Sydney Metro West – major civil construction between The Bays and Sydney CBD

State Significant Infrastructure Assessment
SSI 19238057

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Cover image: Sydney Metro West: Hunter Street (Sydney CBD) Metro Station Artist Impression (Sydney Metro)

Glossary

Abbreviation	Definition
AHD	Australian Height Datum
BC Act	*Biodiversity Conservation Act 2016*
Concept	The Sydney Metro West project at a concept level
Council	Inner West or City of Sydney
CSSI	Critical State Significant Infrastructure
Department	Department of Planning and Environment
EESG	Environment, Energy and Science Group (now EHG)
EIS	*Sydney Metro West Environmental Impact Statement – Major civil construction work between The Bays and Sydney CBD*
EHG	Environment and Heritage Group (previously known as EESG)
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
Heritage NSW	formerly part of Department of Premier and Cabinet, now part of Environment and Heritage Group *Note: Heritage NSW incorporates both Aboriginal cultural heritage and built heritage matters effective from 1 April 2022*
Heritage Council	Heritage Council of NSW
LEP	Local Environmental Plan
Minister	Minister for Planning
SEARs	Planning Secretary's Environmental Assessment Requirements
Planning Secretary	Secretary of the Department of Planning and Environment

Abbreviation	Definition
Proposal	Sydney Metro West – major civil construction between The Bays and the Sydney CBD including station excavation and tunnelling
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
Stage 1	Major civil construction between Westmead and The Bays including station excavation and tunnelling
Stage 3	Tunnel fitout, metro station building and operation of the entire line between Westmead and Sydney CBD (SSI application 22765520)
Sydney Metro West – Westmead to Sydney CBD	All components of Sydney Metro West project from Westmead to the Sydney CBD comprising of: Concept – Sydney Metro West project at a concept level. No construction or operation (SSI-10038) Stage 1 – major civil construction between Westmead and The Bays including station excavation and tunnelling (SSI-10038) Stage 2 – major civil construction between The Bays and the Sydney CBD including station excavation and tunnelling (this proposal) Stage 3 – tunnel fitout, metro station building and operation of the entire line between Westmead and Sydney CBD ((SSI-22765520).
Submissions Report	*Sydney Metro West – Major civil construction work between The Bays and Sydney CBD Submissions Report*
TfNSW	Transport for NSW

Executive Summary

Sydney Metro (the Proponent) is seeking approval for construction of Stage 2 of Sydney Metro West, between The Bays and Sydney CBD. The proposal comprises an underground metro rail line major civil construction work between The Bays and Sydney CBD. Construction involves tunnel excavation including tunnel support activities and station box excavation at Pyrmont and at Hunter Street in the Sydney CBD.

The Proponent staged applications for the construction and operation of the Sydney Metro West proposal as identification of the Pyrmont and Sydney CBD metro station locations and tunnel alignment through the Sydney CBD required further work. Sydney Metro West concept from Westmead to the Sydney CBD and Stage 1, consisting of tunnelling between Westmead and The Bays, was determined by the then Minister for Planning and Public Spaces on 11 March 2021. An application for Stage 3 – rail infrastructure, stations, precincts and operation was exhibited in March 2022 and is being assessed by the Department at the time of writing.

The proposal complies with the objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and is consistent with the NSW Government's key priorities and transport planning framework. The proposal is critical State significant infrastructure under section 5.13 of the EP&A Act. The Minister for Planning is the approval authority.

The Department is satisfied that issues raised in submissions have been appropriately considered and responded to by the Proponent and the Department. Residual impacts can be mitigated or managed generally through implementation of the Proponent's commitments. Recommended conditions reinforce these commitments and address outstanding or residual impacts.

The proposal would provide a component of a world class, safe, efficient, and reliable metro rail line between Greater Parramatta and Sydney CBD, an effective response to existing and emerging constraints on the existing Sydney Trains rail network and Sydney's current and forecast population and economic growth.

Community engagement

The EIS was exhibited from 3 November 2021 to 15 December 2021 (a total of 43 days) and received 18 submissions and agency advice from six NSW Government agencies. Of the submissions received, two were from local councils, seven were from special interest groups and organisations and nine were from members of the community. Five submissions were in support of the proposal, four submissions objected to the proposal and nine submissions provided comments only.

The key issues raised by the community include project design; construction traffic and access impacts on surrounding streets; construction noise and vibration impacts; heritage impacts; impacts to local businesses; engagement and consultation and cumulative impacts with other projects.

Key assessment issues

Noise and Vibration

The Department acknowledges that complex infrastructure projects in urban environments result in noise and vibration impacts, and that good practice is for these impacts to be minimised as far as

practicable and be proactively managed. The Proponent has identified a range of measures that would assist in mitigating these impacts and combined with recommended conditions, the Department considers that noise impacts would be appropriately managed.

Construction would occur simultaneously across the alignment. Once sites are established (at Pyrmont and Hunter Street) and tunnelling (from The Bays) or excavation begins, noise and vibration impacts would originate from those sites. Noticeable increases in road traffic noise from construction haulage and deliveries is not expected.

The Department recommends limiting station box excavations to 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 6:00 pm Saturday in Pyrmont, due to the noise impacts and potential sleep disturbance to surrounding receivers. A range of mitigation and management measures would be employed, including the use of acoustic sheds at sites for at least part of the excavation.

Noise and vibration generated at The Bays Station construction site was assessed as part of Concept and Stage 1 major civil construction between Westmead and The Bays (SSI 10038) approval. The Bays site will continue to be used for Stage 2 as a tunnel launch and support site for tunnel boring machines (TBM) working east towards Pyrmont and Hunter Street in the Sydney CBD. No additional vibration impacts are expected at the former White Bay Power Station as vibration intensive work during cavern mining would be around 300m away and further than work undertaken for Stage 1.

Non-Aboriginal Heritage

The Department has considered the relatively minor heritage impacts in the context of the benefits from the construction of this proposal overall. The Proponent's commitments for managing and reducing heritage impacts, in association with the Department's recommended conditions, would ensure that heritage impacts are appropriately managed and minimised to the greatest extent practicable.

The proposal area includes a number of heritage items; however, the proposal has avoided direct and significant impacts to the majority of listed items. Notwithstanding, Stage 2 excavation has the potential to cause ground movement resulting in minor (cosmetic) impacts to structures and excavations have the potential to impact archaeological remains at Pyrmont and at the Hunter Street Station western construction site. Structural damage to heritage items is unlikely and conservative vibration damage screening levels have been adopted to minimise cosmetic damage. Potential archaeology at metro station sites would be managed through the Archaeological Research Designs which includes an excavation methodology.

Traffic and Transport

Heavy vehicle movements including spoil haulage are proposed during excavation from all construction sites and would be particularly noticeable at The Bays tunnel launch site from where tunnel spoil would be hauled. Although construction traffic could increase congestion, the implementation of the Proponent's mitigation measures, which include scheduling construction traffic movements outside peak hours, implementing specified haulage routes, and site-specific controls, would assist in managing and limiting construction traffic impacts to minimal levels. A recommended condition identifies performance goals to minimise parking on public roads, truck idling, access across pedestrian and shared user paths and that haulage routes are adhered to.

Some existing carparking near Hunter Street and Pyrmont construction sites would be removed. Use of private vehicles and on-street parking by the construction workforce would be discouraged.

Construction workforce parking would be limited to The Bays tunnel launch and support site consistent with Stage 1 (SSI-10038).

The Department has recommended a construction parking and access strategy be prepared and implemented to consider options to limit private vehicle use and construction workforce parking, the use of off-street carparking facilities and the provision of park-and-ride shuttle bus services to construction sites. Further, the Proponent has committed to maintaining access to infrastructure and properties including off-street parking.

Cumulative traffic impacts with other major infrastructure projects in the Rozelle area are considered manageable. To ensure construction traffic on Robert Street, Rozelle is limited, a condition is recommended to limit its use to emergencies.

Operational traffic and transport (including the permanent loss of on-street parking) around both station sites would be assessed as part of a future staged application (SSI 22765520).

Social and Business

The proposal would result in temporary negative impacts to local amenity and changes to access for social infrastructure and services. There would be potential changes to community character, and wellbeing impacts associated with construction activities, such as resulting from sensitivity to noise and vibration. These impacts (such as noise, traffic, visual and air quality) are temporary and will managed through appropriate mitigation measures, including comprehensive community engagement throughout construction.

Once operational, Sydney Metro West will provide benefits to businesses, including additional access and enhanced connections between business and employment areas, allowing faster travel for workers between home and their employment and attracting customers to goods and services in proximity to stations. It is, however, accepted that the local community may lose access to a limited range of goods and services during construction. The types of businesses that require relocation in Pyrmont are destination businesses servicing a wider catchment and given the location of both Hunter Street station sites are within Sydney CBD, the loss of businesses resulting from the proposal is unlikely to have a significant impact on the communities' access to similar services in proximity to construction works.

The Proponent is committed to minimising impacts on individual businesses during construction. Potential temporary business impacts associated with this proposal will generally be managed through appropriate mitigation of other aspects such as noise, traffic, visual and air quality. In addition, the Proponent will implement business specific mitigation including a commitment to small business owner engagement, the scheduling of planned power and utility interruptions outside of typical business hours, and minimising impacts to business visibility and accessibility.

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1 Introduction

1.1 Sydney Metro Program

Sydney Metro is a stand alone rail network comprising a number of separate lines. The program of work is shown in **Figure 1** and includes:

- Sydney Metro North West, between Tallawong and Chatswood, which commenced services in May 2019
- Sydney Metro City & Southwest, between Chatswood and Bankstown via the Sydney CBD, which is under construction and due to commence services in 2024
- Sydney Metro West, between Westmead and the Sydney CBD:
    - Concept and Stage 1, which was approved 11 March 2021, with works commenced
    - Stage 2 major civil construction between The Bays and Sydney CBD (this proposal)
    - Stage 3 tunnel fitout, metro station building and operation of the entire line between Westmead and Sydney CBD (SSI application 22765520))
- Sydney Metro Western Sydney Airport is a new metro line between St Marys and the new Western Sydney Aerotropolis connecting the City's greater west with Western Sydney International (Nancy-Bird Walton) Airport. This line is currently under construction and due to open when the airport opens for passenger services in 2026.

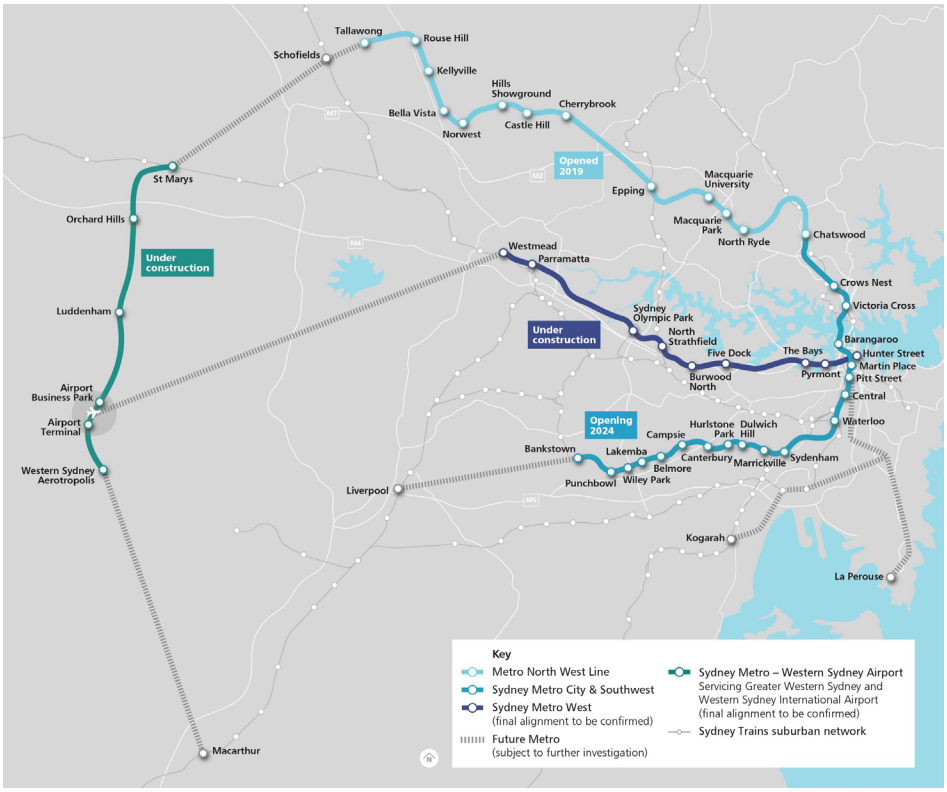

Figure 1 | Sydney Metro program of work (Source: Sydney Metro West EIS The Bays to Sydney CBD, 2021)

1.2 Sydney Metro West proposal

Sydney Metro West (Metro West) would provide a direct, fast, reliable and frequent connection of about 20 minutes between Parramatta and Sydney CBD. It would link communities on its route not previously serviced by rail; relieve congestion on Sydney Train's T1 Western Line, T9 Northern Line, and T2 Inner West and Leppington Line; and double the rail capacity between Parramatta and the Sydney CBD.

1.3 Staged applications

The Proponent, Sydney Metro, sought to stage applications for the construction and operation of Sydney Metro West. The staged applications allowed for further investigation and planning for the Pyrmont and CBD stations.

The proposed stages are:

- Concept – Sydney Metro West project at a concept level. No construction or operation (SSI 10038 was approved 11 March 2021)
- Stage 1 – major civil construction between Westmead and The Bays including station excavation and tunnelling (SSI 10038 was approved 11 March 2021)
- Stage 2 – major civil construction between The Bays and the Sydney CBD including station excavation and tunnelling (this report)
- Stage 3 – tunnel fitout, metro station building and service operation between Westmead and Sydney CBD (SSI application 22765520, EIS exhibited 24 March to 4 May 2022).

1.4 Application(s) for latter stages / related projects

The application in this report relates to the Stage 2 major civil construction between The Bays and the Sydney CBD, including station excavation and tunnelling. An application for Stage 3 was exhibited in March 2022 and is being assessed by the Department at the time of writing.

The following related developments are not part of this application:

- integrated station and precinct developments at stations for Sydney Metro West – Westmead to Sydney CBD (subject to future planning applications)
- rail interchange support works, including work to the existing T1 Western Line at Westmead and T9 Northern Line at North Strathfield – assessed in Concept and Stage 1 (major civil construction between Westmead and The Bays) and approved by the then Minister for Planning and Public Spaces on 11 March 2021
- realignment of Port Access Road, Sommerville Road and Solomons Way at The Bays Precinct – assessed by the Proponent in a Review of Environmental Factors (REF) under section 5.1 of the EP&A Act determined on 18 August 2020
- Sydney Metro West precast facilities at Eastern Creek – also assessed under an REF determined on 11 March 2021.

2 The Proposal

2.1 Proposal description

Metro West Stage 2 involves civil construction work between The Bays and Sydney CBD shown in **Figure 2** including:

- enabling works such as demolition, utility supply to construction sites, utility adjustments, and modifications to the existing transport network
- tunnel excavation including tunnel support activities
- station box excavation at Pyrmont and at Hunter Street, in the Sydney CBD.

The proposal does not include operation, which is being considered as part of Sydney Metro West Stage 3.

Figure 2 | Alignment from The Bays to Sydney CBD (Source: Sydney Metro West EIS The Bays to Sydney CBD, 2021)

The Bays tunnel launch and support site, Pyrmont and Hunter Street station construction sites are shown in **Figure 3** to **Figure 5**.

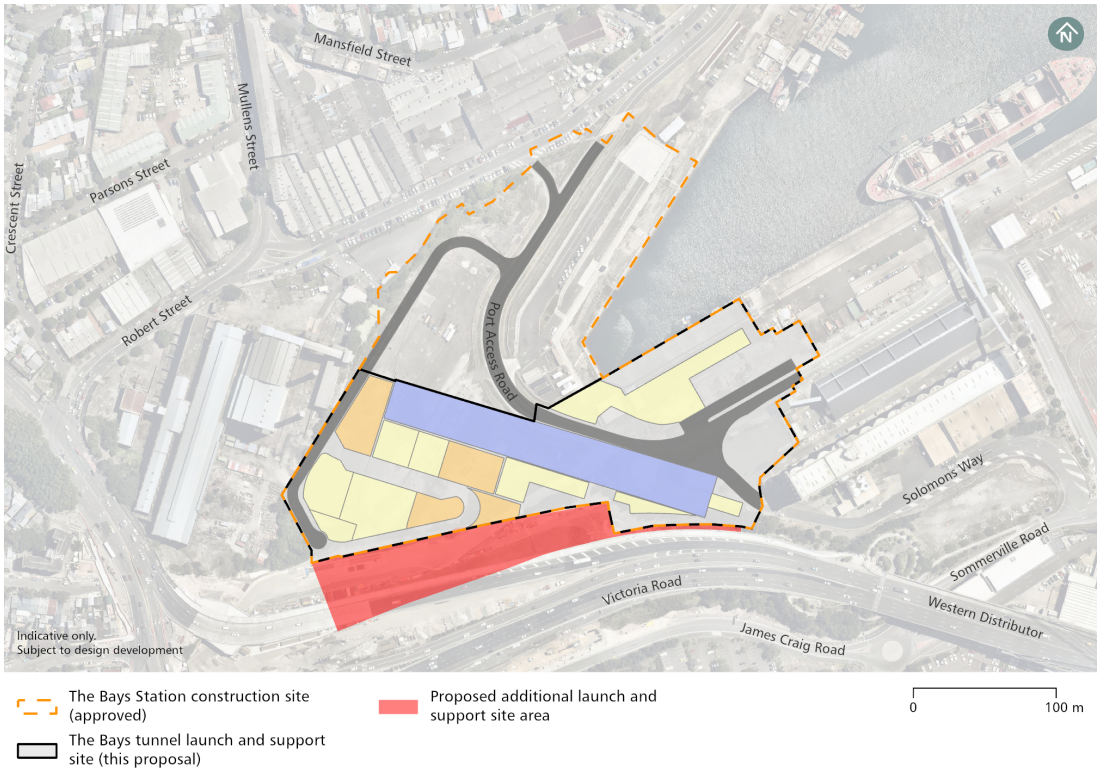

Figure 3 | The Bays tunnel launch and support site (Source: Sydney Metro West The Bays to Sydney CBD Submissions Report, 2022)

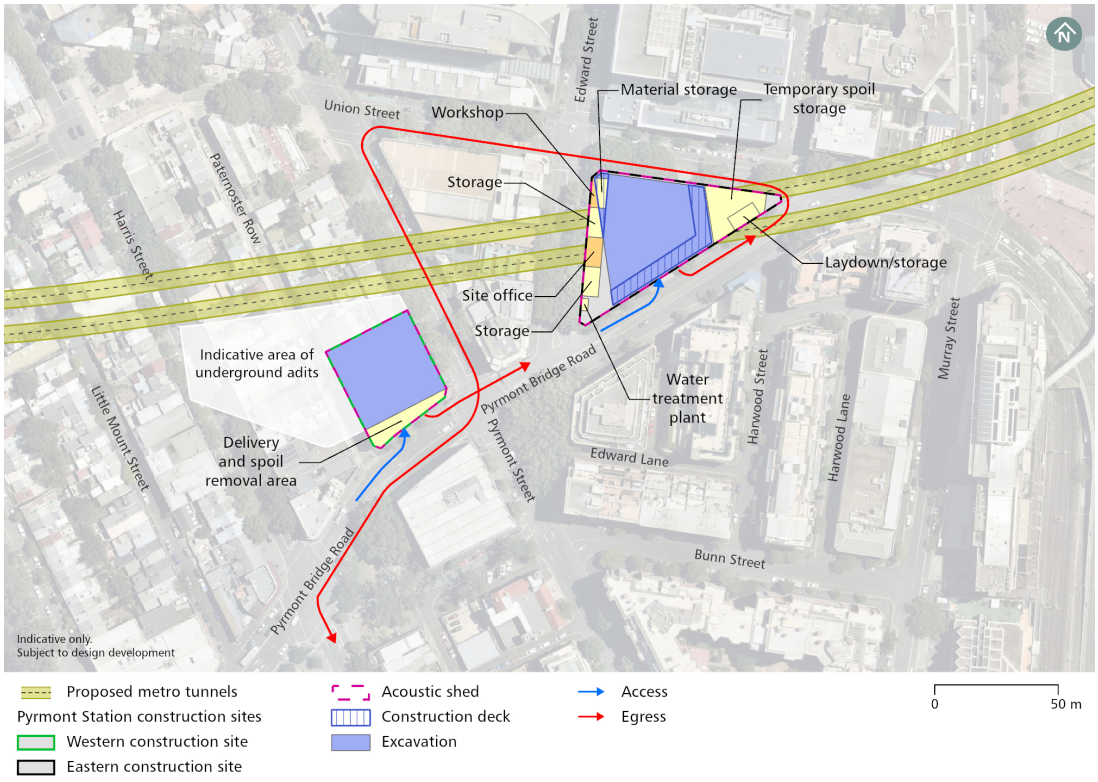

Figure 4 | Pyrmont station construction sites (Source: Sydney Metro West EIS The Bays to Sydney CBD, 2021)

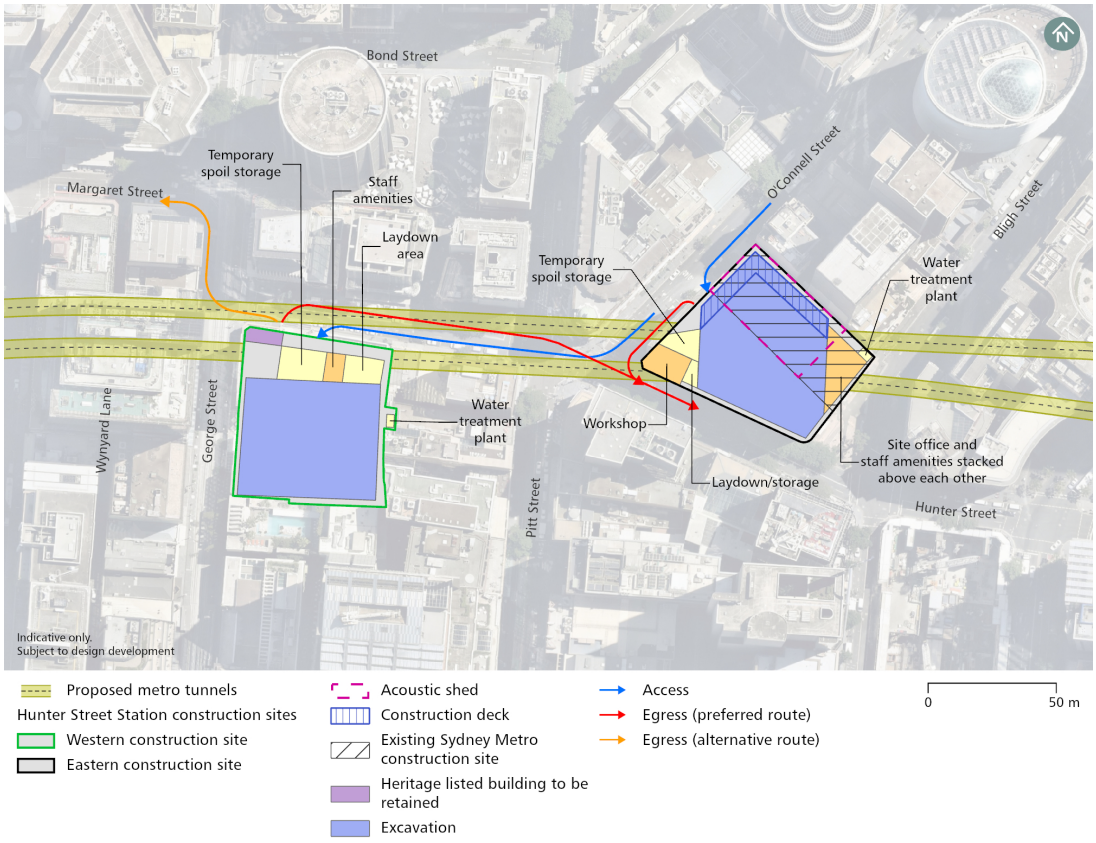

Figure 5 | Hunter Street (Sydney CBD) station construction sites (Source: Sydney Metro West EIS The Bays to Sydney CBD, 2021)

2.2 Proposal - construction

Key elements of constructing the proposal are described in **Table 1**.

Table 1 | Construction activities

Construction element	Activities
Enabling work	• demolition • utility supply, adjustments and protection • transport network modifications • heritage investigations, protection and archival recordings • additional geotechnical and contamination investigations and remediation
Establishment of construction sites	• establish Pyrmont Station west and east construction sites • establish Hunter Street Station (Sydney CBD) west and east construction sites

Construction element	Activities
	• establish site compound and ancillary facilities such as offices, amenities and workshops and hardstand areas for storage and car parking • establish internal roads, vehicle access and egress points • establish truck wheel wash or rumble grids • establish site hoardings, noise barriers and/or fencing around the perimeter of each site
Tunnel excavation and associated tunnelling support activities	• establish The Bays tunnel launch and support site with tunnel boring machines retrieved at either the Hunter Street Station (Sydney CBD) eastern construction site or The Bays tunnel launch and support site • mainline twin tunnel excavation between The Bays and Sydney CBD • caverns, stub tunnels at end of turnback tunnels and connection tunnels by roadheaders • tunnel turnback at the end of the line, east of the eastern Hunter Street Station (Sydney CBD) construction site • movement of excavated spoil from The Bays and Sydney CBD
Station excavation and construction at Pyrmont and Hunter Street Stations	• station excavation • movement of excavated spoil • station precinct work.

An indicative construction program is shown in **Figure 6**.

Figure 6 | Indicative construction program (Source: Sydney Metro West EIS The Bays to Sydney CBD, 2021)

3 Strategic context

3.1 Strategic and proposal justification

The strategic justification for Sydney Metro West – Westmead to Sydney CBD was considered in the Stage 1 concept approval.

During construction across all stages, the proposal is estimated to create around 10,000 direct and 70,000 indirect jobs.

The Bays to Sydney CBD

The merits of the Sydney Metro West – The Bays to Sydney CBD proposal were considered in the context of a number of alternative options, including:

- station locations within Pyrmont and Sydney CBD
- location of station construction sites
- tunnel alignment, the approach to tunnelling and tunnelling support
- transport of spoil from excavation
- potential future extension of the Sydney Metro West line.

Table 2 | Alternatives considered

Element	Alternative evaluation

Pyrmont Station	• The Proponent investigated the following options for the proposed station within the Pyrmont Peninsula:
	  ○ northern section
	  ○ southern section
	  ○ eastern section
	  ○ western section
	  ○ central section.
	• Station options in the northern and southern parts of the Pyrmont Peninsula would require additional tunnel length to access those locations and additional walking distance to Pyrmont Bridge and Darling Harbour.
	• Northern site would also involve substantial walking distance to both the current Sydney Fish Market site and the new Sydney Fish Market site on Bridge Road at Glebe.
	• Station options in the eastern and western parts of the Pyrmont Peninsula would not provide convenient access to both Pyrmont Bridge and Darling Harbour, and the new Sydney Fish Market.
	• A station option in the western part of the Pyrmont Peninsula would also be relatively close to The Bays Station which would not maximise the potential customer catchment.

Element	Alternative evaluation

	• The Department is satisfied with the proposed station being centrally located in the Pyrmont Peninsula as it is consistent with the *Pyrmont Peninsula Place Strategy* (DPE 2020), and:
	  ○ provides good transport customer outcomes, with one station entry located near Pyrmont Bridge and Darling Harbour with access to the Sydney CBD, and another station entrance providing access to residential areas of Pyrmont and the new Sydney Fish Market
	  ○ provides access to restaurants, retail, entertainment precincts, including The Star Sydney, the International Convention Centre Sydney, the Sydney Fish Market, and Darling Harbour waterfront in the vicinity
	  ○ provides interchange with Sydney Light Rail (L1 Dulwich Hill Line) at Pyrmont Bay
	  ○ avoids heritage listed items and minimises impacts on the Pyrmont heritage conservation area.

Sydney CBD Station	• The Proponent investigated the following options for the proposed station in the Sydney CBD:
	  ○ Circular Quay
	  ○ Hunter Street
	  ○ Martin Place
	  ○ Elizabeth Street
	  ○ Museum.
	• Factors considered were:
	  ○ customer benefits which considers journey time, personal safety and security, connectivity to other modes, access for all and special events management
	  ○ deliverability and value which includes alignment, site conditions, constructability, community impacts, heritage, flora and fauna, existing transport network impacts, safety and reliability and cost.
	• Station options at Martin Place, Elizabeth Street and Museum in the Sydney CBD were likely to present challenges regarding constructability, operations and/or functionality.
	• Stations at Hunter Street and Circular Quay were considered feasible and generally perform well against the evaluation criteria. However, the Hunter Street station option connects closely with the T1 North Shore & Western Line and the T9 Northern Line at Wynyard, as well as the Sydney Metro City & Southwest and the T4 Eastern Suburbs & Illawarra Line at Martin Place.
	• The Hunter Street station option was found to be the most favourable, providing a suitable station location in the mid to north of the Sydney CBD and providing direct access to the commercial core of the Sydney CBD.

Element	Alternative evaluation

	• Elizabeth Street and Museum station locations will be considered as part of a potential future extension to Sydney Metro West.
	• The Department is satisfied with the proposed location of the Sydney CBD Station at Hunter Street as it:
	  ○ provides opportunity for a new east-west connection between Martin Place and Wynyard Stations, to benefit customers by offering a fully accessible interchange and pedestrian environment
	  ○ is centrally located within Sydney's commercial precinct by providing east-west connectivity and improved accessibility within the Sydney CBD
	  ○ will provide high levels of usage with almost 22,000 daily journeys on Metro services
	  ○ supports a total catchment of about 8,200 dwellings and about 227,000 jobs within a 10-minute walking catchment of the station
	  ○ additional direct access for Western Sydney customers to the northern Sydney CBD
	  ○ will relieve crowding at Sydney's busiest stations in the 2036 one-hour AM peak, including Central (about 5,200 movements), Wynyard (about 3,600 movements) and Town Hall (about 2,300 movements) stations
	  ○ will provide opportunity to transfer between the Metro services at Hunter Street Station (Sydney CBD) and Sydney Metro City & Southwest at Martin Place Station
	  ○ provides opportunity for customers to transfer to intermediate transport modes in the Sydney CBD, including the light rail along George Street and bus services.

Tunnelling alignment, tunnelling methodology and tunnelling support	• The proposed construction methodology is consistent with the approach described in Sydney Metro West EIS – Westmead to The Bays and Sydney CBD (Sydney Metro, 2020).

Pyrmont Station

The Sydney Metro West EIS – Westmead to The Bays (Sydney Metro, 2020) noted that the preferred location for a Sydney CBD Station was under investigation. Pyrmont was identified as a strategic station option with the potential to enhance Sydney Metro West. The investigation considered:

- station entry configuration, distance to key attractions and commercial activities within the catchment, to maximise customer convenience
- additional tunnel length, if required
- constructability and below ground constraints (existing basements, heritage constraints, land requirements)
- alignment with strategic land use and planning frameworks

- integration with the Sydney Metro West network alignment.

The investigation concluded that a station at Pyrmont is consistent with Pyrmont Peninsula Place Strategy (DPE, 2020) and will:

- provide strong transport customer outcomes, with station entries located close to key attractions
- provide an interchange with other public transport modes including bus, light rail and ferry networks
- have no significant impacts to overall journey times between Parramatta and Sydney CBD
- have no significant foreseeable constructability risks.

On 11 December 2020, the NSW Government announced that a new Metro railway station would be built at Pyrmont as part of Sydney Metro West – Westmead to Sydney CBD.

The Pyrmont Peninsula Place Strategy (DPIE, 2020) vision includes provision of greater transport connectivity by establishing a Sydney Metro Station at Pyrmont.

4 Statutory Context

4.1 State significance

The proposal was declared critical State significant infrastructure (CSSI) by the then Minister under section 5.13 *Environmental Planning and Assessment Act 1979* (EP&A Act) on 23 September 2020. The Minister for Planning is the approval authority.

4.2 Permissibility

The proposal is for the purpose of a rail infrastructure facility and is characterised as development permitted without consent, in accordance with section 2.92 of State Environmental Planning Policy (Transport and Infrastructure) 2021 (the Transport and Infrastructure SEPP).

4.3 Other approvals

In accordance with section 5.22(2) EP&A Act, the only environmental planning instruments that apply are the State Environmental Planning Policy (Transport and Infrastructure) 2021 (as it relates to the declaration of development that does not require consent) and State Environmental Planning Policy (Planning Systems) 2021 (as it pertains to the declaration of infrastructure as State significant infrastructure (SSI)). No other environmental planning instruments substantially govern the carrying out of the proposal.

Construction of the proposal would likely be subject to an environment protection licence issued under the *Protection of the Environment Operations Act 1997*.

Other legislation that applies is the *Land Acquisition (Just Terms Compensation) Act 1991*.

4.4 Staging

The assessment and approval process for a SSI project is established under Part 5, Division 5.2 EP&A Act. Staged infrastructure applications can be made under section 5.20 EP&A Act. The staged infrastructure application the subject of this assessment relates to the Stage 2 major civil construction between The Bays and the Sydney CBD including station excavation and tunnelling.

4.5 Mandatory Matters for Consideration

Objects of the *Environmental Planning and Assessment Act 1979*

The determination must have regard to the objects of the EP&A Act, and the Department has considered the objects of the EP&A Act including:

- ecologically sustainable development (see below and **Section 6**)
- social and economic welfare (see **Section 6**)

- protection of the environment, including in relation to biodiversity, traffic, noise and vibration, air quality, surface and groundwater hydrology, urban design, amenity and socioeconomic issues (see **Section 6**)
- sustainable management of built and cultural heritage, including Aboriginal cultural heritage (see **Section 6**)
- good design and amenity of the built environment (see **Section 6**)
- promote the sharing of the responsibility for environmental planning and assessment between the different levels of government (see **Section 5**)
- community participation in the assessment of the project (see **Section 5**).

4.6 Ecologically Sustainable Development

The EP&A Act adopts the definition of ESD found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental consideration in decision-making processes and that ESD be achieved through the implementation of:

- the precautionary principle
- inter-generational equity
- conservation of biological diversity and ecological integrity
- improved valuation, pricing and incentive mechanisms.

Objectives which guide the delivery and operation of the proposal would contribute to the sustainability of the proposal and meeting ESD principles. In addition to the objectives, the Proponent has addressed the above principles directly in the EIS and identified a range of initiatives and targets as part of its environmental and sustainability policy to manage impacts associated with these issues such as:

- sustainable procurement practices
- minimising water use during construction and considering opportunities for water reuse
- beneficial reuse of usable spoil
- recycling construction and demolition waste
- offsetting 25 per cent of the electricity needs for construction.

The Proponent is committed to achieving a minimum Infrastructure Sustainability Council Rating Scheme (ISC) Infrastructure Sustainability rating of 75 (Version 1.2) (or equivalent). The Department has recommended a condition of approval requiring a water reuse strategy be prepared and implemented that is based on best practice.

The precautionary principle is applied throughout the EIS and the Department considers the assessment and the range of mitigation measures adequately adopt the principle. The Department is also satisfied that the valuation and pricing of the environmental resources associated with Stage 2 of the proposal have been adequately considered and internalised through the project design and the mitigation measures.

The Department considers that Stage 2 of the proposal is consistent with the principles of ESD.

4.7 Biodiversity Development Assessment Report

Section 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act) requires all applications for SSI and SSD to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values

The Proponent submitted a BDAR waiver request in May 2021. A determination under clause 7.9(2) of the *Biodiversity Conservation Act 2016* was issued by the Department on 24 June 2021. The determination concluded the proposal is not likely to have any significant impact on biodiversity values and therefore a Biodiversity Development Assessment Report is not required.

4.8 Consideration of related development

Sydney Metro West – Concept and Stage 1 (major civil construction between Westmead and The Bays

Sydney Metro West – Concept

The Sydney Metro West Concept is the concept proposal for the staged CSSI, which includes approximately 24 kilometres of underground metro rail and associated station development between Westmead and the Sydney CBD.

Sydney Metro West – Stage 1

Stage 1 covers civil construction between Westmead and The Bays including:

- excavation and lining of two mainline tunnels (each around 24 kilometres in length) using tunnel boring machines launched from Westmead and The Bays, cross passages (between the two mainline tunnels) and stub tunnels near Westmead,
- tunnel support facilities at Westmead and The Bays construction sites
- station box excavation for new metro stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays
- shaft excavation for services facilities at Rosehill / Clyde
- civil work for the stabling and maintenance facility at Clyde
- tunnel excavation including tunnel support activities between Westmead and The Bays.

The then Minister for Planning and Public Spaces determined the Concept and Stage 1 application on 11 March 2021. This approved a concept for a Metro between Westmead and the Sydney CBD and station excavation and tunnelling between Westmead and The Bays. It did not include tunnel fitout or Metro station building between Westmead and The Bays, tunnelling or station excavation between The Bays and Sydney CBD, or operation of the line.

Sydney Metro West – rail infrastructure, stations, precincts and operation

SSI application 22765520 covers rail infrastructure, station precincts and operation of the entire line from Westmead to the Sydney CBD and includes construction of:

- stations and structures for non-station uses, station fit-out

- construction of station precincts and interchange facilities (including provisioning for over station development) where proposed.

The EIS for Stage 3 was exhibited from 23 March to 4 May 2022 (inclusive).

Key issues identified by the Proponent in Stage 3 EIS are:

- noise and vibration impacts during construction and operation
- operational and construction traffic impacts including changes to temporary construction and permanent operational network changes
- pedestrian access around sites during construction and operation
- social and local business impacts due to construction-related disruptions
- impacts to landscape character and visual amenity due to the scale and extent of construction
- impacts to visual settings of heritage items and conservation areas
- groundwater and flooding impacts
- cumulative construction impacts including traffic and transport, noise and vibration, non-Aboriginal heritage and social impacts.

Sydney Metro City and Southwest Chatswood to Sydenham

Sydney Metro City and Southwest Chatswood to Sydenham (SSI 7400) is an underground metro rail line, 16.5 kilometres in length, between Chatswood Station and just north of Sydenham Station. The then Minister for Planning determined the application on 9 January 2017 and the project is currently under construction. Following testing and commissioning of the new metro line, services are expected to start in 2024.

The proposed Hunter Street Station east construction site adjoins the Martin Place Station north construction site. Cumulative construction impacts include traffic and transport, noise and vibration, non-Aboriginal heritage, social and business.

Sydney Metro Martin Place North over station development

The Sydney Metro Martin Place North over station development (SSD-9270) involves the construction and use of a 39-storey (plus rooftop) commercial tower above the northern entrance of the new Martin Place Metro Station. The then Minister for Planning determined the application on 13 August 2019 and it is currently under construction.

The Martin Place Station North over station development construction site is located south of the proposed Hunter Street Station east construction site. Martin Place Station North is located in a block bounded by Hunter Street, Castlereagh Street, Elizabeth Street and Martin Place. Cumulative construction impacts include traffic and transport, noise and vibration, social and business.

The Bays Road relocation work

The Bays Road relocation work is a proposed reconfiguration of Port Access Road, Sommerville Road and Solomons Way at The Bays Precinct. These works would improve road reliability of the network and access to the White Bay Cruise Terminal and other port related businesses during Metro West construction. Environmental impacts were considered in a REF (Sydney Metro, 2020). The REF was exhibited from 30 April to 29 May 2020. In summary, the following impacts were identified by the Proponent:

- construction noise impacts with ‘moderate’ and ‘high’ impacts for a short duration during site clearing during standard construction hours
- exceedances of the cosmetic damage screening criteria at some buildings at the White Bay Power Station and Cement Australia site
- minor visual and vibration impacts at the White Bay Power Station where work occurs within the SHR listed curtilage
- construction traffic impacts associated with other Transport for NSW projects, including the M4-M5 Link (Rozelle Interchange) and Western Harbour Tunnel.

To the extent they are impacts associated with the proposal, on the basis of the risks and proposed mitigation measures assessed, the Department is satisfied that they are acceptable (as managed by the mitigation measures). The cumulative impact assessment of this proposal has considered the impacts of those abovementioned related developments. Therefore any recommendations to address cumulative impacts from this proposal would address the contributing impacts from those projects.

5 Engagement

5.1 Department's engagement

Relevant State regulatory agencies and councils were invited to a planning focus meeting in May 2021 where presentations were held on the project application and an opportunity to ask questions was provided to inform development of Secretary's Environmental Assessment Requirements.

Under section 5.28(1)(c) EP&A Act, the Department placed the EIS and accompanying documents on exhibition from 3 November to 15 December 2021 (a total of 43 days) on the Department's Major Projects website.

Notification of the public exhibition was advertised on 3 November 2021 in The Daily Telegraph and Sydney Morning Herald to inform the public of the exhibition details and how to comment on the proposal. The Department notified relevant State and local government authorities of the exhibition.

The Department undertook a site visit on 6 December 2021 of the proposed alignment to obtain an understanding of the surrounding environment, its sensitivities and issues raised in submissions.

5.2 Summary of advice received from Government agencies

During the exhibition period, the Department received advice from six government agencies. Further advice was then sought on the Submissions Report received on 22 April 2022. A summary of the advice from agencies is in **Table 2**. A link to the full copy of the advice is provided in **Appendix C**.

Table 2 | Summary of agency advice

Environment and Heritage Group (EHG) – Heritage NSW (Aboriginal Cultural Heritage Regulation Branch)	
EIS	Heritage NSW (Aboriginal Cultural Heritage Regulation Branch) supports the Aboriginal cultural heritage recommendations and proposed mitigation and management measures as outlined in Aboriginal Cultural Heritage Assessment Report (ACHAR).
Submission Report	Heritage NSW (Aboriginal Cultural Heritage Regulation Branch) noted that the revised environmental mitigation measures of the Submissions Report appear consistent with the advice they provided on the Environmental Impact Statement. Support ongoing consultation with the Aboriginal community and the preparation of an Archaeological Method Statement.

Heritage Council of NSW	
EIS	Heritage Council of NSW (Heritage Council) noted that the proposal would directly and indirectly impact 10 State Heritage Register listed items. The Heritage Council acknowledged the proposal has the potential to impact historical archaeological relics of local significance at Pyrmont Station and relics of State and local significance at Hunter Street Station. The Heritage Council also commented on noise and vibration, visual amenity and non-Aboriginal heritage matters.
Submission Report	The Heritage Council noted that the Submissions Report provides sufficient detail to address Heritage Council's comments on the EIS concerning vibration and settlement, and visual impacts. They noted that the final archaeological research designs (ARDs) for the Pyrmont Station and Hunter Street Station construction site study areas were not provided for comment. When the final ARDs are available, comments can then be provided to inform the determination and ensure appropriate management of historical archaeology. Heritage Council recommended conditions to address these concerns.
Environment Protection Authority	
EIS	Environment Protection Authority (EPA) indicated the proposal would require an environment protection licence (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act). EPA raised concerns on noise and vibration impacts, surface water quality and contamination issues.
Submission Report	The EPA noted that many of the issues raised in its submission on the EIS, particularly in relation to noise and vibration and contamination, were either not satisfactorily addressed, or were deferred to detailed design for further assessment post-approval. The EPA requests that these issues be dealt with during the planning process, but also recommended conditions to address their concerns.
DPE Water Group/ Natural Resource Access Regulator (Water Group)	
EIS	DPE Water Group/Natural Resource Access Regulator (Water Group) raised concerns regarding water balance and licencing, and groundwater impacts and management. The Water Group also requested the Proponent conduct further geotechnical, geological, contamination, salinity and hydrogeological investigations.
Submission Report	Water Group noted it had no additional recommendations or comments, but that the post approval recommendations provided in its submission on the EIS still apply.
NSW EHG – Biodiversity and Conservation (formerly NSW Environment, Energy and Science)	
EIS	NSW Environment and Heritage Group - Biodiversity and Conservation (EHG Biodiversity) sought clarification on the Proponent's approach to pre-clearing surveys and pre-demolition surveys /searches of the human-made structures for microbats at the Pyrmont Station and the Hunter Street Station construction sites. EHG Biodiversity also requested further information on revegetation and landscaping, the number of replacement trees, replacement planting locations, preference of replacement for local native plant species, and pot size.

Submission Report	EHG Biodiversity continued to raise issues with the information provided relating to pre-clearing surveys and pre-demolition surveys /searches of the human-made structures for microbats at construction sites, and revegetation and landscaping. EHG Biodiversity recommended conditions to address their concerns.
NSW EHG – Flooding (formerly NSW Environment, Energy and Science)	
EIS	NSW Environment and Heritage Group – Flooding (EHG Flooding) commented on the approach of the modelling completed for flooding and hydrology assessment. EHG Flooding requested mapping of flood impacts greater than 10 mm be provided similar to the approach undertaken for Stage 1. EHG Flooding also requested further assessment be undertaken on flooding impacts during construction, cumulative flooding impacts with construction of the Rozelle Interchange at The Bays, and flooding conditions under the projected climate change scenarios in the years of 2100s, for the operational stage of Sydney Metro West.
Submission Report	EHG Flooding noted that the Submissions Report could have included an assessment on the loss of storage and obstruction to overland flow paths, to provide a qualitative indication on the likely change of flooding impacts. However, they noted that the modelling works would be undertaken during the detailed construction planning stage to evaluate the impacts. They also note that flooding impacts in relation to the City West Link had not been adequately considered but could be conditioned. Further, EHG Flooding questioned the reasonableness of the Proponent's approach to the consideration of climate change impacts.

5.3 Summary of submissions

During the exhibition period, the Department received 18 unique submissions on the proposal. Of the submissions received, two were from local council, seven were from special interest groups and organisations and nine were from community members. From the unique submissions received, five submissions supported the proposal, four submissions objected to the proposal, and 9 submissions provided comments only. Community submissions were received from individuals located within the Sydney Metropolitan area and an affected business within the Sydney Central Business District (CBD).

The Department received one late submission from accommodation provider Accor Vacation Club representing one of its properties. The late submission was not counted as it was received outside the EIS exhibition period; however, the Department has considered the submission in this assessment.

A summary of the submissions is provided in **Table 3** and **Table 4** below. A link to the full copy of the submissions is provided in **Appendix D**.

Table 3 | Summary of Council Submissions

Inner West Council	
EIS	Inner West Council advised it supports the proposal and provided the following comments: • requests air quality monitoring at construction sites and a prompt response and management of community complaints • advised on the presence of sensitive fauna and the need for preclearance surveys to allow for fauna relocation; minimise tree removal and tree replacement • requests community engagement on noise impacts, including out of hours works • consider construction and construction traffic impacts to pedestrians and cyclists, and buses, and require construction heavy vehicle identification and driver behaviour training • consider construction worker parking and use of public transport • requests a comprehensive cumulative impact assessment • consider potential changes in drainage and overland flow • implement appropriate archaeological protocols and undertake Aboriginal consultation regarding waterways at The Bays • consider impacts to heritage items including White Bay Power Station and port infrastructure, and vibration monitoring and condition surveys to be undertaken at significant heritage structures in proximity to construction sites • consider social and business impacts relating to residents working from home, the use of the Bays as a viewing area for special events, and the White Bay Cruise Passenger Terminal • public health analysis be undertaken, including cumulative impacts of large construction projects • manage contamination in the vicinity of the White Bay Power Station.
Submission Report	Inner West Council generally accepts and/or recognises the approach in relation to consultation, traffic and traffic impacts, Aboriginal and non-Aboriginal heritage impacts, impacts on business and special events, and hydrology and flooding impacts. Further consideration of parking impacts, noise and vibration impacts, tree and vegetation impacts, human health and contamination impacts, and cumulative impacts was requested.
City of Sydney	
EIS	• City of Sydney advised it supports the proposal and provided the following comments: • impacts relating to the management of street trees, including a need to prepare an Arboricultural Impact Assessment (AIA) prior to construction • the minimisation of noise and vibration impacts and the provision of respite for noise intensive works • consideration be given to groundwater discharge options and a request that contaminated groundwater not be discharged into Council's stormwater drainage system • consideration of heavy vehicle speed limits and safety standards • requirement for Construction Traffic Management Plans and consultation with residents and businesses on parking changes and haulage routes

City of Sydney	
	• adopt and implement flood mitigation measures • request a detailed salvage methodology, an archaeological research design and conditions surveys be undertaken for specific sites, and archaeologically sensitive construction methods • a site contamination assessment should be undertaken in accordance with guidelines • retain and protect streetscapes as much as possible, and reinstate works to the public domain in accordance with Council's technical specifications • consider impacts on waste servicing and collection • use lower carbon concrete and align with the circular economy and Net Zero by 2050 policy positions of the NSW Government.
Submission Report	City of Sydney advised that it's comments on the EIS generally still stand. Conditions were requested to address outstanding heritage matters, and further consideration of landscape and visual amenity impacts was requested. The EIS clarifications provided in Section 2 of the 'Submissions Report' were reviewed from a Transport and Traffic perspective and City of Sydney requested Construction Traffic Management Plans be prepared for the Pyrmont and Hunter Street construction sites and to be consulted on haulage routes and on-street parking changes. City of Sydney also recommended traffic controllers be provided at the intersection of Bent Street and O'Connell Street to assist construction traffic with the right turn movements.

Table 4 | Summary of community submissions

Submitter	Number	Position
Special Interest Groups		
Pyrmont Action Inc	1	Comment
Brookfield Properties	1	Comment
The Royal Botanic Gardens and Domain Trust	1	Comment
Friends of Ultimo	1	Object
Action for Public Transport (NSW) Inc.	1	Comment
Sydney Olympic Park Business Association Inc.	1	Support
Charter Hall Holdings Pty. Limited	1	Comment
TOTAL	**7**	
Unique submissions from Community Members		
	2	Object

Submitter	Number	Position
< 5 km	3	Support
	2	Comment
5–100 km	1	Object
	0	Support
	1	Comment
> 100 km	0	Object
	0	Support
	0	Comment
TOTAL	**9**	

5.4 Key issues raised

The Department received submissions from nine community members and seven from special interest groups/organisations.

The key issues related to the proposal are summarised below.

Project design

- the need for and benefits of a metro station at Pyrmont
- consider a pedestrian tunnel from western Pyrmont Station site to Blackwattle Bay
- minimise walking distances from the street to platforms and between platforms at interchanges.

Traffic and transport

- coordination with other construction works to minimise traffic disruption
- clear signage for cyclists and installation of a zebra crossing at Edward Street and Pyrmont Bridge Rd intersection
- maintaining access to businesses and limiting construction vehicle access to residential neighbourhoods
- closure of existing underground pedestrian walkway between Wynyard Station and Pitt Street
- traffic management during significant events that take place in the Domain
- engagement of community stakeholders in traffic management
- maintaining access for emergency vehicles.

Noise and vibration

- concerns on the management of noise impacts during early works
- concerns with construction noise and vibration impacts at Pyrmont and proposed mitigation

- request for installation of permanent noise monitoring equipment at Pyrmont on building facades facing neighbouring residents/buildings
- consider health and wellbeing of residents resulting from extended construction hours.

Air quality

- air quality (dust) impacts to residences and businesses.

Heritage

- proximity and potential impacts to the Pyrmont Heritage Conservation Area and vibration impacts to heritage buildings.

Business

- business impacts, compensation and dispute resolution
- reconsider the ability to maintain access through the Hunter Tunnel during construction
- request for early consultation with affected businesses resulting from the closure of underground pedestrian walkway between Wynyard Station and Pitt Street (Hunter Tunnel).

Place

- activation of street frontages at both Pyrmont station sites
- visual amenity impacts with height and overshadowing of tall buildings at Pyrmont
- concern with security at the street level of Pyrmont Station eastern site.

Biodiversity and biosecurity

- management of potential pathogens during geotechnical investigations at the Domain
- retention, planting, relocation and retention of street trees at Pyrmont.

Community and stakeholder consultation

- establishment of a Community Consultative Committee
- community notification requirements during early works
- consideration of on-site information days for Pyrmont residents and businesses
- request the Proponent communicate with the Domain Trust.

Cumulative impacts

- consideration of cumulative impacts to Pyrmont Peninsula Place Strategy, Sydney Fish Market, Blackwattle Bay Urban Renewal and the Star six-star Hotel.

5.5 Response to submissions and Government Agency advice

On 20 December 2021, the Department provided the Proponent with the above submissions following public exhibition of the EIS and requested the Proponent prepare a response to those submissions.

The Sydney Metro West – Major civil construction between The Bays and Sydney CBD Submissions Report (Submissions Report) (**Appendix E**) was made publicly available on the Department's Major Projects website on 22 April 2022. The Submissions Report included Proponent clarifications to information presented in the EIS, a summary is provided in **Table 5**.

Table 5 | Clarifications in the Submissions Report

Clarification	Proponent's Review
Modified construction boundary – The Bays tunnel launch and support site The Cement Australia parking area would not be used to store spoil at The Bays tunnel launch support site. A portion of the WestConnex Rozelle Interchange construction site would primarily be used for laydown of plant, materials and equipment, in addition to other surface construction activities. Upon completion of WestConnex Rozelle Interchange, this parcel of land would then continue to form part of future stages of Sydney Metro West following the completion of this project.	• The modified boundary at The Bays tunnel launch and support site would not result in any change to other issues as described and assessed in the EIS given that the land has previously been disturbed by the construction of WestConnex Rozelle Interchange and that the indicative use of this land would be as a laydown area only. • The additional site area adjoins The Bays Station construction site that was assessed as part of the Concept and Stage 1 (SSI10038 approved 11 March 2021). • No high noise generating activities (such as excavation using rockbreakers or piling) are proposed. • No surface disturbance. • Low archaeological potential. • No substantial change to flood storage or a likely impediment of flow paths.
Project methodology – tanking of shafts and caverns The EIS incorrectly identified all components of both Pyrmont and Hunter Street (Sydney CBD) stations as being tanked (designed to inhibit the inflow of groundwater, typically using concrete lining and waterproofing membrane). The access shafts at Pyrmont Station and Hunter Street Station (Sydney CBD) locations would be untanked.	• No change to the inflow rates and volumes presented in the EIS. • No further assessment of groundwater impacts was required.
Revised haul route and vehicle movements at Pyrmont Station construction sites This haul route would involve: • A revised outbound route southbound along Pyrmont Street then onto the Western Distributor • A revised inbound route for the eastern construction site by turning left from Pyrmont Bridge Road onto Edward Street and right onto Union Street • A revised outbound route from Union Street egress, left onto Pyrmont Bridge Road, returning via the Darling Drive roundabout and Pyrmont Street • Retention of the westbound outbound route back onto the Western Distributor/Anzac bridge. Partial closure of two westbound traffic lanes in Union Street between Pyrmont Bridge Road and Edward	• Addresses Transport for NSW request to establish a revised outbound haul route at Pyrmont Station construction sites to improve traffic outcomes. • The southbound route along Pyrmont Street then onto the Western Distributor avoids the use of Harris Street and avoids direct impacts to the intersection of Harris Street and Fig Street. • Revised modelled intersection performance was undertaken to address the revised haul routes and additional construction heavy vehicles. • The partial closure of the westbound traffic lanes in Union Street would have no impact to existing cyclists due to the separate cycleway remaining operational and access to the cycling route along Darling Drive would remain available. • Potential impacts to buses will be managed in accordance with the Construction Traffic Management Framework presented as Appendix

Clarification	Proponent's Review
Street is proposed to facilitate right turn construction vehicle access from Union Street into the construction site. Eastbound traffic would continue to use the single through lane on Union Street, while westbound traffic would be restricted. Chapter 6 and Technical Paper 1 (Transport and traffic) of the EIS considered half the construction heavy vehicle movements required for the Pyrmont Station construction sites. A revised traffic and transport assessment that includes the additional construction heavy vehicle movements was provided in the Submissions Report. On-street parking spaces and a loading zone would be temporarily removed along both sides of Union Street between Edward Street and Pyrmont Bridge Road. Parking would be temporarily moved on the south side of Union Street between Edward Street and Pyrmont Bridge Street with only one way traffic flow eastbound along Union Street. The modelled 2024 'with proposal' Level of Service at most intersections would remain the same as presented in the EIS, with some improvements.	D of the EIS and updated as Appendix C of the Submissions Report. • No impacts to the light rail or ferry networks are anticipated during construction. • The combined loss of on-street parking spaces would have minor impacts to the existing road network, given the availability of parking on other local roads nearby, and the permanent demolition of properties that currently generate parking demand. • Opportunities to mitigate impacts to on-street carparking will be explored by the Proponent in consultation with City of Sydney during construction planning. • Additional noise impacts resulting from construction heavy vehicles accelerating and decelerating at the entrances/exits of the Pyrmont construction sites are generally limited to around 150 metres either side of the construction site access points, with the potential to result in increased annoyance at the closest receivers. Review of construction traffic will be undertaken by the Proponent during detailed design.
Access arrangements for emergency services in Pyrmont The Environmental Impact Statement did not consider transport and traffic impacts to emergency services within Pyrmont. A search of emergency services near the Pyrmont Station construction sites found that Pyrmont Fire and Rescue is located at 147 Pyrmont Street, within 85 metres of the Pyrmont eastern construction site.	• Addresses public submission requesting access be maintained for emergency vehicles. • A new mitigation measure has been included by the Proponent in the Submissions Report that requires emergency services to be consulted about proposed road network changes during construction.
Revised haul route and vehicle movements at Hunter Street Station (Sydney CBD) construction sites This haul route would involve construction traffic travelling to the western construction site via Macquarie Street and Hunter Street. The primary inbound route to the Hunter Street Station (Sydney CBD) eastern construction site would be via Bent Street and O'Connell Street. An alternative inbound route via Bridge Street, Loftus Street and O'Connell Street (Primary Inbound B) has been retained consistent with the EIS should it be required but is not the preferred route. Following consultation with City of Sydney, the alternative outbound haul route via Margaret Street described in the EIS is no longer proposed. Chapter 6 and Technical Paper 1 (Transport and traffic) of the EIS considered half the construction heavy vehicle movements required for the Hunter Street Station (Sydney CBD) construction sites. A	• Addresses Transport for NSW and City of Sydney requests for the Proponent to establish a revised inbound haul route at the Hunter Street Station (Sydney CBD) western construction site to improve traffic outcomes. • The forecast volume of heavy vehicle arrivals into the Sydney CBD would not result in queuing or circulation of vehicles on streets on approach to the construction sites. Management of heavy vehicle arrivals and departures will be managed in accordance with the Construction Traffic Management Framework. • Transport for NSW will lead investigations into the following potential road network changes near the Hunter Street (Sydney CBD) western construction site in collaboration with the Proponent and the City of Sydney: o Partial or full closure of Hunter Street to through traffic to/from George Street and Margaret Street o Options to reallocate road space on the western part of Hunter Street.

Clarification	Proponent's Review
revised traffic and transport assessment that included the additional construction heavy vehicle movements was provided in the Submissions Report The 2024 'with proposal' Level of Service (LoS) results have changed compared to those presented in the EIS, with a minor reduction on LoS at key intersections.	• O'Connell Street, north of the Hunter Street east construction site, is predicted to have a potentially noticeable increase in traffic noise during the night-time period due to the relatively low existing volumes on this road. Review of construction traffic will be completed by the Proponent during detailed design.

The Submissions Report was forwarded to government agencies and councils for comment. Government agencies and councils did not raise concerns with the clarifications presented in the Submissions Report.

6 Assessment

The Department has identified the key issues as noise and vibration, non-Aboriginal heritage, traffic and transport; and social and business (**Sections 6.1** to **6.4**.). Other issues considered are discussed in **Section 6.5**. The assessment relates only to tunnelling and station box excavation between The Bays and Sydney CBD. Stage 3 Rail infrastructure, fitout, station construction (SSI-22765520) and over station development will be considered under separate assessment pathways.

6.1 Noise and vibration

The Department acknowledges that complex infrastructure projects in urban environments result in noise and vibration impacts, that good practice is for these impacts to be minimised as far as practicable and be proactively managed. The Proponent has identified a range of measures that would assist in mitigating these impacts, and combined with recommended conditions, the Department considers that noise impacts would be appropriately managed.

The predominant land uses in noise affected areas are:

- The Bays – residential, mixture of commercial, place of worship, childcare, educational facility, industrial buildings, and recreational areas
- Pyrmont – mixture of commercial, residential, education facility and childcare. The Sebel Hotel is located between the two construction sites. The Star Casino and the Sydney Lyric Theatre are located north of the two construction sites
- Hunter Street – commercial including a mixture of hotels, education facilities, places of worship, public buildings and some residential.

Construction would occur simultaneously across the alignment. Once sites are established (at Pyrmont and Hunter Street) and tunnelling (from The Bays) or excavation begins, noise and vibration impacts would originate from those sites. Noticeable increases in road traffic noise from construction haulage and deliveries is not expected as traffic noise levels are not expected to be greater than two dB.

The Department recommends limiting station box excavations (including within an acoustic shed) to 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 6:00 pm Saturday in Pyrmont, due to the noise impacts and potential sleep disturbance to surrounding receivers. This aspect is considered further below. A range of mitigation and management measures would be employed, including the use of acoustic sheds at all sites for at least part of the excavation.

Noise and vibration generated at The Bays Station construction site was assessed as part of Concept and Stage 1 major civil construction between Westmead and The Bays (SSI 10038) approval. The Bays site will continue to be used for Stage 2 as a tunnel launch and support site for tunnel boring machines (TBM) working east towards Pyrmont and Hunter Street in the Sydney CBD. No additional vibration impacts are expected at the former White Bay Power Station as vibration intensive work during cavern mining would be around 300m away and further than work undertaken for Stage 1.

Issue

Construction hours include activities within standard daytime hours, work outside standard hours and 24 hours a day, seven days a week tunnelling

Proposed construction hours for various activities are shown in **Table 6**. These are generally consistent with those adopted on other infrastructure projects including other projects of the Sydney Metro program such as the City and Southwest - Chatswood to Sydenham (SSI 7400) and Stage 1 – major civil construction between Westmead and The Bays (SSI 10038).

Table 6 | Proponent proposed construction hours (Source: EIS)

Construction hours	Activities
Above ground activities 24 hours a day, seven days a week / outside construction hours	long term activities to support tunnelling • TBM launch, support and extraction • mucking out and spoil handling • construction traffic for material supply to and spoil removal from tunnelling and underground excavation • station box excavation within an acoustic shed. short term duration work • utility work (short term work) (includes power supply connection to Pyrmont substation if road possession between 6 pm and 7 am is required).
7.00 am to 6.00 pm Monday to Friday 8.00 am to 6.00 pm Saturdays No work on Sundays and public holidays.	• enabling work • site establishment (including demolition and demobilisation) • piling • surface construction • initial excavation.
Power supply to Pyrmont construction sites Work carried out when required up to 24 hours a day, seven days a week	• undertaken early in the program to provide power to the Pyrmont construction sites from the Pyrmont substation • power supply route would generally be located within existing road reserves of Pyrmont Bridge Road and Harris Street and constructed by open trenching • would require at least partial road occupation and therefore is likely to occur at night during periods of low road use to minimise safety impacts and inconveniences to motorists.
24 hours per day, seven days per week at The Bays tunnel launch and support site and Hunter Street Station (Sydney CBD) construction sites Pyrmont – between 7 am to 10 pm only (with limited truck movements during night-time for safety reasons).	• construction traffic haulage for material supply to, and spoil/ waste material removal from construction sites.
Underground construction activities 24 hours a day, seven days a week / outside construction hours	• tunnelling work

Construction hours	Activities
	• underground excavation) at Pyrmont and Hunter Street (Sydney CBD) metro station sites as shown in **Figure 7** and ancillary sites • rock hammering and road headers within the tunnel • station and crossover cavern excavation and concrete lining • operation of underground work trains.
Other construction activities Work carried out when required up to 24 hours a day, seven days a week	• work determined to comply with the relevant noise management level at the nearest sensitive receiver • work required to be carried out during road possessions where a road occupancy licence is in place • delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons • emergencies where it is required to avoid the loss of lives and property and/or to prevent environmental harm • where agreement is reached with affected receivers.

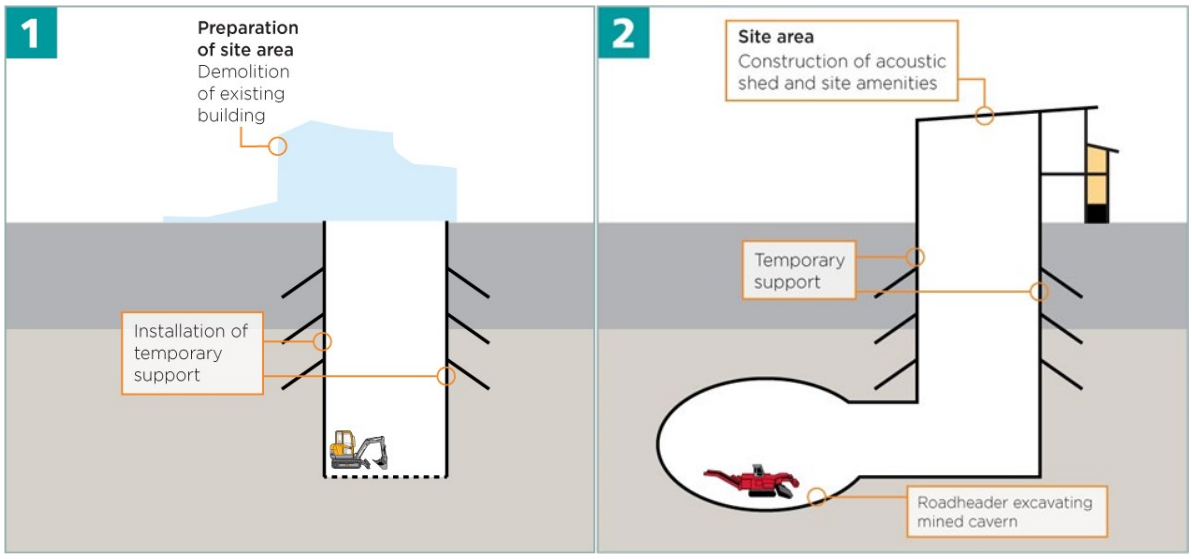

Figure 7 | Cavern station construction – indicative methodology (Source: EIS)

Tunnelling and station box excavation activities at sites with acoustic sheds is proposed 24 hours a day, seven days a week. The acoustic shed at The Bays has been installed as part of Stage 1 (SSI 10038). Acoustic sheds would be erected at both Pyrmont Station construction sites.

Mined cavern excavation at the eastern Hunter Street (Sydney CBD) site would occur inside an existing acoustic shed used to support and access the Martin Place site on the City and Southwest project (SSI 7400). The shed would be dismantled once cavern excavation is complete to allow shaft excavation, as it only partly covers the Hunter Street eastern site as shown in **Figure 9**.

Potential for vibration is greatest at the surface and would diminish as excavation gets deeper

Vibration impact predictions represent work at its closest point to each receiver. These predictions represent a worst-case situation where a large rockbreaker is in use at the boundary of the sites and is in close proximity to the affected buildings. In reality, smaller equipment or alternative methodologies would likely be used to control impacts as the work nears adjacent structures, impacts would be lessened when work is more distant or deeper underground. **Figure 8** and **Figure 9** show buildings expected to be affected by vibration.

The construction impacts were summarised in the EIS on the basis of several study areas centred around each surface construction site. Each study area was divided into one or more Noise Catchment Areas (NCAs) that reflect the ambient noise environment of that area, as well as the noise and vibration sensitivity of the surrounding land uses.

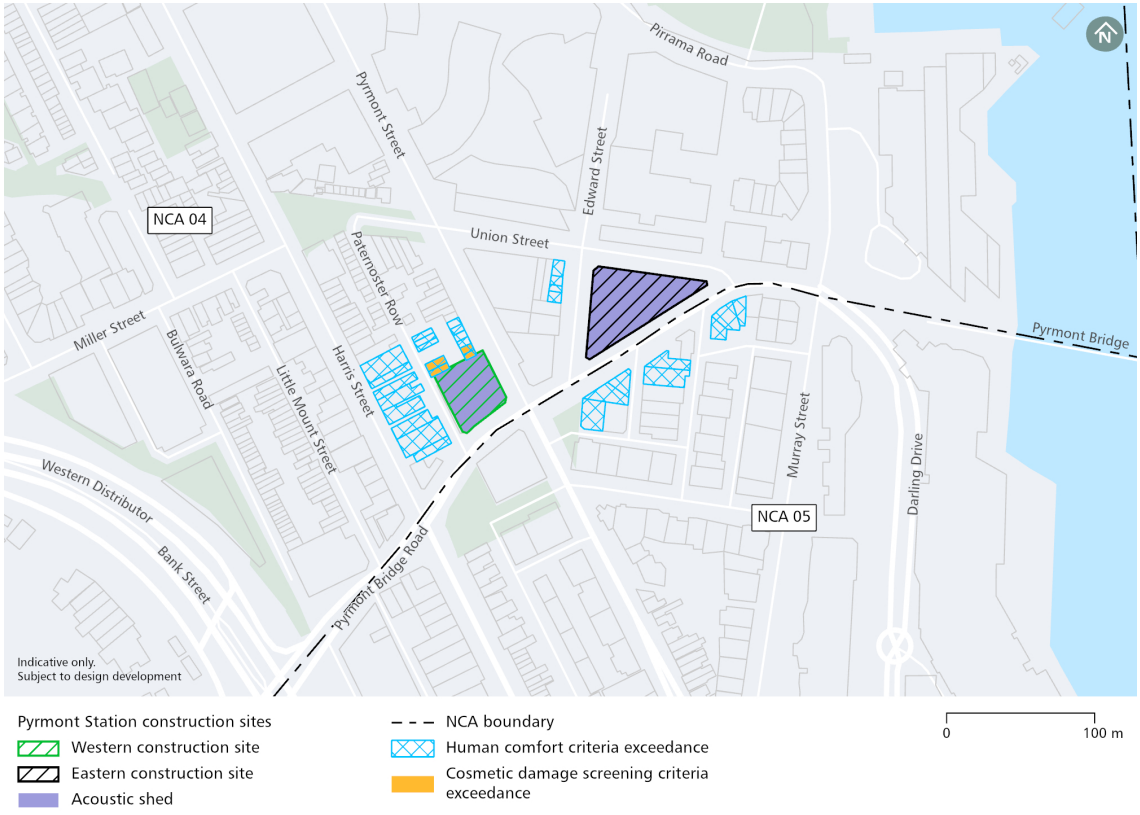

Figure 8 | Vibration impacts – Pyrmont Station sites (Source: EIS)

Figure 9 | Vibration impacts – Hunter Street Station sites (Source: EIS)

Cosmetic damage may occur during demolition and excavation works at station locations. These works are expected to last up to 96 weeks at Hunter Street and up to 31 weeks at Pyrmont. Listed heritage items and conservation areas are located near the Pyrmont West and both Hunter Street locations.

Human comfort criteria are predicted to be exceeded at several buildings near construction sites, meaning occupants of affected buildings may perceive vibration impacts.

Vibration during tunnelling is expected to comply with cosmetic damage criteria but potential exceedances of human comfort criteria are likely around Pyrmont and Hunter Street (Sydney CBD). Vibration may be perceptible when tunnelling is beneath receivers, typically those closest to construction sites where tunnel depth is shallowest.

Three buildings at the Sydney Hospital are expected to experience vibration which exceeds technical specifications of sensitive equipment located in them. Vibration sensitive equipment is, however, often housed in buildings/ rooms specifically designed and constructed for that purpose, which can help mitigate any potential impacts. Further engagement and consultation with Sydney Hospital would be carried out by the Proponent to confirm the presence of vibration sensitive equipment, how and when it is used, and the construction of the building(s). Specific management options, such as attended or unattended monitoring, would be developed and implemented.

Submissions

The following issues are residual matters raised in advice and submissions which require further consideration and resolution. Other matters are considered to have been appropriately addressed in the EIS and Submissions Report.

Community and Interest Group submissions

The following comments were raised:

- concerns with construction noise and vibration impacts at Pyrmont and proposed mitigation
- respite should be provided.

Council submissions

Inner West Council were concerned with the cumulative construction noise and vibration impacts at Balmain, Rozelle, Annandale, and Pyrmont, and potential vibration impacts to White Bay Power Station, Glebe Island Silos, and Glebe Island Bridge. Awareness about the prolonged nature of residents working from home that is likely to continue post COVID-19 pandemic was also raised.

City of Sydney acknowledged construction noise impacts are predicted to be 'high' for sensitive receivers during noise intensive surface activities required to be completed ahead of acoustic sheds being in place.

Council also raised concerns that several heritage items and buildings within the Pyrmont Heritage Conservation would experience vibration impacts from tunnelling and excavation activities at Pyrmont construction sites. Provision of respite during use of highly intrusive equipment, particularly during rock breaking works was recommended.

Agency advice

Environment Protection Authority (EPA) raised concern that noise and vibration classifications are unlikely to align with community expectations. Other matters raised included:

- justification and applicability of construction outside of the recommended standard hours on Saturdays between 1 pm until 6 pm
- recommend not permitting rock breaking between 10 pm and 7 am in noise sensitive areas where night time ground-borne noise exceeds objectives in the Interim Construction Noise Guideline (DECC, 2009) (ICNG).

The EPA emphasised the importance of providing further detail on proposed noise and vibration mitigation, including conceptual feasible and reasonable mitigation measures.

Heritage Council requested clarification on the structural assessment guideline adopted for vibration at each heritage item, especially the ten heritage items listed on the State Heritage Register.

Heritage Council also raised concerns about structural impacts to heritage items.

Consideration

The management of construction noise would be based on accepted noise management levels and the management measures would be implemented through Construction Noise and Vibration Impact Statements

The EPA raised concern that the assessment of noise and vibration impacts being classified as "low" and "moderate" are unlikely to align with community expectations. Noise levels described as "low" and "moderate" in the Noise and Vibration Assessment (NVIA) would be very noticeable by the community and may lead to complaints.

The impact classifications represent a likely subjective response to noise and are aligned with bands of noise management level exceedance. The Proponent has acknowledged that the subjective response would vary and depend on the period in which the impacts occur, and proposes to further refine impact categories in Detailed Noise and Vibration Impact Statements accounting for factors such as location, type/sensitivity of receiver, amenity objectives for an area, extent of exceedance, duration, and time periods. Expected exceedance of noise management levels, rather than the impact categories used in the EIS, would be the basis for implementing mitigation measures during construction, and would be further refined in Construction Noise and Vibration Impact Statements.

Noise impacts and scenarios have been based on equipment used in previous stages and are considered conservative, onsite impacts will be reviewed and managed with site specific mitigation measures

The EPA was also concerned with the quantification of sound levels which considered "realistic worst-case scenarios". These were based on observed equipment use on previous construction projects and have been used in previous assessment and are consistent with the modelling approach for Stage 1. All scenarios assume several items of equipment are being used simultaneously, which is conservative and unlikely to occur regularly. If all items are assumed to be in use for the full 15-minute assessment period, this would likely lead to overprediction of noise levels and impacts.

The Department is satisfied that noise modelling is conservative, as it assumes several items of equipment are in use in the worst-case location (i.e. closest to a particular receiver), where in reality individual plant items would likely have localised shielding, and would not be used in a continuous manner. The sound levels are a realistic worst-case representation and address noise from all activities required for each scenario, when adjusted for reasonable and observed estimations of work cycles.

The construction scenarios used in the assessment are representative of equipment that could be used to complete the work. They represent one way in which this proposal could be built. Realistic scenarios would continue to be refined based on detailed information from the specific construction methodology and used to inform the requirement for site specific management and mitigation measures to be applied to minimise the impacts.

Standard construction hours have been adjusted to include Saturday afternoons to reflect community attitudes and maximise the productivity of worksites

Standard Saturday construction hours, as defined in the *Interim Construction Noise Guideline* (DECC, 2009) (ICNG), are 8.00 am to 1.00 pm. Other Sydney Metro projects, such as City and South West and Metro West Stage 1, received approval for Saturday construction until 6 pm. This has been based on local characteristics and land use and past good performance of the Proponent on other State

significant infrastructure projects. Adoption of longer hours on Saturdays is intended to benefit the community by minimising night-time construction and ultimately reduce the overall construction program by providing incentive for contractors to complete as much work as possible during daytime hours.

On balance, the Department considers that construction on Saturday afternoons is acceptable under the circumstances and reflective of changing community behaviours in urbanised areas. It would also offset the restriction of night time activities associated with spoil haulage, deliveries and metro station box excavations at Pyrmont.

Hybrid work patterns have been considered as part of the noise assessment of residences and respite periods would be provided, particularly in relation to highly intrusive and high noise generating activities

Inner West Council raised the issue of more people working from home and that construction noise management should recognise this. Due to the onset of the Covid-19 pandemic, working from home has become popular and this popularity persists. Hybrid working, where employees split time between working from an office and home, has been broadly adopted. The Department recognises that this trend is likely to continue. However, as Covid-19 restrictions continue to ease, working from home is a decision based on personal choice.

The noise assessment considers potential impacts to residential receivers during all time periods where work is proposed. As a result, impacts to people who may be occupying residences during the day, have been considered. Alternative construction methodologies, and measures that minimise noise and vibration levels during noise intensive work, would be investigated and implemented. The Department has recommended conditions which acknowledge particularly highly intrusive and high noise generating activities, and the need to provide respite from continuous activities.

Station box excavation and associated works have the potential to significantly affect residences at Pyrmont during evening and night hours and the Department has recommended that these works be restricted to protect sleep amenity.

Station box excavations at locations with acoustic sheds are proposed 24 hours a day, seven days a week. The EPA, both Councils and community members indicated strong concern with this proposal. Continuous construction is only considered acceptable in areas dominated by commercial or industrial uses where receivers are less likely to be present during night-time hours.

Residents around construction sites at Pyrmont would experience significant noise impacts from excavations which are expected to take up to 70 weeks. **Table 7** illustrates the number of sensitive receivers who would experience airborne noise exceeding sleep disturbance criteria across a range of activities associated with excavation. The exceedance ranges for airborne noise is considered unlikely to meet community expectations. While an exceedance of 2 dBA over noise management level/s (NMLs) may not be noticeable in an already noisy environment, an exceedance of more than 10 dBA would be clearly perceptible and unlikely to be considered low impact by the receiving community.

Ground-borne noise from station shaft excavation work inside the acoustic sheds during evening and night time is also expected to exceed relevant NMLs at Pyrmont. Receivers close to the western construction site could experience exceedances of more than 20 dB; however, it is recognised that this assumes work close to the surface, and noise levels would decrease as the excavation deepens.

Table 7 | Overview of airborne NML exceedances during the night time period in Pyrmont – residential receivers (Source: EIS)

Scenario	Activity	Night time NML exceedance			Sleep disturbance exceedance		
		1-10 dB	11-20 dB	20+ dB	1-10 dB	11-20 dB	20+ dB
Initial excavation with sheds	Mucking out (doors closed)	28	1	-	52	16	-
	Through rock using rock breaker (doors closed)	128	35	-	52	16	-
Excavation with sheds	Mucking out (doors closed)	25	1	-	52	16	-
	Through rock using rock breaker (doors closed)	132	39	-	54	16	-
	Through rock using rock breaker (doors open)	229	71	19	72	27	-
Mined cavern with sheds	Spoil removal (doors closed)	26	2	-	52	11	-
	Mining with support (doors closed)	79	5	-	52	16	-
	Mining with support (doors open)	107	35	5	63	21	-

The EPA has recommended to not permit rock breaking between 10pm and 7am in noise sensitive areas where the night time ground-borne noise exceeds the objectives in the *Interim Construction Noise Guideline* (DECC, 2009) (ICNG).

The Department agrees with the concerns raised, noting that while Pyrmont is a relatively high activity area, there is a significant medium density resident population near the excavations, which would be subject to highly intrusive noise levels, despite the presence of the acoustic shed. Exceedances of both air and ground-borne noise would likely result in sleep disturbance. Therefore, the Department recommends restricting excavation at Pyrmont (other than TBM tunnelling) to daytime hours (7 am to 6 pm). Deliveries and spoil haulage would be permitted to 10 pm, to protect night-time amenity for residents and minimise the potential for sleep disturbance. The predominance of commercial uses in the CBD does not require similar restriction, and therefore similar restrictions are not proposed in that location.

Construction vibration can be appropriately managed through proactive survey, monitoring and review and impacts can be subject to review by an Independent Property Impact Assessment Panel

Vibration can affect human comfort, and cause physical or cosmetic damage to buildings, and in some cases, damage the structural integrity of adjacent buildings. Cosmetic damage can include cracks or loosening of drywall surfaces, cracks in supporting columns, and loosening of joints. Human comfort criteria are generally more stringent as people perceive vibration at levels well below (ten times less than) those likely to cause damage to building contents. Where human comfort criteria are met, the likelihood of cosmetic or more serious structural damage is low.

For structures where the cosmetic damage vibration screening criterion is likely to be exceeded, further review (pre- and post- construction dilapidation surveys) and attended vibration monitoring is proposed during construction. Vibration policy does not require the provision of more stringent vibration criteria to a heritage building (whether it is a listed building or simply old), unless there is concern for its structural integrity. This approach is consistent other major linear infrastructure projects including the Sydney Metro City and Southwest.

Some businesses or equipment may be more sensitive to vibration. Three buildings were identified with sensitive equipment at the Sydney Hospital (between Macquarie Street and Hospital Road). These buildings are located approximately 160 metres south of the proposed stub tunnels. The stub tunnels will safeguard a potential future extension to the Metro network underneath The Domain. The Department has recommended that construction causing vibration near facilities with noise and vibration sensitive equipment consider timetabling of work or choice of construction methods as may be appropriate, in consultation with those facilities.

While the Department considers the Proponent has identified appropriate safeguards to manage vibration impacts, including undertaking activities to comply with applicable construction vibration criteria, these can be strengthened through recommended conditions:

- undertaking a land use survey to confirm the presence of uses sensitive to construction vibration
- pre- and post- construction dilapidation surveys of buildings likely of being at risk of damage to inform rectification of damage caused by construction
- establishment of an Independent Property Impact Assessment Panel to resolve property damage disputes

- measures and procedures to minimise construction vibration impacts including alternative construction methods and equipment
- a conservative cosmetic damage criterion to be applied to structurally unsound heritage items
- real time monitoring and adaptive management measures to regulate vibration.

Cumulative noise impacts and associated construction fatigue may occur at all locations and these impacts will be actively managed through the coordination of works, active community engagement, and provision of respite periods.

A range of known projects in the Rozelle/The Bays area and in the CBD would result in cumulative noise impact. The Rozelle area has been subject to construction of multiple significant projects for several years, including WestConnex, Lilyfield Maintenance Facility, Western Harbour Tunnel and Metro West Stage 1, among others. Construction programs for these projects have overlapped, resulting in cumulative impacts and construction fatigue. Renewal in the CBD and Pyrmont (Darling Harbour) is also likely to result in further simultaneous construction and cumulative impacts.

Coordination with other projects and engagement with stakeholders to identify opportunities to manage potential cumulative impacts are proposed, to balance quality of life for residents with completing construction as efficiently, unobtrusively, and quickly as possible. Cumulative construction noise impacts would be reviewed during detailed design when construction schedules are available. Co-ordination between potentially interacting projects to allow for respite will minimise consecutive high noise work in the same areas. Mitigation could involve adjustments to construction program or activities. The Department has also recommended conditions to manage cumulative impacts associated with construction fatigue, including coordination of utility management works and other approved major projects, active community engagement, and provision of respite periods.

6.2 Non-Aboriginal heritage

While the study area includes a number of heritage items, direct and significant impacts have been mostly avoided. Station excavation and tunnelling could cause ground movement resulting in minor (cosmetic) impacts to structures and archaeological remains at Pyrmont and Hunter Street. Structural damage to heritage items is unlikely and conservative vibration damage screening levels have been adopted to minimise the risk of cosmetic damage. Excavation methodologies have been developed in to uncover and manage potential archaeology at station sites as documented in archaeological research designs included in the Submissions Report.

Table 8 identifies State and locally listed items (and potential heritage items) that have been identified as having the potential to experience moderate or greater impacts. It is expected that the significance values would not be affected for any item. Further investigation to determine potential vibration impacts of tunnelling on the railway cutting in Pyrmont and St James Railway Station would be undertaken during construction planning.

Table 8 | Local and State heritage items (including potential heritage items) that have the potential to experience moderate impacts or greater

Item	Listing	Significance	Potential Impacts
Potential impacts in or near Pyrmont Station construction sites			
Pyrmont Heritage Conservation Area	• SLEP 2012 Item no. C52	Local	Direct impact: Negligible Potential vibration impact: Moderate Potential settlement impact: Minor Indirect impact: Moderate (views and vistas) **Overall impact: Moderate**
Potential impacts in or near Sydney CBD (Hunter Street Station) construction sites			
Tank Stream	• SHR item no. 00636 • Sydney Water s170 item no. 4573709 • SLEP 2012 (I1656) • RNE Place ID 14311 • NTR no. 6455	State	Direct impact: Neutral Potential vibration impact: Moderate Potential settlement impact: Further assessment required Indirect impact: Neutral **Overall impact: Moderate**
Bennelong Stormwater Channel No 29A	• Sydney Water s170 Item no. 4570854	Local / Section 170	Direct impact: Neutral Potential vibration impact: Moderate Potential settlement impact: Further assessment required Indirect impact: Neutral **Overall impact: Moderate**
Skinners Family Hotel	• SHR Item no. 00584 • SLEP 2012 Item no. I1766 • RNE Place ID 2395 • NTR no. 6218	State	Direct impact: Moderate Potential vibration impact: Moderate Potential settlement impact: Minor Indirect Impact: Negligible (views and vistas) **Overall impact: Moderate**
Former Bank – Delfin House	• SLEP 2012 Item no. I1903 • RNE Place ID 2206 • NTR no. 6403	Local	Direct impact: Negligible Potential vibration impact: Moderate Potential settlement impact: Minor Indirect impact: Negligible (views and vistas) **Overall impact: Moderate**
Impacts to items of potential heritage significance			
Former Gilbey's Gin Distillery Building	• N/A	Local (potential)	Major Direct impact: demolition of potential heritage item **Overall Impact: Major**

Item	Listing	Significance	Potential Impacts
Pangas House	• N/A	Local (potential)	Direct impact: Moderate Potential vibration impact: Moderate Potential settlement impact: Minor Indirect Impact: Negligible (views and vistas) **Overall impact: Moderate**
Potential tunnelling impacts			
Railway cutting	• SHR item no. 01225 • Sydney Trains s170 register (no item number retrievable) • SLEP 2012 item no. 1203 • RNE Place ID 14311	State	Within the zone of influence, and would be subject to further detailed assessment during design development and construction planning.
St James Railway Station	• SHR Item no. 01248 • Sydney Trains s170 register (no item number retrievable) • SLEP 2012 Item no. I1740	State	Within the zone of influence, and would be subject to further detailed assessment during design development and construction planning.
State Library of NSW	• SHR Item no. 01071 • Department of Education s170 register (no item number retrievable) • SLEP 2012 Item no. 01071 • RNE Place ID 1847 • NTR no. 6386	State	Potential vibration impact: Neutral Potential settlement impact: Slight (Settlement resulting in possible superficial damage that is unlikely to have structural significance, generating a minor heritage impact) **Overall impact: Minor**

The Department considers the potential heritage impacts are relatively minor, whilst noting the significance of the heritage items within the potential area of impact. The commitments for managing and reducing heritage impacts, with the Department's recommended conditions, would ensure that heritage impacts are appropriately managed and minimised to the greatest extent practicable.

Issue

The proposal will have direct impacts on items of potential heritage significance

Gilbey's Distillery, located within the Pyrmont western construction site, has been identified as a potential item of local significance. This item would require demolition, resulting in a loss of all heritage value.

Pangas House is located adjacent to the Hunter Street western construction site and is considered a good representation of a Victorian Free Classical Style building from the 1870's and is of potential local significance. The demolition of the adjacent building could result in damage to the structure and façade of the heritage item, particularly if the adjacent high-rise building is anchored into the western wall of Pangas House.

Station and tunnel excavation could cause minor (cosmetic) impacts to listed heritage items

Settlement may cause superficial or cosmetic damage to six items of local significance in Pyrmont, three items of local significance in Sydney CBD, and seven items of State significance in Sydney CBD. Review at later design stages and during detailed construction planning would be undertaken to confirm these findings and refine monitoring and management requirements.

Excavation could impact archaeological remains at Pyrmont and the Hunter Street Station western construction site

There is the potential for archaeological remains to be uncovered at the Pyrmont Station and Hunter Street Station western construction site. Archaeological potential at Hunter Street is potentially of State significance, relating to De Mestre's counting house and residence. Archaeological potential at The Bays is not expected, as excavation will be completed under the Stage 1 approval (SSI 10038), and no major excavation would occur at The Bays under this approval.

A summary of potential impacts to significant non-Aboriginal archaeological resources is provided in **Table 9**. There is no predicted potential for significant remains at the Hunter Street Station (Sydney CBD) eastern construction site due to previous site disturbance.

Table 9 | Potential impacts to archaeology

Site	Archaeological Phase	Predicted Resources	Potential	Significance	Archaeological Impact
Pyrmont Station western construction site	Phase 2 (1883 – 1914)	Brick and stone footings, hearths, domestic or underfloor deposits (discarded ceramic, pins, buttons, glass), cooking and kitchen remains (bone, utensils), yard and workshop surfaces and isolated rubbish deposits.	Moderate	Local	**Major**
Pyrmont Station eastern construction site	Phase 2 (1878 – 1940)	Brick and stone footings, hearths, domestic or underfloor deposits (discarded ceramic, pins, buttons, glass), yard and workshop surfaces and isolated rubbish deposits.	Moderate	Local	**Major**
Hunter Street Station (Sydney CBD) western construction site	Phase 1 (1788 – 1840)	Brick and stone footings, hearths, domestic or underfloor deposits (discarded coins, ceramic, pins, buttons, glass), cooking and kitchen remains (bone, utensils), yard and workshop	Low	State	**Major**

Site	Archaeological Phase	Predicted Resources	Potential	Significance	Archaeological Impact
		surfaces and isolated rubbish deposits.			
	Phase 2 (1840 – 1900)	Former stone sett or woodblock road surfaces and brick or stone-cut drainage modifications.	Moderate	Local	**Major**

Note: Excavation at Pyrmont and Hunter St would result in the total removal of all archaeological resources. The proposal would result in a major impact as the items cannot be kept in-situ.

Submissions

Submissions raised the potential for construction impacts at White Bay Power Station. The Department notes that impact of excavation and tunnelling at The Bays and its impact on the White Bay Power Station was assessed as part of the approval for Stage 1 (SSI 10038). Because tunnelling will occur in an eastward direction away from Stage 1 excavation at The Bays, and no additional land disturbance is proposed, it is expected that there will be no impact on the White Bay Power Station as a result of this proposal.

Community and special interest groups

The following comments were raised:

- concerns about the proximity of the Pyrmont Station western construction site to the Pyrmont Heritage Conservation Area
- concern with vibration impacts to heritage buildings at Pyrmont
- requested inspections of affected buildings within the Pyrmont Heritage Conservation Area by an independent assessor before, during and after construction with rectification of any damage identified.

Councils

Inner West Council supported the identified mitigation measures associated with non-Aboriginal heritage in the area including:

- highlighting the heritage significance of port operations within White Bay, White Bay Power Station and related structures, and the Glebe Island Bridge
- that construction does not impact on heritage structures at The Bay
- a request that vibration monitoring stations be established for significant heritage structures.

City of Sydney acknowledged that existing buildings within the construction sites would be demolished, with the exception of the Skinners Hotel, and that most of the buildings have little heritage significance. However, Council raised concerns that demolition of the former Gilbey's Gin Distillery Building would have an adverse heritage impact, partly mitigated by archival recording and salvage of significant fabric.

Council also raised concerns about vibration impacts to several heritage items and buildings within the Pyrmont Heritage Conservation Area and recommended:

- salvage of significant fabric of Gilbey's Distillery
- identification of the excavation methodology for non-Aboriginal archaeological resources
- preparation of dilapidation reports including photographic surveys of affected properties and detailed methodologies for the protection of these heritage items
- archival recordings of former Skinners Family Hotel, NSW Club House Building, Former Bank Delfin House, Richard Johnson Square, Gilbey's Distillery and Pangas House
- specify protection methodologies for Skinners Family Hotel for mechanical impact prevention, weather protection of the building, and measures to mitigate any potential vibration impacts.

Agency Advice

Heritage NSW noted that the proposal would directly and indirectly impact 10 State Heritage Register listed items and potentially impact archaeological relics at Pyrmont Station and relics of State and local significance at Hunter Street Station. Heritage NSW also commented on noise and vibration, visual amenity and additional non-Aboriginal heritage matters. Heritage NSW recommended:

- consideration of visual impacts to Pyrmont Bridge from acoustic sheds
- clarification of the proximity and impact to the Tank Stream and Bennelong Stormwater Channel No 29A to the eastern Hunter Street Station. Heritage Council also recommended a commitment to identify and avoid these items
- the Proponent reassess the archaeological potential and significance at Pyrmont because Heritage NSW identified that the referenced mapping shows the potential archaeological resources at Pyrmont might be earlier than the predicted 1880's, and may change its significance
- commitment to undertaking additional site-specific historical research to guide heritage significance assessment and management requirements
- a structural assessment of all items be carried out to confirm that the level of vibration screening is appropriate.

Heritage NSW also advised it was satisfied with the Archaeological Research Designs (ARD) for Pyrmont and Hunter Street station sites.

Placemaking NSW requested investigation and monitoring of vibration impacts to heritage items at Pyrmont Bridge.

Consideration

An Archaeological Research Design and excavation methodology has been prepared to guide archaeological excavation at both Pyrmont and Hunter Street west sites

There is potential for archaeological remains to be present at the Pyrmont and Hunter Street station western construction sites. Tunnel sections between The Bays and the CBD would generally be too deep (29 m to 52 m below ground level) to affect archaeological deposits.

Archaeological Research Designs (ARDs) were provided with the Submissions Report to outline the excavation methodology to be adopted for non-Aboriginal archaeological resources at the Pyrmont

and Hunter Street sites. Heritage NSW reviewed and advised that the ARDs are sufficiently detailed to address concerns raised in previous advice.

The Proponent has committed to preparing an Archaeological Excavation Report following completion of archaeological excavation programs, to report the results of these excavations including responses to research questions posed in the ARD. In addition, the Department has recommended that the final Excavation Report identify artefacts which may be considered for use in heritage interpretation plans required under the Concept Approval.

The Department has also recommended that an Unexpected Finds Procedure be developed and implemented for the duration of construction. This would ensure that unexpected finds are appropriately notified, their significance value determined, and appropriate management measures developed.

The recommended conditions capture the intent of the mitigation measures proposed and include additional requirements requested by Heritage NSW including the use and necessary qualifications and expertise for excavation directors, how they are to be involved, and when they are to be engaged.

The Department is satisfied that the proposed mitigation measures and recommended conditions will minimise potential impacts on archaeology through the implementation of an Unexpected Finds Procedure, engagement of excavation director/s, and the methodologies outlined in the ARDs, and that any finds will be recorded and reported in the final Heritage Report.

Structural damage to heritage items is unlikely and vibration damage screening levels have been adopted to minimise cosmetic damage

Vibration and settlement impacts may occur due to tunnel boring along the alignment and during excavation at metro station sites. Sydney Metro has committed to:

- adopting appropriate conservative vibration damage screening levels, including a cosmetic damage screening level of 2.5 millimetres per second peak particle velocity (PPV) where heritage items are found to be structurally unsound
- completing condition surveys of potentially affected buildings and structures along the tunnel alignment and near station excavations before the commencement of excavation

Several agencies and special interest groups raised concerns about potential cosmetic and structural impacts from tunnelling and excavation at station construction sites for listed items including Skinners Family Hotel, Tank Stream, Bennelong Stormwater Channel, and the Pyrmont Heritage Conservation Area. A more detailed vibration review (including a structural assessment of buildings and heritage items) would be completed to set appropriate vibration levels and would consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.

Mitigation measures have been developed to minimise potential direct impacts of vibration, settlement, architectural noise treatment and demolition of adjoining structures. Condition surveys of buildings and structures near to the tunnel and excavations will be carried out before the commencement of excavation at each site and will consider the heritage values of the structures in consultation with a heritage specialist. Specific methods for demolishing structures adjacent to heritage items would be developed to minimise risk of impacts.

The Department considers that the likely impacts that cannot be avoided have been appropriately assessed, and notes that Heritage NSW considered that the proposed mitigation measures are proportionate to the degree of predicted impact. Recommended conditions would ensure that an appropriate management and monitoring regime is established early in construction and allows for an iterative approach that responds to activities on site.

The Tank Stream and Bennelong Stormwater Channel No 29A are unlikely to be impacted

The Tank Stream is a State heritage listed drain that is significant because it is considered to be the reason the First Fleet settlement was established in Sydney Cove. The Tank Stream itself has retained an identity through functional changes from being a fresh water supply, through subsequent use as combined sewer and stormwater drain, to its current function as a stormwater drain. It is an important representation of the first period of organised and integrated water management in an Australian city. Before European colonisation, the area was inhabited by the Gadigal people, providing a variety of food and water supplies. The location of the Tank Stream relative to the Hunter Street West site is shown in **Figure 10**.

A 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 (dated 1886). The sandstone and brick oviform portion of the drain is directly to the north-east of the Hunter Street Station western construction site. Within the site are sections of modern concrete pipes and a shorter section of steel pipes separated by a brick chamber constructed in 1958. South of the site, the pipe reverts to a stone and brick oviform profile (dated 1866).

The original fabric of the Tank Stream section on and adjacent to the site would experience vibration levels predicted to exceed the cosmetic damage screening criteria. While vibration impacts may be high in proximity to these original 19th century portions of the historic item, segments located at a further distance would not be affected.

The physical description of the portions of the sewer has been largely determined by investigative cameras with limited overall ground exposure. Further subsurface investigation will better understand the extent of the transition between sandstone drain and concrete/steel sewer and ensure that heritage fabric is not impacted. This approach is supported by Heritage NSW and the results of these investigations would be included in the final Heritage Report which will contribute to historical knowledge of the area.

Similarly, the section 170 heritage listed Bennelong Stormwater Channel No 29A is of high historical and technical significance as it was one of the five original combined sewers built in Sydney around 1857. The drain skims the north-eastern corner of the Hunter Street Station eastern construction site (see **Figure 11**) and tunnelling of turnback caverns would be located about seven metres below this item. No direct excavation or removal of the Bennelong Stormwater Channel No 29A is required.

Vibration is expected to be above the cosmetic damage screening criteria and investigations are to be carried out to confirm and record the location, depth, and ascertain the current integrity, extent and condition of the heritage items. The investigations are to be carried out under the supervision of a heritage consultant in consultation with Sydney Water.

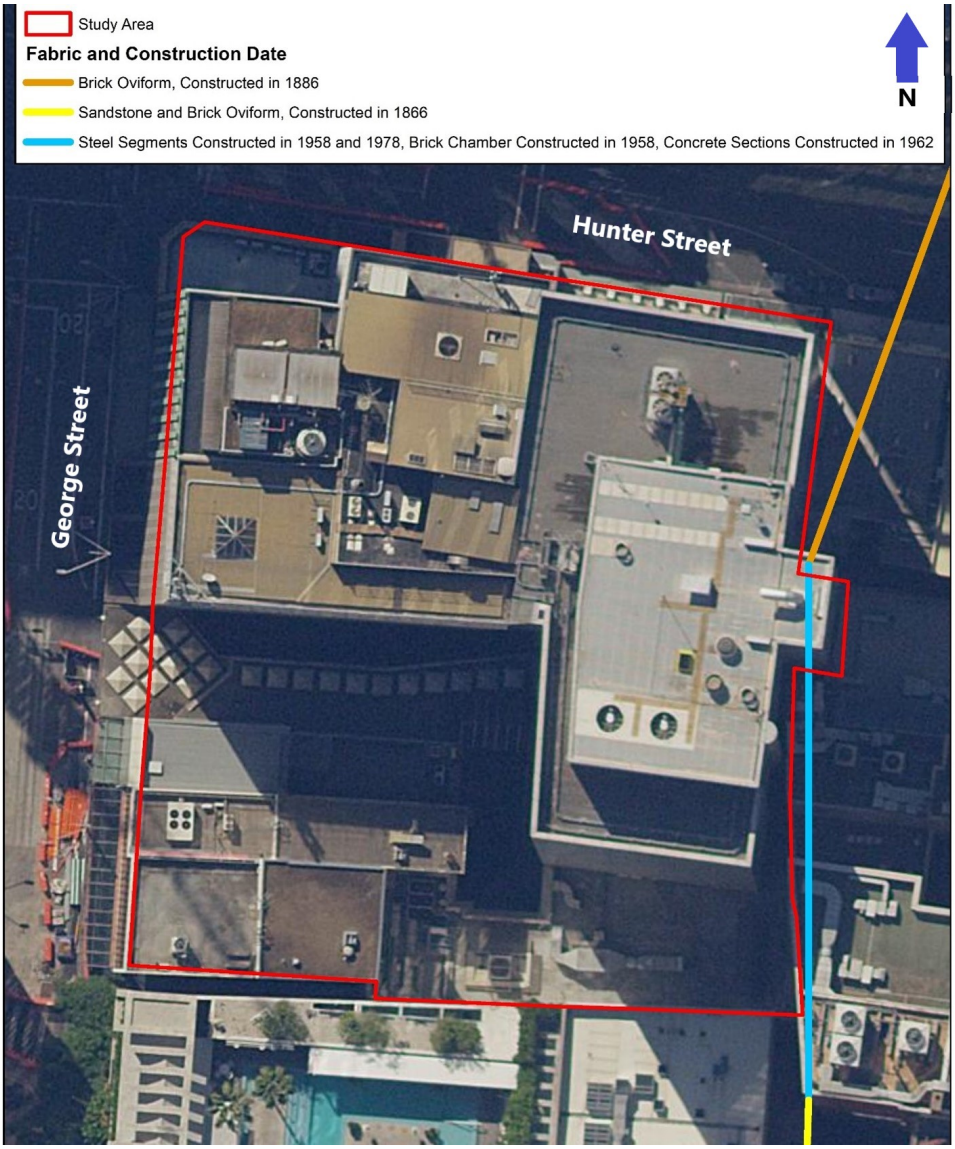

Figure 10 | Location of Tank Stream in relation to the Hunter Street Station western site (Source: EIS)

Appropriate vibration levels would be developed with consideration of the heritage values and structural stability of the items in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed. If necessary, the Proponent will implement additional measures to reduce potential settlement and vibration impacts. A detailed methodology for the protection of the Tank Stream and Bennelong Stormwater Channel No.29A would be developed by suitably qualified heritage engineers and consultants.

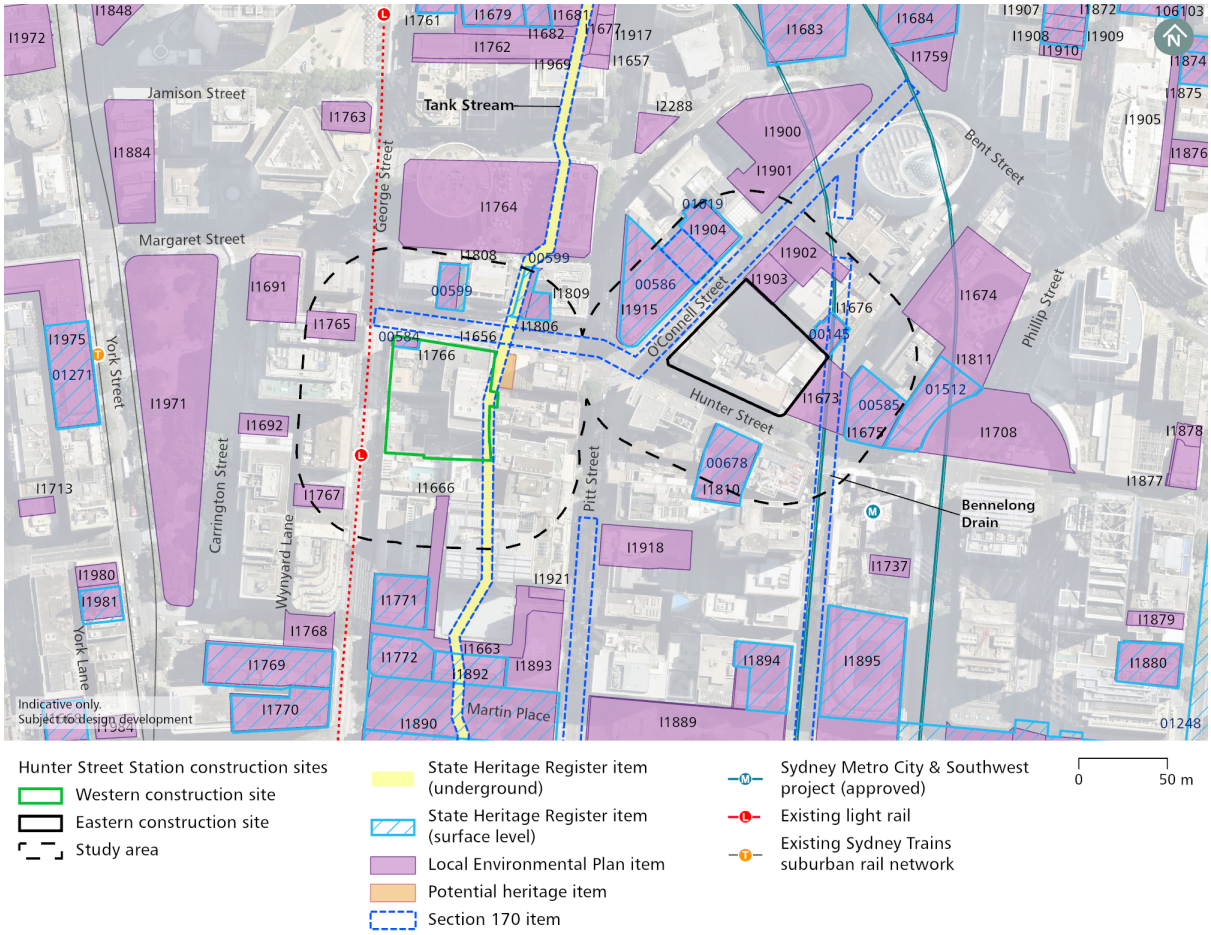

Figure 11 | Location of the Bennelong Drain and Tank Stream (yellow) in relation to the two Hunter Street sites

In noting the heritage value and significance of these items, the Department has recommended a condition requiring that before excavation at Hunter Street commences, investigations are to be carried out for the Tank Stream and Bennelong Stormwater Channel No 29A to confirm and record the location, depth, current integrity, extent, and condition of both heritage items. The findings of these investigations will provide certainty about potential impacts and additional mitigation measures and will benefit future projects in the area by providing heritage resources that can be referenced in future heritage assessments. The Department has also recommended a condition prohibiting the Proponent from modifying or adversely impacting the drains.

The Former Skinners Family Hotel will be retained and protected through the development of site-specific demolition methodologies, vibration monitoring and adaptive management measures

The Former Skinners Family Hotel, located at the corner of George and Hunter streets, within the north-western corner of the western construction site, is one of only four buildings in the Old Colonial Regency style remaining in the city. Demolition of the adjacent building could damage the brick structure and façade, particularly if the adjacent high-rise building is anchored into the southern wall of the hotel. The item would also likely experience vibration levels above the cosmetic damage screening criteria, damaging its fabric if not appropriately managed. There is also potential for minor settlement which could also result in superficial damage to the item.

A detailed methodology for the protection of the Former Skinners Family Hotel would be prepared by the Proponent including a method for the demolition of adjacent buildings. Archival recording and

structural investigation would also be carried out before demolition. Vibration monitoring would occur throughout demolition and excavation, and demolition and construction methodology adjusted where necessary to mitigate vibration and settlement impacts. The Department recommends conditions requiring protective measures to prevent adverse impacts to the building and a requirement that the Former Skinners Family Hotel must not be destroyed or modified beyond what has been identified in the assessment. A detailed methodology for the protection of the Former Skinners Family Hotel would be developed by suitably qualified heritage engineers and will identify protective measures that are to be implemented by the Proponent. These measures will change depending on potential impacts and could include vibration monitoring, structural improvements, and changes to the construction program, equipment or activities being undertaken in proximity to the item. The Department is satisfied that the recommended conditions, and the Proponent's mitigation measures, will reduce the potential of impacts to the Former Skinners Family Hotel.

Impacts to a limited number of heritage items are unavoidable and archival recording would be carried out on items before the commencement of works

As a precautionary measure archival recording and reporting of the following heritage items would be carried out in accordance with the NSW Heritage Office's *How to Prepare Archival Records of Heritage Items* (1998) and *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006):

- Former Skinners Family Hotel
- NSW Club House Building
- Former Bank – Delfin House
- Richard Johnson Square.

Archival recording would also be carried out at the following sites of potential heritage items prior to commencement of work for the following items:

- Gilbey's Distillery, 26-32 Pyrmont Bridge Road, Pyrmont (potential archaeological site and potential local heritage item to be demolished)
- Pangas House, 15-17 Hunter Street, Sydney (potential local heritage item).

The Proponent has committed to archival recording of these six items. Gilbey's Distillery would be demolished, losing a representative example of an Art Deco warehouse, and one of the few remaining distillery buildings left in NSW.

Richard Johnson Square is not expected to experience impacts (other than temporary visual impacts), however archival recording will be undertaken due to its proximity to the Hunter Street Station eastern construction site. This is to ensure that the items are recorded in their current state for public record and any potential damage can be repaired.

The Department has recommended a condition limiting potential adverse impact to those items identified in the EIS. These being the former Skinners Family Hotel, Tank Stream, Bennelong Stormwater Channel No. 29A, NSW Club house building, Delfin House, Richard Johnson Square, Railway Cutting (Pyrmont), and St James Railway Station. Due to their proximity to the construction sites and the scope of work proposed, there is limited opportunity to mitigate all potential impacts; however, the Department is satisfied that the recommended conditions and proposed mitigation

measures will limit potential impacts and ensure that there is archival recordings of heritage items that have the potential to experience the greatest impacts.

6.3 Traffic and transport

Heavy vehicle movements including spoil haulage are proposed during excavation from all construction sites and would be particularly noticeable at The Bays tunnel launch site from where tunnel spoil would be hauled. Although construction traffic could increase congestion, the implementation of the Proponent's mitigation measures, which include scheduling construction traffic movements outside peak hours, implementation of specified haulage routes, and site-specific controls, would assist in the management and limiting of construction traffic impacts to minimal levels. A recommended condition identifies performance goals to minimise parking on public roads, truck idling, access across pedestrian and shared user paths and that haulage routes are adhered to.

Some existing carparking near construction sites would be removed. On-street parking by the construction workforce would be discouraged. Construction workforce parking would be limited to The Bays with Stage 1 (SSI-10038). The Port Authority has leased about 60 parking spots within White Bay to the Proponent that would be used for The Bays construction site for Stage 1. This is proposed to be continued during construction of Stage 2. The Department has recommended a construction parking and access strategy be prepared and implemented to identify construction workforce parking options, which may include installing off-street carparking facilities and providing park-and-ride shuttle bus services to construction sites. Further, the Proponent has committed to maintaining access to infrastructure and properties including off-street parking.

Cumulative traffic impacts with other major infrastructure projects in the Rozelle area have been considered and are manageable. To ensure construction traffic on Robert Street, Rozelle is limited, a condition is recommended to limit its use to emergencies. Further consideration on cumulative impacts in the Rozelle area is discussed in **Section 6.5**.

Operational traffic and transport around both station sites would be assessed as part of a future staged application (SSI 22765520).

Issues

There would be minor delays to traffic around construction sites

Construction traffic near metro station sites would increase traffic during the construction. Station box excavation would generate considerable spoil at each site in addition to tunnel spoil removed at The Bays. Spoil would be removed from site by road (truck) and haulage routes were chosen to minimise the impact on local roadways by choosing the most convenient path to main roads.

While there would be some minor delays at intersections near station sites due to the introduction of signals and local network changes, these changes are expected to be minor and intersection performance largely unchanged due to the significant volume of traffic already in these locations.

Spoil removal is proposed 24 hours, seven days a week during excavation at The Bays and Hunter Street sites. While delays are expected, implementation of mitigation measures, including scheduling construction traffic movement outside of peak hours, and the implementation of site specific construction traffic management plans would manage the impacts of construction traffic to acceptable levels.

On-street parking would be removed at Pyrmont and Hunter Street and property access may be temporarily affected

On-street parking around Hunter Street and Pyrmont stations sites would be temporarily removed to facilitate access to sites. No on-street parking would be removed at The Bays and it is the only site that would include some dedicated parking for the construction workforce of up to 60 spaces, although it would not meet the expected full demand of up to 700 workforce. Additional on-street parking may be temporarily removed around the Hunter Street site to facilitate safe loading/unloading and/or to accommodate heavy vehicle queueing. The permanent loss of on-street parking is to be considered under the Stage 3 application, which includes the development of station precincts.

Construction worker parking on local streets would be discouraged in all locations and measures to encourage travel by public transport, ride-sharing, providing alternative parking locations and shuttle bus transfers would be investigated.

There may be instances where access to properties is impacted, either temporarily or permanent changes may be required. A commitment to maintaining access to properties, including off-street car parking, at all times has been made and would be managed through direct consultation with property owners throughout construction.

Disruption to public transport services and active transport would be temporary and replacement considered as part of station precinct planning

Temporary disruption to pedestrian and cyclist access is expected and may change through construction. Management of this process on a site-by-site basis would be undertaken with input from a Traffic and Transport Liaison Group into site specific traffic management plans.

Minor increases in travel time for public transport services may occur due to additional traffic on local roads. This should not affect peak hour commuter services as construction traffic would be scheduled outside of peak hours.

A bus stop on Pyrmont Bridge Road may need to be relocated; however, it is understood that this is not currently used for scheduled services. Regardless, changes would be made in consultation with TfNSW.

Submissions

Community and special interest groups

The following comments were made:

- requirement for site-specific Construction Traffic Management Plans to be developed in consultation with stakeholders, including consideration of:
    - coordination with other construction occurring to minimise traffic disruption
    - minimising access concerns of construction vehicles for Pyrmont residents
    - traffic management during significant events
    - maintaining emergency vehicle access.
- provision of unobstructed access to The Sebel hotel on Pyrmont Street at all times.

Councils

Inner West Council (IWC) raised the following matters for further consideration:

- cycle and pedestrian awareness training for construction heavy vehicle drivers

- clear identification of construction vehicles with signage; mirrors; active, real-time GPS tracking; and GPS guided routing
- Construction Traffic Management Plan/s and active transport planning should consider the safety of temporary footpath closures and required diversions
- review potential impacts of construction traffic on active and public transport during construction
- traffic modelling should consider the weekend midday peak, a critical time in The Bays area
- require a construction worker parking management scheme and encourage construction workers to use public transport
- construction vehicle access via Robert Street is not supported due to traffic and safety concerns; access should be via James Craig Road.

City of Sydney (CoS) raised the following matters for further consideration:

- residents and businesses should be consulted on the expected loss of parking and proposed haul routes
- requested further refinement of access to construction sites.

Consideration

Construction traffic impacts are relatively minor and the management of these would be refined during construction planning to further minimise disruption, including stakeholder engagement through a Traffic and Transport Liaison Group and a Traffic Control Group

Station site excavation and tunnelling would generate 1.1 million cubic metres of spoil which would be transported off site by road. This would result in local roads around metro station construction sites and facility sites subject to greater vehicle activity throughout construction.

Heavy vehicle movements are proposed 24 hours, seven days a week during excavation of station boxes at all sites, and during tunnel spoil removal at The Bays. Some delays, in the order of 2-15 seconds are anticipated; however, key intersections are expected to perform at acceptable levels of service.

Work at The Bays tunnel launch and support site would occur concurrently with the approved tunnelling work from The Bays to Sydney Olympic Park under Metro Stage 1 (SSI-10038) for approximately six months. Despite this, intersection performance would not deteriorate. There would be a decrease in demand flow at intersections along City West Link and Victoria Road, due to the progressive opening of WestConnex stages from 2023, which would further minimise disruptions in relation to The Bays construction traffic.

The area around The Bays was considered the most likely to cause or exacerbate cumulative impacts due to the number of other large infrastructure projects in the area, including the Western Harbour Tunnel project. Modelling undertaken by the Proponent indicates only a minor deterioration in performance. The Proponent has committed to coordinating traffic management arrangements between major construction projects around The Bays with TfNSW and Customer Journey Planning (formerly the Sydney Coordination Office).

Inner West Council raised concerns that traffic modelling did not consider the weekend midday peak, a time they consider to be critical in The Bays area. The assessment did not consider the weekend midday peak specifically because the modelled peak traffic periods represent a worst-case scenario,

where the road network experiences the maximum background traffic demand, and the available spare capacity of the road network is at its most limited. The Department supports this assessment approach.

Spoil haulage from The Bays, Pyrmont and Hunter Street, would be undertaken by light and heavy trucks. Haulage routes chosen are the most direct route to main roads while avoiding residential areas where possible and amended in response to issues raised by City of Sydney. The Department accepts that the revised routes address Council concerns of vehicle interactions with residents and local traffic. Notwithstanding, specific mitigation would be developed during construction planning to minimise impacts to road network performance and safety and outlined in site specific construction traffic management plans consistent with the Sydney Metro Construction Traffic Management Framework (CTMF).

The CTMF provides a consistent approach to preparing construction traffic management plans (CTMPs) and an outline of the traffic management requirements and processes for construction sites. It establishes the traffic management processes (such as the use of directional signage and variable message signs), emergency services access requirements and performance criteria to managing vehicles, roads and footpaths adjacent to construction sites and interactions with other road users. The CTMF establishes multi-party consultation groups, including a Traffic and Transport Liaison Group (TTLG) and a Traffic Control Group, both to include relevant stakeholders including Council and TfNSW.

Construction Parking and Access Strategy is recommended to address minor on street parking losses and identify construction worker parking and site transport options

Limited construction worker parking would be available at The Bays (consistent with Stage 1). The proposal would use 60 parking spaces within White Bay that is currently used for Stage 1. There would be no construction worker parking at Pyrmont or Hunter Street. However, the CTMF, which sets out the approach to managing construction worker parking in consultation with the TTLG, sets the requirement for all site specific CTMPs that there will be no provision, either on roads within the surrounds of the construction sites or within the work site, for worker parking. Workers are to be encouraged to use public transport when travelling to and from the work sites. The contractor may also be required to identify remote parking areas for workers (with shuttlebus services), to minimise any impacts of workers parking on-street.

The Proponent has also committed to consulting with other Proponents operating in the Rozelle area to minimise cumulative impacts associated with construction worker parking. The Department notes that other major SSI projects approved in the area require the preparation and implementation of strategies to minimise on street parking impacts.

Minimal disruption is anticipated due to the temporary loss of on-street parking near construction sites and ancillary facilities, particularly around the Pyrmont and Hunter Street construction sites. Approximately eight restricted (2P) parking spaces would be lost on the northern side of Union Street and six restricted (2P) spaces, one car share, and one loading zone would be removed from the southern side of Union Street between Edward and Pyrmont streets at Pyrmont. Relocation or shutting down of the businesses which use these sites will reduce the demand for on-street parking at these locations and therefore the need to replace that parking is reduced.

Visitor or short-term parking is available at a number of nearby commercial parking stations, including Murray Street (close to Darling Harbour) and at The Star casino at Pyrmont. Replacement of mobility

and car share spaces near to those removed would be prioritised. The potential to replace other on-street restricted parking through changes to parking restrictions elsewhere would be considered.

Accordingly, the Department has recommended that a Construction Parking and Access Strategy be prepared to identify options to reduce on- and off-street parking impacts in centres and residential streets. Measures could include park and ride shuttle bus services to transport construction workers to construction sites, or public transport hubs, leasing of commercial spaces, and ongoing monitoring of impacts on local streets. Additionally, the Department has recommended that the Proponent consider the cumulative parking impacts of major projects in the preparation of the Construction Parking and Access Strategy for this project.

Access to properties will be maintained and managed through engagement and consultation

Submitters have raised concerns about the potential loss of property access for some properties. There may be areas and instances where access to properties is impacted for periods of time. The Proponent has committed to maintaining access to properties, including off-street car parking, at all times, and it will be managed through engagement and consultation with relevant property owners throughout construction. The Department has recommended conditions to ensure access to affected properties be maintained where practicable and that any property access physically affected be reinstated to at least an equivalent standard, unless otherwise agreed by the landowner.

Temporary changes to bus operations can be effectively managed through consultation with the TTLG

Submitters including both councils have raised concerns about impacts to scheduled bus services. Impacts to bus services would be limited to:

- minor increases in travel time due to additional construction traffic
- changes to intersection performance
- the temporary loss of a bus stop on Pyrmont Bridge Road; however, this bus stop is not currently used by scheduled services.

The Department is satisfied that these impacts, if realised, are unlikely to be significant. Restriction of spoil haulage to off-peak periods is unlikely to have a significant effect on peak period bus timetables and disruption to bus services would be managed through consultation with the TTLG to adjust scheduled services or routes.

To minimise congestion and access impacts to the Balmain peninsula, construction vehicles can only use Robert Street for emergency access

Robert Street is a key access route to Balmain, Birchgrove and Balmain East, providing a direct connection from the Anzac Bridge and City West Link. Additional construction traffic could exacerbate congestion and travel times in the area. Inner West Council does not support the use of Robert Street as a construction route to access due to:

- limited queueing capacity within the existing network
- expected traffic generated by approved developments in the area, including a new Bunnings Warehouse on Parsons Street
- the use of Robert Street as the main access route to the White Bay Cruise Terminal for events.

The Department has not permitted Robert Street as a route for either light or heavy construction vehicles on other State significant infrastructure projects in the Rozelle area (WestConnex M4-M5

Link, the Western Harbour Tunnel), and limited its use for power supply work on Metro West Stage 1 in response to community and Council engagement.

Direct access to The Bays is available via James Craig Road to and from the Anzac Bridge and City West Link. This road services industry on Rozelle Bay and Glebe Island. It is a much lower traffic environment and avoids mixing construction traffic with residential and general traffic, providing a safer road environment as well as allowing westbound (the likely dominant direction of spoil haulage) construction traffic to avoid the complex the Victoria Road/Anzac Bridge/City West Link interchange.

The Department recommends prohibiting the use of Robert Street by construction vehicles unless required in the event of an emergency and has recommended a condition to that effect.

6.4 Social and business impacts

Social impacts

Sydney Metro West will be a transformative project that supports the continued growth and development of Greater Sydney. While there would be construction impacts to the communities through which it passes, there will ultimately be significant benefit to those communities and the functioning of the city. These benefits are intrinsic to its justification and are consistent with the strategic vision for The Bays, Pyrmont and the Sydney CBD.

The following social performance outcomes were identified for the proposal:

- minimising negative impacts on customers and the community (including transport services, amenity, noise and vibration, water management and air quality)
- avoiding impacts to the availability and quality of public open space and social infrastructure
- improving access to local facilities, services and destinations, supporting opportunities for community interaction and improving social cohesion
- placemaking at stations providing a focal point for the community, improving social connections and connection to place
- affected communities are communicated with in a clear and timely manner to enhance community benefits, reduce disruption and address community concerns.

Many of these outcomes are dependent on all stages of Sydney Metro West being completed. Those outcomes which relate to improving access to facilities, placemaking would not be realised until all components subject to the concept approval are complete and would be addressed in and measured against the final staged application (SSI 22765520 Rail Infrastructure, stations, precincts and operations) which is currently under assessment.

All stages of the Sydney Metro West proposal would create an anticipated 10,000 direct and 70,000 indirect jobs during construction (based on Sydney Metro analysis). Of these, this proposal will generate about 700 direct construction industry jobs. Opportunities would be explored for positive interventions to create community benefits in the surrounding areas.

Issue

The proposal would result in temporary negative impacts to local amenity and changes to access for social infrastructure and services. There would be potential changes to community character, and

negative wellbeing impacts associated with construction activities, such as resulting from sensitivity to noise and vibration. These impacts (such as noise, traffic, visual and air quality) are temporary and managed through appropriate mitigation measures.

A summary of key positive and negative social impacts from The Bays tunnel launch support site, tunnel alignment, Pyrmont and Hunter Street (Sydney CBD) construction sites are presented in **Table 10**.

Table 10 | Social impacts

Social impacts	Issue	Construction Impact
1. Way of life 2. Accessibility 3. Community	Traffic, transport and access	• temporary road closures and redirections around construction sites affecting road users, pedestrians, cyclists, businesses, residents, loading zones and customers • temporary car parking loss affecting businesses, residents and road users • permanent closure of De Mestre Place • temporary closure of existing underground pedestrian walkway between Wynyard Station and Pitt Street affecting pedestrians, businesses and customers • changes to wayfinding associated with changes to the streetscape • further details provided in **Section 6.3**.
1. Livelihoods 2. Health and wellbeing	Property acquisition	• full acquisition of 14 properties (comprising of 12 commercial and retail premises, including 4 strata titles) • transfer or termination of leases • further details provided in **Section 6.5**.
1. Way of life 2. Accessibility 3. Community 4. Culture 5. Health and wellbeing	Access to public spaces and community infrastructure	• increased safety risk to pedestrians using community facilities and public spaces from construction vehicle movements • reduced access to public spaces and community facilities • decommissioning of bus stop on Pyrmont Road (currently not used) • restrictions to pedestrian and cyclist access around surface work • accessibility and connectivity during local festivals and other special events. • Further details provided in **Section 6.3** and below**.**
1. Way of life 2. Surroundings 3. Health and wellbeing	Air quality	• reduced air quality amenity from construction near residences, commercial and industrial properties • further details provided in **Section 6.5**.
1. Way of life 2. Surroundings 3. Health and wellbeing 4. Decision-making systems	Noise and vibration	• increased noise and vibration from construction near residences, businesses, commercial and industrial properties • further details provided in **Section 6.1**.
1. Way of life 2. Surroundings	Visual amenity	• demolition of existing buildings

Social impacts	Issue	Construction Impact
3. Decision-making systems		• removal of vegetation within the Pyrmont construction sites • removal of street trees and potential tree trimming of some street trees at Pyrmont and Hunter Street construction sites • installation of acoustic sheds, noise barriers and hoardings around construction sites • tunnel boring machine support services at The Bays • use of machinery and equipment such as mobile cranes, excavators, articulated dump trucks, concrete pumps • station shaft and cavern excavation activities and support at Pyrmont and Hunter Street (Sydney CBD) construction sites • truck movements associated with construction activities • trenching works in streets to lay conduits for the power supply to the Pyrmont construction sites • lighting within construction sites • further details provided in **Section 6.5**.
1. Culture 2. Community 3. Surroundings 4. Decision-making systems	Heritage values	• proximity of The Bays tunnel launch and support site to heritage listed item White Bay Power Station • Pyrmont power supply route would be located within the locally listed Pyrmont Heritage Conservation Area • proximity of local and State heritage listed items • demolition of potential heritage item Former Gilbey's Gin Distillery Building • safety and structural integrity of State heritage listed items Skinners Family Hotel and NSW Club House Building and local heritage listed item Former Bank – Delfin House • potential impacts to local heritage listed item Richard Johnson Square • further details provided in **Section 6.2**.
1. Livelihoods 2. Accessibility 3. Community 4. Decision-making systems	Retail and business	• changes to business access, deliveries and servicing as a result of road and access reconfigurations • loss of on-street parking in commercial and mixed-use areas • loss of overall amenity near construction sites may deter potential customers • cumulative effects during construction • businesses near construction sites would benefit from construction workforce customers • further details are provided below.
1. Livelihoods	Employment	• direct and indirect employment opportunities • indirect gains and losses in jobs as a result of the above environmental impacts.
1. Way of life 2. Accessibility 3. Culture 4. Surroundings 5. Health and wellbeing 6. Livelihoods	Cumulative impact	• increased community sensitivity to impacts due to other recent or future development projects and related construction impacts close to the construction sites, which may cause cumulative sense of disruption, inconvenience and frustration - and for the residents and local workers to experience "construction fatigue" • further details provided in **Section 6.1** and **Section 6.5**.

Social impacts	Issue	Construction Impact
7. Decision-making systems		

A number of initiatives proposed to guide resolution of social impacts include:

- employing dedicated Transport for NSW Place Managers
- implementing and regularly updating the Overarching Community Communications Strategy
- developing and implementing project specific Community Communications Strategy(s)
- developing and implementing a Community Benefit Plan(s)
- developing and implementing a Small Business Owners Engagement Plan(s).

The Department supports these initiatives to guide resolution of construction impacts on the community.

Submissions

Community and Interest Group Submissions

The following comments were raised:

- consider health and wellbeing of residents resulting from extended construction hours
- traffic management during significant events that take place in the Domain.

Inner West Council

Inner West Council highlighted the importance of public health impacts resulting from noise, vibration, dust, illumination, and general lifestyle disruption associated with the cumulative impacts of other State significant infrastructure projects. Council emphasised awareness of the prolonged nature of residents working from home that is likely to continue, such as construction noise and vibration, power outages, utility interruptions and increased traffic congestion that may impact deliveries.

Inner West Council were also concerned with the effect on community use of The Bays construction site as a viewing area for special events such as New Year's Eve and Australia Day.

Council advised Rozelle Railyards Park, and the various active transport links to be built by WestConnex, will become operational during construction and there is an existing cyclist training circuit at James Craig Road and Robert Street in Rozelle.

City of Sydney

The City of Sydney recommend reduced construction zone speed limits to 30km/hr on those streets which are impacted by an increase in heavy vehicles.

Consideration

Construction fatigue would be managed through coordination with other projects, proactive community engagement and providing periods of respite

A number of State significant infrastructure projects are in various phases of construction near the proposal (including Stage 1 from The Bays to Westmead), particularly near The Bays and in the CBD.

These include WestConnex M4-M5 Link, Western Harbour Tunnel, and Sydney Metro City and Southwest. The Department acknowledges residents near construction sites and haulage routes, near The Bays in particular, are experiencing construction fatigue due to cumulative and consecutive construction activity which commenced with construction of the maintenance and stabling facility for the CBD and South East Light Rail in 2017.

Transformation and renewal of the city to meet growing population and housing requirements brings with it the need to upgrade infrastructure to support that growth. The Department is aware that the area around The Bays has been the front of significant and continuous construction and disruption to the community for a number of years. The Bays is earmarked for significant renewal into the future, including the Bays West, Blackwattle Bay and the new Sydney Fish Market. While transport infrastructure projects are scheduled to complete at around 2030, further renewal development will continue into the foreseeable future, with the delivery of a metro station being the first step in the overall renewal of the precinct.

Construction fatigue is largely attributable to noise and traffic impacts. The Department considers that these are best managed by project teams developing strong relationships with the community and working with them to understand their needs and to operate as good neighbours. This includes programming genuine respite for affected communities, to consider the communities' needs alongside those of projects and programs, and open collaboration between project teams.

Sydney Metro has committed to coordinating and collaborating with other projects and consulting with stakeholders to identify opportunities to manage potential cumulative impacts associated with projects under construction at the same time and balancing quality of life for residents during construction with completing construction as efficiently, unobtrusively, and quickly as possible. In addition, the Department has recommended conditions to manage cumulative impacts associated with construction fatigue from concurrent and consecutive major projects, including coordination of utilities work, active community engagement, and provision of respite periods.

Detail on management of noise and cumulative noise impacts, is provided in **Section 6.1**.

Safe movement around sites and interaction of construction traffic with pedestrians, cyclists and vehicles would be implemented from Construction Traffic Management Plans

Access to construction sites, particularly in the CBD and at Pyrmont, requires changes to pedestrian and cyclist pathways to provide vehicle access, to both facilitate site access and ensure safe movement for pedestrians, vehicles and cyclists. Measures identified include:

- changes to the pedestrian environment, such as suitable wayfinding strategies, where work has a public interface
- changes to pedestrian and vehicle access and/or circulation at Hunter Street, Bent Street, O'Connell Street, Margaret Street, and De Mestre Place, to separate modes
- pedestrian access from George Street to the Hunter Connection food court would be permanently closed

James Craig Road and Robert Street around The Bays construction site are currently used as cycle routes and connect with the active transport network. Changes to the active transport network are proposed as part of the approved WestConnex M4-M5 Link and would not be affected by the proposal.

City of Sydney recommended reduced construction zone speed limits to 30km/hr on those streets which will have an increase in heavy vehicles. The Construction Traffic Management Framework (CTMF) allows for temporary and long term speed zone reductions to be covered in a site specific Construction Traffic Management Plan (CTMP), detailing the anticipated impacts and mitigation strategies. The Proponent would also apply for a change to speed zone to TfNSW, if required. The Department supports reviewing traffic safety and associated speed limit changes at the CTMP stage.

Inner West Council requested that cycle and pedestrian awareness training be provided for construction heavy vehicle drivers, clear identification of construction vehicles with signage, and that mirrors, active real-time GPS tracking, and GPS guided routing be provided. The CTMF requires contractors to complete the Sydney Metro heavy vehicle driver introduction training (including cyclist awareness training), and that contractors have systems in place to always monitor vehicle locations and report and address any identified non-conformances.

Vehicle access to and from construction sites will be managed to maintain pedestrian, cyclist and motorist safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals, and modifications to existing signals or, on occasions, police presence.

The Department supports the implementation of the CTMF as an appropriate guide to road user safety and disruption impacts, similarly to other approved projects of this scale and design, including Sydney Metro Concept and Stage 1 (SSI-10038). Adoption of the CTMF provides a consistent approach across sites while considering the site specifics of each and provides the community with confidence that construction traffic is being managed.

To ensure implementation of the CTMF, the Department has recommended conditions including:

- preparation of CTMPs in accordance with the CTMF
- the Traffic and Transport Liaison Group (TTLG) is established before construction commences
- supplementary traffic network modelling or analysis required by the TTLG be undertaken
- the TTLG be involved in preparation of safety audits for permanent road works.

The proposal will have some minor impacts to special events due to site restrictions; however, public interaction with construction sites and traffic can be effectively managed through the Proponent's engagement with Transport for NSW and event organisers

Festivals and special events provide cultural connection, bring the community together, foster social cohesion at a local level, and can attract high visitor numbers. Inner West Council advised that The Bays construction site was used as a viewing area for fireworks displays at special events such as New Year's Eve and Australia Day. The Bays tunnel launch and support construction site would be fenced for safety reasons, and therefore not available as a public viewing spot. Other parts of Glebe Island not subject to construction may be accessible, and other public viewing points, such as the Anzac Bridge, are not affected.

Across the Sydney CBD, celebrations and festivals are planned across different venues and public spaces throughout the year. These events attract high numbers of visitors to the Sydney CBD. Road closures are not proposed around construction sites, and only a limited number of parking spots removed near each site. Interactions of construction traffic with event patrons would be managed by consultation with organisers of major events, relevant Councils and Transport for NSW (where

applicable), to manage construction vehicle movements during festivals and special events, be documented in CTMPs, and major and regular events planned for in construction programming. Management measures would include:

- reducing construction activity and intensity and, if necessary, ceasing construction activity
- providing appropriate access to all areas within the event precinct
- erection of hoardings, site fencing and gates at key locations, to permit pedestrian movements next to the construction site and separate pedestrians from construction vehicles
- scheduling deliveries to the construction site outside of event periods.

The Department recognises the importance of managing access during the operation of festivals and special events and notes any direction given by TfNSW regarding embargos that may be placed during major / special events and marches / special operations must be complied with. The requirement for a Construction Parking and Access Strategy is recommended which includes consideration of special events. The Department is satisfied the measures proposed ensure construction would not impede on the success of community events, as has been shown with continued construction at other city locations.

Communication strategies would be developed in consultation with Place Managers to address site specific needs of the community, stakeholders, and businesses

A comprehensive stakeholder and community engagement program has been developed to guide engagement with local communities, stakeholders, industry, and government agencies. This includes a wide range of engagement tools such as stakeholder meetings, presentations, and phone calls.

Metro West's Place Managers will play a vital role in building and maintaining strong relationships with communities and businesses during planning and delivery. Their role is to engage the community, address concerns, and provide accurate and transparent information to ensure the community's engagement with, and understanding of, the proposal and its impacts.

An Overarching Community Communications Strategy (OCCS) has been prepared to guide the approach to stakeholder and community liaison, including engagement with communities, stakeholders and businesses. Specific community communication strategies would be developed to address site specific needs of the community, stakeholders, and businesses, demonstrate how diverse communities would be engaged, and deliver accessible information to:

- people with languages other than English (LOTE)
- culturally and linguistically diverse communities (CALD)
- vulnerable communities
- Aboriginal and Torres Strait Islander Communities (ATSI)
- affected communities (including residents, businesses, and workers) to understand their preferences for mitigation and management measures
- 'other' sensitive receivers such as hotels, cultural infrastructure, child care services, schools, medical facilities, or places of worship within the 400 metre radius from the construction sites, to understand periods in which they are more sensitive to impacts.

Business Impacts

Once operational, Sydney Metro West will provide benefits to businesses, including additional access and enhanced connections between business and employment areas, allowing faster travel for workers between home and their employment and attract customers to goods and services in proximity to stations. It is, however, accepted that the local community may lose access to a limited range of goods and services during construction. The types of businesses that require relocation in Pyrmont are destination businesses servicing a wider catchment and given the location of both Hunter Street station sites are within Sydney CBD, the loss of businesses is unlikely to have a significant impact on the communities' access to similar services in proximity to construction works.

The Proponent will implement business specific mitigation including a commitment to small business owner engagement, the scheduling of planned power and utility interruptions outside of typical business hours, and minimising impacts to business visibility and accessibility.

Issue

A summary of positive and negative business impacts from Pyrmont and Hunter Street construction sites include:

- increase in passing trade
- redistribution of trade
- loss of parking
- temporary reduced local amenity
- power and utility interruptions
- safety and security.

There is likely to be a decrease in passing trade to businesses that trade in the ground level of 109 Pitt Street at Hunter Connection and lower concourse of Brookfield Place that rely on foot traffic to access goods and services via the underground pedestrian walkway (Hunter Tunnel), due to the demolition of the Hunter Connection building that is required to construct the Hunter Street west station site.

Submissions

Community and Interest Group submissions

The following comments were raised:

- request for early consultation with businesses in the Hunter Connection and Brookfield Place affected by the closure of the Hunter Tunnel underground pedestrian walkway between Wynyard Station and Pitt Street
- request for further information regarding the proposed closure of the Hunter Tunnel, including period of time, and details in relation to whether work is proposed to the Hunter Tunnel itself, its end state and potential impacts on retail tenants, including the ability to maintain access and/or to minimise impacts on retail tenants
- request assistance for retail tenants to continue trading
- concern that closure of the Hunter Connection would exacerbate business impacts associated with COVID-19 public health orders and request for compensation.

Consideration

Impacts to businesses affected by closure of the underground pedestrian walkway between Wynyard Station and Pitt Street would be minimised by implementing good communication channels, wayfinding and other measures to maintain visibility

The proposal would result in the demolition of Hunter Connection main building from the underground pedestrian walkway (Hunter Tunnel) to the secondary adjoining building of Hunter Connection at 109 Pitt Street. The secondary adjoining building of Hunter Connection at 109 Pitt Street will be retained (see **Figure 12**).

The Hunter Tunnel is an underground pedestrian walkway providing access from Wynyard Station to Pitt Street via the Hunter Connection and Brookfield Place. Several businesses occupy the lower concourse of Brookfield Place, including a restaurant, food outlets, and supermarket. Businesses occupying the Pitt Street ground level section of Hunter Connection include cafés, food outlets, barber, hair and beauty salon, drycleaner, pharmacy and other retailers.

Figure 12 | Pitt Street ground level section of Hunter Connection view east towards Pitt Street which would not be physically affected by construction and continue to trade (Source: DPE)

Small business owner engagement would be implemented to assist business owners adversely affected by construction. The Department recognises the importance of regular, genuine and transparent communication with affected small businesses in order to understand and address impacts and that business engagement and activities to support small business have been undertaken on other projects delivered by Sydney Metro. Strategies that have been successfully implemented on other projects include:

- business information sessions to provide updates on construction activities and for business owners to provide feedback relevant to their operations
- project team briefings to ensure awareness of local business needs
- issue of loyalty cards to encourage site workers to visit local businesses
- avoiding highly intrusive work during critical business operations and
- advanced notification of out of hours works where relevant to business operations.

Hoarding and screening impacting the visibility of business would be minimised where possible and clear pathways and signage around construction sites will maximise visibility of obstructed businesses, including lighting pedestrian footpaths at night where relevant.

The Department has recommended conditions for a Small Business Owners Engagement Plan, which will identify businesses adversely impacted by the proposal, and provide a framework to engage with businesses throughout construction. The Small Business Owners Engagement Plan also requires measures to address impacts from the temporary closure of the underground pedestrian walkway between Wynyard Station and Pitt Street (Hunter Tunnel), and associated measures to address amenity, vehicle, pedestrian access (including wayfinding), and visibility of businesses adversely affected by the proposal. Implementation of these measures and genuine engagement and partnering with businesses continuing to trade, is considered the most effective way to develop resilience to construction impacts.

Early notification of planned power and utility interruptions would be undertaken to minimise business impacts

Planned power and utility interruptions would be scheduled to occur before or after typical business hours where practicable. Prior notice of the interruptions would be provided to affected business owners. Given several businesses operate on a 24/7 basis (including The Star at Pyrmont) and outside normal business hours (e.g. pubs), these businesses would need early knowledge and support to minimise the impact of disruptions. Businesses operating financial market infrastructure would be consulted to ensure backup arrangements can be put in place to minimise any disruptions to their services.

6.5 Other issues

Subject	Issue	Consideration and Recommendations
Biodiversity and trees	There would be minor impacts to biodiversity where surface sites are cleared to enable station box excavation. No additional impacts are anticipated at the Hunter Street east or The Bays sites as clearing and use as construction sites have been assessed under the City and South West (SSI 7400) and Metro West Stage 1 (SSI 10038) approvals. The Pyrmont and Hunter Street (Sydney CBD) construction sites are located in highly urbanised areas that do not support high biodiversity value, intact native vegetation, and fauna habitat. *Fauna* Planted native trees at construction sites may provide limited foraging habitat for the Grey-headed Flying-fox, Powerful Owl and Little Lorikeet, however these do not provide important habitat for these species. Extant buildings can provide habitat for threatened species, particularly microbats, however none have been recorded as roosting in these locations. No other potential microbat roosting habitat is present. *Street trees and landscape planting* Minimal vegetation clearing of street trees is required to excavate station boxes. Clearing would include up to 12 planted trees (7 native and 5 exotic) and 250 square metres of exotic plantings at Pyrmont. Four planted exotic trees would be removed at Hunter Street. Tree trimming may be required to establish hoardings along Hunter Street within the Hunter Street Station construction sites.	Planted native trees may provide limited foraging habitat for identified species but are unlikely to comprise a significant component of their overall foraging requirements. The likelihood that extant buildings provide suitable roosting habitat for threatened microbats is considered low. The Department has recommended conditions which support and enhance commitments made in the EIS for preparation of: • a Flora and fauna CEMP sub-plan which includes preclearance surveys before vegetation clearing or building demolition to locate fauna and clear any roosting sites, • an Unexpected Microbat Procedure that includes protocols and notification requirements to be followed in the event microbats are identified. Both recommendations are supported by Environment and Heritage Group. Conditions to retain as many mature trees and as much tree canopy as practicable, and a net increase in the number of mature trees at a ratio of 2:1, forms part of the whole Sydney Metro West Concept previous approval (SSI 10038) and are not reiterated here.

Subject	Issue	Consideration and Recommendations
	No native trees that would be cleared are threatened species. In response to City of Sydney's submission, the Proponent has agreed to engage a suitably qualified project arborist to advise on pruning of street trees, to minimise damage and safeguard the health and stability of retained and protected trees.	
Aboriginal Heritage	The assessment covered the proposed use of the surface at the eastern and southern part of The Bays Station construction site to launch and support two tunnel boring machines for the drive east to the proposed Hunter Street Station construction sites. Most surface disturbance and all excavation of the station box would occur under the previous Stage 1 approval. The use of The Bays tunnel launch and support site is not anticipated to result in impacts on Aboriginal heritage. No known Aboriginal sites would be impacted by the proposed work at the Pyrmont Station construction sites. The likelihood of intact artefacts bearing archaeological deposits is considered to be nil due to the landscape context and largely modified nature of the Pyrmont Station construction sites and surrounding area. The scientific significance of the Pyrmont sites is low. There are not expected to be potential impacts to Aboriginal objects. The likelihood of intact artefact-bearing archaeological deposits is considered to be low for the Hunter Street Station western construction site. Aboriginal objects that might be located within the majority of the western construction site are likely to be within a disturbed context and would therefore be considered to be of low archaeological significance. However, if buried landforms associated with the Tank Stream were located in the western construction site, they would have a high research potential and high significance as Aboriginal objects may be present and would be rare in the context of the urban landscape of the former Tank Stream valley.	The Department is satisfied that due to the low potential for archaeology to be encountered, proposed mitigation measures are satisfactory, and has recommended conditions to ensure that potential Aboriginal heritage is protected, including: • a requirement to implement the excavation methodology outlined in the ARDs • investigations to identify soil profiles at Hunter Street Station western construction site, which may trigger additional investigations and / or salvage excavation • implementation of an Unexpected Heritage Finds and Human Remains Procedure to ensure impacts to archaeology are minimised and a requirement to stop work when previously unidentified Aboriginal objects are discovered • a requirement to take all reasonable steps to not harm, modify or otherwise impact Aboriginal objects • preparation of an Aboriginal Cultural Heritage Excavation Report(s), prepared by a suitably qualified expert, at the completion of Aboriginal heritage test and salvage excavations • a requirement for ongoing consultation with Registered Aboriginal Parties.

Subject	Issue	Consideration and Recommendations
	The Proponent has prepared Archaeological Research Designs (ARD's) for Pyrmont Station and Hunter Street Station which contains an excavation methodology and requirements for salvage excavation and/or further investigation, if the results of test excavations identify potential soil profiles that may contain artefacts. Due to the landscape context and largely modified nature of the Hunter Street Station eastern construction site and surrounding area, the likelihood of intact artefact bearing archaeological deposits is considered to be nil and is considered to be of low scientific significance. An Unexpected Finds Procedure has been prepared for the proposal and would be implemented if Aboriginal objects are exposed. Heritage NSW has indicated its support for all mitigation and management measures and raised no issues with the excavation methods outlined in the ARDs.	
Hydrology & Flooding	Flood modelling results indicate that the overall risk of flooding from the proposal is low and impacts would be negligible. While the Hunter Street and The Bays tunnel sites, and to a lesser extent Pyrmont Station construction sites, are affected by major overland flow paths, the proposed changes to those sites would not significantly alter flooding behaviour on neighbouring sites. However, activities within The Bays Station construction site have the potential to impact local overland flooding with a loss of floodplain storage and blocking of the flow path. Potential impacts on flood behaviour within construction sites is expected to be minor which includes:	The Department is satisfied that flooding impacts associated with this proposal are minor and can be managed through the implementation of the proposed mitigation measures and standard conditions, including. • a requirement for the design and construction to not worsen flooding within and in the vicinity of the proposal • limits on flood inundation levels, including no inundation of floor levels which are currently not inundated in a 1% AEP flood event.

Subject	Issue	Consideration and Recommendations
	• nuisance flooding (usually during high tides) and drainage issues during intense rainfall; • floodwater ingress into excavated areas as a result of overland flooding (or coastal inundation at The Bays); • damage to construction site equipment and facilities at The Bays due to overland flows during the 1% AEP. Proposed mitigation measures include: • Identification of measures during detailed design to not worsen flood impacts on the community and on other property and infrastructure during construction up to and including the 1% AEP flood event; • review of site layout and staging of construction activities to avoid or minimise obstruction of overland flow paths, address loss of floodplain storage and limit the extent of flow diversion required; • Use of The Bays tunnel launch and support site would aim to minimise changes to existing levels in relation to potential impacts on flood behaviour and would aim to avoid conflicts with the potential construction of flood mitigation work in Robert Street, in consultation with Inner West Council; • Construction planning would be in consultation with the NSW State Emergency Service (SES) and the relevant local Council to address potential impacts to emergency access routes; and • Implementation of appropriate flood protection between Hunter Street station construction site and the Sydney Metro – City & Southwest Martin Place metro station site. With the implementation of the proposed mitigation and management measures, there would be negligible differences in flood storage volumes within or in the areas surrounding any of the	

Subject	Issue	Consideration and Recommendations
	construction sites. Flood levels, duration of inundation and flood hazard are not anticipated to increase as a result of the proposal.	
Land use and property	Acquisition of land (on and below ground) would be required to accommodate the stations and ancillary facilities. Full acquisition of 14 properties (comprising commercial and retail premises), acquisition of De Mestre Place, and the transfer or termination of leases in buildings subject to acquisition is required. All property acquisitions would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Stratum acquisition is also required for the tunnels below properties under the *Transport Administration Act 1988*.	Land acquisition has been greatly reduced in designing an underground project. Acquisition of privately owned land has been minimised using existing Government owned land where possible. Proposed management measures include dedicated Sydney Metro Place Managers and project-specific communication contact tools, including a 24-hour community information line, culturally and linguistically diverse translation services and community email address. The Department supports these measures and has recommended conditions for land use and property including: • comprehensive consultation and engagement requirements • condition surveys for buildings and structures at risk of damage • rectification requirements for damage caused directly or indirectly by construction • establishment of an independent panel to verify condition surveys and resolve property damage disputes.
Soils and surface water quality	Given the relatively small areas of surface disturbance anticipated during construction, soil erosion would be adequately managed in accordance with proven standard mitigation measures. Standard construction management measures would be implemented by the Proponent to minimise potential and temporary risks to downstream water quality from station excavation and tunnelling construction activities.	The Department has recommended standard conditions for soils and surface water quality which include: • maintaining or improving water quality consistent with the NSW Water Quality Objectives • preparation of soil and water quality plans to manage construction runoff • monitoring of surface water quality • preparation of a water reuse strategy.

Subject	Issue	Consideration and Recommendations
Contamination and acid sulfate soils	The design has avoided known contaminated sites present at or nearby the Pyrmont Station or Hunter Street Station construction sites. Areas of low or moderate contamination risk were identified within construction sites or within 500 metres of sites and tunnel alignment (including power supply route). These include sites that are listed on the NSW EPA Contaminated Sites Register and the NSW EPA Protection of the Environment Operations Register. During construction, instances of soil, groundwater, vapour, odour and gas contamination may be uncovered. No high-risk contamination was identified in preliminary investigations. The potential contamination risk at sites of a moderate to very high risk of contamination would be confirmed by sampling and detailed site investigation when access to sites is available. Where appropriate, Remediation Action Plans (RAP) would be developed, and an EPA accredited site auditor would be engaged to verify remediation, where contamination risk is highly complex and to issue Site Audit Statements and Site Audit Reports where required to confirm that the land is suitable for its intended use. Acid sulfate soils (ASS) may be encountered at Pyrmont and The Bays.	The EPA raised concerns that the investigations had not appropriately determined contamination risks, and proposed mitigation measures to manage potential contamination and acid sulfate soil risks were not provided. The Department acknowledges that where potential contamination risk is identified as moderate or above, further detailed site investigations, including sampling, is proposed to inform management and remediation measures. Development and implementation of an Unexpected Finds Procedure for contamination is recommended. This procedure would outline the processes to be followed in the event that contamination is uncovered in areas identified as having low risk. The Department has recommended additional conditions to manage contamination which requires undertaking of Detailed Site Investigations, preparation of Remediation Action Plans (RAPs), an Unexpected Finds Procedure for contamination (and ASS), and Site Audit Statements to confirm before remediation that the land can be made suitable for its proposed use.
Groundwater and settlement	Settlement of less than 10 mm is expected across most of the alignment, which is within the range where superficial damage to buildings is unlikely. Measures to determine the potential for superficial or greater damage, including building strain and structural assessments would be implemented before construction commences.	DPE Water advised that further assessment of geotechnical stability, groundwater level and quality, seawater interface level, soil and groundwater contamination and geological structures should be progressed leading into the detailed design stage. The Proponent has committed to development and progressive update of a detailed geotechnical model which would consider predicted changes to groundwater levels and the implementation

Subject	Issue	Consideration and Recommendations
	Most underground elements are designed as tanked structures and therefore settlement may be associated with the initial groundwater drawdown during construction, but groundwater recharge would be expected to equilibrate quickly to ensure that this is not a permanent outcome. Groundwater quality may be affected by pollutants associated with tunnel boring, concrete casting and shotcreting. This would be captured and treated to a level compliant with the ANZECC/ARMCANZ (2000), ANZG (2018) and draft ANZG (2020) default guidelines for 95 per cent species protection and 99 per cent species protection for toxicants that bioaccumulate current and draft ANZECC and ANZG guidelines, before reuse or discharge.	appropriate groundwater monitoring program where targeted changes to groundwater levels are likely to be exceeded. This is a similar approach to the Sydney Metro (Chatswood to Sydenham) and Stage 1 Sydney Metro (Westmead to the Bays). The Department has recommended conditions including: establishment of an Independent Property Impact Assessment Panel to provide independent review of pre- and post-construction condition survey reports, and resolution of potential property damage disputes condition surveys and geotechnical analysis an outcome-based objective to meet the ANZECC/ARMCANZ and ANZG guidelines.
Design, place and movement	The scope of this proposal is such that the final form would provide an underground tunnel and excavation for a subsequent stages (under separate approvals) to build the final aboveground buildings and landform. Site demolition (at Pyrmont and Hunter Street locations) would remove existing industrial or commercial development at each site. These would be replaced with temporary construction hoarding and acoustic sheds. This environment is consistent with the change regularly occurring in business districts and areas of renewal. The scale of the temporary sheds at Pyrmont would be similar to current development, however would be significantly smaller than current structures at the Hunter Street sites. The final form of the sites before handover to the next phase of development would be predominantly vacant lots. While the construction environment for this stage is temporary, subsequent stages involve further construction. Subsequent stages and changes are outside the scope of this application, and	No conditions specific to this issue are recommended.

Subject	Issue	Consideration and Recommendations
	will be considered in subsequent project and development applications.	
Air quality	Dust generating activities include dust generated from clearing and demolition, excavation, materials handling, stockpiling and compaction activities, and wind erosion of stored materials and exposed surfaces. Impacts could include respiratory related health issues, dust deposition on neighbouring properties, reduced visibility and eye irritation. Construction equipment would also emit exhaust from fuel combustion which includes a range of pollutants. Historical air quality (2016-2020) indicates particulate matter (PM_{10} and $PM_{2.5}$) frequently exceeded relevant criteria, likely due to extended periods of drought, hazard reduction burning and an unprecedented fire season in 2019/2020.	Earthworks and spoil handling at Pyrmont would occur in fully enclosed sheds with dust filtering systems installed on exhausts to capture dust and minimise emissions from the site. In addition, industry best practice measures would be implemented such as: • regular wetting down of exposed and disturbed areas (especially during dry weather) • minimising stockpile volumes and positioning stockpiles away from surrounding receivers • maintaining plant and equipment in a proper and efficient manner • preparing and implementing an Air Quality Management Plan which identifies measures to manage air quality impacts A complaints management system would be in place to take and manage complaints, enquiries and escalated unresolved matters. Demolition and tracking out were identified as high risk activities at each location. The proponent has committed to implementing the measures above along with watering of haul roads and removing loose material from haulage routes. These are considered appropriate responses to managing dust and air quality around construction sites. No further conditions are recommended.
Sustainability, climate change and greenhouse gas	A Sustainability Plan would be developed to set out how sustainability principles would be met across the proposal. The Proponent has committed to achieve an Infrastructure Sustainability As Built rating of 75. Other commitments to sustainability, greenhouse gas reduction, and climate change would be factors considered in the calculation of the rating. This requirement, which is a condition of the concept approval for Metro	No further conditions are recommended.

Subject	Issue	Consideration and Recommendations
	West, overrides a range of other measures and a lower performance outcome. The Department considers that the application of a rating outcome is an appropriate way to ensure the desired outcome while allowing the flexibility for innovation to guide the means of achieving it. The Department supports a consistent approach to climate change risk across the program of work and the Concept Approval requires the overall design to be designed to withstand climate change to the year 2100.	
Waste management	Waste generated by the proposal would be managed in accordance with the *Waste Avoidance and Resource Recovery Act 2001* and *Protection of the Environmental Operations Act 1997* and a Waste Management Plan to be prepared for the proposal. Choice of tunnelling methods and equipment was integral to minimising generation of spoil and waste. Approximately 1.1 million cubic metres of spoil would be generated, stockpiled, and managed. A 95% waste recycling target has been adopted for the anticipated 50,000 tonnes of demolition material produced. Reuse options are dependent on the characteristics of the spoil excavated. This would continue to be considered throughout construction. Spoil classification and adoption of the waste hierarchy and tracking would follow industry standards and legislative requirements.	The Department considers that waste generation and management can be adequately managed using standard mitigation measures such as the principles of avoid, reduce, reuse and recycle, and recommended conditions, and supports the commitment to a minimum 95 per cent recycling target for construction and demolition waste. The Department has recommended conditions for the handling, reuse, disposal and tracking of waste which include adopting the waste hierarchy of avoid, reduce, reuse and dispose.
Cumulative impacts	Cumulative impacts result from overlap of impacts between projects and can occur when projects are constructed simultaneously or sequentially. Construction fatigue is a common	This collaborative and iterative approach is consistent with that which the Department advocates, however further additional conditions relating to cumulative noise management, the provision of respite, regional traffic management, resource

Subject	Issue	Consideration and Recommendations
	outcome of cumulative impacts and an increase in complaints can occur. Numerous large scale government infrastructure and private development projects were considered in the cumulative impact assessment, due to their proximity to surface construction sites, temporal overlaps, or extension of timeframes to which residents and other stakeholders would be subject to construction impacts. The Rozelle area in particular is an area which has been subject to significant and ongoing construction since 2016 with the construction of the CBD and South East Light Rail maintenance depot at Lilyfield, and continued construction for WestConnex, Western Harbour Tunnel, and Metro West Stage 1 among others. Potential cumulative impacts of traffic, noise, property and land use, groundwater drawdown, flooding and hydrology, air quality, spoil and waste management, and resource demand are acknowledged. Management commitments for cumulative impacts proposed by the Proponent include: • cross project consultation and co-ordination to manage noise and traffic generating activities • construction programming to minimise opportunities for overlap of groundwater drawdown between Metro West stages • design and installation of flood protection between Sydney Metro projects • ongoing engagement with planning and development agencies to align project delivery where possible for urban renewal at The Bays and implementation of the documented land use vision in the CBD.	demand and flooding are recommended to reinforce this approach.

7 Evaluation

The Department considers the proposal is in the public interest and should be approved, subject to conditions.

The Department's assessment has considered all relevant matters and objects of the *Environmental Planning and Assessment Act 1979*, the principles of ecological sustainable development, advice from government agencies and councils, and strategic government policies and plans.

The proposal is consistent with key government policies and strategies including:

- *Future Transport 2056*
- *NSW State Infrastructure Strategy 2018-2038: Building Momentum*
- *Staying Ahead: NSW State Infrastructure Strategy 2022-2042*
- *Greater Sydney Region Plan: A Metropolis of Three Cities*
- Eastern City District Plan
- Central City District Plan
- Pyrmont Peninsula Place Strategy
- Sydney City Centre Access Strategy 2013.

Key benefits provided by the proposal include:

- establishing Pyrmont as the western gateway to the Sydney CBD, forming a continuous innovation corridor between The Bays and Eveleigh
- positioning Pyrmont to attract future growth in business investment, driven by connectivity with the Sydney CBD, Parramatta, Westmead, Sydney Olympic Park and via interchange to North Sydney and Macquarie Park
- increased public transport use by improving public transport accessibility for The Bays and Pyrmont to Westmead and Parramatta and the Sydney CBD; and
- establishing a new east-west connection between Martin Place and Wynyard Stations by improving accessibility between economic centres of the Sydney CBD.

In its assessment, the Department reviewed the Environmental Impact Statement, public submissions and the Submissions Report, and assessed the key issues arising from the proposal. Key issues associated with the proposal are:

- noise and vibration
- non-Aboriginal heritage
- traffic and transport
- social and business.

The Proponent identified environmental mitigation measures which it has committed to applying to the proposal. Based on its assessment, the Department has recommended conditions of approval to reinforce these commitments and address outstanding or residual impacts.

The Department is satisfied that issues raised in submissions have been appropriately considered and generally responded to by the Proponent. Residual impacts can be mitigated or managed generally through implementation of the Proponent's commitments. Recommended conditions reinforce these commitments and address outstanding or residual impacts.

The proposal would provide a component of a world class, safe, efficient, and reliable metro rail line between Greater Parramatta and Sydney CBD, an effective response to existing and emerging constraints on the existing Sydney Trains rail network and Sydney's current and forecast population and economic growth.

8 Recommendation

It is recommended that the Minister for Planning:

- **considers** the findings and recommendations of this report
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application
- **considers** any advice provided by the Minister having portfolio responsibility for the proposal
- **agrees** with the key reasons for approval listed in the notice of decision (see attachment)
- **grants approval** for the application in respect of State Significant Infrastructure SSI-19238057, subject to the conditions in the attached project approval
- **signs** the attached project approval and recommended conditions of approval (see attachment).

Recommended by:

Lisa Mitchell
Team Leader Transport Assessments
Planning and Assessments

Recommended by:

Glenn Snow
Director Transport Assessments
Planning and Assessments

9 Determination

The recommendation is **Adopted / Not adopted** by:

The Hon. Anthony Roberts
Minister for Planning

Appendices

Appendix A – List of referenced documents

1. *Pyrmont Peninsula Place Strategy* (DPE, 2020)
2. *Sydney Metro West – Major civil construction between The Bays and Sydney CBD Environmental Impact Statement* dated 25 October 2021 (the EIS)
3. *Sydney Metro West – Major civil construction between The Bays and Sydney CBD Submissions Report* dated April 2022 (the Submissions Report)
4. *Sydney Metro West – Archaeological Research Design and Excavation Methodology – Pyrmont Station* dated April 2022 (Pyrmont ARD)
5. *Sydney Metro West – Aboriginal and Historical Archaeological Research Design– Hunter Street Station (Sydney CBD)* dated May 2022 (Hunter Street Station ARD)
6. *Sydney Metro West – Westmead to The Bays and Sydney CBD Environmental Impact Statement* dated 15 April 2020
7. *Sydney Metro West – Rail infrastructure, stations, precincts and operations Environmental Impact Statement* dated 18 March 2022
8. *Sydney Metro West The Bays Road Relocation Works Review of Environmental Factors* dated April 2020
9. *Sydney Metro West The Bays Road Relocation Works Review of Environmental Factors Determination Report* dated August 2020
10. *Sydney Metro City and Southwest – Chatswood to Sydenham Environmental Impact Statement* dated 3 May 2016
11. *Interim Construction Noise Guideline* (DECC, 2009)
12. *Future Transport 2056* (TfNSW, 2018)
13. *Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people* (Greater Sydney Commission, 2018)
14. *2020 Infrastructure Priority List* (Infrastructure Australia, 2020)
15. *Building Momentum: NSW State Infrastructure Strategy 2018-2038* (Infrastructure NSW, 2018)
16. *Staying Ahead: NSW State Infrastructure Strategy 2022-2042* (Infrastructure NSW, 2022)
17. *Eastern City District Plan* (Greater Sydney Commission, 2018)
18. *Central City District Plan* (Greater Sydney Commission, 2018)
19. *Sydney City Centre Access 2018* (TfNSW, 2018)

Appendix B – Environmental Impact Statement

https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-metro-west-bays-sydney-cbd

Appendix C –Government Agency Advice

https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-metro-west-bays-sydney-cbd

Appendix D – Submissions

https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-metro-west-bays-sydney-cbd

Appendix E – Submissions Report

https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-metro-west-bays-sydney-cbd

Appendix F – Additional Information

https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-metro-west-bays-sydney-cbd

Appendix G - Community Views for Draft Notice of Decision

Issue	Consideration
Project design and justification • need for and benefits of locating a metro station at Pyrmont • provision of a pedestrian tunnel from western Pyrmont Station site to Blackwattle Bay • walking distances from the street to platforms and between platforms at interchanges	*Assessment* • the proposal is consistent with State strategic planning and transport documents. • additional connections are outside the scope of this proposal. Location of the Pyrmont station has considered existing connections to local destinations • access from the street to platforms is dictated by geography and depth of tunnel. Connections would be required to be compliant with *Disability Discrimination Act* *Recommended Conditions/Response* No additional conditions are required in relation to this matter
Traffic and transport • construction traffic management and coordination • impacts to pedestrians and cyclists and maintenance of access to businesses • construction vehicles in residential neighbourhoods • closure of Hunter Tunnel • traffic management during significant events • engagement of community stakeholders in traffic management • maintaining access for emergency vehicles • heavy vehicle identification and driver behaviour • construction worker parking impacts • request for bus priority measures	*Assessment* • the proposed Construction Traffic Management Framework provides the overall strategy and approach for construction traffic management. It establishes traffic management processes and traffic control techniques, adjustments to traffic signals, establishment of signage, and traffic calming measures near construction sites • vehicle access to and from construction sites would be managed to maintain pedestrian, cyclist and motorist access and safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals, modifications to existing signals or, on occasion, police presence • most construction sites have direct access to the arterial road network, and this network is equipped to accommodate construction traffic • a limited number of parking spaces are provided in construction sites. Pyrmont and Hunter Street construction sites have good access to public transport services and construction workers would be encouraged to use these services • driver training and vehicle requirements are required in Sydney Metro contracts. Heavy vehicle drivers would be made aware of the construction site traffic management arrangements and site-access requirements, including approach and departure routes and any heavy vehicle noise management measures required *Recommended Conditions/Response* • traffic impacts can be managed by implementing the Proponent's committed management measures and recommended conditions of approval • the conditions require site specific Construction Traffic Management Plans to be prepared and will include pedestrian and cycle movement plans • traffic associated with the operation of stations and services are outside the scope of this application. These concerns will be addressed in Stage 3 – Rail infrastructure, stations, precincts and operations (SSI 22765520)
Noise and Vibration • management of noise impacts during early works • impacts and management of late night work • construction noise and vibration impacts at Pyrmont • health and wellbeing of residents resulting from extended construction hours • engagement with the community about noise impacts including out of hours works • provision of noise monitoring and respite for noise intensive works • noise impacts on residents working from home during construction	*Assessment* • construction noise and vibration impacts are unavoidable for a project of this magnitude in a highly urbanised environment. The impacts would be managed using industry best practice and a robust community consultation strategy • construction hours have been extended on Saturdays (8:00am to 6:00pm) to encourage daytime work and to minimise night-time impacts in residential areas • acoustic sheds would be installed at both Pyrmont construction sites to remain throughout construction, and a temporary acoustic shed retained at Hunter Street east construction site • potential impacts to residential receivers has considered all time periods where work is proposed. The impacts to those working from home, have been considered as for other daytime occupants of residences • cosmetic damage may occur during demolition and excavation at stations • vibration during tunnelling may exceed human comfort criteria around Pyrmont and Hunter Street (Sydney CBD) • noise monitoring for construction of the rail infrastructure, stations and precincts is subject to a separate application currently under assessment

Issue	Consideration
	Recommended Conditions/Response • early works (site investigations) will be carried out during the day where practicable. Work requiring changed traffic conditions would be required at night to minimise traffic impacts • station box excavations (unless undertaken within acoustic sheds with acceptable noise levels) will be limited to daytime construction hours (7:00 am to 6:00 pm Mondays to Fridays and 8:00 am to 6:00 pm Saturdays) in Pyrmont to provide respite to adjoining residents • conditions have been recommended to limit heavy vehicle movements in Pyrmont to ensure night time respite for residents • the Proponent will implement mitigation measures to minimise noise during night-time work, including the use of acoustic blankets, providing respite periods from noisy work and the provision of alternative temporary accommodation for highly impacted residents • active and ongoing consultation, flexibility in construction techniques, at source and at property mitigation, and coordinating and scheduling work to provide respite, must be applied to manage construction noise impacts • consultation regarding work outside specified hours will occur in accordance with the Sydney Metro West Out of Hours Work Protocol and include notification at least seven days prior to the work commencing • noise or vibration monitoring will be conducted at affected receiver(s), where it has been identified that specific construction activities are likely to exceed the relevant noise or vibration goals
Air quality • air quality (dust) impacts to residences and businesses • air quality monitoring at construction sites • prompt response and management of community complaints	*Assessment* • dust generating activities include dust generated from clearing and demolition, excavation, materials handling, stockpiling and compaction activities, and wind erosion of stored materials and exposed surfaces • emissions from combustion of diesel fuel by heavy vehicles, mobile construction equipment, and stationary equipment such as diesel generators, are not expected to result in adverse impacts on the surrounding environment *Recommended Conditions/Response* • the conditions require that measures must be implemented to minimise the emission of dust and other air pollutants • earthworks at the Pyrmont Station construction sites would be occur in fully enclosed sheds. Dust filtering systems would be installed on the shed exhaust which to capture dust generated from construction activities and limit the extent of emissions to air • best-practice dust management measures would be implemented during construction work including regularly wet-down of exposed and disturbed areas (especially during dry weather), minimising the amount of materials stockpiled, and position stockpiles away from surrounding receivers • plant and equipment will be maintained in a proper and efficient manner • an Air Quality Management Plan will be prepared to identify measures to manage potential air quality impacts for each site • a Construction Complaints Management System would outline the processes for managing complaints, enquiries and escalation of unresolved matters
Aboriginal heritage • request for appropriate archaeological protocols to be implemented • Aboriginal consultation should be undertaken near waterways at The Bays	*Assessment* • The Bays tunnel launch and support site is located within The Bays Station construction site that was approved for Stage 1 (SSI 10038) and consultation in that location was a requirement of that approval • the use of The Bays tunnel launch and support site is not anticipated to result in impacts on Aboriginal heritage additional to those assessed in the approval of SSI 10038. • Archaeological Research Designs (ARD's) for Pyrmont Station and Hunter Street Station, contain an excavation methodology and requirements for salvage excavation and/or further investigation if additional artefacts are expected • engagement with Aboriginal stakeholders was undertaken during the for the assessment and development of cultural heritage assessment reports and research designs

Issue	Consideration
	Recommended Conditions/Response • the recommended conditions require that actions be taken to limit impacts on Aboriginal heritage and that the archaeological excavation methodology outlined in the ARDs must be implemented before station excavation commences • Aboriginal stakeholder consultation will continue, and additional consultation with knowledge holders about the proposal will be carried out where possible • the proponent is required to prepare an implement an Unexpected Heritage Finds Procedure which sets out notification and other management requirements would be implemented if unexpected Aboriginal objects are identified
Non-Aboriginal heritage • proximity and potential impacts to the Pyrmont Heritage Conservation Area and vibration impacts to heritage buildings • impacts to heritage items including White Bay Power Station and port infrastructure • vibration monitoring and condition surveys should be undertaken at significant heritage structures in proximity to construction sites • request for a detailed salvage methodology to be prepared for the salvage of significant fabric of Gilbey's Distillery • an Archaeological Research Design (ARD) should be prepared for Pyrmont construction sites • construction methods should include provisions for impact prevention and weather protection of the building at Skinners Family Hotel	*Assessment* • Gilbey's Distillery, a potential item of local heritage significance, would be demolished • there would be moderate indirect impacts to the Pyrmont Conservation Area • excavation at The Bays Station was undertaken as part of the Stage 1 approval. Minimal additional impacts are expected at The Bays site. • a number of items will experience vibration impacts, including the Former Skinners Family Hotel • ARDs have been prepared to guide archaeological excavation at the Pyrmont Station sites, and the Hunter Street Station sties *Recommended Conditions/Response* • the recommended conditions require that actions be taken to limit impacts on non-Aboriginal heritage • mitigation measures have been developed to minimise potential direct impacts such as impacts from vibration, settlement, architectural noise treatment, and demolition of adjoining structures • A method for the removal of existing buildings and/or structures at specified construction sites will be developed to minimise direct and indirect impacts to adjacent and/or adjoining heritage items • archival recording and reporting of potential heritage items and listed items adjacent to the Hunter Street Station sites must be undertaken • opportunities for reuse of significant fabric at the Gilbey's Distillery would be assessed and considered. Where fabric is identified for salvage, a methodology would be prepared • further structural assessment of heritage items and vibration impact monitoring (if required) would be completed to ensure safe vibration levels for heritage items are met • condition surveys of buildings and structures near to the tunnel and excavations will be carried out before excavation at each • condition surveys would consider the heritage values of the structure in consultation with a heritage specialist • specific mitigation strategies would be developed to manage vibration and settlement impacts. Depending on the nature of the impact, this could involve adjustments to construction program, equipment or activities of Sydney Metro West or of other construction projects
Social and business • community use of The Bays construction site for viewing special events such as New Year's Eve and Australia Day • traffic management during events in the Domain • potential construction impacts on the White Bay Cruise Passenger Terminal and its recently upgraded conference/ function centre • business impacts, compensation and dispute resolution	*Assessment* • The Bays construction site would be fenced for safety and not available as a public viewing spot. Other viewing points such as the Anzac Bridge are not affected • interactions of construction traffic during events would be co-ordinated by consultation with event organisers and Transport for NSW. These would be documented in relevant construction traffic management plans and planned for in construction programming • Roberts Street is the main access route to the White Bay Cruise Terminal and the broader Balmain peninsula and is at capacity with significant congestion occurring daily. Limited use of the site is recommended • the underground pedestrian walkway (Hunter Tunnel) between Wynyard Station and Pitt Street would be temporarily closed to facilitate the excavation of the Hunter Street station

Issue	Consideration
• access through the Hunter Connection tunnel during construction • early consultation with businesses affected by closure of the Hunter Tunnel	*Recommended Conditions/Response* • the recommended conditions require that Robert Street not to be used as a route for either light or heavy construction vehicles • hoarding and screening impacting the visibility of businesses would be minimised without compromising public safety or the effective management of construction airborne noise • clear pathways and signage would be implemented around construction sites, to maximise visibility of remaining businesses • small business owner engagement with business owners adjacent to major construction sites to develop appropriate strategies to facility ongoing trading through construction • planned power and utility interruptions would be scheduled to occur before or after typical business hours where practicable with prior notice provided to affected users • recommended conditions include development of a Community Communication Strategy(s), a Community Benefit Plan, and Small Business Owners Engagement Plan to include measures to address access to businesses, amenity and visibility of businesses
Design and Place • activation of street frontages at both Pyrmont station sites • amenity impacts with height and number of buildings at Pyrmont • security at the street level of Pyrmont Station eastern site • retention of streetscapes • reinstatement works be undertaken in accordance with Council technical specifications and requirements • consideration of street aesthetics in the design of site boundary hoardings	*Assessment* • proposals to develop surrounding areas, including the development of streetscapes, green spaces, housing and other community and commercial development, is beyond the scope of the proposal and has not been assessed • the design and construction of over-station development is beyond the scope of this proposal and would be assessed in a separate application for the rail infrastructure and station precincts which is under assessment at the time of writing (SSI 22765520) • development site streetscapes would be retained, protected and preserved as far as possible during site establishment and associated construction • construction site hoardings would be designed in accordance with Sydney Metro Brand Design Guidelines and opportunities for public art on hoardings considered in high pedestrian locations *Recommended Conditions/Response* No conditions are required in relation to this matter
Biodiversity • management of potential pathogens during geotechnical investigations at the Domain • retention, planting, relocation and retention of street trees • commentary on fauna including the presence of Southern Myotis, Powerful Owl, Grey-headed Flying-fox and Large Bent-winged Bat, and the need for preclearance surveys to allow for fauna relocation • Tree removal and tree replacement and Arboricultural Impact Assessment prior to construction.	*Assessment* • the area is highly urbanised and does not possess large expanses of intact native vegetation with high biodiversity value. Vegetation clearing has been largely avoided through the design and further clearing would be avoided where practicable • up to 16 trees (seven planted native trees and nine exotic trees) would be removed including six trees within the construction sites and ten street trees • tree planting would be form part of precinct planning which would be considered as part of SSI 22765520 • planted native trees at construction sites may provide limited foraging habitat for the Grey-headed Flying-fox, Powerful Owl, and Little Lorikeet, however, these sites in isolation would not be important habitat for these species • no microbats have been recorded roosting in structures to be demolished. No other potential microbat roosting habitat is present *Recommended Conditions/Response* • a suitably qualified arborist would be engaged to assess pruning and provide advice on measures to minimise damage and ensure the health and stability of trees to be retained and protected • measures for preclearance surveys to be conducted before vegetation clearing or building demolition would be included in a flora and fauna management plan
Soil, groundwater and contamination • groundwater discharge options and disposal • management of contamination at White Bay Power Station	*Assessment* • no additional areas of contamination would be expected at The Bays site which is approved under SSI 10038 • further detailed investigation of known areas of potential contamination would be undertaken ahead of excavation

Issue	Consideration
• potential for the oxidation of acid sulfate soils and potential impact to groundwater quality, groundwater dependent ecosystems, groundwater users and surface water-groundwater interactions • reinstatement works specifications and requirements.	• potential acid sulfate or saline soils may be encountered at the Pyrmont Station eastern construction site • temporary groundwater drawdown may occur during at locations where excavations are untanked such as the caverns, stations and shafts *Recommended Conditions/Response* • erosion and sediment measures will be implemented at all construction sites in accordance with industry best practice • a Soil and Water Management Plan will be prepared to manage potential contamination impacts • testing would be carried out to determine the presence of actual and / or potential acid sulfate soils before ground disturbance in areas of concern • water collected from construction sites would be treated before discharge • the recommended conditions require the development and implementation of an Unexpected Finds Procedure for contamination and that potential contamination at moderate or high-risk sites be confirmed by detailed site investigation ahead of excavation, remediation action plans (RAPs) developed where required, and an EPA accredited site auditor engaged
Climate change, sustainability and waste management • impacts on waste servicing and collection at construction sites in proximity to public places • use of lower carbon embodied concrete • alignment with NSW Government policy positions relating to the circular economy and Net Zero by 2050, and the proposal is used as a mechanism to influence market behaviour	*Assessment* • construction has been predicted to generate approximately 110,000 tonnes of carbon dioxide equivalent (tCO2 -e), approximately 0.08 per cent of total NSW emissions • the Sydney Metro West Sustainability Plan would be adopted which sets out sustainability principles, objectives, and performance targets to be adopted across the life cycle of the proposal *Recommended Conditions/Response* • commitment to achieve an Infrastructure Sustainability Council “As Built” rating of 75 • potential waste management issues are manageable through standard mitigation measures • consultation regarding waste will continue to occur with relevant Councils throughout development of this proposal
Flooding and hydrology • assessment of potential changes in drainage and overland flow with consideration of major projects in the area including WestConnex • changes to the conveyance capacity of existing stormwater systems should be minimised	*Assessment* • flood modelling results indicate that the overall risk of flooding impacts from this proposal is considered low and the magnitude of impacts would be negligible • localised changes to overland flows are limited in their scale to the immediate vicinity of the construction sites, and are considered minor due to the temporary nature of the impacts *Recommended Conditions/Response* • detailed consideration of flooding and drainage in around construction sites would be carried out when construction site layouts are confirmed during detailed construction planning and when more recent changes from other developments can be considered • design development will confirm the local stormwater system capacity to receive construction water treatment plant inflows. In the event there is a stormwater infrastructure capacity issue with existing infrastructure, mitigation measures such as storage detention to control water outflow during wet weather events would be implemented • new connections to the stormwater system would be negotiated with the relevant Councils • the recommended conditions require the proposal to be designed and constructed to not worsen flooding within and in the vicinity of the proposal
Community and stakeholder engagement • establishment of a Community Consultative Committee • community notification requirements during early work • consideration of on-site information days for residents and businesses	*Assessment* • site-specific needs of the community, stakeholders and businesses will be addressed through a range of online and/or in person engagement tools including work notifications and newsletters, signage, meetings, and door knocks • ongoing dialogue would be maintained, including the use of Place Managers in an area, with community members and stakeholders near construction sites, to advise them of work that may result in potential impacts and communicate proposed mitigation and management measures

Issue	Consideration
• request communication with the Domain Trust	• the Domain Trust has been and would continue to be engaged regarding proposal design and engaged *Recommended Conditions/Response* • conditions for a project specific Community Communication Strategy(s), a Community Benefit Plan, and Small Business Owners Engagement Plan prepared in accordance with the Overarching Community Communications Strategy
Cumulative Impacts • cumulative impacts of major development to the Pyrmont Peninsula • public health analysis should be carried out that considers the proposal and cumulative impact of other state infrastructure projects currently underway in the Balmain-Rozelle-White Bay locality.	*Assessment* • cumulative impacts result from overlap of impacts between projects and occur when projects are constructed simultaneously or sequentially • construction fatigue is a common outcome of cumulative impacts and an increase in complaints can occur • numerous large scale government infrastructure and private development projects were considered in the cumulative impact assessment due to their proximity to surface construction sites, temporal overlaps or extension of timeframes to which residents and other stakeholders would be subject to construction impacts *Recommended Conditions/Response* • ongoing engagement with planning and development agencies to align project delivery where possible for urban renewal at The Bays • a traffic and transport liaison group, including council representatives and other stakeholders, to consider traffic management at a regional level • conditions are recommended to manage cumulative impacts associated with construction fatigue, including coordination of utilities work, active community engagement, and provision of periods of respite