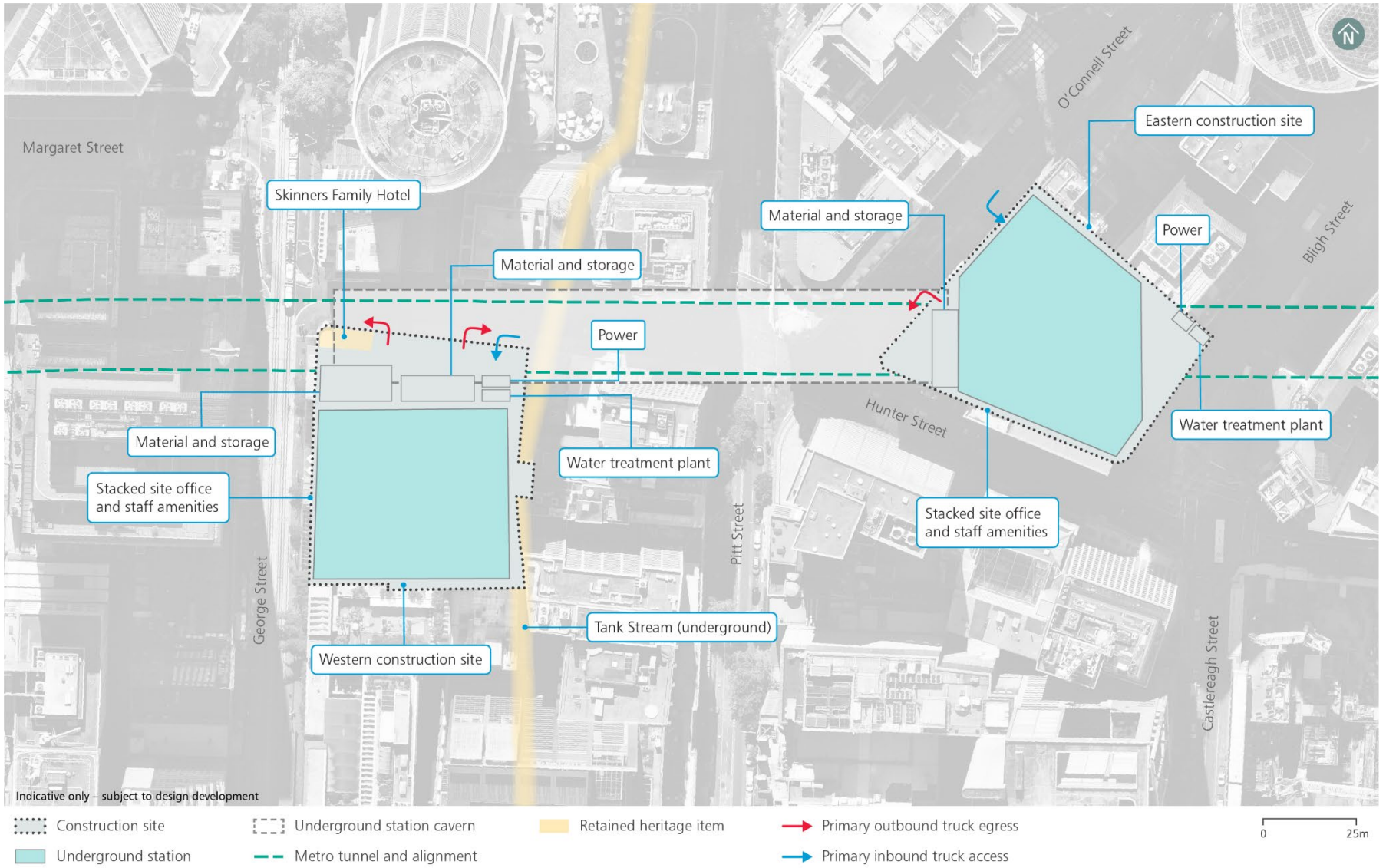

Figure 15-8 Indicative construction sites layout – Hunter Street Station (Sydney CBD)

15.4.2 Construction work

Key construction work at the Hunter Street Station (Sydney CBD) construction sites would include:

- enabling and site establishment work, including installation or retention of protection around the former Skinners Family Hotel heritage structure
- 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 Hunter Street Station (Sydney CBD) is shown in Figure 15-9.

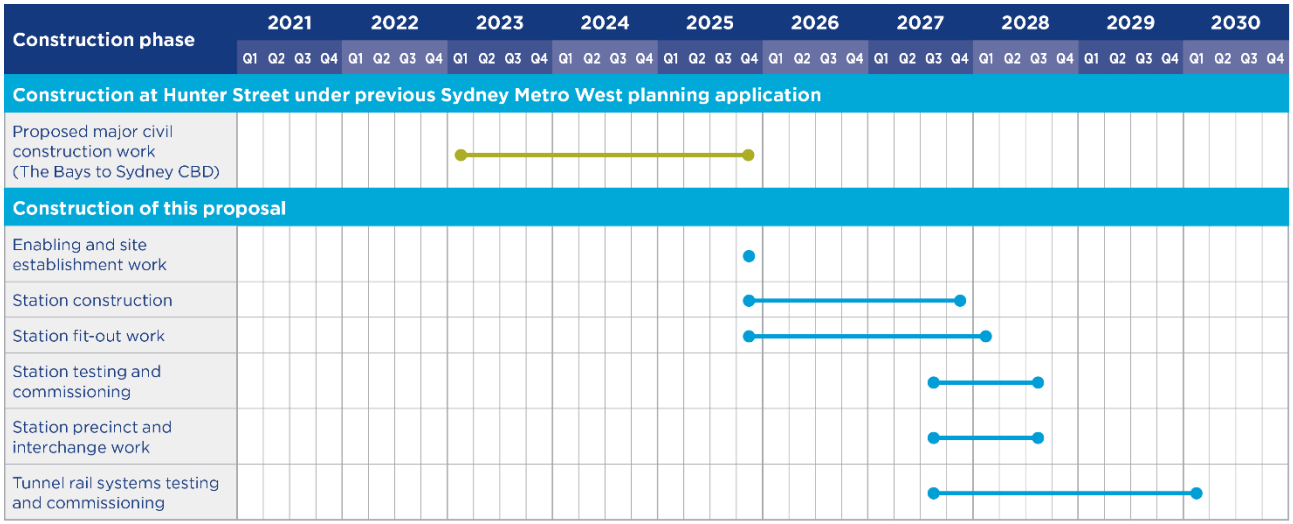

Figure 15-9 Indicative construction program – Hunter Street Station (Sydney CBD)

Other construction elements specific to Hunter Street Station (Sydney CBD) are shown in Table 15-3. Indicative construction hours, plant and equipment and workforce for the Hunter Street Station (Sydney CBD) construction sites are provided in Section 6.5 (Other construction elements) of this Environmental Impact Statement. Key elements specific to Hunter Street Station (Sydney CBD) as described in the table below, are also depicted on Figure 15-8.

Table 15-3 Other construction elements – Hunter Street Station (Sydney CBD)

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the western construction site via left-in from Hunter Street • egress from the western construction site via left-out or right-out onto Hunter Street • access to the eastern construction site via left-in from O'Connell Street • egress from the eastern construction site via left-out onto O'Connell Street.
	No additional and/or new access and egress arrangements are likely to be required for construction of this proposal.
Peak daily traffic movements	Western construction site: • about 224 daily heavy vehicle movements about 236 daily light vehicle movements. Eastern construction site: • about 196 daily heavy vehicle movements • about 210 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 established under the previous Sydney Metro West planning application that would be maintained for the duration of construction of this proposal include: • temporary removal of on-street parking spaces along Hunter Street adjacent to the western construction site • temporary removal of on-street parking spaces along O'Connell Street adjacent to the eastern construction site • temporary extension of the duration of the existing restrictions for the parking lane on the northern side of Hunter Street between Pitt Street and Bligh Street, to include a morning peak clearway in addition to the existing evening peak clearway.
	No additional temporary transport network modifications would be introduced as part of this proposal.

15.5 Transport

A full assessment, including further details of the operational and construction transport assessment, as well as the approach and methodology, is provided in Technical Paper 1 (Operational Transport) and Technical Paper 2 (Construction transport).

Potential impacts (including benefits) 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.

15.5.1 Baseline environment

The baseline transport environment described for Hunter Street Station (Sydney CBD) includes the existing transport environment, as well as adjustments made under the previous Sydney Metro West planning application.

Active transport network

The pedestrian network surrounding the Hunter Street Station (Sydney CBD) construction sites is well developed. Footpaths are provided along both sides of all roads and controlled crossings are provided at all signalised intersections. including Hunter Street. Pedestrian crossings are located across the Lang Street left-turn slip lane at the Grosvenor Street / Lang Street intersection, across Gresham Street at Bridge Street, across Spring Street at Pitt Street, across Loftus Street at Bent Street, and across Gresham Street at the Bent Street / Spring Street intersection. Pedestrian volumes are typically high throughout the day, as the adjacent land uses are primarily commercial, retail and residential. All roads near the construction site are signposted high pedestrian activity areas with a signposted speed limit of 40 kilometres per hour.

During the work carried out under the previous Sydney Metro West planning application, the underground pedestrian link between Wynyard Station and Hunter Connection (with entrances to Hunter Connection located on Hunter Street, Pitt Street and George Street) would be closed, with pedestrians required to travel via surface footpaths along Hunter Street, Pitt Street and George Street.

The cycle network surrounding the Hunter Street Station (Sydney CBD) construction sites consists of:

- a pop-up cycleway on the western side of Pitt Street
- an off-road cycle path on the eastern side of Kent Street between the Western Distributor on-ramp and Liverpool Street
- a shared path on the eastern side of Macquarie Street between north of Albert Street and Bent Street that connects to the shared path on the Cahill Expressway.

Public transport network

The Sydney CBD is well served by public transport services. A summary of the public transport services around Hunter Street Station (Sydney CBD) is provided in Table 15-4.

Table 15-4 Public transport services - Hunter Street Station (Sydney CBD)

Mode	Description
Rail	Wynyard Station and Circular Quay Station are located near the Hunter Street Station (Sydney CBD) construction sites. They are served by the T1 North Shore and Western Line, T2 Inner West and Leppington Line, T3 Bankstown Line, T8 Airport and South Line and T9 Northern Line, which provide direct connections to most areas of Sydney. Wynyard Station is also served by the Central Coast and Newcastle Line during the weekday AM and PM peak periods. Martin Place Station is located to the south-east of the site and is served by T4 Eastern Suburbs and Illawarra Line and South Coast Line, which provide direct connections to Bondi Junction, Sydenham, Sutherland, Waterfall, Wollongong and Kiama. Light rail services operate along George Street and Alfred Street and are served by the L2 Randwick Line and L3 Kingsford Line, which connect the Sydney CBD to Surry Hills, Moore Park, Kingsford and Randwick. The Circular Quay, Bridge Street and Wynyard light rail stops are located near the Hunter Street Station (Sydney CBD) construction sites. Sydney Metro City & Southwest, which is currently under construction, is planned to commence operation in 2024. In the vicinity of the Hunter Street Station (Sydney CBD) construction sites, metro stations will be located at Martin Place and Barangaroo.
Bus	A substantial number of buses serve the Sydney CBD. Near the Hunter Street Station (Sydney CBD) construction sites, bus stops located along York Street, Carrington Street, Clarence Street, Kent Street, Bridge Street, Phillip Street and Macquarie Street are served by 76 bus routes that connect the Sydney CBD to multiple locations across Sydney. Bus interchanges are located at Wynyard Station on Clarence Street, York Street and Carrington Street; Circular Quay Station on Alfred Street; and Martin Place Station on Castlereagh Street and Elizabeth Street.
Ferry	Ferry services are accessible at Circular Quay and Barangaroo. Circular Quay is served by all Sydney Ferries routes and Barangaroo is served by the F3 Parramatta River and F4 Pyrmont Bay routes. Privately operated commuter and sightseeing services are also accessible at Circular Quay and Barangaroo.

Parking, loading, servicing and pick-up arrangements

On-street parking in the Sydney CBD consists of ticketed and time-restricted parking on most streets near the Hunter Street Station (Sydney CBD) construction sites including Grosvenor Street, Bridge Street, Margaret Street, Hunter Street, Bent Street, Phillip Street and Macquarie Street. Near the construction site, parking is not permitted on Clarence Street, York Street or George Street. Loading zones are also provided on most roads near the construction site, with ticketed loading zones located on Grosvenor Street, Bridge Street, Jamison Street, Lang Street, Bond Street, Spring Street, Kent Street, Clarence Street and Bligh Street. Unticketed loading zones are also located on Hunter Street.

Point-to-point zones are provided at multiple locations including Bridge Street, Hunter Street, O'Connell Street and Phillip Street. In addition, there are several mail zones located on Phillip Street, Bridge Street, O'Connell Street, George Street and Pitt Street.

Under the previous Sydney Metro West planning application, the following on-street parking spaces are proposed to be temporarily removed:

- parking spaces on the southern side of Hunter Street adjacent to the Hunter Street Station (Sydney CBD) eastern construction site
- parking spaces on the eastern side of O'Connell Street adjacent to the Hunter Street Station (Sydney CBD) eastern construction site
- extension of the duration of the existing restrictions for the parking lane on the northern side of Hunter Street between Pitt Street and Bligh Street, to include a morning peak clearway in addition to the existing evening peak clearway.

Traffic volumes and patterns

Approximate peak hour midblock volumes on key access roads are shown in Table 15-5. The key access roads carry traffic volumes generally commensurate with their function.

Table 15-5 Existing peak hour traffic volumes (mid-block) by direction (2021) – Hunter Street Station (Sydney CBD)

Road	Direction	AM peak hour volume (vehicles per hour)	PM peak hour volume (vehicles per hour)
Bridge Street west of Macquarie Street	Eastbound	460	790
	Westbound	730	320
Margaret Street east of Clarence Street	Eastbound	170	160
	Westbound	480	280
Hunter Street west of Macquarie Street	Eastbound	370	350
	Westbound	570	310
Bent Street west of Macquarie Street	Eastbound	320	460
	Westbound	570	430
O'Connell Street north of Hunter Street	Northbound	-	-
	Southbound	90	70
Macquarie Street north of Bent Street	Northbound	980	880
	Southbound	880	1,300
George Street north of Margaret Street	Northbound	110	90
	Southbound	-	-
Clarence Street north of Margaret Street	Northbound	370	680
	Southbound	-	-

Intersection performance

Modelled intersection performance during the AM and PM peak hours for key intersections in the vicinity of Hunter Street Station (Sydney CBD) is shown in Table 15-6.

Modelled intersection performance indicates that the Bent Street / Phillip Street intersection currently performs at level of service E during the PM peak hour. This is due to high traffic volumes and long vehicle queues along Bent Street in the westbound direction.

All other intersections currently perform at level of service D or better.

Table 15-6 Modelled peak hour baseline intersection performance (2021) – Hunter Street Station (Sydney CBD)

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Macquarie Street / Bridge Street / Cahill Expressway ramps (signalised)					
AM peak	2,713	46	D	NB	210
				EB	60
				SB	20
				WB	115
PM peak	2,906	31	C	NB	120
				EB	50
				SB	65
				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)	
Bridge Street / Phillip Street (signalised)					
AM peak	1,897	33	C	NB	90
				EB	55
				SB	15
				WB	50
PM peak	1,849	30	C	NB	95
				EB	75
				SB	30
				WB	50
Bridge Street / Young Street (signalised)					
AM peak	1,556	12	A	NB	10
				EB	60
				SB	30
				WB	30
PM peak	1,562	11	A	NB	20
				EB	20
				SB	45
				WB	55
Bridge Street / Loftus Street (signalised)					
AM peak	1,635	12	A	NB	40
				EB	55
				SB	-
				WB	90
PM peak	1,763	14	A	NB	50
				EB	85
				SB	-
				WB	40
Macquarie Street / Bent Street / Eastern Distributor ramps (signalised)					
AM peak	3,689	40	C	NB	90
				EB	85
				SB	185
				WB	150
PM peak	4,183	41	C	NB	115
				EB	130
				SB	330
				WB	100

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Bent Street / Phillip Street (signalised)					
AM peak	1,875	40	C	NB	135
				EB	10
				SB	80
				WB	140
PM peak	1,977	59	E	NB	85
				EB	35
				SB	60
				WB	275
Bent Street / Bligh Street (signalised)					
AM peak	832	8	A	NB	-
				EB	10
				SB	-
				WB	50
PM peak	891	6	A	NB	-
				EB	10
				SB	-
				WB	45
Bent Street / Loftus Street / O'Connell Street (priority controlled)					
AM peak	677	13	A	NB	-
				EB	<5
				SB	<5
				WB	<5
PM peak	760	14	A	NB	-
				EB	<5
				SB	<5
				WB	<5
Hunter Street / Pitt Street / O'Connell Street (signalised)					
AM peak	1,467	55	D	NB	15
				EB	35
				SB[1]	120
				SB[2]	65
				WB	130
PM peak	1,367	34	C	NB	30
				EB	25
				SB[1]	45
				SB[2]	30
				WB	55
Hunter Street / Castlereagh Street / Bligh Street (signalised)					
AM peak	1,123	39	C	NB	-
				EB	50
				SB	20
				WB	145

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	1,166	30	C	NB	-
				EB	40
				SB	20
				WB	125
Hunter Street / Elizabeth Street / Chifley Square (signalised)					
AM peak	2,262	28	B	NB	120
				EB	65
				SB	85
				WB	85
PM peak	2,042	22	B	NB	110
				EB	40
				SB	55
				WB	45
Hunter Street / Macquarie Street (signalised)					
AM peak	2,343	18	B	NB	105
				EB	70
				SB	50
				WB	-
PM peak	2,312	17	B	NB	130
				EB	65
				SB	40
				WB	-
Hunter Street / George Street (signalised)					
AM peak	339	24	B	NB	10
				EB	-
				SB	<5
				WB	60
PM peak	427	23	B	NB	15
				EB	-
				SB	<5
				WB	75
Margaret Street / George Street (signalised)					
AM peak	439	25	B	NB	<5
				EB	55
				SB	<5
				WB	-
PM peak	517	18	B	NB	<5
				EB	50
				SB	<5
				WB	-

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	Level of service	Maximum queue length by directional approaches (metres)	
Margaret Street / Carrington Street (signalised)					
AM peak	641	8	A	NB	20
				EB	<5
				SB	-
				WB	35
PM peak	691	13	A	NB	25
				EB	15
				SB	-
				WB	50
Margaret Street / York Street (signalised)					
AM peak	1,643	25	B	NB	-
				EB	60
				SB	80
				WB	60
PM peak	1,685	23	B	NB	-
				EB	25
				SB	85
				WB	65
Margaret Street / Clarence Street (signalised)					
AM peak	1,347	25	B	NB	60
				EB	65
				SB	-
				WB	75
PM peak	1,484	25	B	NB	80
				EB	70
				SB	-
				WB	40
Clarence Street / Jamison Street (signalised)					
AM peak	985	14	A	NB	25
				EB	-
				SB	-
				WB	25
PM peak	1,285	9	A	NB	15
				EB	-
				SB	-
				WB	20

Notes:
1. Pitt Street SB approach
2. O'Connell Street SB approach

15.5.2 Operational impact assessment

This section outlines the transport interchange provisions proposed at Hunter Street Station (Sydney CBD) as shown in Figure 15-1.

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 940 customers accessing Hunter Street Station (Sydney CBD) and 9,560 customers egressing Hunter Street Station (Sydney CBD) during the AM peak hour. This indicates this station would be used as a destination station for customers reaching places of work in the Sydney CBD.

The 2036 modal breakdown of access and egress during the AM peak hour is presented in Table 15-7. The key observations from this analysis indicated access to the station is forecast to come from a variety of public and active transport modes, likely due to the range of transport options available to customers in the Sydney CBD. Egress trips from the station are almost all walking to nearby commercial areas.

Table 15-7 2036 forecast mode of access and egress – Hunter Street Station (Sydney CBD)

Mode	Walk	Cycle	Bus	Light rail	Ferry
Access	35%	2%	20%	16%	27%
Egress	97%	0%	2%	1%	0%

Integration with other transport modes

A description of how Hunter Street Station (Sydney CBD) would integrate with existing transport modes during operation is provided in Table 15-8. Appropriate signage and wayfinding would be provided within the precinct to provide easy customer transfer and access to the station.

Table 15-8 Network integration – Hunter Street Station (Sydney CBD)

Network	Description
Pedestrian network	Two station entries would be provided: • a western entry onto George Street with additional surface access through to Hunter Street. This entry would also include an unpaid underground connection, under George Street, through to Wynyard Station. Through-site links would also connect to potential future pedestrian links to Pitt Street • an eastern entry onto O'Connell Street, with a through-site connection to Bligh Street. This entry would also include a paid underground connection, under Hunter Street, to the Sydney Metro City & Southwest Martin Place Station. The pedestrian network surrounding the proposed metro station is extensive, providing active travel connectivity to interchangeable transport modes and high-quality infrastructure to local destinations in all directions. 2036 pedestrian modelling forecasts that the footpaths surrounding Hunter Street Station (Sydney CBD) would operate at level of service C or better, with the exception of a short section along Hunter Street immediately west of Pitt Street that would operate at level of service D. Key pedestrian crossing locations where congestion is forecast include: • the crossing of Hunter Street at the George Street / Hunter Street intersection • the crossing of Hunter Street, the crossing on the southern approach of Pitt Street and the crossing of O'Connell Street at the Pitt Street / O'Connell Street / Hunter Street intersection • all crossings at the Bligh Street / Castlereagh Street / Hunter Street intersection. Sydney Metro would also continue to investigate improvements to the surrounding pedestrian network, including the potential for minor footpath upgrades (such as localised footpath widening) on O'Connell Street, Hunter Street and at Richard Johnson Square with key stakeholders such as City of Sydney Council and Transport for NSW, in response to increased pedestrian demand associated with the metro station.

Network	Description
Cycle network	Cycling trips account for about two per cent of access and egress trips during the AM peak. Connectivity around the station via the cycle network would be adequate, with several existing cycleways and cycle links providing access for cyclists around the Sydney CBD. All cycling routes in the Sydney CBD are off-road, two-way cycleways to segregate cyclists from pedestrians on footpaths and vehicles in the roadway. The Pitt Street 'pop-up' cycle link provides a north-south cycle link through the middle of the precinct. This cycle link is planned to be retained as a permanent route in the cycle network (by Council). This cycle link has turning facilities at its signalised intersection with Hunter Street, which would facilitate access to the O'Connell Street entrance to the metro station. The pedestrian boulevard on George Street could also be used by cyclists to access the western station entrance on George Street. Cycle parking facilities would be provided at the metro station.
Public transport network	The centralised location of Hunter Street Station (Sydney CBD) between Wynyard Station and the future Sydney Metro City & Southwest Martin Place Station, and fronting Hunter Street, presents a unique opportunity to create an effortless and seamless interchange experience for customers. The station precinct would include: • an unpaid underground connection to Wynyard Station, using an existing tunnel under George Street • a paid underground connection to link the eastern entry to the Sydney Metro City & Southwest Martin Place Station. The main transfer point for bus customers is to and from the Wynyard and Martin Place bus interchanges. Customers would be able to make these connections using the existing pedestrian network. Similarly, any customers wishing the transfer to and from nearby ferry services would use the existing pedestrian network. Collectively, these existing and proposed pedestrian links would improve public amenity, extend existing east-west connections between Barangaroo and Martin Place, and facilitate efficient transfer between Sydney Metro lines, the suburban rail network, and light rail, ferry and bus services. No changes are proposed to other public transport infrastructure or services within the local area.
Road network	The proposed station does not support park and ride or kiss and ride. Minimal additional general traffic is forecast to be generated by the metro station. No changes are proposed to the current road network or intersections, both within the station precinct and in the surrounding area.

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 Hunter Street Station (Sydney CBD) is shown in Figure 15-10.

Future intersection performance in the AM peak is forecast to be similar with or without the metro station, with a minor increase in average delay at the Bligh Street / Hunter Street intersection with this proposal.

Intersection performance in the PM peak shows minor increased delays at Pitt Street, O'Connell Street and Hunter Street with this proposal. Vehicle flows here are forecast to be unstable, causing flows to become irregular.

Figure 15-10 Operational intersection performance —Hunter Street Station (Sydney CBD) (2036)

Parking and property access

No potential parking or property access impacts are anticipated during operation of this proposal.

15.5.3 Construction impact assessment

Construction haul routes

The primary construction haul routes for Hunter Street Station (Sydney CBD) are shown in Figure 15-11. A secondary haul route may also involve the use of Phillip Street. Construction site access and egress locations, as well as the number of daily traffic movements anticipated at the Hunter Street Station (Sydney CBD) construction sites, are outlined in Section 15.4.

The proposed right turn out of the western construction site onto Hunter Street would require some form of traffic control so that construction vehicles can safely exit the site. Opportunities to facilitate this turn would be explored in consultation with Transport for NSW and the City of Sydney during detailed construction planning and may include temporary traffic signals or traffic controllers. For the purposes of this assessment, temporary traffic signals have been included at the site egress point. Sydney Metro are continuing to investigate the feasibility of the outbound route via George Street, Margaret Street, Clarence Street and Bradfield Highway in relation to the crossing the light rail tracks and pedestrianised George Street.

Active transport network

During the work carried out under the previous Sydney Metro West planning application, the underground pedestrian link between Wynyard Station and Hunter Connection (with entrances to Hunter Connection located on Hunter Street, Pitt Street and George Street) would be closed. This closure would continue during construction of this proposal.

Other existing pedestrian and cycle routes surrounding the Hunter Street Station (Sydney CBD) construction sites would be maintained throughout construction. Temporary short-term closures (for around a few months) of footpaths adjacent to the construction site may be required, which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Macquarie Street is designated as an on-road cycle route of high difficulty. Macquarie Street would be used by construction vehicles travelling from the Hunter Street Station (Sydney CBD) western and eastern construction sites. Construction vehicles would also travel adjacent to the shared path on Macquarie Street and across the cycle path on Pitt 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 as provided in the CTMF would be implemented.

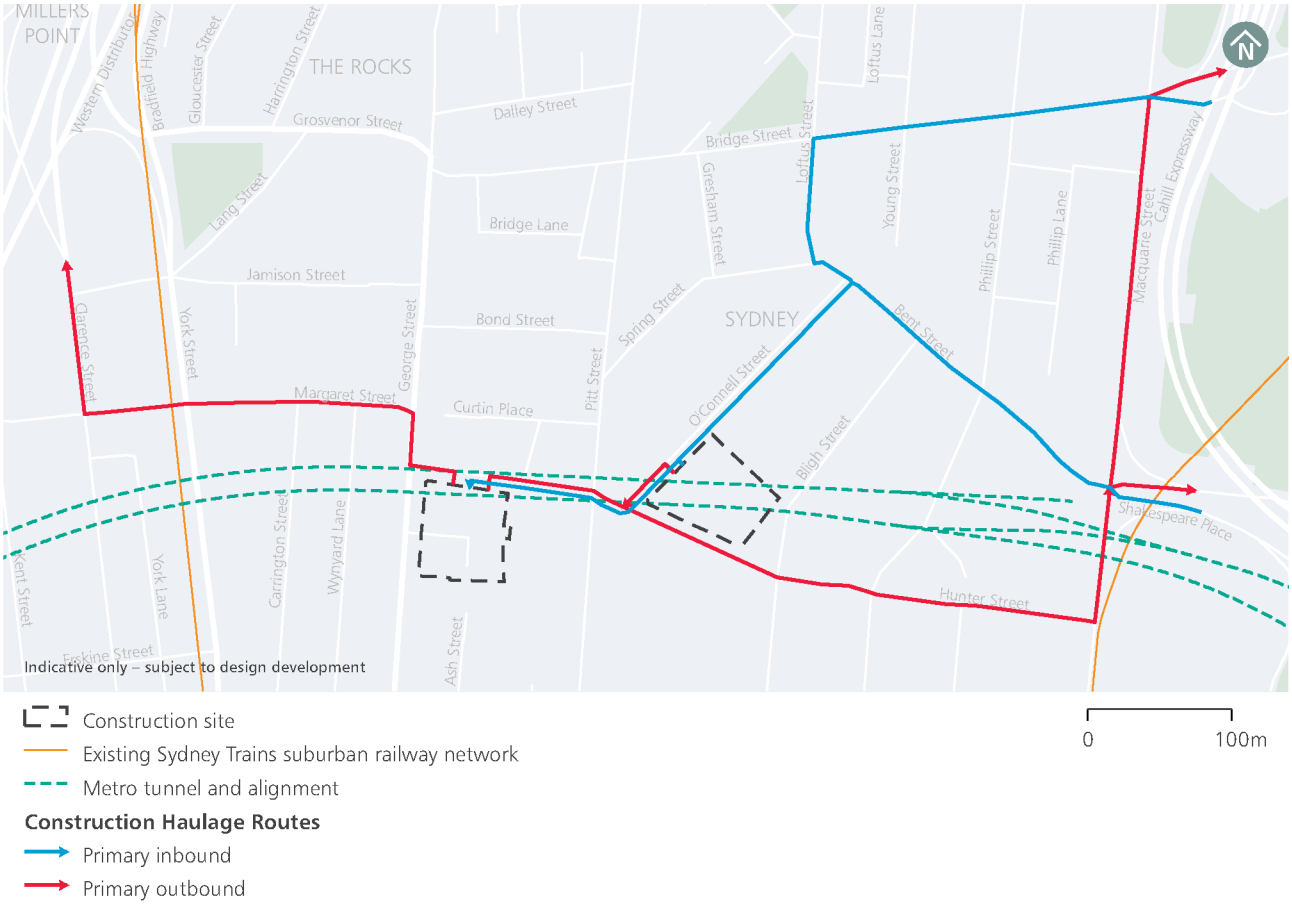

Figure 15-11 Primary construction haul routes – Hunter Street Station (Sydney CBD)

Public transport network

Roads forming part of the Hunter Street Station (Sydney CBD) construction vehicle route that are also used by buses include Clarence Street, Margaret Street, Macquarie Street, Hunter Street and Bent Street. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network. No impacts are anticipated on the operation of bus stops.

Construction vehicles would interface with the light rail network at the George Street / Margaret Street and George Street / Hunter Street intersections. Impacts on the light rail network would be minimal given that the interface between light rail vehicles and road vehicles using the road network are controlled by traffic signals at these intersections.

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

Parking and property access

There would be continued temporary impacts associated with the removal of on-street parking on Hunter Street due to the installation of traffic signals to facilitate access at the western construction site, along O'Connell Street and during oversize deliveries. These would be minor given the low number of removed parking spaces and the availability of alternative on-street and off-street parking nearby. Opportunities to mitigate impacts on on-street parking would be explored in consultation with the City of Sydney Council during construction planning.

Road network performance

Intersection performance results under the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Figure 15-12.

During the AM peak hour (8:15am to 9;15am) and PM peak hour (5:45pm to 6:45pm), it is anticipated that the:

- Hunter Street Station (Sydney CBD) western construction site would generate a total of 38 light vehicle movements (19 light vehicles travelling to and from the construction site) and 28 heavy vehicle movements (14 heavy vehicles travelling to and from the construction site)
- Hunter Street Station (Sydney CBD) eastern construction site would generate a total of 34 light vehicle movements (17 light vehicles travelling to and from the construction site) and 26 heavy vehicle movements (13 heavy vehicles travelling to and from the construction site).

These vehicle movement forecasts were assumed for the intersection performance modelling. The peak hours presented in this assessment 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:

- Bridge Street / Phillip Street during the AM peak hour from level of service C to D. Without construction traffic, the intersection would operate at the level of service C/D threshold. With construction traffic, the intersection would still operate with spare capacity
- Macquarie Street / Bent Street during the PM peak hour from level of service E to F. This is due to additional construction vehicles traveling on Macquarie Street in both directions, resulting in increased average delays on the south approach
- Bent Street / Loftus Street / O'Connell 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
- Hunter Street / Pitt Street / O'Connell Street during the PM peak hour from level of service C to D. This is due to additional construction vehicles travelling on O'Connell Street in the southbound direction, resulting in increased average delays on the O'Connell Street approach. The intersection would still operate with spare capacity with the addition of construction traffic
- Hunter Street / Macquarie Street during the PM peak hour from level of service B to D. This is due to additional construction vehicles travelling on Hunter Street in the eastbound direction, resulting in increased average delays on the Macquarie Street south approach and Hunter Street west approach. The intersection would still operate with spare capacity with the addition of construction traffic
- Hunter Street / George Street during the PM peak hour from level of service B to C. The intersection would still operate with spare capacity with the addition of construction traffic
- Macquarie Street / Carrington Street during the PM peak hour from level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic.

Measures to improve road network performance are outlined in the CTMF.

Special events

A large number of special events are held in the Sydney CBD at various locations including The Domain, The Rocks and the Sydney Harbour foreshore. Major special events include New Year's Eve, Australia Day, Sydney Festival, Mardi Gras, ANZAC Day, VIVID Sydney, Sydney Film Festival, City 2 Surf, Sydney Running Festival, Night Noodle Market, Carols in the Domain, and the Sydney to Hobart yacht race.

During major special events, there are high levels of pedestrian activity throughout the Sydney CBD. Major pedestrian movements can comprise trips between venues within the Sydney CBD, various public transport stops and car parks. Major pedestrian movements would fall within the immediate vicinity of the Hunter Street Station (Sydney CBD) construction sites, with the potential for conflict between pedestrians and construction vehicles and impacts on pedestrian movement and accessibility. During major special events these impacts would require mitigation measures to reduce the anticipated impacts. Further, movements to and from the construction site would be restricted during major special events, including New Year's Eve and VIVID Sydney, which involve the temporary pedestrianisation of roads to facilitate large pedestrian volumes. In addition, during major events the City of Sydney Council may suspend or restrict the operation of a works zone and special traffic arrangements may be required during the Christmas and New Year period (generally from 1 December to 2 January).

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.

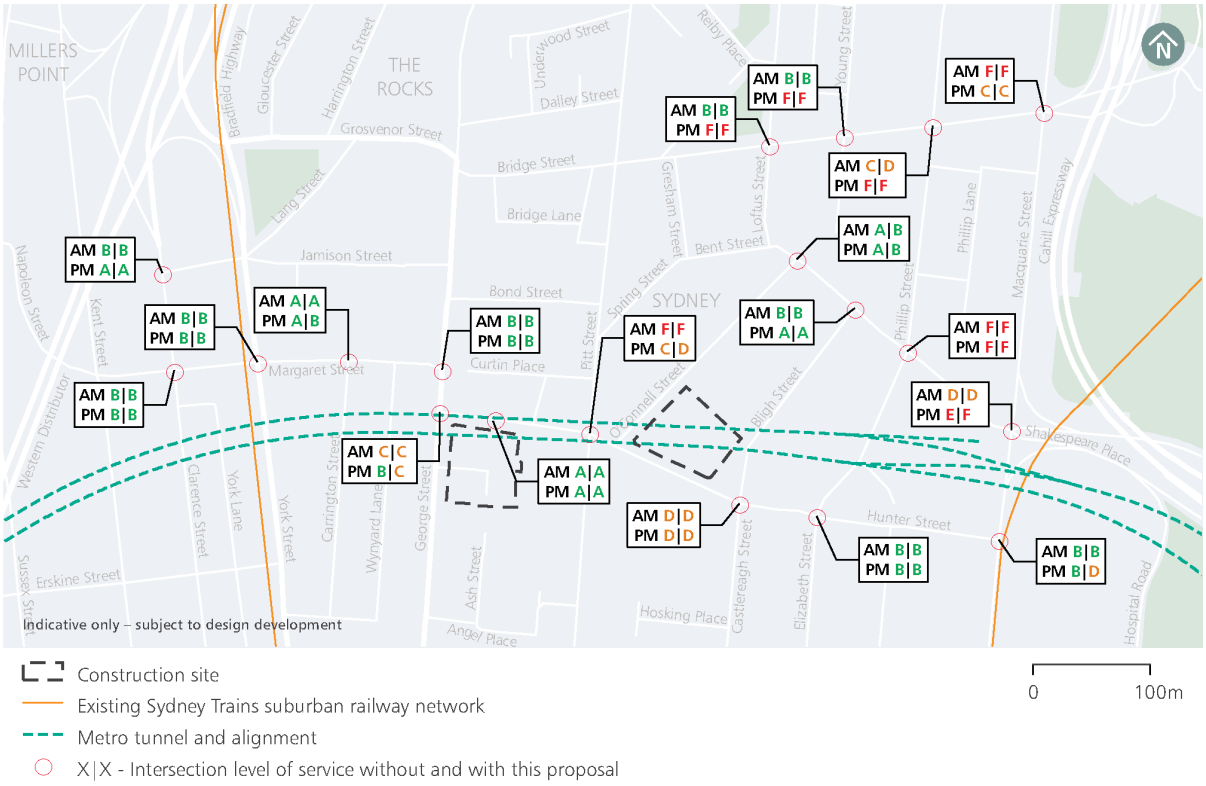

Figure 15-12 Construction site intersection performance – Hunter Street Station (Sydney CBD) (2026)

15.5.4 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 Hunter Street Station (Sydney CBD) are listed in Table 15-9.

Table 15-9 Transport mitigation measures – Hunter Street Station (Sydney CBD)

Ref	Impact/issue	Proposed mitigation measure	Timing
Transport			
EIS-TT12	Pedestrian crossing provision at Bligh Street / Hunter Street intersection	Widening of selected pedestrian crossings at the Bligh Street/ Hunter Street intersection to accommodate future pedestrian demands would be investigated in consultation with City of Sydney Council and Transport for NSW.	Operation
EIS-TT13	Footpath capacity	The potential for minor footpath upgrades on O'Connell Street, Hunter Street and at Richard Johnson Square (corner of Bligh Street and Hunter Street) would be investigated in consultation with key stakeholders, in response to increased pedestrian demand associated with the metro station.	Operation

15.6 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).

15.6.1 Baseline environment

Existing noise levels around Hunter Street Station (Sydney CBD) are controlled by road traffic noise and general urban noise associated with the Sydney CBD. As with any CBD, existing noise levels and are relatively high during all periods. The area surrounding Hunter Street Station (Sydney CBD) is mainly commercial and the nearest receivers directly adjacent to the site. There are also residential receivers, retail services and several hotels located within proximity to the site.

This precinct is covered by two noise catchment areas (NCAs) – NCA25 and NCA26. The site and NCAs are shown in Figure 15-13.

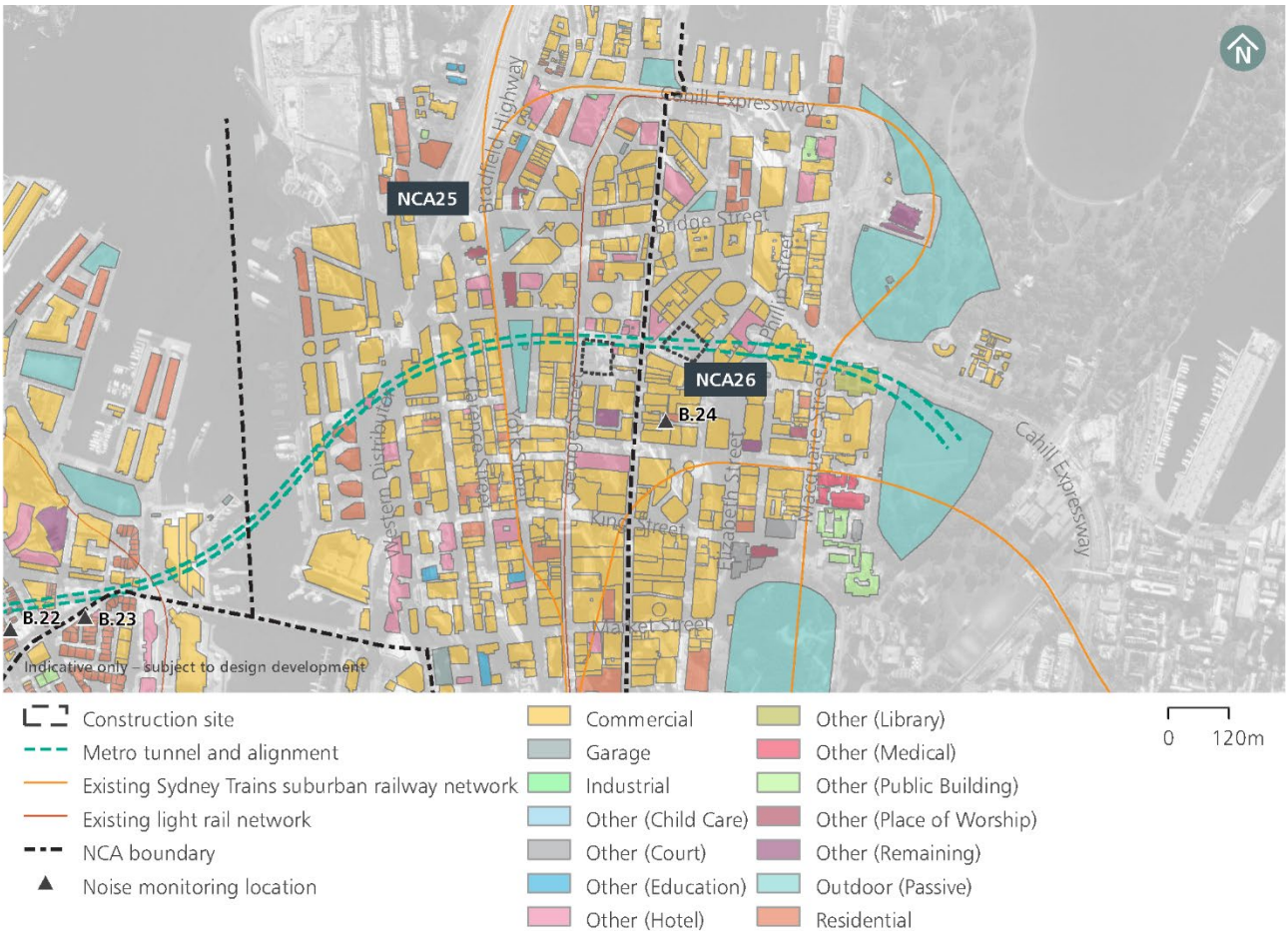

Figure 15-13 Location of sensitive receivers near Hunter Street Station (Sydney CBD) and NCAs

For the operational noise assessment, unattended noise monitoring carried out in 2017 for the *Sydney Metro Martin Place Stage 1 Amending DA – Acoustic Assessment Report* (Arup, 2018)) was used to inform the assessment of potential operational impacts at Hunter Street Station (Sydney CBD).

For the construction noise assessment, unattended noise monitoring carried out at sensitive receiver locations near Hunter Street Station (Sydney CBD) in 2015 for the Environmental Impact Statement for Sydney Metro – Chatswood to Sydenham (Sydney Metro, 2016) was used to inform the assessment of potential construction impacts at Hunter Street Station (Sydney CBD). These results are summarised in Table 15-10 and indicate that background noise levels generally reflect the commercial nature of the area.

Noise levels in the Sydney CBD are typically elevated due to relatively constant sources of noise and the measured levels are considered representative of current ambient noise conditions. This data would also represent the noise environment prior to the commencement of the proposed major civil construction between The Bays and Sydney CBD.

Short-term attended noise monitoring was also carried out at Hunter Street Station (Sydney CBD). The results were generally found to be consistent with the unattended noise monitoring. Detailed observations from the attended monitoring are provided in Technical Paper 3 (Operational noise and vibration) and Technical Paper 4 (Construction noise and vibration).

The operational and construction assessments have used different background locations as:

- there are no residential receivers located close to the Hunter Street Station (Sydney CBD) sites that are not shielded by intervening buildings
- there are no residential receivers located close to the Hunter Street Station (Sydney CBD) sites that are not shielded by intervening buildings
- the operational assessment has used the most recent available data to establish the ambient noise environment
- the construction assessment has used monitoring from the closest available residential receiver to appropriately establish noise management levels. These noise levels are lower than the monitoring used for the operational assessment and, as such, the assessment is conservative.

Table 15-10 Summary of unattended noise monitoring – Hunter Street Station (Sydney CBD)

Location ID	Noise logger location	Noise level (dBA)[1,2]					
		Background noise (RBL)			Ambient noise level (L_{Aeq})		
		Day	Evening	Night	Day	Evening	Night
n/a	50 Martin Place, Sydney	64	61	58	66	64	62
B.24	1 Hoskings Place, Sydney	61	56	52	66	62	63

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

15.6.2 Operational impact assessment

The operational noise impacts associated with eastern and western sites for Hunter Street Station (Sydney CBD) has been assessed for the nearest and most noise affected commercial receivers for each source type as presented in Table 15-11.

The results indicate that the predicted noise levels would be compliant with the design noise criteria, except for receivers directly adjacent to the tunnel ventilation system during the daytime, evening and 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. Given the scope for future industrial development in the Sydney CBD is limited, the -5dB correction which is typically applied to the amenity criteria is not necessarily warranted and the amenity acceptance criteria are considered to be more appropriate at this location. Noise impacts outlined above comply with the amenity acceptance criteria.

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

Table 15-11 Operational noise levels – Hunter Street Station (Sydney CBD) (eastern site)

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Hunter Street – commercial		
Daytime	60	59
Evening	60	59
Night-time	60	57
Emergency mode	65 (70[2])	**70**
Bligh Street (adjacent) – commercial		
Daytime	60 (65[2])	**63**
Evening	60 (65[2])	**63**
Night-time	60 (65[2])	**62**
Emergency mode	65 (70[2])	**68**
O'Connor Street Hotel – commercial		
Daytime	63	50
Evening	53	50
Night-time	48	47
Emergency mode	53	53
Draught relief noise impacts	70 L_{AFmax}	56

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 15-12 Operational noise levels – Hunter Street Station (Sydney CBD) (western site)

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Hunter Street hotel (opposite) – commercial		
Daytime	63 (68[2])	54
Evening	53 (58[2])	**54**
Night-time	48 (53[2])	**50**
Emergency mode	53 (58[2])	**56**
Hunter Street / George Street (adjacent) – commercial		
Daytime	60 (65[2])	**63**
Evening	60 (65[2])	**63**
Night-time	60 (65[2])	**62**
Emergency mode	65 (70[2])	**68**
George Street (opposite) – commercial		
Daytime	60 (65[2])	59
Evening	60 (65[2])	59

Source	Criteria[1], dB(A)	Predicted noise level ($L_{Aeq,15min}$)
Night-time	60 (65[2])	56
Emergency mode	65 (70[2])	65

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

15.6.3 Construction impact assessment

The construction scenarios and anticipated working hours at the Hunter Street Station (Sydney CBD) construction sites are shown in Table 15-13. 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 15-1 for the indicative construction program for Hunter Street Station (Sydney CBD).

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 15-13 Construction activities and working hours – Hunter Street Station (Sydney CBD)

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 Hunter Street Station (Sydney CBD) construction sites are summarised in Table 15-14 for all residential receivers and in Table 15-15 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 is expected to last for around 24 months.

Table 15-14 Overview of NML exceedances (residential receivers) – Hunter Street Station (Sydney CBD)

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	-	-	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Peak		-	-	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling	Typical	1	-	-	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Peak		-	-	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Station / facility construction	Typical	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Peak 1		-	-	-	-	-	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a
	Peak 2		-	-	-	1	-	-	1	-	-	n/a	n/a	n/a	n/a	n/a	n/a

Table 15-15 Overview of NML exceedances (other sensitive receivers) – Hunter Street Station (Sydney CBD)

Scenario	Activity	Duration (months)	Number of receivers exceeding NML														
			Commercial			Court			Hotel			Hotel (Night)			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
Site establishment and public domain work	Typical	18	4	4	-	-	-	-	-	1	-	n/a	n/a	n/a	1	-	-
	Peak		13	8	-	-	-	-	2	1	-	n/a	n/a	n/a	1	-	-
Piling	Typical	1	5	7	-	-	-	-	-	1	-	n/a	n/a	n/a	1	-	-
	Peak		13	8	-	-	-	-	3	1	-	n/a	n/a	n/a	1	-	-
Station/facility construction	Typical	24	8	-	-	-	-	-	1	-	-	3	1	-	-	-	-
	Peak 1		9	7	-	-	-	-	1	1	-	n/a	n/a	n/a	1	-	-
	Peak 2		25	10	8	1	-	-	2	2	1	n/a	n/a	n/a	1	1	-

The findings of the worst-case construction noise impact assessment at the Hunter Street Station (Sydney CBD) construction sites during the daytime indicate:

- the nearest receivers to the site include commercial and 'other sensitive' receivers, with residential receivers located further away from the construction site. 'Moderate' to 'high' impacts are predicted during noisy work, particularly when noise-intensive equipment such as concrete saws are being used as part of station/facility construction. 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 are 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. 'High' or 'moderate' worst-case impacts are predicted at:
    - 'high' at The Comfort Hotel Sydney
    - 'moderate' at A by Adina Hotel Sydney
    - 'moderate' at Radisson Blu Plaza Hotel Sydney
    - 'moderate' at 7 News Sydney.

The findings of the worst-case construction noise impact assessment at the Hunter Street Station (Sydney CBD) construction sites during the night-time indicate:

- noise levels at the majority of receivers are predicted to comply with the noise management levels
- 'moderate' impacts are predicted at the closest hotel receiver
- 'low' impacts are predicted at three more distant hotels.

In the event that Hunter Street Station (Sydney CBD) is used to support rail systems fit-out work, this would likely result in the following potential impacts:

- negligible exceedances of the noise management level at the nearest residential receivers during the daytime
- negligible exceedances of the noise management level at the nearest residential receivers during the night-time
- moderate 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

No receivers are predicted to be highly noise affected around the Hunter Street Station (Sydney CBD) construction sites.

Sleep disturbance

A sleep disturbance screening assessment has been completed for the construction work and is summarised in Table 15-12. There would be no sources of vibration as part of operation of the station. Potential operational vibration impacts from trains operating in the tunnels are addressed in Chapter 16 (Tunnels) of this Environmental Impact Statement.

No sleep disturbance impacts are predicted from the proposed work at the Hunter Street Station (Sydney CBD) construction sites.

Vibration impacts

Construction work for this proposal at Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) construction site, 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 and haul routes. The forecast construction traffic volumes outlined in Table 15-6 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 Hunter Street Station (Sydney CBD) construction sites are anticipated to have a greater than 2 dB increase.

15.6.4 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, Sydney Metro's CEMF 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.

15.7 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).

15.7.1 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 previous Sydney Metro West planning application.

Areas within the Hunter Street Station (Sydney CBD) construction sites under the previous Sydney Metro West planning application will have been cleared of existing structures and vegetation, with the station box excavated.

Under the previous Sydney Metro West planning application, and subject to approval, all archaeological investigations would have been carried out within the approved Hunter Street Station (Sydney CBD) construction sites.

The Hunter Street Station (Sydney CBD) includes two sites – Hunter Street Station (Sydney CBD) western site and Hunter Street Station (Sydney CBD) eastern site. For the purpose of this heritage assessment, the study area for Hunter Street Station (Sydney CBD) 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 impact 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 Hunter Street Station (Sydney CBD) western site is surrounded by development in the form of multi-storey office blocks, many with ground-floor retail, hotels and entertainment. The Hunter Street Station (Sydney CBD) eastern site is surrounded by mixed-use office buildings. The Hunter Street Station (Sydney CBD) study area and existing heritage items within the study area are shown in Figure 15-14.

Site history

Following European settlement at Port Jackson, Sydney emerged as the hub of government and administration in the new colony. The freshwater source later known as the Tank Stream played a key role in the selection of the Port Jackson settlement, and as the colony grew, the water source was put under pressure and increasingly polluted as Sydney Town developed around it. The Tank Stream served as a demarcation between the government's administrative centre and the convict settlement. In 1860, the Tank Stream around Hunter and Bridge Streets (to the north of the construction sites) was covered and connected to an open stone drain at Bridge Street. Currently, the portion of the Tank Stream between Hunter Street in the north and Martin Place in the south consists of an original stone section and early brick oviform section of the sewer on the southern side of Hunter Street with a modern concrete and steel sewer constructed further to the south.

Leases for the land around the study area were granted from the 1790s onwards, with relatively ephemeral development from the first decades of the 19th century onwards in the form of small timber huts. The mid to late 1840s, however, appears to have ushered in an increase in substantial development with well-built, finely detailed buildings like the former Skinners Family Hotel on the corner of George Street and Hunter Street erected in 1845. The study area was quite densely developed and built upon by 1880s, with the Sydney CBD evolving from a manufacturing and warehousing function to increasingly commercial business premises. During the 1900s, commercial businesses within the study area continued to flourish, with new developments being erected, including a 10-floor metropolitan building (plus mezzanine and basement office) at the corner of Hunter Street and O'Connell Street. Post-war booms in population and economic growth contributed to ever increasing pressure on land within the city, leading to a wave of mass re-development and the erection of many high-rise buildings around the study area from the 1960s onwards.

Figure 15-14 Heritage items within the study area – Hunter Street Station (Sydney CBD)

15.7.2 Impact assessment

Built heritage impact assessment

Table 15-16 summarises the potential impacts of construction and operation of this proposal on built heritage items within the study area at Hunter Street Station (Sydney CBD).

Potential impacts to built heritage items at Hunter Street Station (Sydney CBD) would generally be neutral, or negligible, and up to minor. Management of potential impacts is outlined in Section 15.7.3. A draft Heritage Interpretation Strategy has been prepared for this proposal (Appendix K). 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 15-16 Impacts on significance of built heritage items – Hunter Street Station (Sydney CBD)

Item, listing and significance	Potential impact	Magnitude
Tank Stream SHR item no. 00636 Sydney Water s170 item no. 4573709 SLEP 2012 item no. I1656 RNE Place ID 14311 NTR no. 6455 State	**Direct impact** The heritage curtilage of the item is located within the Hunter Street Station (Sydney CBD) western construction site, where the outer boundary of the site extends slightly to the east. The section of the Tank Stream located within the construction site is believed to be modern concrete/steel, which was assessed in the Conservation Management Plan (Sydney Water, 2005) as of local/little significance. Although this fabric has been assessed as of local/little significance, the whole course of the Tank Stream, including existing re-routing from the original water course is assessed as of exceptional State significance. Further investigation of the Tank Stream would be carried out as part of the Archaeological Research Design that would be developed as part of the previous Sydney Metro West planning application. Construction work supporting the introduction of metro station services buildings (including the proposed station entrance fronting Hunter Street) would be located to the west of the underground heritage item. As part of the design for Hunter Street Station (Sydney CBD), the fabric and alignment of the Tank Stream within the study area would be protected and not directly modified in any way.	**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, and vibration levels are not anticipated to exceed the cosmetic damage screening criteria at this heritage item.	**Neutral**
	Temporary indirect (visual) impacts The Tank Stream is located wholly underground and has no significant view lines or heritage significant setting. Construction activities would therefore not result in any temporary indirect (visual) impacts to this item.	**Neutral**
	Permanent indirect (visual) impacts The Tank Stream is located wholly underground and has no significant view lines or heritage significant setting. The metro station buildings and public domain work would not result in any permanent indirect impacts to this item.	**Neutral**
Bennelong Stormwater Channel No 29A	**Direct impact** The heritage curtilage of the underground item is located adjacent to the northern boundary (Hunter Street) of the Hunter Street Station (Sydney CBD) western construction site and within the north-eastern corner of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would not directly affect the heritage item.	**Neutral**

Item, listing and significance	Potential impact	Magnitude
Sydney Water s170 Item no. 4570854 Local	**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, and vibration levels are not anticipated to exceed the cosmetic damage screening criteria at this heritage item.	**Neutral**
	Temporary indirect (visual) impact The Bennelong Stormwater Channel is located wholly underground and has no significant view-lines or heritage significant setting. Construction activities would therefore not result in any temporary indirect (visual) impacts to this item.	**Neutral**
	Permanent indirect (visual) impact The Bennelong Stormwater Channel is located wholly underground and has no significant view-lines or heritage significant setting. The metro station buildings and public domain work would not result in any permanent indirect (visual) impacts to this item.	**Neutral**
Former Skinners Family Hotel SHR Item no. 00584 SLEP 2012 Item no. I1766 RNE Place ID 2395 NTR no. 6218 State	**Direct impact** The heritage item is located within the north-western corner of the western construction site. This proposal would introduce new station services infrastructure (including space for non-station uses), adjoining the eastern façade (Hunter Street) and southern façade (George Street). The southern and eastern elevations of the building would be protected during the construction phase of works and no impacts are anticipated to the fabric of the building during this phase. This proposal includes the introduction of station services building (about four to five storeys high) directly adjacent to the heritage item. The physical interface between the heritage item's southern and eastern elevations would be developed during detailed design, however based on the construction methodology proposed, this proposal is not anticipated to physically impact the existing walls of the heritage item.	**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 and vibration levels are not anticipated to exceed the cosmetic damage screening criteria at this heritage item.	**Neutral**
	Temporary indirect (visual) impact Protective hoarding would be established around the heritage item that may temporarily impede views of the lower facades on the northern and western side of the building. While the hoarding would also cover views of the whole of the eastern and southern elevations, the latter two façades are not considered significant view lines. Construction equipment and facilities would likely be visible surrounding the item, which would also reduce the prominence of the building within the streetscape.	**Minor**

Item, listing and significance	Potential impact	Magnitude
	Permanent indirect (visual) impact The station building at the Hunter Street Station (Sydney CBD) western site would be about four to five storeys in elevation and would be of substantial visual mass to the south and east of the heritage item. Heritage significant views of the corner facades of the building would not be obstructed and clear views of the heritage significant detailing, including the projecting hoods over windows and the painted brickwork of the façade, would be retained. The station services building would be consistent with the previous scale of development adjacent to the item and development within the surrounding streetscape. However, the new station building would likely visually dominate the street corner and impact the significant prominence of the building within the streetscape.	**Minor**
NSW Club House Building SHR Item no. 00145 SLEP 2012 Item no. I1676 RNE Place ID 2206NTR no. 6092 State	**Direct impact** The NSW Club House Building is an item of high heritage significance and is rare as the only surviving example of a nineteenth century gentlemen's club in Sydney. The heritage item is located abutting the north-eastern corner of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would introduce a station services building adjacent to the southern elevation of the item. The building would be protected during the construction phase of works and no inadvertent impacts are anticipated to the fabric of the building during this phase. The physical interface between the heritage item's southern elevation would be developed during detailed design; however, the station services building would not physically impact the existing fabric of the heritage item.	**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, and vibration levels are not anticipated to exceed the cosmetic damage screening criteria at this heritage item.	**Neutral**
	Temporary indirect (visual) impact Construction hoarding would be established around the outer edge of the Hunter Street Station (Sydney CBD) eastern construction site, with ancillary construction facilities, including water treatment and power. Tall plant and equipment would be visible from the heritage item. While these structures may overshadow the heritage item, the item is not considered significant for its prominence or contribution to the streetscape, and the construction activities would not obscure or obstruct heritage significant views of the sandstone street-facing façade of the building.	**Negligible**
	Permanent indirect (visual) impact The heritage item is located along the north-eastern boundary of the Hunter Street Station (Sydney CBD) eastern site. This proposal would introduce a station services building immediately to the south of the item that would be consistent with the existing scale of development along the streetscape. Existing development in this area has largely overshadowed the heritage item and the new station building would result in similar overshadowing.	**Negligible**

Item, listing and significance	Potential impact	Magnitude
	The heritage item is not considered significant because of its contribution or prominence in the streetscape; however, the design of this proposal (set back to align with the street alignment established by the NSW Club House) would not interrupt views of the significant architectural features of its street frontage.	
Former Bank – Delfin House SLEP 2012 Item no. I1903 RNE Place ID 2206 NTR no. 6403 Local	**Direct impact** The heritage item is located abutting the north-eastern corner of the Hunter Street Station (Sydney CBD) eastern construction site. The building would be protected during the construction of this proposal and no inadvertent impacts are anticipated to the fabric of the building during this phase. The physical interface between the heritage item's southern elevation would be developed during detailed design; however, this proposal would not physically impact the existing fabric of the heritage item.	**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, and vibration levels are not anticipated to exceed the cosmetic damage screening criteria at this heritage item.	**Neutral**
	Temporary indirect (visual) impact Construction activities for this proposal would include site establishment hoarding and the use of tall machine plant in proximity to this heritage item. The heritage item would not be overshadowed by these activities and the construction work would not obstruct views of the heritage significant Art Deco architectural detailing of the street façade.	**Negligible**
	Permanent indirect (visual) impact The eastern station services building (about four to five storeys) would be constructed directly to the south of this 15-storey heritage item along O'Connell Street and would not overshadow the item. The station services building would not interrupt or obscure significant views of the granite archway entrance and other heritage significant Art Deco detailing on the street façade of the building.	**Negligible**
Richard Johnson Square SLEP 2012 Item no. I1673 RNE Place ID 2363 NTR no. 6093 (memorial only) Local	**Direct impact** The heritage item is located adjacent to the south-eastern edge of the Hunter Street Station (Sydney CBD) eastern construction site. The site would directly connect with a proposed station through-site link and would likely include tie-in work with minor physical modification of the landscaping/pavement, which would consider the heritage significance of the site as a small public park. Construction hoarding for the Hunter Street Station (Sydney CBD) eastern construction site would not include this heritage item, which would be excluded from the zone of work.	**Neutral**
	Settlement and vibration impacts Richard Johnson Square has a small sandstone memorial located in the centre of the item. Vibration levels from the surrounding construction works are predicted to be below the cosmetic damage screening criteria to the memorial. Potential direct impacts associated with vibration are not anticipated.	**Neutral**

Item, listing and significance	Potential impact	Magnitude
	Temporary indirect (visual) impact The heritage item would be located outside the Hunter Street Station (Sydney CBD) eastern construction site and construction activities to the west of this item would not impede significant views of the sandstone memorial or interrupt the heritage significant use of the space as a small public park.	**Negligible**
	Permanent indirect (visual) impact The station services building (about four to five storeys) to the west of the item would not interrupt or impede heritage significant views of the sandstone memorial or the significant use of the space as a public park. The integration of the heritage item into the proposed station entrance building, including proposed public domain work and through-site link, would improve public access and use of the space, which would be a positive heritage outcome.	**Negligible positive**
City Mutual Life Assurance Building SHR item no. 00585 SLEP 2012 item no. I1675 RNE Place ID 1814 NTR no. 6091 AIA listing no. 4700629 State	**Direct impacts** The heritage item is located about 35 metres east of the Hunter Street Station (Sydney CBD) eastern construction site and would not be physically affected by 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 for this proposal would be visible from the heritage item; however, these works would not overshadow or obstruct the heritage significant view lines and street corner prominence of the heritage item on the eastern side of Bligh Street.	**Negligible**
	Permanent indirect (visual) impact The development of the station services building (about four to five storeys high) on the opposite side of Bligh Street from this item would not interrupt or overshadow heritage significant views of the building's façade or prominence on the Bligh and Hunter Street intersection.	**Negligible**
Perpetual Trustee Company SHR item no. 00678 SLEP 2012 item no. I1810 RNE Place ID 2424 NTR no. 6317 AIA listing no. 4700628 State	**Direct impact** The heritage item is located about 20 metres south of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would not directly affect the heritage curtilage of the item or affect any of its physical fabric.	**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 hoarding, site facilities and tall machine plant at the Hunter Street Station (Sydney CBD) eastern construction site would not overshadow this heritage item from the opposite side of Hunter Street, nor temporarily obstruct significant view lines of the street façade of the building.	**Negligible**

Item, listing and significance	Potential impact	Magnitude
	Permanent indirect (visual) impact The eastern station services building (including station entry and public domain) would be located immediately opposite the item, about 20 metres to the north of the item. The Perpetual Trustee Company building is a State heritage item of high significance and has a prominent and positive aesthetic contribution to the Hunter Street streetscape. The station services building will be scaled to compliment the Perpetual Trustee building (about four to five storeys) and would not compete with the prominence of the heritage item on the southern side of the street nor obstruct significant views of the architectural detailing on its façade.	**Negligible**
Public Trust Office SHR item no. 01019 Department of Justice and Attorney General S170 Register (2011) [no item no. provided] SLEP 2012 item no. I1904 State	**Direct impact** The heritage item is located about 20 metres north of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would not directly affect the heritage curtilage of the item or affect any physical fabric of 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 works would occur about 20 metres to the south of the heritage item behind construction hoarding. Tall machine plant and site facilities at the Hunter Street Station (Sydney CBD) eastern construction site would likely be partially visible from the street frontage of the item. However, these facilities and activities would not obscure heritage significant views of the building's street façade on the other side of O'Connell Street.	**Neutral**
	Permanent indirect (visual) impact The Public Trust Office building is a State heritage item that makes a positive aesthetic contribution to the O'Connell Street streetscape. Vistas to the building along O'Connell Street would not be impacted by this proposal, including the introduction of station services infrastructure (including a metro station entry fronting O'Connell Street), which would be located about 20 metres south of the item. As such, due to the siting of these works, this proposal would not obstruct or overshadow significant existing views to the heritage item.	**Neutral**
Little Hunter and Hamilton Street Precinct SHR item no. 00599 SLEP 2012 item no. I1808 State	**Direct impact** The heritage item is located about 20 metres north of the Hunter Street Station (Sydney CBD) western construction site. This proposal would not directly affect the heritage curtilage of the item and no works are proposed that would modify the physical fabric of the heritage 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**

Item, listing and significance	Potential impact	Magnitude
	Temporary indirect (visual) impact Construction activities including site hoarding, the establishment of site facilities and the use of tall machine plant on the other side (southern side) of Hunter Street would not obstruct the heritage significant views of the Victorian and Inter-War era architectural elements of the precinct, nor interrupt the heritage significant streetscape and laneways of the item.	**Negligible**
	Permanent indirect (visual) impact The station services building (about four to five storeys) on the southern side of Hunter Street to the south of this heritage item would not obstruct or overshadow heritage significant views of the street and laneway frontages of this heritage item. The heritage significant street and laneway patterns of the precinct would also not be affected by the proposed station services buildings, including station entry and associated public domain.	**Negligible**
NSW Sports Club SHR item no. 00599 SLEP 2012 item no. I1808 RNE Place ID 2441 State	**Direct impact** The heritage item is located approximately 20 metres north of the Hunter Street Station (Sydney CBD) western construction site. This proposal would not directly affect the heritage curtilage of the item, nor would the physical fabric of the item be modified.	**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 The establishment of site hoarding and site sheds and facilities for the Hunter Street Station (Sydney CBD) western construction site, as well as the use of heavy machine plant, would not obstruct or overshadow significant view lines of the architectural elements of this item on its Hunter Street frontage.	**Negligible**
	Permanent indirect (visual) impact A station services (about four to five storeys) building would be introduced on the opposite side of Hunter Street to this heritage item. The construction of the new station services building would not obscure or obstruct heritage significant views of the Hunter Street façade of this item, and the introduction of a new through-site link terminating on Hunter Street directly to the south of this item would improve view lines towards its heritage significant features.	**Negligible positive**
Former Wales House SHR item no. 00586 SLEP 2012 item no. I1915 RNE Place ID 1841 NTR no. 6543	**Direct impact** The heritage item is located approximately 20 metres north-west of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would not directly affect the heritage curtilage of the item, nor would any physical fabric of the item be affected.	**Neutral**
	Settlement and vibration (visual) impact 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**

Item, listing and significance	Potential impact	Magnitude
AIA listing no. 4700660 State	**Temporary indirect (visual) impact** The Hunter Street Station (Sydney CBD) eastern construction site would be established about 20 metres east of the heritage item. The establishment of site hoarding, installation of site buildings and the use of tall machinery and plant would not obstruct significant views of the Inter-War Palazzo decorative architectural elements on its street façades, nor would the construction facilities and activities overshadow or reduce the heritage significant prominence of the building on its narrow corner block.	**Negligible**
	Permanent indirect (visual) impact A station services building (about four to five storeys) would be introduced on the opposite side of O'Connell Street from this heritage item. The station services infrastructure would be smaller than the 12-storey heritage item and would not overshadow its heritage significant corner prominence. The station services infrastructure would not obstruct heritage significant views of the item's decorative external elements including sandstone detailing and fenestration patterning.	**Negligible**
Former Industrial Building 'Manufacturers Mutual' SLEP 2012 item no. I1902 RNE Place ID 19546 NTR no. 6402 Local	**Direct impact** The heritage item is located about 25 metres north-east of the Hunter Street Station (Sydney CBD) eastern construction site. This proposal would not directly affect the heritage curtilage of the item nor would any of the item's physical fabric be modified by 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 The Hunter Street Station (Sydney CBD) eastern construction site would not be visible from this item on O'Connell Street, and construction work at this site would therefore not indirectly impact heritage significant views of the building façade and architectural design on O'Connell Street during the construction phase.	**Neutral**
	Permanent indirect (visual) impact The station services building (about four to five storeys) at the Hunter Street Station (Sydney CBD) eastern site would not be visible from this heritage item on O'Connell Street. The heritage significant views of the Art Deco sandstone and masonry façade of the building would not be overshadowed or obstructed by this proposal.	**Neutral**
Ash Street Laneway SLEP 2012 item no. I1666 RNE Place ID 2404 Local	**Direct impact** The Ash Street laneway heritage item is located 25 metres south of the Hunter Street Station (Sydney CBD) western construction site. Construction works for this proposal would not occur within the heritage curtilage of this item and would not modify the physical fabric, nor alter the layout of, the heritage significant streets and facades of 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**

Item, listing and significance	Potential impact	Magnitude
	Temporary indirect (visual) impact Construction work at the Hunter Street Station (Sydney CBD) western construction site would not be visible from the Ash Street laneway heritage item, as the five-storey Ivy Complex would obstruct all direct sightlines. The heritage significant views of the building façades and street surface of this heritage item would not be obstructed or overshadowed by works during the construction phase.	**Neutral**
	Permanent indirect (visual) impact The station services building (about four to five storeys) would not be visible from the Ash Street Laneway heritage item as all direct sight lines are blocked between this heritage item and the Hunter Street Station (Sydney CBD) western station site by intervening buildings. Heritage significant views of laneway building façades and street surfaces would not be obstructed or overshadowed by this proposal.	**Neutral**
Former Commercial Building 'Peapes Menswear' SLEP 2012 item no. I1765 Local	**Direct impacts** This heritage item is located about 20 metres west of the Hunter Street Station (Sydney CBD) western construction site on the western side of George Street. No works are proposed within the heritage curtilage of this item and no physical fabric of this item would be affected by 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 The Hunter Street Station (Sydney CBD) western construction site would be secured with site hoarding, with site facilities established within the construction footprint. Tall machinery and plant would be visible above the site hoarding. While these elements would be visible from the heritage item, they would not obstruct significant views of the Inter-War Georgian Revival street frontage nor overshadow the patterning of the building within the George Street streetscape during the construction phase.	**Negligible**
	Permanent indirect (visual) impact A station services building (about four to five storeys) would be constructed across George Street, immediately east of this heritage item. The station services building would be much smaller than the heritage item and would not visually compete with the item in the streetscape nor overshadow the item. Significant views of the street frontage and the exposed northern elevation of the building would not be obstructed by this proposal.	**Negligible**
Grand Hotel SLEP 2012 item no. I1809 NTR no. 6316 Local	**Direct impact** The heritage item is located 25 metres north-east of the Hunter Street Station (Sydney CBD) western construction site. No construction work would occur within the heritage curtilage of this item and no physical fabric of this item would be affected.	**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**

Item, listing and significance	Potential impact	Magnitude
	Temporary indirect (visual) impact Construction work at the Hunter Street Station (Sydney CBD) western construction site would include site hoarding, the establishment of site facility buildings and the use of tall machinery and plant. While these construction facilities and activities would be visible from the heritage item, these would not obstruct significant views of the Grand Hotel pub exterior in the construction phase.	**Neutral**
	Permanent indirect (visual) impact A station services building (about four to five storeys) would be introduced at the Hunter Street Station (Sydney CBD) western site, which would be visible from the street frontage of this heritage item. However, the low elevation (about four to five storeys) and oblique angle of intervening view-lines across Hunter Street between the station services building and the heritage item would not result in any obstruction or overshadowing of the heritage significant external architectural detailing (including building façades, Juliette balconies and fenestration patterns) of the heritage item.	**Neutral**

Archaeological impact assessment

The area within the Hunter Street Station (Sydney CBD) construction sites has been assessed 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.

15.7.3 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, non-Aboriginal heritage would be managed in accordance with Sydney Metro's CEMF (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 Hunter Street Station (Sydney CBD) to address potential impacts are listed in Table 15-17.

Table 15-17 Non-Aboriginal heritage mitigation measures – Hunter Street Station (Sydney CBD)

Ref.	Impact/issue	Proposed mitigation measure	Timing
Non-Aboriginal heritage			
EIS-NAH2	Permanent indirect (visual) impact	Detailed design for aboveground station elements, ancillary facilities including public domain and landscaping work located in or near to heritage significant items, would have 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	Operation

Ref.	Impact/issue	Proposed mitigation measure	Timing
		• 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.	
EIS-NAH4	Direct (physical) and permanent indirect (visual) impacts	An Adaptive Reuse Strategy and Conservation Management Plan would be prepared for heritage items which would be integrated into the proposed metro station precincts. Relevant heritage items include: • 'Shops (potential archaeological site)' Parramatta LEP item I#703 • 'Kia Ora' (Parramatta LEP item #I716) • 'Skinners Family Hotel' (SHR #00584).	Construction
EIS-NAH5	Permanent indirect (visual) impact	The new public domain to the west of Richard Johnson Square (SLEP 2012 Item # I1673) would incorporate a landscape design that enhances the heritage significant elements and features of the adjacent item.	Construction

15.8 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).

15.8.1 Baseline environment

The previous Sydney Metro West planning application assessed the potential impacts of the establishment of the Hunter Street Station (Sydney CBD) construction sites. No additional footprint beyond that already assessed under the previous Sydney Metro West planning application is required for this proposal at the Hunter Street Station (Sydney CBD) construction sites.

Landscape and archaeological context

The Hunter Street Station (Sydney CBD) construction sites lie along a prominent north-south trending sandstone ridgeline that forms the spine of the Sydney CBD. The ridge is flanked on its eastern and western margins by moderate slopes and localised sandstone escarpments dropping down to the low-lying areas associated with the former estuarine Cockle Bay/Darling Harbour embayment/s to its west.

Prior to colonisation, the Tank Stream would have been the primary freshwater source for Aboriginal peoples occupying the Port Jackson area. Although now heavily modified, the Tank Stream was one of the principal influencing factors which guided Governor Arthur Phillip's selection of Sydney Cove above other bays in Port Jackson for the colony in 1788. A minor tributary of the Tank Stream, named in 1788 as Hospital Creek, followed a course across George Street before discharging to the Tank Stream near the area now occupied by Circular Quay. At this time, the Tank Stream itself was described as a narrow, 'ferny gully' which flowed north through a small valley from the elevated ground located in the area now bounded by Market, Park, Elizabeth and Pitt Streets and discharged into Sydney Cove (Owen & Macphail, 2018).

Reference to the 1:100,000 Geological Map Sheet for Sydney (9130) indicates the Hunter Street Station (Sydney CBD) construction footprint is 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 Hunter Street Station (Sydney CBD) construction sites as belonging to the Gymea soil landscape. Where present, these soils comprise shallow to moderately deep (30-100 cm) earthy sands on crests and inside of benches; shallow (<20 cm) siliceous sands on leading edges of benches; localised gleyed podzolic soils and podzolic soils on shale lenses. Much of the natural soil deposits within the Sydney CBD have been grossly impacted by development activities, particularly in the footprints of existing buildings and where underground carparking is present.

Previous Aboriginal cultural heritage assessments

The following summarises key investigations undertaken in the local environs that are relevant to the current assessment:

- Godden Mackay Pty Ltd (1997) undertook archaeological test excavation of Aboriginal site AHIMS#45-5-2581, an open camp site located at Angel Place, approximately 100 m south of the Hunter Street Station (Sydney CBD) construction sites and adjacent to the Tank Stream. A total of fifty-four flaked stone artefacts were recovered from the excavation
- Dominic Steele Consulting Archaeology (2002) undertook archaeological salvage excavation for an identified potential midden site, AHIMS #45-6-2637, located approximately 1.2 kilometres south of the Hunter Street Station (Sydney CBD) construction sites. No Aboriginal archaeological features were found with the shell deposit. It was concluded that the deposit was not of Aboriginal origin but likely associated with European use of the site
- Dominic Steele Consulting Archaeology (2006) undertook archaeological investigation of the site located near Kent, Erskine, Napoleon and Sussex streets. The site is located on a flat area about halfway up the eastern side of Cockle Bay, approximately 300 metres west of the Hunter Street Station (Sydney CBD) construction sites. Despite the high levels of ground disturbance, several Aboriginal objects were recovered
- 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). Portions of the Hunter Street Station (Sydney CBD) western construction site were identified as demonstrating low potential to contain truncated but in-situ deposits associated with the Gymea soil body beneath modern and historic disturbances, and sedimentary deposits of the Tank Stream below the modern Tank Stream drain. As such, the Hunter Street Station (Sydney CBD) western construction site was assessed as demonstrating a low potential to contain Aboriginal objects. This report identified that within the eastern construction site there are no Aboriginal sites or predicted areas of Aboriginal archaeological sensitivity. The assessment did not identify any site-specific cultural values within the 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 one previously recorded Aboriginal site (AHIMS ID #45-6-2796) within the Hunter Street Station (Sydney CBD) western construction site. However, AHIMS site card information indicates that the location data displayed on the AHIMS register has been inaccurately recorded. AHIMS site 45-6-2796 is located outside of the Hunter Street Station (Sydney CBD) western construction site. One Aboriginal stone artefact was identified during historical archaeological excavation carried out on the site. This stone artefact was recovered from a redeposited soil layer within the historical archaeological contexts of that site.

The likelihood of intact artefact-bearing archaeological deposits was considered to be low for the Hunter Street Station (Sydney CBD) western construction site (Sydney Metro, 2021a). Due to the landscape context and largely modified nature of the Hunter Street Station (Sydney CBD) eastern construction site and surrounding area, the likelihood of intact artefact bearing archaeological deposits is considered to be nil.

An updated search of the AHIMS database was undertaken on 21 August 2021 (Search ID 609567) which identified the same AHIMS site (AHIMS ID #45-6-2796) outside of the Hunter Street Station (Sydney CBD) western construction site.

Aboriginal community consultation and cultural values

Consultation was undertaken with Registered Aboriginal Parties for the *Sydney Metro West Environmental Impact Statement – The Bays and Sydney CBD* (Sydney Metro, 2021a) did not identify any site-specific cultural values at Hunter Street Station (Sydney CBD) construction sites.

Registered Aboriginal Party representatives noted a strong cultural connection to the general area. Representatives placed particular emphasis on the proximity to Sydney Harbour, which was noted as representing a valuable ceremonial location and as a former, tangible resource gathering place. Sacred women's sites were noted to be associated with freshwater resources in the area.

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 Hunter Street Station (Sydney CBD) construction sites undertaken with participation from Registered Aboriginal Party representatives from the Metropolitan Local Aboriginal Land Council. No areas of surface visibility were observed during this field investigation.

A field investigation has not been undertaken at the Hunter Street Station (Sydney CBD) construction sites for this proposal as the land required would be consistent with the site assessed and approved under the previous Sydney Metro West planning application.

15.8.2 Operational impact assessment

Direct impacts

No identified Aboriginal sites, objects and/or values would be directly impacted during operation of this proposal at Hunter Street Station (Sydney CBD).

Indirect impacts

No identified Aboriginal sites, objects and/or values would be indirectly impacted during operation of this proposal at Hunter Street Station (Sydney CBD).

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 C-B4, C-B5, and C-B6 a draft Heritage Interpretation Strategy (Appendix K) has been prepared for this proposal which details how Aboriginal heritage values would be interpreted 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).

15.8.3 Construction impact assessment

Direct impacts

The Hunter Street Station (Sydney CBD) construction sites would be established for the major civil construction work and the likelihood of intact artefact-bearing archaeological deposits being present at the western construction site (associated with AHIMS ID #45-6-2796) was assessed as low. The likelihood of intact artefact bearing archaeological deposits within the Hunter Street Station (Sydney CBD) western construction site is considered to be nil.

This proposal does not require any additional footprint areas at the Hunter Street Station (Sydney CBD) construction sites. Any potential direct impacts or disturbance to Aboriginal heritage items or cultural values would occur under the previous Sydney Metro West planning application. Therefore, no identified Aboriginal sites, objects and/or site-specific cultural values would be directly impacted during construction of this proposal at the Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) construction sites.

15.8.4 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 (Appendix F). The CEMF management objectives and mitigation measures to minimise impacts as relevant to this proposal as a whole.

15.9 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).

15.9.1 Baseline environment

The Hunter Street Station (Sydney CBD) would be situated within the heart of the Sydney CBD, near the financial district and one of the busiest precincts of the city for vehicular and pedestrian movement. This part of the Sydney CBD is traversed by several important civic streets including Hunter and George streets, which are lined by office towers, and intermittent historic buildings, street trees and public squares.

There would be two sites located on Hunter Street, situated between Bligh and George Street.

The Hunter Street Station (Sydney CBD) western site extends south of Hunter Street, from the corner of George Street, including the historic former Skinners Family Hotel building at the corner. Hunter Street Station (Sydney CBD) eastern site extends north of Hunter Street, between Bligh and O'Connell Streets. Alongside the proposed Hunter Street Station (Sydney CBD) western site, George Street is pedestrianised. The Wynyard light rail stop is located to the south of Hunter Street, on George Street and adjacent to the site. The eastern entry to Wynyard Station is located opposite the site on George Street.

The Hunter Street Station (Sydney CBD) eastern site would be located adjacent to Richard Johnson Square, at the corner of Bligh Street and Hunter Street. Richard Johnson Square is of local heritage value. The square is a triangular shape space with some trees, and a monument and plinth that marks this corner site.

As part of the previous Sydney Metro West planning application, all buildings within both these sites would have been demolished, excluding the State heritage listed former Skinners Family Hotel building (within the western site), which would be retained at the corner of Hunter and George Street. The site for this proposal would be enclosed by hoarding and there would be site access gates on Hunter Street.

Several street trees are located on Hunter Street, O'Connell Street and Bligh Street, providing shade and amenity to the streetscape and softening views within this intensely urban environment.

Section 15.3 provides further discussion of the intended future character local strategic plans relevant to Hunter Street (Sydney CBD). 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, are outlined in Table 15-18.

Table 15-18 Landscapes and public realm areas – Hunter Street Station (Sydney CBD)

Location	Baseline environment	Landscape sensitivity level
George and Hunter Street streetscapes (western site)	George Street and Hunter Street are major routes in the grid of Sydney CBD. They intersect at the proposed Hunter Street Station (Sydney CBD) western construction site, beside the State heritage listed former Skinners Family Hotel building. Awnings, trees and high-quality urban furnishings provide comfort and amenity to the pedestrian areas of George Street, with the edges activated by retail and cafe frontages	Regional

Location	Baseline environment	Landscape sensitivity level
Richard Johnson Square (eastern site)	Richard Johnson Square is adjacent to the Hunter Street Station (Sydney CBD) eastern construction site. The square is used as a local meeting place and includes trees, seating and a heritage listed monument and plinth. The monument was constructed in the mid-1920s to commemorate the site of the first church erected in Australia and is named after its chaplain, Reverend Richard Johnson. The monument provides visual interest within the surrounding urban area.	Local
Bligh, Hunter and O'Connell Street streetscapes (eastern site)	Bligh Street and O'Connell Street are two north-south aligned streets in the Sydney CBD grid, with the southern end of these streets intersecting with Hunter Street. In the area generally surrounding the Hunter Street Station (Sydney CBD) eastern construction site, these streets are lined by high-rise office towers with retail space, restaurants and cafés at street level. The Bligh Street tunnelling support site for Martin Place Metro Station (part of Sydney Metro City & Southwest) is located between Bligh Street and O'Connell Street, including demountable offices stacked to about three levels with hoarding along the Bligh Street frontage and an acoustic shed along the O'Connell Street frontage. The Hunter Street Station (Sydney CBD) eastern construction site established under the previous Sydney Metro West planning application, would utilise this construction site. Bligh Street, Hunter Street and O'Connell Street include several historic buildings, such as the former 'NSW Club' building beside the Hunter Street Station (Sydney CBD) eastern construction site, at 31 Bligh Street, and the former Wales House and 'Perpetual Trustee' buildings located opposite the construction site. Mature street trees along all three streets provide visual interest and amenity for pedestrians.	Local

Representative viewpoints

Representative viewpoints that have been selected to inform the daytime visual impact assessment are shown in Figure 15-15. These viewpoints would be of local sensitivity.

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

- **viewpoint 2: view south along George Street from corner of Margaret Street** – presents the interface of the western site with former Skinners Family Hotel and surrounding high-rise office and hotel developments
- **viewpoint 4: view north-east from corner of Hunter and Pitt streets** – presents the interface of the western site with the State heritage listed former Wales House building (now occupied by the Radisson Hotel, left of view)
- **viewpoint 5: view north-west from corner of Hunter and Castlereagh streets** – presents the interface of the western site with Richard Johnson Square (centre of view).

These viewpoints are assessed in further detail in this section. A detailed assessment of all viewpoints is provided in Technical Paper 6 (Landscape and visual amenity).

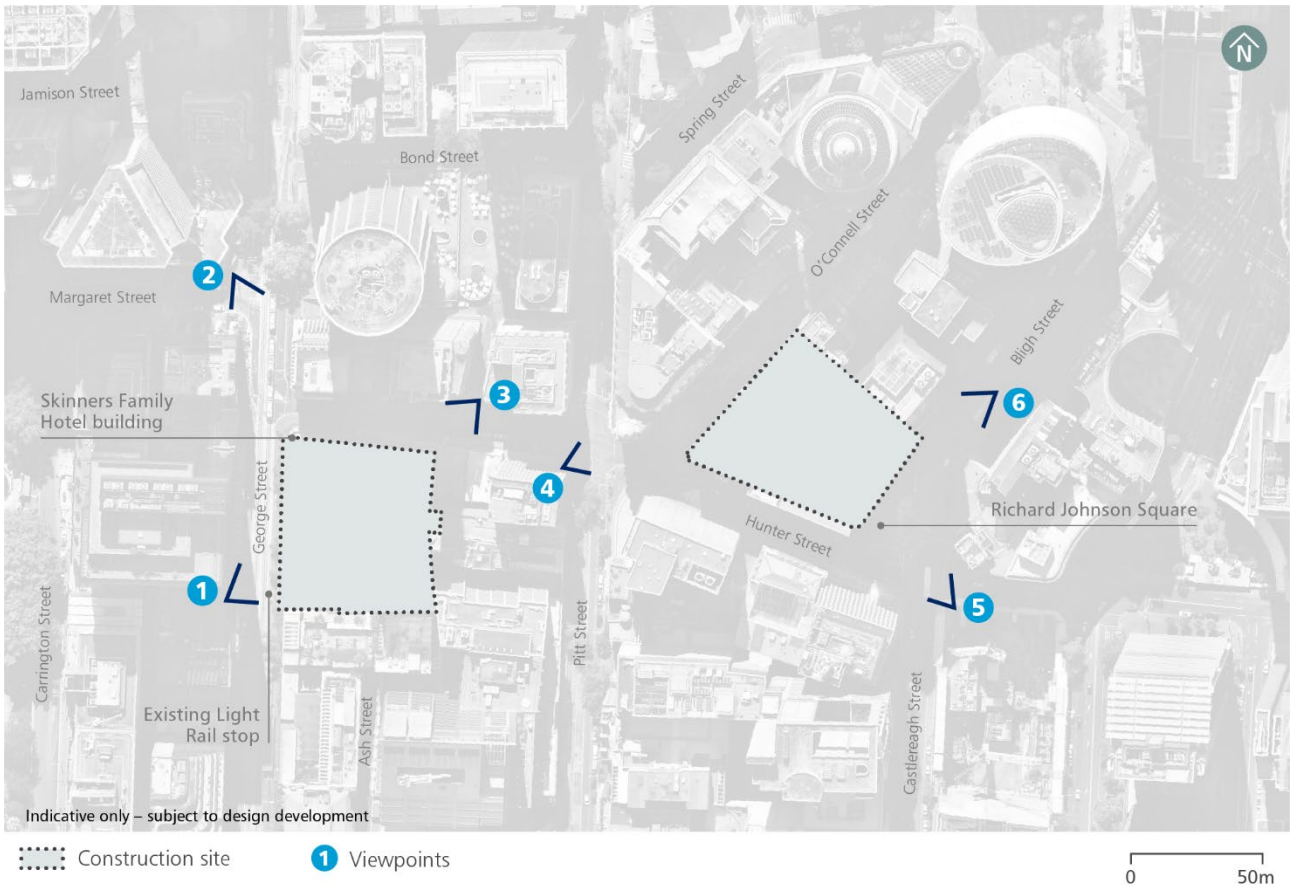

Figure 15-15 Representative viewpoints – Hunter Street Station (Sydney CBD)

Night-time visual sensitivity

The proposed Hunter Street Station (Sydney CBD) sites would be located in an area of high district brightness (A4) and would have a very low sensitivity at night. This is due to the concentration of medium- and high-rise commercial, residential and hotel buildings within this location. Streetlights and headlights from high volumes of vehicle traffic and the light rail would further add light to the night scene. Following the work carried out under the previous Sydney Metro West planning application, there would be security lighting remaining at the sites which would be required temporarily, during the construction of this proposal.

15.9.2 Operational impact assessment

Operation of this proposal at Hunter Street Station (Sydney CBD) would comprise underground and surface elements. The key elements of this proposal that would be visible are described in Section 15.2.

Landscape impact

Landscape impacts anticipated as a result of the operation of this proposal are summarised in Table 15-19.

Landscape impacts during the operation of this proposal at Hunter Street (Sydney CBD) would generally be moderate beneficial, due to improvements in legibility and accessibility of the surrounding area.

There would be new station entries addressing George Street and Hunter Street. Visible metro station entries would provide legibility and support public transport interchange and accessibility.

This proposal would include integration with the existing Richard Johnson Square, which would be designed in consultation with relevant stakeholders. Around the square there would be new public domain areas, including the areas surrounding the ground level of the eastern station building and extending along Bligh Street and Hunter Street. This square would be further activated by space for non-station uses (fit-out and use of which would be subject to separate approvals, where required).

Through site links would be provided within both the western and eastern sites, as well as footpath upgrades and a signalised crossing of Hunter Street, improving access and permeability for pedestrians.

Table 15-19 Landscape impacts during operation – Hunter Street Station (Sydney CBD)

Location	Landscape sensitivity level	Magnitude of change	Impact rating
George and Hunter Street streetscapes	Regional	Noticeable improvement	Moderate beneficial
Richard Johnson Square	Local	Considerable improvement	Moderate beneficial
Bligh, Hunter and O'Connell Street streetscapes	Local	Considerable improvement	Moderate beneficial

Daytime visual amenity impact

Visual amenity impacts anticipated as a result of the operation of this proposal are summarised in Table 15-20. Management of potential impacts is discussed in Section 15.9.4. An artist's impression of Hunter Street Station (Sydney CBD) during operation is shown in Figure 15-16. Potential station finishes would be identified as part of further design development and would be consistent with the principles and outcomes presented in the Design Guidelines (Appendix E).

Generally, there would be a minor beneficial to moderate beneficial visual impact during operation, due to new contemporary architecture that would be established to respect the adjacent heritage character buildings. Additionally, new public realm elements would generally improve the surrounding area.

Table 15-20 Daytime visual impacts during operation – Hunter Street Station (Sydney CBD)

Location	Sensitivity rating	Magnitude of change	Impact rating
Viewpoint 1: view north-east along George Street from the Wynyard light rail stop	Local	Considerable improvement	Moderate beneficial
Viewpoint 2: view south along George Street from corner of Margaret Street	Local	Noticeable improvement	Minor beneficial
Viewpoint 3: view south-west from corner of Hunter and Hamilton streets	Local	Noticeable improvement	Minor beneficial
Viewpoint 4: view north-east from corner of Hunter and Pitt streets	Local	Noticeable improvement	Minor beneficial
Viewpoint 5: view north-west from corner of Hunter and Castlereagh streets	Local	Noticeable improvement	Minor beneficial
Viewpoint 6: view south along Bligh Street	Local	Noticeable improvement	Minor beneficial

As noted in Section 15.9.1, the most representative viewpoints have been assessed in detail in this section. Potential impacts from these viewpoints would be as follows:

- **viewpoint 2: view south along George Street from corner of Margaret Street** – this viewpoint would experience a minor beneficial visual impact during operation, as the contemporary station architecture at the western site would improve the amenity of this view at street level and respect the character and setting of the former Skinners Family Hotel heritage building. The former Skinners Family Hotel building would continue to be protected and visible in the middle ground of this view. The proposed western station entrance building would be visible behind the former Skinners Family Hotel building, extending south along George Street and east along Hunter Street. This would include station services stepping up to the south to about five storeys, similar in height to the predominant building height of the buildings extending south along George Street. The station building would also extend west from the former Skinners Family Hotel building along Hunter Street, rising to the same height of this building. While there would be a new built form established across the middle ground of this view, the scale of the buildings surrounding the former hotel would maintain its prominence

- **viewpoint 4: view north-east from corner of Hunter and Pitt streets** – this viewpoint would experience a minor beneficial visual impact during operation due to improvements in the built form, and as the scale and appearance of the eastern aboveground station building would be visually compatible with the surrounding area. The eastern metro station building would be visible in the middle ground of this view, rising several stories above the street. The metro station entrance would be located on O'Connell Street, which would be widened in the vicinity of the station. A new through-site link would be visible beyond the station entrance facing O'Connell Street. There would be station services above the station entry, rising about four to five storeys above the station
- **viewpoint 5: view north-west from corner of Hunter and Castlereagh streets** – this viewpoint would experience a minor beneficial visual impact during operation, due to the provision of a building that is visually compatible with the surrounding urban setting as well as upgrades to the surrounding footpaths to integrate with the station entry. The eastern aboveground station building would be seen in the middle ground of this view, rising to about five storeys. The building would be set back from Richard Johnson Square, introducing a contemporary structure into this view. There would be potential future non-station uses providing activation facing Bligh Street. A new through site link would be seen to the north of the square, extending towards O'Connell Street. The height, scale and appearance of the aboveground station building would be visually compatible for this dense urban setting and respond to the height and scale of the adjacent heritage buildings.

The existing view and a photomontage of this proposal during operation at viewpoint 5 is provided in Figure 15-17 and Figure 15-18, respectively.

Indicative only – subject to design development

Figure 15-16 Artist's impression of the Hunter Street Station (Sydney CBD) western site during operation

Figure 15-17 Existing view from viewpoint 5 (view north-west from corner of Hunter and Castlereagh Streets) – Hunter Street Station (Sydney CBD) eastern site. Extent of previous demolition (under the previous Sydney Metro West planning application) is shown in blue

Indicative only – subject to design development

Figure 15-18 Photomontage from viewpoint 5 (view north-west from corner of Hunter and Castlereagh Streets) – Hunter Street Station (Sydney CBD) eastern site

Night-time visual amenity impact

The anticipated night-time visual impacts during operation are summarised in Table 15-21.

The station and public domain areas would be brightly lit to provide for customer safety. This would include lighting at the station entries and where station activation opportunities are established. All station lighting would be designed to minimise light spill and directed away from neighbouring properties. This proposal would, however, contribute to the existing general skyglow of the Sydney CBD and there would be additional lighting sources visible.

Table 15-21 Night-time visual amenity impacts during operation – Hunter Street Station (Sydney CBD)

Location	Sensitivity rating	Magnitude of change	Impact rating
Hunter Street Station (Sydney CBD)	A4: High district brightness	No perceived change	Negligible

15.9.3 Construction impact assessment

Construction of the Hunter Street Station (Sydney CBD) would require the continued use of the construction sites established under the previous Sydney Metro West planning application. The main elements that would be visible include the proposed works, construction site features, equipment and vehicle access routes described in Chapter 6 (Proposal description – construction) of this Environmental Impact Statement and Section 15.4.

Landscape impact

Landscape impacts anticipated as a result of the construction of this proposal are summarised in Table 15-22. Management of potential impacts is discussed in Section 15.9.4.

During construction of this proposal, there would generally be minor to moderate adverse temporary landscape impacts due to the continued presence of construction activity. This would maintain a temporarily reduced level of comfort and amenity for pedestrians, and reduced levels of street activation along frontages of the construction sites.

The proposed construction haulage route along Hunter Street would also detract from the pedestrian amenity and comfort along this street. There would be no direct landscape impact on the pedestrianised areas of George Street.

There would continue to be a gap in the building line along George Street and Hunter Street, which would be gradually reinstated as construction of the proposed metro station and space to support future non-station uses progresses. The former Skinners Family Hotel building is a local visual feature, which provides interest and variety to both streetscapes, and would be retained.

Construction site hoarding that would be established under the previous Sydney Metro West planning application would remain on site and the continued use of the site for this proposal (including use of large-scale machinery and vehicles) would result in the continued reduction in amenity for the affected sections of adjacent streets.

There would continue to be no direct impact on Richard Johnson Square during construction of this proposal. However, the amenity of the square would continue to be reduced by the proximity to major construction activity at the eastern construction site. The continued impact on footpaths adjacent to the construction site on Bligh Street and Hunter Street would continue to potentially divert pedestrians to surrounding footpaths and alter movement and access patterns through the square.

Table 15-22 Landscape impacts during construction – Hunter Street Station (Sydney CBD)

Location	Landscape sensitivity level	Magnitude of change	Impact rating
George and Hunter Street streetscapes	Regional	Noticeable reduction	Moderate adverse
Richard Johnson Square	Local	Noticeable reduction	Minor adverse
Bligh, Hunter and O'Connell Street streetscapes	Local	Noticeable reduction	Minor adverse

Daytime visual amenity impact

Visual amenity impacts as a result of the construction of this proposal are summarised in Table 15-23. Viewpoints would generally experience minor adverse temporary visual impacts during construction, due to the continued presence of construction sites. Management of potential impacts is discussed in Section 15.9.4.

Table 15-23 Daytime visual impacts during construction – Hunter Street Station (Sydney CBD)

Location	Sensitivity rating	Magnitude of change	Impact rating
Viewpoint 1: view north-east along George Street from the Wynyard light rail stop	Local	Noticeable reduction	Minor adverse
Viewpoint 2: view south along George Street from corner of Margaret Street	Local	Noticeable reduction	Minor adverse
Viewpoint 3: view south-west from corner of Hunter and Hamilton streets	Local	Noticeable reduction	Minor adverse
Viewpoint 4: view north-east from corner of Hunter and Pitt streets	Local	Noticeable reduction	Minor adverse
Viewpoint 5: view north-west from corner of Hunter and Castlereagh streets	Local	Noticeable reduction	Minor adverse
Viewpoint 6: view south along Bligh Street	Local	Noticeable reduction	Minor adverse

As noted in Section 15.9.1, the most representative viewpoints have been discussed in detail in this section. Potential temporary impacts for the duration of construction from these viewpoints would include the following:

- **viewpoint 2: view south along George Street from corner of Margaret Street** – this view would experience temporary minor adverse visual impacts during construction of this proposal, due to the continued presence of the construction site. The western construction site would continue to be visible in the centre of view, extending south from the corner of Hunter Street and George Street. The former Skinners Family Hotel would continue to be protected during construction. Hoardings would continue to be visible along the George Street site boundary, obstructing views to the street level construction activity within the site. Larger equipment would be visible rising above this hoarding with construction of the aboveground station building rising to a similar level to the heritage building. Construction vehicles would also be seen accessing and egressing the site and travelling along Hunter Street. However, the work would be partly absorbed into the surrounding urban setting
- **viewpoint 4: view north-east from corner of Hunter and Pitt streets** – this view would experience temporary a minor adverse visual impact during construction of this proposal, as the eastern construction site would continue to be seen in the centre of this view. The street trees removed during work caried out under the previous Sydney Metro West planning application would allow clear views to the site from this angle, including to the construction of a station building along the eastern side of O'Connell Street and adjacent space for non-station use (fit-out and use subject to separate approval, if required). Construction vehicles would be seen accessing the site from O'Connell Street and travelling along Hunter Street. Overall, while there would be a substantial change to this view associated with the construction work, the activity would be located behind hoarding. The scale of the work would be generally compatible with the existing construction activity seen in this view and somewhat absorbed into the surrounding urban setting
- **viewpoint 5: view north-west from corner of Hunter and Castlereagh streets** – this view would experience temporary a minor adverse visual impact during construction of this proposal, as the eastern construction site would continue to be visible, extending north from Hunter Street, between Bligh and O'Connell streets. The station services building would be constructed in the background of the view and would partially block views to the former NSW Club building. From this angle, the construction of new areas of public domain extending west from Richard Johnson Square towards the aboveground station building, would be visible. The street trees along Hunter and Bligh Streets would be retained and protected and would continue to filter views to the construction site. Construction vehicles would be seen travelling along Hunter Street in the foreground of this view. While there would be substantial changes seen during the construction of this proposal, the work would be largely absorbed into the urban setting.

To manage these potential impacts, management and mitigation measures are provided in Section 15.9.4 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 15-24.

Night work would be required at both the eastern and western construction site of Hunter Street Station (Sydney CBD). This would require lighting of much of the site including site offices, staff amenities, laydown areas and workshops. There would be additional headlights from heavy vehicles accessing the site and moving along Hunter Street. All lighting within the construction sites would be designed to minimise light spill and directed away from neighbouring property. This lighting would contribute to the general skyglow above the Sydney CBD and there would be direct light sources visible from surrounding areas. This lighting would continue the bright light levels currently seen across the construction site and would be largely consistent with the prevailing light levels of this area.

Table 15-24 Night-time visual amenity impacts during construction – Hunter Street Station (Sydney CBD)

Location	Sensitivity rating	Magnitude of change	Impact rating
Hunter Street Station (Sydney CBD)	A4: High district brightness	Noticeable reduction	Negligible

15.9.4 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 (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).

Mitigation measures that are specific to the operation and construction of Hunter Street Station (Sydney CBD) to address potential landscape and visual impacts are listed in Table 15-25.

Table 15-25 Landscape and visual amenity mitigation measures – Hunter Street Station (Sydney CBD)

Ref	Impact/issue	Mitigation measure	Timing
Landscape and visual amenity			
EIS-LV10	Visual impacts	Investigate opportunities with City of Sydney Council to provide public domain improvements to Richard Johnson Square.	Operation
EIS-LV16	Landscape impacts	Any new temporary structures facing Fred Kelly Place and Richard Johnson Square would be designed with a suitable urban design and/or landscape treatment to minimise visual amenity and landscape character impact where feasible and reasonable.	Construction

15.10 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) of this Environmental Impact Statement and Appendix D (Detailed assessment methodologies). The legislative context for the assessment is provided in Appendix B (Legislative and policy context).

15.10.1 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, buildings and other infrastructure on the land required for the Hunter Street Station (Sydney CBD) construction sites would be demolished, 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 Hunter Street Station (Sydney CBD) construction sites include fill material (0 – 4 metres below ground level, Quarternary deposits (4 to 7 metres below ground level) and Hawkesbury Sandstone (greater than 7 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 Hunter Street Station (Sydney CBD) (general 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 Hunter Street Station (Sydney CBD).

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 Hunter Street Station (Sydney CBD). No potential acid sulfate soils were identified within the construction sites and immediate vicinity. However, 'disturbed terrain' is located around 200 metres north and 400 metres west of the construction sites, 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. High risk acid sulfate soils are also located around 500 metres north and 650 metres west of the construction sites.

Contamination

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 S*ydney Metro West Environmental Impact Statement –The Bays and Sydney CBD* (Sydney Metro, 2021a) at Hunter Street Station (Sydney CBD) are described as follows:

- AEI 5(2) – Dry cleaning business (447 Kent Street, 500 metres south-west of construction sites) – low risk of groundwater contamination from volatile organic compounds, including chlorinated hydrocarbons
- AEI 6(2) – Former gasworks at Millers Point (300 metres north-west of construction sites) – low risk of groundwater contamination from hydrocarbons, ammonia, phenol and cyanide
- AEI 10(2) – Current dry cleaners (within western construction site) – low groundwater and vapour contamination risk from volatile organic compounds including chlorinated hydrocarbons
- AEI 12(2) – Current and historical storage of diesel for backup power supply generators within commercial buildings in general surroundings (outside of construction sites) – low soil and groundwater contamination from hydrocarbons, as contamination source will be excavated and removed under the previous Sydney Metro West planning application.

Overall, the risk of shallow soil contamination or encountering previously dumped construction waste within the existing construction site 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 requirements for any additional groundwater remediation.

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

Groundwater

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)
- 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 further in Table 15-26.

Table 15-26 Groundwater baseline environment – Hunter Street Station (Sydney CBD)

Aspect	Description
Groundwater levels and flow	Within the immediate station area, as a result of the previous Sydney Metro West planning application, the groundwater level to predicted to reduce to about 29 metres below ground level. This groundwater level is assumed to remain at the commencement of construction for this proposal. At the tanked station cavern, groundwater inflows would be minimised. The predicted groundwater inflows to the shafts (untanked) of up to about 0.6 litres per second as a result of the previous Sydney Metro West planning application are expected to continue at the commencement of construction for this proposal. As a result, 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) as a result of the previous Sydney Metro West planning application. Potential contaminants of concern include hydrocarbons and volatile organic compounds as detailed in Section 5.8.4 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 groundwater systems. Though considered to be unlikely, there is potential that saline water from Circular Quay could be drawn to the station, as discussed in Section 5.8.4 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), which forms the baseline environment for this proposal.
Groundwater users	Six registered bores reported to be used for monitoring purposes are expected to have a reduced groundwater level at the commencement of 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. No registered bores are expected to have a reduced groundwater level greater than two metres, as per minimal impacts considerations (NSW Aquifer Interference Policy (NSW Department of Primary Industries, 2012)), at the commencement of construction of this proposal.
Groundwater dependent ecosystems	No groundwater dependent ecosystems were identified within the predicted extent of groundwater level drawdown at the commencement of construction works 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.

Aspect	Description
Surface water and groundwater interaction	The interaction between surface water and groundwater in proximity to the Hunter Street Station (Sydney CBD) 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) permit • 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 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 any creeks associated with Cockle Bay and Circular Quay at the commencement of construction work for this proposal, as discussed in Section 5.8.8 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). This has been adopted as the baseline environment for this proposal.

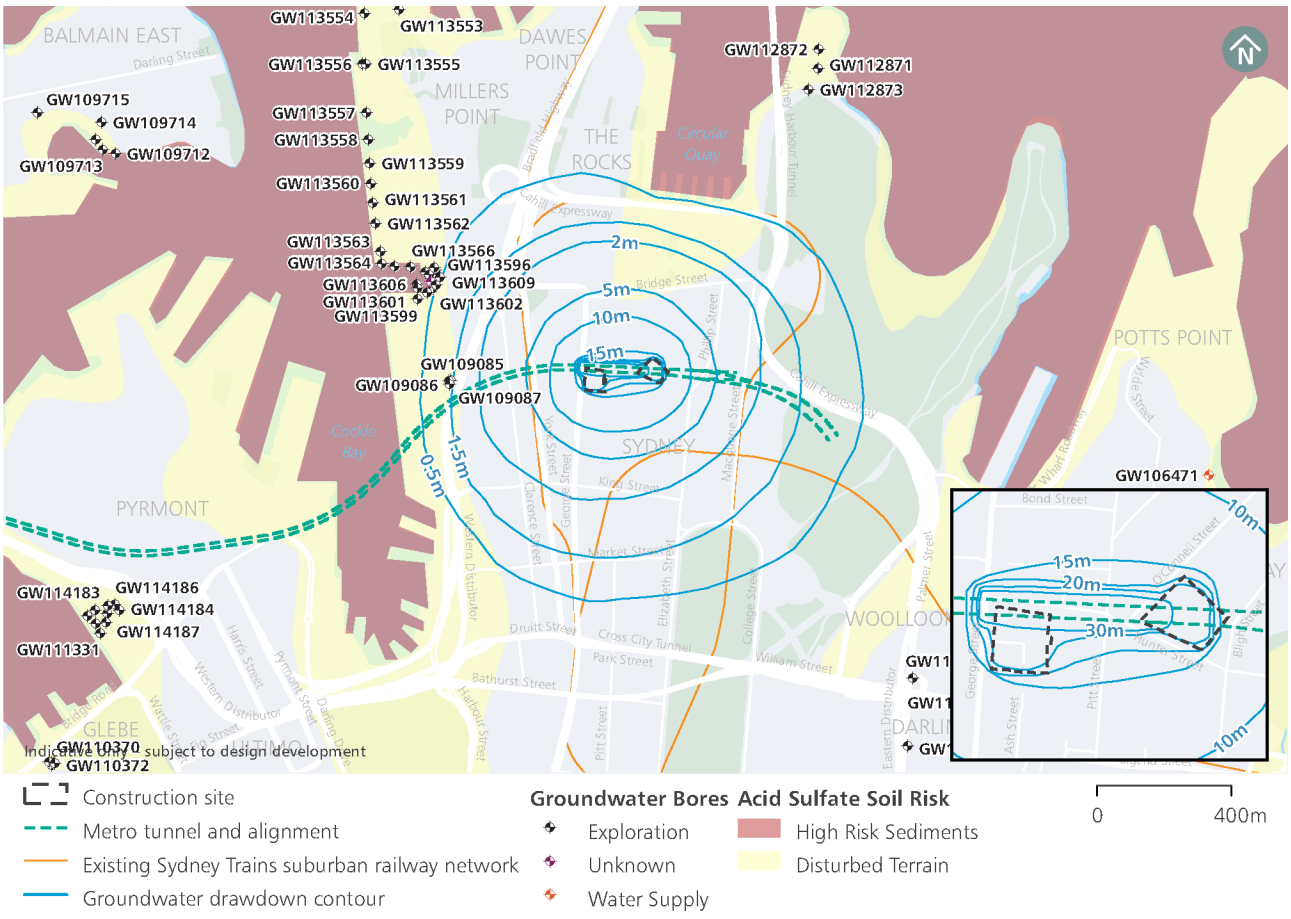

Figure 15-19 Groundwater baseline environment – Hunter Street Station (Sydney CBD)

15.10.2 Operational impact assessment

Soils

The operation of Hunter Street Station (Sydney CBD) is not expected to 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) the work carried out under the previous Sydney Metro West planning application in accordance with the relevant mitigation measures and conditions of approval. Groundwater drawdown could result in contaminated groundwater inflows into the untanked access shafts. The station would be tanked and therefore potentially contaminated groundwater inflows are 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) of this Environmental Impact Statement.

Operation of Hunter Street Station (Sydney CBD) would require limited use and storage of chemicals, oils, or fuels during operation. 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 Hunter Street Station (Sydney CBD) are described further in Table 15-27.

Table 15-27 Potential impacts to groundwater during operation – Hunter Street Station (Sydney CBD)

Potential impact	Discussion
Groundwater recharge	The surface area of impervious surfaces at Hunter Street Station (Sydney CBD) 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. The groundwater inflows for the untanked shafts would continue throughout operation at roughly the modelled inflow rates identified as part of the baseline environment (refer to Table 15-26). This inflow rate is deemed to be a conservative representation of long-term inflow rates for operation of this proposal. Groundwater flow would be towards the untanked shafts. In the long term, the tanked station box 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 (refer to Table 15-26). However, the volume of potentially contaminated groundwater to be managed during the operation phase for this proposal would be reduced by comparison to the previous Sydney Metro West planning application. This is due to the excavations for the shafts and cavern being lined and tanked, respectively, at commencement of this proposal 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 dewatering of the untanked shafts at Hunter Street Station (Sydney CBD) during operation. Further groundwater modelling would be undertaken 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.

Potential impact	Discussion
	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.
Surface water – groundwater interaction	Groundwater acting as baseflow to surface water features (Cockle Bay, Circular Quay) is considered to be a minor component of recharge in the area surrounding Hunter Street Station (Sydney CBD)). Groundwater is not likely to affect the flow in creeks draining towards Cockle Bay and Circular Quay 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 for the Greater Metropolitan Region Groundwater Sources* (NSW Department of Industry, 2011) adopted 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.

15.10.3 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 Hunter Street Station (Sydney CBD) construction site. 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 impact from acid sulfate soils was assessed as very low risk in the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) due to recharge of groundwater from the harbour and already disturbed nature of the area. 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

Based on the assessment, all areas of environmental interest were ranked as low risk. Groundwater de-watering may occur into the untanked shafts during construction, which could draw potential contaminated groundwater from off-site sources into the construction site. 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. The station would be tanked and therefore potentially contaminated groundwater inflows are expected to be negligible.

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 Hunter Street Station (Sydney CBD) are outlined in Table 15-28.

Table 15-28 Potential impacts to groundwater during construction – Hunter Street Station (Sydney CBD)

Potential impact	Discussion
Groundwater recharge	Almost all of the surface area within the sites' footprint 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 station would reduce groundwater inflows during construction of this proposal compared to the inflow rates under the previous Sydney Metro West planning application. This would promote partial recovery of groundwater levels around the station over time (including during the construction phase of this proposal). The untanked shafts would maintain the groundwater inflows modelled under the previous Sydney Metro West planning application (refer to Table 15-26). Through the continued application of the adopted mitigation measures, application of the CEMF and relevant sub-plans, the potential impacts from construction of this proposal are expected to reduce compared to the impacts to baseline groundwater levels, inflows, and flow regime f under the previous Sydney Metro West planning application.
Groundwater quality	Groundwater quality is expected to remain consistent with the baseline conditions under the previous Sydney Metro West planning application. Groundwater drawdown could result in potentially contaminated groundwater being drawn towards the Hunter Street Station (Sydney CBD) construction sites. However, the volume of potentially impacted groundwater to be managed during construction of this proposal would be reduced by comparison to the previous Sydney Metro West planning application as the cavern would be tanked prior to construction of this proposal. Technical Paper 7 (Hydrogeology) of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) concluded that saltwater intrusion from groundwater drawdown was unlikely to reach Hunter Street Station (Sydney CBD). 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. 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 area surrounding Hunter Street Station (Sydney CBD). Groundwater is not likely to interact with creeks associated with Cockle Bay and Circular Quay as they are concrete-lined channels which 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 for the Greater Metropolitan Region Groundwater Sources* (NSW Department of Industry, 2011) adopted under the previous Sydney Metro West planning application are expected to be complied with into construction of this proposal. Impacts from the alteration of groundwater levels and flow regime would be reduced (relative to baseline conditions) during construction of this proposal.
Ground movement	For work carried out under the previous Sydney Metro West planning application, estimated ground surface vertical settlement ranged between 5 to 30 mm (slight risk to buildings and structures) within an approximate ground cover between 12 to 31 square metres within the vicinity of the shafts at Hunter Street Station (Sydney CBD) (Sydney Metro, 2021a). Additional investigations would be carried out prior to commencement of work carried out under the previous Sydney Metro West planning application.

Potential impact	Discussion
	The potential for further ground movement (and therefore potential impacts to buildings and structures) as a result of construction of this proposal is comparatively reduced, as the excavation of the shafts and cavern would be carried out under the previous Sydney Metro West planning application. As such, the extent of ground movement is expected to be reduced (negligible) as a result of construction of this proposal.

15.10.4 Management and mitigation measures

Environmental management for this proposal would be undertaken through the environmental management approach as detailed in Chapter 20 (Synthesis). 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 impacts would be managed in accordance with Sydney Metro's CEMF (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.

15.11 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).

15.11.1 Baseline environment

Hunter Street Station (Sydney CBD) would be located in a heavily disturbed area that falls towards Pitt Street from south to north. The disturbed areas are often landscaped and artificially drained. Both sites have underground drainage networks in the adjacent road reserve generally following existing kerb lines and connecting into Pitt Street where flows eventually discharge to Circular Quay. The eastern site has local stormwater drainage that could pick up additional runoff if required.

Flood study mapping and the previous Sydney Metro West planning application identified that the Hunter Street Station (Sydney CBD) sites are not subject to flood hazard during one per cent Annual Exceedance Probability (AEP) event and Probably Maximum Flood (PMF) event.

Flood modelling for this proposal has determined that the north eastern portion of the western site is subject to flood depths of 0.35 metres, while outside the site boundary is subject to depths of 0.2 metres respectively during the one per cent AEP (with climate change) event. A similar trend is seen in the PMF event with the worst-case flooding occurring at the northern boundary with depths up to one metre. The western boundary is inundated up to 0.4 metres in the PMF event.

Flood depths at the eastern site between the southern boundary and Bligh Street are up to 0.06 metres and 0.25 metres in the five per cent AEP and one per cent AEP (both with climate change) events. Elsewhere, Hunter Street and O'Connell Street are inundated by up to 0.07 metres and 0.1 metres respectively in the one per cent AEP (with climate change) event. In the PMF event both Hunter Street and the southern portion of the site have flood depths up to 0.3 metres whilst O'Connell Street has depths up to 0.15 metres.

Flood hazard in the one per cent AEP event would be high within some adjacent roadways, including Hunter Street and a small section of George Street. In the PMF event, flood hazard in adjacent roadways is also high, which could be a risk to pedestrians and vehicles, potentially restricting access and evacuation routes from the sites.

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 Hunter Street Station (Sydney CBD) would be 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 Hunter Street Station (Sydney CBD) 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 or direct rainfall into the excavation area (although the station excavation would be protected)
- direct intense rainfall onto the site may cause nuisance flooding and drainage issues.

15.11.2 Operational impact assessment

The flood protection levels for Hunter Street Station (Sydney CBD) are driven by the one per cent AEP (with climate change) event (plus 0.5 metres freeboard), which is:

- 14.25 metres AHD at the George Street entry to the western site
- 10.50 metres AHD at the Hunter Street entry to the western site
- 12.65 metres AHD at the O'Connell Street entry to the eastern site
- 19.10 metres AHD at the Bligh Street entry to the eastern site.

The design levels at these station entries would be:

- 13.5 metres AHD at the George Street entry to the western site
- 9.5 metres AHD at the Hunter Street entry to the western site
- 12.4 metres AHD at the O'Connell Street entry to the eastern site
- 18.3 metres AHD at the Bligh Street entry to the eastern site.

Flood mitigation measures would be required at Hunter Street Station (Sydney CBD) to protect the station to the flood protection levels.

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 Hunter Street Station (Sydney CBD) is provided in Table 15-29 and shown in Figure 15-20. 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 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 15.11.4.

Table 15-29 Potential flooding impacts for the modelled one per cent AEP and PMF flood events – Hunter Street Station (Sydney CBD)

Potential impact	Description
Change in peak flooding levels	• flood modelling carried out for the one per cent AEP and PMF events indicate this proposal would have limited localised impacts on existing flooding behaviour, including a potential decrease in flood affectation on the site and adjacent road verges, a slight increase in flood depth of up to 0.08 metres on Hunter Street which would be contained within the road • as set out in the mitigation measures (refer to Section 15.11.4), further design refinement would occur to manage potential local flooding impacts.
Change in flood extent	• no increase or decrease to potential flood extent for all events up to the PMF.
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. Hunter Street Station (Sydney CBD) 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 • Hunter Street Station (Sydney CBD) would provide shelter in place arrangements during extreme flood events as surrounding streets would be high hazard.

Potential impact	Description
Change in duration of inundation	• change in duration of inundation would be negligible in 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	• a review of publicly available floodplain risk management plans did not identify any conflicts or inconsistencies with proposed floodplain risk management measures.
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. Ongoing consultation would occur with NSW State Emergency Services and the City of Sydney council in relation to potential impacts upon existing community emergency management arrangements for flooding (refer to Section 15.11.4).
Potential social and economic costs from flooding impacts	• given the generally low flood affectation at Hunter Street 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.

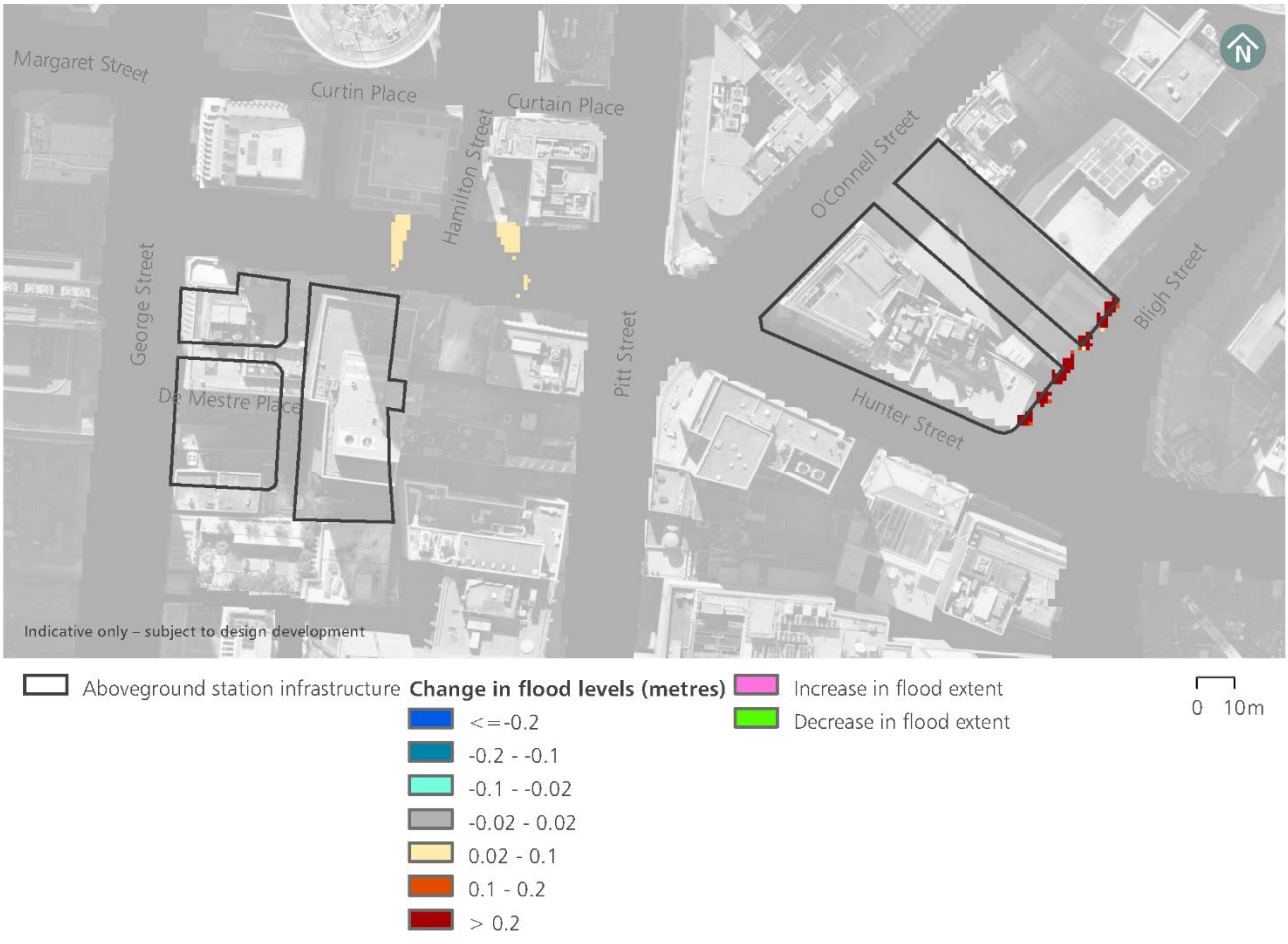

Figure 15-20 Potential change in flood levels (one per cent AEP event) – Hunter Street Station (Sydney CBD)

15.11.3 Construction impact assessment

The duration of construction at the Hunter Street Station (Sydney CBD) construction sites would be about four years (see Figure 15-9). 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. This includes:

- 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 Hunter Street Station (Sydney CBD) construction sites during the five per cent AEP and one per cent AEP events is low and due to the temporary nature of potential impacts, the overall risk of flooding impacts from the proposal is considered to be low.

The CEMF (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 Hunter Street Station (Sydney CBD) construction site as compatible with flood conditions because the eastern and western construction sites are not subject to flood hazard during all flood events up to and including the PMF event.

Consistency with floodplain risk management plans

A review of the City Area Catchment Floodplain Risk Management Plan (WMA Water, 2016b) 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 15.11.4.

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 Hunter Street Station (Sydney CBD) as a result of this proposal are considered low given the low flood affectation during all flood events and the expected low impact on flood behaviour on surrounding properties and infrastructure. The CEMF (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.

15.11.4 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 (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 Hunter Street Station (Sydney CBD) in relation to flooding are provided in Table 15-30.

Table 15-30 Flooding mitigation measures - Hunter Street Station (Sydney CBD)

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

15.12 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.

15.12.1 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 Hunter Street Station (Sydney CBD).

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 the community capitals related to Hunter Street Station (Sydney CBD) is discussed in Table 15-31. This summary considers the proximal area of analysis only. A discussion of potential broader corridor-wide and region social impacts (both benefits and disbenefits) is provided in Chapter 18 (Proposal-wide) of this Environmental Impact Statement.

Table 15-31 Community capitals summary - Hunter Street Station (Sydney CBD)

Capital	Summary
Human	Similar to Pyrmont locality, in 2016, the Sydney CBD locality the share of residents between the age of 20 to 64 was 82.7 per cent. It had the oldest population, with only 6.6 per cent of the population under the age of 19. Reflective of the age of the population, in 2016, 16.6 per cent of all residents in the Sydney CBD 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 institution, the majority were attending university or other tertiary institution.
Social	Length of residence in the Sydney CBD locality was relatively low, with only 29 per cent of residents in the same address as in 2011. A little over half of residents within the Sydney CBD locality reported speaking English at home (58 per cent), comparable to the Greater Sydney average of 62 per cent

Capital	Summary
	Lone person households accounted for 45 per cent of household composition types in the Sydney CBD locality, which was about double the other localities and the Greater Sydney average (22 per cent). Couple families without children comprised 32.3 per cent of households in the locality. The share of families with children in the Sydney CBD locality was the lowest across all the localities within this proposal corridor (9.7per cent), and well below the Greater Sydney average (37.5 per cent). 8.8 per cent of the households in the Sydney CBD locality were group households.
Economic	Overall, households were relatively more advantaged compared to other localities, with 43.3 per cent of households earning above $2,500 per week. Similar to Pyrmont, a high proportion of households were rented in the area (62.5 per cent) with 91.1 per cent paying in the highest quartile (paying greater than $443 per week). The locality had the lowest occupancy rate across the corridor (78.1 per cent) indicating that a greater number of residential dwellings are available for rent, compared to other localities, potentially reflective of the high-density apartment living in the Sydney CBD. Unemployment levels in were relatively low when compared to the whole corridor and Greater Sydney (4.1 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. Of those that were employed, the dominant industry was professional, scientific and technical services (20.5 per cent) or financial and insurance services (19.7 per cent).
Physical	Reflective of the CBD environment, the dwelling type was almost entirely flats, units or apartments (92.5 per cent) within the Sydney CBD locality. To travel to work, nearly half of the employed residents of Sydney CBD locality used active transport with walking accounting for (49.5 per cent). The next most common modes of transport were train or bus (18.7 per cent) and private vehicles (12.4 per cent). Social infrastructure, such as the Museum of Sydney, Customs House, City Recital Hall, Sydney Lyric Theatre, Sydney Hospital, Sydney Tower and Martin Place, are within the general proximity of Hunter Street Station (Sydney CBD).
Natural	The Royal Botanic Garden in the Sydney CBD is a heritage-listed major 30-hectare (74-acre) botanical garden.

15.12.2 Operational impact assessment

Social Impacts would be experienced at different geographies or spatial extents. A large proportion of operational social impacts associated with Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) are outlined in Table 15-32.

The identified potential impacts are presented in Table 15-32 are unmitigated and would be appropriately managed through the implementation of the OCCS and the mitigation measures outlined in Section 15.12.4, and through the performance outcomes detailed in Chapter 20 (Synthesis) of this Environmental Impact Statement. A Community Benefit Plan to guide the development of community benefit initiatives would also be developed.

A residual impact rating has been assigned to each pre-mitigated impact in Table 15-32 to quantify the impacts after mitigation measures have been applied.

Table 15-32 Summary of operational social impacts – Hunter Street Station (Sydney CBD)

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
Increased access to jobs, businesses, 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 Livelihoods	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. Technical Paper 6 (Landscape and visual amenity) found this proposal would bring improvements to the landscapes and public domain areas surrounding this proposal, including George Street and Hunter Street streetscapes, Richard Johnson Square, and Bligh Street, Hunter Street and O'Connell Street streetscapes. Richard Johnson Square would particularly be enhanced due to the improvements to both the urban fabric of the square and its interface with the new metro station entry, which would have a positive impact on the way people experience their surroundings in the vicinity of Hunter Street Station (Sydney CBD).	Surroundings	Positive	High
Change in community character due to permanent changes to improve local visual character.	Community	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.	Way of life	Negative	Low
Potential decline in how people experience their living environments due to light spill, visual amenity and/or extended opening hours of services.	Way of life	Negative	Low

Overall, the assessment found that Hunter Street Station (Sydney CBD) would boost jobs and improve connections to recreational and tourist attractions by relieving demand in peak times and providing a more seamless transition between Sydney public transport options. This includes enhancement in accessibility for employees and visitors to and from the Sydney CBD and visitors travelling to retail, commercial, dining and recreational activities.

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

15.12.3 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 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 Hunter Street Station (Sydney CBD) are outlined in Table 15-33.

These potential impacts are unmitigated and would be appropriately managed through the implementation of the OCCS and the mitigation measures outlined in Section 15.12.4, 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 15-33 Summary of construction social impacts – Hunter Street Station (Sydney CBD)

Pre mitigation impact	Social impact category	Impact type	Residual impact rating
Continued temporary changes to the way of life for the large number of people living, working, visiting or accessing services near the construction site due to additional temporary removal of parking spaces, temporary impacts to footpaths and temporary road closures. Communication materials would need to address the needs of linguistically diverse residents so that impacts are not disproportionally experienced.	Way of life Livelihoods	Negative	Medium
Continued change to community character, and sense of place and belonging associated with changes to streetscape and construction activity, and potential disruption to access to some community gathering spaces (e.g., Ivy Precinct, 30 Knots, and the Royal George).	Community	Negative	Medium
Continued changes to how people access local social infrastructure and services, including within the locality, and potential disruption to way of life, including the continued closure of the existing underground walkway between Wynyard Station and Pitt Street. This could also continue to impact businesses who rely on passing trade or who have already been affected by a redistribution of trade during work carried out under the previous Sydney Metro West planning application.	Accessibility Way of life Livelihoods	Negative	Low
Continued health and wellbeing impacts associated with ongoing construction activity for those people sensitivity to noise and vibration.	Health and wellbeing	Negative	Low

The assessment indicates that the social impacts associated with construction of this proposal would effectively represent a continuation of the impacts from work carried out under the previous Sydney Metro West planning application, though generally at a lower intensity and extent. Key impacts would be largely related to health and wellbeing and would be temporary and short term in nature. These impacts would be managed through mitigation measures as identified in Chapter 20 (Synthesis) of this Environmental Impact Statement.

15.12.4 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 (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).

15.13 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).

15.13.1 Baseline environment

The Hunter Street Station (Sydney CBD) construction sites would be established under the previous Sydney Metro West planning application. This previous Sydney Metro West planning application 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 Sydney CBD is Australia's largest commercial office centre and the primary employment centre within Australia. It is a nationally significant centre, being the location for a wide range of businesses from small businesses to larger domestic and multinational companies. The local business study area is the headquarters for a number of national and international companies. A number of state and federal agencies are also located within the Sydney CBD and within the Hunter Street Station (Sydney CBD) local business study area.

The Hunter Street Station (Sydney CBD) local business study area includes a highly developed commercial core, with a wide range of commercial, retail, health, education, community and government administration uses. The large number and diverse range of businesses reflect Sydney CBD's status as a metropolitan centre and the nation's primary business and employment centre.

Table 15-34 identifies the types of existing businesses within the local business impacts study area. The large number and diverse range of businesses reflect Sydney CBD's status as a metropolitan centre and the nation's primary business and employment centre.

Table 15-34 Businesses within the Hunter Street Station (Sydney CBD) local business impacts study area

Impact area	Types of businesses	Approximate number of businesses
Within 100 metres of the sites	Commercial, food outlets, pubs, clubs and bars, cafes and restaurants, education and training, financial and insurance services, health care and social assistance, retail trading, convenience stores, entertainment facilities, fitness and recreation, apparel stores, other retail goods and service providers, tourist and cultural facilities, entertainment facilities, financial market infrastructure and services, and State and Federal government departments.	3,000 to 4,000
Between 100 and 400 metres of the sites	Commercial, food outlets, cafes and restaurants, education and training, financial and insurance services, health care and social assistance, retail trading, convenience stores, entertainment facilities, fitness and recreation, apparel stores, other retail goods and service providers, tourist and cultural facilities, entertainment facilities, financial market infrastructure and services, and State and Federal government departments.	6,000 to 7,000

Employment

At the 2016 Census, about 172,390 people were employed within the destination zones relevant to the Hunter Street Station (Sydney CBD) local business impacts study area, making it the largest business area along the Sydney Metro West corridor and reflecting the role of Sydney CBD as a major metropolitan and employment centre. 'Destination zones' are the spatial unit used to code 'place of work' by the Australian Bureau of Statistics. Most of these jobs were located in knowledge worker industries, and population serving industries was the next largest broad industry category which mostly comprised jobs in accommodation and food services, and retail trade.

The main industries of employment at the 2016 census included financial and insurance services (29.8 per cent) and professional, scientific and technical services (26.0 per cent), which together comprise 55.8 per cent of the top five industries.

Travel patterns

At the 2016 Census, workers within the area primarily rely on public transport with 73.1 per cent of workers using public transport to get to work.

Workers using the Sydney Trains network use a number of nearby stations including Circular Quay Station, Westmead Station, Martin Place Station, St James Station and Town Hall Station. Sydney CBD is also well serviced by buses, light rail and ferries. Large volumes of traffic cause significant levels of congestion during peak hours and make car travel to the Sydney CBD less viable for most workers, with only 12.1 per cent of people using a vehicle to get to and from work.

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

15.13.2 Operational impact assessment

A qualitative assessment of the potential opportunities for local businesses during operation is provided in Table 15-35. There are no indirect or direct impacts anticipated for local businesses during operation.

Overall, the Hunter Street Station (Sydney CBD) local business impacts study area is a diverse and dynamic area with a large number of businesses, and a high capacity to absorb and adapt to potential impacts and it would benefit from the accessibility provided by the metro station.

Hunter Street Station (Sydney CBD) is expected to support further business investment and growth within the Sydney CBD by providing greater connections between businesses, labour markets, customers and clients located within and near to the Sydney Metro corridor.

Hunter Street Station (Sydney CBD) would enable interchange with existing and future public transport networks. This would include the future Sydney Metro City & Southwest (due to open in 2024), the existing Sydney Trains suburban rail network (T1 North Shore and Western Line and the T9 Northern Line at Wynyard and T4 Eastern Suburbs and Illawarra Line at Martin Place), as well as the existing light rail (L2 Randwick Line and L3 Kingsford Line) and bus networks.

Table 15-35 Local business impacts (operation) – Hunter Street Station (Sydney CBD)

Potential impact operation	Risk assessment	
	Likelihood	Significance
Potential opportunities		
Increase passing trade for businesses Customers accessing Hunter Street Station (Sydney CBD) could result in an increase in business activity and passing trade for local businesses that are reliant on passing trade such as retail, cafes and restaurants. The Sydney CBD already experiences a high level of foot traffic.	Possible	Slight positive
Improved accessibility The Sydney CBD is already well connected through public transport and the road network. This notwithstanding, some businesses may experience increased accessibility (both those reliant on passing trade and also destination businesses, for example those that are visited by appointment) bringing in new customers who previously could not easily access the area.	Possible	Moderate positive

Potential impact operation	Risk assessment	
	Likelihood	Significance
Hunter Street Station (Sydney CBD) would boost jobs and improving connections to recreational and tourist attractions by relieving demand in peak times and providing a more seamless transition between Sydney public transport options. This includes enhancement in terms of accessibility for employees and visitors to and from the Sydney CBD and visitors travelling to retail, commercial, dining and recreational activities.		
Improved amenity related benefits around station precincts Improved amenity (such as visual impacts and urban design) around Hunter Street Station (Sydney CBD) 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	Slight positive

15.13.3 Construction impact assessment

A qualitative assessment of potential indirect construction impacts to local businesses at Hunter Street Station (Sydney CBD) is provided in Table 15-36. There are no direct impacts anticipated for local businesses during construction. Potential opportunities for local businesses during construction are also provided in Table 15-36.

Similar to the potential operational impacts, the Hunter Street Station (Sydney CBD) local business impacts study area is a diverse and dynamic area with a large number of businesses, and a high capacity to absorb and adapt to construction impacts that may change the localised trading environment around the construction sites.

Additionally, anticipated construction impacts are expected to be similar and would be a continuation of those from 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 under the previous Sydney Metro West planning application work due to the nature of this proposal's activities.

Table 15-36 Local business impacts (construction) – Hunter Street Station (Sydney CBD)

Potential impact construction	Risk assessment	
	Likelihood	Significance
Potential opportunities		
Continuation of passing trade from workforce Local businesses located around the construction sites may continue to benefit from an increase in the number of customers as a result of construction workers buying goods and services from retail, cafes and restaurants, in comparison to pre-construction numbers.	Possible	Slight positive
Continuation of redistribution of trade As a result of the previous Sydney Metro West planning application, some local customers could have redistributed their trade towards similar locally serving businesses within other parts of the business study area or the surrounding area which would be positive for those businesses that potentially experience an increase in trade. This redistribution of trade could continue during construction of this proposal.	Possible	Slight positive

Potential impact construction	Risk assessment	
	Likelihood	Significance
Potential impacts		
Continuation of redistribution of trade As a result of the previous Sydney Metro West planning application, some local customers could have redistributed their trade towards similar locally serving businesses within other parts of the business precinct or the surrounding area which would be negative for those businesses that potentially experience a reduction in trade. This redistribution of trade could continue during construction of this proposal.	Possible	Slight negative
Continued temporary traffic congestion and increased travel times Some businesses surrounding the construction site may have experienced impacts associated with traffic congestion and increased travel times during the previous Sydney Metro West planning application. These impacts may continue during construction of this proposal. The extent to which workers and customers would be affected by construction works would be largely dependent on their proximity to the construction sites, and whether they travel on roads that are part of the construction haul route. Similarly, potential traffic and travel time impacts for servicing deliveries would be greatest for businesses immediately adjacent to the construction sites. This is a particular issue for businesses within Sydney CBD that already face restrictions in terms of time of day access to loading docks and deliveries. Impacts on road network performance is expected to be minimal with a mild deterioration anticipated in the level of service at some intersections. Measures to improve road network performance are outlined in the CTMF and may include: • managing construction vehicles to minimise movements during peak periods • traffic signal optimisation at an intersection or corridor level • active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes. While there is a high density of businesses within 400 metres of the construction sites, the diversity of employment types and availability of multiple access routes into and out of this area of Sydney CBD mean impacts from localised congestion should be avoidable for most businesses. Workers within the local business impacts study area are not car dependent, with the study area having good public transport access. In addition, customers accessing businesses within the Sydney CBD would be accustomed to large volumes of traffic and traffic congestion present within Sydney CBD. As such, increases in traffic congestion and travel times would not be expected to affect the numbers of customers for a range of business types including retail, cafes and restaurants within the local business impacts study area. Traffic congestion could also affect business loading times, however no impacts to loading arrangements are expected during construction.	Likely	Moderate negative
Continued impacts to parking Some businesses surrounding the construction site may have experienced impacts associated with temporary loss of parking under the previous Sydney Metro West planning application. These impacts may continue during construction of this proposal.	Likely	Slight negative

Potential impact construction	Risk assessment	
	Likelihood	Significance
Although the number of car spaces which would continue to be affected by construction (on Hunter Street) is expected to be minimal for this proposal, car parking spaces are at a premium within the local business study area. This notwithstanding, there is on-street and off-street parking available nearby.		
Continued temporary reduced local amenity Some businesses surrounding the construction site may have experienced impacts associated with reduced local amenity and visibility under the previous Sydney Metro West planning application. These impacts may continue during construction of this proposal. A range of businesses near the construction sites may be affected by changes to amenity and visibility. Businesses potentially affected would be those located closest to the construction sites and those more reliant on a pleasant urban amenity. This includes noise impacts to commercial offices, cafes and restaurants, pubs and bars and other entertainment facilities. Visual impacts from hoarding have the potential to obstruct vision of a business from the street and nearby area. Hoarding design and signage would seek to minimise potential visibility impacts to nearby businesses. These impacts would also affect some businesses that are recovering from impacts that arose during the Sydney light rail construction period.	Almost certain	Moderate negative
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 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 continued 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 Hunter Street Station (Sydney CBD) 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.	Unlikely	Slight negative

15.13.4 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 (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.

15.14 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).

15.14.1 Baseline environment

Site context

The area immediately surrounding the proposed location of Hunter Street Station (Sydney CBD) is highly urbanised, with a history of clearing and development over the past 200 years. This area is one of the first cleared and developed pieces of land in Australia, with constant redevelopment for residential and commercial land uses since European settlement. The area is relatively flat, with a landform generally draining towards Sydney Harbour to the north.

Vegetation characteristics

Vegetation in the area surrounding the proposed location of Hunter Street Station (Sydney CBD) is limited to street trees. No remnant native vegetation is present. All vegetation within the footprint of the construction site would be removed under the previous Sydney Metro West planning application.

Vegetation in the surrounding area is similarly comprised solely of street trees and is not remnant. This vegetation would not be affected by this proposal.

Threatened ecological communities

There are no threatened ecological communities present within the Hunter Street Station (Sydney CBD) construction sites.

Groundwater dependent ecosystems

There are no groundwater dependent ecosystems present within the Hunter Street Station (Sydney CBD) construction sites.

Threatened flora species

There are no threatened flora species present within the Hunter Street Station (Sydney CBD) construction sites.

Threatened fauna species

The Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) construction sites.

Aquatic ecology

There is no aquatic habitat present within the Hunter Street Station (Sydney CBD) construction sites.

15.14.2 Operational impact assessment

Direct impacts

Direct impacts related to the operation of Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) sites, resulting in subsequent impacts to nearby aquatic systems such as Circular Quay, 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 (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.

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 Hunter Street Station (Sydney CBD) (refer to Chapter 18 (Proposal-wide) of this Environmental Impact Statement).

15.14.3 Construction Impact assessment

Direct impacts

As described in Section 15.14.1, construction activities associated with Hunter Street Station (Sydney CBD) would take place entirely within the Hunter Street Station (Sydney CBD) construction sites established under the previous Sydney Metro West planning application.

Construction of Hunter Street Station (Sydney CBD) 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 Hunter Street Station (Sydney CBD) construction sites, sediment-laden runoff and spills could result in indirect adverse impacts to nearby aquatic systems such as Sydney Harbour. Biodiversity impacts could include 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 site as well as potential water quality and quantity impacts would be managed through the implementation of mitigation measures outlined in Appendix F (Construction Environmental Management Framework). As such the potential for indirect downstream biodiversity impacts is expected to be low.

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