Appendix B

Revised proposal description

Table of Contents

List of Tables

List of Figures

Appendix B Revised proposal description

The Appendix provides a consolidated description of the operation and construction of this proposal, including for each station and key ancillary infrastructure. The proposal description has been updated since the exhibition of the Environmental Impact Statement to address clarifications identified in the *Sydney Metro West - Rail infrastructure, stations, precincts and operations Submissions Report* (Sydney Metro, 2022, 'the Submissions Report'). Further detail on the clarifications is provided in Chapter 2 (Environmental Impact Statement clarifications) of the Submissions Report.

1.0 Proposal description – operation

This chapter outlines how Sydney Metro West would operate and be maintained between Westmead and the Sydney CBD, and how customers would use the rail line (this proposal) (Section 1.1 to 1.6). A detailed description for each station and key ancillary infrastructure is provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

The description of this proposal is indicative and based on the current level of design. Some design elements of this proposal would continue to be refined as part of the design development process and including ongoing consultation with key stakeholders.

1.1 Proposal overview

1.1.1 Key features

Key operational features of this proposal would include:

- operation of a turn-up-and-go metro service in about 24 kilometres of twin tunnels between Westmead and the Sydney CBD
- new metro stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD)
- access and interchange features to allow transfers to other modes of transport (such as the existing suburban rail network and other parts of the metro network) and the surrounding precinct
- services within each of the metro stations, including mechanical and fresh air ventilation equipment and electrical power substations to supply power
- a stabling and maintenance facility at Clyde, and associated aboveground and belowground tracks to connect to the mainline tunnels and other operational ancillary infrastructure
- a services facility at Rosehill (within the Clyde stabling and maintenance facility)
- provision of structures for non-station use (e.g. retail, commercial and/or community facilities)
- provisions for future over and/or adjacent station development at relevant stations, including structures for future developments where these cannot be delivered separately to the metro stations
- subdivision of sites.

Key operational features of this proposal are shown in Figure 1-1.

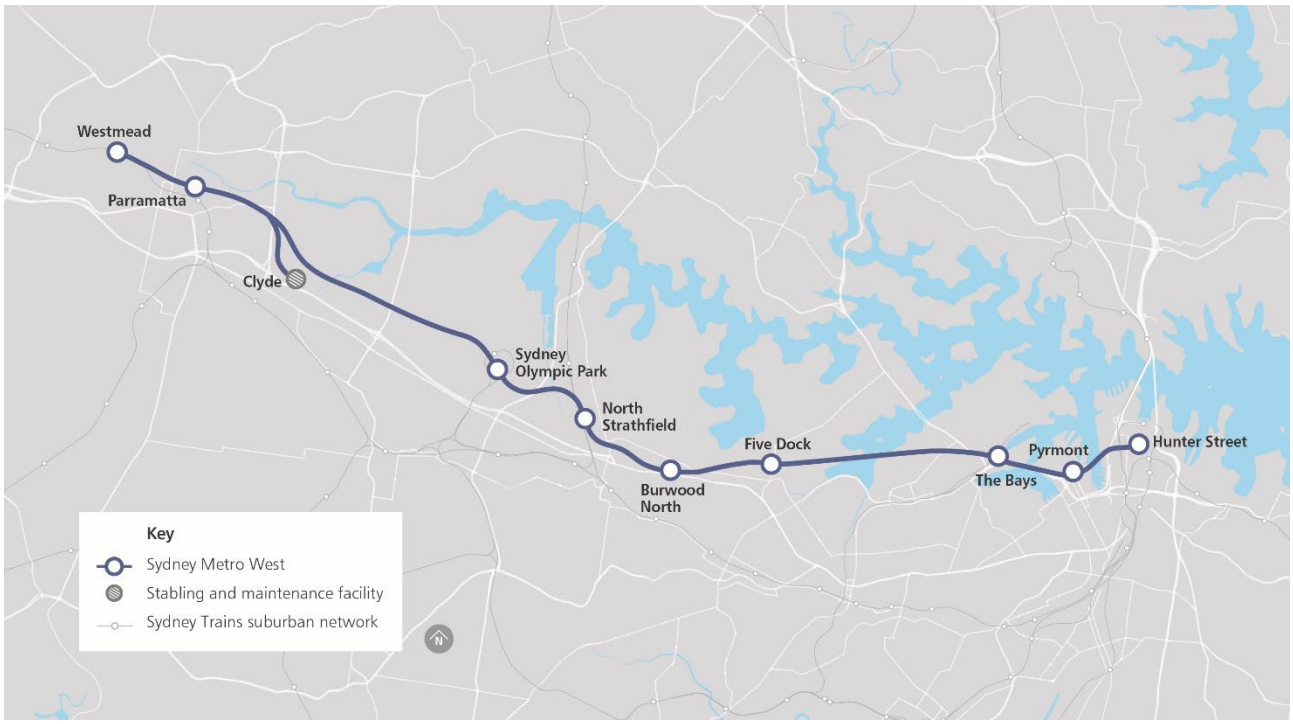


Figure 1-1 Sydney Metro West

1.1.2 Key characteristics

The Sydney Metro network has been designed with a focus on the customers' experience, which incorporates all aspects of travel associated with the transport network, services and the:

- decision on how to travel – the new metro service would be integrated with other transport modes, including transfers with the existing Sydney Trains suburban rail network, pedestrian and cycle networks, light rail and buses
- travel information available – state-of-the-art technology is proposed to keep customers connected at all stages of their journey, from smart phone travel apps on the way to stations to real time journey information at metro stations and onboard trains
- speed and comfort of the journey
- range and quantity of services available at stations, interchanges and within station precincts.

Sydney Metro West would help customers achieve their daily tasks, whether it's travelling to work or home or accessing travel opportunities.

A high-quality door-to-door transport service is critical to attract and retain customers, and to meeting broader transport and land use objectives. This includes providing:

- a system that is inherently safe for customers on trains, at stations and at the interface with the public domain
- direct, comfortable, well-marked and safe routes for customers between transport modes
- a clean, pleasant and comfortable environment for customers at stations and on trains.

Making it easy for customers at each stage of their journey is integral to the success of Sydney Metro. Key characteristics of Sydney Metro that would be delivered by this proposal are outlined in Table 1-1.

Table 1-1 Key metro characteristics

Product characteristic	Description
Fast and reliable service	• delivering fast journeys between stations with new generation single deck trains • ensuring easy boarding and alighting to reduce dwell times at stations • creating a highly reliable service.

Product characteristic	Description
Ability to move more people	• designing infrastructure, trains and systems to be able to run 30 trains per hour at ultimate capacity • ability to move more than 40,000 customers per hour in each direction at ultimate capacity.
Modern trains and technology	• trains operate safely closer together with communications-based train control that allows automated train operations and driverless operation • on-board real time travel information and live electronic route maps.
Accessible system	• fully accessible stations and single deck trains • at least three double doors per side per carriage for faster loading and unloading • level access and reduced gaps between the platform and train – providing access for all • designing for bicycles on trains • delivering modern customer information systems.
Highly legible	• 'turn-up-and-go' frequencies means there is no need for a timetable • consistent stopping patterns that mean metro would stop at all stations.
Safe and secure	• improving customer experience with customer service assistants at every station, and customer service assistants moving through the network during the day and night • ensuring customers can see all the way along the train and move easily between carriages, including wide, open walkways between carriages • providing platform screen doors at stations that keep people and objects away from the edge, improving customer safety and allowing trains to get in and out of stations much faster.
Comfortable service	• air-conditioned trains with large windows, warm lighting and open walkways • seating and standing room designed to maximise personal space • easy boarding and alighting at stations.

1.2 Placemaking and design

Chapter 7 of *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) provides the approach to placemaking, the design process and the place and design principles for stations and ancillary facilities and includes integration with strategic planning for stations between Westmead and The Bays. Chapter 5 of *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) includes integration with strategic planning for Pyrmont and Hunter Street (Sydney CBD) stations. In accordance with Concept condition of approval C-B1, the design of this proposal would have regard to the place and design principles outlined in the previous Sydney Metro West planning applications so that a high-quality urban design response is achieved.

This section provides an overview of the approach to placemaking for this proposal, the role of the design guidelines, corridor-wide urban design principles and the design process. Details about placemaking outcomes for each station and ancillary facility are provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the *Healthy Built Environment Checklist* (NSW Government, 2020a) is provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

1.2.1 Policy framework

Placemaking and the approach to design is guided by a number of NSW Government policies and guidelines, primarily developed by the Government Architect NSW. The key policies and guidelines (shown in Figure 1-2) and their role include:

- *Better Placed* (Government Architect NSW, 2017) is an integrated design policy for the built environment of NSW. It seeks to capture the collective aspiration and expectations for the places where we work, live and play. It creates a clear approach to ensure good design that will deliver the architecture, public places and environments we want to inhabit now and those we make for the future

- *Greener Places* (Government Architect NSW, 2020a) is a design framework for urban green infrastructure. It seeks to capture the collective aspiration and expectations in planning, designing and delivering green infrastructure in urban areas across NSW
- *Connecting with Country* (Government Architect NSW, 2020b) is a draft framework for developing connections with Country that can inform the planning, design, and delivery of built environment projects in NSW
- *Designing with Country* (Government Architect NSW, 2020c) is a discussion paper that encourages a response to Aboriginal cultural connections to Country in the design and planning of new projects
- *Aligning Movement and Place* (Government Architect NSW, 2019) sets out a better approach to aligning movement and place in the design, planning, construction and operation of NSW's overall transport network. The Aligning Movement and Place guideline was updated in November 2021, however the overall principles and objectives remain similar. Sydney Metro would consider the new 2021 guideline as part of ongoing design development
- *Practitioner's Guide to Movement and Place* (NSW Government, 2020b) guides the design and planning around streets and roads for NSW Government projects. The Practitioner's Guide to Movement and Place guideline was updated in November 2021, however the overall principles and objectives remain similar. Sydney Metro would consider the new 2021 guideline as part of ongoing design development
- Government Architect NSW's *Sydney Green Grid* (Tyrrell Studio and Office of the Government Architect, 2017) underpins Greener Places and aims to deliver an interconnecting network of open space that will keep the city cool, encourage healthy living, enhance biodiversity and ensure ecological resilience.

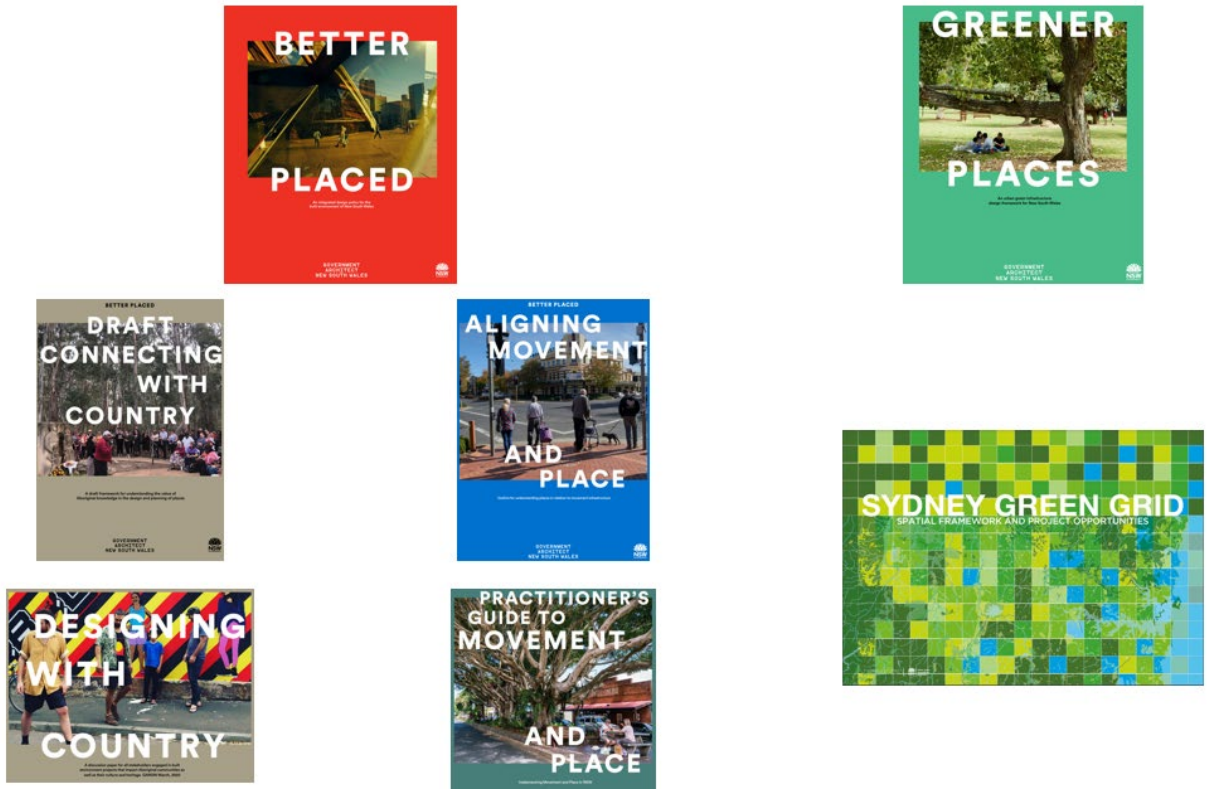


Figure 1-2 Placemaking and design policy framework

A number of other documents are available to guide the design of certain elements. The intent of these documents is being considered during the development of the design of stations, precincts and ancillary facilities. These guidance documents include:

- *Smart Places Strategy* (NSW Government, 2020c)
- *Cycleway Design Toolbox: Designing for cycling and micromobility* (Transport for NSW, 2020b)
- *Walking Space Guide: Towards pedestrian comfort and safety* (Transport for NSW, 2020c)

- *Water Sensitive Urban Design Guideline* (Transport for NSW, 2017)
- *Creating Walkable Neighbourhoods* (Active Living NSW, 2018).

1.2.2 Sydney Metro design objectives

To help meet Sydney Metro's vision to transform Sydney with a world-class metro, five design objectives have been identified to guide decision making and the design process. A design principle is prescribed to each design objective, describing the intention for the design of stations, station precincts and the wider metro corridor. The Sydney Metro design objectives and principles, and their alignment with the objectives outlined in *Better Placed* are provided in Table 1-2.

Table 1-2 Sydney Metro design objectives

Design objective	Principle	Relevant Better Placed objectives
Objective 1: Ensuring an easy customer experience	Sydney Metro places the customer first. Stations are welcoming and intuitive with simple, uncluttered spaces that ensure a comfortable, enjoyable and safe experience for a diverse range of customers.	Objective 4: Better for people – safe, comfortable and liveable Objective 5: Better working – functional, efficient and fit for purpose
Objective 2: Being part of a fully integrated transport system	Sydney Metro is a transit-oriented project that prioritises clear and legible connections with other public and active transport modes within the wider metropolitan travel network that intersect with this new spine.	Objective 5: Better working – functional, efficient and fit for purpose
Objective 3: Being a catalyst for positive change	Sydney Metro is a landmark opportunity to regenerate and invigorate the city with new stations and associated developments that engage with their precincts, raise the urban quality and enhance the overall experience of the city.	Objective 6: Better value – creating and adding value Objective 7: Better look and feel – engaging, inviting and attractive
Objective 4: Being responsive to distinct contexts and communities	Sydney Metro's identity is stronger for the unique conditions of centres and communities through which it passes. This local character is to be embraced through distinctive station architecture and public domain that is well integrated with the inherited urban fabric of existing places.	Objective 1: Better fit – contextual, local and of its place Objective 3: Better for community – inclusive, diverse and connected
Objective 5: Delivering an enduring and sustainable legacy for Sydney	Sydney Metro is a positive legacy for future generations. A high standard of design across the corridor, stations and station precincts, which sets a new benchmark, is vital to ensuring the longevity of the metro system, its enduring contribution to civic life and an ability to adapt to a changing city over time.	Objective 2: Better performance – sustainable, adaptable and durable Objective 6: Better value – creating and adding value

1.2.3 Approach to placemaking

Understanding place

Aligning Movement and Place (NSW Government, 2021a) defines places as 'the spaces where we get together, relax, celebrate and contemplate, as well as work, participate in civic life, learn and exchange'.

The delivery of Sydney Metro West offers the opportunity to transform areas with new places, or to reinforce and enhance existing places. The approach to placemaking is based on a multifaceted approach to the planning, design, and management of public spaces, which aims to create public spaces that promote people's health and wellbeing.

The approach to placemaking at each precinct is contextual, taking into consideration that metro stations would:

- function as 'places' in their own right, creating focal points in the communities each station serves. The stations would attract a range of benefits and land uses, including reducing dependence on private vehicles, and providing public places for gathering and human interaction supported by commercial and retail, as well as encouraging exercise by promoting walking and cycling to and from the stations

- have a role in contributing to their surrounding environment or 'place' in which they are located by supporting planned growth and renewal, and acting as a catalyst for transit-oriented development within their catchments.

Understanding movement

Aligning Movement and Place (NSW Government, 2021a) identifies that 'movement enables people to connect with one another and pursue leisure and recreational activities. It is also about efficiently delivering goods and services to drive economic growth'.

Movement refers to how transport networks are integrated with land use and public space, and how they serve users' needs to support the overall place vision.

Placemaking outcomes around each station aim to strike a balance between movement and place, taking guidance from a *Practitioner's Guide to Movement and Place* (NSW Government, 2021b). Movement and place have a different relationship depending on whether trips are within, to and from, and/or through places. Achieving the right balance for a particular location may require exploration of alternatives, such as rerouting through-movement where it conflicts with those places.

For metro stations, the balance between movement and place is critical to provide:

- places at and around stations as focal points in the community and as areas with high pedestrian volumes
- efficient movement and interchange of people to and from the station as pedestrians, cyclists, customers on other public transport modes, point-to-point or via private vehicle
- efficient movement of people, cyclists and motorists through and around station precincts.

Further details on key movement and place outcomes at each station are provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

Role and scope for placemaking

Sydney Metro considers placemaking opportunities at different scales, starting from the station itself, extending to the interchange area, and to the broader area in which the station and interchange are located.

Sydney Metro's role in delivery changes as the scale increases. Sydney Metro's scope to deliver and influence place outcomes is highest within the station and interchange area. The physical extent of this area differs from station to station depending on context, but generally includes station plazas and interchange infrastructure in the immediate surrounds of the station. In some locations this may include areas for over and/or adjacent station development, placemaking or transport integration purposes.

At all stations, Sydney Metro would deliver public domain elements and work with other parts of Transport for NSW to deliver transport integration elements. This would ensure that stations and interchanges are attractive, safe, functional and allow for the gathering and movement of people. Within station and interchange areas, Sydney Metro would also explore opportunities for activation, retail and other specialised spaces for the customer and community.

The proposal description for each precinct details the list of public domain and interchange elements to be delivered as part of this proposal.

Sydney Metro would provide connections to service key attractions and enable opportunities for land use change and placemaking more broadly.

Integration with broader land use planning led by state and local government agencies is an important consideration for the precinct. This can help ensure that mass transit amenity offered by the station is supported by appropriate land uses and densities, which contribute to liveability of areas through supporting public transport use and reducing the need for private vehicle use.

Over station development and adjacent station development

All Sydney Metro West stations are being designed to integrate with their surrounding areas, to make vibrant and attractive places that reflect the unique context and future aspirations for each place.

The *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) identified that the provision for future integrated station and/or precinct development would allow for the future provision of a range of uses, such as community facilities, new homes, shops, restaurants and commercial office space.

As the design for Sydney Metro West has further progressed, opportunities for two types of potential development have been identified – over station development and adjacent station development.

Integrating a mix of uses and development into the station precinct would contribute to the success of places by:

- encouraging precinct activation and use of Sydney Metro West across different times of the day and week
- creating opportunities to provide facilities that meet customer and community needs, attracting people to stations
- allowing stations to successfully integrate into their urban context and to contribute positively to the character of places at the stations.

Sydney Metro West stations would be designed with provisions for over and/or adjacent station development at Westmead, Parramatta, Sydney Olympic Park, Burwood North, The Bays, Pyrmont and Hunter Street (Sydney CBD).

Sydney Metro will continue to work closely with the local community and stakeholders so that station precincts are welcoming hubs that build on the local character.

1.2.4 Design guidelines

Station and precinct design guidelines have been developed for Sydney Metro West to guide the design of:

- the interface between stations and their immediate surrounds, including:
  - station entries
  - transport interchange facilities (bicycle facilities, bus stops, kiss and ride, point-to-point facilities and transfers to existing metro, rail, buses and existing and future light rail)
  - landscaping and other elements of the public domain
  - heritage interpretation and Connecting with Country
- station, stabling, maintenance and service buildings, including underground stations
- rail corridor works including tunnel dive structures, bridges and underpasses.

The design guidelines identify corridor-wide station and precinct design principles that can be applied across all sites, as well as place-specific design principles that respond to contextual factors.

The station and precinct design guidelines are provided in the Design Guidelines (Appendix M of the Submissions Report).

1.2.5 Corridor-wide urban design principles

The design guidelines also identify corridor-wide urban design principles (refer to Table 1-3) to guide future stages of design development. The corridor-wide urban design principles have been developed so that all stations are part of a network and together contribute to a corridor of activity centres that offer social, employment and housing opportunities while also contributing to local character.

Table 1-3 Sydney Metro West corridor-wide urban design principles

Title	Urban design principle
Land use and function	• identify uses that support and contribute to the delivery of unique, attractive and vibrant urban centres which provide a sense of connection and identity for local communities and visitors • activate the public domain of station precincts to integrate stations and supporting infrastructure with existing and desired future urban settings.
Places and spaces	• ensure the scale of development reflects existing and desired future character • reflect and build on opportunities to strengthen design and place outcomes for Aboriginal and non-Aboriginal heritage • create a safe and legible hierarchy of public spaces such as parks, plazas and pedestrian links for active and passive recreation.

Title	Urban design principle
Access and connectivity	• prioritise walking and other modes of active transport in the design of stations, interchanges and associated developments • integrate walkable urban environments with the Green Grid to contribute to safe, permeable and well-connected station precincts • manage the design of streets in accordance with Movement and Place principles • enable easy connections with other transport services.
Environment and sustainability	• precinct planning supported by 'Designing with Country' strategy • contribute to the evolution of a new urban development paradigm that incorporates environmentally sustainable elements, processes and designs • maximise green infrastructure.

The corridor-wide principles have been applied to create the place-specific urban design strategies for each station precinct and facility (including the Clyde stabling and maintenance facility and Rosehill services facility).

Connecting with Country

The Sydney Metro West corridor traverses Burramattagal, Wangal and Gadigal Country. Westmead and Parramatta are situated on Burramattagal Country, which extends from Rosehill to Prospect. Sydney Olympic Park to The Bays is situated on Wangal Country, which stretches across the southern shore of the Parramatta River between Burramattagal Country and Gadigal Country. The Sydney CBD is situated on Gadigal Country, which runs from the south side of Port Jackson, extending from South Head to Darling Harbour.

Sydney Metro is piloting the Connecting with Country framework and developing a corridor-wide approach to connect with Country and an ongoing approach to Aboriginal engagement. As part of the pilot Sydney Metro is working with Aboriginal knowledge holders in the development of heritage interpretation and throughout design development. A Heritage Interpretation Strategy (Appendix L of the Submissions Report) has been prepared for this proposal in accordance with Concept conditions of approval C-B4 to C-B6, which includes how Aboriginal heritage values would be interpreted and reflected within the design of this proposal.

Further details regarding Sydney Metro's approach to connect with Country, and heritage and archaeology design guidelines are provided in the Design Guidelines (Appendix M of the Submissions Report).

Green infrastructure

Green infrastructure refers to the network of open spaces, natural and semi-natural systems, including parks, rivers, bushland and private gardens which support quality of life in urban environments.

Greener Places identifies the NSW Government's infrastructure and urban renewal projects as an opportunity for the delivery of quality green infrastructure. Sydney Metro West would support the principles of *Greener Places*, including:

- integration – the design would consider opportunities to integrate green infrastructure with metro stations and facilities
- connectivity – Sydney Metro West would provide opportunities to improve connectivity to open spaces, parklands, waterways and active transport routes. Opportunities to integrate with existing and planned walking and cycling networks would also be an important consideration in design.

The *Sydney Green Grid* proposes the creation and consolidation of a 'network of high quality green areas that connect town centres, public transport networks and major residential areas,' enhancing open space throughout Greater Sydney. With Sydney Metro West following the Parramatta River from Westmead to the Sydney CBD, there are opportunities for the stations and surrounding public domain to connect into or enhance Sydney's Green Grid.

Key opportunities related to green infrastructure and improving connectivity to existing and future Green Grid projects are identified for relevant precincts in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

The Design Guidelines (Appendix M of the Submissions Report) provide a range of guidelines related to green infrastructure, landscaping and tree planting. Of note, Sydney Metro West would provide a net increase in mature trees at a ratio of at least 2:1, which would result in an increase in tree canopy coverage within 10 years of the date of the Concept approval or no later than the commencement of operation of the CSSI (whichever is earlier) (in line with Concept conditions of approval C-B8 and C-B9).

1.2.6 Precinct place and design principles

Place and design principles have been developed for each Sydney Metro West station, station precinct and ancillary facility. The purpose of these principles is to guide future design through identifying outcomes that would be achieved at the station or ancillary facility and in the immediate public domain and interchange area. The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives.

Preliminary place and design principles for stations and ancillary facilities between Westmead and The Bays were provided in Chapter 7 of *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). Preliminary place and design principles for Pyrmont Station and Hunter Street Station (Sydney CBD) were provided in Chapter 5 of *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). These principles have since been further refined in consultation with key stakeholders (including relevant local and state government agencies). The refined place and design principles for each station and facility are included in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix and in the Design Guidelines (Appendix M of the Submissions Report). Sydney Metro would work with key stakeholders to implement and achieve these principles.

1.2.7 Design process

The ongoing design development of the stations and precincts would be informed by the design objectives and principles, as well as feedback from community and stakeholders.

The design development process would be guided by a suite of documents that include:

- Sydney Metro design objectives (refer to Table 1-2)
- Design quality framework
- Design guidelines, including the place and design principles for Sydney Metro West (Appendix M of the Submissions Report).

These documents, along with community and stakeholder engagement and the use of a Design Advisory Panel / Design Review Panel will allow for high quality standards throughout the whole design process. At relevant stages in the design process, the design will be reviewed against the place and design principles and the design guidelines.

Design process documents

The documents that guide the overall design process are described in Table 1-4.

Table 1-4 Design process documents

Document	Description
Sydney Metro design objectives	The Sydney Metro design objectives have been developed to help meet the transformational vision and world class aspirations of all Sydney Metro projects. The design objectives are described in Section 1.2.2.
Design quality framework	Sydney Metro is preparing a Design Quality Framework in consultation with the Government Architect NSW. The Framework will establish the design quality assurance process for Sydney Metro projects and is intended to provide a structured process to integrate design quality assurance across the life cycle of each project. Design quality assurance is important in the delivery of Sydney Metro West given design quality is integral to the achievement of the government's value for money. Design value is a balance of social, economic and environmental factors. For Sydney Metro West, these may include how well the metro performs, how efficiently the metro operates, and what benefits the metro generates for the community and the environment.

Document	Description
	As each Sydney Metro project differs in terms of timing, procurement and delivery, the Design Quality Framework intends to provide a high-level process detailing how Sydney Metro ensures high-quality design throughout each project's lifecycle, regardless of the procurement and delivery strategy. The components of the framework would include Sydney Metro's: • Design Quality Statement defining Sydney Metro's ambition for design quality • Design governance protocol • Internal design gateway process • Design review protocol (including a Design Review Panel) • Design procurement protocol • Design integrity process.
Design Guidelines	The Design Guidelines set overarching design objectives and principles for Sydney Metro, and corridor-wide station and corridor-wide precinct guidelines which can be applied across all sites, and place-specific guidelines. The Design Guidelines are described in Section 1.2.4 and are provided in Appendix M of the Submissions Report.
Place and design principles	The role of the place and design principles is to guide future design through identifying outcomes that would be achieved at the station and in the immediate public domain and interchange area. The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives. The place and design principles and how the design achieves these principles has been refined since the previous Sydney Metro West planning applications in consultation with key stakeholders. These principles are provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix and the Design Guidelines (Appendix M of the Submissions Report).

Design review

The design of Sydney Metro West will continue to be subject to design review processes so that it responds to the design guidelines and achieves design excellence. This will include an internal design review process to maintain a level of quality which meets the needs and expectations of Sydney Metro customers and the people of NSW.

The design of Sydney Metro West and implementation of the design guidelines would also be subject to independent review by the established Sydney Metro Design Advisory Panel and future Design Review Panel/s. Their objectives are to provide independent design review of Sydney Metro West at all stages. This assists in meeting design objectives and achieving quality design outcomes. Further detail on the Design Advisory Panel and Design Review Panel is provided in Table 1-5. Further detail on review of design is included in the Design Guidelines (Appendix M of the Submissions Report).

Table 1-5 Independent design review

Group	Role
Design Advisory Panel	Sydney Metro has established a Design Advisory Panel to support the design development process. If planning approval for this application is granted, the Design Advisory Panel would transition to a Design Review Panel (refer below). The Design Advisory Panel provides independent design review to support the achievement of Sydney Metro project objectives, ensure quality design process and outcomes and guide strategic planning and urban design outcomes.

Group	Role
	The Design Advisory Panel is chaired by the Government Architect NSW and includes suitably qualified, experienced professionals to provide architectural, urban design, public domain and landscape advice. The Design Advisory Panel provides a forum for critique of design and guidance to placemaking and design teams on design refinements to be considered to realise place and design principles. Opportunities to respond to the Design Advisory Panel feedback that has been considered throughout design development for each precinct is discussed in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.
Design Review Panel	Sydney Metro will establish a Design Review Panel for Sydney Metro West. The Design Review Panel will provide independent, design review of stations and interchange areas, ancillary facilities and over and/or adjacent station development and endorse design integrity at key stages. The objective of the Design Review Panel would be to support the achievement of Sydney Metro's design objectives and ensure quality design process and outcomes. The Design Review Panel would support good design by: • having a remit that includes stations, ancillary infrastructure and associated integrated station and precinct development • providing independent design review of the integrated project throughout the design development • refining and endorsing design guidelines • reviewing and critiquing the design against the design guidelines. The role of the Design Review Panel would be advisory and its recommendations would not be binding on Sydney Metro. The composition of the Design Review Panel, including panel, size and membership will be determined in consultation with the Government Architect NSW. Panel members will be sourced from the State Design Review Panel unless otherwise agreed with the NSW Government Architect. Membership will include suitably qualified, experienced and independent professionals in each of the fields of: • urban design and placemaking • landscape architecture • architecture. The Design Review Panel may seek advice from suitably qualified, experienced independent professionals in other fields as required, including but not limited to sustainability, active transport and non-Aboriginal heritage. The Panel must also seek appropriate expertise to ensure Aboriginal cultural heritage and cultural values inform its advice. Sydney Metro would also provide an independent secretariat to support the Design Review Panel. The responsibilities of the independent secretariat will include maintaining a register of actions and outcomes. This will allow transparency and accountability of the Design Review Panel. Relevant councils and key stakeholders will be invited to participate in Design Review Panel meetings as required to advise on local issues and design outcomes as they relate to the local context.

Stakeholder engagement

Sydney Metro is committed to a collaborative design approach that includes consultation with relevant government agencies, local council and precinct partners. Consultation with local councils and other relevant precinct partners, including Sydney Olympic Park Authority and the NSW Department of Planning and Environment, has continued throughout the design of the stations, precincts and ancillary infrastructure. This has also included seeking feedback on the integration with the local area and future land use plans. Further detail on how the design of the stations and ancillary facilities has responded to stakeholder feedback is provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

Community and stakeholder submissions to the Environmental Impact Statement would be considered in ongoing design development. An overview of ongoing and future community and stakeholder engagement for Sydney Metro West is provided in Chapter 3 (Stakeholder and community engagement) of the Submissions Report.

1.2.8 Customer experience and design

Customer Centred Design (CCD) is an iterative process which places the customer at the centre of all design decisions. This process aims to deliver an easy experience across the entire customer door-to-door journey.

CCD is an important part of the Sydney Metro West interdisciplinary design process because it provides evidence-based customer insights to inform design decisions throughout all stages of design. Customer research and testing help build on the existing insights by obtaining objective customer feedback. Collection of customer feedback informs design decisions based on diverse customer needs and aspirations to enable a world-class metro journey. Some of the methods used in undertaking CCD research include customer walkthroughs to understand customers needs, customer feedback sessions and interviews, and virtual reality testing to provide objective insights during the ongoing design process for Sydney Metro West. This research is undertaken to collect feedback from a wide representation of the community, including Aboriginal and Torres Strait Islander peoples, culturally and linguistically diverse community members, vulnerable or marginalised people, people with a disability and elderly people.

The objectives of customer testing and research is to:

- integrate CCD principles and processes into all stages of the design development and identify how the design has evolved to improve customer outcomes
- consider door-to-door experiences; including all station designs, precinct designs, and interchange between different modes of transport
- ensure design solutions address the Transport for NSW nine drivers of customer satisfaction and overall customer effort score
- iterate and improve the design based on customer research and testing.

1.3 Metro alignment and track

The alignment of this proposal between Westmead and Hunter Street (Sydney CBD) is shown in Figure 1-3 to Figure 1-10.

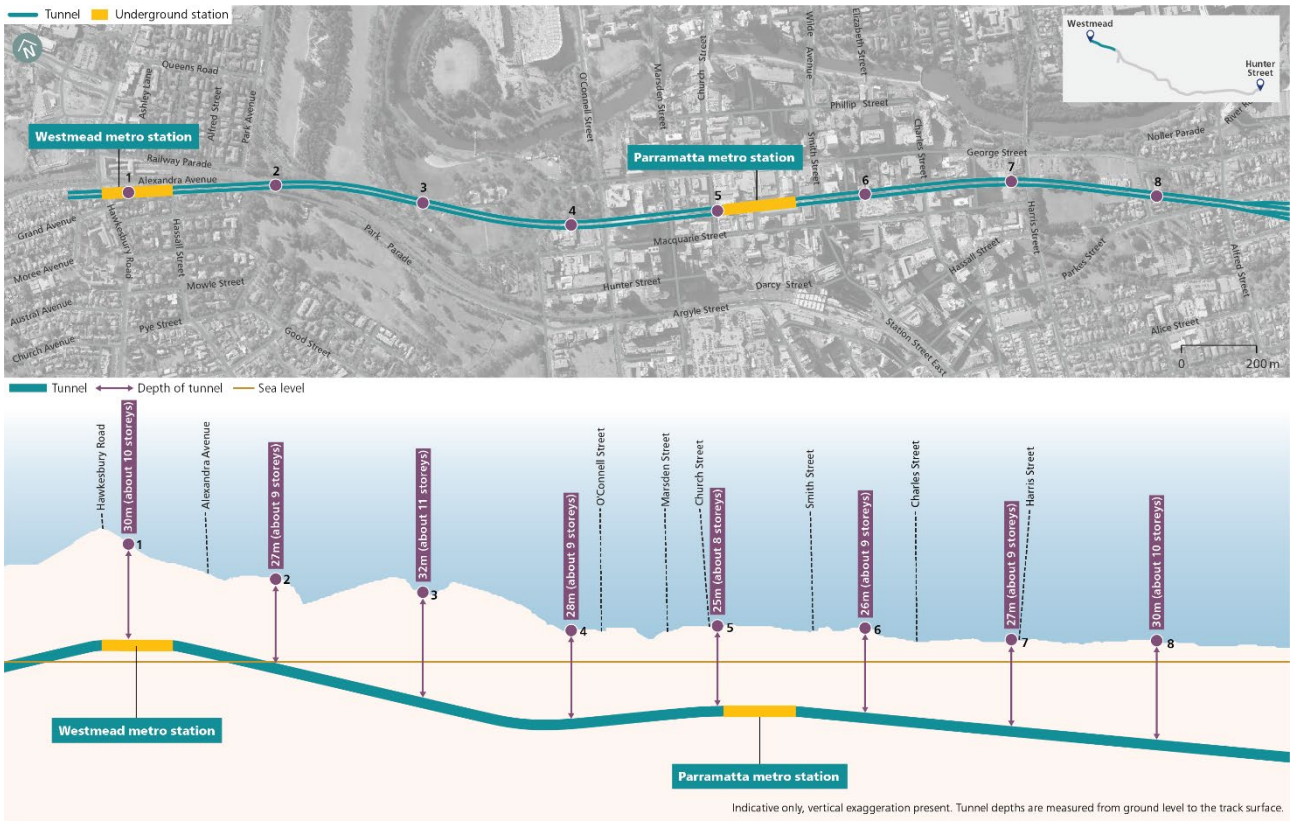


Figure 1-3 Indicative alignment plan and long section (1 of 8)

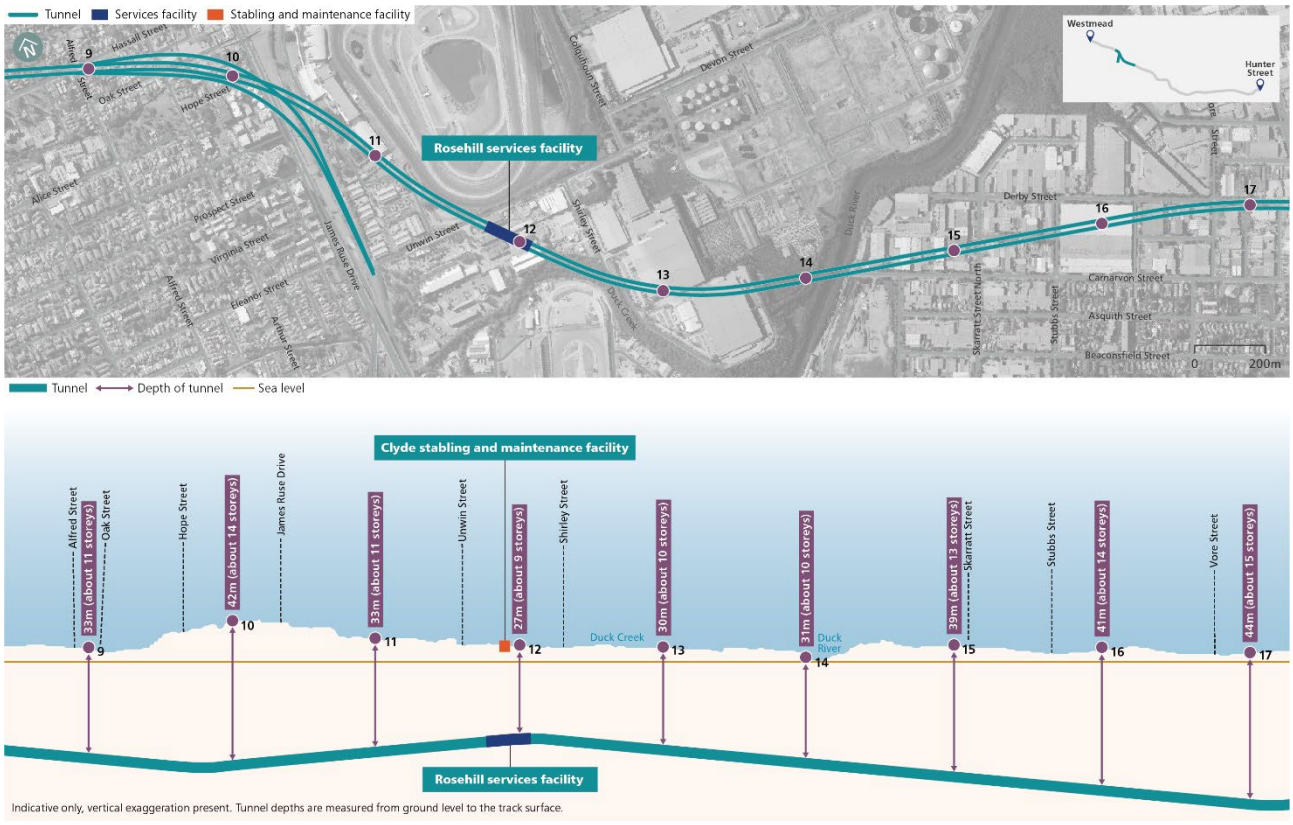


Figure 1-4 Indicative alignment plan and long section (2 of 8)

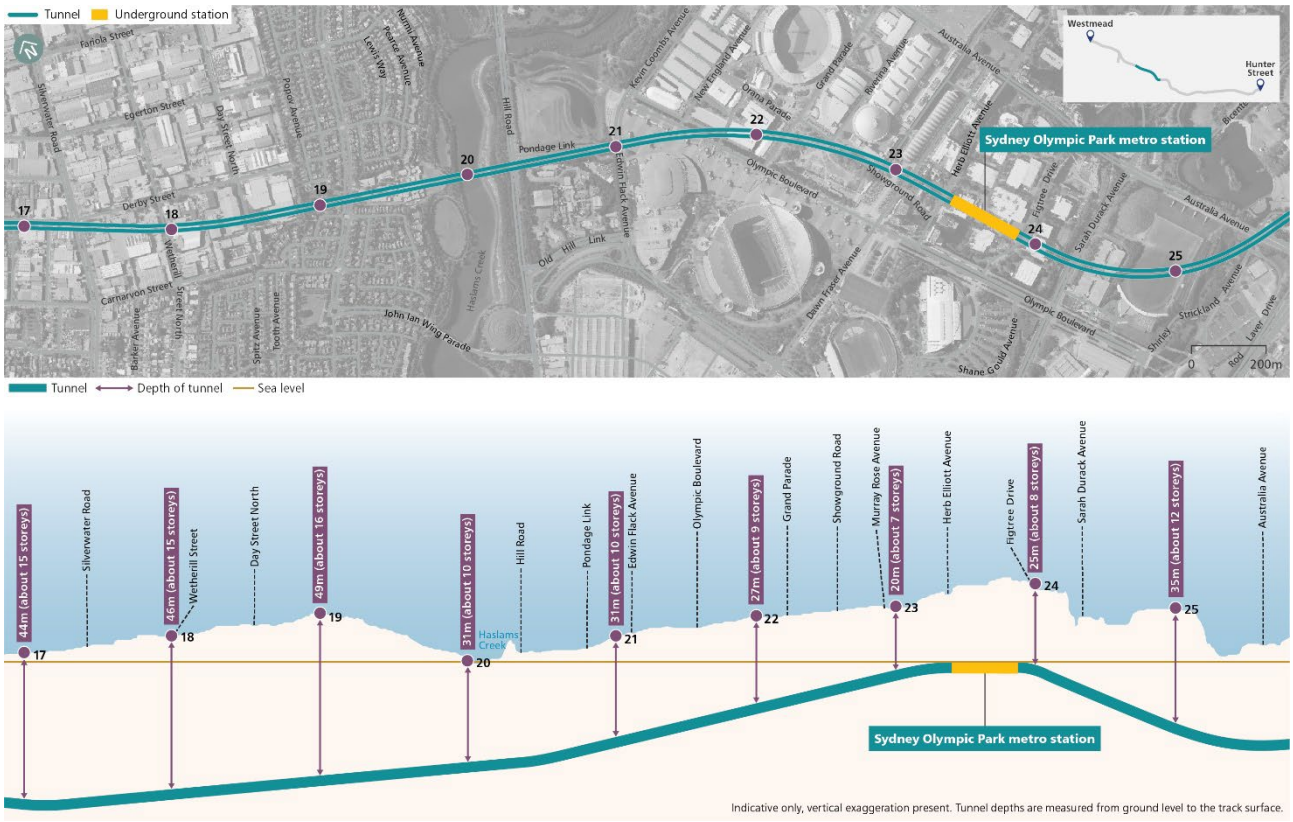


Figure 1-5 Indicative alignment plan and long section (3 of 8)

Figure 1-6 Indicative alignment plan and long section (4 of 8)

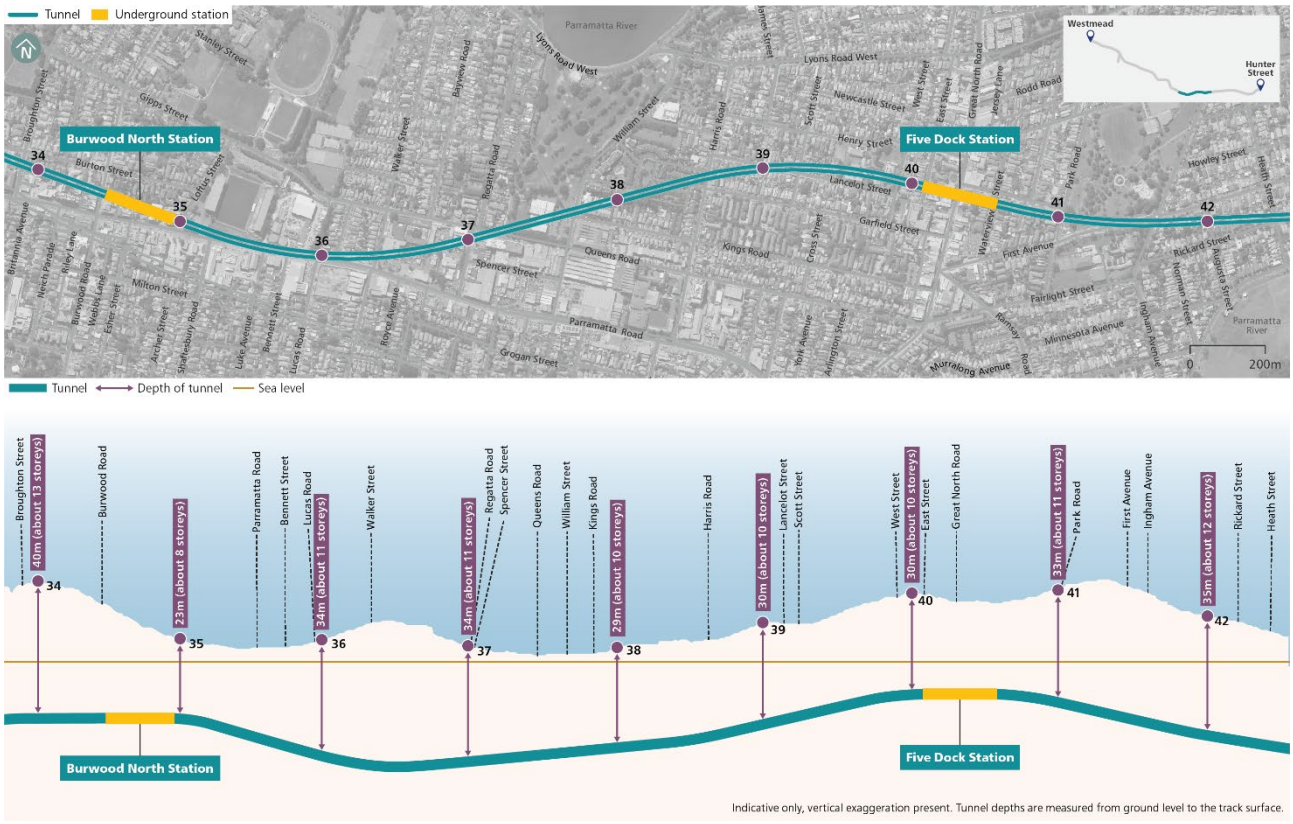


Figure 1-7 Indicative alignment plan and long section (5 of 8)

Figure 1-8 Indicative alignment plan and long section (6 of 8)

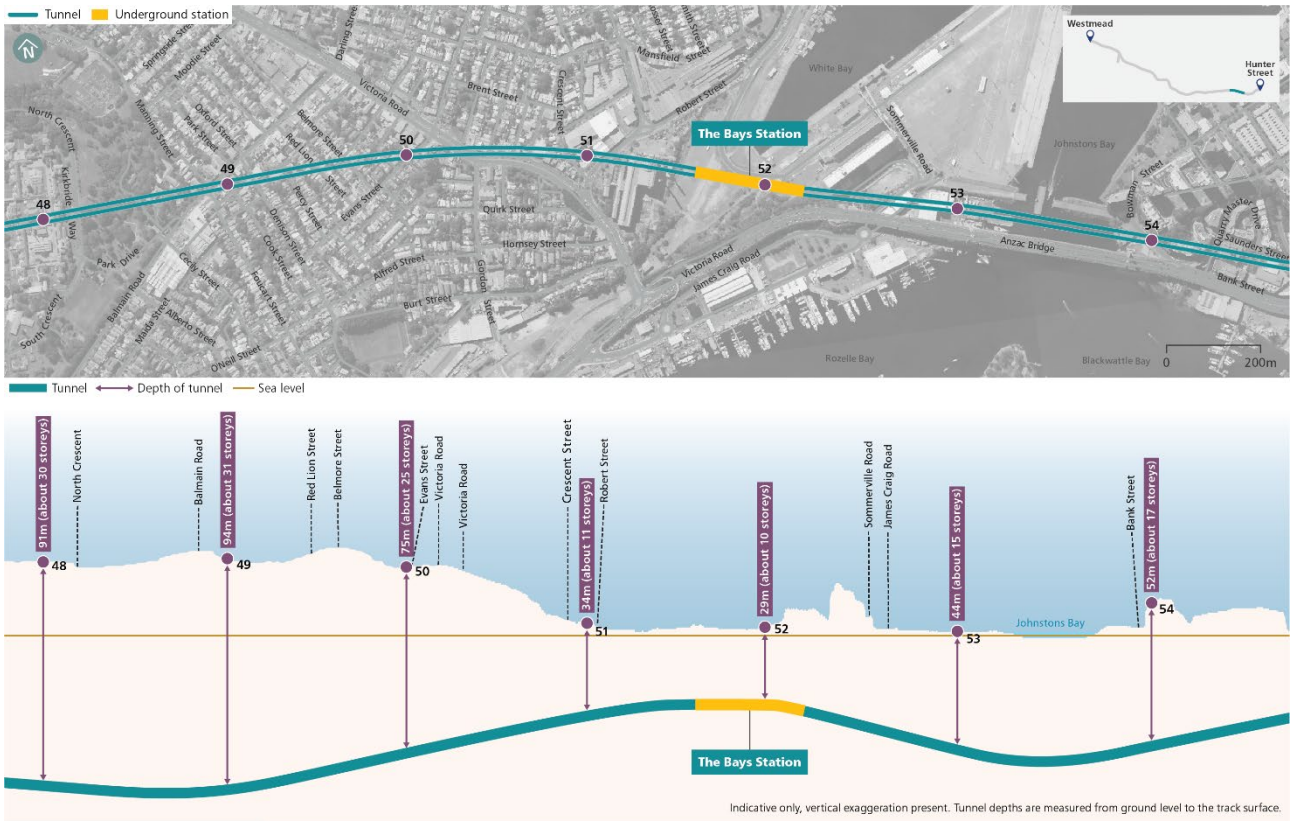


Figure 1-9 Indicative alignment plan and long section (7 of 8)

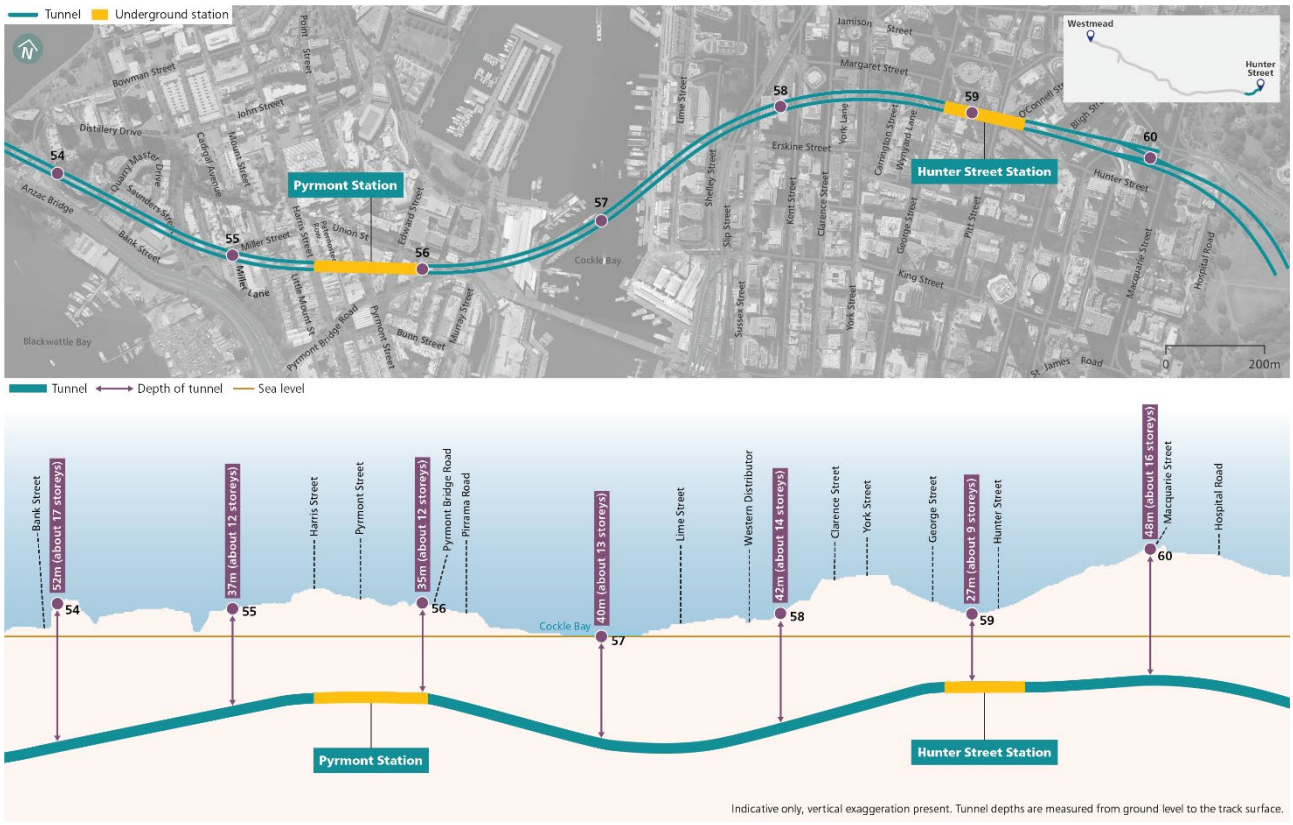


Figure 1-10 Indicative alignment plan and long section (8 of 8)

The proposed configuration of the metro tracks is shown in Figure 1-11.

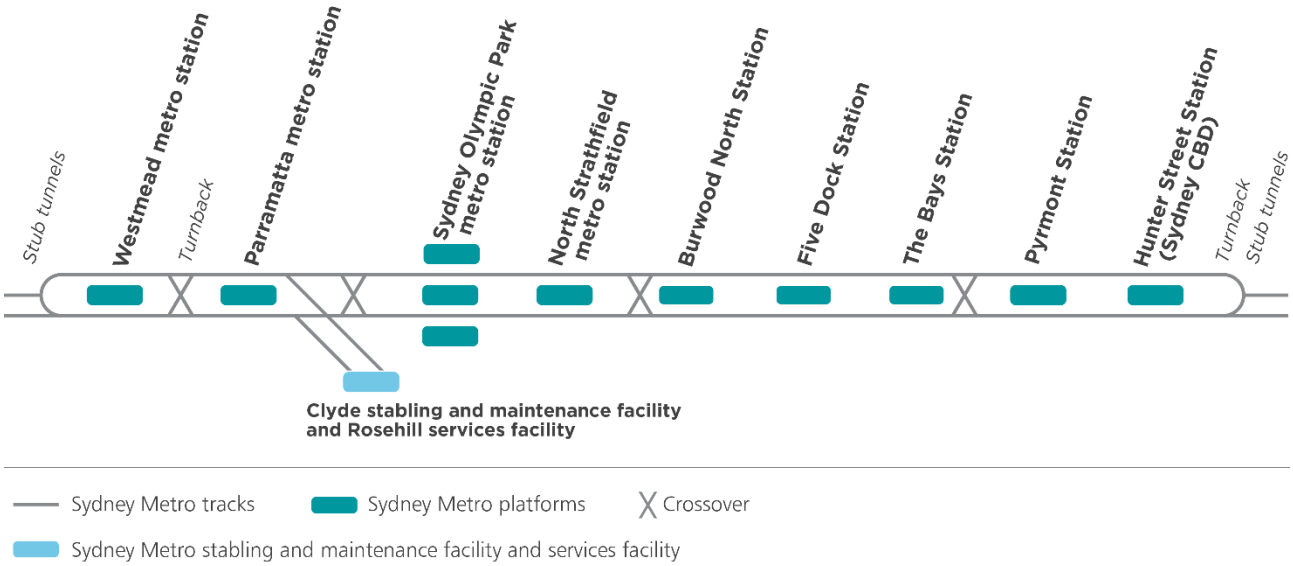


Figure 1-11 Indicative track configuration for Sydney Metro West

The track in tunnel would consist of a fixed concrete slab supporting continuously welded rail. The tunnels would also include other equipment and services including rail signalling, controls and communication, overhead traction power, fresh air ventilation, fire and life safety systems, maintenance access, lighting and drainage.

Sydney Metro West would include turnbacks (to allow trains to change to the other set of tracks) at Westmead and in the Sydney CBD. Crossover points (a track crossing point that would enable a train to cross between two parallel tracks for use in degraded operations due to maintenance, breakdowns or other emergencies) would be provided at various points along the alignment.

Stub tunnels would be located at the western and eastern extents of the tunnels to safeguard for potential future extensions. The provision of stub tunnels would allow for minimal disruption of the operating line during the construction of future extensions.

Emergency tunnel access and exit

An emergency egress strategy would be implemented that allows emergency access and egress from trains throughout the tunnel sections of the alignment. Low level walkways would be provided so that customers could evacuate from the tunnels in an emergency.

To facilitate emergency access and exit between the two tunnels, cross passages would be provided and spaced subject to ground conditions, engineering constraints, and fire and life safety requirements.

Figure 1-12 shows an indicative section of a typical cross passage.

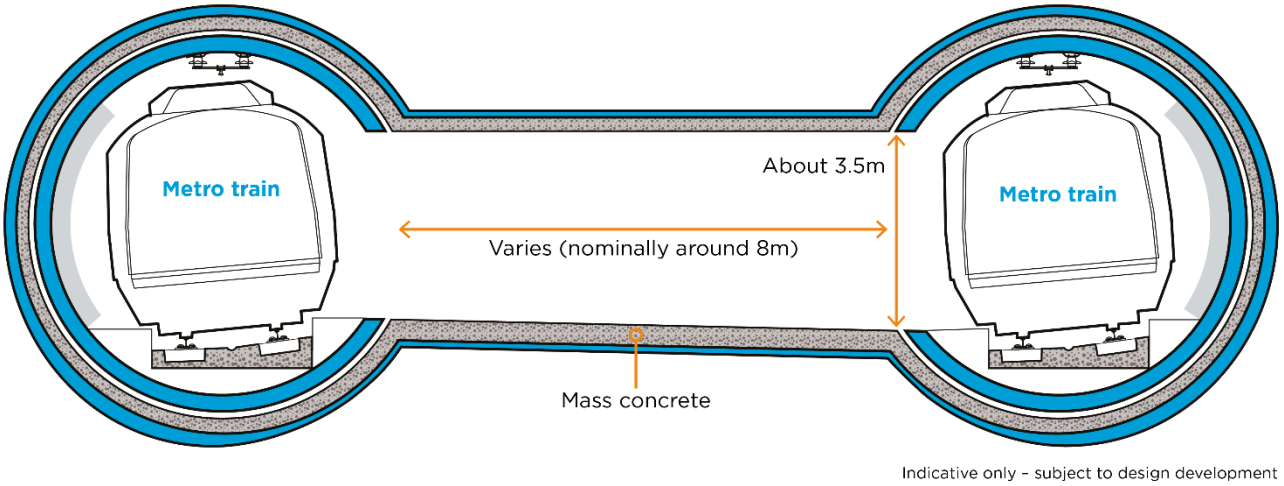


Figure 1-12 Indicative section of a cross passage

1.4 Stations

1.4.1 Station typologies

Metro stations would be located at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). All stations would be located underground.

Two main station typologies have been identified for this proposal to best meet the proposed track alignment at each station location. These are:

- cut-and-cover stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North and The Bays
- cavern stations at Five Dock, Pyrmont and Hunter Street (Sydney CBD).

A description of a typical cut-and-cover station and typical cavern station, including the construction methodology for these station typologies, is provided in Section 9.4.3 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

Metro stations would be designed to provide safe and efficient interchange between transport modes, including minimising conflicts between pedestrians, cyclists, buses and vehicles. The proposed interchange opportunities at each station are shown in Figure 1-13.

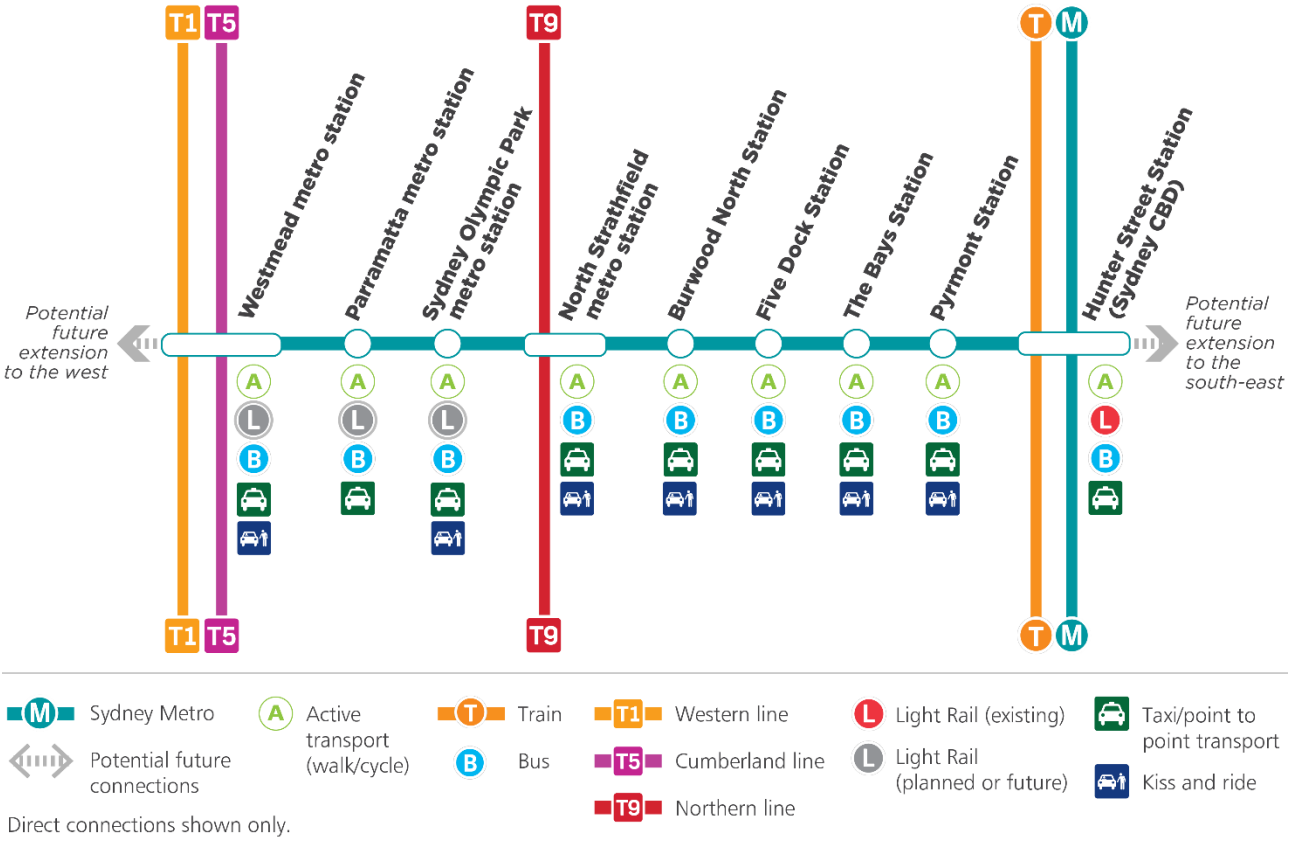


Figure 1-13 Proposed stations and direct transfer opportunities

1.4.2 Common station elements

Each metro station and precinct would have a number of common elements or design features. These would generally include:

- station concourses, including elements such as ticket vending machines, tap-on and tap-off infrastructure (such as ticket gates) and access to and from the platform and toilets
- platforms with elements such as seating, help points to enable customers to obtain emergency assistance, real-time customer information display screens and public address systems
- vertical transport, including a combination of escalators, lifts and stairs
- emergency stairwell access (typically at the ends of each station)
- station services and utilities buildings/facilities
- structures and spaces for non-station uses such as retail, commercial and/or community facilities
- canopies and awnings for shade and shelter at street level station entries
- optimised station design to provide natural light and ventilation
- station access walkways and enhancements to the footpaths in the vicinity of the station entries, as required
- station transport interchanges with supporting infrastructure, such as bicycle parking facilities, bus stops, kiss and ride and point-to-point facilities
- signage and wayfinding within the station and the surrounding public domain
- access roads, road modifications and intersection treatments, stormwater infrastructure, and other ancillary facilities
- landscaping, public art, heritage interpretation and urban design features

- elements within the public domain for hostile vehicle management such as security bollards
- back of house areas for staff and to support operations maintenance.

A detailed station and precinct description for each station is provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

This proposal would include subdivision of the relevant sites, for example to support over and/or adjacent station development. Refer to Section 1.7 for further detail.

1.4.3 Structures and spaces for non-station uses

Structures and spaces for non-station uses such as retail, commercial and/or community facilities would enable the activation of each station precinct and provide opportunities for positive social and business benefits. This would generally include construction of the structural building elements, and associated utilities and services. These structures and spaces would generally be provided within, around and above the station infrastructure and integrated within the overall design of the station. Further detail on the potential location for these at each station precinct are provided in the individual precinct chapters of this Appendix (Chapters 3 to 12). Inclusion of these structures and spaces would ensure seamless design and integrated delivery of the desired place outcomes for each precinct.

Although the fit-out and use of these spaces would be subject to separate assessment (where required), these structures and spaces are being designed with the station so that operational servicing can be accommodated, to minimise impacts, and will be subject to relevant building codes and certification.

1.4.4 Provision for future over station development and adjacent station development

In addition to the spaces for non-station uses, new metro stations create opportunities for developments that provide for community needs and include consideration of relevant planning controls and local character. These over and/or adjacent station developments could provide for a range of uses such as community facilities, new homes, shops, restaurants and commercial office space.

Over station development refers to building(s) that could be built, subject to separate approval, above metro stations. Where this is planned, this proposal would include relevant provisions to enable future construction of over station development, for example:

- structural elements (steel and/or concrete) up to podium level, building grids, column loadings and building infrastructure to enable the future construction of over station development
- space for future lobbies, lift cores, access, parking, loading docks, building services and basements for future over station development
- subdivision (refer to Section 1.7 for further detail).

Adjacent station development refers to building(s) that could be built, subject to separate approval, within the vicinity of metro stations, generally on residual land required for construction that does not form part of the operational station footprint. These building(s) would not be directly above metro stations. Where this is planned, this proposal would include relevant provisions to enable future construction of adjacent station development, for example:

- utility connections to support future development
- access to future adjacent station development (for example, pedestrian and vehicle connections)
- shared public domain areas with metro stations
- subdivision (refer to Section 1.7 for further detail).

In the event that adjacent station developments have not commenced when Sydney Metro West commences operations, opportunities to provide temporary activation of these areas would be explored.

Provision for over station development would be made at Parramatta, Sydney Olympic Park, Pyrmont and Hunter Street (Sydney CBD). Provision for adjacent station development would be made at Westmead, Parramatta, Sydney Olympic Park, Burwood North and The Bays.

Design of the metro stations and precincts would take into account planned over and/or adjacent station development, so that future developments can be built efficiently and effectively.

Further details regarding elements incorporated into the station design for the purposes of providing for over and/or adjacent station developments are included for each station in Chapter 3 (Westmead metro station) to Chapter 11 (Hunter Street Station) of this Appendix. Over and/or adjacent station developments do not form part of this proposal and would be subject to separate assessment and approval.

1.4.5 Related development

The following related development set out below is not part of the State significant infrastructure that is the subject of this planning application and for which approval is sought.

The potential impacts of this related development (although the detail of such development is not yet fully known) has been considered in the design of the infrastructure that is the subject of this planning application.

Approval for the related development will be sought separately. The related development comprises:

- construction and operation of future over station development and/or adjacent station development at Westmead, Parramatta, Sydney Olympic Park, Burwood North, The Bays, Pyrmont and Hunter Street
- fit-out and use of structures and spaces for non-station use at the station precincts.

This related development would activate the station precincts and provide a range of uses, such as community facilities, new homes, shops, restaurants and commercial office space.

As identified in Section 1.2.3, integrating a mix of uses and development into the station precinct would contribute to the success of places by encouraging precinct activation and use of Sydney Metro West across different times of the day and week, creating opportunities to provide facilities that meet customer and community needs, allowing stations to successfully integrate into their urban context and to contribute positively to the character of places at the stations.

The fit-out and use of non-station structures and spaces is not part of the infrastructure assessed in the Environmental Impact Statement. However, the design and construction of the structures and spaces that will later be fitted out and used is part of the infrastructure and is assessed in the Environmental Impact Statement and includes operational requirements for the structures such as access and servicing. The delivery of these structures and spaces would also be undertaken in accordance with relevant requirements, such as the Building Code of Australia and other standards, and appropriate certification of these structures would be obtained where required.

The locations of proposed over station development and/or adjacent station development have been identified and, where appropriate, that development is being designed in an integrated manner with the proposed stations included in the Environmental Impact Statement to minimise its construction and operational impacts.

Full consideration of the potential environmental impacts of related development would be carried out as part of the relevant separate assessment and planning approval process. Where appropriate this would include, but not necessarily be limited to, assessment of:

- compliance with strategic and statutory plans
- urban design and built form
- view and visual impacts (including overshadowing)
- impacts on the public domain
- wind impacts
- heritage impacts
- traffic, access, and parking
- interface with the metro station
- utilities, infrastructure, and services
- ecologically sustainable development
- aeronautical impacts
- biodiversity
- noise and vibration impacts
- contamination
- construction management

- social and economic impacts
- safety and security
- development contributions
- design excellence
- impacts on adjoining properties
- residential amenity.

1.5 Operational ancillary infrastructure

1.5.1 Stabling and maintenance facility

Trains would be stabled and maintained at a dedicated facility. This would be an integrated facility incorporating most operational functions including the operations control centre and all infrastructure required to maintain the train fleet.

A stabling and maintenance facility would be located in the Clyde industrial area. The facility would operate 24 hours per day, seven days per week.

A detailed description of the Clyde stabling and maintenance facility during operation, including key features, stabling activities and train maintenance activities is provided in Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix).

1.5.2 Services facility

A services facility would be located at Rosehill (within the Clyde stabling and maintenance facility) to provide fresh air ventilation to the tunnels and emergency egress. The services facility would include an aboveground building for mechanical, electrical and ventilation equipment, with a vertical shaft to connect to the tunnels below. Construction of the vertical shafts will be completed as part of the work under the previous Sydney Metro West planning application. The services facility could also include electrical rooms, fire systems, emergency lighting and signage, and ancillary rooms supporting the ventilation system and amenities for personnel. Further details regarding the Rosehill services facility are included in Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

The need for a services facility at Silverwater, and between Five Dock and The Bays stations, was identified in the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). Following further detailed design work, Sydney Metro determined that ventilation can be adequately provided through enhancement of the ventilation system along the alignment and Sydney Metro West can be safely delivered without a services facility at Silverwater or between Five Dock and The Bays stations. Sydney Metro would continue to investigate opportunities for utilising the Silverwater site (as identified in the previous Sydney Metro West planning applications) to support the construction and operation of Sydney Metro West.

1.5.3 Substations and traction power supply

The power supply for Sydney Metro West would be designed to operate as an independent standalone system. All Sydney Metro West traction power supply infrastructure would be controlled and monitored from the Operations Control Centre at the Clyde stabling and maintenance facility.

Traction power supply would be provided through dedicated traction power substations and supporting feeder line cables. Substations would be provided at the following locations:

- a traction substation at Rosehill services facility
- a traction substation at The Bays (south of the White Bay Power Station).

The substation sites would generally include mechanical and electrical equipment such as 132 kilovolt high voltage network, gas insulated switchgear, transformers, gas exhaust systems and mechanical cooling systems. The sites would include fencing and security measures to prevent public access.

The provision of additional local power supply to the stations may be required as part of this proposal for the operation of Sydney Metro West. Where required, utility connections would be made to the nearest substations, with works retained to the road reserve where possible. Further investigation into the need for this additional power supply would be undertaken during detailed design.

1.5.4 Metro rail systems

Signalling and train control

Similar to the operation of the Metro North West Line, Sydney Metro West would use advanced signalling technology to support safe operations and control the way trains accelerate and brake at stations. The signalling system would keep each train within a safe braking distance of the train ahead, control speed between stations and the opening and closing of train doors.

The signalling and train control system would consist of:

- automatic train protection which would provide train spacing and speed monitoring and control functionality
- automatic train control, which would monitor and adjust train speeds and station dwell times to maintain timetable and spacing between trains
- automatic train operation, which would provide automated train driving functionality.

The signalling system would control the stopping of trains at stations, ensure trains stop at the correct location on the platform (including lining trains up with platform screen doors), control train speed between stations, and initiate the opening and closing of doors on the correct side of the train.

The signalling system would allow for bi-directional operation (that is, trains would run in either direction on either track) in special circumstances. This would provide functionality to respond to a range of incidents to support continuity of service. All control systems would be integrated with rail systems to provide consistent performance and high levels of safety.

Communications

Sydney Metro West would include an integrated information and digital communication system. This would allow communication for operations purposes, and between customers and metro staff via audio and visual links at each station and on all trains. The communications equipment would be within the designated services area at each station, within the proposed tunnels and at the Clyde stabling and maintenance facility.

The communications system would comprise:

- customer information display and public address system
- customer mobile telephone and other modern telecommunication methods (at stations and on trains within tunnels)
- ticketing system (refer to Section 1.6.4)
- closed-circuit television system and video broadcasting system
- radio communications systems for operator and emergency services
- emergency warning information system
- digital voice video recording system
- telephone system and personnel wireless terminal
- access control and trackside intruder detection system.

1.5.5 Ventilation system

A tunnel ventilation system would be provided to allow for a range of ventilation requirements including fresh air in tunnels and stations, and ventilation for fire and life safety and operational scenarios.

During normal operations, ventilation of the tunnels would be provided through the draught relief shafts (which operate passively through the movement of trains in the tunnel) and the operation of ventilation fans at the stations to exhaust air from the tunnels. Tunnel ventilation fans are not expected to be used during normal train operations. However, tunnel ventilation fans could be operated to provide additional heat removal particularly during periods of train service disruption in summer conditions. Typically, the direction of ventilation would be the direction of train travel; however, the system would be designed to allow for ventilation in both directions.

Separate mechanical ventilation systems would be provided at each underground station for heat removal and to provide fresh air. Full height platform screen doors at stations would assist in controlling underground station temperatures by physically separating the tunnel and station environments.

The services facility proposed at Rosehill is located directly above the tunnel alignment and would typically include tunnel ventilation plant rooms and associated equipment. The tunnel ventilation system at the services facility would operate to provide additional heat removal, particularly during periods of train service disruption but is not expected to be used during normal train operations.

The services facility would also allow for inclusion of mechanical and electrical equipment and ancillary rooms to support the ventilation system. A stair shaft would be provided to connect to the tunnels below for maintenance personnel.

In the event of a tunnel fire, the tunnel ventilation system would generate longitudinal flow and would extract smoke to prevent smoke building up in the area of the fire. Smoke-laden air would be discharged via ventilation outlets at stations or the services facility, depending on the location of the fire.

1.5.6 Drainage and stormwater

This proposal would include a series of drainage works so that stormwater is efficiently conveyed to the surrounding stormwater drainage system. The proposed track drainage system would include new drainage infrastructure for the tunnel and surface sections of this proposal.

The drainage infrastructure would consist of trunk stormwater drainage, track drainage, onsite detention and various discharge points. Once constructed the stations, tunnels and dive structure portals and retaining walls would generally comprise tanked structures (which prevent groundwater from entering the structure but do not actively drain groundwater).

Within the tunnels, drainage depressions would be incorporated into the concrete slabs that form the base for the rail track. The tunnel portals and other critical locations, such as stations and the stabling and maintenance facility, would be designed to be protected from the Probable Maximum Flood level or be 0.5 metres above the one per cent Annual Exceedance Probability flood level (whichever is greater).

An operational water treatment plant would be provided at the Rosehill services facility to treat wastewater pumped from the tunnels, stations and other underground facilities. The water treatment plant building would include holding tanks, chemical treatment tanks and filters. Treated water would be discharged towards Duck Creek. During an emergency situation, there may be a need for water to bypass the operational water treatment plant and be discharged untreated to the receiving environment.

1.6 Proposed operations

This section provides a description of the operation of this proposal in the context of the broader Sydney Metro network.

1.6.1 Service frequency and reliability

As with the broader Sydney Metro network, this proposal would deliver a ‘turn up and go’ service stopping at all stations along Sydney Metro West.

The indicative service frequency for Sydney Metro West at opening between Westmead and the Sydney CBD would be:

- at least every four minutes during the morning and evening peaks on a typical weekday
- every 5 minutes during the day on a typical weekday
- every 10 minutes during early morning and late at night on a typical weekday, and on weekends.

Demand for the service would be managed through increased service frequency. The ultimate operational frequency would be for 30 trains per hour in each direction – a train every two minutes each way.

Operations would be tailored to cater for planned special events, for example major events at Sydney Olympic Park or New Year’s Eve. Details for special event operations would be determined during the design development process.

1.6.2 Hours of operation

The hours of operation would be aligned to the Sydney Trains suburban rail network and the Sydney Metro network. It is anticipated that Sydney Metro West would generally operate from early morning to late at night. To accommodate for planned special events, operating hours could be extended as required.

Final operating hours would be determined as part of the development of service schedules for the metro line, taking into account maintenance access requirements, customer requirements and broader network considerations.

The Clyde stabling and maintenance facility would operate 24 hours a day, seven days a week.

1.6.3 Train types

All trains would be new, single-deck, fully automated and driverless metro trains. They would deliver a fast, safe and reliable journey for customers with high performance standards and good customer amenities including:

- at least three doors per side per carriage and no doors between carriages, allowing fast boarding and alighting
- level access between the platform and train
- a mix of seating and standing arrangements for efficient boarding and alighting
- accessible priority seating for people with mobility impairments, people with a disability or using a wheelchair or mobility device, the elderly and people with prams
- allocated multi-purpose areas on each train for prams, bicycles and customers travelling with luggage
- air-conditioned carriages
- emergency help points
- clear customer information while on board, including passenger information screens.

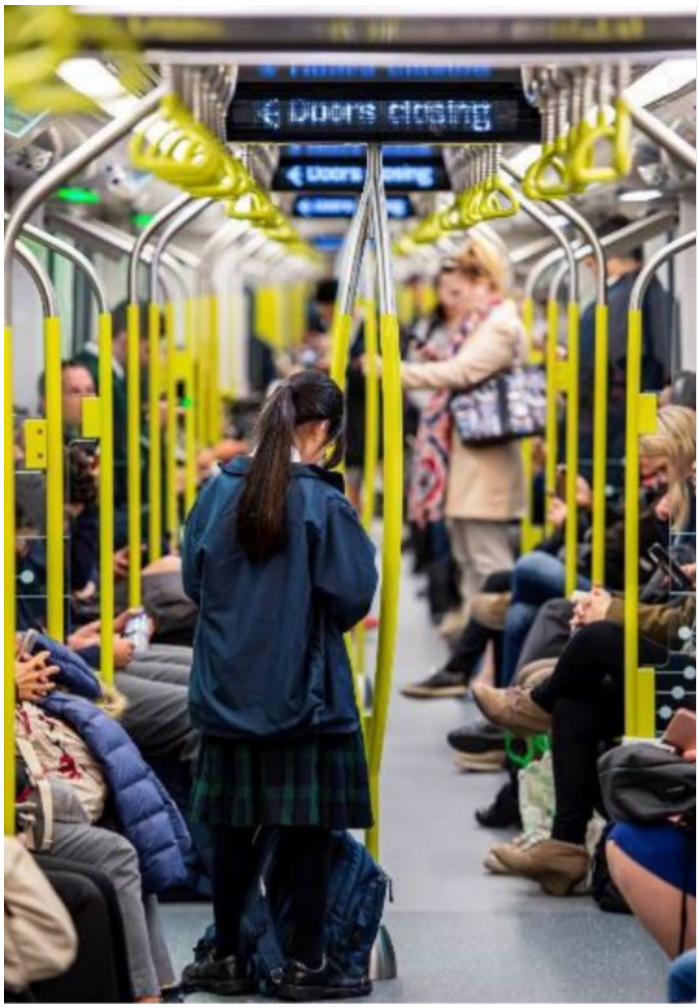
Photographs of the indicative type of trains proposed are provided in Figure 1-14, Figure 1-15 and Figure 1-16.

Source: Sydney Metro

Figure 1-14 Photograph of a metro train operating on the Metro North West Line

Source: Sydney Metro

Figure 1-15 Photograph of a metro train at an underground station on the Metro North West Line



Source: Sydney Metro

Figure 1-16 Photograph of an internal metro train carriage

1.6.4 Ticketing

This proposal would be integrated with the existing Opal electronic ticketing system, which would allow for a ticketing system integrated with all other modes of public transport (Sydney Trains operated trains, buses, ferries, and light rail services). This system would be installed at all stations.

Fares for Sydney Metro would be set by the NSW Government. Ticket pricing for all transport in NSW is determined by the Independent Pricing and Regulatory Tribunal of New South Wales (IPART), and by NSW Government policy. The NSW Government reviews this pricing annually and may consider a change to the Opal policy at any time. Sydney Metro service pricing would be reviewed in line with the pricing review process for other forms of public transport.

1.6.5 Operational staff

Sydney Metro West staff would provide assistance to customers in person throughout stations and trains.

It is anticipated that about 70 to 90 staff members would be required per shift to operate and maintain this proposal. The final arrangement of staffing to operate this proposal would be determined as part of future operator requirements.

1.6.6 Maintenance activities

The maintenance philosophy for Sydney Metro West would be to ensure safety and maintain the functional performance of the railway.

Maintenance planning would generally allow for routine and major periodic maintenance of infrastructure with a view to maximising service availability and minimising impacts on customers. Scheduled maintenance would generally occur between the last and first train services, or during planned weekend maintenance periods, when train services would not be in operation on parts of the line.

Rail maintenance vehicles would be able to use the metro network and provide access for maintenance crews. Track monitoring equipment may also be used on metro trains to support maintenance activities. The following types of maintenance activities would be required:

- scheduled maintenance – involving routine inspections and repairs to enable operations at prescribed levels of safety, reliability and service frequency; this type of maintenance would be performed on a regular and recurring basis at specified intervals
- non-scheduled maintenance – involving emergency repairs, or repairs due to vandalism and breakage that would impact on prescribed levels of safety, reliability and/or service frequency; this type of maintenance would be performed as needed
- overhaul and repairs – involving the repair, replacement and testing of infrastructure that has been removed from its working location.

1.7 Subdivision

This proposal includes subdivision of the relevant sites, including the station precincts and ancillary facilities as required to allow for separate occupation or development of parts of the land within the station precincts. Subdivision may be carried out to divide land for the purposes of (but not necessarily limited to):

- the station
- the spaces to be used for non-station uses
- over station development (including within and between the over station development(s) and elements at and below ground level)
- adjacent station development
- public roads and public open space
- the management of residual land.

2.0 Proposal description – construction

This chapter provides an overview of the indicative construction approach and methodology for this proposal including the indicative construction staging, strategy and program. This chapter also provides an overview of the proposed construction sites required to support this proposal, and construction traffic and access, utilities work and plant and equipment required. A detailed description of construction activities at each construction site is provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

The construction approach and methodology presented in this chapter is indicative and would be refined as design and construction planning progresses. A final construction methodology and program would be developed as part of detailed construction planning.

2.1 Overview

Key construction elements underway or to be delivered as part of the work carried out under previous Sydney Metro West planning applications would include:

- enabling work such as demolition, utility supply to construction sites, utility adjustments, and modifications to the existing transport network
- tunnel excavation including tunnel support activities
- excavation for the new metro stations and ancillary infrastructure
- civil work for the future Clyde stabling and maintenance facility including filling to the final formation level and construction of structures for watercourse crossings.

These construction activities do not form part of this proposal and are assessed separately in the following documents:

- *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- *Sydney Metro West Westmead to The Bays and Sydney CBD – Amendment Report* (Sydney Metro, 2020b)
- *Sydney Metro West Environmental Impact Statement – The Bays to Sydney CBD* (Sydney Metro, 2021a)
- *Sydney Metro West Submissions Report – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2022).

The key construction activities that would be carried out for this proposal include:

- enabling and site establishment work
- construction of stations and structures for non-station use (e.g. retail, commercial and/or community facilities)
- station fit-out
- station precinct and interchange work including provisioning for over and/or adjacent station development, where relevant
- construction and fit-out of the stabling and maintenance facility and services facility
- tunnel fit-out and rail systems work
- finishing work, testing and commissioning.

These activities are described in further detail in this chapter.

2.2 Indicative construction program

Construction of this proposal is expected to commence in late 2024, subject to planning approval. The construction period would be around four years, followed by around a further year of testing and commissioning. The indicative construction program for this proposal is provided in Figure 2-1.

Indicative construction programs for each construction site are provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix. Figure 2-1 also shows how this proposal interrelates to the work carried out under the previous Sydney Metro West planning applications.

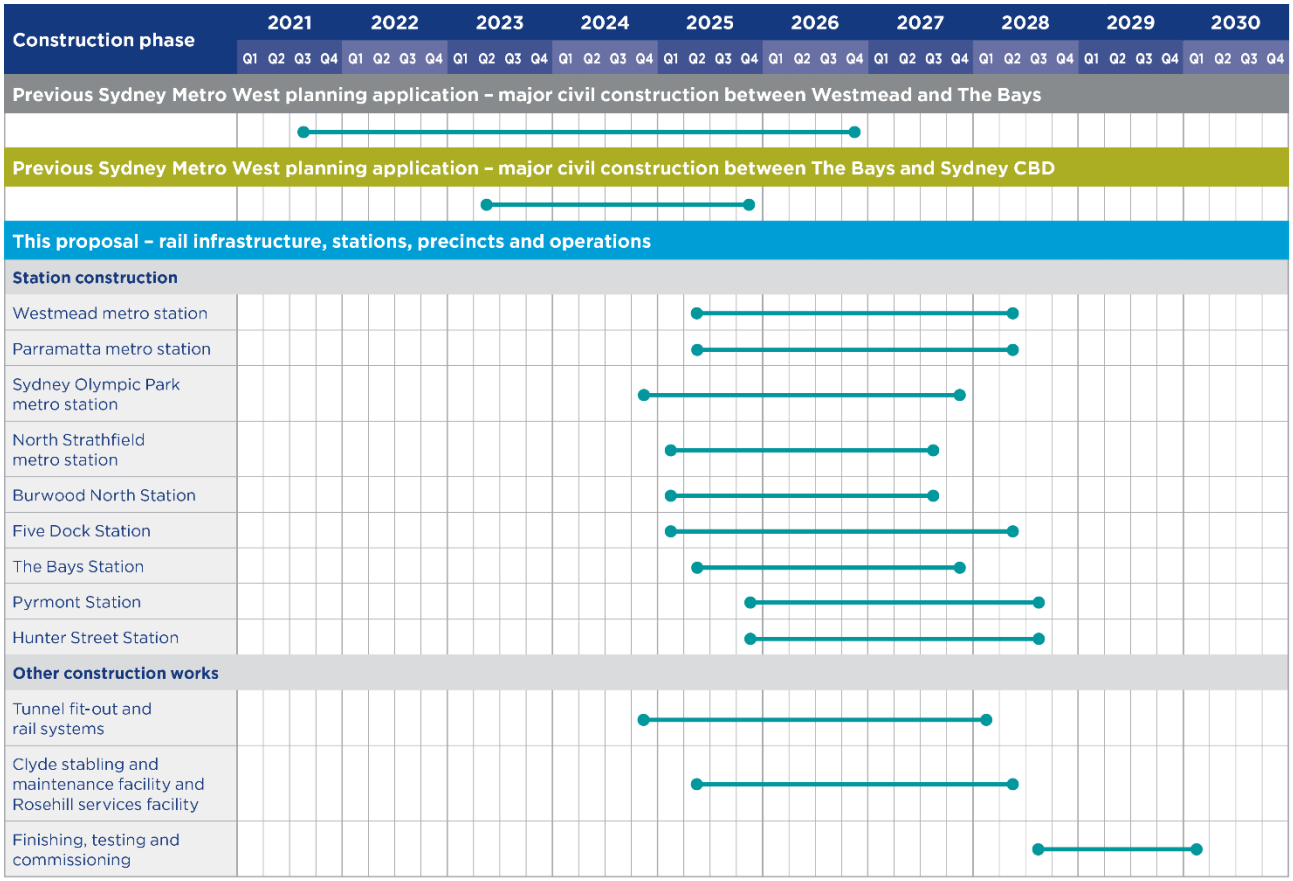


Figure 2-1 Indicative construction program

2.3 Construction sites

The location and land required for the proposed construction sites for this proposal would generally be consistent with the locations described in Chapter 9 of *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a); *Sydney Metro West Westmead to The Bays and Sydney CBD – Amendment Report* (Sydney Metro, 2020c); Chapter 5 of *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a); and *Sydney Metro West Submissions Report – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2022).

Some additional land would be required at the following construction sites to support construction of this proposal:

- Westmead metro station construction site – additional areas for road work to the north and south of the existing rail corridor, work within the existing rail corridor and on platforms at the existing Westmead Station (refer Chapter 3 (Westmead metro station) of this Appendix))
- Sydney Olympic Park metro station construction site – a minor additional area to support the development of public domain in the south-western corner of the site (refer Chapter 5 (Sydney Olympic Park metro station) of this Appendix)
- North Strathfield metro station construction sites – additional areas for work within the existing rail corridor, including on the existing North Strathfield Station platforms, to support construction activities (refer to Chapter 6 (North Strathfield metro station) of this Appendix))
- The Bays Station construction site – additional areas to support utility and drainage work, road work, traction substation construction and other station precinct and public domain work (refer to Chapter 9 (The Bays Station) of this Appendix)).

The indicative construction sites for this proposal are shown in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

2.4 Construction methods

2.4.1 Enabling and site establishment work

The majority of construction sites would have been previously demolished and cleared and the majority of enabling work would have been completed as a result of the work carried out under the previous Sydney Metro West planning applications. Additional enabling work such as geotechnical and contamination investigations may be required where minor additional land is proposed.

Enabling and site establishment work for this proposal would generally be carried out before the start of substantial construction to make ready the key construction sites to facilitate construction activities and to provide protection to the public.

Enabling and site establishment work would generally include:

- archaeological, geotechnical and contamination investigations
- delivery of construction plant equipment and materials
- utility supply and adjustments
- establishment of site facilities including amenities, site offices, security huts, dangerous goods storage, workshops, site utilities and water treatment equipment
- establishment of material laydown areas
- establishment and/or adjustment of environmental and safety controls
- establishment and/or adjustment of hoardings around the construction site.

Where required, specific enabling and site establishment work related to each construction site are described in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

2.4.2 Station construction

Bulk earthworks for the excavation of stations would be completed as part of the work carried out under the previous Sydney Metro West planning applications. Station construction for this proposal would occur predominantly within the excavations completed as part of the work carried out under the previous Sydney Metro West planning applications. It would include the underground structural construction of the permanent station structures and aboveground station infrastructure such as station entrances and buildings.

Some stations would involve fitting out a large underground cavern and several shafts rising to the surface. Other stations would take the form of an excavated box to be fitted out and closed-up.

Rail interchange support work would also occur at Westmead and North Strathfield. This would involve work within the existing rail corridor to support rail interchange between Sydney Trains and Sydney Metro. Further details of these works at each site are provided in Chapter 3 (Westmead metro station) and Chapter 12 (North Strathfield metro station) of this Appendix.

Underground structural work

Underground structural work for the stations would generally include the construction of:

- detailed excavation for lift pits, drains, sumps, electrical earthing and foundations
- base slab and outer walls, including drainage and a waterproof membrane layer
- station platforms
- support columns and foundations for vertical transport (such as escalators and lifts), the station buildings and, where relevant, for future over station developments (subject to separate approval)
- pedestrian access, including delivering or provisioning for underground pedestrian links to future adjacent development
- mezzanine levels and rooms

- roof slabs (covering the shafts and station boxes), where required
- emergency access.

Platform construction would involve the placement of precast concrete elements, followed by pouring of a concrete topping slab over the precast concrete elements using concrete pumps located at the surface. Allowance would be made during platform construction for the location of the vertical transportation elements (such as escalators and lifts).

The construction of station levels would involve the installation of structural beams to span the full width of the shafts and station boxes, followed by secondary structural beams between the main beams. A concrete slab would then be poured in sections supported by the beams.

The roof slabs would likely consist of closely spaced precast concrete girders spanning the full width of the shafts and station boxes, placed on the outer walls. A concrete topping slab would be poured on the girders, followed by a waterproof membrane and a concrete protection layer. The area would then be backfilled (as required) to the surface level.

Aboveground station infrastructure

Aboveground station work would generally include the construction of:

- station entrances, concourses and canopies
- station service buildings and facilities such as loading docks and maintenance access
- structures for non-station uses (e.g. retail, commercial and/or community facilities)
- provision for future over and/or adjacent station development at relevant stations as described in Section 1.4.4 (Provision for over station development and adjacent station development)
- emergency access.

The aboveground station buildings would likely be constructed using reinforced concrete methodologies or steel frames or a combination of both. The above structural construction methods would be further developed during detailed design, with consideration of alternative methods such as the use of precast concrete units whereby heavy vehicles deliver pre-made units instead of concrete being poured on-site.

Station entrances would generally be integrated with station services buildings and/or future station development. A new concourse would be constructed at Westmead and a new pedestrian footbridge would be constructed at North Strathfield to connect the new metro stations to the existing stations. These would likely be pre-fabricated at an off-site location and assembled at ground level adjacent to the station then lifted into place.

Construction of the station would incorporate suitably designed structures to integrate with or support any future over and/or adjacent station development (subject to separate approval).

2.4.3 Station fit-out work

The mechanical and electrical fit-out of the stations would consist of two major elements: the rail systems located at the stations and the building services required for the function of the stations. The initial fit-out of mechanical and electrical services would occur concurrently with the structural work, including the installation of large equipment such as ventilation fans, lifts and escalators. The final fit-out of mechanical and electrical services would occur after the completion of structural work and concurrently with the architectural fit-out.

The architectural fit-out of the stations would occur on completion of the station structural work and would involve the final finishes for the stations, such as glazing, wall and ceiling cladding, and floor finishes.

Rail systems would also be provided at this stage including passenger information systems, help points, passenger evacuation and public address systems, platform screen doors, gate line and ticketing along with building control systems.

2.4.4 Station precinct and interchange work

Each of the stations would include works to upgrade the surrounding station precinct, including connections with roads, active transport links and public transport. Station precinct and interchange work would generally include where applicable:

- intersection and traffic signal modifications
- changes to traffic speed zones

- safety infrastructure to protect vulnerable road users and manage vehicle speeds such as pedestrian crossings, speed humps and hostile vehicle barriers (for example, security bollards)
- kerb and guttering
- surfacing
- transport interchange facilities (for example bus shelters, bicycle paths and bicycle parking)
- public domain and placemaking infrastructure, including footpaths, street lighting and landscaping
- accessibility infrastructure (for example, accessible ramps and lifts)
- line marking, signage and other finishes.

2.4.5 Ancillary facilities and associated work

Stabling and maintenance facility

The proposal includes the construction and fit-out of a stabling and maintenance facility at Clyde to provide fleet support services. Bulk earthworks at the Clyde stabling and maintenance facility would be undertaken as part of the work carried out under the previous Sydney Metro West planning application.

The construction of the stabling and maintenance facility would include civil works for the construction of the rail entry/exit structures to the facility from the mainline tunnels. B-double heavy vehicle access through the facility would be maintained during construction using the roads realigned as part of the work carried out under the previous Sydney Metro West planning application.

Overhead wiring and associated structures would also be constructed, including installation of structure footings, structures and running of wiring.

A traction substation would also be constructed which would include excavation and construction of foundations, placement of underground conduit routes, construction of the substation building and yard and installation and commissioning of the electrical and mechanical equipment.

Following construction of the Clyde stabling and maintenance facility, test trains would be required for the testing and commissioning work. Other track infrastructure such as buffer stops (device used to prevent railway vehicles from going past the end of a physical section of track) and signalling equipment would also be installed and commissioned.

Further detail regarding construction of the Clyde stabling and maintenance facility is provided in Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

Services facility

This proposal includes the construction and fit-out of a services facility to support operations at Rosehill, within the Clyde stabling and maintenance facility. The services facility is designed to provide fresh air ventilation to the mainline tunnels and emergency exit out of them. The services facility would include an aboveground building for mechanical, electrical and ventilation equipment and a shaft to connect to the tunnels below. Bulk earthworks (shaft excavation) for the services facility will be undertaken as part of the work carried out under the previous Sydney Metro West planning application.

Following site establishment work, lifts, emergency access stairs and a tower crane would be installed to enable workers to access each level of the services facility and to unload materials into the shaft. Construction of the services facility would also include installation of floor slab sections and intermediate walls on each floor.

The aboveground services building would likely be constructed using reinforced concrete methodologies and/or steel frames. The aboveground services building would then undergo mechanical and electrical fit-out work. Following construction of the major structural elements, installation of floor finishes, façade treatment and wall and ceiling cladding would be carried out.

Further detail regarding construction of the services facility is provided in Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

2.4.6 Tunnel fit-out and rail systems work

Tunnel excavation would be completed as part of the work carried out under the previous Sydney Metro West planning applications. This proposal would include tunnel fit-out and rail systems work. An overview of activities that comprise tunnel fit-out and rail systems work is provided in Table 2-1.

Based on current construction planning access points for tunnel fit-out and rail systems work would likely be via the Parramatta metro station, Clyde stabling and maintenance facility (including Rosehill services facility), Burwood North Station and The Bays Station construction sites. However, depending on construction staging, other construction sites would be used to access the tunnels to carry out tunnel fit-out and rail systems work. Flexibility in the use of identified construction sites to support tunnel fit-out and rail systems work has been considered in the Environmental Impact Statement.

Table 2-1 Tunnel fit-out and rail systems work

Construction item	Description of proposed work
Fresh air tunnel ventilation fit-out	The majority of tunnel ventilation equipment would be located at the stations and the services facility. The fit-out of these elements is described as part of the mechanical and electrical components fit-out in Section 2.4.3.
Track slab and rail fastening	The track slab would be formed by mass concrete pours with rail fasteners incorporated into the pours. Rail fasteners would be designed to mitigate operational noise and vibration where required. Ballast track form would be used at the stabling and maintenance facility.
Rail track installation	Rail would be delivered to the access points at each of the construction sites. Where there is surface access to the tunnel (that is the tunnel portal at the Clyde stabling and maintenance facility), rail sections would be welded together in lengths of up to 120 metres and then transported underground. At other tunnel access locations short sections of rail may be delivered and lowered into the tunnel where they can be welded to form longer lengths for installation. Cutting of track into shorter sections may also be required at these access points. Where there is no surface access to the tunnel, standard rail lengths would be delivered and lowered to track level via access shafts and excavated station boxes. Below ground, close to the access point, the rail lengths would be welded together in lengths of up to 120 metres and moved into the tunnel for installation.
Cable and equipment installation	Dedicated cable routes would be installed in the tunnel for signalling, communications and electricity. Rooms for signalling and communications and power equipment would be provided at cross passages. Signal equipment rooms and communications rooms would be provided at the stabling and maintenance facility and at each station. The signalling equipment and communication rooms at the stations would be connected to the communications backbone and subsequent system destinations. Galvanised steel troughs and poles and masts for communications systems and lighting would also be provided in the stabling and maintenance facility and associated aboveground track section.
Overhead power	Overhead power structures would be installed for the mainline tunnels to support the provision of traction power.
Other equipment	Other equipment to be installed in the tunnels would include (but not be limited to) lighting (including emergency lighting), drainage, and fire and life safety systems (including walkways connecting to emergency egress and fire hydrant systems).

2.4.7 Finishing work, testing and commissioning

Finishing work

Following the completion of the construction work, construction equipment would be removed from the construction sites. Where relevant, sites that were used for construction but are not required in operation would be stabilised and/or rehabilitated.

Site stabilisation and rehabilitation would be carried out progressively during the work, and would include the following activities:

- demobilisation of construction sites and facilities
- removal of materials, waste and redundant structures from the work sites

- decommissioning of temporary work site signs
- removal of temporary fencing and hoardings
- establishment of permanent fencing
- restoration of disturbed areas as required, including remediation and/or revegetation where required.

Landscaping, irrigation, drainage and other station amenity work would be carried out at permanent operational sites where applicable.

Testing and commissioning

Testing and commissioning would be carried out to check that all systems and infrastructure have been installed and are operating according to Sydney Metro's operational requirements. Testing and commissioning of the stations and stabling and maintenance facility would initially occur separately to the testing and commissioning of the rail systems.

Once all services are installed and tested individually, testing and commissioning of the whole system would occur in three stages:

- collection of safety and quality assurance documentation and commissioning of readiness checks
- installation and operation tests and checks
- final inspection, site acceptance tests, commissioning and validation of individual systems.

During the final stages of commissioning, test trains would run on the line to test the signalling system and the traction power supply, and the overall functionality of the railway.

2.5 Other construction elements

2.5.1 Construction hours

Wherever possible the aboveground and external construction activities would be carried out during the following daytime construction hours:

- 7am to 6pm Monday to Friday
- 8am to 6pm Saturday.

It is proposed to extend the standard construction hours for the proposal to include 1pm to 6pm on Saturdays to reduce the overall program of the proposal. Earlier completion would bring considerable benefits to the community and would reduce the duration of construction related disruption. The extended construction hours on Saturdays (from 1pm to 6pm) for this proposal would also align with the conditions of approval for the previous Sydney Metro West planning application.

Underground and internal construction activities would generally take place 24 hours per day, seven days per week. This would include access to the tunnels via the stations and service facility sites, as well as material deliveries at these locations. Further detail on the approach to out of hours work is provided in the Sydney Metro Construction Noise and Vibration Standard (Appendix K of the Submissions Report).

Proposed working hours for the main construction scenarios that would be carried out for this proposal both during the daytime construction hours outlined above and outside daytime construction hours are outlined in Table 2-2. Construction scenarios that would be carried out at specific construction sites are identified in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

With the exception of emergencies and subject to the terms of the planning approval and any environment protection licence, activities would not take place outside daytime construction hours without prior notification of the affected community and the NSW Environment Protection Authority as required.

Table 2-2 Working hours for construction scenarios

Construction scenario	Proposed working hours
Enabling and site establishment work	Daytime construction hours
Station construction	Daytime construction hours and out of hours as required
Station and line-wide fit-out (systems)	24 hours per day, seven days per week
Station testing and commissioning	24 hours per day, seven days per week
Station precinct and interchange work	Daytime construction hours
Rail systems fit-out	24 hours per day, seven days per week
Rail systems testing and commissioning	24 hours per day, seven days per week
Finishing, testing and commissioning	24 hours per day, seven days per week

Other activities that would likely need to occur outside daytime construction hours include:

- work that would require the temporary road or lane closures
- work determined to comply with the relevant noise management level at the nearest sensitive receiver
- work required to be carried out during rail possessions
- the delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons
- emergency situations where required to avoid the loss of lives and property and/or to prevent environmental harm
- situations where agreement is reached with affected receivers.

2.5.2 Construction traffic, access, transport network modifications and parking

Proposed construction haul routes are identified in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix. Construction traffic would be managed in accordance with the Construction Traffic Management Framework (Appendix J of the Submissions Report). Construction traffic management plans for each site would be submitted to the relevant roads authority for review before work starts.

Temporary transport network adjustments would be required to support construction. This may include the continuation of adjustments put in place as part of the work carried out under the previous Sydney Metro West planning applications and/or new adjustments to support this proposal. This would generally include:

- road modifications and intersection work to facilitate the movement of construction vehicles
- measures to provide for the ongoing function and safety of existing transport networks
- temporary changes to pedestrian and cycling infrastructure
- temporary changes to the existing public transport network.

Specific road network modifications are outlined for each construction site as relevant in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix. These temporary modifications are subject to design development and construction planning with the objective of minimising disruptions to the transport network.

All temporary road network and parking modifications would be carried out so that access to private property is maintained, where possible.

Further site-specific construction transport and access information, potential construction transport impact and mitigation is provided in Chapter 3 (Westmead metro station) to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix.

2.5.3 Utilities management and power supply

Utilities identification, relocation, protection and/or removal would be completed as part of the work carried out under the previous Sydney Metro West planning applications. Additional utilities work may be required where minor additional land is required. At these locations and if required, it may be necessary to:

- provide physical protection for the utility, where the utility is not directly affected but may be indirectly affected by vibration or accidental impact
- modify construction methods to avoid impacting a nearby utility, such as by using smaller plant and equipment, hand excavation and compaction tools such as hand digging tools, a vibration plate or pedestrian rollers
- divert the utility around the construction footprint.

Further information relating to proposed utility work at Westmead metro station, North Strathfield metro station and The Bays Station construction sites is outlined in Chapter 3 (Westmead), Chapter 6 (North Strathfield metro station) and Chapter 9 (The Bays Station) respectively of this Appendix.

All construction power requirements for this proposal would use the existing power supply (either currently available or being provided for the work carried out under the previous Sydney Metro West planning applications).

A permanent power supply route would be provided between the traction substation at the Rosehill services facility and Camellia substation, generally within road reserves along Unwin Street and Colquhoun Street as part of this proposal (refer to Chapter 12 (Clyde stabling and maintenance facility and Rosehill services facility) of this Appendix for further detail). The permanent power supply to the traction substation at The Bays is being constructed under the previous Sydney Metro West planning application.

Construction for the provision of additional power supply to the stations may be required as part of this proposal for the operation of Sydney Metro West. Where required, utility connections would be made to the nearest substations, with works retained to the road reserve where possible. Further investigation into the need for this additional power supply would be undertaken during detailed design.

2.5.4 Construction plant and equipment

The indicative construction plant and equipment expected to be used at each construction site for this proposal is summarised in Table 2-3. The actual plant and equipment used at each construction site would be confirmed by the construction contractor(s) as part of detailed construction planning.

Table 2-3 Indicative plant and equipment at proposed construction sites

Location	Equipment																						
	Backhoe	Ballast tamper	Compressor	Concrete mixer truck	Concrete pump	Concrete saw	Concrete vibrator	Dozer	Excavator	Forklift	Generator	Grader	Grinder	Hand tools	Rail trolley	Mobile crane	Piling – bored	Roller – vibratory	Rock breaker/hammer	Skidsteer loader	Tower crane	Ventilation scrubber	Water pump	Welding equipment
Westmead		●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Parramatta			●	●	●		●		●	●	●		●	●		●	●		●	●	●	●	●	●
Sydney Olympic Park			●	●	●		●		●	●	●		●	●		●	●		●	●	●	●	●	●
North Strathfield			●	●	●	●	●		●	●	●		●	●	●	●	●		●	●	●	●	●	●
Burwood North			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Five Dock			●	●	●		●		●	●	●		●	●		●	●		●	●	●	●	●	●
The Bays			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Pyrmont			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Hunter Street			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Clyde	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●	●		●	●	●	●	●
Rosehill			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●

2.5.5 Construction workforce

It is estimated that this proposal would require a workforce of about 1,750 people during peak construction activity across all construction sites. The Sydney Metro West project would create an anticipated 10,000 direct and 70,000 indirect jobs during construction (based on Sydney Metro analysis).

The indicative peak workforce numbers across the construction sites is provided in Table 2-4.

Table 2-4 Indicative peak construction workforce at proposed construction sites

Construction site	Peak construction workforce
Westmead metro station	210
Parramatta metro station	210
Sydney Olympic Park metro station	90
North Strathfield Station	210
Burwood North Station	180
Five Dock Station	90
Pyrmont Station	110
The Bays Station	210
Hunter Street Station	180
Clyde stabling and maintenance facility	130
Rosehill services facility	70

2.5.6 Construction water management

Treated water discharge

All water generated from the construction site would be reused and/or treated. Treated water that could not be recirculated would be discharged from the construction sites via construction water treatment plants as outlined in Table 2-5. The reuse of treated water would be maximised during the construction works for tasks such as dust suppression.

Surplus treated water would be discharged to the local stormwater system or directly to a local surface watercourse subject to licence requirements, although other options, such as Sydney Water trade waste agreements, would be investigated during design development and construction planning.

Table 2-5 Treated water discharge from construction water treatment plants

Construction site location	Discharge location (via local stormwater infrastructure)	Indicative discharge volume (litres per second)
Westmead	Domain Creek	30
Parramatta	Parramatta River	15
Sydney Olympic Park	Haslams Creek	15
North Strathfield	Powells Creek	15
Burwood North	St Lukes Park Canal	35
Five Dock	Iron Cove Creek	20
The Bays	Sydney Harbour	30
Pyrmont	Sydney Harbour	30
Hunter Street	Sydney Harbour	30
Clyde and Rosehill	Duck River	30

Surface water management

Surface water management at the construction sites would be managed through the implementation of standard erosion and sediment control mitigation measures in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2* (NSW Department of Environment and Climate Change, 2008a). Further details regarding surface water quality management during construction are provided in Chapter 18 (Proposal-wide) of the Environmental Impact Statement.

2.5.7 Construction materials and resources

Raw materials

Indicative quantities of major raw materials required during construction of this proposal are provided in Table 2-6. Efficiencies in material use, management and transport would continue to be investigated during design development and construction planning.

Table 2-6 Estimated quantities of major raw materials (indicative only)

Material	Estimated quantity
Diesel	130,000 kilolitres
Concrete	945,000 tonnes
Rail steel	6,000 tonnes
Other steel (reinforcing, galvanised and structural)	45,000 tonnes

Water requirements

Estimated daily water use for the construction of this proposal are provided in Table 2-7. Efficiencies in water use and management would continue to be investigated during design development and construction planning.

Table 2-7 Estimated daily water quantities

Activity	Indicative quantity (kilolitres/day)	Water source
Site facilities	44	Potable
Wheel washes	53	Reuse of groundwater supplemented by potable water where required
Dust suppression	168	Reuse of groundwater supplemented by potable water where required
Total	**265**	

3.0 Westmead metro station

3.1 Station and precinct description

3.1.1 Design development

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

- feedback as part of submissions and consultation associated with the Environmental Impact Statement for this proposal
- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with Cumberland Council and City of Parramatta Council since exhibition of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel
- meetings and advice from the Parramatta Light Rail Stage 1 project
- ongoing meetings with Sydney Trains
- ongoing meetings with other relevant parts of Transport for NSW.

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

- a new metro station entry from Hawkesbury Road (to the south of Alexandra Avenue) – which Cumberland City Council expressed support for and was raised in community submissions received during public exhibition of the Environmental Impact Statement for this proposal. This would improve connectivity to the station both north and south of Alexandra Avenue
- underground and aerial concourses – the underground concourse would provide efficient interchange for customers transferring between Sydney Metro and Sydney Trains services compared to an aerial concourse only, while the aerial concourse would provide efficient customer entry from the surrounding catchment and interchange with light rail and bus services
- retention of the existing Alexandra Avenue alignment – further design development and stakeholder feedback (including from the Design Advisory Panel, Transport for NSW and Schools Infrastructure NSW) since the approval of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a), has resulted in a decision to retain Alexandra Avenue (between Hawkesbury Road and Hassall Street) in its existing alignment following construction. This would enable efficient operation of the road network, including maintaining the existing route for T-way bus services, and minimising operational traffic impacts
- upgrade of Hawkesbury Road overbridge – the upgrade of Hawkesbury Road overbridge would enhance connections between north and south Westmead, support activation opportunities and interchange between transport modes. This responds to feedback from the City of Parramatta Council. Since the exhibition of the Environmental Impact Statement, the design of these improvements has been further developed to locate the proposed bicycle route and public domain upgrades on the eastern side of Hawkesbury Road. Adjustments to the proposed bicycle route align with feedback from Cumberland City Council's submission.

3.1.2 Station design

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

The key features of Westmead metro station are provided in Table 3-1.

Table 3-1 Key features – Westmead metro station

Key features	Description
Proposed station entry	Entries on Hawkesbury Road, north and south of Alexandra Avenue.
Customers	• residents within walking and cycling distance • employees and visitors to and from the Westmead health and education precinct • university students, employees and visitors to the education precinct • customers transferring to and from other transport modes.
Primary station function	Origin, destination and interchange.
Catchment	Employment, residential, health and education.
Transport interchange	• walk • cycle • suburban and intercity rail • bus • light rail (future) • point-to-point transport • kiss and ride.

Westmead metro station would consist of an underground station with an island platform in an east–west orientation.

An aerial concourse located on Hawkesbury Road would provide customers with access to the Sydney Trains and Sydney Metro platforms via the northern entrance along Hawkesbury Road, from the west. The northern entrance would be connected via an unpaid pedestrian concourse located adjacent to the existing Hawkesbury Road overbridge. Escalators and/or stairs and lifts would provide access to the Sydney Trains and Sydney Metro platforms. A paid underground concourse would be provided in a north-south orientation beneath Alexandra Avenue and the existing rail corridor, connecting the aerial concourse, Sydney Metro and Sydney Trains services via lifts and escalators. Customers transferring between the Sydney Metro network and the Sydney Trains network would do so within the paid area of the concourse.

The southern station entry would be located on Hawkesbury Road (to the south of Alexandra Avenue), providing access to the metro station platforms via lifts and escalators.

New public domain areas would be located to the south of the existing Westmead Station. Areas for station services and utilities would be provided underground and in consolidated services buildings located above the metro station. The new concourse would also provide for Sydney Trains station facilities.

The aboveground station infrastructure (station concourse building with canopy) north of Alexandra Avenue would be, subject to design development, indicatively around nine metres above Hawkesbury Road. The aboveground station infrastructure (station, services and utility buildings) south of Alexandra Avenue would be indicatively around 18 metres above Hassall Street, subject to design development.

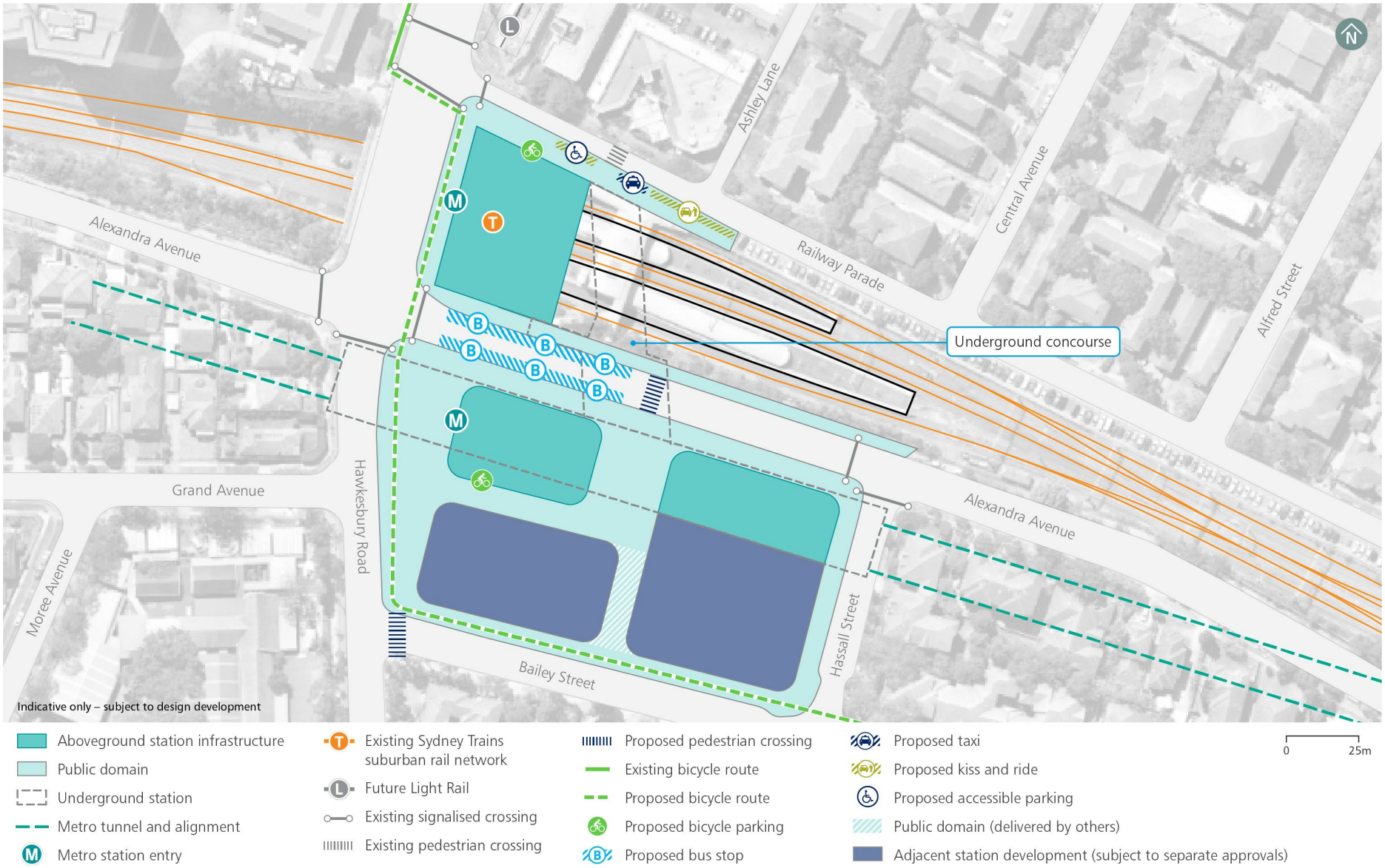


Figure 3-1 Indicative layout and key design elements – Westmead metro station

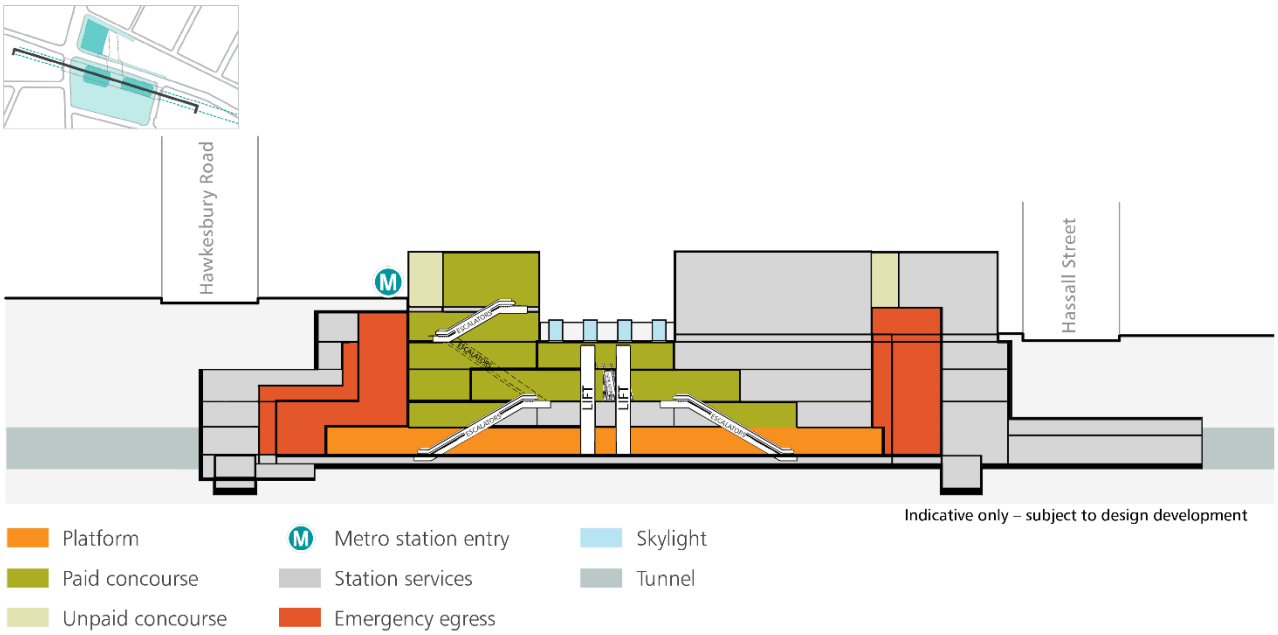


Figure 3-2 Indicative long-section – Westmead metro station

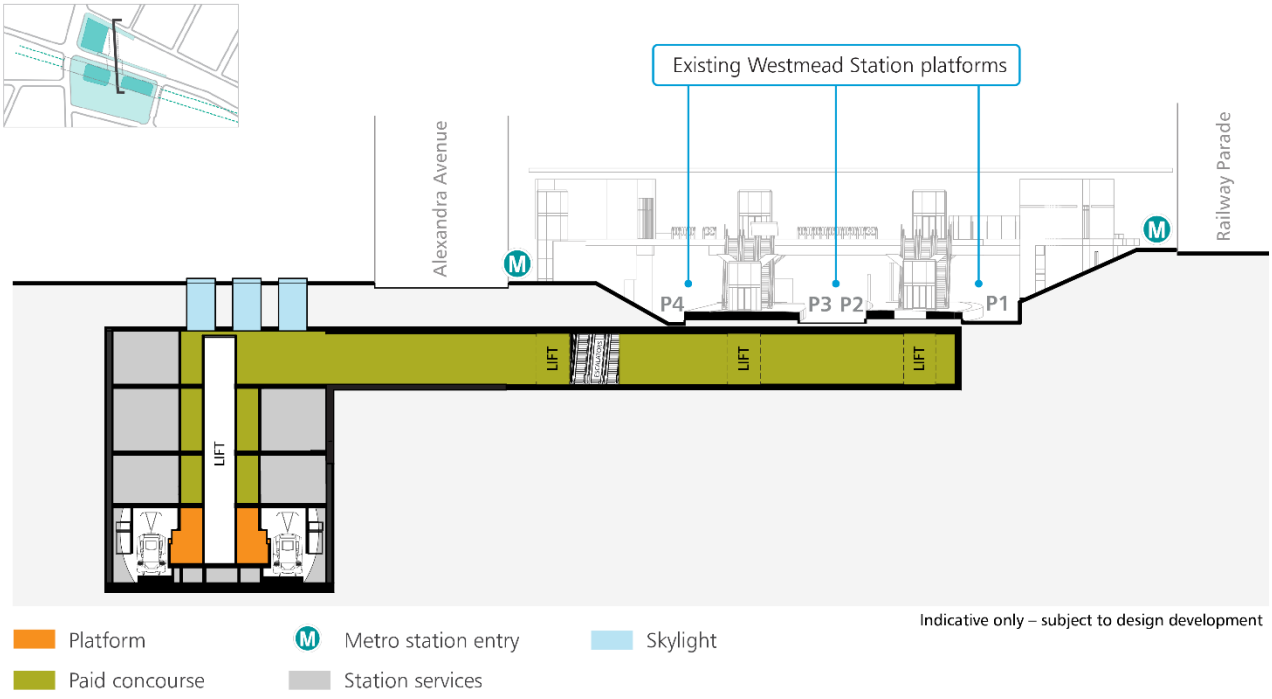


Figure 3-3 Indicative cross-section – Westmead metro station

3.1.3 Station precinct and interchange facilities

Westmead metro station would include a series of precinct and interchange elements such as:

- improvements to the eastern side of the existing Hawkesbury Road overbridge, to allow improved amenity and pedestrian accessibility across the rail corridor and between the existing Westmead Station, Sydney Metro station and Parramatta Light Rail stop
- bicycle parking and new bicycle path connections providing access throughout the station precinct
- consolidated Sydney Trains / Sydney Metro transfers via a new aerial concourse and a new underground concourse

- reinstatement of Alexandra Avenue between Hawkesbury Road and Hassall Street following the completion of construction
- a bus interchange and shelters located on both sides of Alexandra Avenue
- combined kiss and ride and point-to-point vehicle facilities
- upgrades to the surrounding road network, new pedestrian crossings and the creation of a new public plaza adjacent to the metro station (south of Alexandra Avenue)
- structural elements for the space for non-station uses within the aboveground station infrastructure (e.g. retail, commercial and/or community facilities). Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

Sydney Metro is continuing to investigate options for the layout and use of Alexandra Avenue between Hawkesbury Road and Hassall Street, including the potential for this section of road to be narrowed and used for bus and emergency services only. In this scenario, generally traffic would be redirected via Hassall Street, Bailey Street and/or Priddle Street which may result in additional traffic and traffic noise impacts along these roads.

Sydney Metro is also continuing to investigate opportunities to optimise the location of and provide additional kiss and ride facilities at Westmead metro station.

3.1.4 Provisioning for adjacent station development

As shown in Figure 3-1, adjacent station development is proposed on the residual land required for construction of this proposal, to the south of the metro station.

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

- a shared public domain area south of the metro station
- utility connections, where required
- subdivision.

Delivery of the adjacent station development does not form part of this proposal and would be subject to separate assessment and approval (with the exception of the provisioning elements listed above). Access to the metro station would be maintained around these spaces and may be temporarily activated to provide public spaces and local community facilities. Adjacent station development is discussed further in Section 1.4.5 (Related development) of this Appendix.

3.2 Placemaking

The vision for Westmead metro station and its surrounds is for:

A well connected and accessible health and education precinct, and a revitalised, high amenity living and employment centre, as an extension of Parramatta's CBD.

3.2.1 Integration with strategic planning

As identified in the *Central City District Plan* (Greater Sydney Commission, 2018c), the Westmead health and education precinct is a major attribute to Westmead, and its redevelopment has the potential to transform the precinct into a world-class innovation district. A number of plans and strategies support this plan, which have informed the development of Westmead metro station, particularly raising the awareness of Westmead health and education precinct, and these would guide future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the *Healthy Built Environment Checklist* (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

Local Strategic Planning Statements

The relationship of Sydney Metro West to the *Cumberland 2030: Our Local Strategic Planning Statement* (Cumberland City Council, 2020) and the *City of Parramatta Local Strategic Planning Statement City Plan 2036* (City of Parramatta, 2020) are discussed in Section 7.10.1 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The *Cumberland 2030: Our Local Strategic Planning Statement* reinforces the future role of the specialised health and education precinct at Westmead. It identifies that the land south of the existing rail corridor comprises an existing low-density residential area with potential to facilitate housing opportunities for key workers and students from the Westmead health and education precinct. It also identifies opportunities to reinforce and improve connectivity between the areas north and south of the existing rail line through the revitalisation of Hawkesbury Road.

Sydney Metro West would support the potential urban renewal of south Westmead by improving transport accessibility to and from Westmead; and would support activation and enhanced pedestrian amenity along Hawkesbury Road.

The *City of Parramatta Local Strategic Planning Statement* includes a priority to increase commercial floor space in strategic centres, including Westmead. The Statement also identifies a need to encourage growth of the night-time economy at Westmead; and to limit residential development in the Westmead health and education precinct in order to encourage commercial, entertainment, health and education development. The increase in transport amenity provided by Sydney Metro West would support these outcomes.

Westmead Draft Place Strategy

Since preparation of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a), the *Westmead 2036 Draft Place Strategy* (NSW Department of Planning, Industry and Environment, 2020a) was placed on public exhibition between December 2020 and March 2021. This document provides a framework to capitalise on opportunities created by new transport infrastructure, including Sydney Metro West and Parramatta Light Rail Stage 1, and major development to transform Westmead into a health and innovation district. Westmead Station is identified as a 'gateway site' and 'major transport interchange', including the Sydney Trains suburban rail network, T-way, Parramatta Light Rail network and the future metro station.

Westmead metro station would provide a major investment in transport infrastructure and realises the development of a new transport interchange at Westmead, improving transfer opportunities between all transport modes. A metro station at Westmead would also support the objectives, priorities and actions of the Strategy by providing an activated public plaza and creating a new activity centre, with improvements to Hawkesbury Road reinforcing connections between north and south Westmead.

3.2.2 Place and design principles

Place and design principles for Westmead metro station were identified in Section 7.10.1 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 3-2 outlines how these principles have been achieved in the Westmead metro station design.

Table 3-2 Design responses to Westmead metro station place and design principles

Place and design principle	Design response
Facilitate an integrated transport hub with direct interchange between Sydney Metro and Sydney Trains services, and safe, equitable and legible connections with active transport, buses and Parramatta Light Rail.	• direct and efficient transfer between Sydney Metro and Sydney Trains services via direct underground pedestrian connection, separated from other interchange movements • proposed accessible bus interchange on Alexandra Avenue • intuitive station design providing direct line of sight for transfer between Sydney Metro aerial concourse and the proposed bus interchange and Parramatta Light Rail.
Provide a gateway to the Westmead health and education precinct in recognition of its status.	• introduction of a new public plaza on Hawkesbury Road, designed as a focal point for the community • the design reinforces Hawkesbury Road's role as a major activity and mobility spine connecting north and south Westmead • upgrading the eastern side of the existing Hawkesbury Road overbridge to create expansive shared path connections and intuitive interchange with the future Parramatta Light Rail.

Place and design principle	Design response
Support greater activation along Hawkesbury Road connecting North and South Westmead.	• upgrades to the existing Hawkesbury Road overbridge to create expansive pedestrian zones enabling both north-south movement and transfer between buses, Sydney Trains, Sydney Metro and Parramatta Light Rail • the proposed pedestrian network would allow for good connectivity within the station precinct and would respond to all pedestrian desire lines • provision of metro station entries on Hawkesbury Road (both north and south of Alexandra Avenue).
Support growth and renewal opportunities by enhancing connections across the existing railway line with the station as a focal point.	• new streetscape amenity with upgrades to Hawkesbury Road to support improved north south connectivity at the station interchange plaza • new public plaza that would be a focal point along the Hawkesbury Road corridor in Westmead south.
Create an inviting public place at the station with high amenity and landscaped spaces that will encourage activation.	• new station entry and public plaza to the south of Alexandra Avenue with large shade trees, and the sleeving of station services with space for non-station uses such as retail facilities to support activation • enhanced street verge amenity to Hawkesbury Road and Alexandra Avenue • lower speed, pedestrian friendly environment on Railway Parade • station plaza canopy over the aerial concourse to provide shade and weather protection to interchange plaza.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 3-4, Figure 3-5 and Figure 3-6.

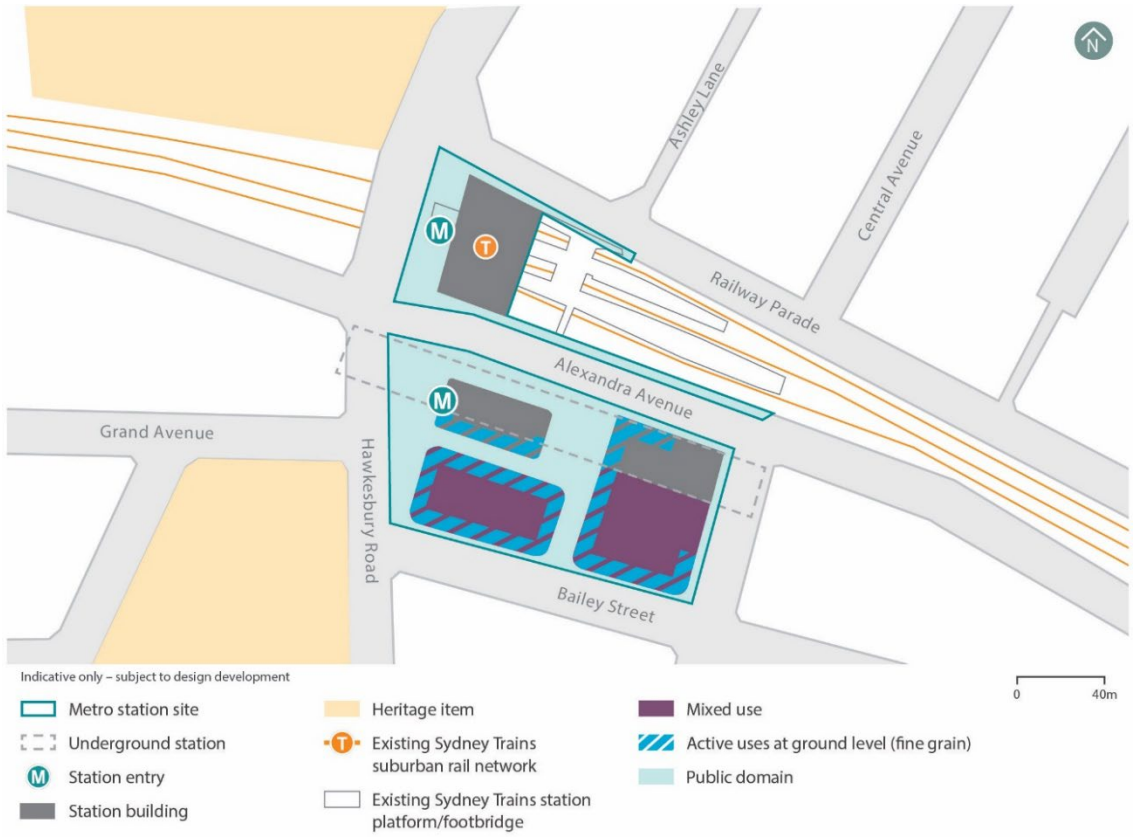


Figure 3-4 Land use and function urban design strategies – Westmead metro station

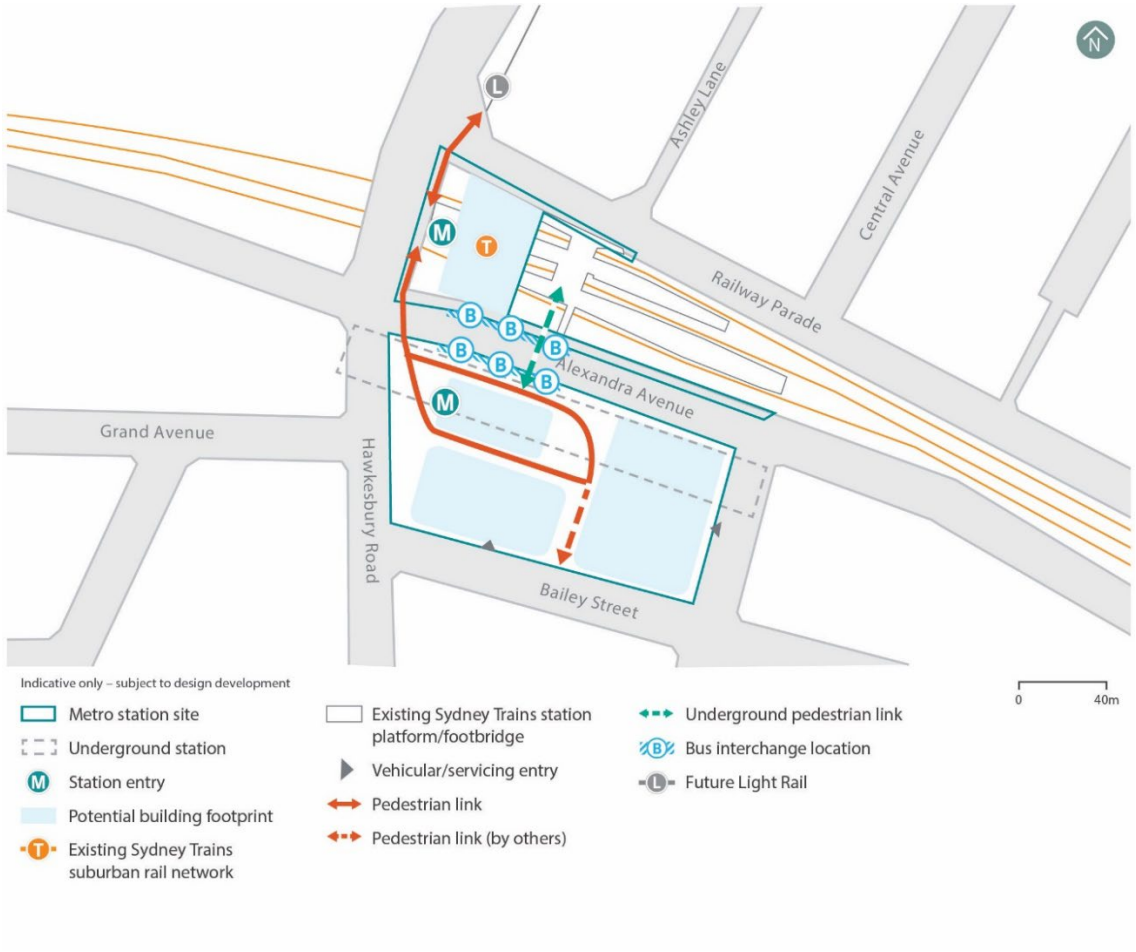


Figure 3-5 Access and connectivity urban design strategies – Westmead metro station

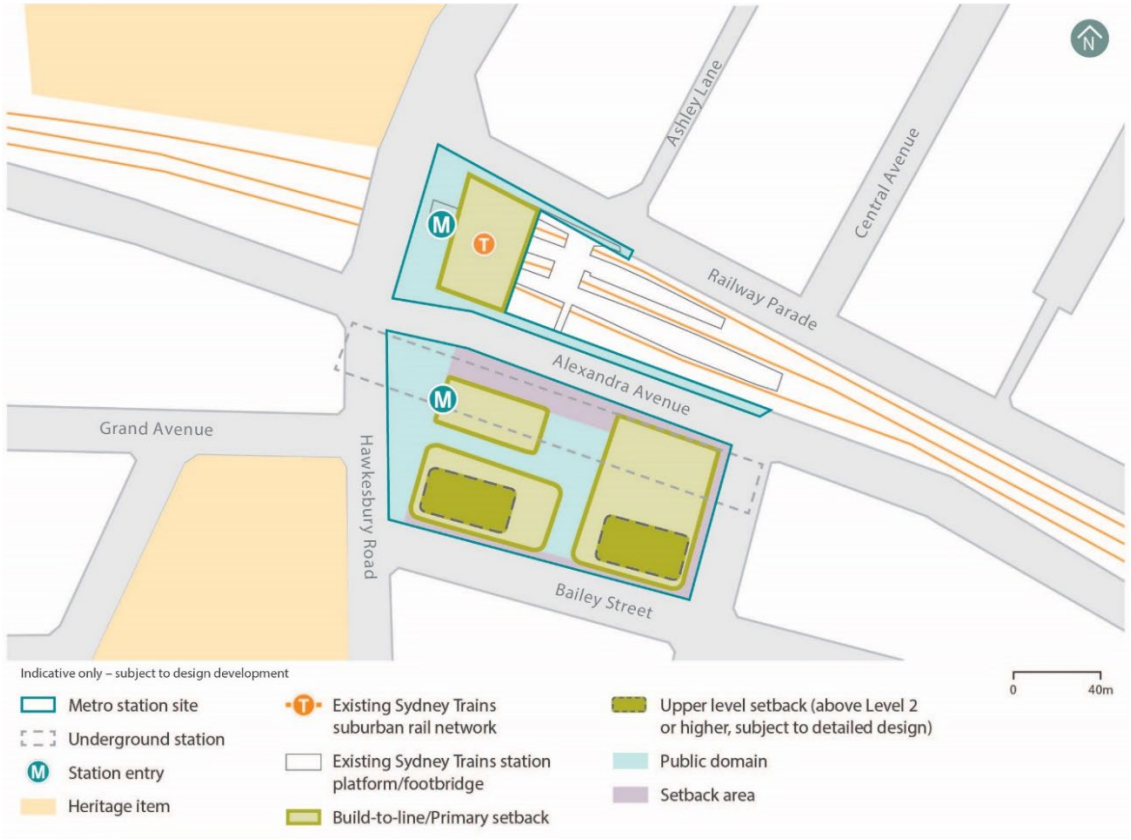


Figure 3-6 Built form urban design strategies – Westmead metro station

The Westmead metro station design includes the following key movement and place features:

- the creation of a new public plaza to the south of Alexandra Avenue, designed as a focal point for the community. The plaza would cater for large shade trees to create year-round amenity, and would support a range of informal passive recreation activities, providing the community with places to meet, rest and engage in urban life
- enhanced public domain and street improvements along the eastern side of Hawkesbury Road, Alexandra Avenue and Railway Parade, providing shade trees and improved amenity for pedestrians into and out of the station precinct
- a lower speed pedestrian friendly environment on Railway Parade, improving access and interchange with the Parramatta Light Rail
- an upgrade to the eastern side of the Hawkesbury Road overbridge to provide an expansive shared path environment (around seven metres wide) providing safe and easy north-south connection in front of the station concourse. When combined with retained bus and vehicle lanes, the design reinforces Hawkesbury Road's role as a major activity and mobility spine connecting north and south Westmead.

3.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the Westmead metro station design. Westmead Station is unique in that it would provide interchange between Sydney Metro, Sydney Trains, buses, and the future Parramatta Light Rail, making it an interchange hub. The delivery of a metro station at Westmead would provide a substantial improvement to regional access to the Westmead health and education precinct, either through a short walk from the metro station or through interchange with Parramatta Light Rail. This would be enhanced by improvements to the north-south connection across the existing rail line on the currently constrained Hawkesbury Road overbridge.

Examples of how the Westmead metro station design integrates with other transport modes and improves access for customers and the community include:

- an underground concourse to provide a direct customer transfer between Sydney Metro and Sydney Trains services
- an aerial station concourse above the existing T1 Western Line and existing Westmead Station (as an extension east of the existing Hawkesbury Road overbridge) to provide customer access and egress to the Sydney Metro and Sydney Trains services
- the proposed pedestrian network would allow for good connectivity within the station precinct and would respond to all pedestrian desire lines, creating safe and walkable streets that are designed for people and that provide easy access for all customers, including those with disabilities. Metro station entries on Hawkesbury Road (both north and south of Alexandra Avenue) would also respond to pedestrian desire lines
- cycling paths (including shared paths) in the immediate vicinity of the station to enable cycle trips through the precinct and facilitate connections with the wider strategic cycle network. Bicycle parking facilities would be provided near the southern station plaza and on Railway Parade
- a new bus interchange on Alexandra Avenue to facilitate customer interchange between metro, suburban rail and light rail services, and would provide accessible paths between all modes.

For further information on transport interchange, access and connectivity features of Westmead metro station, see Section 7.5 (Transport) of the Environmental Impact Statement.

3.3 Construction description

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

Major civil construction including station excavation and tunnelling work at Westmead was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

3.3.1 Overview

Construction of Westmead metro station would require the continued use of the construction site established under the previous Sydney Metro West planning application. Additional areas are also required to support construction of this proposal. The Westmead metro station construction site would primarily be located in the block bound by the existing rail corridor, Hawkesbury Road, Bailey Street and Hassall Street.

The majority of the Westmead metro station construction site will be demolished and excavated (where required) as a result of activities associated with the work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal.

The Westmead metro station construction site for this proposal would comprise:

- the approved construction site that was established in *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- additional areas within the existing rail corridor at the existing Westmead Station (bound by Railway Parade in the north and the Hawkesbury Road overbridge in the west, as well as to the west of the Hawkesbury Road overbridge) to support within-corridor construction activities. The location of these areas may vary during the construction period depending on specific activities being carried out. The construction boundary at this location includes the existing rail corridor between Bridge Road to the west and to the end of Railway Parade to the east
- additional areas within Alexandra Avenue to support construction activities.

This proposal would include some additional excavation to construct the underground concourse that will connect to the station which would require the removal of about 30,000 cubic metres of spoil.

The location and indicative layout of the Westmead metro station construction site are shown in Figure 3-7. Some activities would occur outside this construction footprint, such as delivery of construction equipment and station precinct and interchange work.

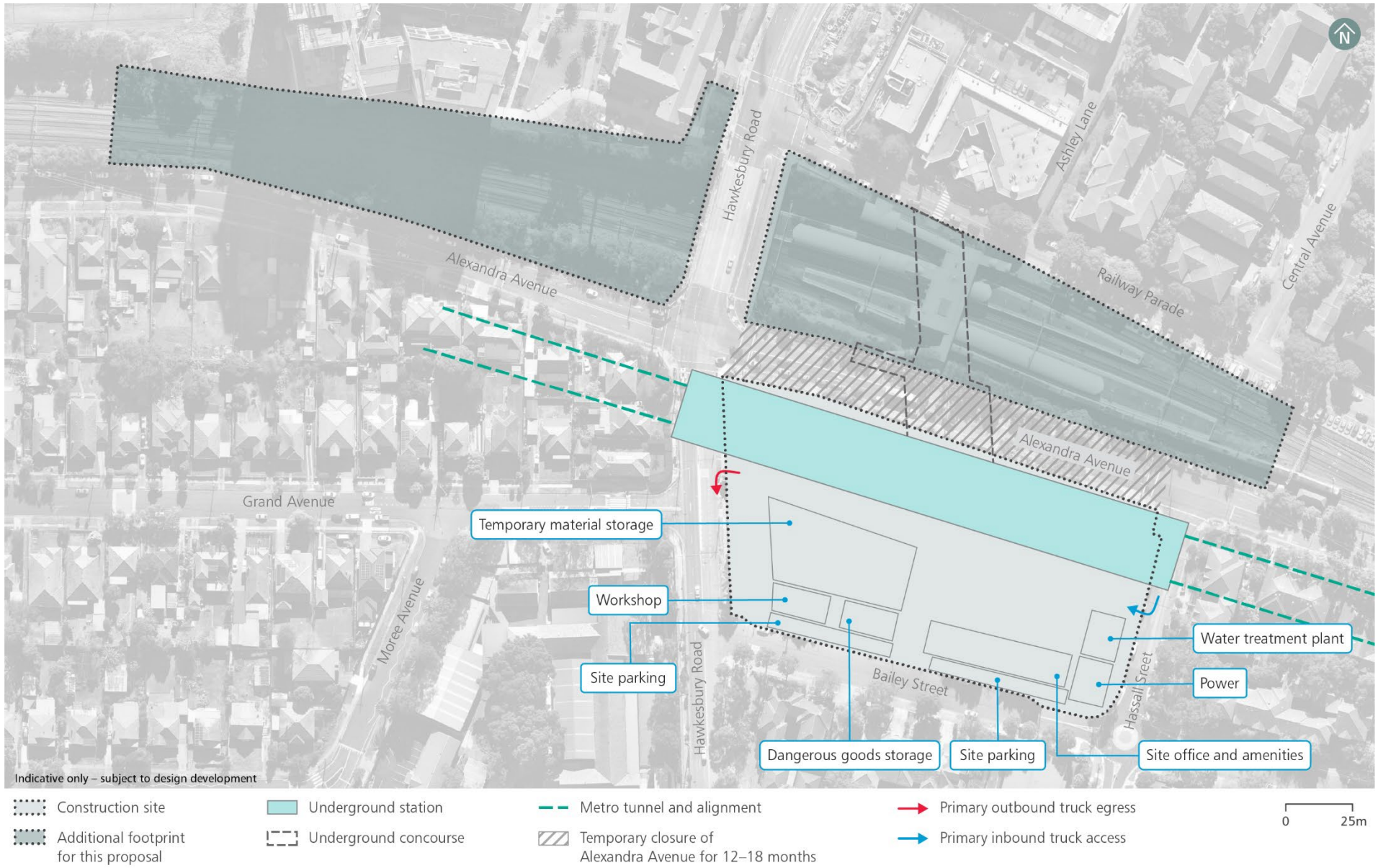


Figure 3-7 Indicative construction site layout – Westmead metro station

3.3.2 Construction work

Key construction work at the Westmead metro station construction site would include:

- enabling and site establishment work
- construction of the station and structures for non-station uses
- station fit-out
- construction of station precinct and interchange facilities, including provisioning for adjacent station development
- work within the existing rail corridor to enable integration of the proposal with the existing Sydney Trains suburban network, including:
  - construction and fit-out of a new aerial concourse above the existing rail corridor to the east of the existing Hawkesbury Road overbridge
  - construction and fit-out of the new underground concourse which would connect to the existing Sydney Trains suburban network
  - demolition of the aerial concourse at the existing Westmead Station
  - track realignment in the vicinity of the existing Westmead Station
  - lengthening and widening of Platform 1 and Platform 4 of the existing Westmead Station
  - localised excavations of the existing platforms to allow for vertical transport (lifts and escalators) from the proposed underground concourse
  - adjusting the embankment (to the south of the rail tracks) within the existing rail corridor and west of the Hawkesbury Road overbridge to support track realignment
  - use of the existing rail corridor between Bridge Road in the west and Park Avenue in the east to support the above work
- regrading of Alexandra Avenue between Hawkesbury Road and Hassall Street
- finishing work, testing and commissioning.

Sydney Metro is continuing to investigate options for the layout and use of Alexandra Avenue between Hawkesbury Road and Hassall Street, including the potential for this section of road to be narrowed and used for bus and emergency services only.

The indicative construction program for Westmead metro station is shown in Figure 3-8.

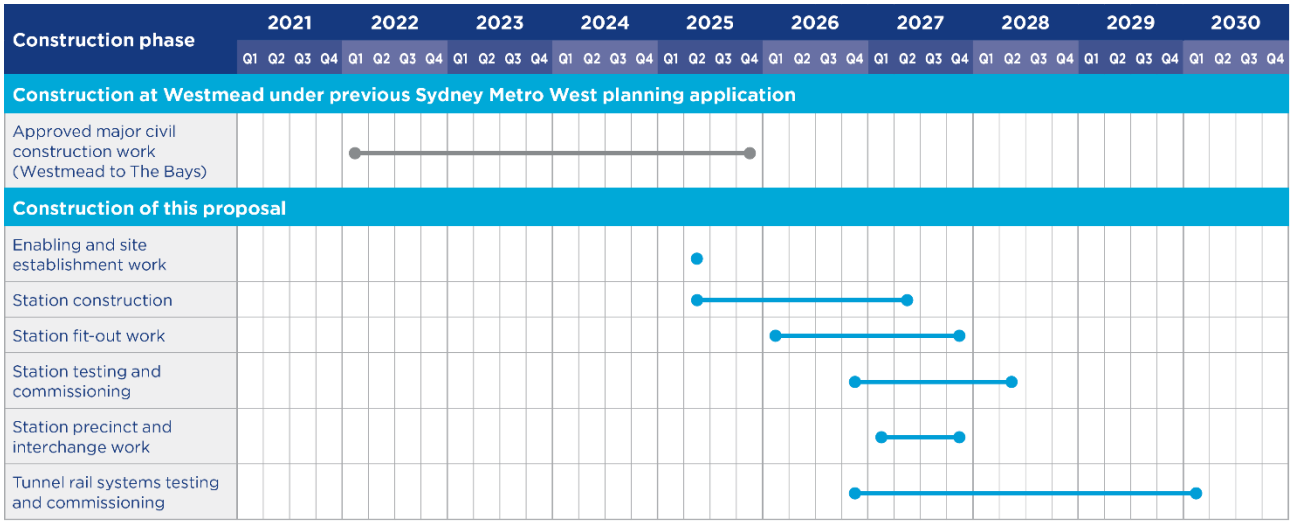


Figure 3-8 Indicative construction program – Westmead metro station

Other construction elements specific to Westmead metro station are shown in Table 3-3. Indicative construction hours, plant and equipment and workforce for Westmead metro station construction site are provided in Section 2.5(Other construction elements) of this Appendix. Key elements specific to Westmead metro station as described in the table below, are also depicted on Figure 3-7.

Table 3-3 Other construction elements – Westmead metro station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established by the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the construction site during out of hours work via left-in from Bailey Street, with traffic control measures implemented • departure from the construction site via left-out to Hawkesbury Road.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal to minimise heavy vehicle movement travelling through school zones include: • access to the construction site during daytime construction hours via right-in from Hassall Street • potential secondary access to the construction site via left-in from Hassall Street • access to the existing rail corridor via existing and new Sydney Trains access gates on Alexandra Avenue, Railway Parade and Bridge Road.
Peak daily traffic movements	• about 320 daily heavy vehicle movements • about 360 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Temporary transport network modifications that would be introduced as part of this proposal include: • temporary closure (around 12-18 months – length of closure subject to further design development) of Alexandra Avenue and temporary traffic detour via Hassall Street, Bailey Street / Priddle Street and Hawkesbury Road • during the temporary closure of Alexandra Avenue, modification of traffic signals at the Hawkesbury Road/Alexandra Avenue and Alexandra Avenue/Hassall Street intersections. This would involve: - signalisation of the Hawkesbury Road/Bailey Street intersection - removal of around four parking spaces at the Hawkesbury Road/Bailey Street intersection and about 10 parking spaces at the Hassall Street/Bailey Street intersection to accommodate signalisation - relocation of bus stops from Alexandra Avenue. The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about four spaces along Railway Parade to accommodate the new kiss and ride bays and point-to-point zones. In addition to the parking spaces that would be permanently removed, there would also be the following temporary on-street parking impacts during construction of this proposal: • removal of about 10 spaces along Hassall Street (continued impact from previous Sydney Metro West planning application) • removal of about 10 spaces along Bailey Street adjacent to the construction site (continued impact from previous Sydney Metro West planning application) • short-term closures of about 27 spaces on Railway Parade during rail possessions only • short-term closures of about 50 spaces on Alexandra Avenue (west of Hawkesbury Road) during railway possessions only • removal of about four spaces near the Hawkesbury Road / Bailey Street intersection (about four spaces) and about 10 spaces near the Hassall Street / Bailey Street intersection to allow for the detour during temporary closure of Alexandra Avenue • short-term closures (for around a few months) of some spaces on Railway Parade to create a new low speed zone.

4.0 Parramatta metro station

4.1 Station and precinct description

4.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement - Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with the City of Parramatta Council since exhibition of the previous Sydney Metro West planning application (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- inclusion of a western entry to Church Street to facilitate efficient station access to the western part of Parramatta CBD. The need for multiple station entries was identified in feedback from the City of Parramatta Council
- retaining and minimising potential impacts to heritage-listed Kia Ora, shop (and potential archaeological site) at 43-47 George Street and the Roxy Theatre, by, for example, locating station infrastructure to avoid and minimise direct visual impacts
- incorporation of the eastern entry to the Civic Link into a future mixed-use building, responding to feedback from the Design Advisory Panel
- provision of enhanced civic-scaled public domain in the centre of the Parramatta CBD (based on feedback from the Design Advisory Panel), which also opens up space around and views to the heritage-listed Kia Ora
- delivery of part of the Civic Link and safeguarding an east-west connection between Smith Street and Church Street (refer to Figure 4-1), consistent with the Draft Civic Link Precinct Development Control Plan and feedback from the City of Parramatta Council.

4.1.2 Station design

The indicative layout and key design elements of Parramatta metro station are shown in Figure 4-1, with a long-section and cross-section shown in Figure 4-2 and Figure 4-3, respectively. The design of the metro station is subject to further detailed design development.

The key features of Parramatta metro station are provided in Table 4-1.

Table 4-1 Key features – Parramatta metro station

Key features	Description
Proposed station entry	• entry on the future Civic Link • entry on Church Street.
Customers	• residents within walking and cycling distance • employees travelling to and from work in the Parramatta CBD • visitors travelling to and from nearby education, retail, residential • areas and recreational activities • customers transferring to and from other transport modes.
Primary station function	Origin, destination and interchange.
Catchment	Employment, residential, education, recreation and entertainment.
Transport interchange	• walk • cycle • suburban and intercity rail (indirect connection via the Civic Link) • bus • light rail (future) • point-to-point transport • kiss and ride.

Parramatta metro station would consist of an underground station with an island platform in an east-west orientation.

The primary eastern station entry is proposed adjacent to the eastern side of the Civic Link, which is a pedestrianised link planned by the City of Parramatta Council that would provide a connection from Parramatta Square to River Square. This proposal would involve delivery of the section of the Civic Link located within the station precinct footprint (between Macquarie and George Streets), as shown in Figure 4-1. A second station entry is proposed to the west on Church Street.

Areas for station services and utilities would be provided underground and within consolidated services buildings, including a station services building to the west of Horwood Place.

The aboveground station buildings facing Church Street, Macquarie Street and Horwood Place would each be, subject to design development, indicatively around 21 metres above street level.

Parramatta metro station is being safeguarded for future connections to other rail lines as per *Future Transport 2056* (Transport for NSW, 2020a).

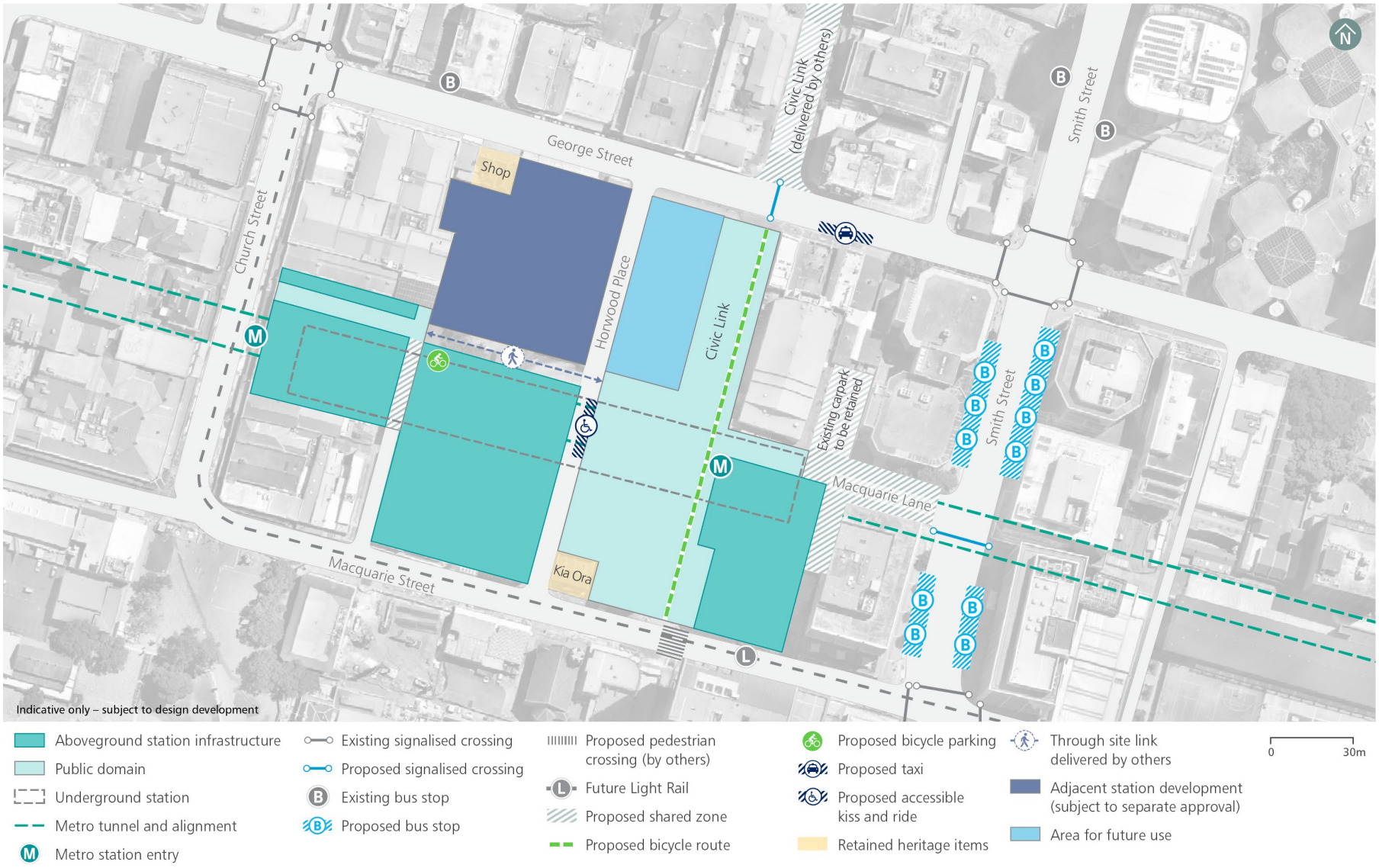


Figure 4-1 Indicative layout and key design elements – Parramatta metro station

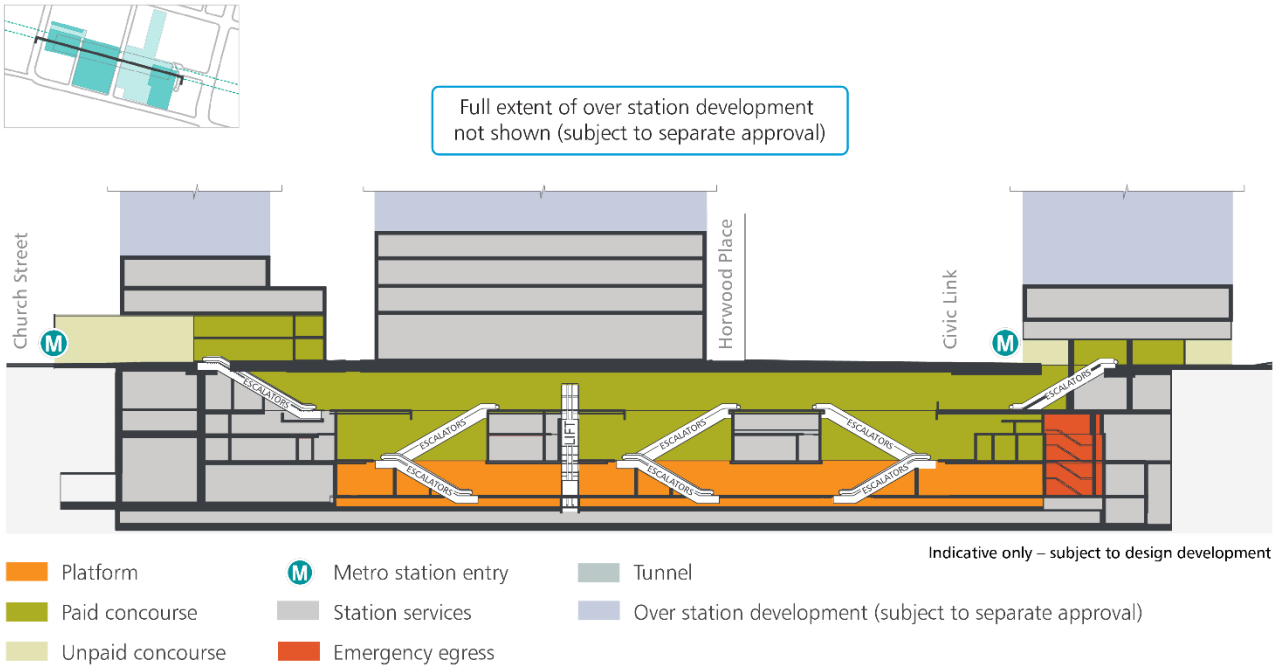


Figure 4-2 Indicative long-section – Parramatta metro station

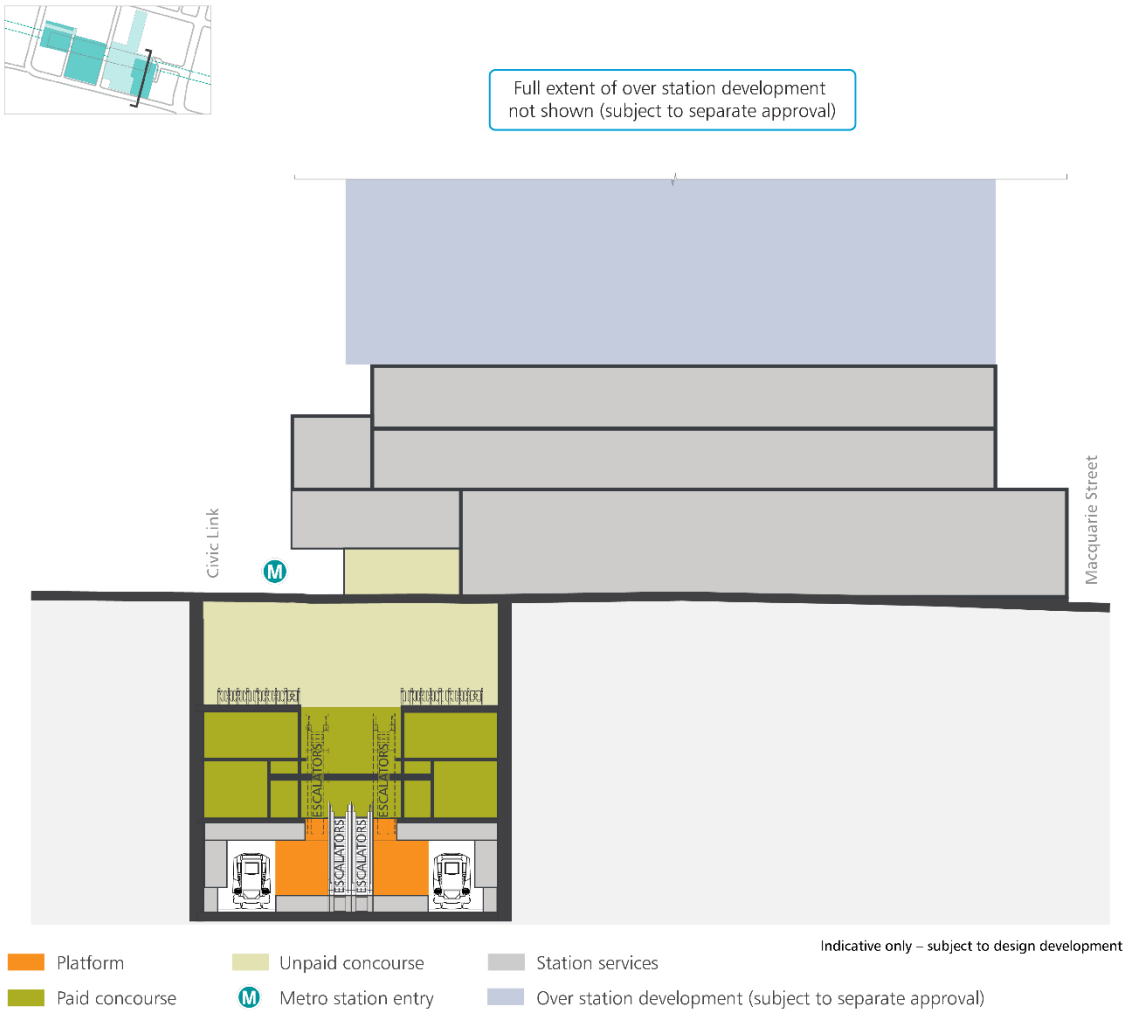


Figure 4-3 Indicative cross-section – Parramatta metro station

4.1.3 Station precinct and interchange facilities

Parramatta metro station would include a series of precinct and interchange elements such as:

- bicycle parking
- delivery of the section of the Civic Link between Macquarie and George Streets
- bus interchange located on Smith Street
- provision of direct interchange with Parramatta Square Light Rail stop (via the Civic Link)
- accessible kiss and ride and point-to-point vehicle facilities
- reconfigured on-street parking
- a new signalised pedestrian crossing of George Street at the Civic Link
- a new mid-block crossing of Smith Street north of Macquarie Lane
- realignment of Horwood Place between Macquarie and George Streets
- creation of new public domain areas
- an area for future use to the west of the Civic Link, which may be temporarily fenced with appropriate hoarding
- the structural elements for the space for non-station uses within the aboveground station infrastructure (e.g. retail, commercial and/or community facilities). Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

Parramatta metro station would also include provision for potential additional underground connections to future train/metro services (as per *Future Transport 2056* (Transport for NSW, 2020a)) or adjacent developments.

4.1.4 Provisioning for over station and adjacent station development

As shown in Figure 4-1, Figure 4-2 and Figure 4-3, over station developments are proposed above the station. Adjacent station development is also proposed on the residual land required for construction, to the north of the metro station. The over station and adjacent station development proposed at Parramatta would be subject to separate assessment and approval.

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

- structural elements up to a podium level to enable the construction of future over station development
- space for future lobbies, lift cores, access, parking, loading docks, and building services for future over station development
- utility connections to support future developments, where required
- subdivision.

As part of this proposal, basement structures would be provided to support the future over and adjacent station developments, including provision of space for future car parking. The construction of the basement structures is included as part of this proposal as this work could not be readily undertaken following the construction of the station and provision of the aboveground station infrastructure (including the services building). The fit-out and use of the basements would form part of the separate assessment and approval required for the future over and adjacent station developments. The extent of the basement structures is provided on

Figure 4-4.

The potential extent of the proposed over station development subject to separate assessment and approval is provided on Figure 4-5 and discussed further in Section 1.4.5 (Related development) of this Appendix.

Delivery of the over station and adjacent station development does not form part of this proposal and would be subject to separate assessment and approval (with the exception of the provisioning elements listed above). Access to the metro station would be maintained through these spaces and may be temporarily activated to provide public spaces and local community facilities.

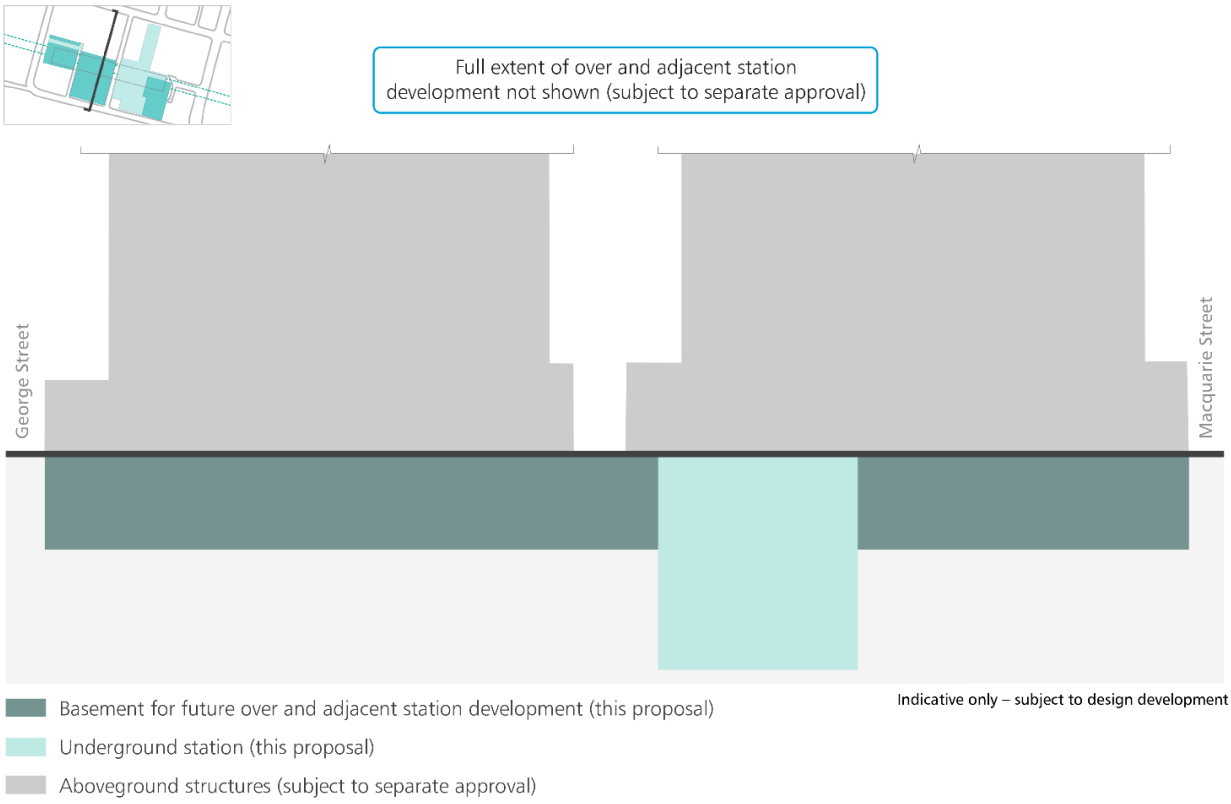


Figure 4-4 Indicative basement extent – Parramatta metro station

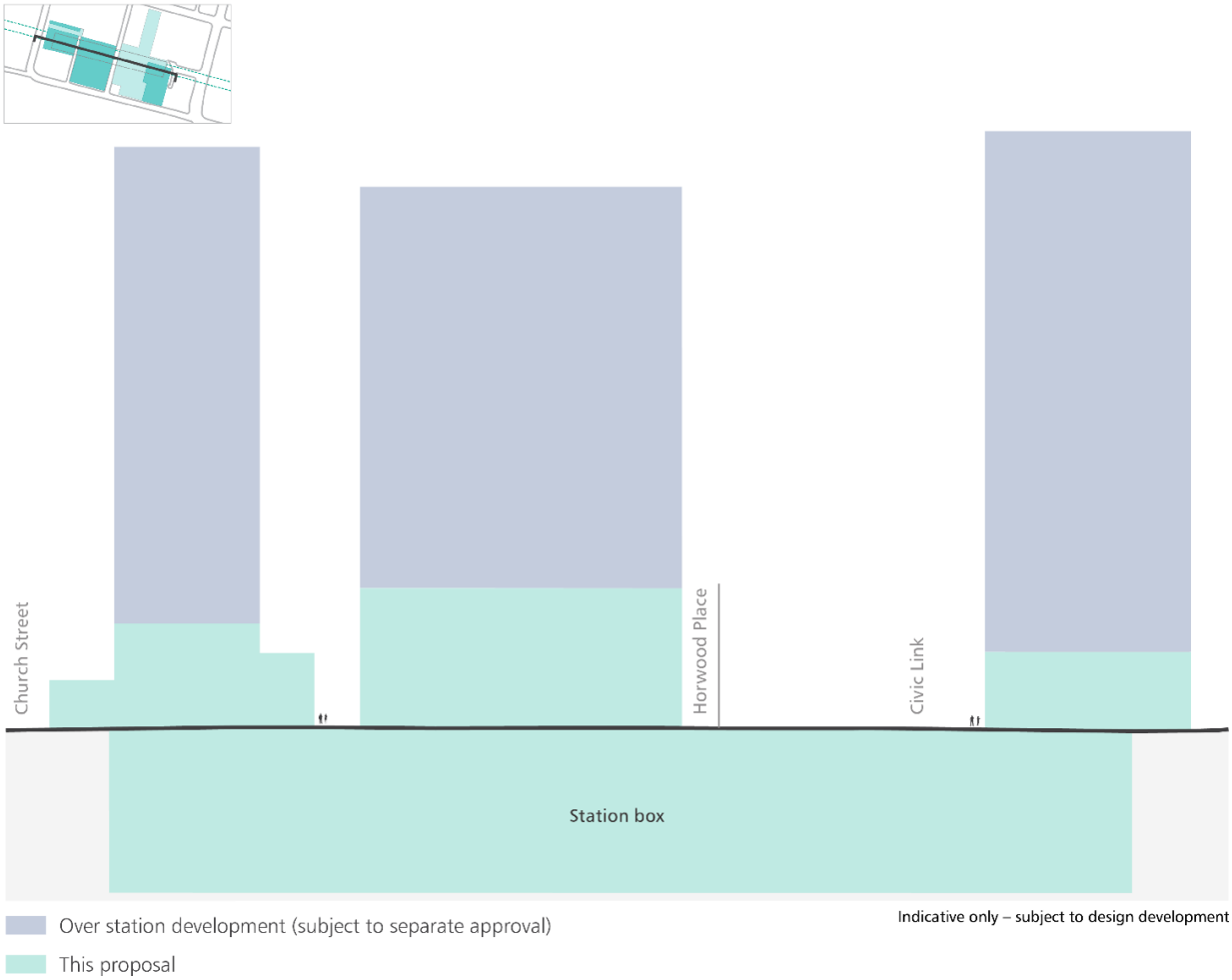


Figure 4-5 Potential over station development extent – Parramatta metro station

4.2 Placemaking

The vision for Parramatta metro station and its surrounds is for:

Sydney's Central River City – a high amenity and connected employment, living and cultural centre in the heart of Sydney.

4.2.1 Integration with strategic planning

As a priority in the *Central City District Plan* (Greater Sydney Commission, 2018c), Parramatta CBD has the potential to be transformed into one of Australia's most important business hubs. To capitalise on this plan, a number of plans and strategies have been developed that have informed the development of Parramatta metro station and would guide future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the *Healthy Built Environment Checklist* (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City of Parramatta Local Strategic Planning Statement: City Plan 2036

The relationship of the Concept to the *City of Parramatta Local Strategic Planning Statement City Plan 2036* (City of Parramatta, 2036) is discussed in Section 7.10.2 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Local Strategic Planning Statement vision is "for Parramatta to transition in the next 20 years to a bustling, cosmopolitan and vibrant metropolis, the Central City for Greater Sydney". Several of Council's planning priorities are enhanced by a metro station as a city-shaping influence on the Parramatta CBD. Priorities include:

- building the access capacity of the CBD, recognising the constraints of the existing T1 Western Line
- improving the integrated transport network to enable and expand Parramatta's economic role as the Central City of Greater Parramatta, maximising connectivity and choice for customers
- improving the amenity, walking and cycling infrastructure of the CBD and enhancing Parramatta's heritage and cultural assets
- supporting the growth of Parramatta's night-time economy.

The proposed Sydney Metro West station in Parramatta would provide a second mass transit hub relieving the T1 Western Line, greatly enhancing access, connectivity into and out of the CBD, and deliver amenity enhancements with extensive new public domain focused on the Civic Link.

Civic Link Framework Plan

The *Civic Link Framework Plan* (City of Parramatta Council, 2017) establishes an aspiration for a new Civic Link to support the liveability, sustainability and productivity of the Parramatta CBD. The Civic Link would connect Parramatta Square to the Parramatta River at River Square via a green, pedestrianised public space and 'cultural spine'. Parramatta metro station would provide an entry directly to the Civic Link and would deliver the section of the link between George Street and Macquarie Street.

Sydney Green Grid

The Parramatta River foreshore has been identified as a Green Grid priority project, which aims to create and connect a network of open spaces on both sides of the river. Sydney Metro West would improve connectivity to the foreshore via the future Civic Link at Parramatta, supporting its activation.

4.2.2 Place and design principles

Place and design principles for Parramatta metro station were identified in Section 7.10.2 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 4-2 outlines how these principles have been achieved in the Parramatta metro station design.

Table 4-2 Design responses to Parramatta metro station place and design principles

Place and design principle	Design response
Support the transformation, expansion and economic growth of the Parramatta CBD by facilitating a well-designed high-quality station, public domain and development	• centrally focused in the Parramatta CBD, the station would connect to the new Civic Link, Parramatta Square and Church Street, serving the planned expansion of the commercial core and greatly increasing pedestrian permeability and public domain amenity around the station entrances • the station would provide an extensive expansion of the public domain network within the Parramatta CBD, greatly increasing pedestrian permeability and access • the station presents great opportunities for high-quality over and adjacent station development to activate the CBD public domain.
Strengthen the connectivity of the city centre between Parramatta Square and the Parramatta River by supporting realisation of the Civic Link	• the metro station would deliver the section of the proposed Civic Link between Macquarie Street and George Street, satisfying Concept condition of approval C-B3 • the main station entry directly faces the Civic Link, connecting directly with Parramatta Square and safeguarding for the further expansion of the Civic Link north to the Parramatta River.
Facilitate activation of the ground plane at the station and its surrounds, encouraging pedestrian movement in the area	• centrally located in the Civic Link, the main station entry would draw people through the block, complemented by a future east-west link. This fine-grain pedestrian network would support new and diverse ground floor activation.
Enhance permeability by introducing fine-grain pedestrian links between the station and surrounding streets, breaking down the large city block	• delivery of the proposed Civic Link between Macquarie and George Street would enhance pedestrian permeability between Macquarie Street and George Street • modification and realignment of Horwood Lane would provide local traffic between Macquarie Street and George Street separated from the main pedestrian activity area along the Civic Link • a future east-west pedestrian connection would be safeguarded to enable connection from Church Street through to the Civic Link and onto Smith Street.
Facilitate intuitive interchange with pedestrian and cycle transport, the future Parramatta Light Rail Stage 1, and bus services with legible, safe and direct connections from the station entry	• the station entry is located to provide for direct and easy interchange with light rail on Macquarie Street (via the Civic Link) and buses on Smith Street • the pedestrianised and cycle-friendly Civic Link would provide a safe and high amenity space and connect with the future CBD cycle connections on George Street (planned by City of Parramatta Council).

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 4-6, Figure 4-7 and Figure 4-8.

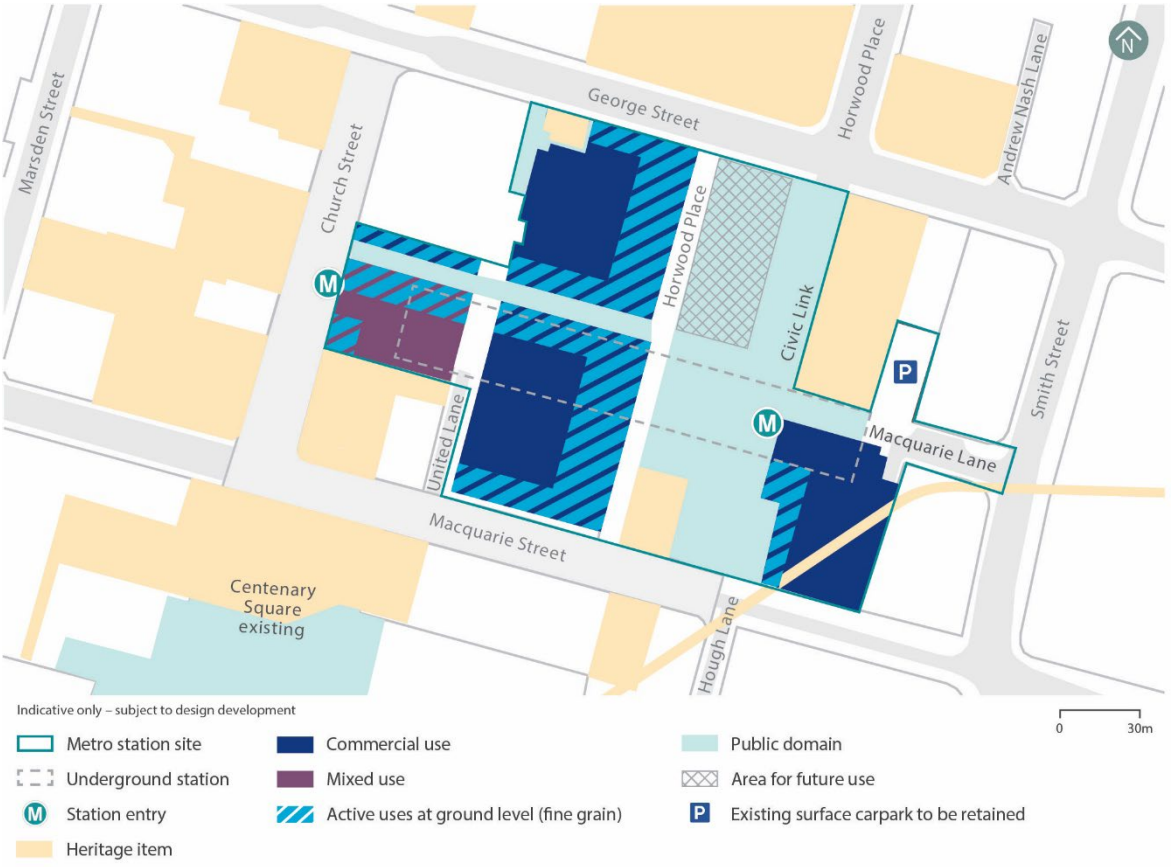


Figure 4-6 Land use and function urban design strategies – Parramatta metro station

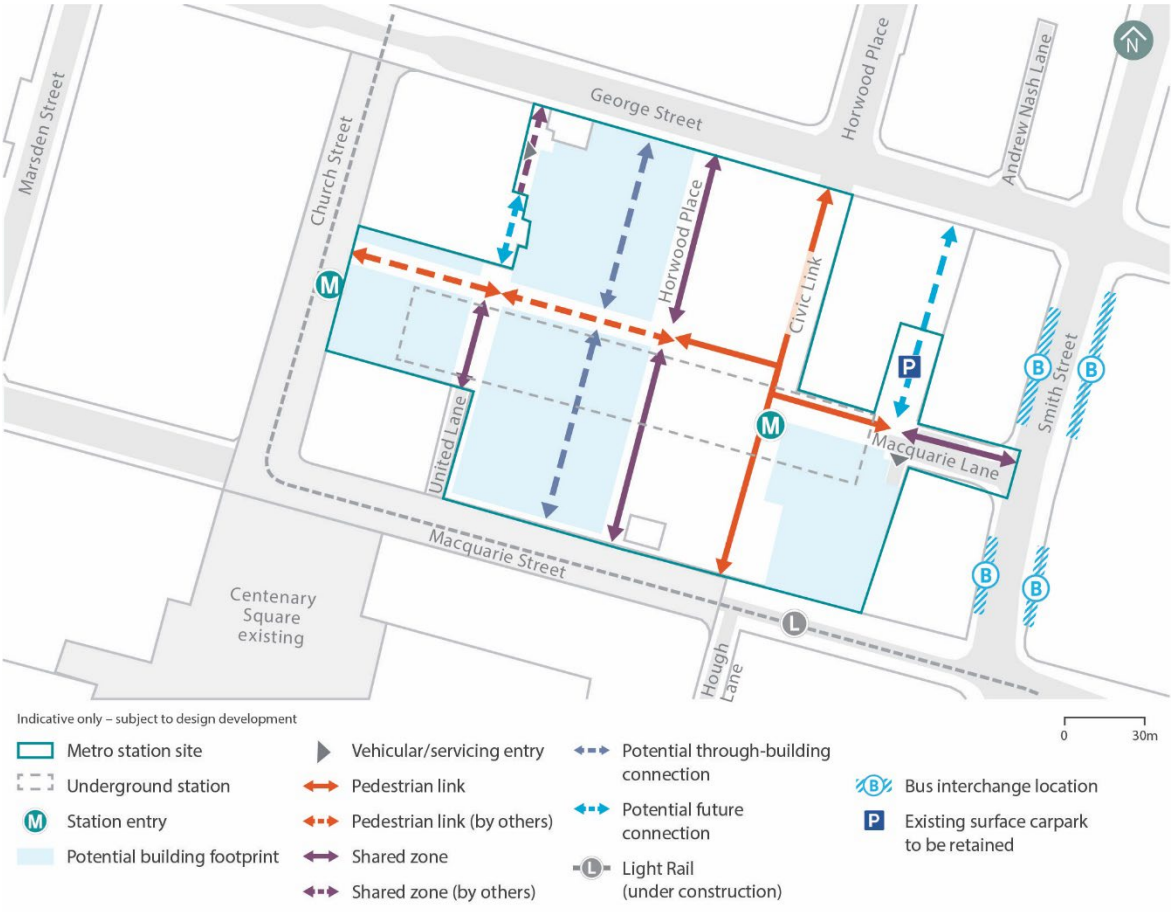


Figure 4-7 Access and connectivity urban design strategies – Parramatta metro station

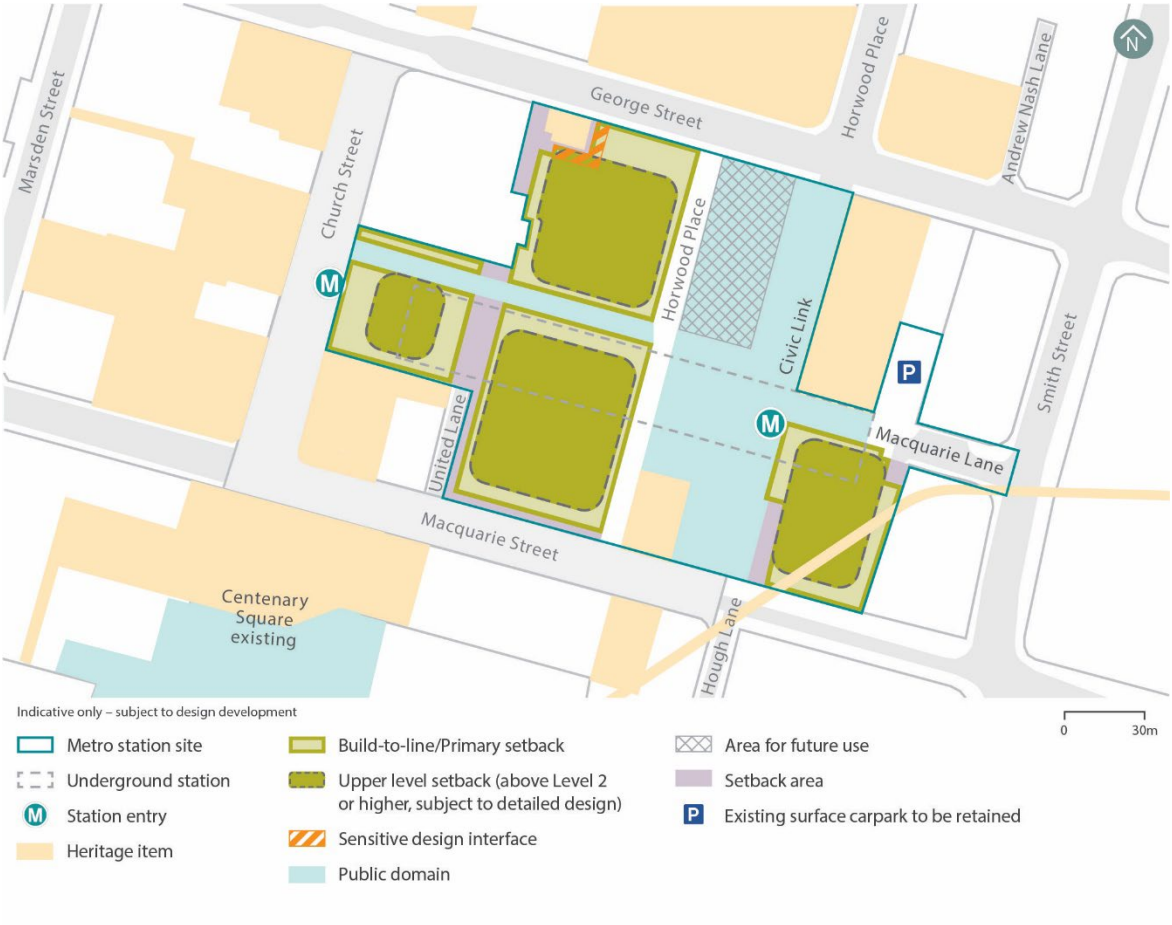


Figure 4-8 Built form urban design strategies – Parramatta metro station

The Parramatta metro station design includes the following key movement and place features:

- providing station entries focused on the pedestrianised Civic Link and Church Street, and away from the key vehicle movement corridors along George Street and Smith Street
- extensive new public domain space, including the north-south pedestrian-focused Civic Link between Macquarie Street and George Street satisfying Concept condition of approval C-B3
- safeguarding for a future east-west connection through to Church Street to increase permeability and activation
- an upgraded and modified alignment for Horwood Place, providing local vehicular access between Macquarie Street and George Street
- an enhanced setting for the integration of heritage assets including Kia Ora and the adjacent Roxy Theatre
- recognising the key vehicle movement corridor along George Street while providing a safe pedestrian crossing at the end of the Civic Link.

4.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the Parramatta metro station design. The delivery of a metro station at Parramatta provides a second mass transit hub right in the heart of the Parramatta CBD. Parramatta metro station would deliver extensive new public domain, including the Civic Link and new street between George Street and Macquarie Street. East-west connections would be enhanced to Smith Street and safeguarded for a future connection through to Church Street. These initiatives would greatly enhance the connectivity and access to the large city block bounded by George Street, Church Street, Macquarie Street and Smith Street.

Examples of how the Parramatta metro station design would integrate with other transport modes and improve access for customers and the community include:

- creation of a high amenity, pedestrian dominated environment on the Civic Link that provides activation and access for the community
- direct access to the Parramatta Light Rail stop on Macquarie Street, via the Civic Link
- provision of, and direct access to, new bus stops and services on Smith Street through an east-west connection from the Civic Link
- easy connection through to the existing Parramatta station and additional bus services (on Argyle Street) via a short walk along the Civic Link and through Parramatta Square
- active transport connections via the Civic Link (which would ultimately connect to Parramatta River cycleway) and the Parramatta CBD on-street cycle network
- opportunity for connections to Parramatta River and the ferry terminal (via the future Civic Link).

4.3 Construction description

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

Major civil construction including station excavation and tunnelling work at Parramatta was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

4.3.1 Overview

Construction of Parramatta metro station would require the continued use of a construction site established under the previous Sydney Metro West planning application. The land for this construction site will be consistent with the site described in the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Parramatta metro station construction site will be located between George Street to the north, Smith Street to the east, Macquarie Street to the south and Church Street to the west.

The Parramatta metro station construction site will be demolished and excavated as a result of the work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal. This excludes the heritage buildings within the Parramatta metro station construction site that would be retained, which would also be retained for the construction of this proposal. The realignment of Macquarie Lane would be delivered as part of the work carried out under the previous Sydney Metro West planning application.

The location and indicative layout of the Parramatta metro station construction site are shown in Figure 4-9. Some activities would occur outside this construction site, such as delivery of construction equipment, and station precinct and interchange work.

This proposal would include additional excavation for the construction of basement structures for future over station and adjacent station development that would require the removal of about 145,000 cubic metres of spoil (refer to Figure 4-10). Construction of the basement structures as part of this proposal is required to facilitate construction of the aboveground station infrastructure, Civic Link, and public domain, which are required to be delivered prior to operation of this proposal. Fit-out and use of the basement structures would be subject to separate approval.

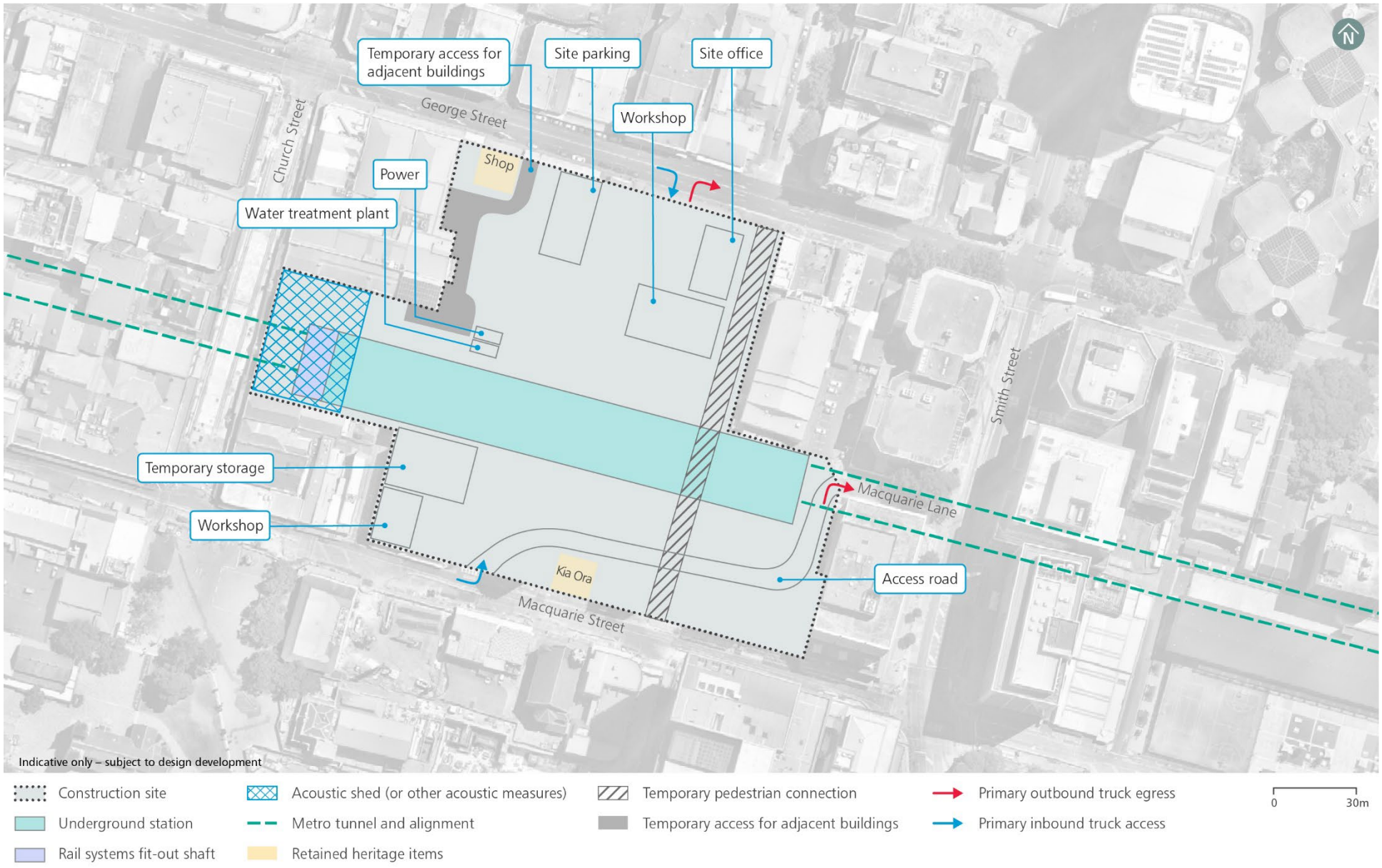


Figure 4-9 Indicative construction site layout – Parramatta metro station

Figure 4-10 Indicative basement extent – Parramatta metro station

4.3.2 Construction work

Key construction work at the Parramatta metro station construction site would include:

- enabling and site establishment work, including:
  - installation of an acoustic shed (or other acoustic measures) over the rail systems fit-out shaft at the western end of the station box (refer to Figure 4-9)
  - installation or retention of protection around heritage structures including Kia Ora, Roxy Theatre and heritage-listed shop at 45 George Street
- construction of the station and structures for non-station use
- station fit-out
- excavation for basement structures for over station and adjacent station development (refer to Figure 4-10)
- construction of station precinct and interchange facilities, including:
  - public domain works including the for the Civic Link within the footprint of the construction site
  - provisioning for adjacent and over station development
- access for tunnel fit-out and rail systems work
- finishing work, testing and commissioning.

The indicative construction program for Parramatta metro station is shown in Figure 4-11.

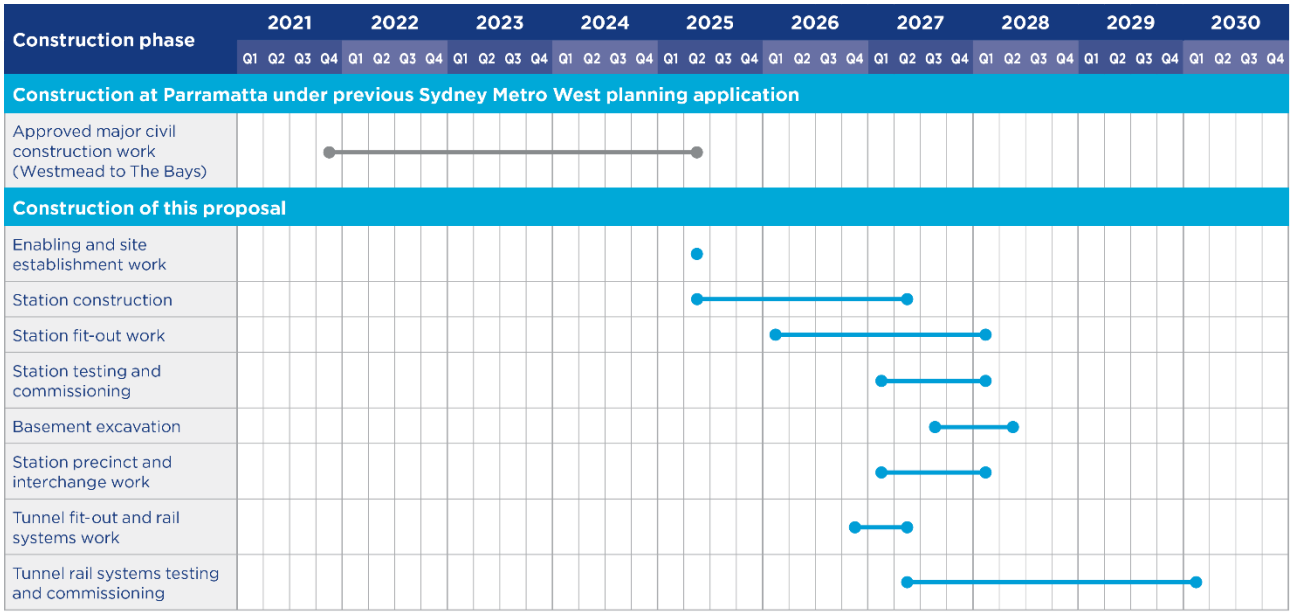


Figure 4-11 Indicative construction program – Parramatta metro station

Other construction elements specific to Parramatta metro station are shown in Table 4-3. Indicative construction hours, plant and equipment and workforce for Parramatta metro station construction site are provided in Section 2.5 (Other construction elements) of this Appendix.

Key elements specific to Parramatta metro station as described in the table below, are also depicted on Figure 4-9.

Table 4-3 Other construction elements – Parramatta metro station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the north of the construction site via right-in from George Street at a temporary signalised intersection.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • egress from the north of the construction site via right-out onto George Street at the temporary signalised intersection • access to the south of the construction site via left-in from Macquarie Street and the realigned Macquarie Lane • egress from the south of the construction site via left-out onto the realigned Macquarie Lane then left-out onto Smith Street.
Peak daily traffic movements	• about 292 daily heavy vehicle movements • about 300 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Transport network modifications during construction of this proposal would include: • permanent closure of Horwood Place to allow construction of the new Civic Link • realignment of Macquarie Lane (and kept open to public) between Macquarie Street and Smith Street (continued from previous Sydney Metro West planning application) • temporary construction phase signals at George Street for site access/egress (although these would become permanent for pedestrian crossing of George Street at the Civic Link) (continued from previous Sydney Metro West planning application) • temporary access arrangements to adjacent properties (continued from previous Sydney Metro West planning application). The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about seven spaces on George Street. No additional temporary on-street parking impacts are anticipated during construction at Parramatta metro station beyond those that would be permanently removed.
	As part of this proposal, provision would be made for ongoing pedestrian access between George Street and Macquarie Street through the construction site.

5.0 Sydney Olympic Park metro station

5.1 Station and precinct description

5.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement –Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with Sydney Olympic Park Authority and NSW Department of Planning and Environment since exhibition of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- provision of two side platforms (in addition to an island platform) – to provide increased capacity for additional customers during major events (event mode operations)
- provision of two dedicated event mode entries – to provide increased capacity and separate customer flows during events
- a plaza – to control event mode crowds from the west of the station while also providing a fine-grained pedestrian network to the new town centre to the east. This responds to feedback from the Design Advisory Panel and Sydney Olympic Park Authority
- removal of the northern entry on Dawn Fraser Avenue with a preference for customers to make this connection aboveground on the street network. This also avoids potential impacts to the heritage listed Abattoir.

5.1.2 Station design

The indicative layout and key design elements of Sydney Olympic Park metro station are shown in Figure 5-1, with a long-section and cross-section shown in Figure 5-2 and Figure 5-3 respectively. The design of the metro station is subject to further detailed design development.

The key features of Sydney Olympic Park metro station are provided in Table 5-1.

Table 5-1 Key features – Sydney Olympic Park metro station

Key features	Description
Proposed station entry	• main station entries between Herb Elliott Avenue and Figtree Drive • event mode entries from public space to the west of the metro station (connected to Olympic Boulevard). Sydney Metro is reviewing the station entries in consultation with Sydney Olympic Park Authority with the intent of all entries being available for day-to-day operations.
Customers	• residents within walking and cycling distance • employees or visitors travelling to and from nearby residential and employment areas • visitors to events, venues, recreational facilities and parklands • customers transferring to and from other transport modes.
Primary station function	Origin, destination and interchange.
Catchment	Residential, employment, events and recreation.

Key features	Description
Transport interchange	• walk • cycle • suburban rail (indirect connection) • bus • light rail (planned) • point-to-point transport • kiss and ride.

Sydney Olympic Park metro station would consist of an underground station with an island platform in a north-south orientation for day-to-day mode, and two additional side platforms that would provide increased capacity in event mode.

Customers would access the station from the main proposed public space running north-south between Herb Elliott Avenue and Figtree Drive. In event mode, the station would also be accessed from the proposed public space to the west that would be connected to Olympic Boulevard.

The public space running north-south between Herb Elliott Avenue and Figtree Drive would also be the main aboveground pedestrian connection to the kiss and ride area on Herb Elliott Avenue, and to the bus interchange located along Figtree Drive to the south.

Escalators and/or stairs and lifts would provide access to the Sydney Metro platforms.

Areas for station services and utilities would be provided within consolidated services buildings.

The aboveground station infrastructure (including concourse, station services and space for non-station use) would be, subject to design development, indicatively around 18 metres above Herb Elliott Avenue (for the northern station entry building), and around 31 metres above Figtree Drive (for the southern station entry building).

The site to the east of Precinct Street A would be developed in future (subject to separate approval) and planned in accordance with the development of the Master Plan 2050 for the broader precinct.

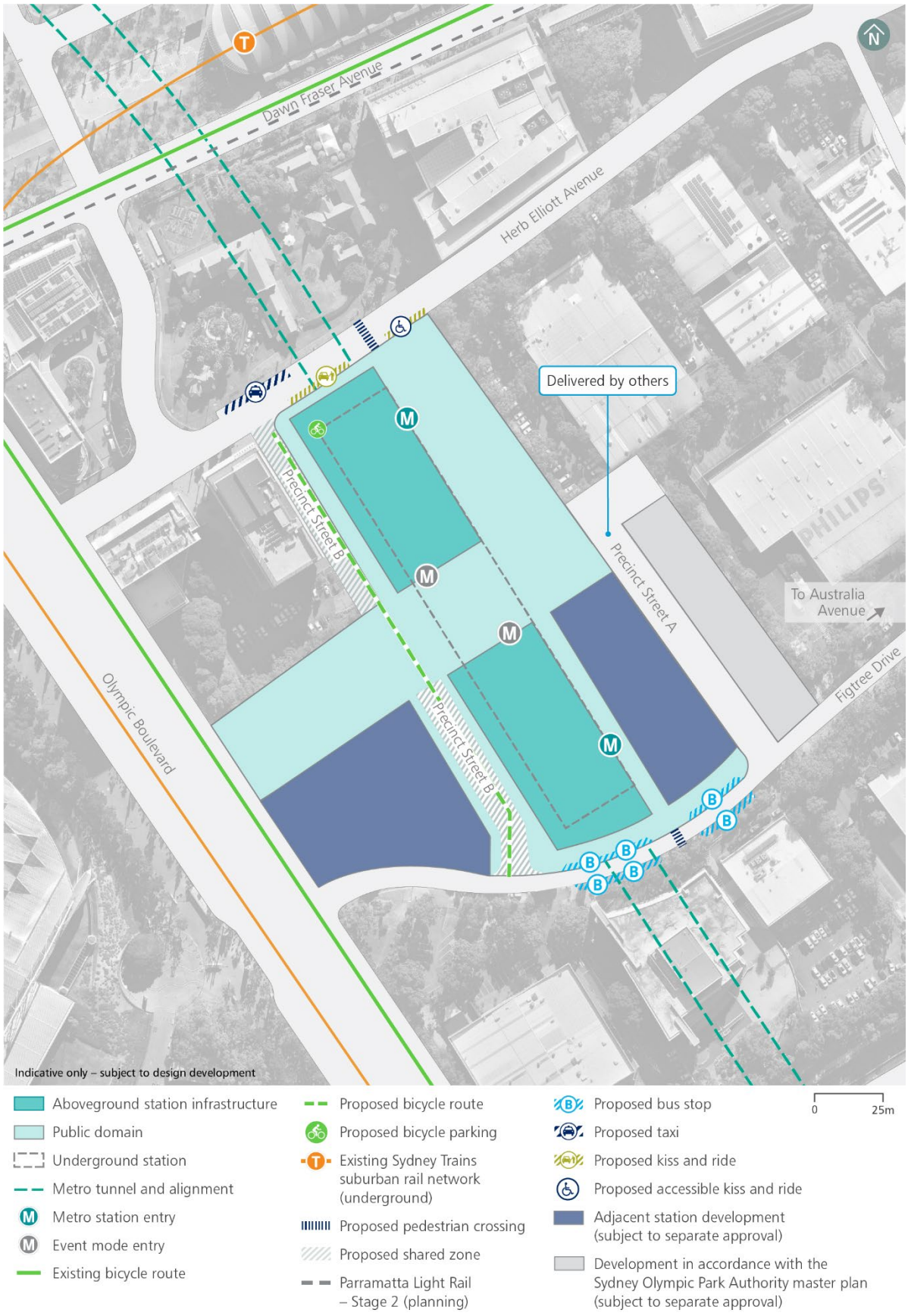


Figure 5-1 Indicative layout and key design elements – Sydney Olympic Park metro station

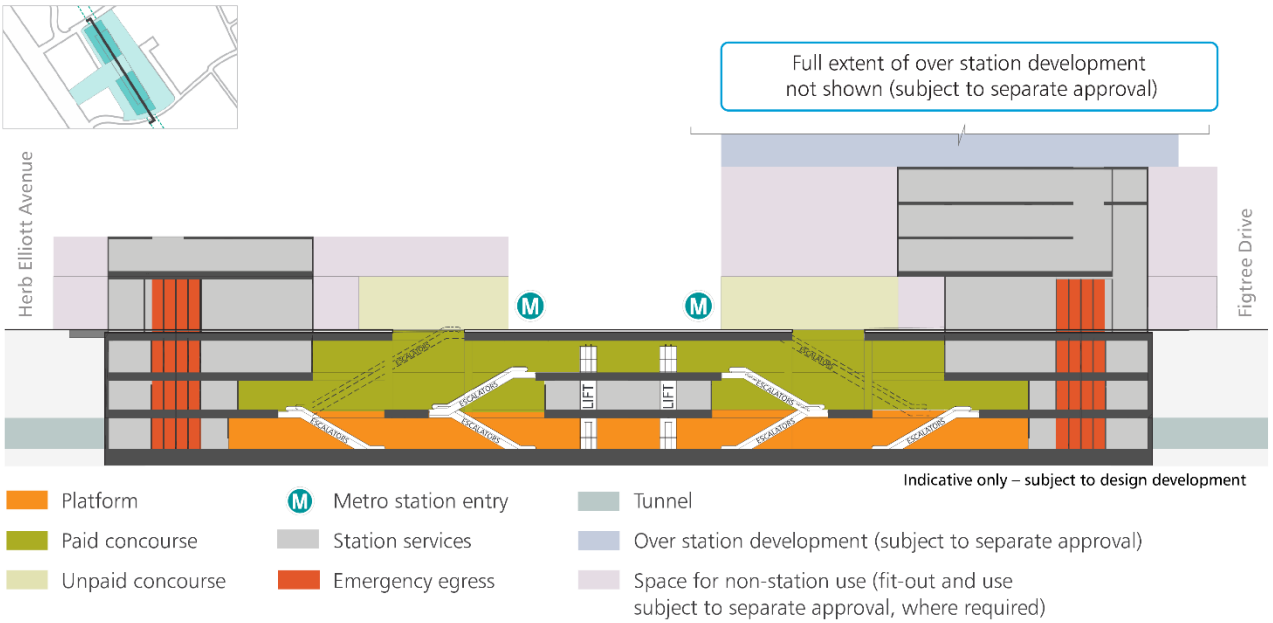


Figure 5-2 Indicative long-section – Sydney Olympic Park metro station

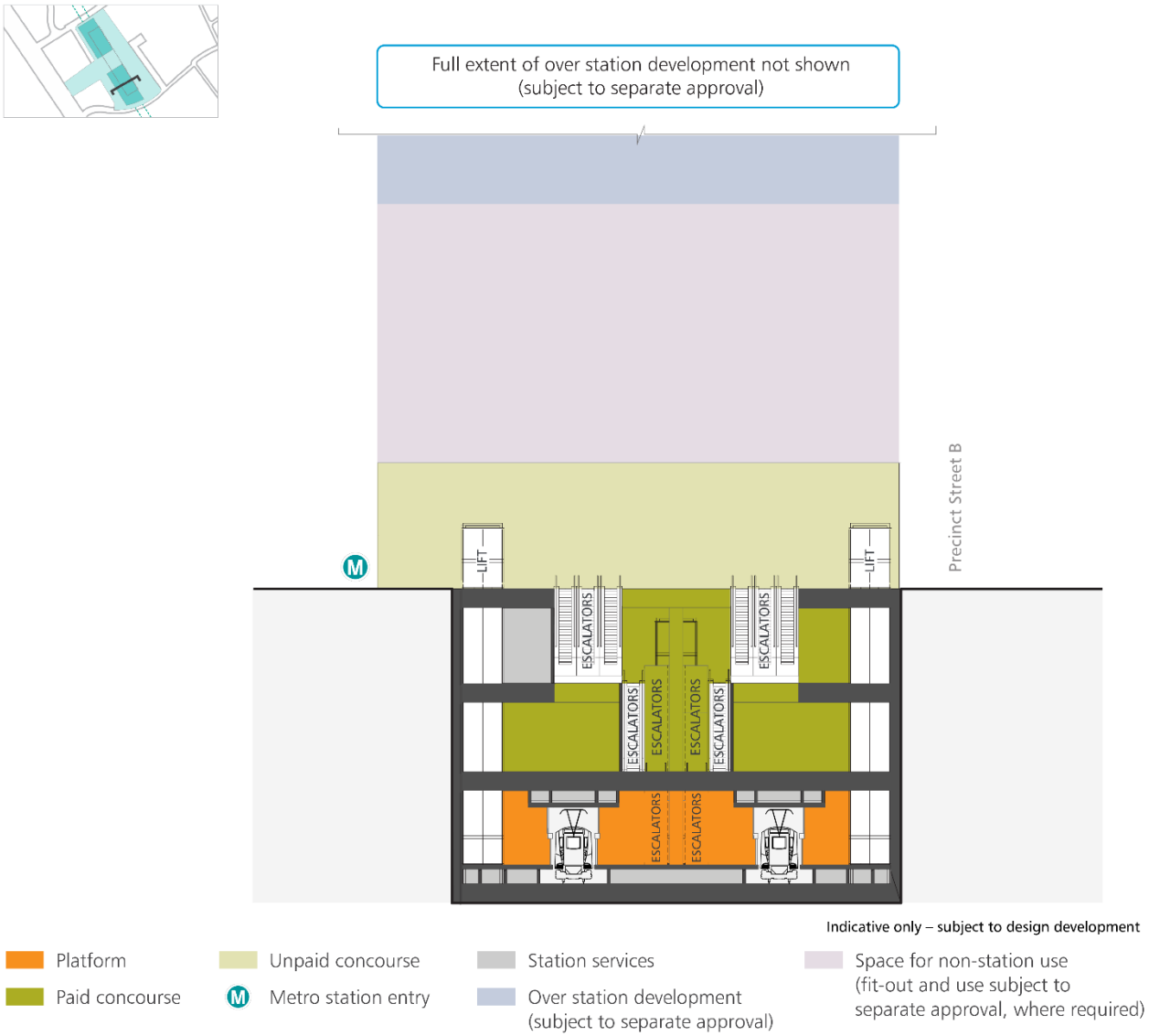


Figure 5-3 Indicative cross-section – Sydney Olympic Park metro station

5.1.3 Station precinct and interchange facilities

Sydney Olympic Park metro station would include a series of precinct and interchange elements such as:

- bicycle parking
- bus interchange and shelters located on Figtree Drive
- kiss and ride and point-to-point vehicle facilities on Herb Elliott Avenue
- provision of a new street within the vicinity of the proposed station
- two new pedestrian crossings on Herb Elliott Avenue and Figtree Drive, and creation of new public spaces adjacent to the proposed station entrances
- public domain area connecting Olympic Boulevard, Herb Elliott Avenue and Figtree Drive to the metro station, to allow for marshalling and crowd management during major events (refer to Figure 5-1 for indicative extent)
- the structural elements and provision for utilities and services for non-station uses (e.g. retail, commercial and/or community facilities), including structures:
  - connected to the northern station services building to about the same height as the station services building
  - connected to the southern station services building to about the same height as the station services building
  - fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

5.1.4 Provisioning for over station and adjacent station development

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

- structural elements to enable the construction of future over station development, up to a podium level that future development would be constructed above
- space for future lobbies, lift cores, access, parking, loading docks and building services for future over station development
- road intersection upgrades at the intersection of Australia Avenue and Figtree Drive, and the intersection of Olympic Boulevard and Figtree Drive, to support access to both the metro station and future adjacent development
- utility connections to support future developments, where required
- subdivision.

As shown in Figure 5-1, adjacent station development is proposed on the residual land required for construction, to the east of the metro station (on the western side of Precinct Street A), and to the west of the metro station (at the corner of Olympic Boulevard and Figtree Drive).

Access to the metro station would be maintained around these spaces and may be temporarily activated to provide public spaces and local community facilities.

Over station development is proposed on the southern end of the metro station. The potential extent of the over station development is provided on Figure 5-4 and is discussed further in Section 1.4.5 (Related development) of this Appendix.

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

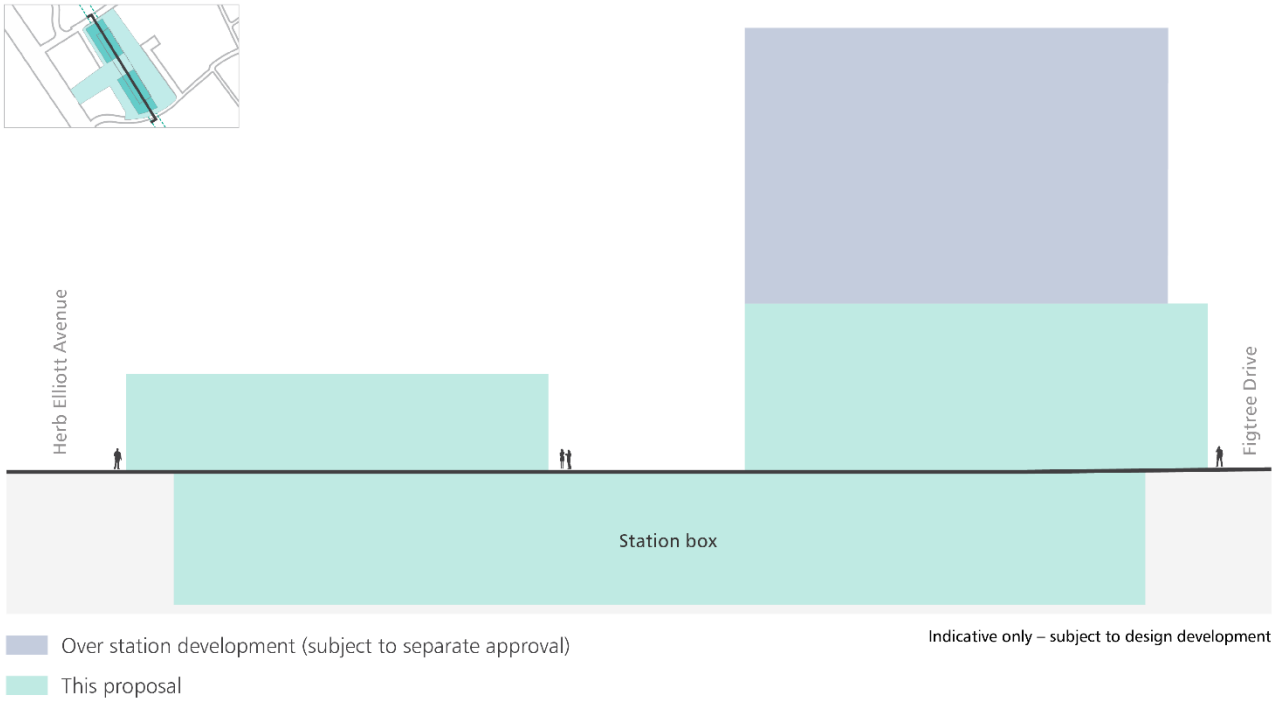


Figure 5-4 Potential over station development extent – Sydney Olympic Park metro station

5.2 Placemaking

The vision for Sydney Olympic Park metro station and its surrounds is for:

A thriving urban centre with a vibrant mix of homes and jobs and a premier destination for cultural, entertainment, recreation and sporting events.

5.2.1 Integration with strategic planning

As identified in the Central City District Plan (Greater Sydney Commission, 2018c), Sydney Olympic Park provides world-class sporting and event venues and residential, commercial and recreational activities. Since the release of the Central City District Plan, further plans and strategies have been developed that have informed the development of Sydney Olympic Park metro station and would guide future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City of Parramatta Local Strategic Planning Statement City Plan 2036

The relationship of Sydney Metro West to the City of Parramatta Local Strategic Planning Statement City Plan 2036 (City of Parramatta, 2020) is discussed in Section 7.10.3 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Local Strategic Planning Statement highlights Sydney Olympic Park's role as a lifestyle precinct that will continue to offer a mix of living, recreation and entertainment options. The planning statement includes aspirations to grow the strategic centre to have a role in the Greater Parramatta and the Olympic Peninsula economic corridor between Westmead and Sydney Olympic Park. It also supports the vision for 30-minute door-to-door access to employment in the Parramatta CBD, Westmead and Sydney Olympic Park. Strategically, connectivity to the Sydney CBD is greatly enhanced by Sydney Metro West substantially improving access for people across Sydney to Sydney Olympic Park.

Sydney Olympic Park metro station would provide a direct and fast connection into the Parramatta CBD and Westmead and support the planned increases in residents and employment opportunities in the area. It would also support the precinct's continued role in sports and entertainment, serving the stadia and sports precinct and the Royal Agricultural Society Grounds. Wider benefits can be achieved with integrated transport connections into the Carter Street, Newington and Wentworth Point residential precincts, as outlined in the planning statement.

Sydney Olympic Park Master Plan 2030

The *Sydney Olympic Park Master Plan 2030* (Sydney Olympic Park Authority, 2018) guides the long-term development of the precinct. As a strategic centre, the Plan outlines a strong growth in both employment and residential opportunities supported by a wide mix of land uses. At Sydney Olympic Park this growth is largely focused on the Central Precinct (within which the metro station would be located). Successful realisation of these aspirations would be catalysed by Sydney Metro West and its integration with the broader transport network, supported by and set within a new high-amenity precinct that supports active travel and walkability.

Sydney Olympic Park Authority is pursuing an amendment to the *Sydney Olympic Park Master Plan 2030* to accommodate the Sydney Olympic Park metro station as part of the *Draft Sydney Olympic Park Master Plan 2030 (Interim Metro Review)* (Sydney Olympic Park Authority, 2021). The Interim Metro Review outlines a proposed structure plan for the Central Precinct which includes Sydney Olympic Park metro station. Sydney Metro has been consulting with Sydney Olympic Park Authority and would continue this consultation during finalisation of the *Draft Sydney Olympic Park Master Plan 2030 (Interim Metro Review)*.

The *Sydney Olympic Park Master Plan 2030 (Interim Metro Review)* was finalised in June 2022, following the exhibition of the Environmental Impact Statement for this proposal.

5.2.2 Place and design principles

Place and design principles for Sydney Olympic Park metro station were identified in Section 7.10.3 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 5-2 outlines how these principles have been achieved in the Sydney Olympic Park metro station design.

Table 5-2 Design responses to Sydney Olympic Park metro station place and design principles

Place and design principle	Design response
Support the creation of a new town centre and reinforce Sydney Olympic Park as a premier destination for major events in line with the principles outlined in the *Sydney Olympic Park Master Plan 2030*	• the new station precinct public domain, open space and new streets would be fully integrated with the Central Precinct of the master plan to create a walkable, high-amenity interface to the new town centre • space provisioning and configuration in the precinct would enable the safe management of major event crowds • new streets and pedestrian connections would provide intimate scale and amenity for day-to-day residents and workers.
Deliver a station and public domain designed to support day-to-day activities and flexibility to accommodate major events and periodic large crowds	• clear and separate entry and exit location for the day-to-day function, distinct from the event mode access points (noting this is subject to ongoing investigation as identified in Table 5-1) • provision of a publicly accessible plaza adjacent to the station entry to accommodate higher volumes of pedestrian movement from the metro station and customers moving through the town centre • large public domain and plazas spaces would be relatively open and adaptable, enabling local community uses (e.g. markets) with the ability to be transitioned into safe marshalling space for major event egress.
Facilitate east-west access from Olympic Boulevard to the station and town centre to accommodate event crowds	• creation of new space between Olympic Boulevard and the station would support activated frontages and street amenity in the day-to-day function and enable movement into the town centre east of the station. This space can be transitioned into a key egress and marshalling space accommodating major event crowds.

Place and design principle	Design response
Enhance permeability with new pedestrian links and connections to places within the wider station precinct supported by active street frontages and new open spaces	• north-south permeability would be enhanced with new Precinct Street B, and a pedestrian-only mid-block connection. Precinct Street A (when delivered by others in the future) would also enhance north-south permeability • east-west permeability would be provided across the station, connecting Olympic Boulevard to the new town centre • new open space located to the north-east of the station, positioned to maximise solar gain, and provide open views toward the Abattoir Heritage Precinct.
Ensure the station provides easy, safe and intuitive interchange with other modes of transport, during day-to-day operation and events	• the southern station entrance would provide day-to-day direct connection to the bus interchange on Figtree Drive • the northern station entrance adjacent to point-to-point and kiss and ride would provide an easy connection to the proposed Parramatta Light Rail Stage 2 • centrally located separate event mode entries would be located to provide direct flow into the station from Olympic Boulevard (noting this is subject to ongoing investigation as identified in Table 5-1).

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

Figure 5-5 Land use and function urban design strategies – Sydney Olympic Park metro station

Figure 5-6 Access and connectivity urban design strategies – Sydney Olympic Park metro station

Figure 5-7 Built form urban design strategies – Sydney Olympic Park metro station

The Sydney Olympic Park metro station design includes the following key movement and place features:

- new streets close to the station entries would be pedestrian focused and traffic calmed, supporting activated ground floor uses and encouraging passive recreation
- new open space would be provided to the north-east of the station adjacent to the northern station entry. This position would maximise solar gain and provide open views toward the Abattoir Heritage Precinct
- new open space would be provided connecting the station to Olympic Boulevard and through to the future town centre. This generous open space can be transitioned into an efficient event crowd marshalling space towards the centrally located separate event mode station entries
- vehicle movement is focused on the Herb Elliott Avenue and Figtree Drive corridors, away from the station entries
- the street and public domain network would be structured so that large event crowds can be managed safely without impact on the function as a town centre.

5.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the Sydney Olympic Park metro station design. The delivery of a metro station provides a new mass transit hub right in the heart of Sydney Olympic Park, substantially improving access for people across Sydney to major events at Sydney Olympic Park. Sydney Olympic Park metro station would deliver an extensive new public domain integrating with the new Sydney Olympic Park town centre and be able to service major events safely.

Examples of how the Sydney Olympic Park metro station design integrates with other transport modes and improves access for customers and the community include:

- creation of a high-amenity pedestrian environment around the station entries and new Precinct Street B that provides activation and access for the community. Precinct Street A (when delivered by others in the future) would also enhance permeability
- active transport connections within the station precinct along the Precinct Street B shared zone, connecting the bicycle parking located near the northern station entry
- new pedestrian crossing points on Figtree Drive near the new bus stops and Herb Elliott Avenue to provide efficient and safe pedestrian access to the station entries
- direct access to new bus stops on Figtree Drive, via the southern day to day entry
- easy connections through to the existing Olympic Park Station and to the proposed Parramatta Light Rail Stage 2
- provision of kiss and ride and point-to-point zones on Herb Elliott Avenue near the northern station entry.

5.2.4 Event mode and crowded spaces management

Sydney Olympic Park metro station has a key role to play in safely servicing the major events within the stadia precinct, in combination with the existing Sydney Trains services and event buses on the northern section of Olympic Boulevard. Examples of how the Sydney Olympic Park metro station design addresses the event mode and crowded spaces management include:

- a bespoke platform configuration that includes an island and two side platforms enabling separation and safe function of customer access and egress during major events without impacting on the wider function of the Sydney Metro West line
- the separation of day-to-day and event entries and lifts and escalators within the station. Sydney Metro is reviewing the station entries in consultation with Sydney Olympic Park Authority with the intent of all entries being available for day-to-day operations
- the creation of new public domain space and street connection from the event station entries through to Olympic Boulevard, to enable safe marshalling of customers prior to entry into the station, and separation from the future town centre to the east

- the ability to direct and marshal crowds separately towards Sydney Train services (along Dawn Fraser Avenue, Murray Rose Avenue and the associated open space) and towards Sydney Metro services (along Olympic Boulevard and through the new public plaza)
- ongoing engagement with the Sydney Olympic Park Authority, so that that the operational overlay for major event crowds is considered holistically with the whole of the Sydney Olympic Park precinct.

5.3 Construction description

This section provides a description of the construction activities required to completed Sydney Olympic Park metro station, and associated precinct work required for the operation of Sydney Metro West.

Major civil construction work including station excavation and tunnelling work at Sydney Olympic Park was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

5.3.1 Overview

Construction of Sydney Olympic Park metro station would require the continued use of the construction site established under the previous Sydney Metro West planning application. The land required for the construction site would be consistent with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). A minor area of additional footprint would be required during construction to support the development of the public domain (refer to Figure 5-8).

The Sydney Olympic Park metro station construction site would be located close to Olympic Boulevard and between Herb Elliott Avenue and Figtree Drive.

The Sydney Olympic Park metro station construction site would be demolished and excavated as a result of activities associated with the work carried out under the previous Sydney Metro West planning application. This proposal would include some earthworks across the site outside of the station box area (excavation to a depth of around three metres) to create a public domain that would be level with the surrounding road network. The earthworks would require the removal of about 32,000 cubic metres of spoil.

The location and indicative layout of the Sydney Olympic Park metro station construction site are shown in Figure 5-8. Some activities would occur outside this construction site, such as delivery of construction equipment and station precinct and interchange work.

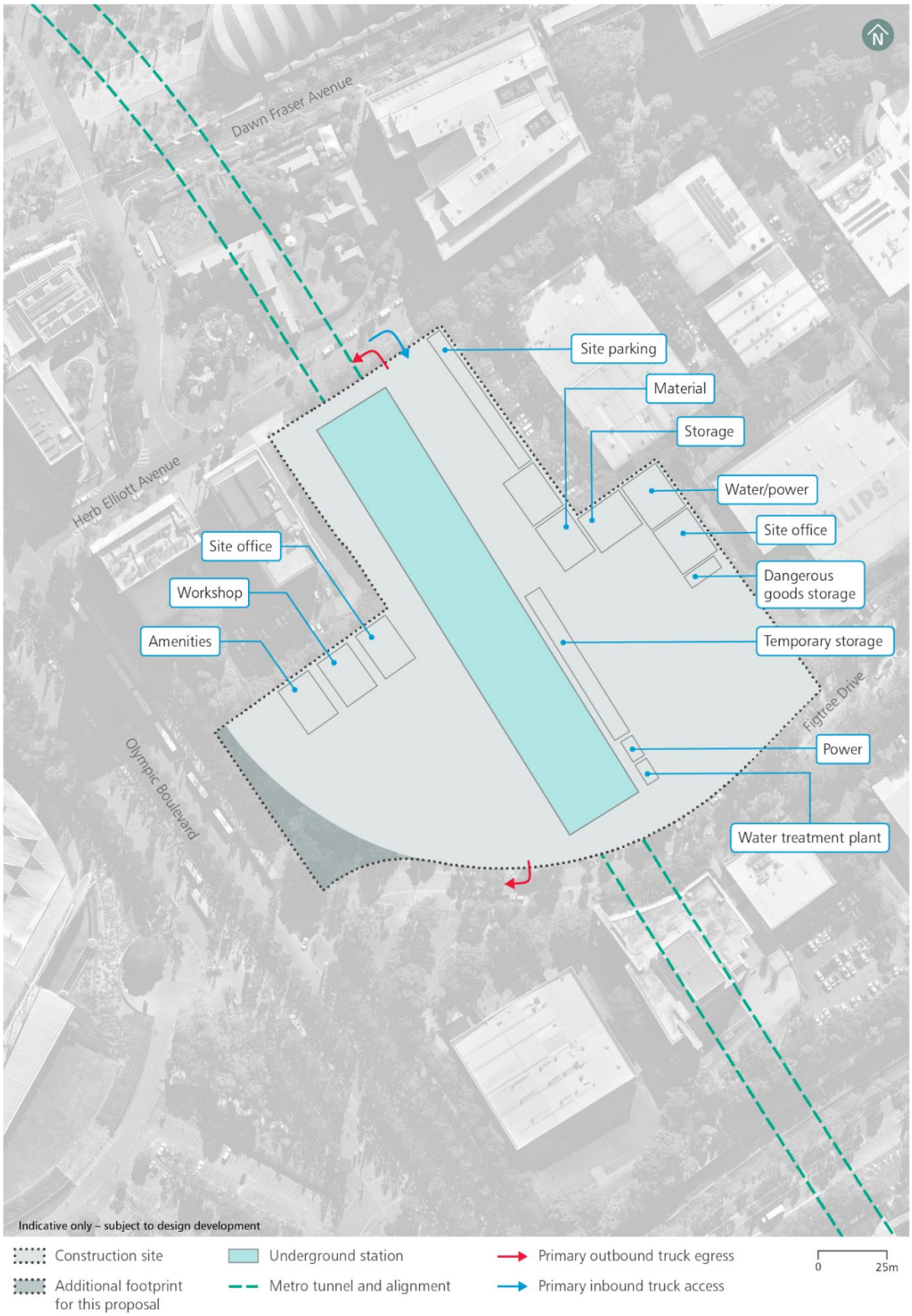


Figure 5-8 Indicative construction site layout – Sydney Olympic Park metro station

5.3.2 Construction work

Key construction work at the Sydney Olympic Park metro station construction site would include:

- enabling and site establishment work
- earthworks to level the site with the surrounding road network
- construction of the station and structures for non-station use
- station fit out
- construction of station precinct and interchange facilities, including provisioning for adjacent and over station development
- finishing work, testing and commissioning.

The indicative construction program for Sydney Olympic Park metro station is shown in Figure 5-9.

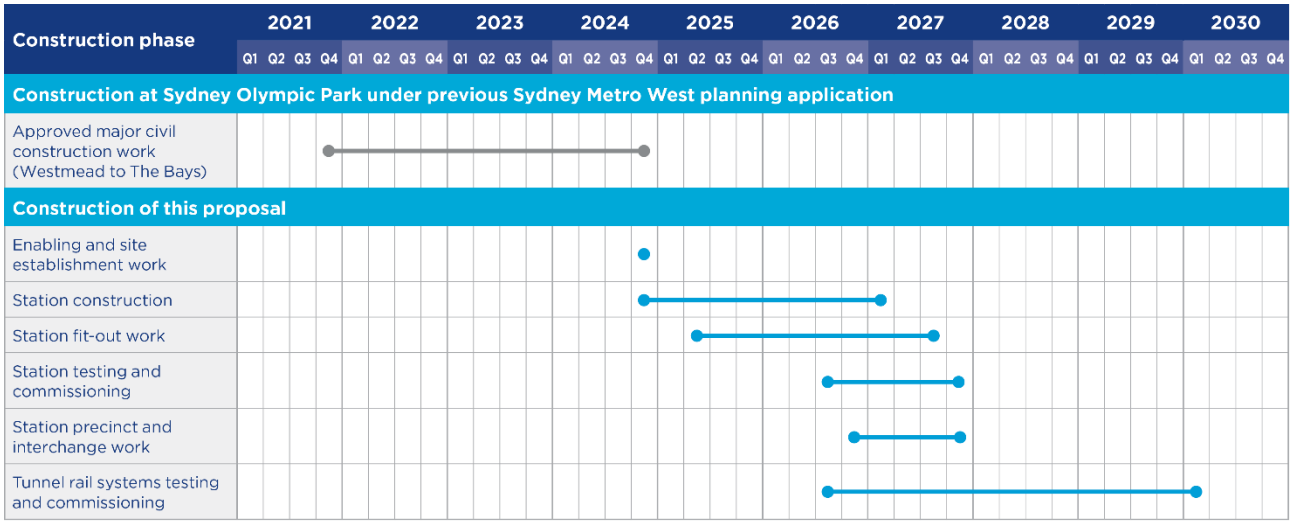


Figure 5-9 Indicative construction program – Sydney Olympic Park metro station

Other construction elements specific to Sydney Olympic Park metro station are shown in Table 5-3. Indicative construction hours, plant and equipment and workforce for the Sydney Olympic Park metro station construction site are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Sydney Olympic Park metro station as described in the table below, are also depicted on Figure 5-8.

Table 5-3 Other construction elements – Sydney Olympic Park metro station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established by the previous Sydney Metro West planning application that would likely be maintained during construction include: • potential secondary access (for example during when special events impact primary routes) to the construction site via left-in from Herb Elliott Avenue • potential secondary egress from the construction site via right-out onto Herb Elliott Avenue.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • access to the construction site via right-in from Herb Elliott Avenue • egress from the construction site via left-out onto Herb Elliott Avenue or right-out onto Figtree Drive • potential secondary access (for example during when special events impact primary routes) to the construction site via right-in from Figtree Drive • potential secondary egress from the construction site via left-out onto Figtree Drive.

Construction element	Description
Peak daily traffic movements	• about 224 daily heavy vehicle movements • about 226 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about 18 spaces on Herb Elliott Avenue, including: - about six spaces to be replaced by a taxi stand - about six spaces to be replaced for a pedestrian crossing - one space and one motorcycle parking space to be replaced with a relocated loading zone - about four spaces to be re-allocated as kiss and ride bays • about 11 spaces to accommodate the six bus stands on Figtree Drive • a number of spaces on Herb Elliott Avenue near the proposed Precinct Street B for a no stopping zone. In addition to the parking spaces that would be permanently removed, there may be short-term closures (for around a few months) of some on-street parking spaces in the following locations during construction of this proposal to facilitate precinct construction works: • Herb Elliott Avenue • Figtree Drive.

6.0 North Strathfield metro station

6.1 Station and precinct description

6.1.1 Design development

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

- feedback as part of submissions to and consultation associated with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and workshops held with Canada Bay Council since exhibition of the preceding approved *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings with Sydney Trains
- meetings and advice from the Design Advisory Panel.

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

- setbacks of the station buildings from Queen Street – responding to feedback from Canada Bay Council
- provision of public plaza space fronting Queen Street – responding to feedback from Canada Bay Council
- retention of a cross corridor pedestrian link across the corridor between Hamilton Street East and Wellbank Street, consistent with feedback from the Design Advisory Panel and Canada Bay Council
- a design that is sympathetic to the heritage significance of the existing North Strathfield Station – responding to feedback from the Design Advisory Panel.

6.1.2 Station design

The indicative layout and key design elements of North Strathfield metro station are shown in Figure 6-1, with a long-section and cross-section shown in Figure 6-2 and Figure 6-3, respectively. The design of the metro station is subject to further detailed design development.

The key features of North Strathfield metro station are provided in Table 6-1.

Table 6-1 Key features – North Strathfield metro station

Key features	Description
Proposed station entry	• entries on Queen Street • entry from Pomeroy Street via a pedestrian footbridge to the west of the proposed metro station • entry from Hamilton Street East via retained pedestrian footbridge to the west of the proposed metro station.
Customers	• residents within walking and cycling distance • visitors travelling to and from nearby residential and education areas • visitors to local entertainment, retail or dining attractions • customers transferring to and from other transport modes.
Primary station function	Origin and interchange.
Catchment	Residential, education and entertainment.
Transport interchange	• walk • cycle • suburban rail, and potentially intercity services • bus • point-to-point transport • kiss and ride.

North Strathfield metro station would consist of an underground station with an island platform in a north-south orientation.

A new pedestrian footbridge located off Queen Street would provide customers with access to the Sydney Trains and Sydney Metro platforms via entrances on Queen Street. Customers transferring between the Sydney Metro network and the Sydney Trains network would do so within the paid area of the footbridge. A public domain area would be located to the south of the proposed metro station.

The new pedestrian footbridge (to the north of the existing station building) would provide an interchange connection between Sydney Metro and Sydney Trains and connect to a new station entry from the west.

The existing footbridge that connects Queen Street, the Sydney Trains station platforms, and the public footpath access to the west of the station (between Pomeroy Street and Hamilton Street East), may require upgrades/replacement including the potential widening of the footbridge to provide improved interchange capacity (to be further investigated).

Escalators and/or stairs and lifts would provide access to the Sydney Trains and Sydney Metro platforms.

Areas for station services and utilities would be provided underground and within consolidated services buildings.

The aboveground station infrastructure (including station services and space for non-station use) would be, subject to design development, indicatively around 25 metres above Queen Street at the northern end of the station. The new eastern entry at Queen Street and would be, subject to design development, indicatively around 10 metres above street level. The new footbridge would be indicatively around 18 metres above the existing station platforms, subject to design development.

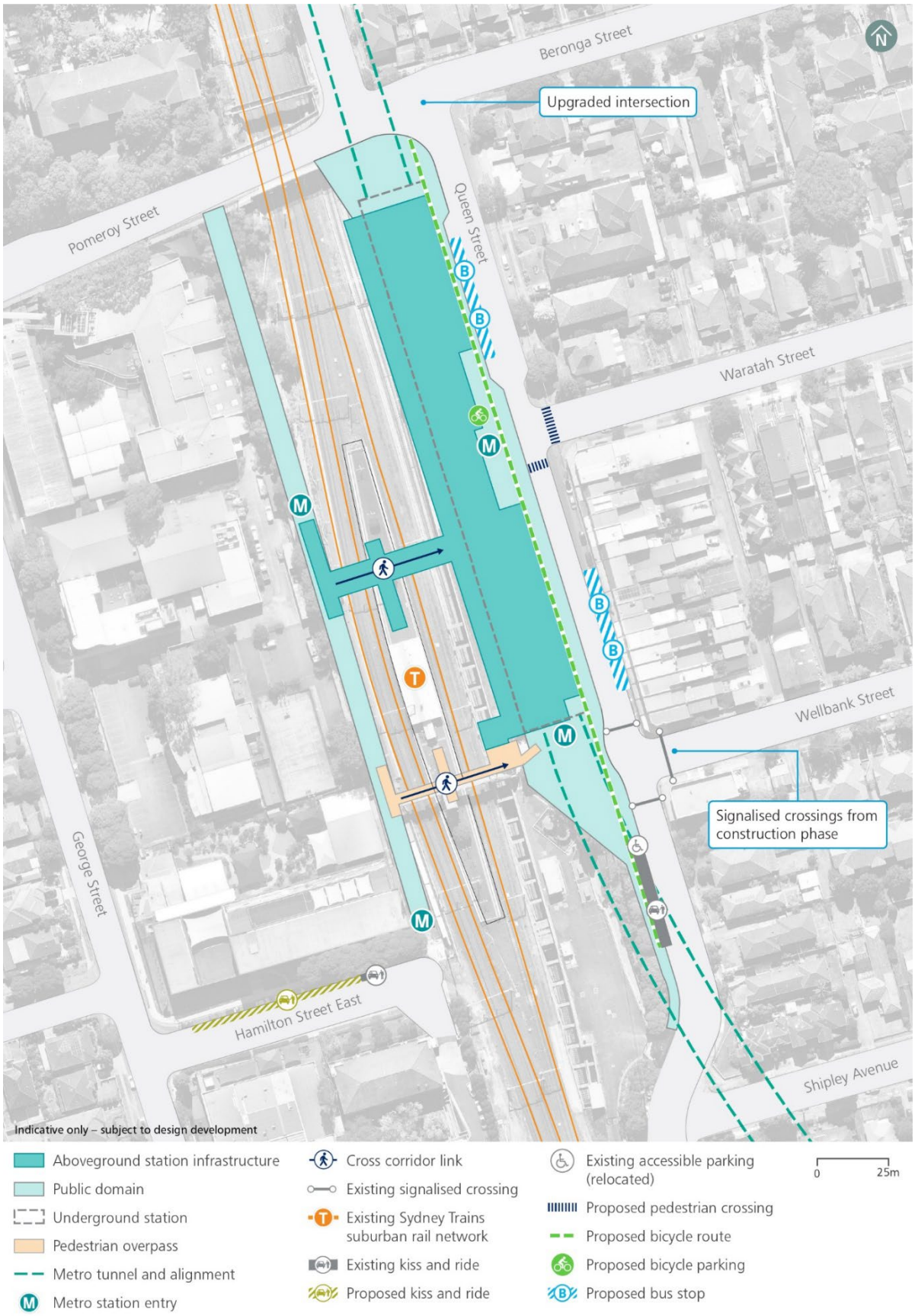


Figure 6-1 Indicative layout and key design elements – North Strathfield metro station

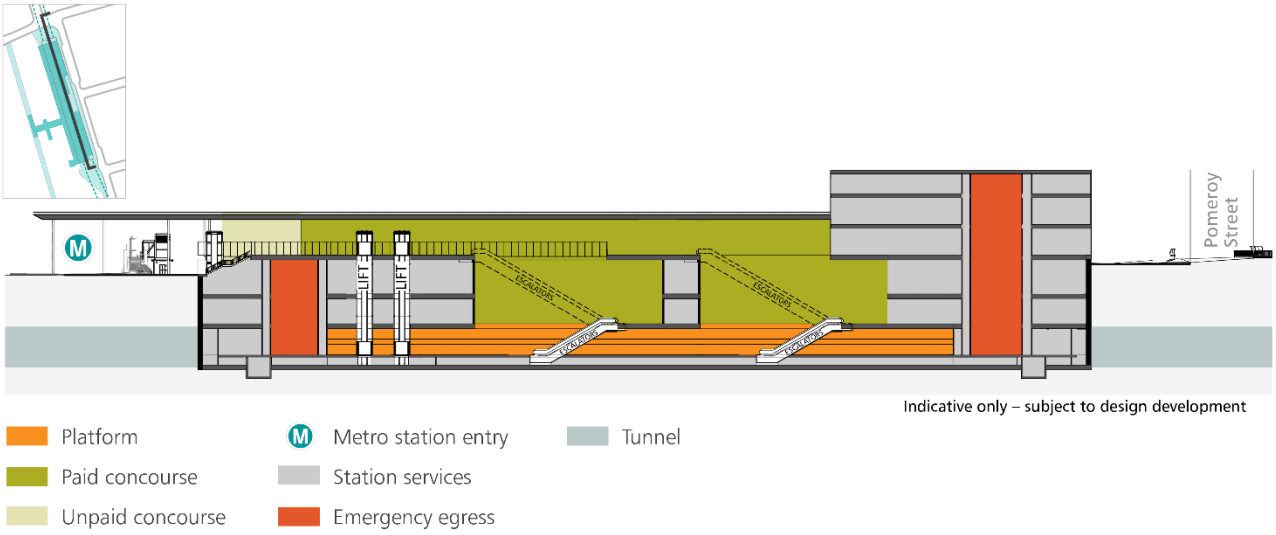


Figure 6-2 Indicative long-section - North Strathfield metro station

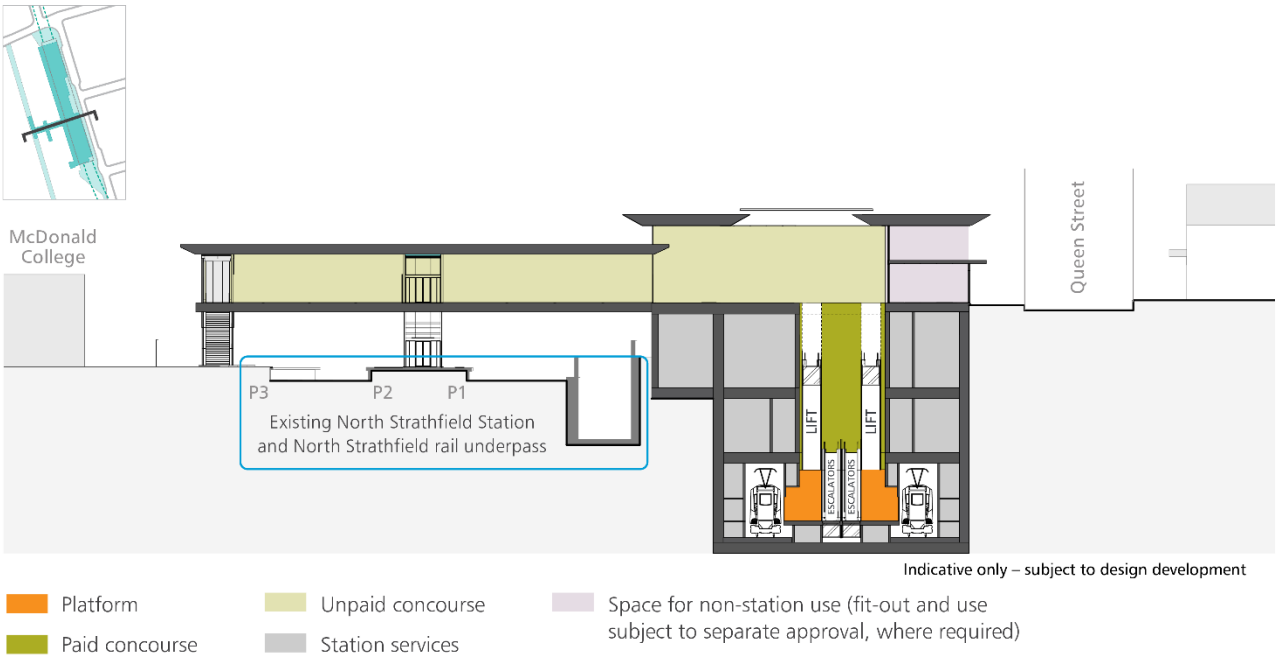


Figure 6-3 Indicative cross-section - North Strathfield metro station

6.1.3 Station precinct and interchange facilities

North Strathfield metro station would include a series of precinct and interchange elements, such as:

- bicycle parking
- a new pedestrian footbridge accessed via Pomeroy Street and Hamilton Street East (to the north of the existing station building) to provide for transfers with the Sydney Trains network within the paid area of the station and a new western entry to the station
- cross-corridor pedestrian connection between Queen Street, the Sydney Trains station platforms, and the public footpath access to the west of the station (between Pomeroy Street and Hamilton Street East) at opening of this proposal, with the potential to upgrade the existing aerial footbridge to enhance pedestrian flow and connectivity throughout the station precinct to be further investigated
- provision for local bus interchange on Queen Street
- dedicated kiss and ride located on Queen Street and Hamilton Street East

- new crossings and/or intersection treatment along Queen Street at the Beronga Street, Wellbank Street and Waratah Street intersections
- built elements along Queen Street, and provision of utilities and services to provide space for future non-station uses to around the height of the station footbridge (e.g. retail, commercial and/or community facilities). Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) of this Appendix.

6.1.4 Provisioning for over and/or adjacent station development

Over and/or adjacent station development is not proposed at North Strathfield metro station.

6.2 Placemaking

The vision for North Strathfield metro station and its surrounds is for:

A high amenity living precinct, well connected to Sydney's key employment and leisure destinations.

6.2.1 Integration with strategic planning

The *Eastern City District Plan* (Greater Sydney Commission, 2018b) identifies North Strathfield as a local centre within an urban renewal area. To capitalise on this plan, a number of plans and strategies have been developed, which have informed the development of North Strathfield metro station and would guide the future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the *Healthy Built Environment Checklist* (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City of Canada Bay Local Strategic Planning Statement

The relationship of Sydney Metro West to the *City of Canada Bay Local Strategic Planning Statement* (City of Canada Bay Council, 2020) is discussed in Section 7.10.4 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Local Strategic Planning Statement highlights that a metro station at North Strathfield would support urban renewal in the area west of the existing rail corridor, development of a local centre focused on Queen Street, and investigation into housing diversity in the area east of the station.

A new metro station would support the development of the local centre at North Strathfield, providing activation through enhanced access and connections. The benefits of metro are recognised, with Council reviewing and updating strategic bicycle plans so that routes and links provide safe and legible connections.

The station would be able to support several of the priorities and initiatives outlined by Council. North Strathfield metro station would provide a major investment in transport infrastructure and realise the development of a new transport interchange at North Strathfield, improving transfer opportunities between metro, trains and buses. A metro station at North Strathfield would also support the objectives, priorities and actions of the Local Strategic Planning Statement by providing an activated public domain to Queen Street, servicing increased housing diversity and urban renewal in the area and encouraging active transport use.

Parramatta Road Corridor Urban Transformation Strategy

The *Parramatta Road Corridor Urban Transformation Strategy* (NSW Government, 2016) provides the long-term vision and framework to support coordinated employment and housing growth in the Parramatta Road Corridor. North Strathfield is identified within the Homebush Precinct. The vision of the Homebush Precinct is to transform the area into an 'active and varied hub, blending higher density housing and a mix of different uses, supported by a network of green links and open spaces with walking access to four train stations.'

Sydney Metro West would support this vision, with the metro station increasing public transport accessibility and development opportunities in the area.

Sydney Green Grid

Powells Creek and Mason Park have been identified as a Green Grid project opportunity. Powells Creek and Mason Park form an important open space corridor linking the urban centres of Concord West, North Strathfield, Homebush and Strathfield to Parramatta Road, Bicentennial Park and the Parramatta River foreshore. The Parramatta Road Urban Renewal Corridor is also identified as a project opportunity, with the potential to improve access to open space along the corridor as renewal occurs. Sydney Metro would support improved access to these open spaces by providing upgraded entries to the west of the station and enhanced easy connections across the existing rail corridor.

6.2.2 Place and design principles

Place and design principles for North Strathfield metro station were identified in Section 7.10.4 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 6-2 outlines how these principles have been achieved in the North Strathfield metro station design.

Table 6-2 Design responses to North Strathfield metro station place and design principles

Place and design principle	Design response
Facilitate direct interchange between Sydney Metro and Sydney Trains services on the T9 Northern Line and easy connections with other modes	• the metro station is located immediately adjacent to the existing Sydney Trains station and is relatively shallow to minimise customer transfer time between the metro and Sydney Trains services • a new pedestrian footbridge between the metro platforms and the Sydney Trains platforms would provide direct, accessible interchange • direct connection would be provided to new bus stops on Queen Street near the station entry • improved connections across the existing rail corridor with the integration of the existing station access at the southern end into the metro entry.
Ensure legible, safe and intuitive station access to the east and west of the existing rail corridor	• two new station entries would be located on Queen Street, to facilitate access from the east with: - one opposite the intersection with Waratah Street and close to the new bus stops - a second entrance at the southern end of the station opposite Wellbank Street, connecting with the unpaid cross corridor pedestrian connection to Hamilton Street East • the existing station entries to the west (from Hamilton Street East and Pomeroy Street) would be upgraded and directly connected to the new aerial footbridge providing improved access to Sydney Trains and Sydney Metro platforms.
Support an active public domain area focused on Queen Street	• the metro station would be set back from Queen Street to provide space for a high amenity public domain, including street trees, new street lighting, shelters (at bus stops) and new pavements • provision of a pedestrian friendly low-speed environment on Queen Street near the station entries • pedestrian safety and access improvements would include: - new signalised pedestrian crossings at the Queen Street / Wellbank Street intersection - new pedestrian crossings at the Queen Street / Waratah Street intersection - an upgrade intersection and pedestrian crossings at the Beronga Street / Pomeroy Street / Queen Street intersection.

Place and design principle	Design response
Enable an easy connection across the existing rail corridor and to key destinations including the Bakehouse Quarter and the Powells Creek open space corridor	• easy connection across the corridor would be maintained by the southern accessible connection linking Wellbank Street in the east to Hamilton Street East in the west • broader connectivity is reinforced to the Bakehouse Quarter, and Powells Creek open space (identified as part of the Sydney Green Grid network).
Integrate the historic value of the North Strathfield Station into the design of the metro station, and its surrounding station precinct	• the design would aim to retain or interpret key heritage significance fabric of the existing North Strathfield Station where possible • the design of the station buildings would respond to the local heritage character of the precinct.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 6-4, Figure 6-5 and Figure 6-6.

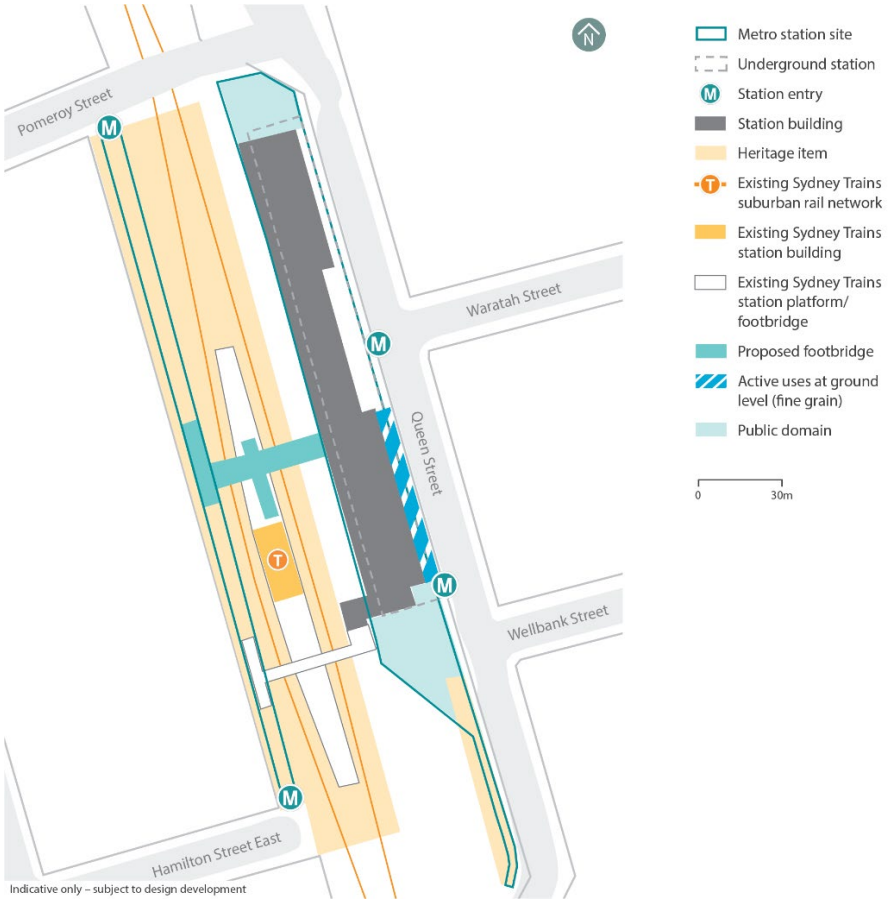


Figure 6-4 Land use and function urban design strategies - North Strathfield metro station

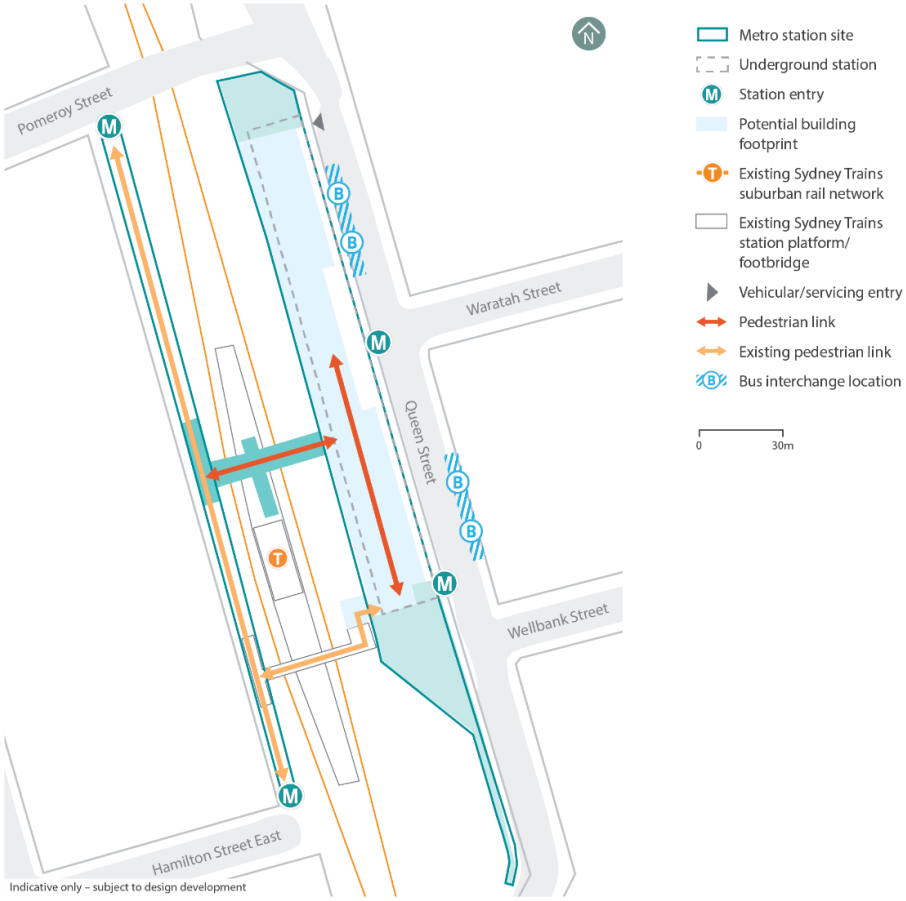


Figure 6-5 Access and connectivity urban design strategies - North Strathfield metro station

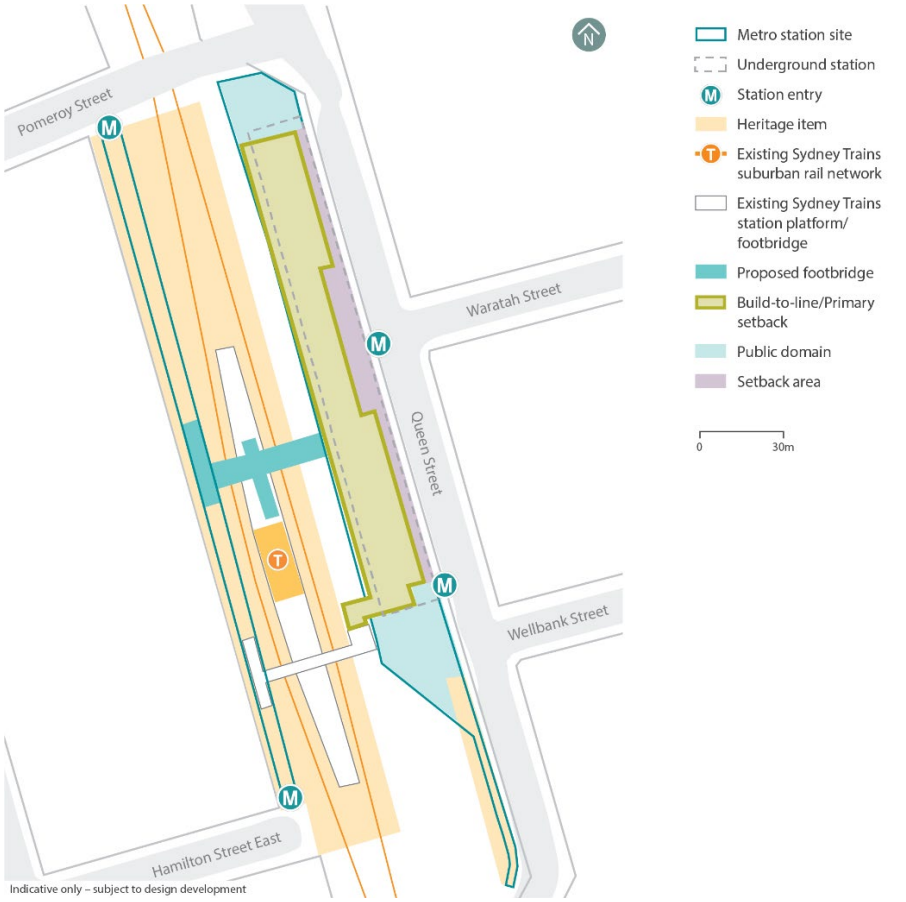


Figure 6-6 Built form urban design strategies - North Strathfield metro station

The North Strathfield metro station design includes the following key movement and place features:

- a new low-speed traffic environment on Queen Street near the station entries to prioritise pedestrians
- improved pedestrian safety and amenity around the station entry precinct with the addition of new signalised crossings at the Queen Street / Wellbank Street intersection and as part of an upgraded Queen Street / Beronga Street / Pomeroy Street intersection
- new pedestrian crossing points opposite the station entry on Queen Street and Waratah Street
- provision of a safe environment for cyclists along Queen Street and bicycle parking facilities at the station to encourage active transport participation
- ability for a continued movement corridor along Queen Street (including for buses) within the traffic calmed environment
- new street enhancements including street tree planting, furniture and fixings, and pavements to enhance the local centre on Queen Street.

6.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the North Strathfield metro station design. The station is strategically located to provide interchange and relief to the T9 Northern Line. The station would also provide improved access to destinations on the Sydney Metro West corridor to the local community of North Strathfield. The station would deliver new public domain enhancements to Queen Street and support the development of the proposed local centre.

Examples of how the North Strathfield metro station design integrates with other transport modes and improves access for customers and the community include:

- direct, easy and accessible transfer via the new aerial footbridge between Sydney Metro and Sydney Trains platforms
- improved pedestrian access and safety through a low-speed environment and dedicated crossing facilities along Queen Street at Wellbank, Waratah and Pomeroy Streets
- provision of cycling paths along Queen Street and bicycle parking near the station entry
- upgraded station western entries from Hamilton Street East and Pomeroy Street
- maintenance of and connection to the existing accessible unpaid pedestrian access across the rail corridor connecting Wellbank Street in the east to Hamilton Street East in the west. Sydney Metro are continuing to investigate upgrades to the footbridge with the potential for a new pedestrian footbridge to provide enhanced customer transfer capacity while maintaining connection across the rail corridor
- direct access to new bus stops on Queen Street immediately outside the station entry
- provision of new and extended kiss and ride zone on Queen Street and Hamilton Street East.

6.3 Construction description

This section provides a description of the construction activities required to complete North Strathfield metro station, and associated precinct work required for the operation of Sydney Metro West.

Major civil construction including station excavation and tunnelling work at North Strathfield was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

6.3.1 Overview

Construction of North Strathfield metro station would require the continued use of two construction sites on the eastern side of the rail corridor established as part of the previous Sydney Metro West planning application. Additional areas are also required to support construction of this proposal. The majority of the North Strathfield metro station construction sites would have been levelled and excavated as a result of activities associated with the work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal. Additional minor excavation would also be required for this proposal to allow for station services on the western side of the proposed metro station (adjacent to the North Strathfield rail underpass structure).

The North Strathfield metro station construction sites for this proposal would comprise:

- the approved construction sites that was established in *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- additional footprint within the rail corridor to support within-corridor construction activities. Construction activities within the existing rail corridor would be undertaken between Rhodes Station to the north and Strathfield Station to the south. The location of these areas within the rail corridor may change during the construction period, depending on specific activities being carried out.

The location and indicative layout of the North Strathfield metro station construction sites are shown in Figure 6-7. Some activities would occur outside this construction sites, such as construction activities within the rail corridor, delivery of construction equipment, and station precinct and interchange work.

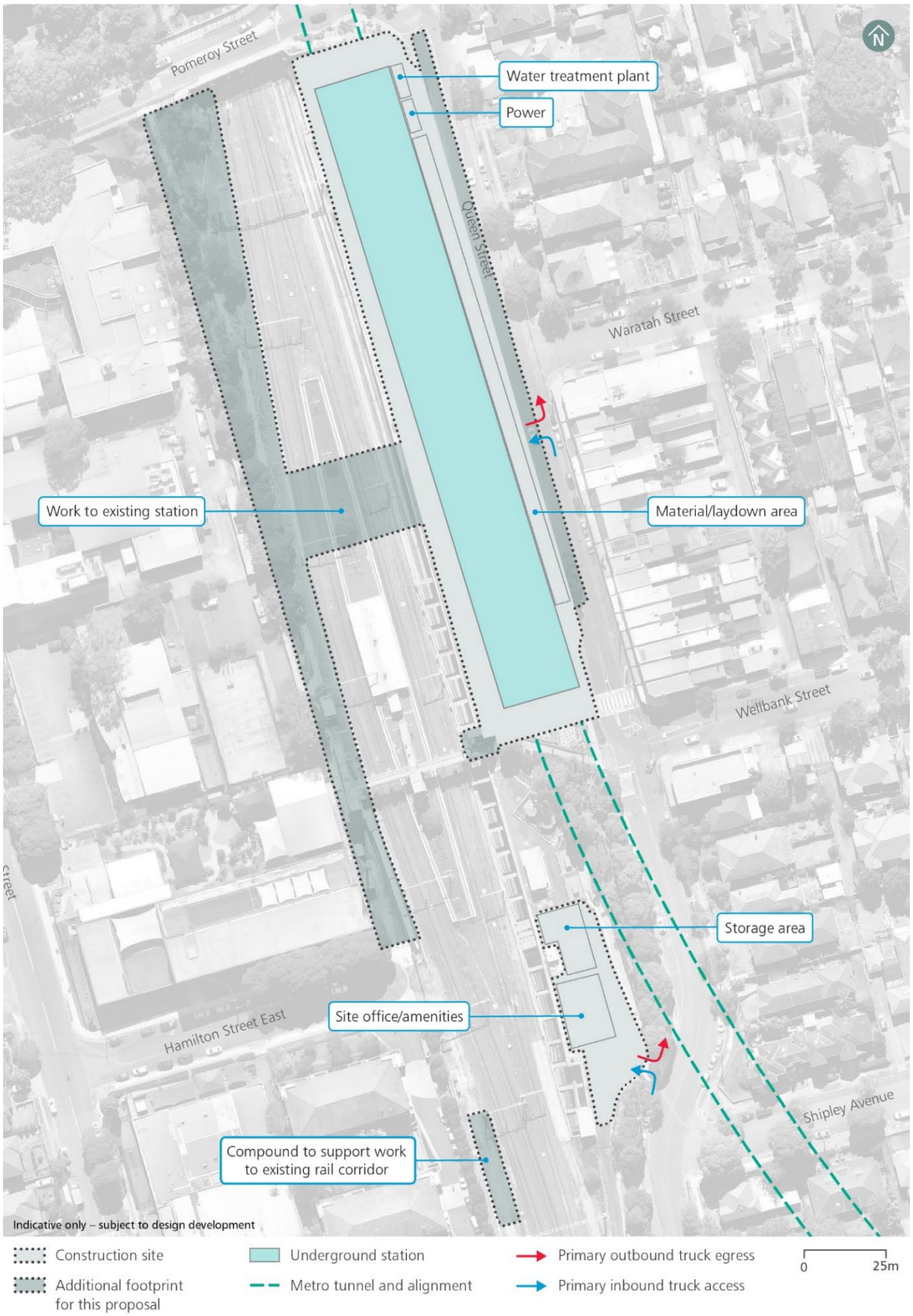


Figure 6-7 Indicative construction sites layout – North Strathfield metro station

6.3.2 Construction work

Key construction work at the North Strathfield metro station construction sites would include:

- enabling and site establishment work, including installation or retention of protection around heritage structures for North Strathfield Station
- relocation of utilities, including:
  - fibre optic cable relocation works within the rail corridor between Rhodes Station to the north and Strathfield Station to the south
  - signals and communication routes at Platform 3
  - overhead wiring structures
- access to and use of the existing rail corridor between Rhodes Station to the north and Strathfield Station to the south, to support work within the rail corridor
- construction and fit-out of a new aerial footbridge (to the north of the existing footbridge) to enable integration of this proposal with the existing Sydney Trains suburban network and to provide access to the existing station and North Strathfield metro station from the west of the rail corridor. This would include modifications such as localised widening to Platform 3
- construction of the station and structures for non-station use
- station fit-out, including tie-in work to the area at the existing aerial footbridge on the eastern side of the rail corridor
- construction of station precinct and interchange facilities
- finishing work, testing and commissioning.

The existing aerial footbridge that connects Queen Street, the Sydney Trains station platforms, and the public footpath access to the west of the station (between Pomeroy Street and Hamilton Street East), may require upgrade/replacement including the potential widening of the footbridge to provide improved interchange capacity (to be further investigated).

The indicative construction program for North Strathfield metro station is shown in Figure 6-8.

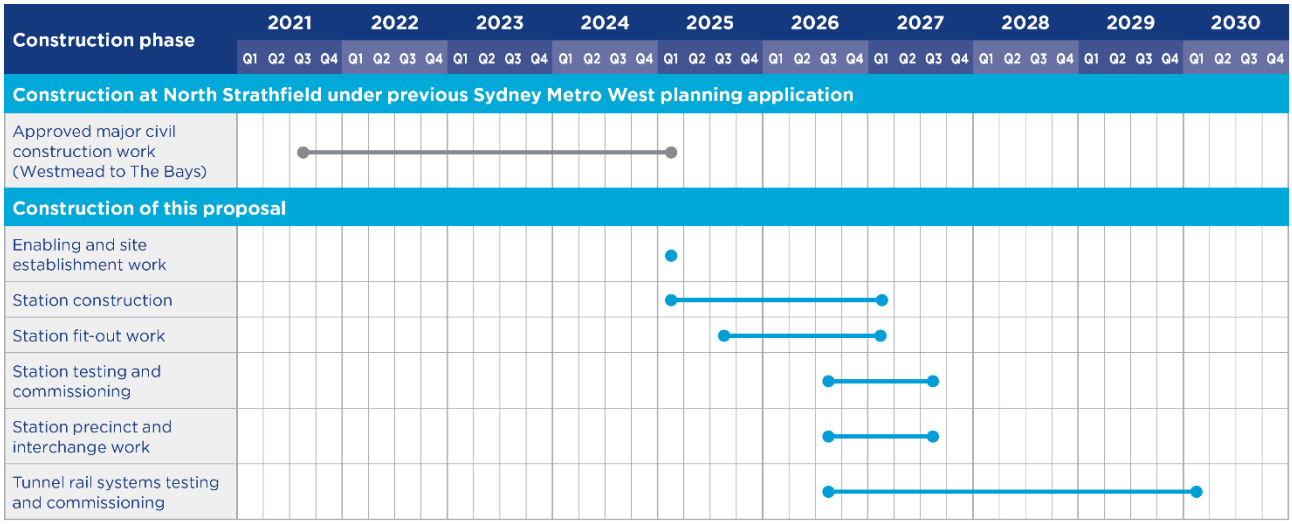


Figure 6-8 Indicative construction program – North Strathfield metro station

Other construction elements specific to North Strathfield metro station are shown in Table 6-3. Indicative construction hours, plant and equipment and workforce for North Strathfield metro station construction sites are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to North Strathfield metro station as described in the table below, are also depicted on Figure 6-7.

Table 6-3 Other construction elements – North Strathfield metro station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established by the work carried out under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the construction sites east of the rail corridor via Queen Street. Heavy vehicles would pull up alongside the northern construction site for equipment and material loading and unloading, rather than enter the site.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • egress from the northern construction site, east of the existing rail corridor by turning left along Queen Street • access to and egress from the existing rail corridor via existing access gates, primarily those located on Queen Street and Hamilton Street East. Other existing gates located between Strathfield Station and Rhodes Station may be used on occasion during rail possession work to support utility relocations.
Peak daily traffic movements	• about 320 daily heavy vehicle movements • about 360 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Temporary transport network modifications during construction of this proposal would include: • temporary relocation of the existing school bus stops on the western and eastern sides of Queen Street (north of Wellbank Street) (continued from previous Sydney Metro West planning application) • new traffic signals at the Queen Street / Wellbank Street intersection (this would be a permanent feature present during operation of this proposal) (continued from previous Sydney Metro West planning application). The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about 24 spaces on the western side of Queen Street between Pomeroy Street and Wellbank Street • about 20 spaces on the eastern side of Queen Street between Beronga Street and Wellbank Street • about four spaces on the Waratah Street approach would be converted to kiss and ride spaces during peak periods • about two spaces on Hamilton Street East, which would be converted to kiss and ride spaces (adjacent to the existing kiss and ride zone) • about 12 spaces on the approaches to the upgraded intersections to provide safe operation and efficient use for all road users. In addition to the parking spaces that would be permanently removed, there would also be the following temporary on-street parking impacts during construction of this proposal: • the kiss and ride zone on Queen Street that will be relocated as part of work carried out under the previous Sydney Metro West planning application would continue to operate in its relocated position during construction of this proposal until the permanent new kiss and ride zones are established • to facilitate precinct construction work, there may be some short-term closures (for around a few months) of some spaces on the western side of Queen Street south of Wellbank Street and on the northern side of Hamilton Street East to establish new kiss and ride zones.

7.0 Burwood North Station

7.1 Station and precinct description

7.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with the City of Canada Bay Council and Burwood Council since exhibition of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- provision of an underground unpaid pedestrian connection between the north and south sides of Parramatta Road, which responds to feedback from Burwood Council and is supported by the Design Advisory Panel, as well as supporting the Burwood Strategic Centre by providing for community access south of Parramatta Road
- delivery of through-site links and enhanced pedestrian permeability, responding to feedback from the City of Canada Bay Council and the Design Advisory Panel
- building setbacks from both Burwood Road and Parramatta Road to provide an improved pedestrian environment.

7.1.2 Station design

The indicative layout and key design elements of Burwood North Station are shown in Figure 7-1, with a long-section and cross-section shown in Figure 7-2 and Figure 7-3 respectively. The design of the metro station is subject to further detailed design development.

The key features of Burwood North Station are provided in Table 7-1.

Table 7-1 Key features – Burwood North Station

Key features	Description
Proposed station entry	• entry on the north-east corner of Burwood Road and Parramatta Road • entry on the south-east corner of Burwood Road and Parramatta Road.
Customers	• residents within walking and cycling distance • students, staff and visitors travelling to and from nearby schools • residents or employees travelling to and from nearby residential and employment areas • customers transferring to and from other transport modes.
Primary station function	Origin and interchange.
Catchment	Residential, education and employment.
Transport interchange	• walk • cycle • bus • point-to-point transport • kiss and ride areas, including an accessible kiss and ride.

Burwood North Station would consist of an underground station with an island platform in an east–west orientation. The station would be located to the north of Parramatta Road.

Customers would access the station via two entrances on Burwood Road, one to the north and one to the south of Parramatta Road. The two entrances would be connected via an unpaid pedestrian link below Parramatta Road, which would be open to the public during station operating hours. Escalators and/or stairs and lifts would provide access from the platform to the underground concourse areas, and onto to the surface.

Areas for station services and utilities would be provided at the eastern and western ends of the station.

The aboveground station infrastructure located south of Parramatta Road (including the station entry, services and space for non-station use) would be, subject to design development, indicatively around 31 metres above Burwood Road (with the station entry around 10 metres high and the space for non-station use about 21 metres high). The aboveground station infrastructure located north of Parramatta Road (including the station entry, services and space for non-station use) would be indicatively around 18 metres above Burwood Road, and around 24 metres above Loftus Street, subject to design development.

Figure 7-1 Indicative layout and key design elements – Burwood North Station

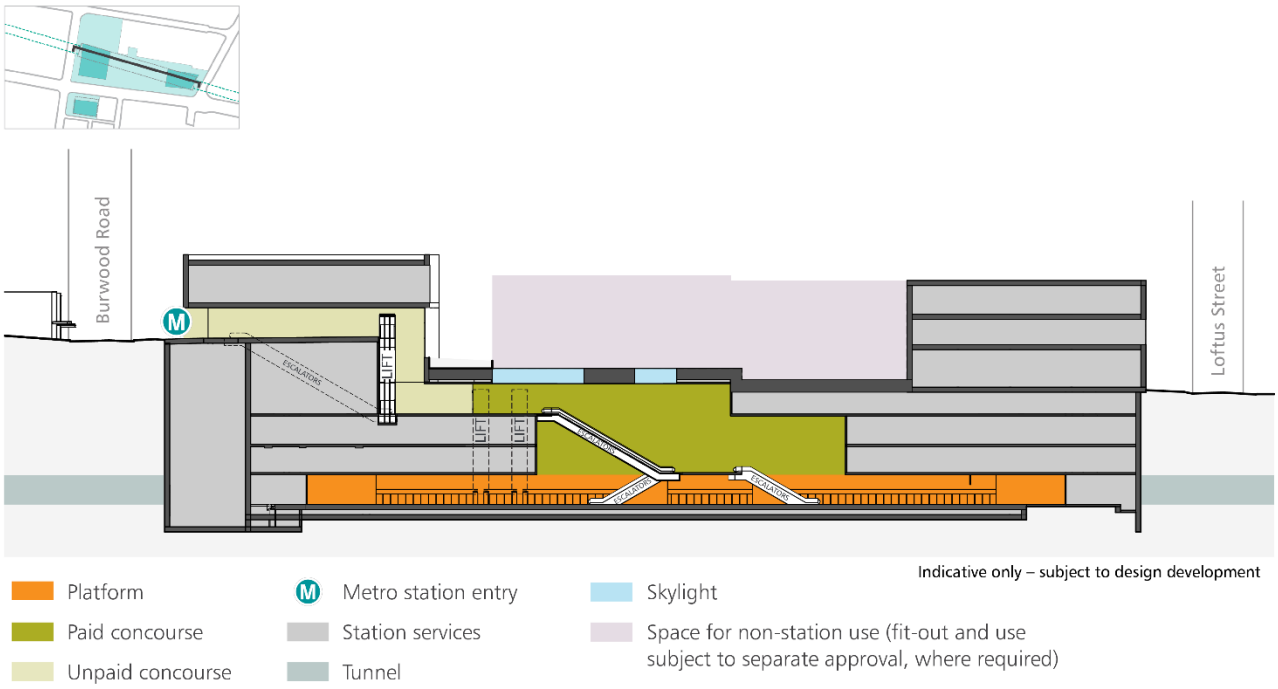


Figure 7-2 Indicative long-section – Burwood North Station

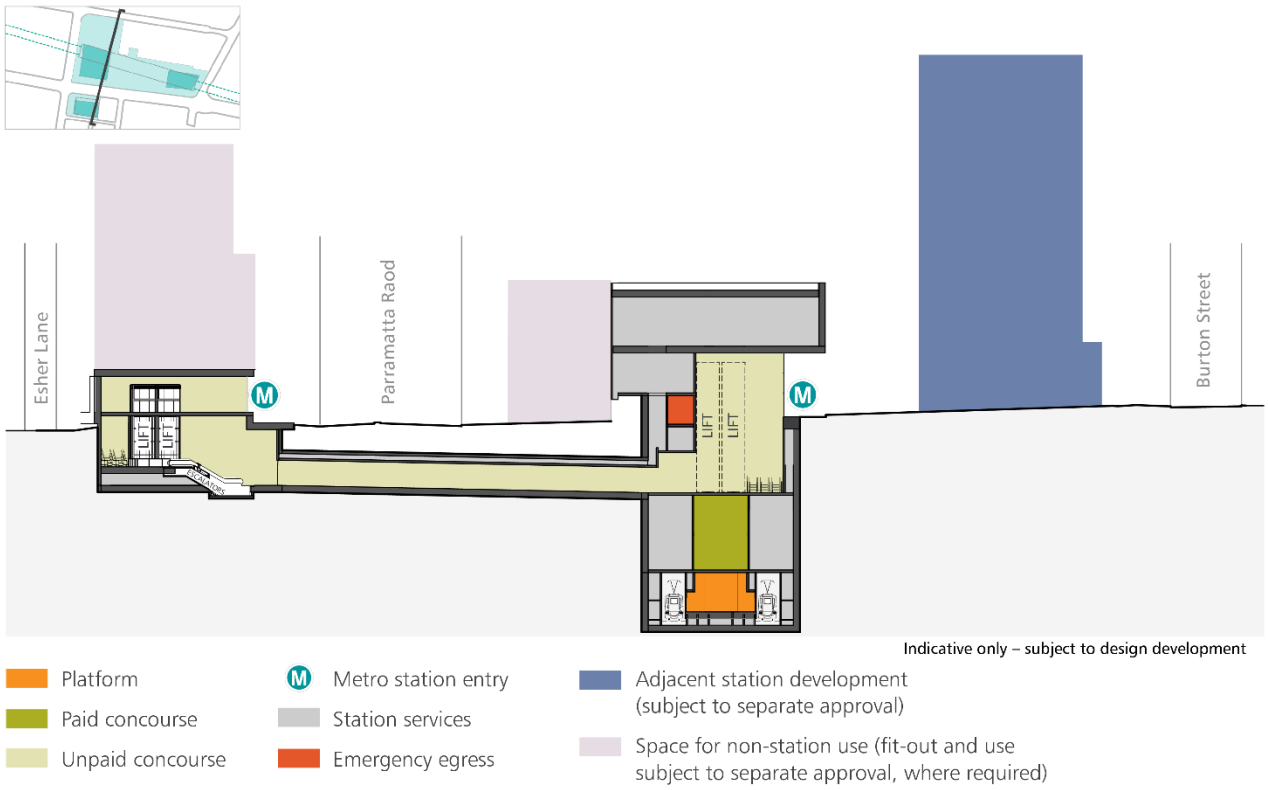


Figure 7-3 Indicative cross-section – Burwood North Station

7.1.3 Station precinct and interchange facilities

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

- bicycle parking
- new bicycle path connections providing access throughout the station precinct
- bus interchange and shelters located on Burwood Road
- kiss and ride and point-to-point vehicle facilities, including accessible kiss and ride on Burton Street
- creation of new public domain areas adjacent to the proposed station entrances
- signalisation of the intersection of Burwood Road and Burton Street
- a service access lane to support future adjacent station development, station retail and other station activation opportunities (subject to separate approval)
- the structural elements for the space for non-station uses (e.g. retail, commercial and/or community facilities), including structures:
  - between the northern station entry and station services infrastructure to, subject to design development, indicatively around 24 metres above Loftus Street (refer to the space for non-station use shown on Figure 7-2)
  - about 21 metres above the southern station entry, subject to design development (refer to the space for non-station use above the southern station entry adjacent to Esher Lane shown on Figure 7-3)
  - connected to the south of the northern entry to, subject to design development, indicatively around 18 metres above Burwood Road (refer to the space for non-station use adjacent to the northern station entry and north of Parramatta Road shown on Figure 7-3)
  - fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

The structures described above would be designed to align with future planning controls, zoning plans, and/or strategic plans including the *Parramatta Road Corridor Urban Transformation Strategy* and Canada Bay Planning Proposal. To provide a consistent design across the precinct and deliver the desired place outcomes, the additional levels of the station buildings for the spaces for non-station use need to be designed and constructed at a similar time to the station entry.

7.1.4 Provisioning for adjacent station development

As shown in Figure 7-1, Figure 7-2 and Figure 7-3, adjacent station development is proposed on the residual land required for construction, to the north of the metro station, at the corner of Burwood Road and Burton Street.

This proposal would include and has assessed the following, to support the adjacent station development:

- utility connections to support future developments, where required
- a service laneway and access to support both the metro station and future developments
- subdivision.

Delivery of the adjacent station developments does not form part of this proposal and would also be subject to separate assessment and approval (with the exception of the provisioning elements listed above). Access to the metro station would be maintained through these spaces and may be temporarily activated to provide public spaces and local community facilities. Adjacent station development is discussed further in Section 1.4.5 (Related development) of this Appendix.

7.2 Placemaking

The vision for Burwood North Station and its surrounds is for:

A well-designed high-density living and employment precinct centred on the enhanced spines of Parramatta Road and Burwood Road, providing a second mass transit node for the Burwood Strategic Centre.

7.2.1 Integration with strategic planning

With Burwood identified as a strategic centre in the Eastern City District Plan (Greater Sydney Commission, 2018c), an opportunity was sought to extend this centre to the north. To support this plan, a number of plans and strategies have been developed, which have informed the development of Burwood North Station and would guide the design development.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

Local Strategic Planning Statements

The relationship of Sydney Metro West to the *City of Canada Bay Local Strategic Planning Statement* (City of Canada Bay Council, 2020) and the Burwood Local Strategic Planning Statement (Burwood Council, 2020) are discussed in Section 7.10.5 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The main part of Burwood North Station sits within the City of Canada Bay, while the southern station entrance is in Burwood Council.

The City of Canada Bay Local Strategic Planning Statement (City of Canada Bay, 2020) prioritises land use opportunities and implications arising from Sydney Metro West. It recognises a station at Burwood North would support the Burwood Strategic Centre and facilitate land use renewal along the Parramatta Road corridor. Other themes of the Local Strategic Planning Statement that directly related to the land use vision include the creation of great streets, places and buildings for people, and aligning growth with the delivery of infrastructure. Sydney Metro West would support new and or denser development as it provides excellent access to high-frequency public transport.

The Burwood Council Local Strategic Planning Statement (Burwood Council, 2020) sets a vision for Burwood as a 'thriving town centre and cherished heritage conservation areas that are conveniently connected to world class transport, with well-designed buildings and inviting public spaces'. The planning statement advocates for improved transport options for Burwood, with a focus on new north-south transport connections and improved public and active transport options. Burwood North Station would support the development of Burwood as a dual-node centre, supporting the priorities of the Local Strategic Planning Statement. The planning statement also recognises that a metro station at Burwood North would support urban renewal along the Parramatta Road corridor.

Parramatta Road Corridor Urban Transformation Strategy

Burwood North is identified within the Burwood-Concord Precinct as part of the *Parramatta Road Corridor Urban Transformation Strategy* (NSW Government, 2016). The vision of Burwood-Concord Precinct is to be a 'commercial gateway to Burwood Town Centre based around an enlivened Burwood Road building upon existing amenity for new residents.'

A Sydney Metro West station at Burwood North would provide a second node to the Burwood centre, supporting activation of Burwood Road between Burwood and Concord.

Sydney Green Grid

St Lukes Park and Concord Oval Green Link have been identified as a Green Grid project opportunity, which would seek to connect active transport to these key open spaces. The Parramatta Road Urban Renewal Corridor is also identified as a project opportunity, with the potential to improve access to open space along the corridor as renewal occurs. A Sydney Metro West station at Burwood North would support improved access to these open spaces by significantly improving transport connectivity in the area.

7.2.2 Place and design principles

Place and design principles for Burwood North Station were identified in Section 7.10.5 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 7-2 outlines how these principles have been achieved in the Burwood North Station design.

Table 7-2 Design responses to Burwood North metro station place and design principles

Place and design principle	Design response
Improve amenity north and south of Parramatta Road with Sydney Metro as a catalyst for positive change	• the station would provide two entrances that address Burwood Road on the northern and southern sides of Parramatta Road • the entrances would be set back from the street edge to provide space for station entry plazas, including pedestrian circulation space and shade amenity • aboveground station infrastructure would be set back from Parramatta Road to provide space for street trees, pedestrians and circulation • an unpaid connection (open during station operating hours) would be provided to connect under Parramatta Road • Burwood North Station would provide opportunities for positive changes to the south along Burwood Road and to the north around the new station entry, particularly enabling day and night time activation opportunities for a diverse range of uses (residential, commercial, retail and other non-residential).
Facilitate transit-oriented development with public spaces and local services that support the station as a focal point for activity	• easy and direct interchange between buses and metro would be provided on Burwood Road, supporting connection directly to the Burwood Strategic Centre • easy and direct interchange between buses and metro would be provided on Parramatta Road, supporting east-west connectivity • the station location is complementary to the aspirations of the *Parramatta Road Corridor Urban Transformation Strategy* and would provide a mass transit connection and interchange focus to this section of the Parramatta Road corridor.
Deliver legible, safe and intuitive station entries that address both north and south of Parramatta Road	• the station entrances would be set back from the street edge to provide space for station entry plazas, including pedestrian circulation space and shade amenity • an unpaid connection (open during station operating hours) would be provided from the southern side of Parramatta Road directly into the metro station • signalisation of the Burton Street / Burwood Road intersection would provide safer access for pedestrians accessing the station from the north and west.
Improve the priority and amenity for pedestrians in the area	• the streetscape frontages on Burwood Road and Parramatta Road would have generous setbacks for pedestrians and cyclists coming into the station precinct • space is also provided for new street tree planting to improve amenity and canopy cover • a through-site link would provide improved pedestrian permeability and cyclist access between Parramatta Road and Burton Street and to the northern station entry • an east-west laneway (partially a shared zone) would also provide a pedestrian connection between Loftus Street and Burwood Road • signalisation of the Burton Street / Burwood Road intersection would provide safer access and prioritisation for pedestrians accessing the station from the north and west.

Place and design principle	Design response
Facilitate activation and urban renewal around the station in accordance with the *Parramatta Road Corridor Urban Transformation Strategy*	• the station infrastructure (including space for non-station uses) would be set back from street frontages, consistent the *Parramatta Road Corridor Urban Transformation Strategy* • the station would enable opportunities for an activated ground plane and a diverse range of residential (as part of the adjacent station development), business, retail, commercial and other non-residential uses • this proposal would facilitate activation and urban renewal around the station by provisioning for adjacent station development and constructing structures for non-station uses as described in Section 7.1 in accordance with the *Parramatta Road Corridor Urban Transformation Strategy*.
Enable provision of through-site links to enhance permeability in and around the station	• a through-site link would provide improved pedestrian permeability and cyclist access between Parramatta Road and Burton Street and to the northern station entry • an east-west laneway (partially a shared zone) would also provide a pedestrian connection between Loftus Street and Burwood Road • an additional north south through site link between Parramatta Road and Burton Street would be safeguarded.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 7-4, Figure 7-5 and Figure 7-6.

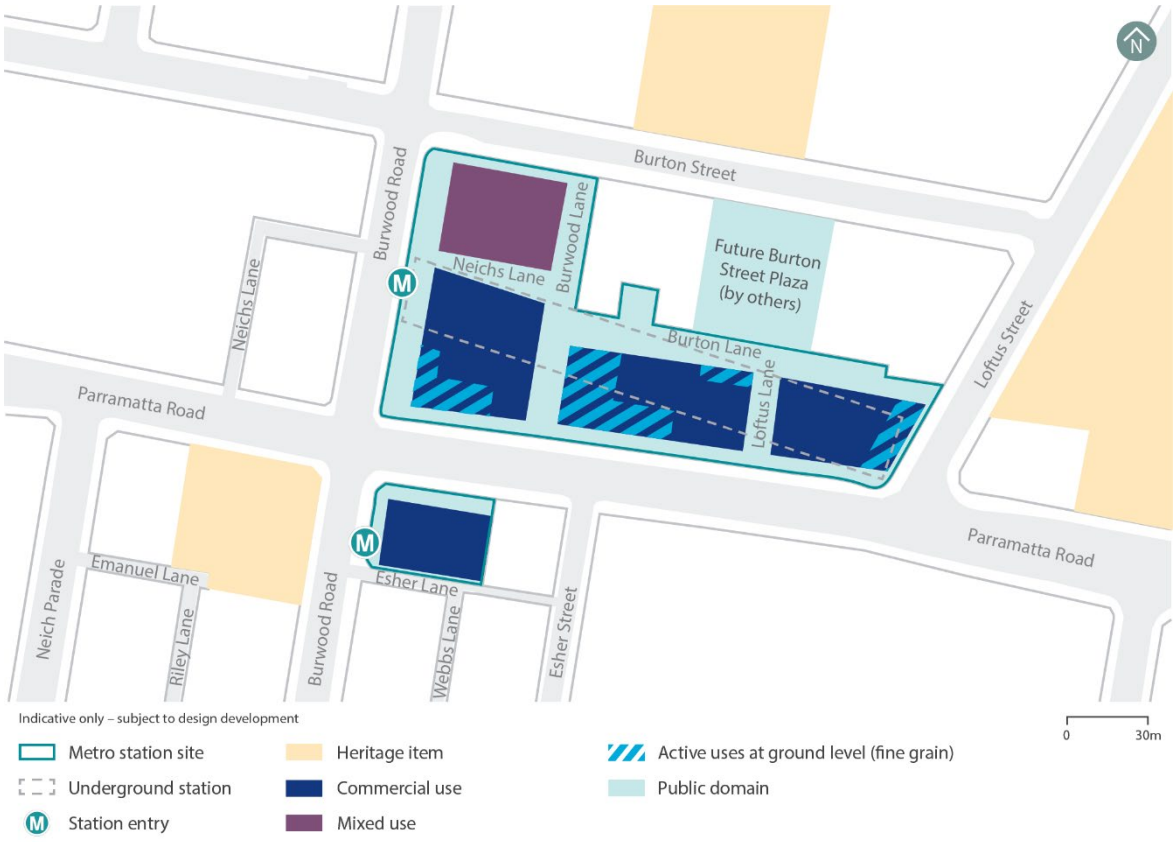


Figure 7-4 Land use and function urban design strategies – Burwood North Station

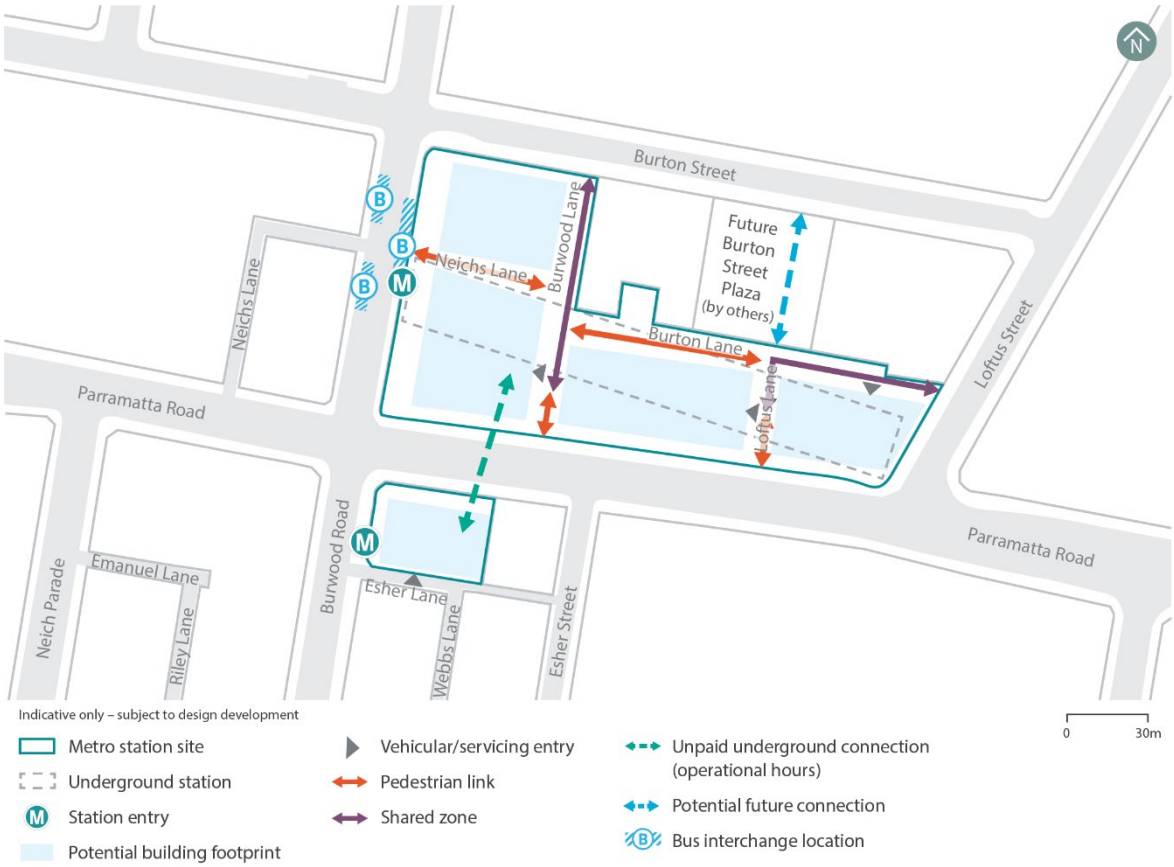


Figure 7-5 Access and connectivity urban design strategies – Burwood North Station

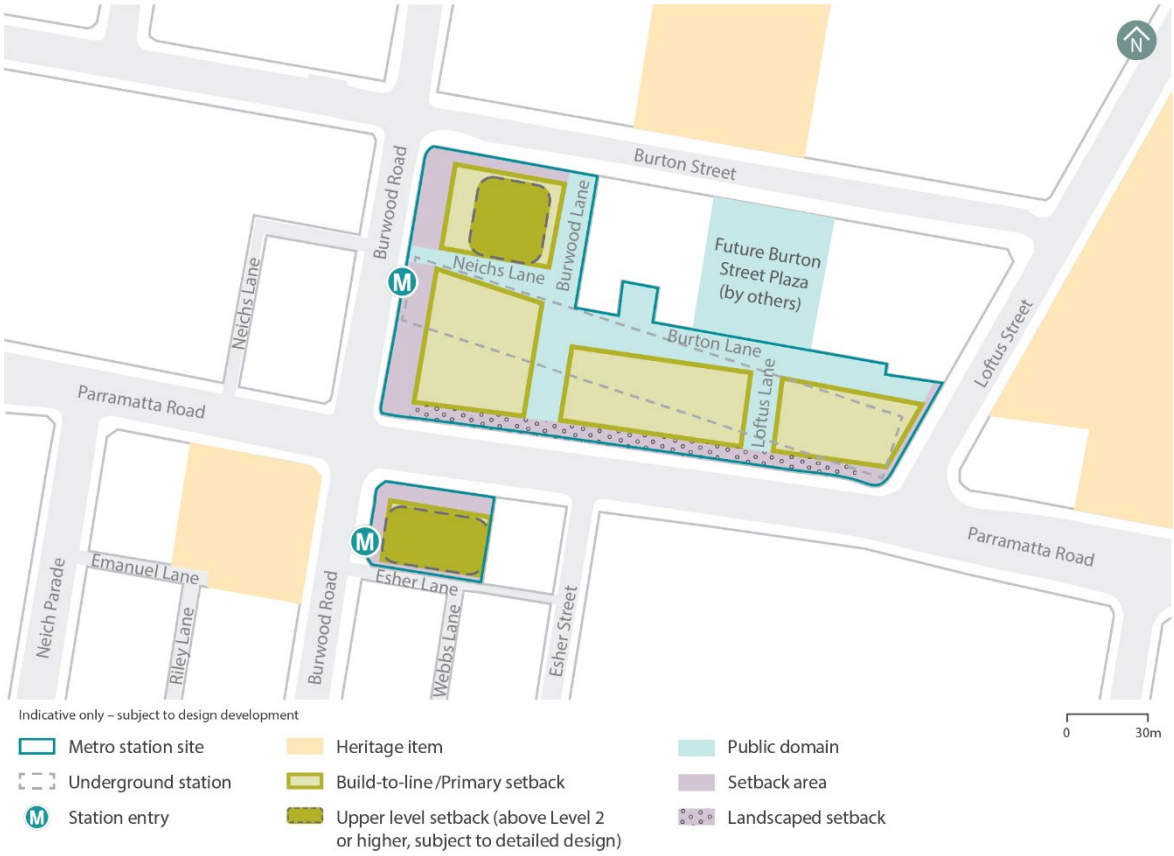


Figure 7-6 Built form urban design strategies – Burwood North Station

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

- station entries that are positioned away from the busy movement environment along Parramatta Road and focused on Burwood Road to provide direct access to the existing and future main street
- generous setbacks to Parramatta Road enabling the enhancement of the amenity of Parramatta Road and giving flexibility for the future opportunities
- generous setbacks to Burwood Road to provide space for pedestrian movement and high amenity activated 'place' around the bus interchange and both station entries
- retention of all four existing pedestrian crossings at the intersection of Parramatta Road and Burwood Road
- through site links and active frontages with opportunities for a diverse range of ground level uses to enhance permeability and day and night-time activation along Burwood Road, Parramatta Road, Loftus Street and key edges along new through site links and/or laneways
- provision of an unpaid underground link that provides safe grade-separated crossing of Parramatta Road
- new traffic signals (and removal of the existing roundabout) at the intersection of Burton Street and Burwood Road to provide safe pedestrian access from the north and west
- provision for cyclists along the north-south through-site link connecting Parramatta Road and Burton Street
- new bus stops on Burwood Road and existing bus stops on Parramatta Road, addressing the key north-south and east-west movement corridors while being close to the station entries.

7.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the Burwood North Station design. The delivery of a metro station provides a new mass transit hub to the *Parramatta Road Corridor Urban Transformation Strategy* area. Burwood North Station would deliver new public domain to optimise the interchange function and provide safe, accessible station access.

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

- generous setbacks from Burwood Road near the station entries and from Parramatta Road to provide easy and safe pedestrian access to the station
- new signalised pedestrian crossings at the Burwood Road / Burton Street intersection to facilitate pedestrian access to the northern station entry from the north and west
- an unpaid underground pedestrian connection (open during station operating hours) to allow easy access for customers from the south without needing to cross Parramatta Road
- provision for cyclists along the north-south through-site link between Parramatta Road and Burton Street, connecting the bicycle parking near the northern station entry
- direct access to new bus stops on Burwood Road and existing bus stops of Parramatta Road, providing connection to north-south and east-west bus services
- new kiss and ride zones near the northern station entry on Burton Street and Burwood Road, and near the southern station entry on Burwood Road
- a new taxi zone near the southern station entry on Burwood Road.

7.3 Construction description

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

Major civil construction including station excavation and tunnelling work at Burwood North Station was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

7.3.1 Overview

Construction of Burwood North Station would require the continued use of two construction sites established under the previous Sydney Metro West planning application, including a northern construction site and a southern construction site. The land for of these construction sites will be consistent with that described in the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The northern construction site would be located on Parramatta Road, bounded by Burwood Road, Burton Street and Loftus Street and the southern construction site would be located on Parramatta Road, bounded by Burwood Road and Esher Lane.

The majority of the Burwood North Station construction sites would be levelled and excavated as a result of work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal.

The location and indicative layout of the Burwood North Station construction sites for this proposal are shown in Figure 7-7. Some activities would occur outside these construction sites, such as delivery of construction equipment and station precinct and interchange work.

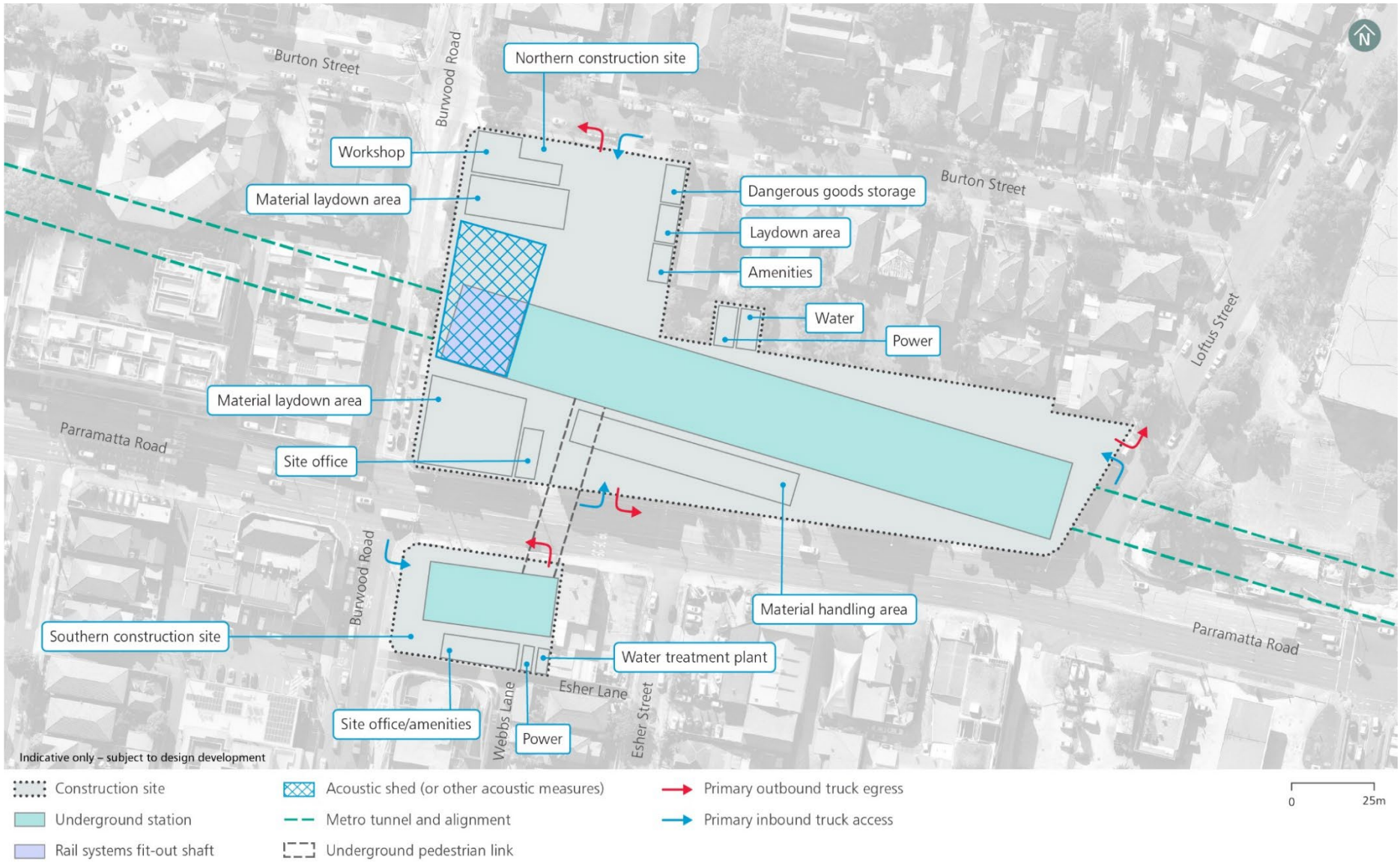


Figure 7-7 Indicative construction sites layout – Burwood North Station

7.3.2 Construction work

Key construction work at the Burwood North Station construction sites would include:

- enabling and site establishment work, including installation of an acoustic shed (or other acoustic measures) over the rail systems fit-out shaft at the Burwood North northern construction site
- construction of the station and structures for non-station use
- station fit-out, including the underground pedestrian link below Parramatta Road, providing a permanent connection between two station entrances to the north and south of Parramatta Road
- construction of station precinct and interchange facilities, including provisioning for adjacent station development
- access for tunnel fit-out and rail systems work
- finishing work, testing and commissioning.

The indicative construction program for Burwood North Station is shown in Figure 7-8.

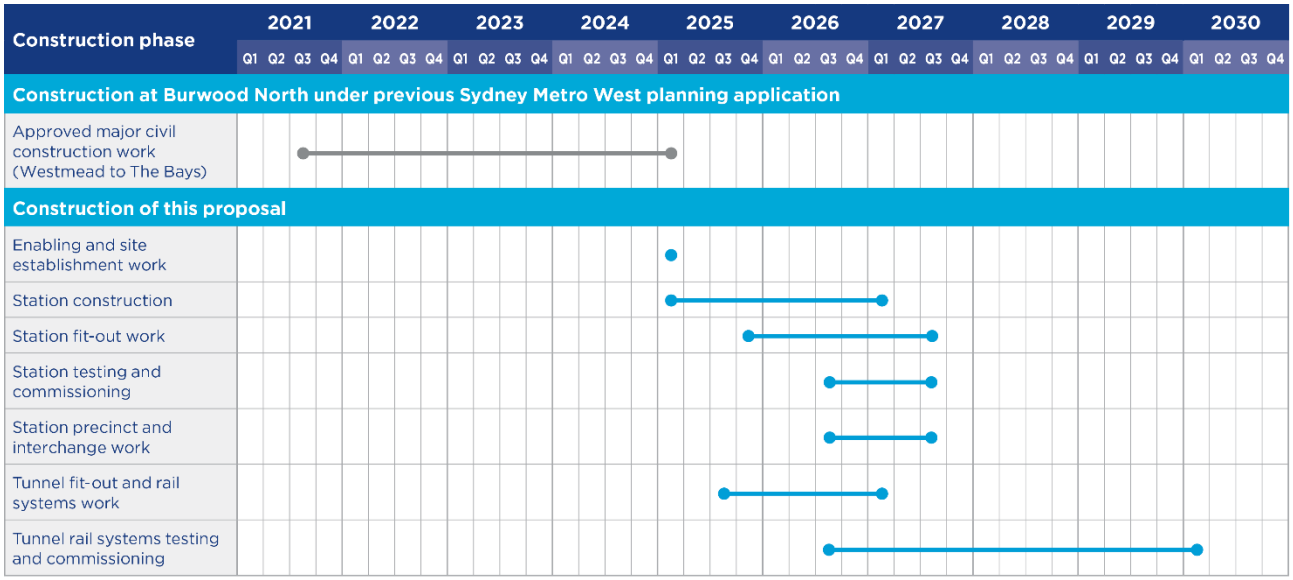


Figure 7-8 Indicative construction program – Burwood North Station

Other construction elements specific to Burwood North Station are shown in Table 7-3. Indicative construction hours, plant and equipment and workforce for Burwood North metro station construction sites are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Burwood North Station as described in the table below, are also depicted on Figure 7-7.

Table 7-3 Other construction elements – Burwood North Station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established by the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the northern construction site via left-in from Parramatta Road, Burton Street and Loftus Street • egress from the northern construction site via left-out onto Parramatta Road, Burton Street and Loftus Street • access to the southern construction site via left-in from Burwood Road • egress from the southern construction site via left-out onto Parramatta Road.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • potential secondary egress from the southern construction site via left-out onto Burwood Road to support access to the site following construction of the station box.

Construction element	Description
Peak daily traffic movements	Northern construction site: • about 320 daily heavy vehicle movements • about 360 daily light vehicle movements. Southern construction site: • about 168 daily heavy vehicle movements • about 168 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Temporary transport network modifications during construction of this proposal would include: • temporary relocation of the bus stop along the southern side of Parramatta Road (continued impact from previous Sydney Metro West planning application). The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about two spaces on Burton Street along the northern kerb (near Burwood Road) to accommodate statutory No Stopping requirements and kerb setbacks • about 10 spaces on the western side of Burwood Road between Parramatta Road and Burton Street to accommodate two northbound bus stops • about five spaces on the eastern side of Burwood Road between Parramatta Road and Burton Street to accommodate two southbound bus stops • about seven spaces along the western side of Loftus Street between Parramatta Road and Burton Street for the access and egress to the new laneway • about seven spaces along the southern side of Burton Street to accommodate the kiss and ride zones. In addition to the parking spaces that would be permanently removed, there would also be the following temporary on-street parking impacts during construction of this proposal: • removal of about 15 spaces along Burton Street (continued impact from previous Sydney Metro West planning application) • short-term closures (for around a few months) of some spaces on Burwood Road and Burton Street to facilitate precinct construction works (i.e. to construct new pedestrian and interchange facilities).

8.0 Five Dock Station

8.1 Station and precinct description

8.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with the City of Canada Bay Council since exhibition of the Environmental Impact Statement for the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- the change from a binocular cavern to a single span cavern design. This design change would provide improved customer environment (space and wayfinding) within the station and a more efficient customer journey from the station entry to the platforms
- an expansion of Fred Kelly Place to the north (within the station precinct), consistent with the City of Canada Bay Council plans and supported by the Design Advisory Panel
- provision of space for non-station uses (such as retail) fronting the Fred Kelly Place extension, East Street and Great North Road to activate these spaces, responding the feedback from the City of Canada Bay Council
- maximising opportunities for ground level non-station uses (such as retail) at the corner of Second Avenue and Waterview Street and along the future laneway (to be delivered by Council), responding the feedback from Canada Bay Council
- scale and built form of the station buildings aligning with local planning controls, responds to the local village character and minimises visual and overshadowing impacts, responding to feedback from Canada Bay Council
- architectural and contextual heritage response along the interface with the locally-listed St Albans Anglican Church, responding to feedback by the Design Advisory Panel and City of Canada Bay Council.

8.1.2 Station design

The indicative layout of Five Dock Station is shown in Figure 8-1, with a long-section and cross-section shown in Figure 8-2 and Figure 8-3 respectively. The design of the metro station is subject to design development.

The key features of Five Dock Station are provided in Table 8-1.

Table 8-1 Key features – Five Dock Station

Key features	Description
Proposed station entry	Entry at Fred Kelly Place.
Customers	• residents within walking and cycling distance • visitors to commercial, retail and recreational areas • customers transferring to and from other transport modes.
Primary station function	Origin and interchange.
Catchment	Residential, commercial and retail.
Transport interchange	• walk • cycle • bus • point-to-point transport • kiss and ride

Five Dock Station would consist of an underground station with two platforms in an east–west orientation.

Customers would access the station via an entrance at the northern edge of Fred Kelly Place, which would be extended to the north as part of this proposal. An internal concourse would be provided. Escalators and/or stairs and lifts would provide access from the platform to the surface.

The eastern site would accommodate station related plant and emergency egress stairs from the eastern end of the platforms.

The aboveground station infrastructure (including the station services and space for non-station use) would be, subject to design development, indicatively around 17 metres above street level. Station building heights would consider the local planning controls subject to ongoing consultation with Canada Bay Council.

Figure 8-1 Indicative layout and key design elements – Five Dock Station

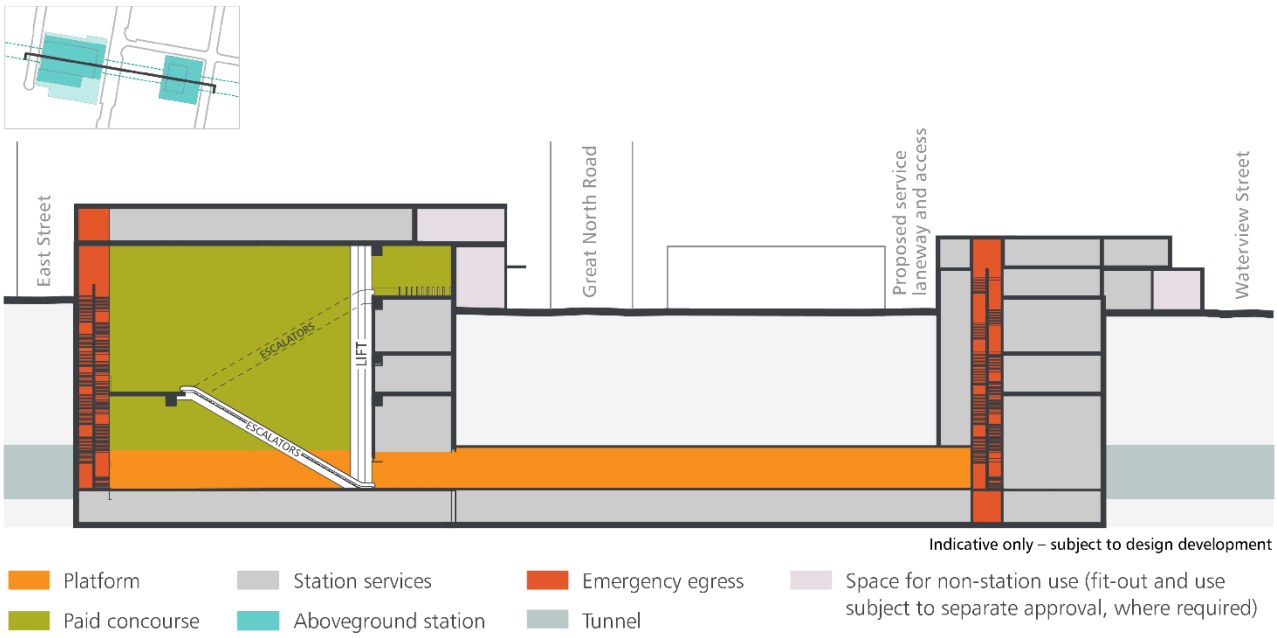


Figure 8-2 Indicative long-section – Five Dock Station

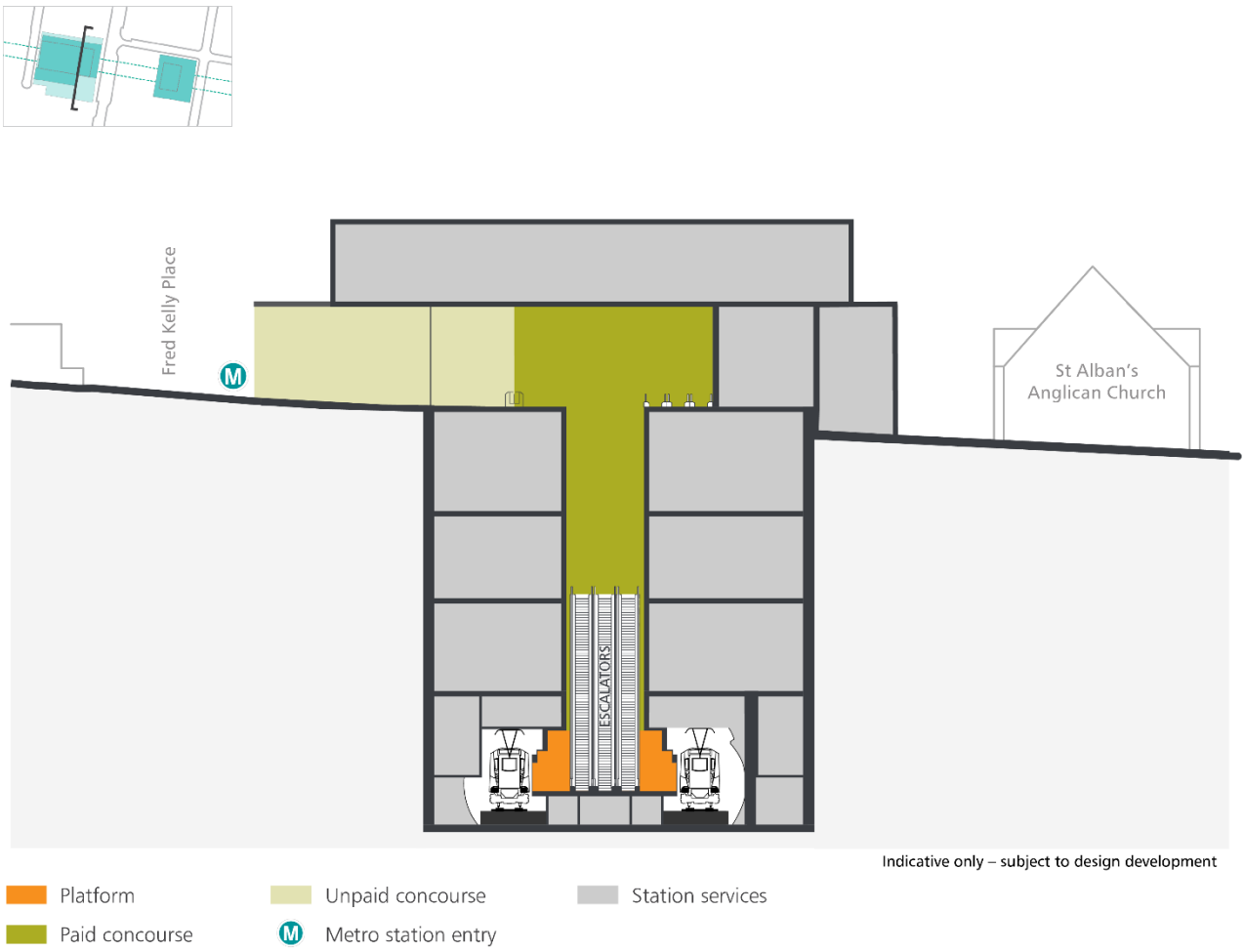


Figure 8-3 Indicative cross-section – Five Dock Station

8.1.3 Station precinct and interchange facilities

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

- bicycle parking
- new bicycle path connections providing access throughout the station precinct
- bus interchange located kerbside on both sides of Great North Road
- accessible kiss and ride facility on East Street
- kiss and ride facilities on Waterview Street and on Second Avenue
- parking spaces to be converted to kiss and ride areas during peak hours on Garfield Street and on Second Avenue
- point-to-point vehicle facilities on Garfield Street
- extension of the existing Fred Kelly Place to the new station entry in the north (refer to Figure 8-1 for extent of public domain works to be delivered as part of this proposal)
- modifications to the existing signalised pedestrian crossing on Great North Road
- footpath widening on both sides of Great North Road, adjacent to proposed signalised crossings and proposed and existing bus stops
- loading area for station operations
- built elements and provision of utilities and services to provide space for future non-station uses (e.g. retail, commercial and/or community facilities), including structures connected to the eastern and western sites. Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

Sydney Metro is also investigating options for a pedestrian crossing of Second Avenue at Great North Road.

Five Dock Station would also be designed in accordance with the precinct place and design and the corridor-wide urban design principles outlined in Section 1.2 (Placemaking and design) of this Appendix.

8.1.4 Provisioning for over and/or adjacent station development

Over and/or adjacent station development is not proposed at Five Dock Station.

8.2 Placemaking

The vision for Five Dock Station and its surrounds is to:

Deliver a station precinct development that contributes to the character and identity of Five Dock as a revitalised, diverse and vibrant local centre, well connected to all transport modes.

8.2.1 Integration with strategic planning

The *Eastern City District Plan* (Greater Sydney Commission, 2018b) identifies Five Dock as a local centre. A number of plans and strategies have been developed, which have informed the development of Five Dock Station and would guide the future design.

This proposal has considered the objectives of Better Placed (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City of Canada Bay Local Strategic Planning Statement

The relationship of Sydney Metro West to the City of Canada Bay Local Strategic Planning Statement (City of Canada Bay Council, 2020) is discussed in Section 7.10.6 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Local Strategic Planning Statement highlights Five Dock Station as supporting development of the local centre focused on Great North Road and building on existing qualities. Priorities include expanding the range of services and employment opportunities and encouraging evening activities and the night-time economy.

Key actions include implementing the expansion of Fred Kelly Place and encouraging a diversity of dwellings within the vicinity of the Five Dock town centre. The planning statement also advocates for walking and cycling connections to be integrated with new metro stations. Sydney Metro West would support an increased diversity of housing near the station and would activate and expand Fred Kelly Place to the north.

Five Dock town centre revitalisation

The Five Dock town centre includes the commercial and retail area along Great North Road, with Fred Kelly Place as the focal point of the community.

The Five Dock Town Centre Urban Design Study (City of Canada Bay Council, 2013) aims to ensure that the town centre provides for the community, creates opportunities for investment, is easy to get around and provides an enhanced built environment.

Based on the Five Dock Town Centre Urban Design Study, the City of Canada Bay Council has planned and begun to deliver public domain improvements to encourage the centre's activation and enhancement. This includes an expansion of Fred Kelly Place that would be delivered as part of the metro station. The station would also support the opportunity for a new public domain to the east of Great North Road, with through-site links to Second Avenue and Waterview Street. This would create the potential for an active frontage to the eastern station services building.

8.2.2 Place and design principles

Place and design principles for Five Dock Station were identified in Section 7.10.6 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and Better Placed design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 8-2 outlines how these principles have been achieved in the Five Dock Station design.

Table 8-2 Design responses to Five Dock Station place and design principles

Place and design principle	Design response
Facilitate improved public and active transport accessibility for the community by providing efficient access and interchange	• the station entrance would face directly onto Fred Kelly Place and be coordinated with Council's aspirations for expansion and enhancement of this plaza • bicycle parking facilities would be provided near the station entry • bus interchange immediately outside the station entry on Great North Road.
Respect and contribute to the local character and amenity of the Five Dock town centre	• the station entry would be located to encourage and contribute to the activation of the Great North Road street environment, enhance Fred Kelly Place as the community focal point and assist with greater east west access between East Street and Waterview Street • the height and scale of the station buildings are relatively low, in keeping with the local setting • the public domain and precincts work associated with the station would be integrated with and safeguard for the planned Council programs for the broader precinct. This includes the expansion of Fred Kelly Place and through-site links near the eastern station services building.
Facilitate an active ground plane along Great North Road and Fred Kelly Place	• aboveground station buildings would incorporate space for future ground floor retail activation along Great North Road and at Fred Kelly Place.
Support an enhanced Fred Kelly Place, in consideration of the principles outlined in the *Five Dock Town Centre Urban Design Study*	• the station entry would face directly onto Fred Kelly Place and includes the expansion and enhancement of this plaza consistent with Council's aspirations • the public domain and precincts work associated with the station would be integrated with and safeguard for the planned Council programs for the broader precinct. This includes the expansion of Fred Kelly Place and through-site links near the eastern station services building.

Place and design principle	Design response
Promote connectivity to and from the station through streets, lanes and public places	• the design would provide part of the future north-south connection from Second Avenue to the planned 'new town square' (to be delivered by Council) and provide opportunities for potential ground floor retail activation at the eastern station services building along the future east-west laneway (to be delivered by Council).

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 8-4, Figure 8-5 and Figure 8-6.

Figure 8-4 Land use and function urban design strategies – Five Dock Station

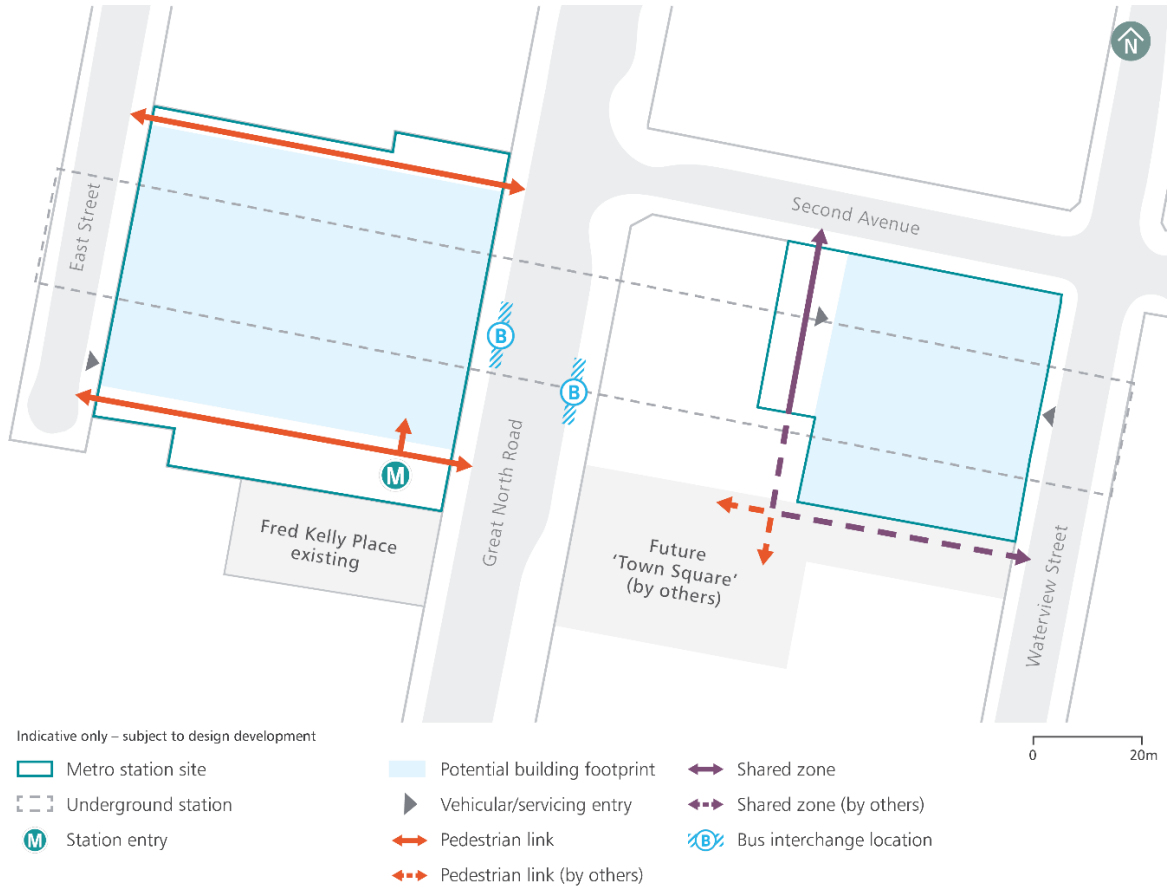


Figure 8-5 Access and connectivity urban design strategies – Five Dock Station

Figure 8-6 Built form urban design strategies – Five Dock Station

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

- providing a station entry to, and an expansion of, Fred Kelly Place
- providing a set back of the station entry building to the adjacent St Alban's Church, improving the setting and views to this heritage item
- providing for future ground floor retail activation at the station entry fronting Fred Kelly Place and Great North Road, as well as along a part of East Street, Second Avenue and Waterview Street
- supporting Council's vision for the enhancement of the town centre by safeguarding the potential for laneways and linkages, as well as potential ground floor activation of the eastern station services building
- recognising Great North Road as a key movement corridor while balancing improved pedestrian crossing facilities near the station entry and opportunities for active uses and enhanced place outcomes.

8.2.3 Transport interchange, access and connectivity

Integration with other transport modes, including active transport, is fundamental to improving access to the public spaces and local community facilities surrounding or delivered as part of the Five Dock Station design. The delivery of a metro station provides a new mass transit to a new area. Five Dock Station would deliver public domain enhancements to optimise the interchange function and provide safe, accessible station access. It would also build on the recent and planned upgrades to Great North Road.

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

- creation of a high amenity, pedestrian dominated plaza environment around the station entry within an expanded Fred Kelly Place, improving access to the western catchment through Fred Kelly Place
- improved and narrower pedestrian crossing of Great North Road near the station entry
- bicycle parking near the station entry
- direct access to new and existing bus stops on Great North Road, near the station entry in Fred Kelly Place. Customers would be able to access the station entry using the upgraded mid-block signalised crossing
- an accessible kiss and ride space near the station entry on East Street
- kiss and ride spaces on Waterview Street, Second Avenue and Garfield Street and a point-to-point zone on Garfield Street in proximity to the station. Customers would be able to access the station from these facilities using the existing wide footpaths through the Five Dock town centre.

8.3 Construction description

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

Major civil construction including station excavation and tunnelling work at Five Dock Station was assessed and approved under *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a) and does not form part of this proposal.

8.3.1 Overview

Construction of Five Dock Station would require the continued use of two construction sites (one west and one east of Great North Road) established under the previous Sydney Metro West planning application. The footprint of these construction sites will be consistent with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a).

The Five Dock western construction site will be located between Great North Road and East Street, to the north of Fred Kelly Place and south of St Alban's Anglican Church and the Five Dock eastern construction site will be located on the corner of Second Avenue and Waterview Street.

These construction sites would be levelled and excavated as a result of the work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal.

The location and indicative layout of the Five Dock construction sites are shown in Figure 8-7. Some activities would occur outside this construction footprint, such as delivery of construction equipment and station precinct and interchange work.

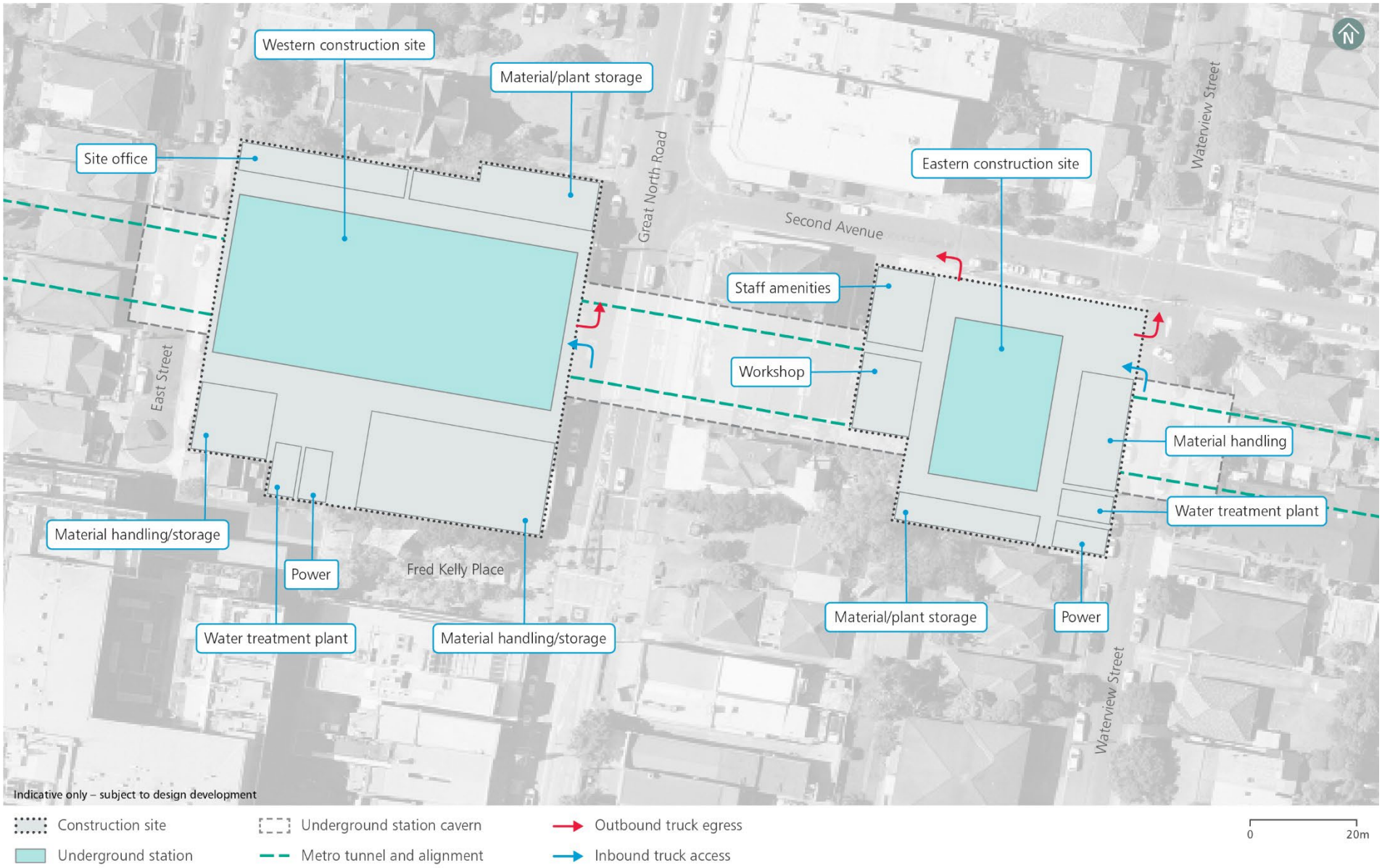


Figure 8-7 Indicative construction sites layout – Five Dock Station

8.3.2 Construction work

Key construction work at the Five Dock construction sites would include:

- enabling and site establishment work
- minor excavation for the station building
- construction of the station and structures for non-station use
- station fit-out
- construction of station precinct and interchange facilities
- finishing work, testing and commissioning.

The indicative construction program for Five Dock Station is shown on Figure 8-8.

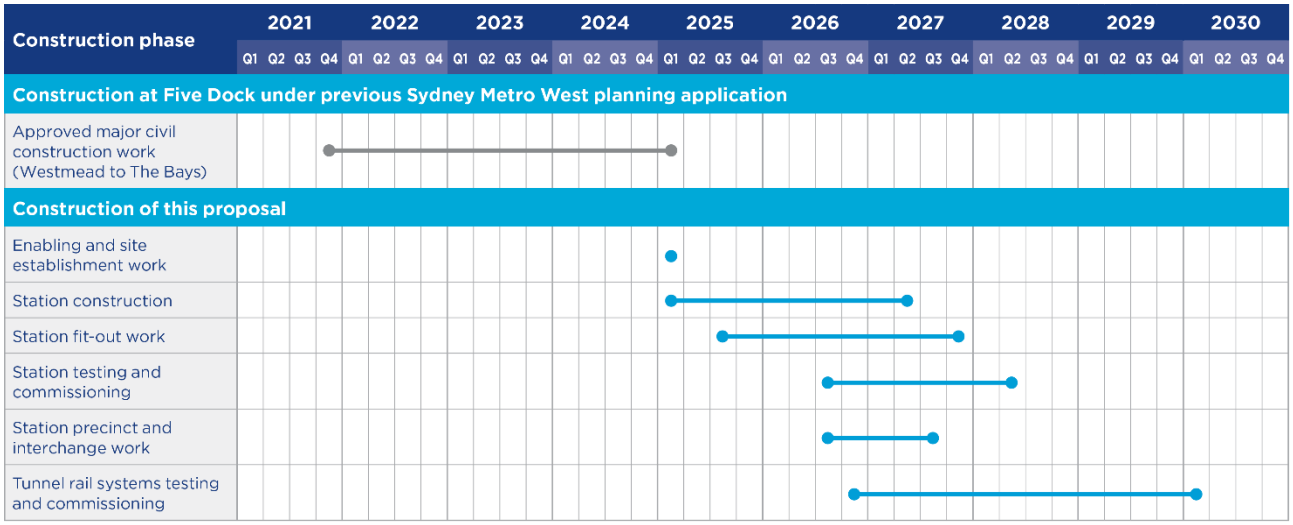


Figure 8-8 Indicative construction program – Five Dock Station

Other construction elements specific to Five Dock Station are shown in Table 8-3. Indicative construction hours, plant and equipment and workforce for Five Dock Station construction sites are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to the Five Dock Station construction sites as described in the table below, are also depicted on Figure 8-7.

Table 8-3 Other construction elements – Five Dock Station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the eastern construction site via left-in from Waterview Street • egress from the eastern construction site via left-out onto Second Avenue • access to and egress from the western construction site via left-in from Great North Road and left-out onto Great North Road.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • egress from the eastern construction site via left-out onto Waterview Street. Additional investigations into alternate egress arrangements would be undertaken to support the construction of this proposal at Five Dock.

Construction element	Description
Peak daily traffic movements	Eastern construction site: • about 224 daily heavy vehicle movements • about 226 daily light vehicle movements. Western construction site: • about 224 daily heavy vehicle movements • about 276 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Temporary transport network modifications during construction of this proposal would include: • Waterview Street one-way northbound from the main car park to Second Avenue (continued from previous Sydney Metro West planning application) • Second Avenue one-way westbound from Second Avenue to Great North Road (continued from previous Sydney Metro West planning application). The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about three spaces, including one accessible parking space on East Street, to accommodate access to the station loading dock • about 12 spaces along the western side of Great North Road between the midblock crossing and Second Avenue to accommodate the new bus stops • about two spaces along the southern side of Second Avenue west of Waterview Street to accommodate new kiss and ride zone • about five spaces on Second Avenue between Great North Road and Waterview Street to accommodate new kiss and ride zone • about three spaces on Waterview Street to accommodate new kiss and ride zone • about two spaces on Garfield Street to accommodate new kiss and ride zone. In addition to the parking spaces that would be permanently removed, there may be short-term closures (for around a few months) of some on-street parking spaces in the following locations during construction of this proposal to facilitate precinct construction works (i.e. to construct new pedestrian and interchange facilities): • Great North Road • East Street • Second Avenue • Waterview Street • Garfield Street.

9.0 The Bays Station

9.1 Station and precinct description

9.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with the Inner West Council and the NSW Department of Planning and Environment since exhibition of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- realignment of the main vehicle access road around the edge of the precinct to provide improved pedestrian and public open space outcomes. This responds to feedback from the NSW Department of Planning and Environment and is supported by the Design Advisory Panel
- locating the bus stops to the south of the precinct rather than directly adjacent to the station, which would impede connections to the waterfront, responding to feedback from the Design Advisory Panel
- locating the traction substation on the edge of the precinct near the former White Bay Power Station. This avoids the need for this large industrial element to be located within the new pedestrian-focused precinct. The Design Advisory Panel also identified that this provided the opportunity for the traction substation to be designed as a new industrial layer of infrastructure
- the provision of new public open space between the station entry, the former White Bay Power Station and the foreshore, responding to feedback from the Inner West Council
- a design that responds to the key heritage view lines associated with the former White Bay Power Station, consistent with the Conservation Management Plan and feedback from the Inner West Council and the NSW Department of Planning and Environment
- the provision of active transport links to the foreshore, Rozelle Parklands, Balmain and toward the future reinstated Glebe Island bridge (by others), based on feedback from the Inner West Council.

9.1.2 Station design

The indicative layout and key design elements of The Bays Station are shown in Figure 9-1, with a long-section and cross-section shown in Figure 9-2 and Figure 9-3 respectively. The design of the metro station is subject to design development.

The key features of The Bays Station are provided in Table 9-1.

Table 9-1 Key features – The Bays Station

Key features	Description
Proposed station entry	Entry to the south of White Bay, near the future Bays Waterfront Promenade.
Customers	• new residents within the precinct • existing residents within walking and cycling distance • employees and visitors to and from business, education, and districts within The Bays • visitors to and from retail, commercial and recreational attractions • customers transferring to and from other transport modes.
Primary station function	Origin and destination.
Catchment	Employment, residential and recreation.

Key features	Description
Transport interchange	• walk • cycle • bus • point-to-point transport • kiss and ride.

The Bays Station would consist of an underground station with an island platform in an east–west orientation.

Customers would access the station via an entrance to the south of White Bay, near the future Bays Waterfront Promenade. Escalators and/or stairs and lifts would provide access to the platform from the surface. Public domain areas would be provided within the vicinity of the station, generally in areas shown on Figure 9-1.

The aboveground station infrastructure (including the station services, space for non-station use and concourse) would be, subject to design development, indicatively around 25 metres in height.

A new precinct street (realigned Port Access Road) would be delivered under this proposal to provide connections to the station and within the precinct. The Port Access Road will have been relocated to a temporary position during construction, as part of work carried out under the determined *The Bays road relocation works Review of Environmental Factors* (Sydney Metro, 2020d). This proposal would realign it to a permanent position to support operation.

A landscape and drainage strategy would be implemented to support the station and adjacent station development (subject to separate approval). Areas for station services and utilities would also be provided.

A traction substation would be provided within the vicinity of The Bays Station. Further detail on the proposed traction substation is provided in Section 1.5.3 (Substations and traction power supply) of this Appendix. The traction substation would be, subject to design development, indicatively around 20 metres in height. Sydney Metro is continuing to consider the location, design and sizing of the traction substation to minimise impacts to the adjacent heritage listed White Bay Power Station.

Sydney Metro will continue to work with the NSW Department of Planning and Environment to integrate The Bays Station with the *Bays West Place Strategy* (2021a) and associated draft *Bays West Urban Design Framework* (2021b) and relevant sub-precinct master plans. This may include changes to the:

- overall street network (such as the layout and function of the streets) within the precinct, and access to the precinct from Robert Street
- location of interchange facilities
- public domain and adjacent station development proposed throughout the precinct.

The NSW Department of Planning and Environment's ongoing master planning work at Bays West is subject to separate community consultation and process.

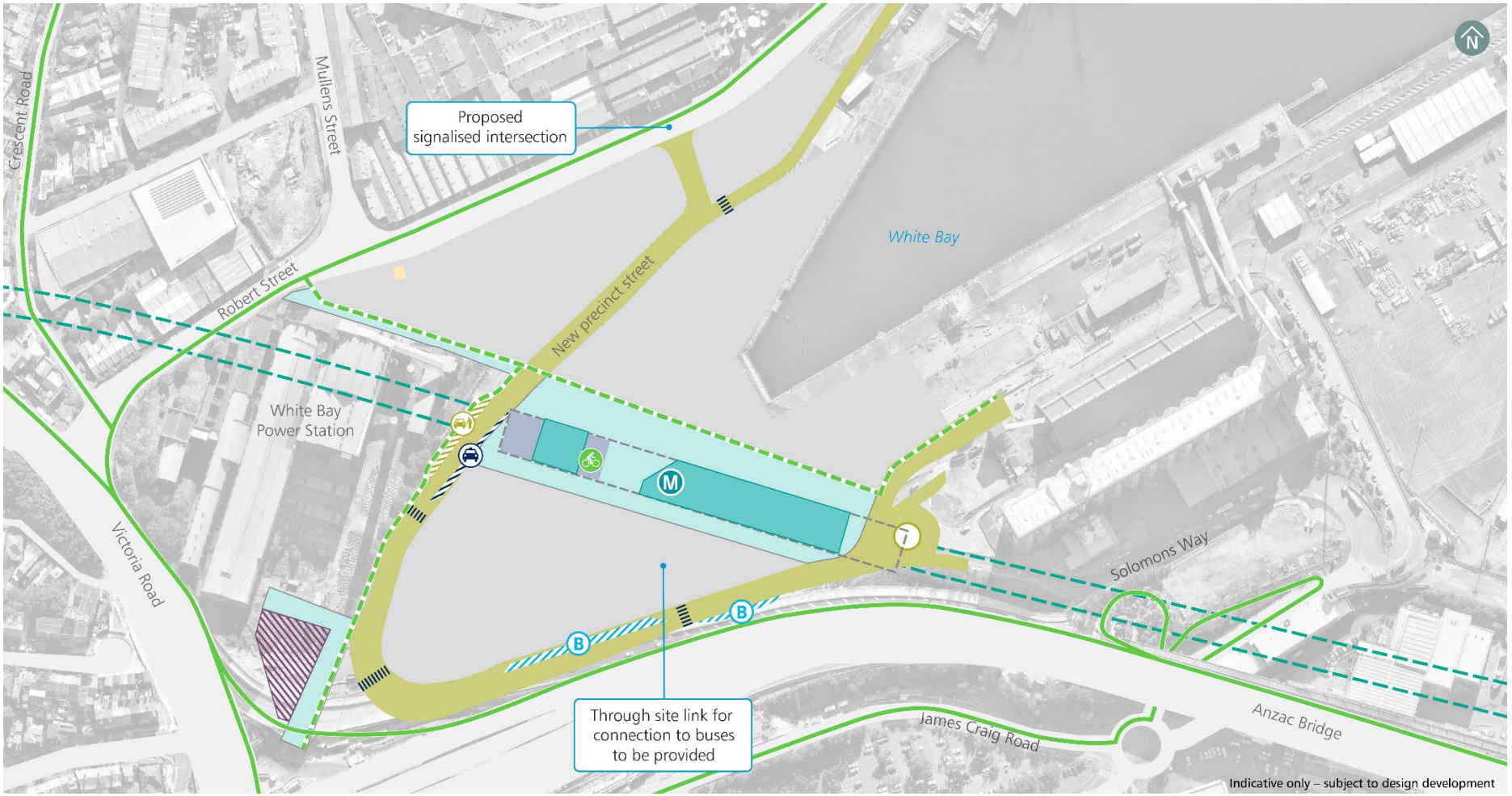


Figure 9-1 Indicative layout and key design elements – The Bays Station

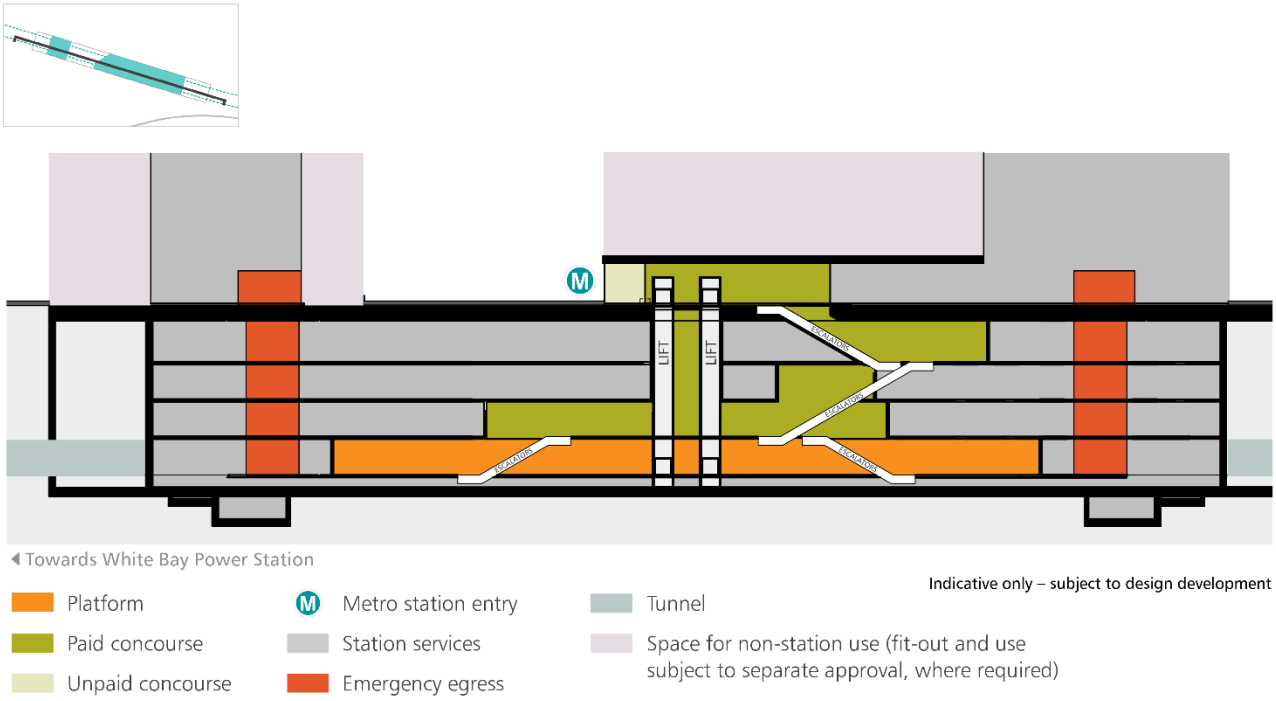


Figure 9-2 Indicative-long section – The Bays Station

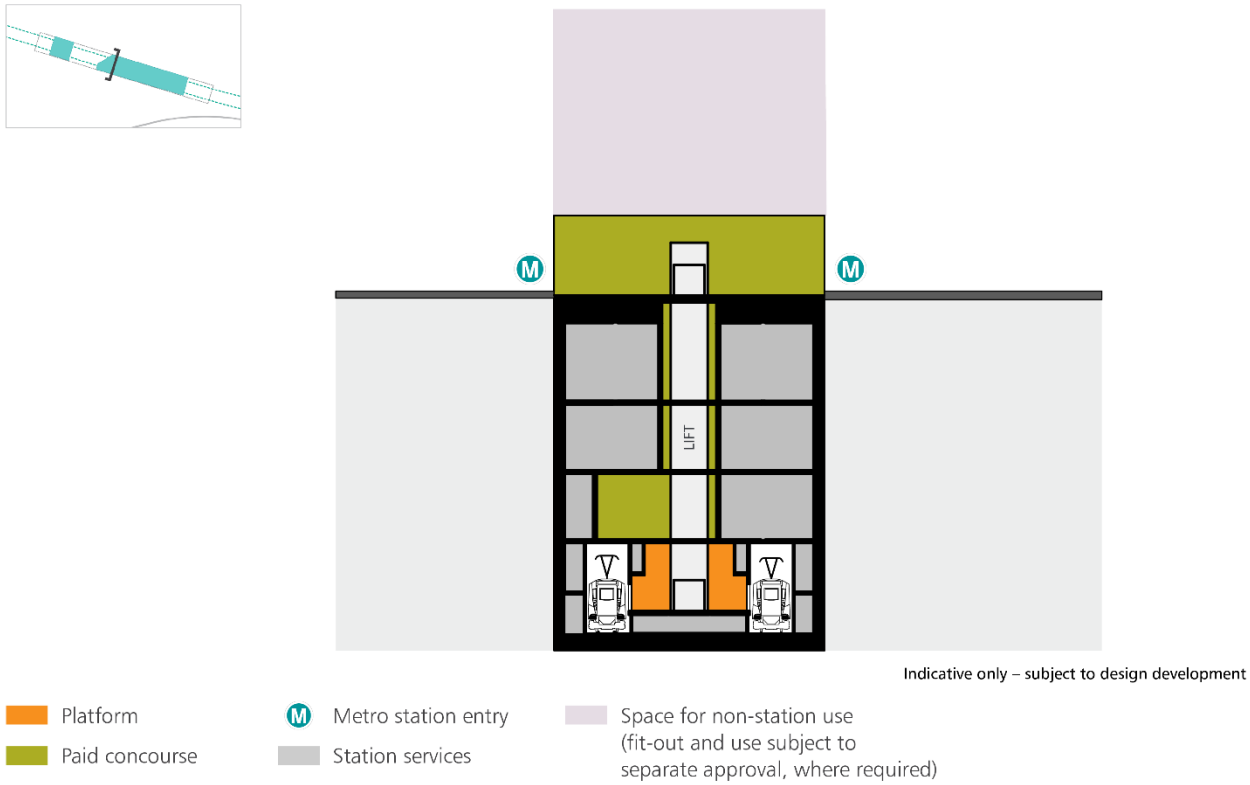


Figure 9-3 Indicative cross section – The Bays Station

9.1.3 Station precinct and interchange facilities

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

- a pedestrian network within the vicinity of the station to enable access to the station
- bicycle parking
- new bicycle path connections providing access throughout the station precinct
- delivery of a new precinct street (realigned Port Access Road) and footpaths
- bus interchange and shelters located on the new precinct street
- kiss and ride and point-to-point vehicle facilities on the new precinct street
- new north-south pedestrian links from Robert Street to provide accessibility to the station from the north
- pedestrian crossings on the new precinct street
- removal and reconfiguration of on-street parking on Robert Street
- modifications to Robert Street and delivery of a new intersection at Robert Street/new precinct street
- public domain areas including open space, landscaping and tie-in works within the vicinity of the station and the broader precinct (refer to Figure 9-1 for indicative extent)
- the structural elements for the space for non-station uses (e.g. retail, commercial and/or community facilities), including structures:
  - connected to the eastern and western sides of the eastern station service infrastructure to, subject to design development, indicatively around 25 metres high (refer to the space for non-station use wrapping each side of the aboveground station infrastructure shown on Figure 9-1 and Figure 9-3)
  - above the metro station entry to abut the western station service infrastructure to, subject to design development, indicatively around 25 metres high (refer to the space for non-station use above the metro station entry shown on Figure 9-3)
  - fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

Sydney Metro will continue to work with the NSW Department of Planning and Environment to integrate The Bays Station with the *Bays West Place Strategy* and associated draft *Bays West Urban Design Framework* and relevant sub-precinct master plans.

9.1.4 Provisioning for adjacent station development

As shown in Figure 9-1, adjacent station development is proposed on the residual land required for construction, to the north and south of the metro station in line with the *Bays West Place Strategy*.

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

- provision of trunk utilities to the precinct, likely to be located beneath the new precinct street
- a drainage strategy across the site
- a new precinct street and pedestrian connections to support access to both the metro station and future adjacent development
- subdivision
- investigation of other opportunities to support the development of the broader precinct in line with the *Bays West Place Strategy* in consultation with the NSW Department of Planning and Environment.

Delivery of the adjacent development does not form part of this proposal and would be subject to separate assessment and approval (with the exception of the provisioning elements listed above). Access to the metro station would be maintained through these spaces and may be temporarily activated to provide public spaces and local community facilities. Adjacent station development is discussed further in Section 1.4.5 (Related development) of this Appendix.

9.2 Placemaking

The vision for The Bays Station and its surrounds is for:

A new mixed use innovation precinct including employment, civic, retail and residential activities in a high amenity harbourside setting.

9.2.1 Integration with strategic planning

The *Eastern City District Plan* (Greater Sydney Commission, 2018b) identifies The Bays Precinct for urban renewal opportunities to transform the Harbour CBD, expanding the innovation corridor of the CBD. To capitalise on this plan, a number of plans and strategies have been developed, which have informed the development of The Bays Station and would guide the future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

Bays West Place Strategy

The urban renewal of land within The Bays was identified as a State Significant Precinct and Growth Centre by the NSW Government in 2017. The Bays Station site would be located within the Bays West area, which includes Rozelle Bay, Rozelle Rail Yards, White Bay, Glebe Island and the former White Bay Power Station, and is currently in the early stages of planning. *The Bays West Place Strategy* (NSW Department of Planning, Industry and Environment, 2021a) released for consultation in March 2021, to help guide the final plans and shape the future of Bays West and finalised in November 2021. The Bays West area will build on its natural, cultural, maritime and industrial stories to shape an innovative and sustainable new place for living, recreation and working.

The Bays Station is seen as a first step to unlocking the precinct's potential. It provides a catalyst, offering significant development and connectivity opportunities for its future resident, worker and visitor populations. It would allow the future vision and opportunities for the precinct to be realised (NSW Department of Planning, Industry and Environment, 2021a, p.7). The Bays Station would be located in the White Bay Power Station sub-precinct, which would be the first stage of this place strategy to be delivered. This zone is described as a key activity centre for the precinct, providing events, services, and infrastructure for existing and new communities.

The *Bays West Strategic Place Framework* (2021) is one of the supporting documents to the *Bays West Place Strategy*. In relation to the design of places and spaces, the preservation of 'district and local views of landmark features that form a significant part of the place character' is listed as a priority. There are several significant landmarks located within the Bays West precinct, which 'act as unique visual markers on the journey between the Inner West and Sydney's CBD'. These elements include the former White Bay Power Station, the Glebe Island Silos and Anzac Bridge. The *Bays West Strategic Place Framework* further states that it is 'critical for any future development within Bays West to respect and preserve the existing signature views towards these landmarks from key public viewpoints', which 'offer a deep connection between the site, its immediate neighbourhood, the surrounding districts, and the broader city in terms of navigation, memory, and identity'. The design of the metro station has been developed to maintain these important view corridors.

The draft *Bays West Urban Design Framework* (2021) is a supporting technical document to the *Bays West Place Strategy*. This framework builds on the vision set out in the strategy to inform future detailed master planning work and will be updated as each precinct within Bays West is master planned. A Draft Connecting with Country Framework (Bangawarra, 2021) has also been developed as a supporting document to the *Bays West Place Strategy*. This framework will inform consideration of Country during subsequent stages of planning at Bays West. The NSW Department of Planning and Environment is leading the preparation of the revised *Bays West Urban Design Framework* and sub-precinct master plans for the White Bay Power Station (and Metro) and Robert Street sub-precincts to inform the initial stage rezoning for Bays West (subject to separate planning process).

The *Bays West Stage 1 draft Master Plan and Urban Design Framework* (NSW Department of Planning and Environment, 2022) was exhibited from 4 May to 31 May 2022. The master plan builds on the vision of the *Bays West Place Strategy,* and will inform development and planning controls for the area around the former White Bay Power Station. The Department of Planning and Environment are currently considering all feedback and submissions to help finalise the master plan package and inform the preparation of the initial stage rezoning proposal, which will be exhibited for further feedback later this year.

Sydney Metro will continue to work with the NSW Department of Planning and Environment to integrate The Bays Station with the *Bays West Place Strategy* and associated draft Urban Design Framework and relevant sub-precinct master plans, including responding to the strategic intent of these frameworks relating to road layout and interchange facilities, land use, detailed built form and landscape design.

Our Place Inner West – Local Strategic Planning Statement

The *Our Place Inner West – Local Strategic Planning Statement* (Inner West Council, 2020) is based around six themes and identifies the challenges and opportunities for the communities in the context of a changing climate, changing technologies and a growing population. It sets out planning priorities, objectives and actions to enable opportunities for social, economic and environmental benefits to be taken while maintaining the character, culture and values so important to the identity of Inner West communities.

A key priority of the planning statement is to develop diverse and strong stakeholder relationships to deliver positive planning outcomes. This includes working with stakeholders so that The Bays develops as a waterfront, sustainable destination with employment, housing and public spaces to support a healthy and vibrant community.

The northern foreshore of White Bay is identified as a 'future Blue/Green link', with the embedding of green infrastructure in the redevelopment of this area listed as a priority.

Sydney Green Grid

White Bay and Blackwattle Bay Foreshore and Open Space are identified as a Green Grid project opportunity, which would improve foreshore access and allow for an increase in open space. Sydney Metro West would significantly improve transport connectivity to this project with a station at The Bays.

9.2.2 Place and design principles

Place and design principles for The Bays Station were identified in Section 7.10.7 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 9-2 outlines how these principles have been achieved in The Bays Station design.

Table 9-2 Design responses to The Bays Station place and design principles

Place and design principle	Design response
Support the establishment of The Bays Precinct by facilitating well-designed, high-quality station, public domain and development	• The Bays Station precinct includes unimpeded access to the White Bay foreshore from the station, orienting the precinct toward the foreshore • development areas (by others) would buffer the public domain areas from the lower amenity environment of the arterial road network to the west and south of the site • the provision of through-site links and perimeter road access within the precinct would build on and reinforce the opportunities for connecting with the Rozelle Parklands delivered as part of the M4-M5 Link Rozelle Interchange project to the west • the extent and location of public domain elements would be of high quality and has been developed to be of appropriate scale and relevance to the precinct to capitalise to the precinct's unique character and context and would be of appropriate scale, function and relevance to the precinct.

Place and design principle	Design response
Ensure station and precinct designs are coordinated with wider precinct planning frameworks	• the design responds to the Big Moves and strategic intent of the *Bays West Place Strategy*, draft *Bays West Urban Design Framework* and associated documents • the design responds to principles in the *White Bay Power Station Conservation Management Plan* (Design 5 Architects & Sydney Harbour Foreshore Authority, 2004), including its relationship with (and orientation toward) Anzac Bridge, relevant view corridors and by providing a contextually appropriate built form response and curtilage to the former White Bay Power Station • Green Grid principles are achieved by substantially increasing the area of accessible open space surrounding the foreshore as part of the public domain improvements, with direct and unincumbered access to White Bay foreshore • the precinct structure supports a key east-west movement corridor and reinforcing access to and connection with Rozelle Parklands west of the site.
Facilitate intuitive and accessible interchange between Sydney Metro and other modes	• the precinct structure and layout provides intuitive wayfinding and efficient transfer from the station to bus interchange (south) and point-to-point transport facilities (west) • a new precinct street would be delivered within the site prioritising public and active transport user access.
Enhance legibility and accessibility through The Bays Precinct by facilitating connections to White Bay Power Station, Anzac Bridge and White Bay	• the east-west orientation of the metro station sits perpendicular to the former White Bay Power Station. Public domain would be delivered along the same axis, providing a coherent and legible street layout, including connection between the former White Bay Power Station and the east of the site toward the Anzac Bridge • the new precinct street would sit at the perimeter of the precinct, separating transport (movement) requirements from place outcomes that focus on the station precinct and prioritise access to the White Bay foreshore. The street network would continue to be refined in consultation with the NSW Department of Planning and Environment to provide alignment with the ongoing master planning for the area.
Promote active street frontages in development around the station to support a vibrant public domain and public amenity in this important harbour-side precinct	• activated public domain would surround the station and associated street frontages, which would clearly interface with surrounding areas, supporting opportunities for a vibrant public domain across the wider precinct • the station precinct responds to the strong industrial landscape and the foreshore by reinforcing view lines from the former White Bay Power Station to the Anzac Bridge while at the same time orienting the precinct with the harbour through expansive public domain areas.
Ensure key view corridors frame the new precinct	• key view corridors would be reinforced through the precinct structure and layout, including the relationship the former White Bay Power Station to the Glebe Island Silos and beyond to Anzac Bridge, as well as views from the White Bay foreshore to the Sydney Harbour Bridge.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 9-4, Figure 9-5 and Figure 9-6.

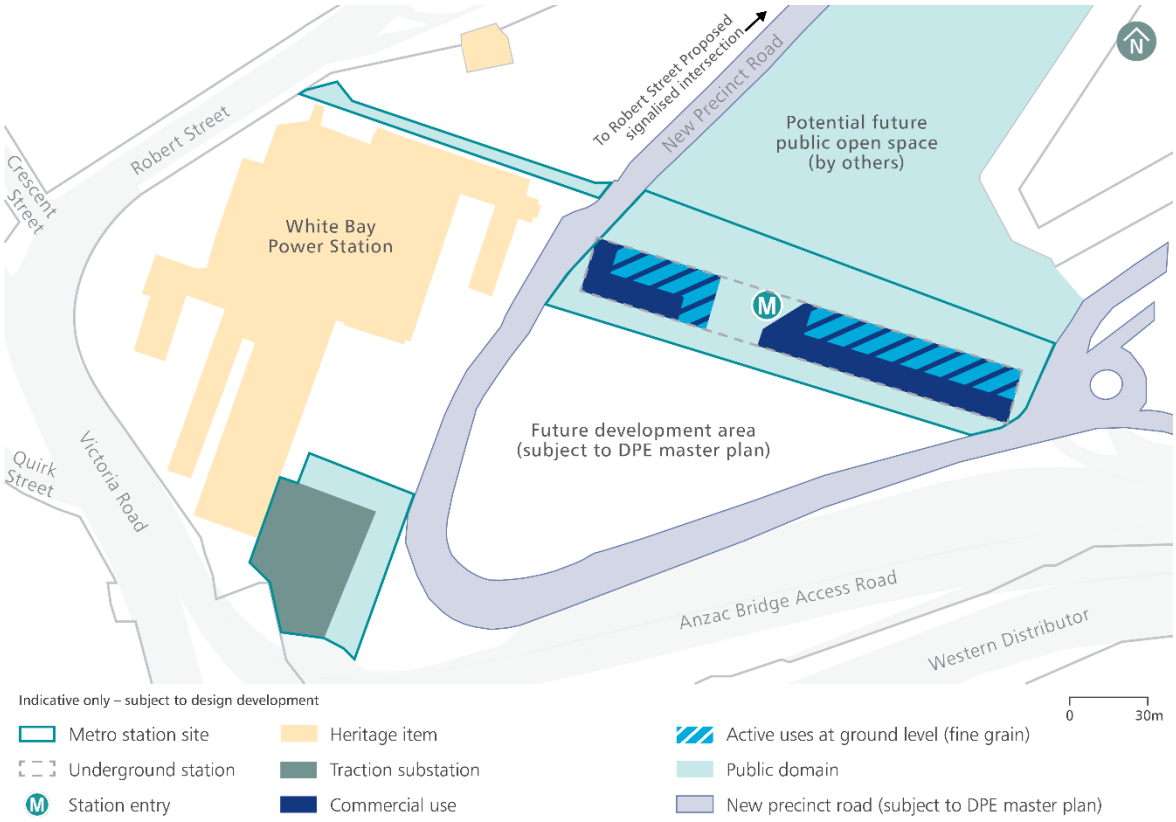


Figure 9-4 Land use and function urban design strategies – The Bays Station

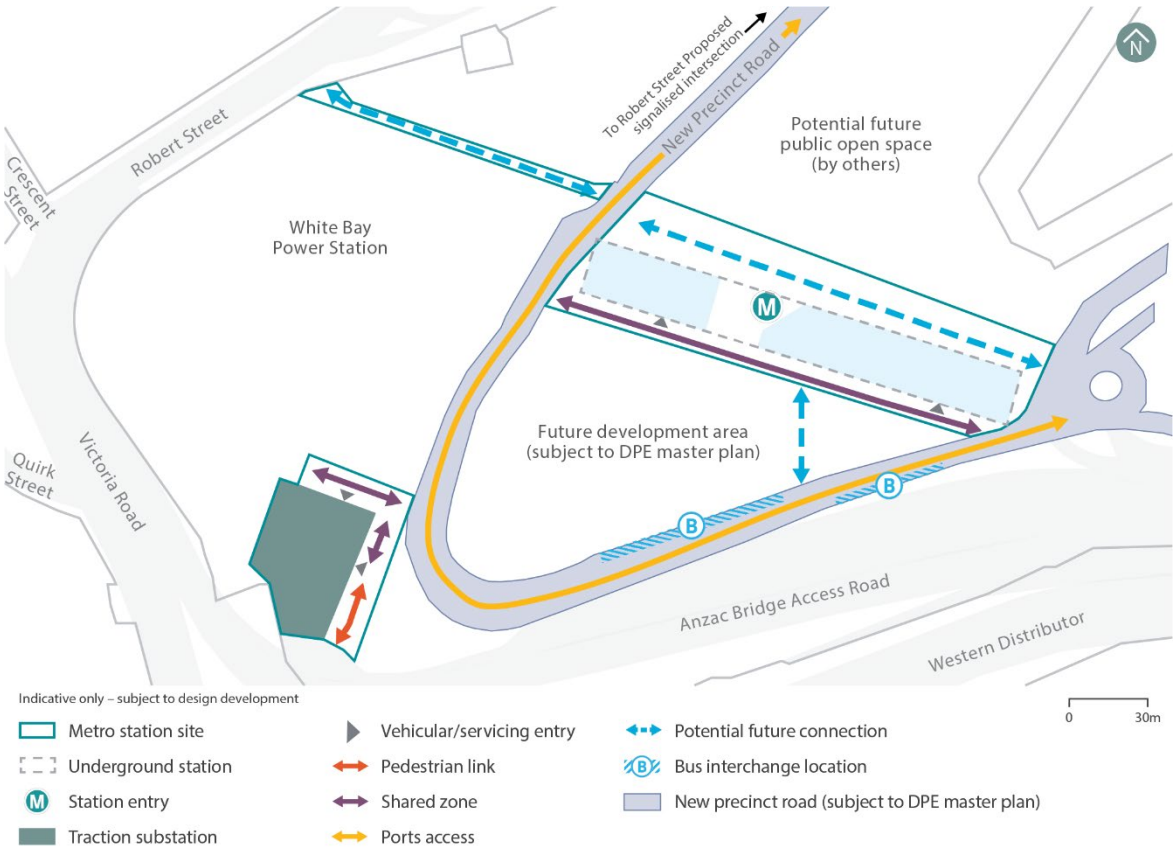


Figure 9-5 Access and connectivity urban design strategies – The Bays Station

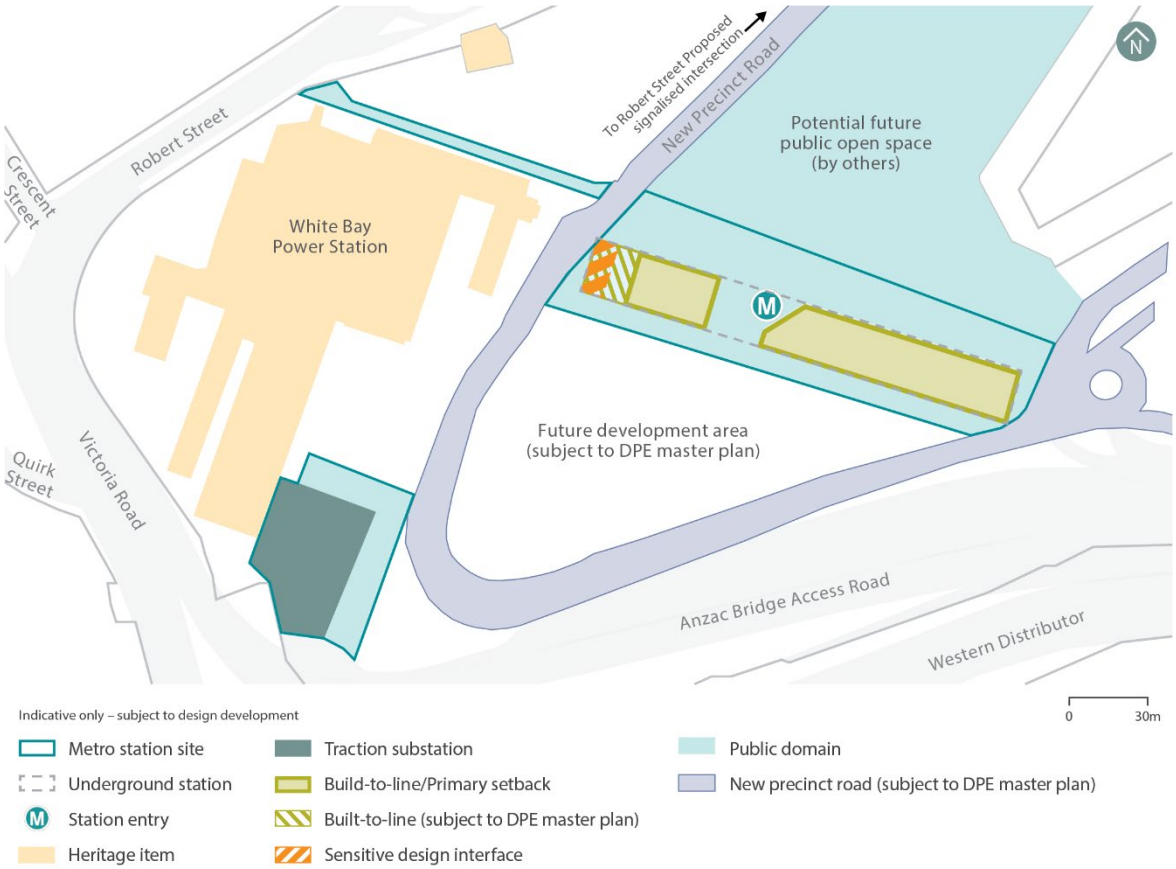


Figure 9-6 Built form urban design strategies – The Bays Station

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

- public space in front of the station, protected from the regional movement corridors of Victoria Road and Anzac Bridge, and connections to the foreshore and the former White Bay Power Station
- responding to the key pedestrian and cyclist movement corridor from the south, through the site, connecting the Rozelle Parklands with the White Bay foreshore, as well as east-west access from Rozelle and Balmain in the west through the site toward Anzac Bridge, Pyrmont and the city beyond
- provision of a new precinct street at the periphery of the site, separating movement and place functions. The precinct would also provide expansive high amenity public domain areas, orienting the station toward the White Bay foreshore and views to the Sydney CBD and Sydney Harbour Bridge beyond
- providing opportunities for activation in key locations, including around the station entry and surrounding the western station services building that fronts the public domain, as well as the new precinct street adjacent to the former White Bay Power Station
- facilitating vehicular and other access to the precinct, through a new intersection with Robert Street to the north of site, away from the station entry and public domain areas.

9.2.3 Transport interchange, access and connectivity

A metro station at The Bays provides the catalyst for renewal of the site and provides connectivity opportunities for its future resident, worker and visitor populations. The Bays Station would provide a mass transit connection for this future precinct and serve the existing communities around Rozelle and Balmain. Transport integration opportunities are focused on active and public transport opportunities.

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

- the station precinct design would support active transport access and connectivity by providing:
  - pedestrian and cyclist improvements at the intersection of Mullens and Robert Streets and the provision of access points from Robert Street (and areas of Balmain and Rozelle further north) into the precinct, which reinforce and support key movements through the site to Anzac Bridge

  - cyclist and pedestrian infrastructure (connecting with existing or proposed facilities), which reinforce access to and connection with Rozelle Parklands located to the south-west of the site, including along the new precinct street, and to the east towards the future link across Glebe Island Bridge (by others)

- a new bus interchange would be introduced along the southern boundary of the site on the new precinct street to the south of the station entry. This would bring buses directly into the precinct and provide for efficient interchange with metro services
- the new precinct street would also provide access for taxi services, kiss and ride, and accessible parking
- substantial building setbacks along the new precinct street provide for expansive footpath areas that create safe, walkable streets designed for people and that provide easy access for all customers including those with disabilities. This would include several new pedestrian crossings of the new precinct street at key pedestrian desire lines.

For further information on transport interchange, access and connectivity features of The Bays Station, see Section 13.5 (Transport) of the Environmental Impact Statement.

9.3 Construction description

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

Major civil construction including station excavation and tunnelling work (between Westmead and The Bays) at The Bays was assessed and approved under the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). Tunnelling work at The Bays (between The Bays and Sydney CBD) has been assessed under the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a) and *Sydney Metro West Submissions Report – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2022). The work subject to these previous Sydney Metro West planning applications does not form part of this proposal.

9.3.1 Overview

Construction of The Bays Station would require the continued use of the construction site established under the previous Sydney Metro West planning applications. Additional footprint areas are also required to support construction of this proposal.

The Bays Station construction site would be located between Robert Street on the northern side, White Bay on the eastern side, Anzac Bridge approach on the southern side, and the former White Bay Power Station on the western side.

The Bays Station construction site would be demolished and excavated as a result of activities under the previous Sydney Metro West planning applications prior to the commencement of this proposal.

The Bays Station construction site for this proposal would comprise:

- the construction site that will be established and used for work under the previous Sydney Metro West planning applications
- an area to the north of the former White Bay Power Station adjacent to Robert Street to allow for the construction of flood mitigation and active transport upgrade works
- an area to the south of the former White Bay Power Station adjacent to Victoria Road to allow for the construction of a traction substation and road work.

This proposal would include some additional minor excavation to construct flood mitigation work, trunk utilities and the traction substation.

The location and indicative layout of The Bays Station construction site is shown on Figure 9-7. Some activities would occur outside this construction site, such as delivery of construction equipment and station precinct and interchange work.

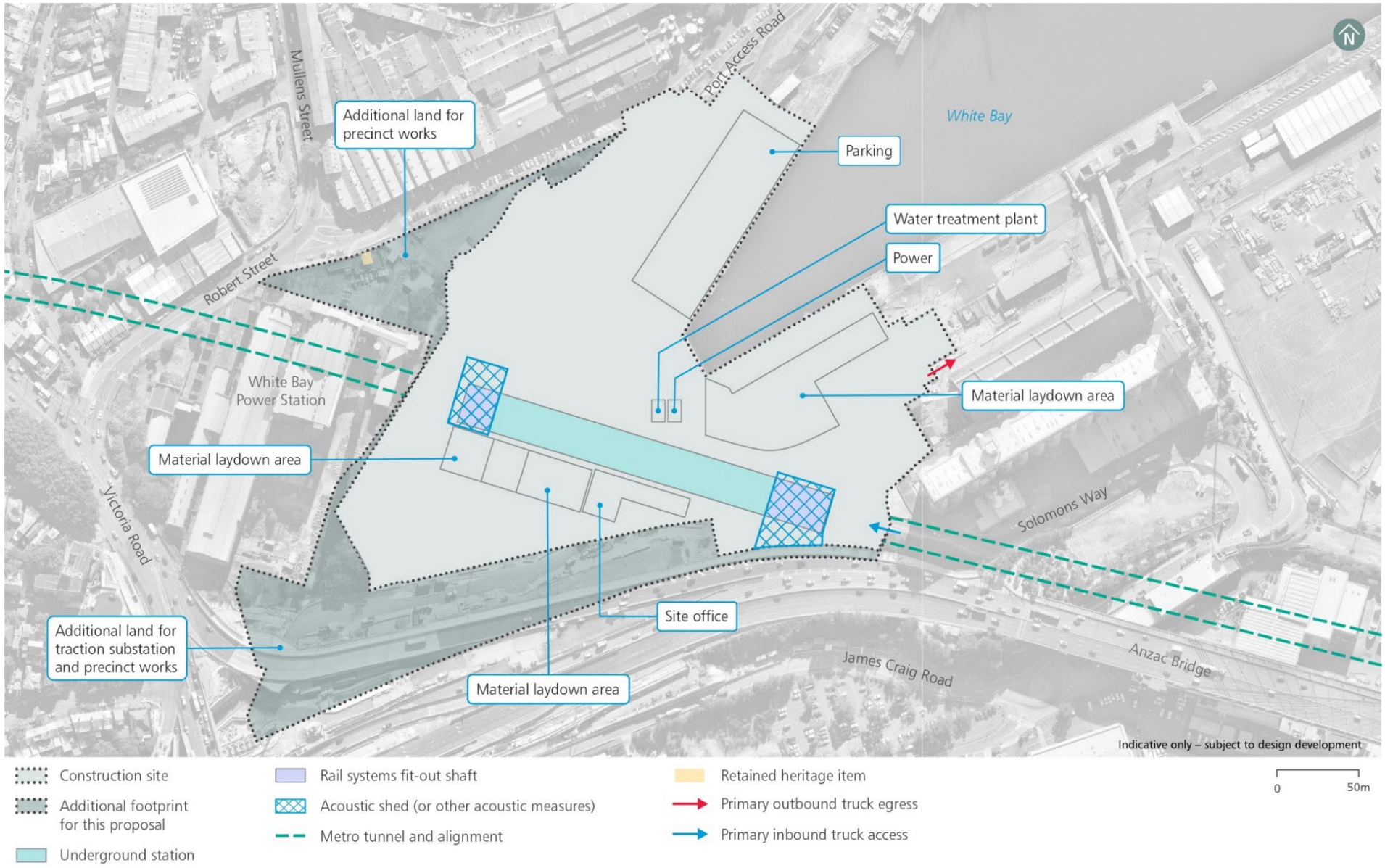


Figure 9-7 Indicative construction site layout – The Bays Station

9.3.2 Construction work

Key construction work at The Bays Station construction site would include:

- enabling and site establishment work, including installation of acoustic sheds (or other acoustic measures) over rail systems fit-out shafts
- construction of the station and structures for non-station use
- station fit-out
- construction of station precinct and interchange facilities, including construction of a bus interchange and shelters to service the station entrance, located on both sides of the new precinct street and provisioning for adjacent station development
- provision of infrastructure such as trunk utilities, as well as public domain and landscape works to service the station precinct and future adjacent station development (subject to separate approvals)
- access for tunnel fit-out and rail systems work
- construction of flood mitigation work from Robert Street, near its intersection with Mullens Street, through the site to White Bay, including a culvert beneath the new precinct street
- road work, including construction of a new precinct street, intersection upgrade and associated footpaths, which would service existing port uses, the White Bay Cruise Terminal and through site access
- construction of a traction substation, including:
  - excavation and construction of foundations
  - placement of underground conduit routes
  - construction of the substation building and yard
  - installation, testing and commissioning of electrical and mechanical equipment
- finishing work, testing and commissioning.

The indicative construction program for The Bays Station construction site is shown on Figure 9-8.

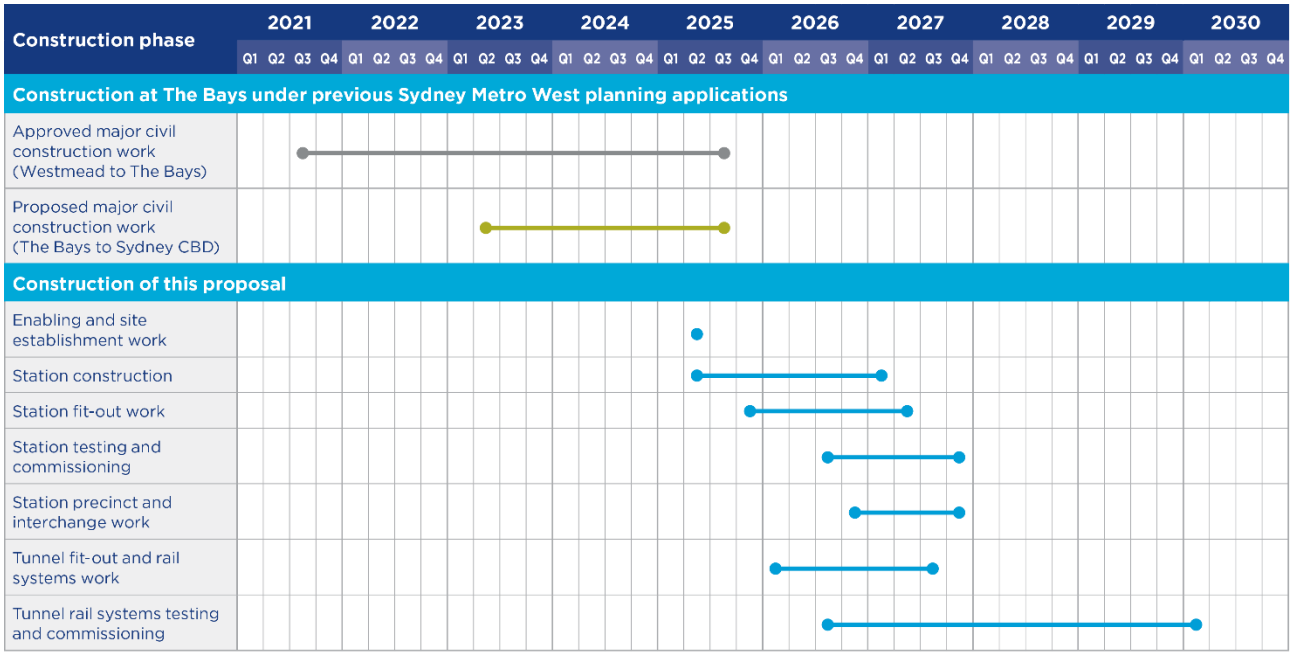


Figure 9-8 Indicative construction program – The Bays Station

Other construction elements specific to The Bays Station are shown in Table 9-3. Indicative construction hours, plant and equipment and workforce for The Bays Station construction site are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to The Bays Station as described in the table below, are also depicted on Figure 9-7.

Table 9-3 Other construction elements – The Bays Station

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning applications that would likely be maintained during construction include: • access to the construction site via James Craig Road and Solomons Way / Port Access Road • egress from the construction site via James Craig Road and Solomons Way / Port Access Road, through to Sommerville Road.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • potential secondary access to and egress from the construction site via right-in and left out to Robert Street.
Peak daily traffic movements	• about 292 daily heavy vehicle movements • about 300 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about 72 spaces on Robert Street east of Mullens Street to accommodate the proposed new precinct street / Robert Street intersection. In addition to the parking spaces that would be permanently removed, there may be some additional on-street parking spaces impacted by short-term closures (for around a few months) along Robert Street to facilitate construction works for the new precinct street / Robert Street intersection.

10.0 Pyrmont Station

10.1 Station and precinct description

10.1.1 Design development

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

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

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

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

10.1.2 Station design

The indicative layout and key design elements of Pyrmont Station are shown in Figure 10-1 with a long-section and cross-section shown in Figure 10-2 and Figure 10-3 respectively. The design of the metro station is subject to detailed design development.

The key features of Pyrmont Station are provided in Table 10-1.

Table 10-1 Key features – Pyrmont Station

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

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

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

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

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

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

The aboveground station infrastructure (including the station services, space for non-station use and concourse) would be, subject to design development, indicatively around 16 metres above Pyrmont Bridge Road (for the western station building) and Union Street (for the eastern station building).

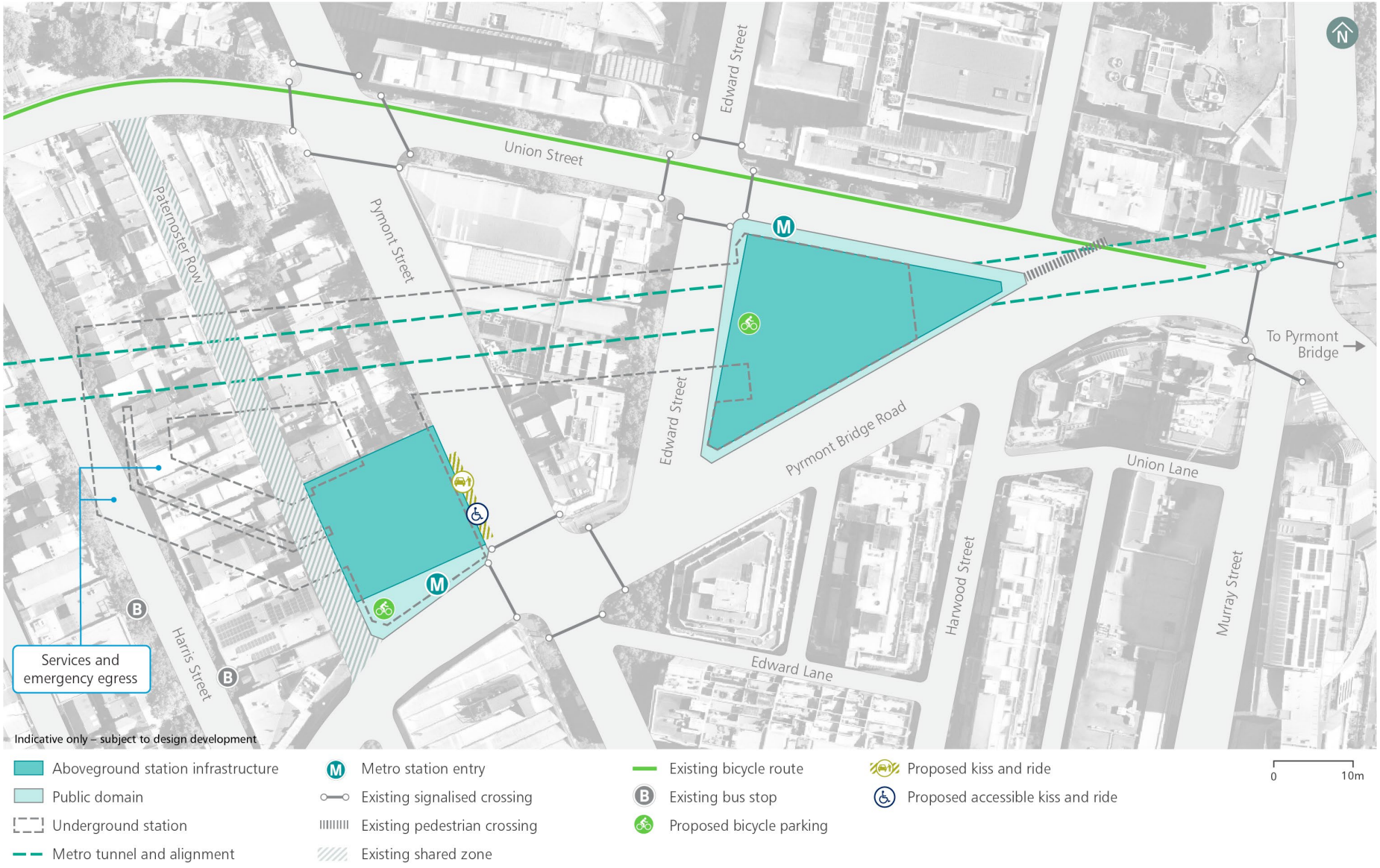


Figure 10-1 Indicative layout and key design elements – Pyrmont Station

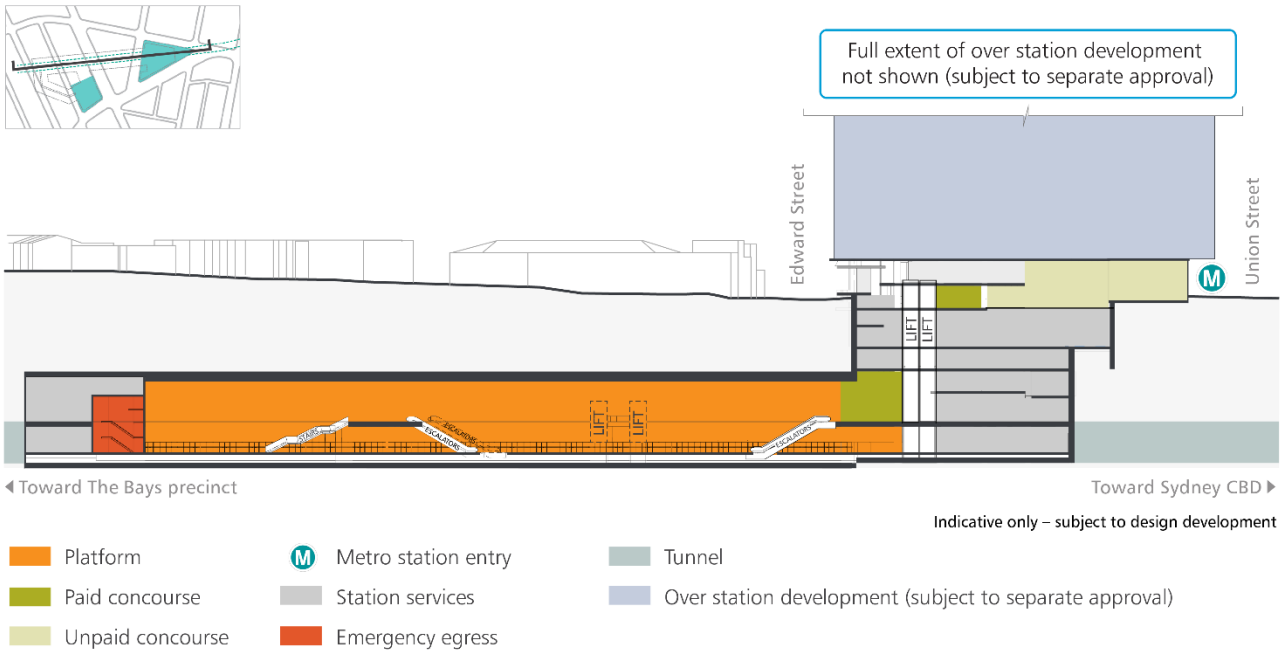


Figure 10-2 Indicative long-section – Pyrmont Station

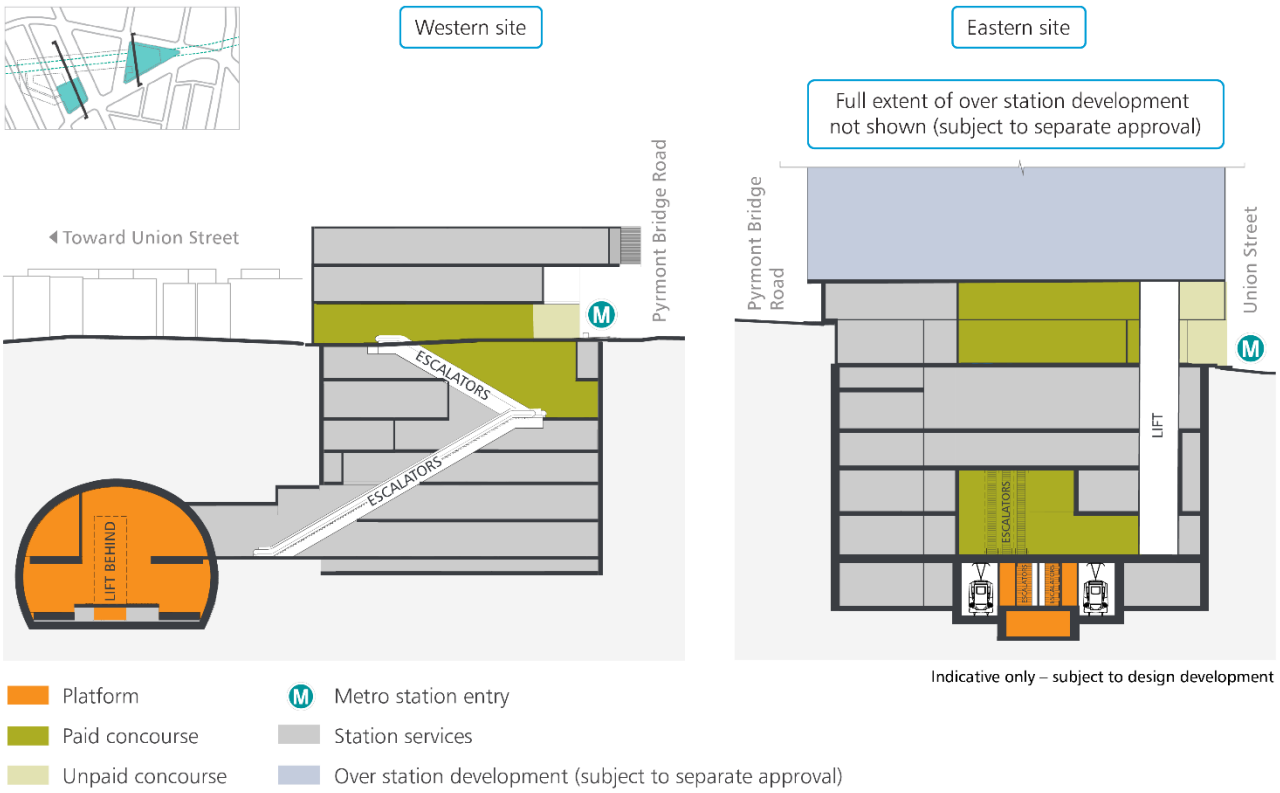


Figure 10-3 Indicative cross-sections – Pyrmont Station

10.1.3 Station precinct and interchange facilities

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

- bicycle parking
- accessible kiss and ride
- public domain areas at the station entrances
- built elements and provision of utilities and services to provide space for future non-station uses (e.g., retail, commercial and/or community facilities), within the aboveground station infrastructure. Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

10.1.4 Provisioning for over station development

As shown in Figure 10-2 and Figure 10-3, following the completion of construction, over station development would be proposed at the eastern station site. Over station development is not proposed at the western station site.

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

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

The potential extent of the over station development is provided on Figure 10-4 and is discussed further in Section 1.4.5 (Related development) of this Appendix.

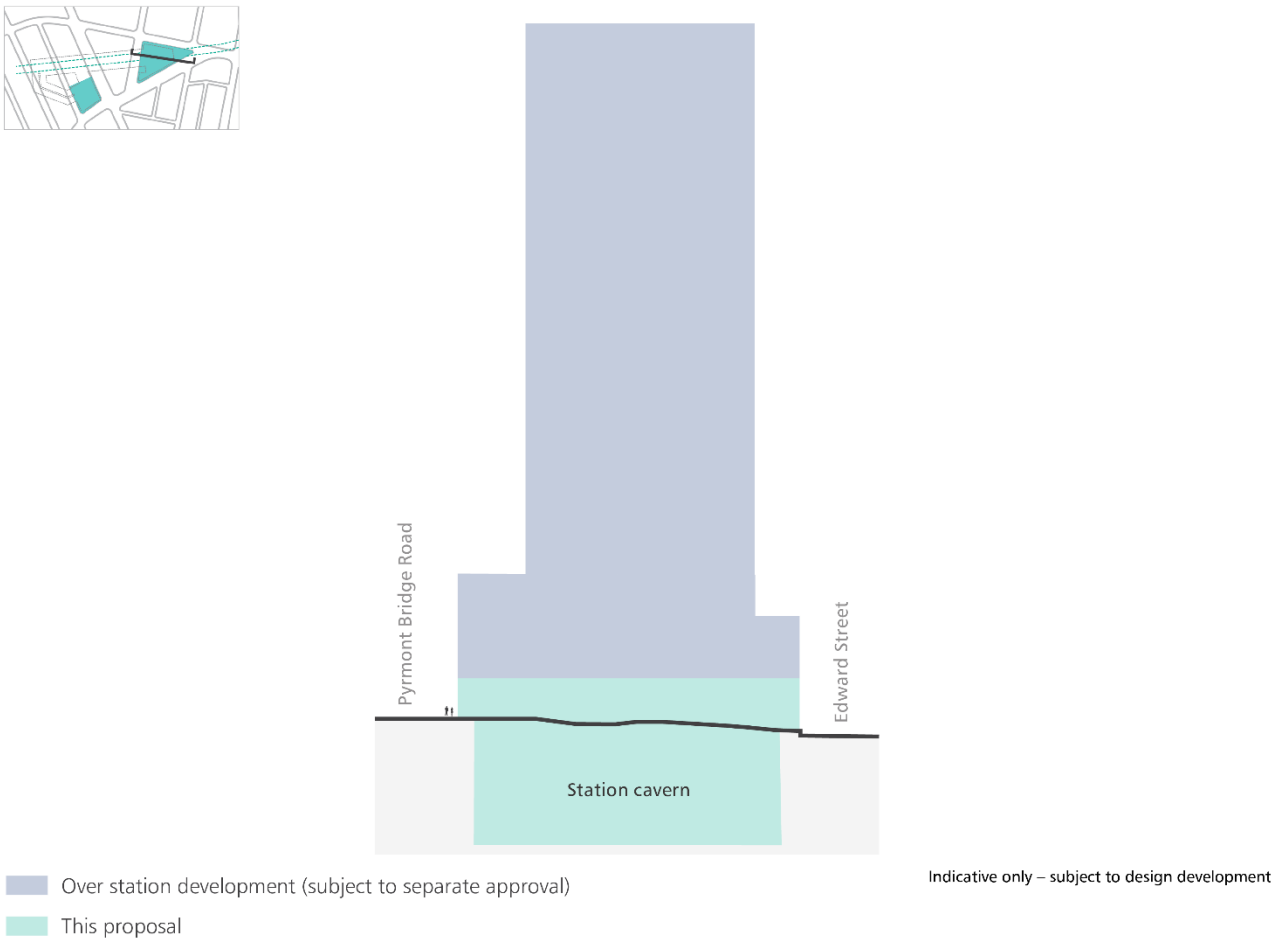


Figure 10-4 Potential over station development extent – Pyrmont Station

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

10.2 Placemaking

The vision for Pyrmont Station and its surrounds is for:

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

10.2.1 Integration with strategic planning

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

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City Plan 2036: Local Strategic Planning Statement

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

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

Pyrmont Peninsula Place Strategy

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

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

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

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

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

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

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

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

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

Draft Pyrmont Peninsula Design Guidelines

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

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

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

Sustainable Sydney 2030: Community strategic plan

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

Blackwattle Bay State Significant Precinct Study

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

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

10.2.2 Place and design principles

Place and design principles for Pyrmont Station were identified in Section 5.2 of the *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 10-2 outlines how these principles have been achieved in the Pyrmont Station design.

Table 10-2 Design responses to Pyrmont Station place and design principles

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

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 10-5, Figure 10-6 and Figure 10-7.

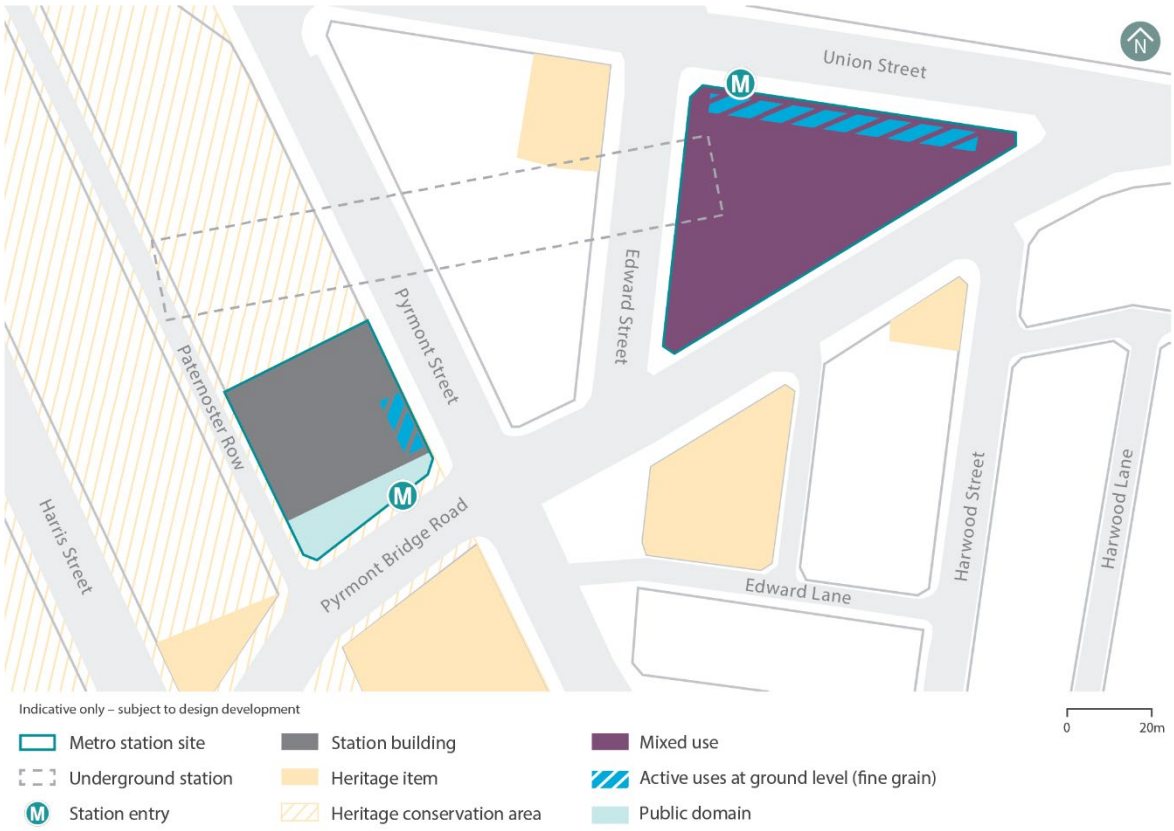


Figure 10-5 Land use and function urban design strategies – Pyrmont Station

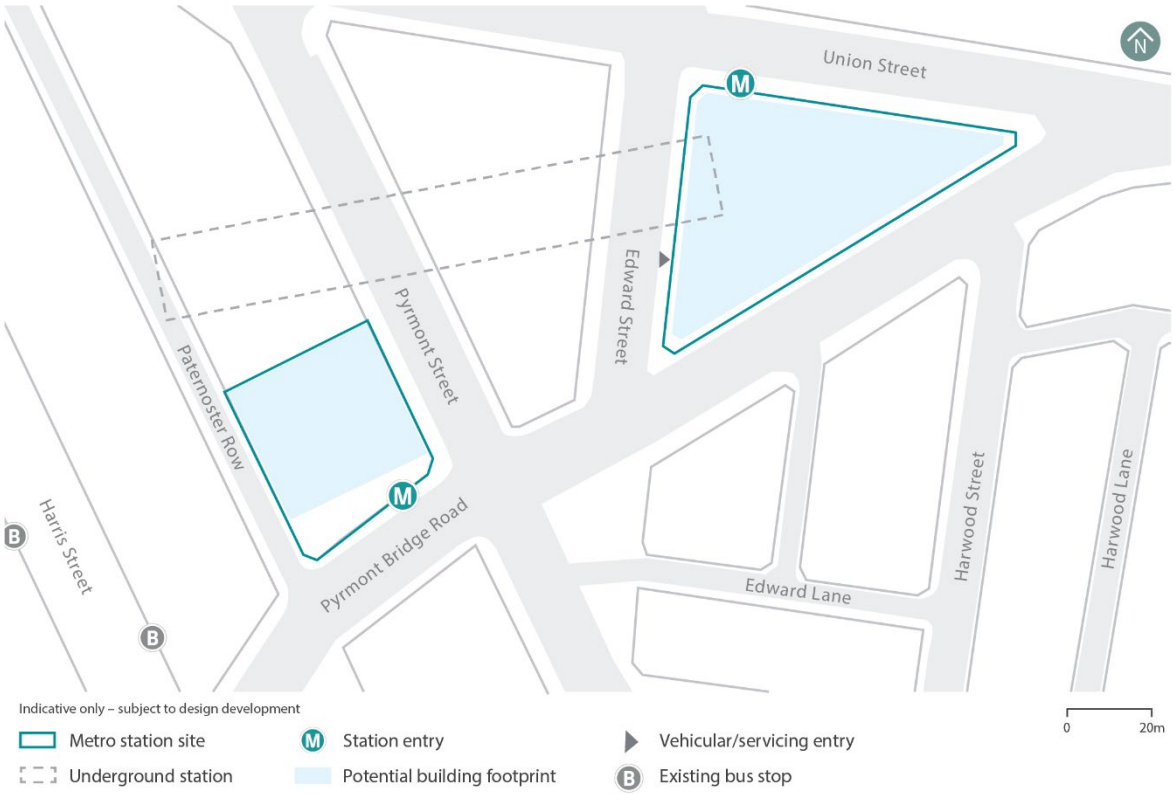


Figure 10-6 Access and connectivity urban design strategies – Pyrmont Station

Figure 10-7 Built form urban design strategies – Pyrmont Station

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

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

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

10.2.3 Transport interchange, access and connectivity

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

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

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

For further information on transport interchange, access and connectivity features of Pyrmont Station, see Section 14.5 (Transport) of the Environmental Impact Statement.

10.3 Construction description

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

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

10.3.1 Overview

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

The western construction site would be located between Paternoster Row and Pyrmont Street, immediately north of Pyrmont Bridge Road, and the eastern construction site would be located between Edward Street, Union Street and Pyrmont Bridge Road (refer to Figure 10-8).

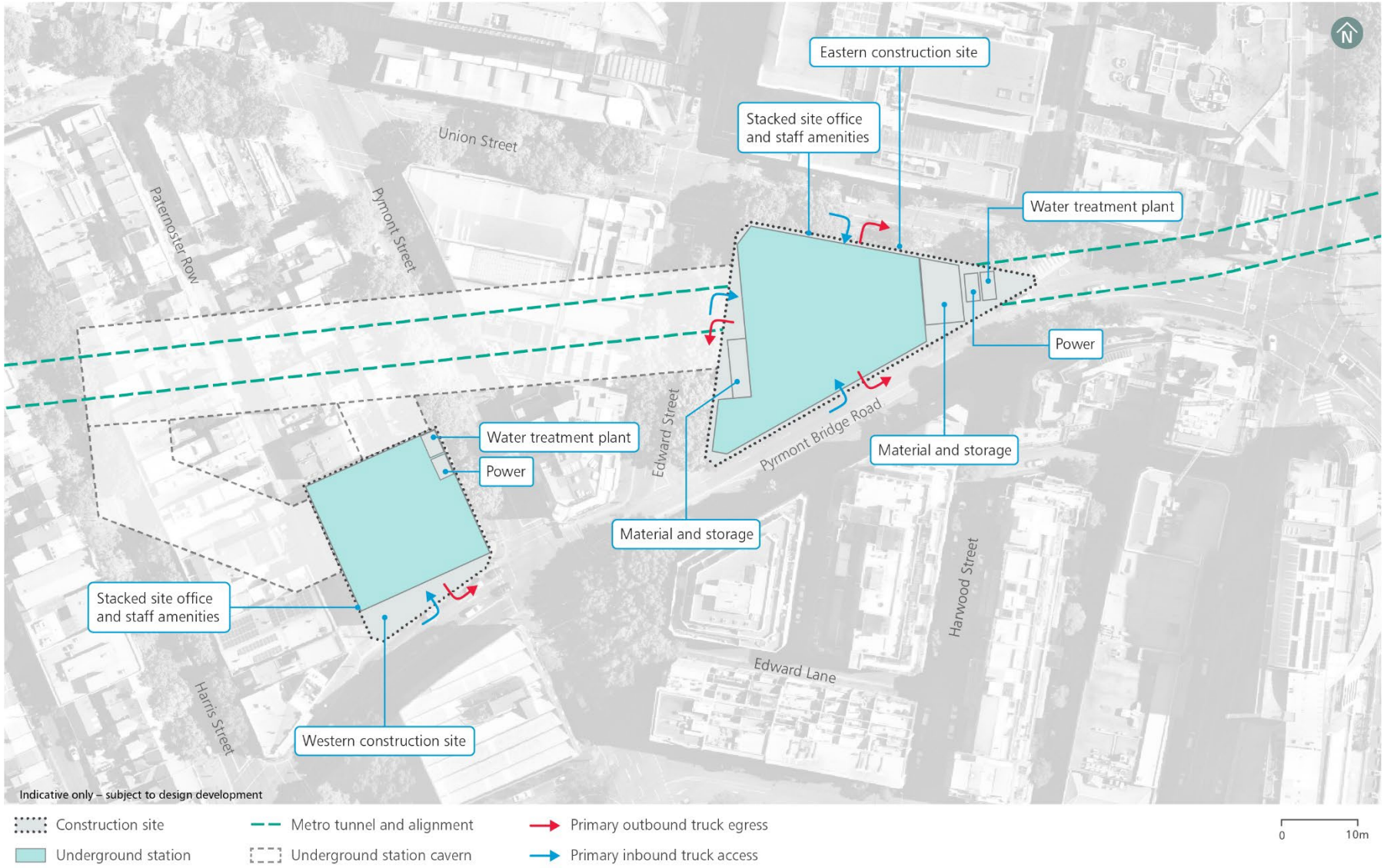


Figure 10-8 Indicative construction sites layout – Pyrmont Station

10.3.2 Construction work

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

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

The indicative construction program for the Pyrmont Station construction sites is shown in Figure 10-9.

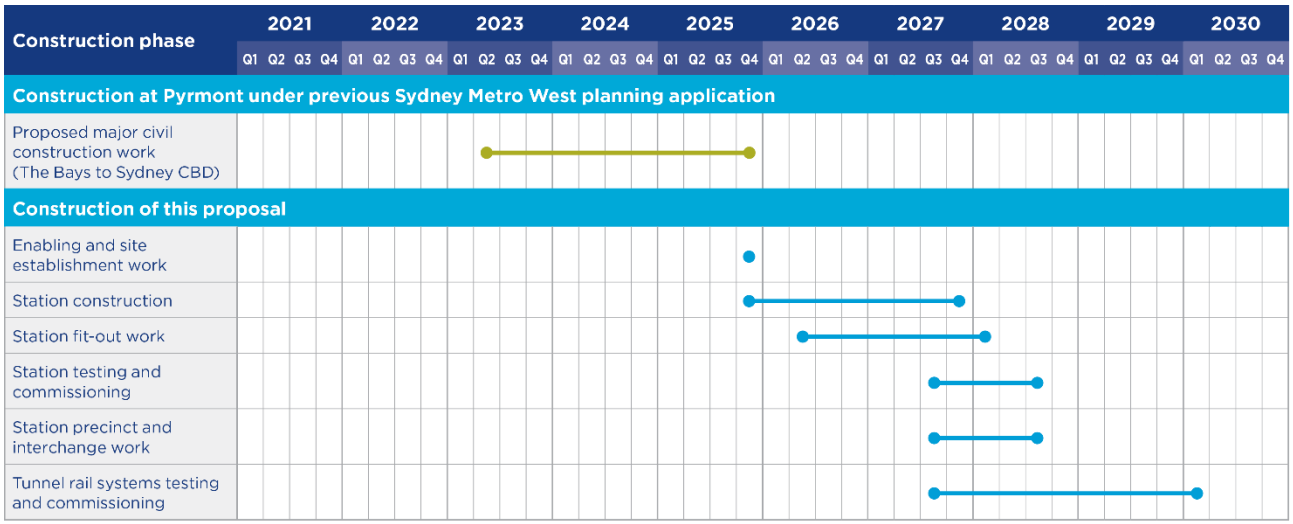


Figure 10-9 Indicative construction program – Pyrmont Station

Other construction elements specific to Pyrmont Station are shown in Table 10-3. Indicative construction hours, plant and equipment and workforce for the Pyrmont Station construction sites are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Pyrmont Station as described in the table below, are also depicted on Figure 10-8.

Table 10-3 Other construction elements – Pyrmont Station

Construction element	Description
Construction traffic access and egress	Continued primary access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to and egress from both the western and eastern construction sites via left-in from and left-out to Pyrmont Bridge Road • access to the eastern site via right-in from Edward Street • access to the eastern site via right-in from Union Street • egress from the eastern site via right-out to Union Street • egress from the eastern site via left-out to Edward Street.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • secondary access to and egress from the eastern construction site via left-in and left-out from Union Street.

Construction element	Description
Peak daily traffic movements	Western construction site: • about 168 daily heavy vehicle movements • about 228 daily light vehicle movements. Eastern construction site: • about 168 daily heavy vehicle movements • about 244 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Temporary transport network modifications during construction of this proposal would include: • temporary closure of the southern footpath on Union Street between Edward Street and Pyrmont Bridge Road (continued from previous Sydney Metro West planning application) • temporary decommissioning of the bus stop on Pyrmont Bridge Road, adjacent to the Pyrmont Station western construction site. This stop is not used by any public transport bus services (continued from previous Sydney Metro West planning application) • temporary partial closure of two westbound traffic lanes on Union Street between Pyrmont Bridge Road and Edward Street to facilitate right turn construction vehicle access from Union Street into the eastern construction site. Eastbound traffic would continue to use the single through lane on Union Street. Access to the laneway that travels north-south between 52-72 Union Street and 84 Union Street, would also be maintained to provide access to relevant properties (continued from previous Sydney Metro West planning application). The following on-street parking spaces would be permanently removed as part of this proposal (may be removed from the commencement of construction): • about two spaces located on Pyrmont Street • about one space located on Union Street, fronting the proposed eastern station entry • about four spaces located on Edward Street. In addition to the parking spaces that would be permanently removed, there would also be the following temporary on-street parking impacts during construction of this proposal: • removal of about 27 spaces and a loading zone both sides of Union Street between Pyrmont Street and Pyrmont Bridge Road (continued impact from previous Sydney Metro West planning application) • short-term closures (for around a few months) of some spaces on Pyrmont Street to facilitate construction of the new kiss and ride zone.

11.0 Hunter Street Station (Sydney CBD)

11.1 Station and precinct description

11.1.1 Design development

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

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

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

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

11.1.2 Station design

The indicative layout and key design elements of Hunter Street Station (Sydney CBD) are shown in Figure 11-1 with a long-section and cross-section shown in Figure 11-2 and Figure 11-3 respectively. The design of the metro station is subject to further detailed design development.

The key features of Hunter Street Station (Sydney CBD) are provided in Table 11-1.

Table 11-1 Hunter Street Station (Sydney CBD) key features

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

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

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

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

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

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

The western station building (including the station services, space for non-station use and concourse) would be, subject to design development, indicatively around 20 metres above George Street. The eastern station building (including the station services, space for non-station use and concourse) would be, subject to design development, indicatively around 15 metres above O'Connell Street at the station entry, with station services around 30 metres above O'Connell Street, subject to design development.

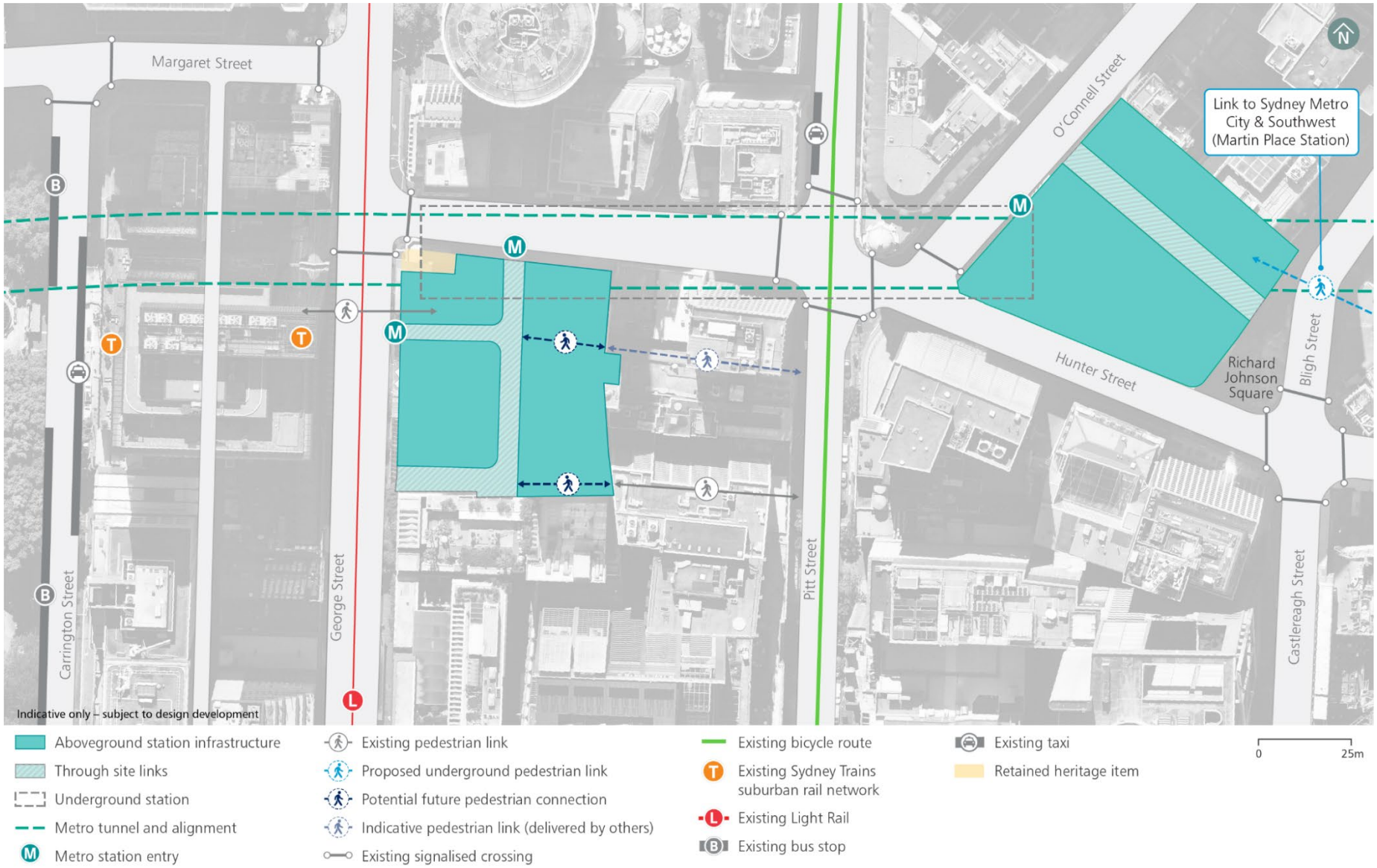


Figure 11-1 Indicative layout and key design elements – Hunter Street Station (Sydney CBD)

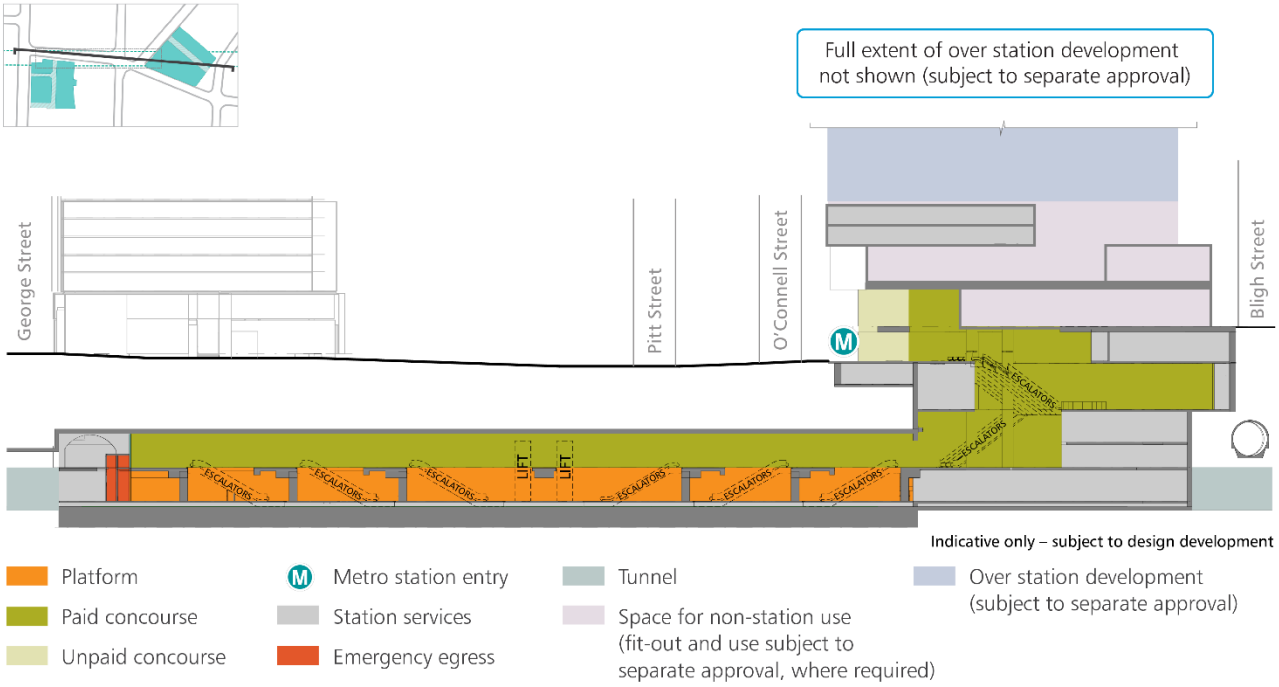


Figure 11-2 - Indicative long-section - Hunter Street Station (Sydney CBD)

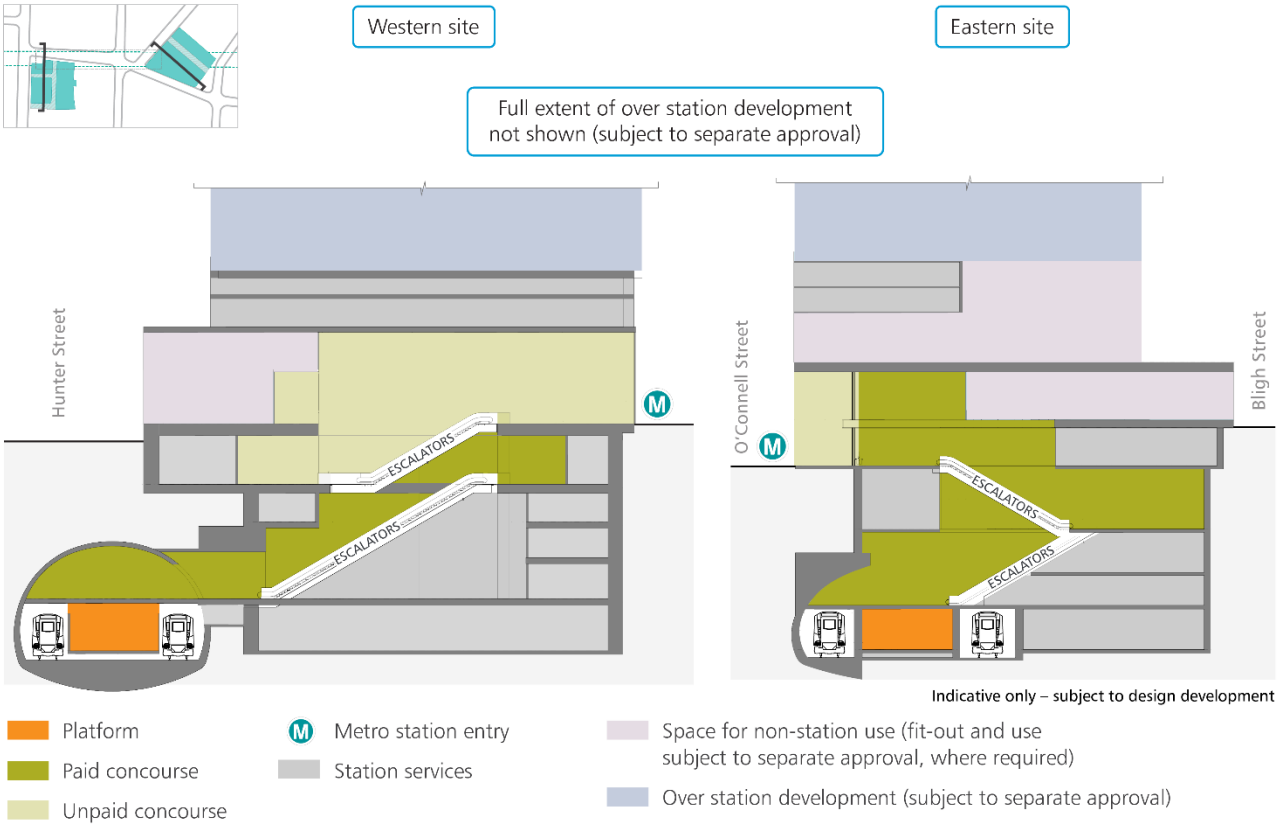


Figure 11-3 Indicative cross-sections - Hunter Street Station (Sydney CBD)

11.1.3 Station precinct and interchange facilities

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

- underground pedestrian connections to the Sydney Trains network at Wynyard and Sydney Metro City & Southwest at Martin Place
- through-site links at the proposed station entries
- built elements and provision of utilities and services to provide space for future non-station uses (e.g. retail, commercial and/or community facilities) including within the eastern and western sites as shown in Figure 11-2 and Figure 11-3. Fit-out and use of these spaces would be subject to separate approval, where required. Refer to Section 1.4.3 (Structures and spaces for non-station uses) for further detail.

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

11.1.4 Provisioning for over station development

As shown on Figure 11-2 and Figure 11-3, following the completion of construction, over station developments would be proposed at the western and eastern station sites.

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

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

The potential extent of the over station development is provided on Figure 11-4 and is discussed further in Section 1.4.5 (Related development) of this Appendix.

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

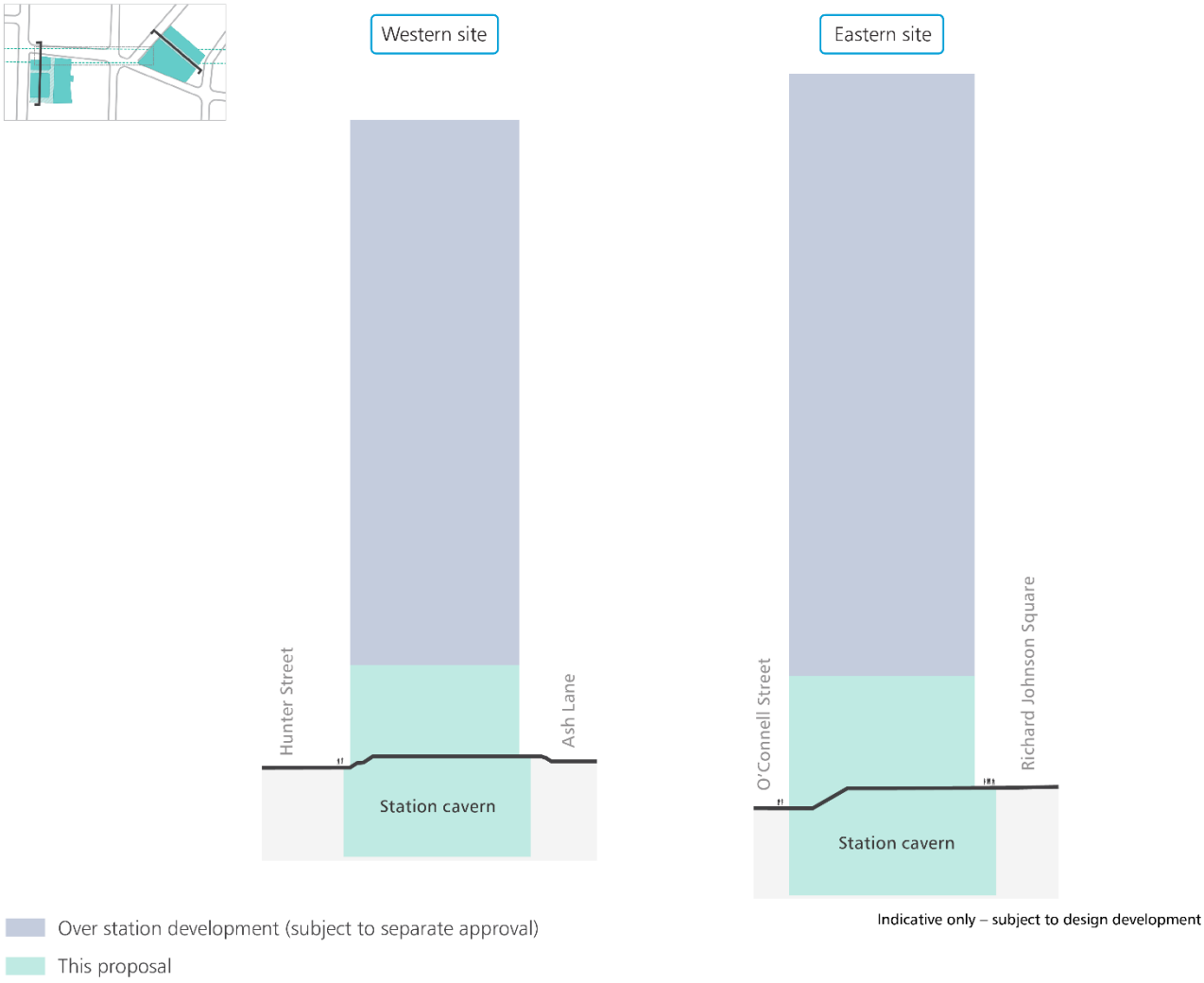


Figure 11-4 Potential over station development extent – Hunter Street Station (Sydney CBD)

11.2 Placemaking

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

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

11.2.1 Integration with strategic planning

The Eastern City District Plan (Greater Sydney Commission, 2018b) identifies the Sydney CBD as a metropolitan centre, the established economic heart of Greater Sydney with a strong cultural, arts and education focus. Since the release of the District Plan, a number of plans and strategies have been developed to guide the continued growth of the CBD, which have informed the development of Hunter Street Station (Sydney CBD) and would guide the future design.

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

City Plan 2036: Local Strategic Planning Statement

City Plan 2036: Local Strategic Planning Statement (City of Sydney, 2020) sets out the 20-year vision for land use planning in the City of Sydney local government area. Hunter Street Station (Sydney CBD) would be located in the CBD and harbour city providing a broad mix of uses including offices, retail, hotels, entertainment and night-life, as well as open space such as The Royal Botanic Garden, the Domain and Hyde Park. It is well connected to Greater Sydney as the centre through the network of suburban train lines.

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

Sustainable Sydney 2030: Community strategic plan

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

City North Public Domain Plan

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

11.2.2 Place and design principles

Place and design principles for Hunter Street Station (Sydney CBD) were identified in Section 5.2 of the *Sydney Metro West Environmental Impact Statement – The Bays and Sydney CBD* (Sydney Metro, 2021a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 11-2 outlines how these principles have been achieved in the Hunter Street Station (Sydney CBD) design.

Table 11-2 Design responses to Hunter Street Station (Sydney CBD) place and design principles

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

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

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 11-5, Figure 11-6 and Figure 11-7.

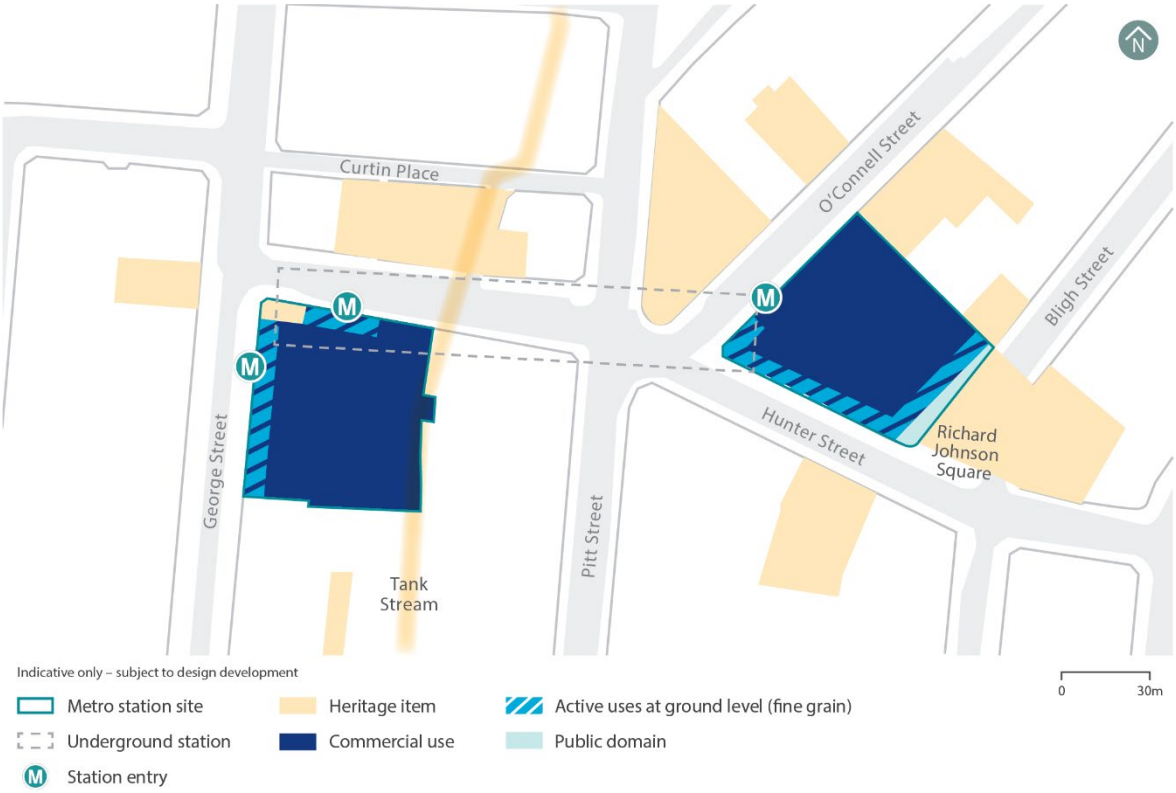


Figure 11-5 Land use and function urban design strategies – Hunter Street Station (Sydney CBD)

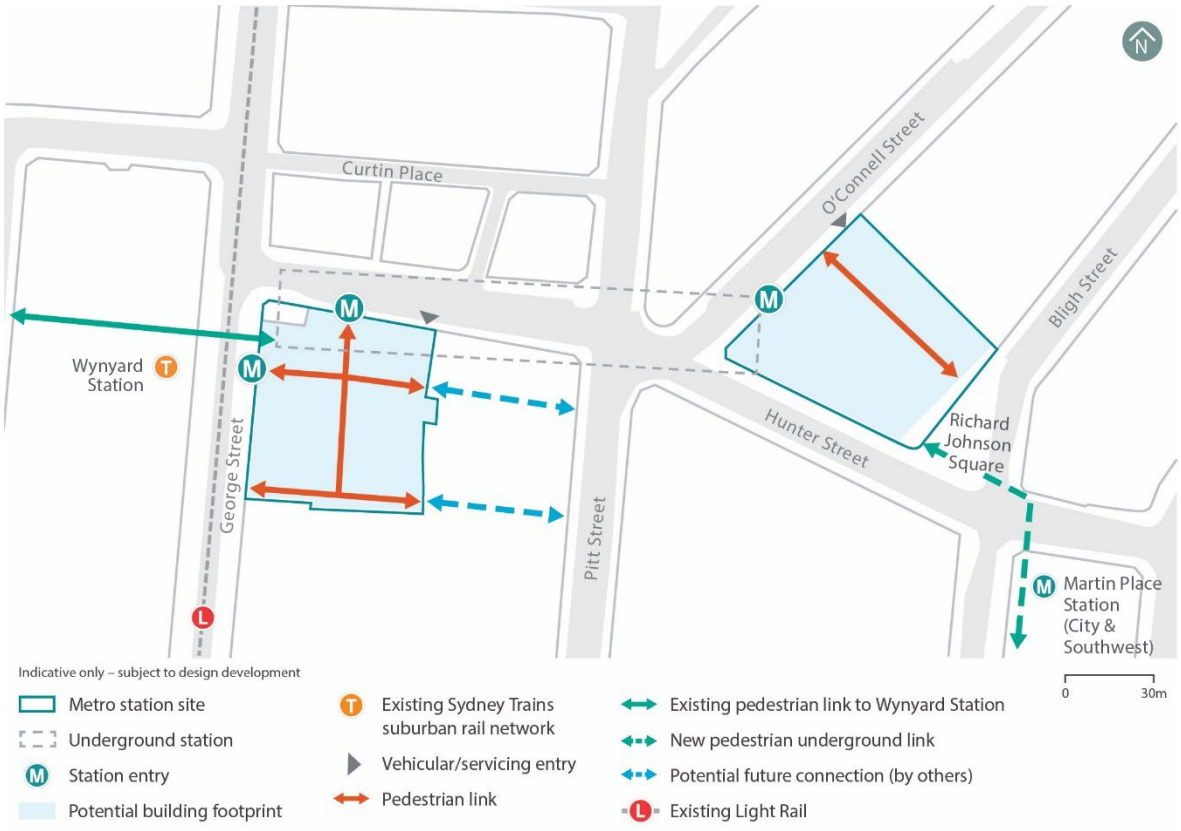


Figure 11-6 Access and connectivity urban design strategies – Hunter Street Station (Sydney CBD)

Figure 11-7 Built form urban design strategies – Hunter Street Station (Sydney CBD)

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

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

11.2.3 Transport interchange, access and connectivity

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

Examples of how the Hunter Street Station (Sydney CBD) design integrates with other transport modes and improves access for customers and the community include:

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

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

11.3 Construction description

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

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

11.3.1 Overview

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

The western construction site would be located on the corner of Hunter Street and George Street and would also contain DeMestre Place and the eastern construction site would be bounded by O'Connell Street, Hunter Street and Bligh Street.

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

The location and indicative layout of the Hunter Street Station (Sydney CBD) construction sites are shown on Figure 11-8. Some activities would occur outside this construction footprint, such as delivery of construction equipment and station precinct and interchange work.

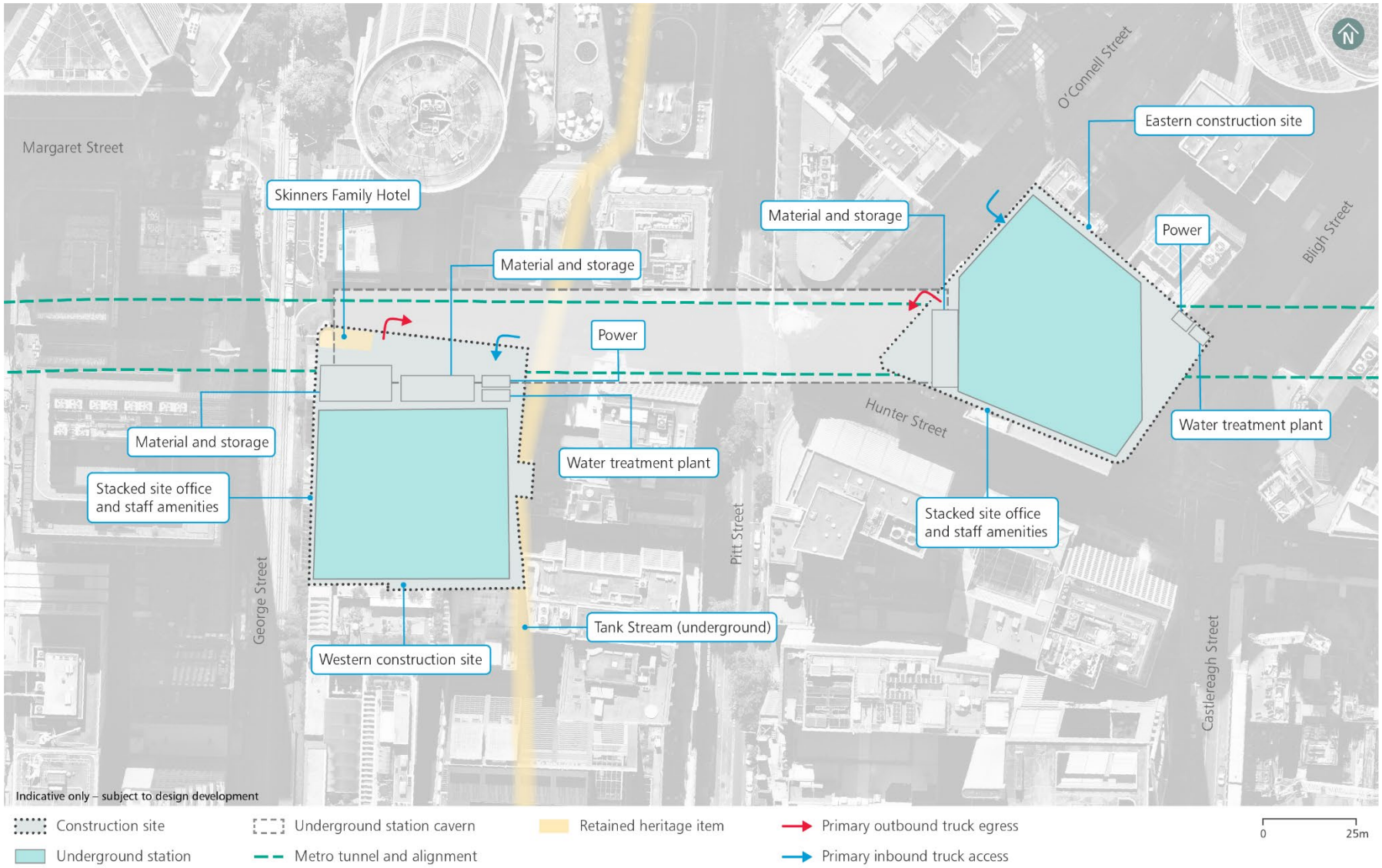


Figure 11-8 Indicative construction sites layout – Hunter Street Station (Sydney CBD)

11.3.2 Construction work

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

- enabling and site establishment work, including installation or retention of protection around the former Skinners Family Hotel heritage structure
- construction of the station and structures for non-station use
- station fit-out
- construction of station precinct and interchange facilities, including provisioning for over station development
- finishing work, testing and commissioning.

The indicative construction program for Hunter Street Station (Sydney CBD) is shown in Figure 11-9.

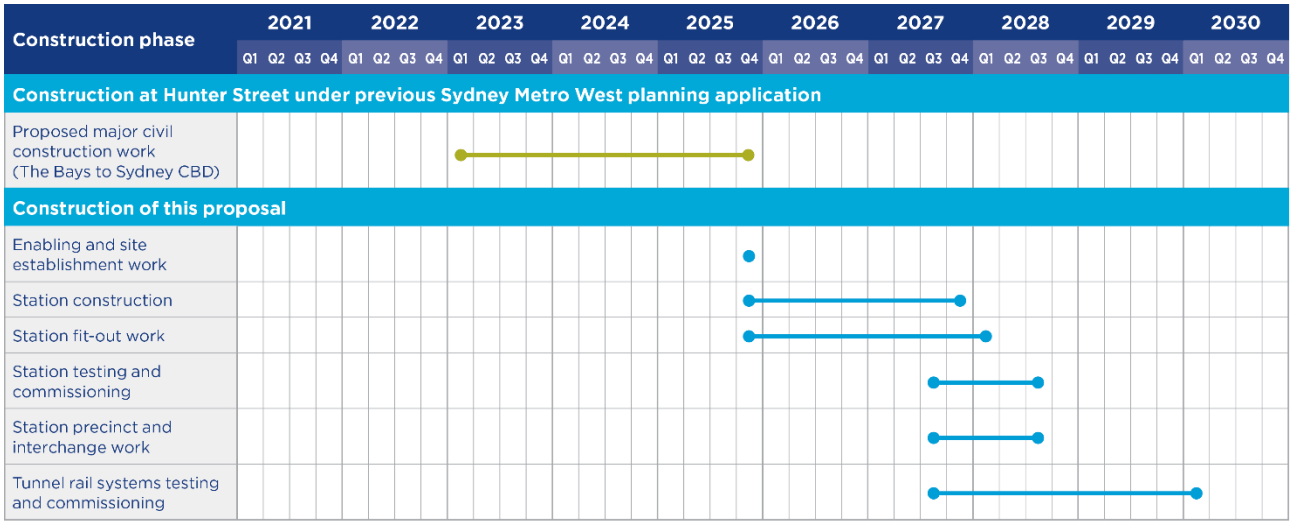


Figure 11-9 Indicative construction program – Hunter Street Station (Sydney CBD)

Other construction elements specific to Hunter Street Station (Sydney CBD) are shown in Table 11-3. Indicative construction hours, plant and equipment and workforce for the Hunter Street Station (Sydney CBD) construction sites are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Hunter Street Station (Sydney CBD) as described in the table below, are also depicted on Figure 11-8.

Table 11-3 Other construction elements – Hunter Street Station (Sydney CBD)

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to the western construction site via left-in from Hunter Street • egress from the western construction site via right-out onto Hunter Street • access to the eastern construction site via left-in from O'Connell Street • egress from the eastern construction site via left-out onto O'Connell Street.
	No additional and/or new access and egress arrangements are likely to be required for construction of this proposal.
Peak daily traffic movements	Western construction site: • about 224 daily heavy vehicle movements about 236 daily light vehicle movements. Eastern construction site: • about 196 daily heavy vehicle movements • about 210 daily light vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.

Construction element	Description
Transport network modifications	There would be no permanent impacts to parking or the transport network at Hunter Street Station (Sydney CBD). There would be the following temporary on-street parking impacts during construction of this proposal: • removal of some spaces on Hunter Street and O'Connell Street (continued impact from previous Sydney Metro West planning application) • extension of duration of the existing restrictions on the parking lane on the northern side of Hunter Street (continued impact from previous Sydney Metro West planning application).

12.0 Clyde stabling and maintenance facility and Rosehill services facility

12.1 Clyde stabling and maintenance facility and Rosehill services facility description

12.1.1 Design development

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

- feedback as part of submissions and consultation associated with the *Sydney Metro West Environmental Impact Statement Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- ongoing meetings and design workshops held with the City of Parramatta Council since exhibition of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a)
- meetings and advice from the Design Advisory Panel.

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

- delivery of a section of the 'Wilderline' (an active transport connection along the former T6 Carlingford Line corridor), based on feedback provided by the City of Parramatta Council
- rehabilitation of Duck Creek and A'Beckett's Creek where they run through or are adjacent to the Sydney Metro site, based on feedback provided by the City of Parramatta Council.

12.1.2 Clyde stabling and maintenance facility description

Clyde stabling and maintenance facility would be an integrated facility incorporating most operational and maintenance functions for Sydney Metro West, including the operations control centre and infrastructure required to maintain the train fleet.

The stabling and maintenance facility layout has been configured to allow for metro train access/egress from a dive structure (an open-air structure leading to a tunnel portal where trains enter/exit the mainline tunnels) located to the north of the site, adjacent to James Ruse Drive. The dive structure would connect the facility into the mainline tunnels. Vehicular access would be provided via separate access/egress points from Wentworth Street (delivery, contractors and visitor access) and Unwin Street (for general staff access). Large vehicle access to the stabling and maintenance facility would be via Wentworth Street. An internal access road network would provide for general circulation while being appropriately separated from train movements. The site would also be fenced from general public access and lighting would be used at night for safety and security of the site.

The operation of the stabling and maintenance facility would include the following components:

- stabling tracks to store trains
- a train maintenance centre, sidings and depot
- workshops for the maintenance of railway infrastructure components
- vehicle equipment measurement systems building
- train wash/bio wash and graffiti removal facility
- wheel lathe and heavy wash building
- test track to undertake training, testing, commissioning and maintenance
- operations control centre and administration building
- dangerous goods building
- cleaners building
- train servicing and maintenance equipment

- fire control and security building, including the provision of fire hydrants, hoses and other firefighting equipment within the building
- offices, staff car parks, storage, and internal vehicular and pedestrian access roads.

Given the available roof space, Sydney Metro would investigate options for the inclusion of a solar array.

This proposal would also include rehabilitation and renaturalisation of parts of Duck Creek, and site landscaping (as required by Concept condition of approval C-B2) (refer to Section 12.2).

The facility would operate 24 hours a day, seven days a week. An indicative layout and key design elements of the stabling and maintenance facility is shown in Figure 12-1. The design of the stabling and maintenance facility is subject to further detailed design development.

New pedestrian access would be provided to the Rosehill Gardens racecourse from James Ruse Drive to replace the previous access over the former Rosehill Station footbridge (which would be removed as part of work under the previous Sydney Metro West planning application). This access would likely be located to the north of the Sydney Metro West infrastructure, potentially through the formalisation of the temporary construction phase access point. Active transport connections to the surrounding area would be also provided, including delivery of part of the Wilderline within the site, which is a pedestrian network initiative by the City of Parramatta Council.

Sydney Metro is continuing to carry out design of the tunnel dive structure and associated infrastructure at Clyde stabling and maintenance facility. Aboveground services infrastructure would be required in the area adjacent to James Ruse Drive (for example, services infrastructure above the tunnel dive structure such as ventilation). The aboveground services infrastructure is subject to ongoing design development and would be designed to comply with the relevant environmental noise criteria.

Appendix A (Assessment requirements) of the Environmental Impact Statement provides an overview of how the design of this proposal has addressed the relevant Concept conditions of approval at the Clyde stabling and maintenance facility.

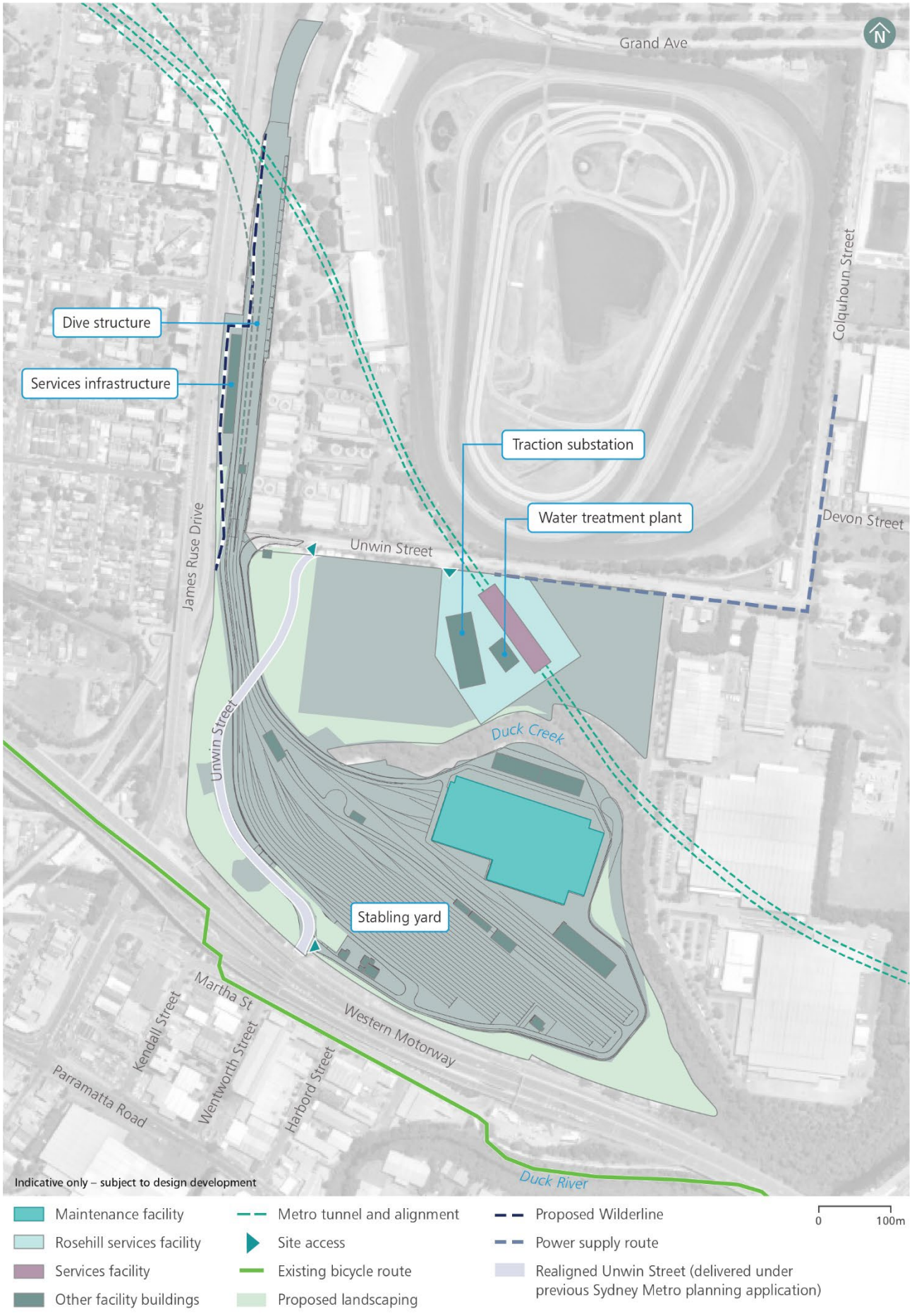


Figure 12-1 Indicative layout – Clyde stabling and maintenance facility and Rosehill services facility

Stabling activities

Trains not in operation would be stored in the stabling facility. Trains would normally be shut down after they have been stabled and the interior cleaned. They would need to be powered up about one hour before their scheduled departure time. The stabling and maintenance facility could be used to store a powered standby train for use in the event that a train needs to be withdrawn from service at short notice, if required.

The installation of stabling tracks would be undertaken progressively throughout the life of this proposal. About nine stabling tracks would be provided at the stabling and maintenance facility initially, with additional capacity (including select fill layers) provided for about thirteen additional stabling tracks. Where relevant, the Environmental Impact Statement has assessed both the at-opening and ultimate capacity of the facility.

Train maintenance activities

The infrastructure maintenance building would provide for both general and more substantial periodic maintenance activities (such as bogie/underframe inspections and other major equipment replacement).

The maintenance building would include workshops and storage areas, inspection pits and elevated walkways (for inspection of the train fleet), and crane lifting facilities. Maintenance operations would also include carrying out inspections, maintenance and component exchange on the train fleet.

Rail maintenance vehicles would use the metro network and provide access for maintenance crews. The types of maintenance activities that would be required are detailed in Section 1.6.6 (Maintenance activities) of this Appendix.

The water used for spot cleaning would be collected and treated onsite at the operational water treatment plant (located within the Rosehill services facility site) for reuse onsite.

Administration and staff facilities, as well as the operations control centre for the metro network, would be provided at the stabling and maintenance facility.

Car parking for staff and visitor use (about 170 spaces) would be provided within the site, including maintenance vehicle parking.

12.1.3 Rosehill services facility description

Rosehill services facility would include a services facility building, traction substation building and operational water treatment plant. Access to the services facility would be provided via Unwin Street. An internal road would provide access for inspection and maintenance for the services facility building and adjacent substation building. This internal road would be appropriately separated from train movements associated with the stabling and maintenance facility. The site would also be fenced from general public access and lighting would be used at night for safety and security of the site.

The services facility building would include tunnel ventilation plant rooms and associated air distribution equipment, as well as a central open shaft over a track crossover to allow for open air ventilation. A portion of the aboveground structures would be for inserting and extracting mechanical equipment and for access to the track crossover. The building would be indicatively around 20 metres above Unwin Street at the northern end, stepping down to around 15 metres in the south, subject to design development. The key features of the services facility is provided in Section 1.5.2 (Services facility) of this Appendix.

The traction substation would supply power to Sydney Metro West during operation and would be located adjacent to the water treatment plant. The structure would be indicatively around 20 metres in height, subject to design development. The key features of the proposed traction substations are provided in Section 1.5 (Operational ancillary infrastructure) of this Appendix.

The water treatment plant would treat wastewater pumped from the tunnels, stations and other underground facilities during operation, and would be located adjacent to the services facility. The water treatment plant building would include holding tanks, chemical treatment tanks and filters. Further detail on operational water management is provided in Section 1.5.6 (Drainage and stormwater) of this Appendix.

A permanent power supply route would be provided between traction substation at the Rosehill services facility and Camellia substation, generally within road reserves along Unwin Street and Colquhoun Street (refer to Figure 12-1).

The use of residual land required for construction surrounding the services facility (within the vicinity of the stabling and maintenance facility) following completion of construction would be investigated during further design development and in consultation with relevant stakeholders.

Rosehill services facility would be an unmanned facility that forms part of the tunnel ventilation system when required to provide additional heat removal, particularly during peak summer conditions. However, the facility would not be expected to operate during normal operating conditions. The adjacent traction substation would operate 24 hours a day, seven days a week.

The indicative layout of Rosehill services facility is shown in Figure 12-1. A long-section of Rosehill services facility is shown in Figure 12-2. The design of the services facility is subject to further detailed design development.

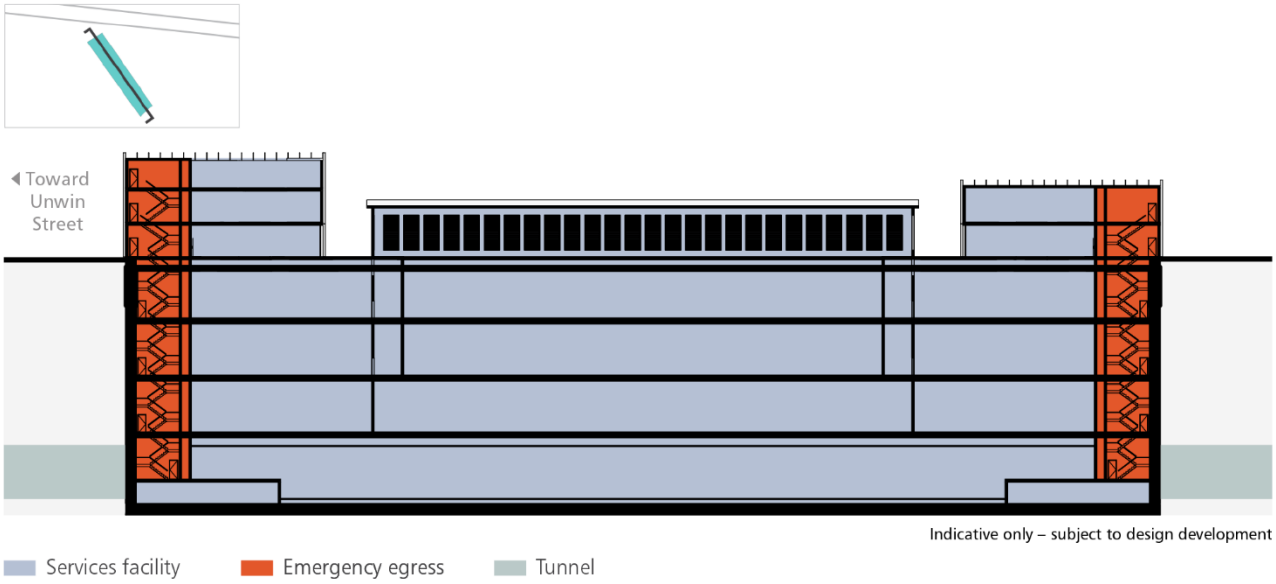


Figure 12-2 Indicative long-section – Rosehill services facility

12.2 Placemaking

The vision for Clyde stabling and maintenance facility, Rosehill services facility and its surrounds would be developed in consultation with the NSW Department of Planning and Environment, with regard to the *Draft Camellia-Rosehill Place Strategy* (2018).

12.2.1 Integration with strategic planning

Design development for the Clyde stabling and maintenance facility and Rosehill services facility would consider integration with strategic planning for the precinct. An overview of key strategic plans which have and would continue to be taken into consideration is included below, in accordance with the requirements of Concept condition of approval C-B2(d).

This proposal has considered the objectives of *Better Placed* (Government Architect NSW, 2017) as outlined in Section 1.2 (Placemaking and design) of this Appendix. An overview of how this proposal meets the relevant transport and connectivity outcomes of the Healthy Built Environment Checklist (NSW Government, 2020a) is also provided in Appendix I (Healthy Built Environment Checklist) of the Environmental Impact Statement.

Parramatta Local Strategic Planning Statement City Plan 2036

The *Parramatta Local Strategic Planning Statement City Plan 2036* (City of Parramatta, 2020) identifies the area around Clyde stabling and maintenance facility and Rosehill services facility as continuing to provide its existing land use as key urban services. The proposed Sydney Metro West facilities in this area align with and support the continuation of this land use.

Sydney Green Grid

The Sydney Green Grid identifies two project opportunities in the vicinity of Clyde stabling and maintenance facility and Rosehill services facility:

- The Duck River project would run adjacent to Duck River to the east of Clyde stabling and maintenance facility. The facility would not impact the ability to realise this project, and would safeguard the ability to provide future connections, such as adjacent to Duck Creek

- The Carlingford Rail Line project (within the former rail line) would run partly through the site, alongside the aboveground connecting track to Clyde stabling and maintenance facility. Sydney Metro would deliver part of this active transport corridor within this proposal's operational footprint.

Draft Camellia-Rosehill Place Strategy

The *Draft Camelia-Rosehill Place Strategy* was released in December 2021, (NSW Department of Planning, Industry and Environment, 2021c) and provides a 20-year plan for the development of Camellia-Rosehill. The strategy builds on previous work published by the NSW Department of Planning and Environment for the precinct, including the *Draft Camellia Town Centre Master Plan* (2018) and *Camellia Land Use and Infrastructure Strategy* (2015).

The Draft Camellia–Rosehill Place Strategy sets out an approach to create a 'vibrant 18-hour entertainment precinct, a thriving residential town centre with supporting retail outlets, and a new urban services precinct'.

The draft strategy includes a master plan which provides a land use framework for future development in the precinct. It illustrates the primary land use, open space, and access and movement layout, and aims to strike a balance between the need for urban development while retaining strategically significant industrial land. The master plan identifies the need for the Sydney Metro West stabling and maintenance facility in this location.

The Camellia–Rosehill precinct is divided into three sub-precincts. The Rosehill services facility site is included in the southern area of the town centre sub-precinct, south of Unwin Street, bordered by two investigation sites for future use. The Clyde stabling and maintenance facility site is located in the western part of the urban services sub-precinct, between two areas of linear open space along James Ruse Drive and Duck Creek.

12.2.2 Place and design principles

Place and design principles for Clyde stabling and maintenance facility and Rosehill services facility were identified in Section 7.10.9 of the *Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD* (Sydney Metro, 2020a). The principles build on the five Sydney Metro-wide design objectives and have considered relevant local council strategies and *Better Placed* design objectives (refer to Section 1.2 (Placemaking and design) of this Appendix). Table 12-1 outlines how these principles have been achieved in Clyde stabling and maintenance facility and Rosehill services facility design.

Table 12-1 Design responses to Clyde stabling and maintenance facility and Rosehill services facility place and design principles

Place and design principle	Design response
Provide a well-designed stabling and maintenance facility to support operations and integrate into its surrounding context including strategic planning for the Camellia-Rosehill peninsula	• the design of stabling and maintenance facility provides for the efficient operation of the metro rail line • the facility sits within, and is compatible with, the surrounding industrial land use • opportunities for landscaping have been identified around the facility to provide improved visual amenity and tree canopy cover.
Provide for the safe and legible staff pedestrian movement within site	• the facility has been, and would continue to be, designed to provide for safe staff pedestrian movements within the site, including dedicated pedestrian walkways • the design would also facilitate active transport connections, including provision of a section of the 'Wilderline' and through safeguarding the ability for future active transport corridors within the vicinity of the site
Minimise impact to Duck Creek and support rehabilitation to the riparian corridor adjacent to the site	• work directly interfacing with the waterways has been minimised as far as practical • Sydney Metro would carry out rehabilitation of Duck Creek where it runs through or is adjacent to the Sydney Metro site as outlined in Section 12.2.3.
Maintain industrial uses on residual land (construction site), including access and integration with the surrounding uses	• the potential future use of residual land is subject to ongoing consultation with the City of Parramatta Council in accordance with the Concept condition of approval C-B2(b) and the NSW Department of Planning and Environment. This would include consideration of the existing zoning of the land, the nature of the

Place and design principle	Design response
	surrounding uses, the recreational needs of the local population, and the necessary work and remediation to make the land suitable for potential public use. Sydney Metro is also considering the potential use of this land to provide flood storage to meet the requirements of condition of approval D10 of SSI 10038. Further information regarding considerations for the future of residual land at Clyde is provided in Section 18.2 (Property) of the Environmental Impact Statement. Residual land would remain suitable for industrial use • Sydney Metro is proposing to develop a landscape masterplan to detail how the design would respond to the requirements of Concept condition C-B2 including active transport links, the use of residual land, rehabilitation of the Duck Creek and A'Becketts Creek riparian corridor where it adjoins the Sydney Metro site and how the facility would integrate with the master planning work for the Camellia-Rosehill precinct.

The key urban design strategies to support the implementation of the place and design principles are illustrated in Figure 12-3 and Figure 12-4.

Figure 12-3 Land use and function urban design strategies – Clyde stabling and maintenance facility and Rosehill services facility

Figure 12-4 Access and connectivity urban design strategies – Clyde stabling and maintenance facility and Rosehill services facility

Clyde stabling and maintenance facility and Rosehill services facility would be secure facilities to support operation of the rail line and would not be publicly accessible. Notwithstanding, the design includes the following key movement and place features:

- provision of a section of the 'Wilderline' – a City of Parramatta Council proposed north-south active transport corridor within the former T6 Carlingford Line (in accordance with Concept condition of approval C-B2(a))
- provision of new pedestrian access to Rosehill Gardens racecourse from James Ruse Drive to replace the previous access over the former Rosehill Station footbridge (which would be removed as part of work under the previous Sydney Metro West planning application)
- landscaping around the boundary of the site to provide improved visual amenity and tree canopy cover
- rehabilitation of the waterways and riparian corridor to provide improved ecological function (as outlined in Section 12.2.3)
- safeguarding the ability for future active transport corridors within the vicinity of the site, including adjacent to Duck River and Duck Creek
- maintenance of a key (B-Double capable) heavy vehicle access route to the Camellia/Rosehill peninsula through the realigned Unwin Street over the rail tracks (carried out under the previous Sydney Metro West planning application).

12.2.3 Riparian rehabilitation

In the vicinity of the site, Duck Creek and A'Beckett's Creek are heavily weed infested in places, with other sections retaining some native vegetation. As part of this proposal, Sydney Metro would carry out localised rehabilitation of Duck Creek and A'Beckett's Creek where they run through or are adjacent to the Sydney Metro site. This would satisfy the requirements of the Concept conditions of approval related to renaturalisation and rehabilitation of these waterways (conditions of approval C-B2(c) and C-B10).

The overarching vision and objectives, and indicative rehabilitation approach are outlined below.

Vision and objectives

Sydney Metro's vision for the waterways is:

A healthy urban waterway able to be sustainably managed for the ongoing benefit of biodiversity and the public.

The objectives of the riparian rehabilitation are to:

- facilitate the expansion of mangroves (Plant Community Type 920) as needed to fill their full potential as an ecological niche within the site
- improve the ecological condition of vegetation surrounding the mangroves, including composition, structure and maturity
- improve the quantity and quality of fauna habitat throughout the site
- provide for manageable levels of ongoing effort and cost in maintaining the site's ecological integrity in perpetuity
- involve the local community where possible to encourage ownership and stewardship, with a view to maintaining future interest in sustaining the improved ecological condition
- satisfy Sydney Metro West Concept conditions of approval C-B2(c) and C-B10.

Indicative rehabilitation approach

The indicative approach to riparian rehabilitation is outlined in Table 12-2. The approach has been developed based on the overarching objectives and to:

- avoid heavy works or mass disturbance within the riparian area to avoid or minimise any potential impacts to the existing environmental values (particularly existing mangroves and native seedbank)
- avoid dredging or other substantial disturbance of the existing beds of the waterways to maintain their natural state and avoid disturbance of potentially contaminated soils.

A Rehabilitation Management Plan would be prepared to guide the riparian rehabilitation and provide further detail on the approach to rehabilitation, building on the indicative approach outlined in Table 12-2.

Sydney Metro West Concept condition of approval C-B10 restricts revegetation of the tidal limits of Duck Creek and A'Becketts Creek to the use of species that are representative of Plant Community Type 920 (Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion). This would limit revegetation to the use of:

- Grey mangrove (*Avicennia marina subsp. australasica*)
- River mangrove (*Aegiceras corniculatum*)
- Beaded samphire (*Sarcocornia quinqueflora*).

Other species are likely to be relevant and important within the broader riparian zone and to provide for the success of the revegetation. As such, Sydney Metro would supplement the revegetation with a number of additional species that are representative of the most appropriate plant community type in each location as outlined in the table below.

Table 12-2 Indicative approach to riparian rehabilitation

Aspect	Indicative approach
Detailed ecological survey and vegetation and heritage mapping	• carry out on-ground ecological survey including an audit of habitat values for threatened and non-threatened native flora and fauna • identify and refine opportunities for improvement of ecological condition and values.

Aspect	Indicative approach
Access	• plan and construct permanent access tracks (minimal width for on-foot maintenance access and to discourage public access to any sensitive areas), including consideration of potential active transport corridors. Additional public access in this area would be considered in consultation with relevant stakeholders, with regard to the draft Camellia-Rosehill Place Strategy • consider enhancement of suitable nearby parking areas for access by maintenance staff, and the potential for some parking to be provided within the facility.
Weed control	• weed control works would use typical bush regeneration methods where practical, such as physical removal and bagging, cut and paint, smothering with weed suppression matting or foliar application of herbicide • implement weed-mat, mulch or similar, to suppress weed regrowth, in tandem with targeted revegetation, and supported by ongoing weed removal.
Litter / rubbish removal	• remove existing litter/rubbish throughout the site • install gross pollutant traps such a pit baskets, stormwater outlet trash netting, sediment traps and trash racks (where possible and subject to access constraints) to minimise the continued introduction of litter and rubbish.
Habitat interventions	• installation of appropriate nest boxes • targeted revegetation with view to enhancing particular types of habitat.
Revegetation	• the scope of revegetation would be limited in favour of natural regeneration where feasible • revegetation should be used where necessary to rapidly suppress weeds and where it provides long-term benefits • only local native species would be used • urban-resilient species such as *Casuarina*, *Lomandra* and *Eucalyptus* would be used • prioritise species that would provide long-term habitat value as a foraging or roosting resource for target fauna • transplant mangrove suckers to extend presence of mangroves into exposed tidal flats (where possible).
Community involvement and information	Community involvement in rehabilitation programs can encourage people to value the site and maintain an interest in its ongoing protection and enhancement. Community involvement would include: • engagement with the local Aboriginal community and knowledge holders • identification and engagement with any local interest groups • ongoing engagement with City of Parramatta Council and relevant NSW government agencies. Provision of community information regarding the site could include: • interpretive signage at strategic locations • plant species identification including their role in the local ecosystem • the role of mangroves including water quality and habitat associations • fauna species present and how they use the area • management of weeds • general issues associated with urban waterways such as water quality and flooding.
Governance	Governance arrangements would be required to establish the roles and responsibilities of the different parties, including Sydney Metro, the City of Parramatta Council, other NSW government agencies, Aboriginal groups and any other community groups. This would include the responsibility for ongoing management and maintenance of the site.

12.3 Construction description

This section provides a description of the construction activities required to complete the Clyde stabling and maintenance facility and Rosehill services facility ready for the operation of Sydney Metro West.

12.3.1 Stabling and maintenance facility

Overview

The construction site for Clyde stabling and maintenance facility would be located between the M4 Western Motorway, James Ruse Drive and Rosehill Gardens racecourse in the suburbs of Clyde and Rosehill.

Construction activities at this site for this proposal would require the continued use of much of the construction site used for work carried out under the previous Sydney Metro West planning application.

The stabling and maintenance facility construction site would also be levelled as a result of activities associated with the work carried out under the previous Sydney Metro West planning application prior to the commencement of this proposal.

The location and indicative construction layout of Clyde stabling and maintenance facility is shown in Figure 12-5.

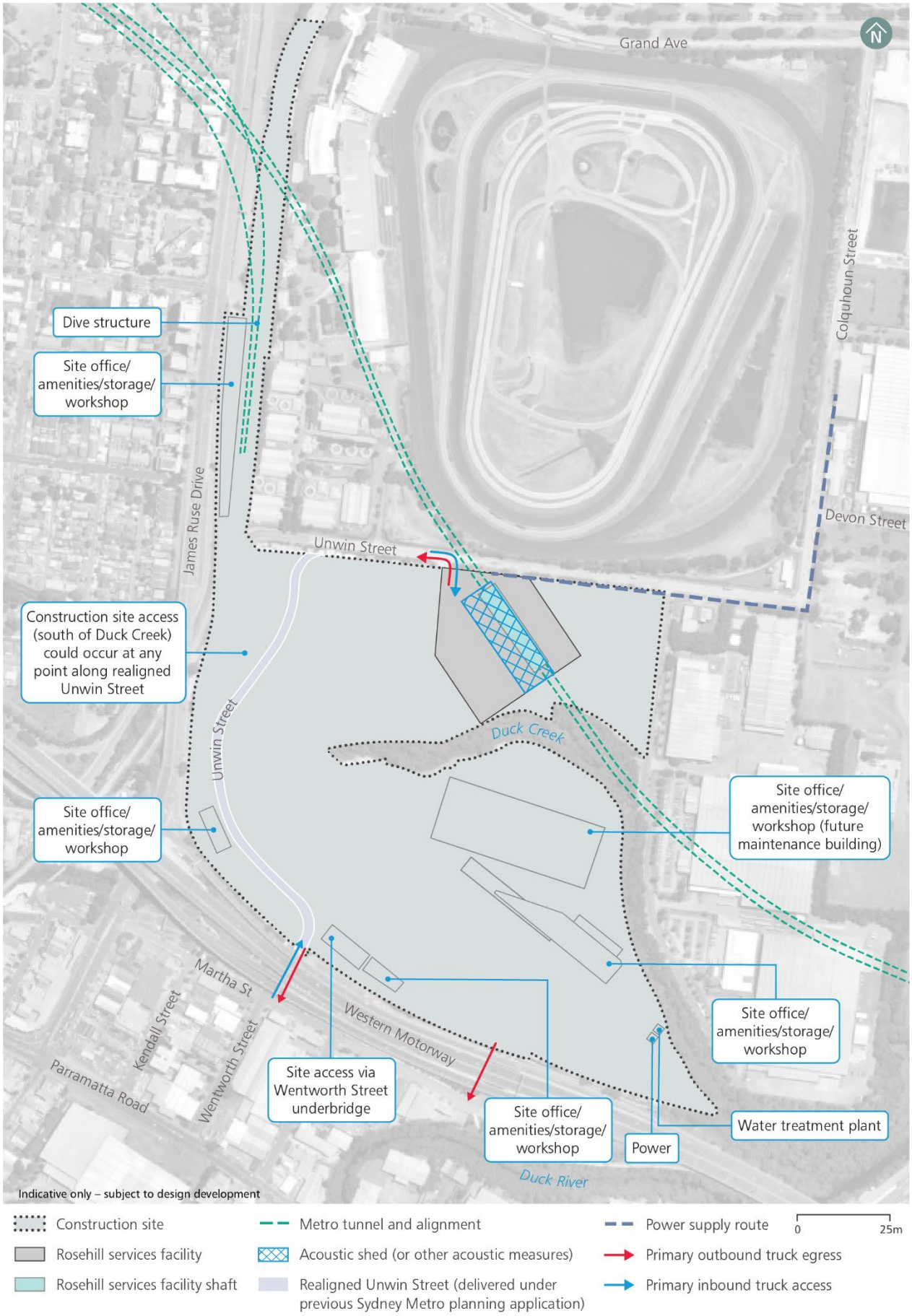


Figure 12-5 Indicative construction site layout – Clyde stabling and maintenance facility and Rosehill services facility

Construction work

Key construction work at Clyde stabling and maintenance facility as part of this proposal would include:

- enabling and site establishment work
- placement of select material to final design levels
- construction of access roads and car parking, including kerb and guttering, localised drainage work, surfacing including asphalt, concrete or pavers, line marking, signage and other finishes
- building and facility construction and fit-out, including maintenance buildings, the operations control centre, administration, cleaning facilities, security and fire control buildings, a train wash facility and other services infrastructure (such as ventilation associated with the tunnel dive structure)
- construction and fit-out of the stabling yard to accommodate the stabling of trains, including:
  - construction of rail entry/exit structures to the facility from the mainline tunnels
  - surface rail track installation (refer to Section 6.4.6 (Tunnel fit-out and rail systems work))
  - electrical fit-out
  - signalling and communications works
- rehabilitation and revegetation work within the Duck Creek and A'Beckett's Creek riparian zone as outlined in Section 12.2.3
- finishing work, testing and commissioning.

The indicative construction program for Clyde stabling and maintenance facility is shown in Figure 12-6. Creek rehabilitation works are likely to commence in early 2023.

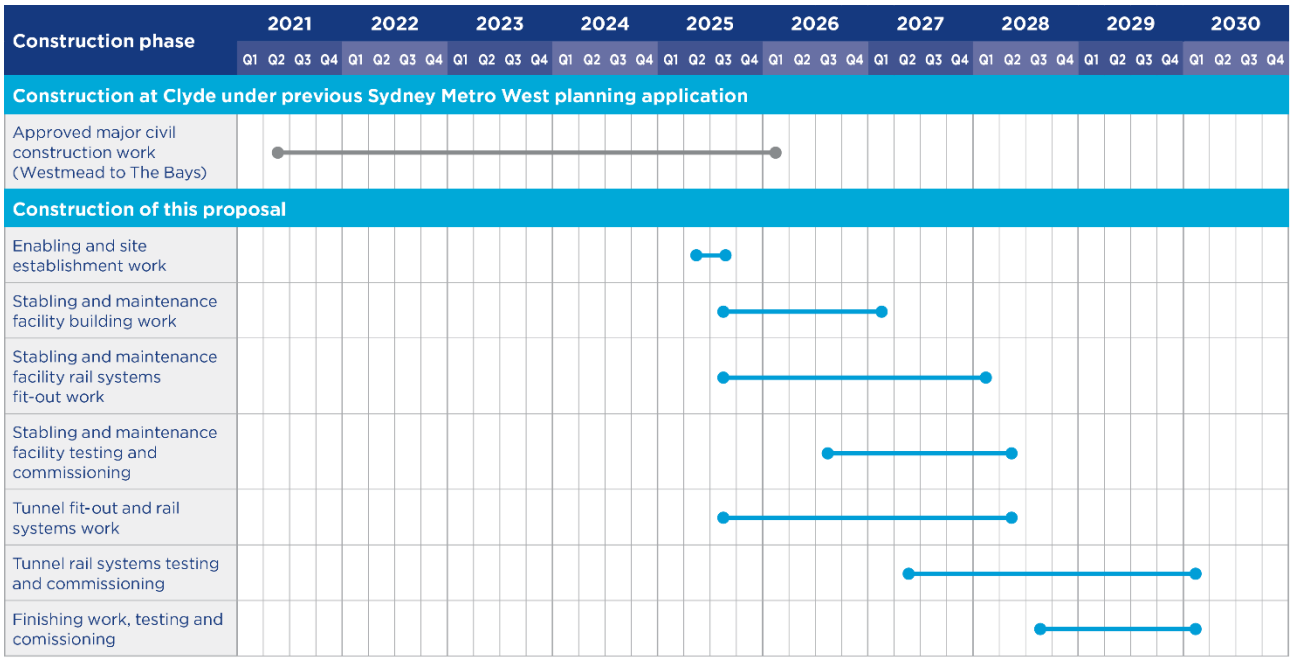


Figure 12-6 Indicative construction program – Clyde stabling and maintenance facility

Other construction elements specific to Clyde stabling and maintenance facility are provided in Table 12-3. Indicative construction hours, plant and equipment and workforce for Clyde stabling and maintenance facility construction site are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Clyde stabling and maintenance facility as described in the table below, are also depicted on Figure 12-5.

Table 12-3 Other construction elements – Clyde stabling and maintenance facility

Construction element	Description
Construction traffic access and egress	Continued access and egress arrangements established under the previous Sydney Metro West planning application that would likely be maintained during construction include: • access to and egress from the southern side of the construction site via Wentworth Street.
	Additional and/or new access and egress arrangements likely to be required for construction of this proposal include: • potential secondary egress from the southern side of the construction site via Martha Street • access to and egress from the northern side of the construction site via right-in from and left-out onto the realigned Unwin Street.
Peak daily traffic movements	• about 408 daily light vehicle movements • about 320 daily heavy vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	Continued transport network modifications that would be established under the previous Sydney Metro West planning application that include the permanent realignment of Unwin Street.
	No new temporary network modifications or loss of parking would be required to facilitate construction of Clyde stabling and maintenance facility for this proposal.

12.3.2 Rosehill services facility

Overview

Construction of Rosehill services facility would require the continued use of a portion of the Clyde stabling and maintenance facility construction site as described in Section 12.3.1. The Rosehill services facility construction site would be used for the work carried out under the previous Sydney Metro West planning application.

Civil works to excavate the services facility shaft and levelling of the site will be carried out under the previous Sydney Metro West planning application.

This proposal would also include the construction of a permanent power supply route between the traction substation at the Rosehill services facility and Camellia substation, generally within road reserves along Unwin Street and Colquhoun Street. Construction of the power supply route would generally be carried out by open trench within the road reserve. Construction contractors would be required to meet the requirements of the CEMF.

The location and indicative layout of the Rosehill services facility construction site is shown in Figure 12-5.

Construction work

Key construction work at Rosehill services facility would include:

- enabling and site establishment work, including:
  - delivery of tunnel ventilation fans, substation transformers, precast concrete elements and structural steel
  - temporary installation of an acoustic shed (or other acoustic measures) above the services facility
- construction of aboveground and underground structures for the services facility
- access for tunnel fit-out and rail systems work
- construction and fit-out of a traction substation
- construction and fit-out of an operational water treatment plant

- construction of a permanent power supply route between Rosehill services facility and Camellia substation
- finishing work, testing and commissioning.

The indicative construction program for Rosehill services facility is shown in Figure 12-7.

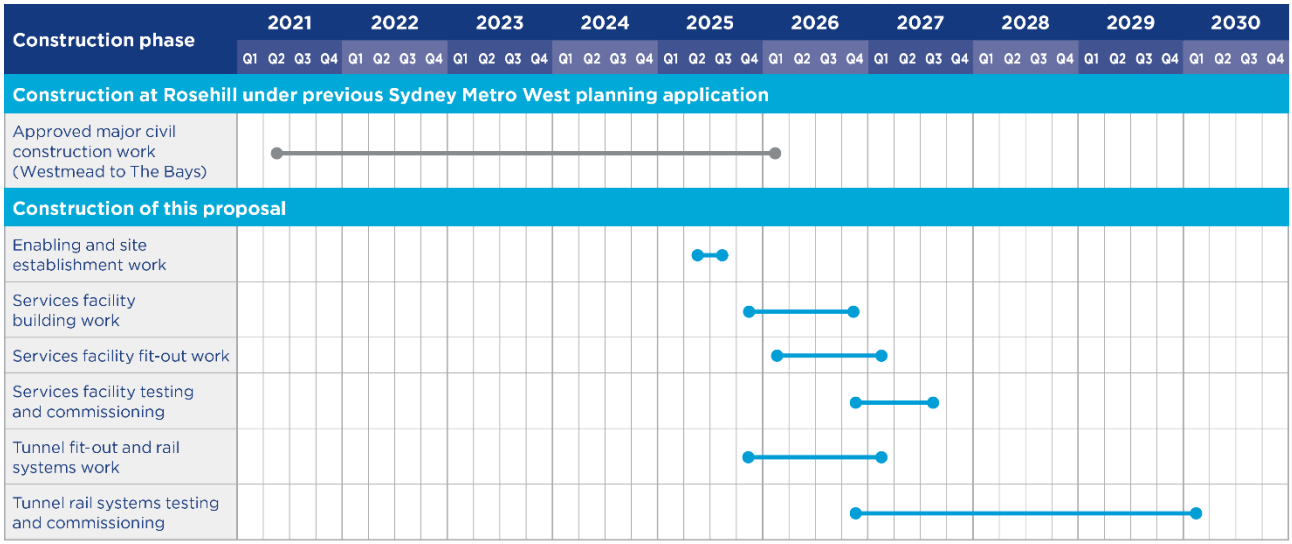


Figure 12-7 Indicative construction program – Rosehill services facility

Other construction elements specific to Rosehill services facility are provided in Table 12-4. Indicative construction hours, plant and equipment and workforce for Rosehill services facility (as part of the Clyde stabling and maintenance facility construction site) are provided in Section 2.5 (Other construction elements) of this Appendix. Key elements specific to Rosehill services facility as described in the table below, are also depicted on Figure 12-5.

Table 12-4 Other construction elements – Rosehill services facility

Construction element	Description
Construction traffic access and egress	Proposed access and egress arrangements likely to be required for construction of this proposal include: • access to and egress from the construction site via right-in from and left-out onto the realigned Unwin Street.
Peak daily traffic movements	• about 100 daily light vehicle movements • about 132 daily heavy vehicle movements. Note: Movement refers to a one-way movement. A vehicle entering and then leaving a construction site represents two movements.
Transport network modifications	No temporary network modifications would be required to facilitate construction of Rosehill services facility.