

Part B

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# Proposal description – construction

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## 6.0 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 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

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.

### 6.1 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).

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

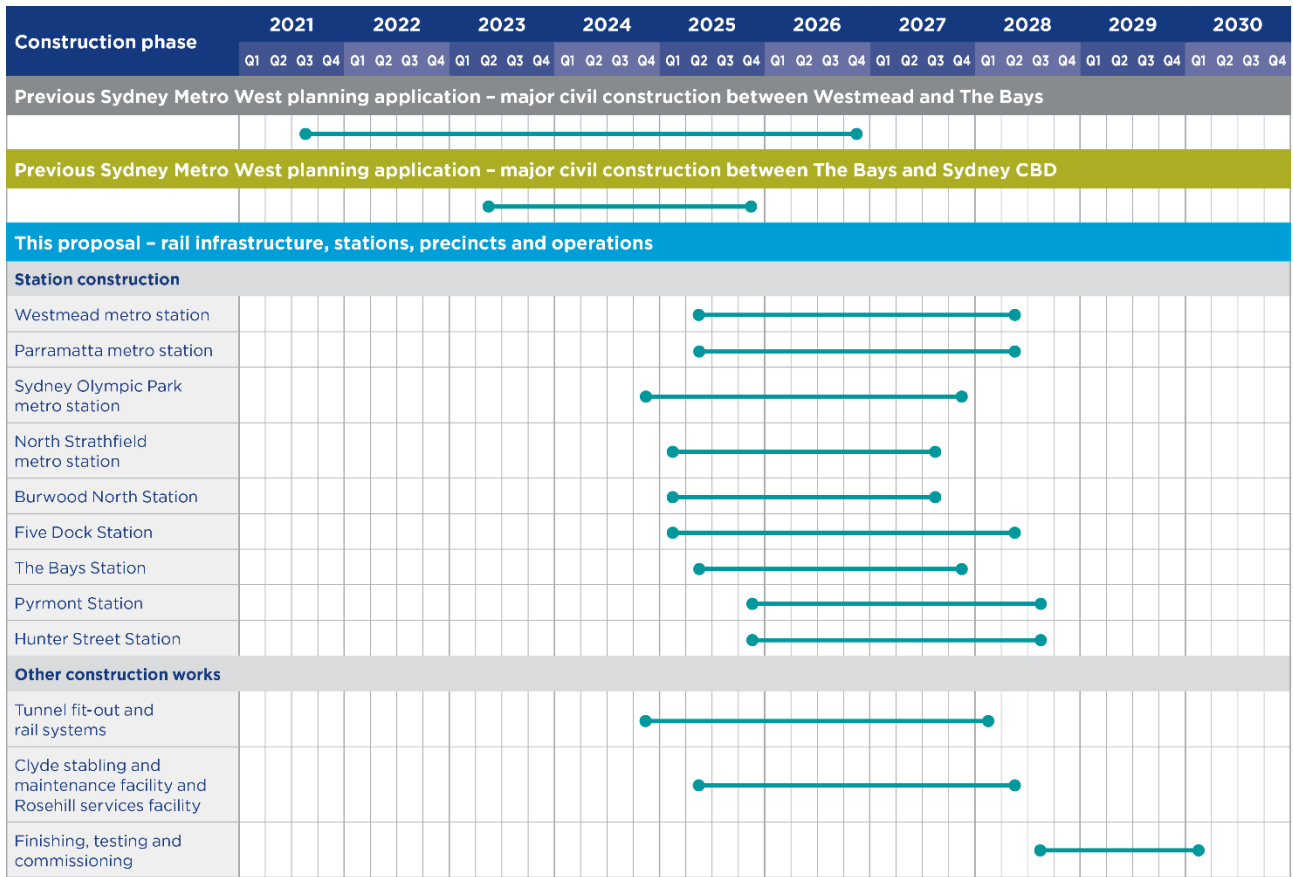
- enabling and site establishment work
- construction of stations and structures for non-station use (e.g. retail, commercial and/or community facilities)
- station fit-out
- station precinct and interchange work including provisioning for over and/or adjacent station development, where relevant
- construction 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.

### 6.2 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 6-1.

Indicative construction programs for each construction site are provided in Chapter 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement. Figure 6-1 also shows how this proposal interrelates to the work carried out under the previous Sydney Metro West planning applications.



**Figure 6-1 Indicative construction program**

### 6.3 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) and Chapter 5 of *Sydney Metro West Environmental Impact Statement – Major civil construction between The Bays and Sydney CBD* (Sydney Metro, 2021a).

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 7 (Westmead metro station) of this Environmental Impact Statement))
- 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 9 (Sydney Olympic Park metro station) of this Environmental Impact Statement)
- 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 10 (North Strathfield metro station) of this Environmental Impact Statement))
- 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 13 (The Bays Station) of this Environmental Impact Statement)).

The indicative construction sites for this proposal are shown in Chapter 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

## 6.4 Construction methods

### 6.4.1 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 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

### 6.4.2 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 7 (Westmead metro station) and Chapter 10 (North Strathfield metro station) of this Environmental Impact Statement.

#### **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 5.4.4 (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).

#### **6.4.3 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.

#### **6.4.4 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.

#### 6.4.5 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 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

##### 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 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

#### 6.4.6 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 6-1.

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 this Environmental Impact Statement.

**Table 6-1 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 6.4.3.
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	<p>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.</p> <p>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.</p>
Cable and equipment installation	<p>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.</p> <p>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.</p> <p>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.</p>
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).

### 6.4.7 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.

## **6.5 Other construction elements**

### **6.5.1 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 (refer to Appendix H).

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 6-2. Construction scenarios that would be carried out at specific construction sites are identified in Chapter 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

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 6-2 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.

### 6.5.2 Construction traffic, access, transport network modifications and parking

Proposed construction haul routes are identified in Chapter 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement. Construction traffic would be managed in accordance with the Construction Traffic Management Framework (refer to Appendix G). 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 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement. 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 7 (Westmead metro station) to Chapter 17 (Clyde stabling and maintenance facility and Rosehill services facility) of this Environmental Impact Statement.

### 6.5.3 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 7 (Westmead), Chapter 10 (North Strathfield metro station) and Chapter 13 (The Bays Station) respectively of this Environmental Impact Statement.

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 17 (Clyde stabling and maintenance facility and Rosehill services facility) 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.

### 6.5.4 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 6-3. 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 6-3 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			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Pymont			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Hunter Street			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●
Clyde	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●	●		●	●	●	●	●
Rosehill			●	●	●		●		●	●	●		●	●		●	●			●	●	●	●	●

### 6.5.5 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 6-4.

**Table 6-4 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
Pymont Station	110
The Bays Station	210
Hunter Street Station	180
Clyde stabling and maintenance facility	130
Rosehill services facility	70

### 6.5.6 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 6-5. 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 6-5 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
Pymont	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).

### 6.5.7 Construction materials and resources

#### Raw materials

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

**Table 6-6 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 6-7. Efficiencies in water use and management would continue to be investigated during design development and construction planning.

**Table 6-7 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
<b>Total</b>	<b>265</b>	