

Construction transport

2

**Sydney Metro West – Rail infrastructure,
▲ stations, precincts and operations
Environmental Impact Statement**

Technical Paper 2: Construction transport

turnbull

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Glossary of terms and acronyms

Term	Meaning
Average delay	Duration, in seconds, of the average vehicle waiting time at an intersection
Bus lane	A traffic lane dedicated to buses, but which can also be used by taxi, hire cars, bicycles and motorcycles
Capacity	The nominal maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or roadway in one direction during a given time period under prevailing roadway conditions
Corridor	A substantial segment of the transport network, in which parallel, possibly competing, transport routes (and modes, where appropriate) operate between two locations
CTMF	Construction Traffic Management Framework (included as Appendix G of this Environmental Impact Statement)
CTMP	Construction Traffic Management Plan
Cumulative impacts	Impacts that, when considered together, have different and / or more substantial impacts than a single impact assessment on its own
Detour	An alternative route, using existing roads, made available to traffic
Footpath	A paved area in a footway
Footprint	The extent of the impact that a development (in plan view) makes on the land
Heavy vehicles	A heavy vehicle is classified as a Class 3 vehicle (a two-axle truck) or larger, in accordance with the Austroads Vehicle Classification System. Generally vehicles greater than 4.5 tonnes.
HPAA	High Pedestrian Activity Area - areas of high pedestrian activity, near shopping strips, railway stations, bus interchanges, beach-sides and services such as medical centres. The maximum speed limit is 40 kilometres per hour at all times
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment
LOS	Level of Service. An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions
Light vehicles	Vehicles up to 4.5 tonnes Gross Vehicle Mass, including cars which have been registered for business use
Local road	A road or street used primarily for access to abutting properties, generally under the care and control of local councils.
Median	The central reservation which divides a carriageway for traffic travelling in opposite directions
Midblock	A general location on a road between two intersections
Motorway	Fast, high capacity, access-controlled roads that primarily link regional hubs and cities usually with grade separated interchanges and without traffic signals. May be tolled or untolled.
Movement	A single trip in one direction of travel between an origin and a destination
Off ramp	A ramp by which one exits a limited access highway/tunnel
On ramp	A ramp by which one enters a limited access highway/tunnel
Public transport	Includes metro, train, bus ferry and light rail
SCATS	Sydney Coordinated Adaptive Traffic Systems – an urban traffic control system that optimises traffic flow. SCATS responds automatically to fluctuations in traffic flow through the use of vehicle detectors.

Term	Meaning
SIDRA Intersection	SIDRA Intersection is a computer-based modelling package that calculates intersection performance. The commonly used measure of intersection performance is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the Level of Service. Version 9.0 used for the assessment as part of this Environmental Impact Statement.
SPECTS	Safety, Productivity and Environment Construction Transport Scheme
Transitway	A route designed for use by public transport as defined in the <i>Roads Act 1993</i> . In Sydney, this is a rapid bus network.
Truck and dog	A construction vehicle with about 20 cubic metres of capacity and a maximum length of 19 metres.

Executive summary

Overview

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future. Sydney Metro is Australia's biggest public transport program.

Sydney Metro West is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

The delivery of Sydney Metro West is critical to keeping Sydney moving and is identified in a number of key strategic planning documents including the Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (Greater Sydney Commission, 2018), Building Momentum: State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) and Future Transport Strategy 2056 (Transport for NSW, 2018).

Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The previous Sydney Metro West planning applications included:

- The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021
- Stage 2 of the planning approval process includes all major civil construction between The Bays and Sydney CBD. An Environmental Impact Statement for major civil construction between The Bays and Sydney CBD was exhibited between 3 November 2021 and 15 December 2021.

Stage 3 of the planning approval process is seeking planning approval to enable the approved Concept to be realised by carrying out the tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the Sydney Metro West line (this proposal).

Major civil construction including station excavation and tunnelling work associated with the previous Sydney Metro West planning applications does not form part of this proposal. This proposal includes the activities required to complete construction ready for operations of Sydney Metro West.

This proposal would involve:

- Fit-out of tunnels including systems for metro train operations
- Construction, fit-out and operation of:
 - Metro station buildings and the surrounding metro precincts
 - A services facility and traction substations
 - A control centre, test track and stabling and maintenance facility at Clyde
- Space for non-station uses at metro stations (e.g. retail, commercial and / or community facilities)
- Provisions for over and / or adjacent station development within metro precincts
- Rail interchange support works, including work to the existing T1 Western Line at Westmead and T9 Northern Line at North Strathfield
- Transport network modifications such as new interchange facilities and changes to public transport networks to serve metro stations
- Subdivision of sites
- Operation and maintenance of the Sydney Metro West line.

Components of this proposal are subject to further design development, and changes may be made during the ongoing design which take into account the outcomes of community and stakeholder engagement and environmental investigations.

Approach to transport assessment

To assess the potential construction impacts of this proposal on the transport network, the following methodology has been used to identify and, where possible, quantify the following:

- Impacts on road network performance – assessed through the use of traffic modelling (SIDRA Intersection version 9.0) to determine the performance of the road network with and without construction vehicles generated by this proposal
- Impacts on parking – assessed through a qualitative analysis of removed parking spaces and availability of parking in nearby locations to determine the potential impacts of parking overflow
- Impacts on property access – assessed through an analysis of existing access provisions and a comparison with access provisions during construction
- Impacts on public transport – assessed through an analysis of proposed changes to public transport operations including routes and stop infrastructure to determine potential impacts on public transport customers
- Impacts on pedestrians and cyclists – assessed through an analysis of proposed changes to shared use paths, cycleways, footpaths and pedestrian crossings to determine potential impacts on access to and availability of pedestrian and cyclist infrastructure
- Cumulative impacts – assessed through a qualitative analysis or use of traffic modelling (SIDRA Intersection) to determine the performance of the road network with construction vehicle movements associated with other major projects expected to be occurring at the same time as this proposal based on current publicly available information.

Overview of potential impacts

Potential impacts as part of previous Sydney Metro West planning applications that would continue during construction of this proposal have been identified as follows:

- Temporary or permanent loss of parking spaces in Westmead, North Strathfield, Burwood North, Five Dock, Pyrmont and Hunter Street (Sydney CBD)
- Temporary or permanent closure of pedestrian and cyclist facilities in Parramatta, North Strathfield, Pyrmont, Hunter Street (Sydney CBD), Clyde and Rosehill
- Temporary relocation of bus stops in North Strathfield and Burwood North
- Temporarily decommissioned bus stop in Pyrmont
- Temporary relocation of a kiss and ride zone in North Strathfield
- Detour routes due to road network modifications in Parramatta and Five Dock, impacting general traffic, buses, cyclists and emergency vehicles.

Potential impacts during construction of this proposal have been identified as follows:

- Temporary or permanent loss of parking spaces in Westmead, North Strathfield and The Bays
- Short-term closures (for around a few months) of footpaths and parking spaces during precinct construction work in Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD)
- Temporary relocation of bus stops in Westmead
- Temporary adjustments to station access arrangements at Westmead and North Strathfield
- Temporary detour routes due to road network modifications in Westmead, impacting general traffic, buses, cyclists and emergency vehicles
- Provision of rail replacement bus services during works within the rail corridor in Westmead and North Strathfield
- Potential decrease in intersection performance around construction sites, particularly in Westmead, Parramatta, Five Dock, Pyrmont and Hunter Street (Sydney CBD).

Summary of mitigation measures

The planning for this proposal and the arrangements of the construction sites have been developed to avoid and minimise transport related impacts where possible. This has included the following:

- Haul routes have been developed in consultation with relevant councils, relevant parts of Transport for NSW and Sydney Olympic Park Authority, and have aimed to minimise the use of local roads and use the most efficient route to the arterial road network

- Selection of truck sizes at each construction site has considered a balance between reducing overall truck movements and manoeuvrability to, from and within the construction sites.

The approach to transport and traffic management during construction of this proposal, including the process for the development of all Traffic Management Plans, is outlined in Appendix G (Construction Traffic Management Framework) (CTMF) of the Environmental Impact Statement.

The CTMF is a Sydney Metro framework which provides the overall strategy and approach for construction traffic management, an outline of the traffic management requirements and processes common to all construction sites, and establishes the traffic management processes and acceptable criteria. It provides a linking document between the planning approval documentation and the construction traffic management documentation to be developed by the Principal Contractors, relevant to their scope of works. General key traffic management measures that would be adopted across all construction sites (where applicable and as required) include:

- The provision of directional signage and line marking to safely direct and guide drivers, cyclists and pedestrians past construction sites and to suitable alternative routes (if required) on the surrounding road network
- Notification of proposed changes and duration of changes using appropriate communication tools, for example newspapers (local or metropolitan), radio, project website, social media and direct community engagement
- Ongoing and direct coordination with relevant parts of Transport for NSW to mitigate congestion and provide rapid response should incidents or increased congestion occur as a direct result of the works. Notification of incidents or congestion would also be relayed to Sydney Metro and relevant parts of Transport for NSW representatives immediately
- The management and coordination of construction vehicles to provide safe access to and from construction sites and across pedestrian paths. The type of traffic management to be employed at each construction site would depend on, and be adjusted according to, the volume of pedestrians, passing traffic and the volume of construction vehicles. The types of management could include manual supervision, physical barriers, temporary / portable traffic signals (where approved by Transport for NSW, council or other road authority) or modification to existing traffic signals (where approved by Transport for NSW)
- The reduction of construction vehicle movements during network peak periods
- The management and coordination of construction vehicles to minimise movements through school zones when these zones are in operation
- Maintaining safe access to existing properties and businesses during the period of the works, or providing a suitable alternative
- Retaining existing on-street parking and restrictions, as far as is practicable.

The CTMF also details the requirement for the Principal Contractors to prepare detailed site-specific Construction Traffic Management Plans (CTMPs). The CTMPs would be developed for each construction site and detail items including access points, relevant signage, construction vehicle volumes, construction vehicle routes, swept paths, consultation and correspondence with relevant stakeholders, and any specific mitigation measures required to address any identified impacts associated with operation of the construction sites. The CTMPs would also include traffic guidance schemes, vehicle movement plans, pedestrian movement plans, parking management plans and traffic staging plans.

Construction site-specific mitigation and management measures have also been identified and are documented in Chapter 4 of this report.

1. Introduction

1.1. Context and overview

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future. Sydney Metro is Australia's biggest public transport program.

Sydney Metro West is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

The delivery of Sydney Metro West is critical to keeping Sydney moving and is identified in a number of key strategic planning documents including the Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (Greater Sydney Commission, 2018), Building Momentum: State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) and Future Transport Strategy 2056 (Transport for NSW, 2018).

Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The previous Sydney Metro West planning applications included:

- The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021
- Stage 2 of the planning approval process includes all major civil construction between The Bays and Sydney CBD. An Environmental Impact Statement for major civil construction between The Bays and Sydney CBD was exhibited between 3 November 2021 and 15 December 2021.

Stage 3 of the planning approval process is seeking planning approval to enable the approved Concept to be realised by carrying out the tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the Sydney Metro West line (this proposal).

Major civil construction including station excavation and tunnelling work associated with the previous Sydney Metro West planning applications does not form part of this proposal. This proposal includes the activities required to complete construction ready for operations of Sydney Metro West.

The main elements of Sydney Metro West are shown in Figure 1-1.

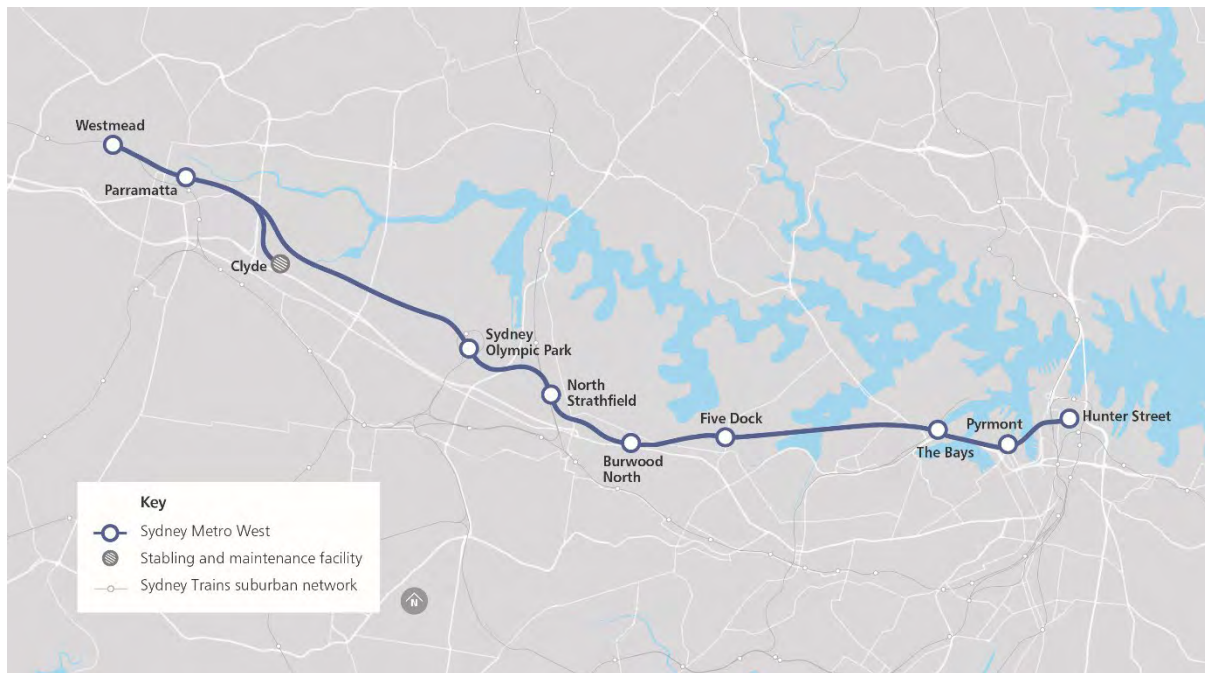


Figure 1-1: Sydney Metro West

This proposal would involve:

- Fit-out of tunnels including systems for metro train operations
- Construction, fit-out and operation of:
 - Metro station buildings and the surrounding metro precincts
 - A services facility and traction substations
 - A control centre, test track and stabling and maintenance facility at Clyde
- Space for non-station uses at metro stations (e.g. retail, commercial and / or community facilities)
- Provisions for over and / or adjacent station development within metro precincts
- Rail interchange support works, including work to the existing T1 Western Line at Westmead and T9 Northern Line at North Strathfield
- Transport network modifications such as new interchange facilities and changes to public transport networks to serve metro stations
- Subdivision of sites
- Operation and maintenance of the Sydney Metro West line.

Components of this proposal are subject to further design development, and changes may be made during the ongoing design which take into account the outcomes of community and stakeholder engagement and environmental investigations.

Further details of this proposal are provided in Chapter 5 (Proposal description – operation) and Chapter 6 (Proposal description – construction) of the Environmental Impact Statement.

1.3. Purpose and scope of this report

This technical paper, Technical Paper 2: Construction transport, is one of a number of technical papers that form part of the Environmental Impact Statement. The purpose of this technical paper is to identify and assess the potential construction impacts of this proposal in relation to transport. It responds directly to the Secretary's environmental assessment requirements outlined in Section 1.3.1.

1.3.1. Secretary's environmental assessment requirements

The Secretary's environmental assessment requirements for this proposal were issued on 16 August 2021. The requirements specific to construction transport, and where these requirements are assessed in this technical paper, are outlined in Table 1-1.

The Secretary's environmental assessment requirements also make reference to the *Sydney Metro West Scoping Report – Rail infrastructure, stations, precincts and operations* (Sydney Metro, 2021), which identified the proposed scope of investigations and assessment. How this technical paper addresses these matters is outlined in Table 1-2.

Table 1-1: Secretary's environmental assessment requirements – construction transport

Secretary's environmental assessment requirements		Where addressed
Construction transport and traffic (vehicle, pedestrian and cyclists) impacts, including, but not necessarily limited to:		
(a)	A considered approach to route identification and scheduling of construction vehicle movements;	Section 3.2
(b)	The indicative number, frequency and size of construction related vehicles (passenger, commercial and heavy vehicles, including spoil management movements) across the construction schedule;	Section 3.2 and part (c) of Sections 3.7.2 to 3.16.2
(c)	Construction worker parking and management;	Section 3.2
(d)	The nature of current traffic (types and number of movements) on construction access routes (including consideration of peak traffic times and sensitive road users (such as emergency vehicles and school buses) and parking arrangements);	Parts (a) to (d) of Sections 3.7.1 to 3.16.1
(e)	Access constraints and impacts on public transport (infrastructure and services), pedestrians and cyclists and property;	Parts (d) to (f) of Sections 3.7.2 to 3.16.2
(f)	Access constraints and impacts during the staging of major events at Sydney Olympic Park and Rosehill;	Part (h) of Sections 3.9.2 and 3.16.2
(g)	The need to close, divert or otherwise reconfigure elements of the road, pedestrian and cycle network associated with construction of the proposal and the duration of these changes; and	Parts (d) to (g) of Sections 3.7.2 to 3.16.2
(h)	Impacts to on-street parking, loading, servicing, and drop off and pick up, including to residents and businesses.	Part (f) of Sections 3.7.2 to 3.16.2

Table 1-2: Scoping Report investigations and assessment – construction transport

Scoping Report investigations and assessment	Where addressed
Assessment of construction traffic including number, frequency and size of construction related vehicles, potential routes for construction traffic and spoil haulage, and potential impact on existing traffic conditions.	Section 3.2 and parts (c) and (g) of Sections 3.7.2 to 3.16.2
Assessment of potential access constraints and impacts on public transport, pedestrians, cyclists and road network performance arising from construction.	Parts (d) to (g) of Sections 3.7.2 to 3.16.2
Assessment of potential cumulative traffic impacts.	Section 3.17

1.4. Structure of this report

This technical paper is structured as follows:

- Chapter 1 (this chapter) provides the context, overview and key features of this proposal
- Chapter 2 documents the assessment methodology including the construction traffic modelling approach adopted to assess the potential transport impacts of this proposal during construction
- Chapter 3 details the baseline transport environment and provides an assessment of the potential transport impacts of this proposal during construction, including cumulative impacts
- Chapter 4 identifies mitigation and management measures.

2. Assessment methodology

2.1. Overall assessment approach

To assess the potential construction impacts of this proposal on the transport network, the following methodology has been used to identify and, where possible, quantify the following:

- Impacts on road network performance – assessed through the use of traffic modelling (SIDRA Intersection version 9.0) to determine the performance of the road network with and without construction vehicles generated by this proposal
- Impacts on parking – assessed through a qualitative analysis of removed parking spaces and availability of parking in nearby locations to determine the potential impacts of parking overflow
- Impacts on property access – assessed through an analysis of existing access provisions and a comparison with access provisions during construction
- Impacts on public transport – assessed through an analysis of proposed changes to public transport operations including routes and stop infrastructure to determine potential impacts on public transport customers
- Impacts on pedestrians and cyclists – assessed through an analysis of proposed changes to shared use paths, cycleways, footpaths and pedestrian crossings to determine potential impacts on access to and availability of pedestrian and cyclist infrastructure
- Cumulative impacts – assessed through a qualitative analysis or use of traffic modelling (SIDRA Intersection) to determine the performance of the road network with construction vehicle movements associated with other major projects expected to be occurring at the same time as this proposal based on current publicly available information.

2.2. Traffic modelling approach

To assess the impacts of this proposal on road network performance, traffic modelling has been carried out for proposed primary construction vehicle routes between each construction site and the nearest arterial road inclusive of the arterial road interface.

The approach to traffic modelling undertaken for this assessment aligns with the *Traffic Modelling Guidelines* (Roads and Maritime Services, 2013) and includes the following broad steps:

- Development of calibrated and validated baseline models to align with existing operational conditions along each construction vehicle route. To account for the impacts of the COVID-19 pandemic on traffic volumes:
 - A comparison of 2019 and 2021 traffic volumes was carried out for the same months (March and June) at various locations between Westmead and Sydney CBD

- The comparison shows 2021 traffic volumes are, on average, three to nine per cent lower in the morning peak, and 2.6 to four per cent lower in the evening peak, than the same period in 2019
- Observed traffic volumes in 2021 were increased by an amount equivalent to the average reductions between 2019 and 2021 in the morning and evening peaks
- The adjusted traffic volumes were used in the baseline models
- Development of future base year models using traffic forecasts from the Strategic Traffic Forecasting Model to align with anticipated operational conditions in the year of peak construction (2026), including road network changes as a result of Parramatta Light Rail (Stage 1), WestConnex Rozelle Interchange, Western Harbour Tunnel and the previous Sydney Metro West planning applications. Outputs from the Strategic Traffic Forecasting Model for the morning and evening peak period in 2021 and 2026 were received, and the calculated growth in traffic demand at each modelled intersection between 2021 and 2026 was applied to the base models
- Application of anticipated construction traffic demands to the future base year models to allow the identification of potential impacts on road network performance.

Due to the geographical scope of the proposal, traffic modelling was carried out in separate geographical sub-areas corresponding to each construction site as follows:

- Westmead metro station
- Parramatta metro station
- Sydney Olympic Park metro station
- North Strathfield metro station
- Burwood North Station
- Five Dock Station
- The Bays Station
- Pyrmont Station
- Hunter Street Station (Sydney CBD)
- Clyde stabling and maintenance facility and Rosehill services facility.

Traffic models were developed using SIDRA Intersection (version 9.0). Traffic modelling was carried out for the weekday morning peak hour and evening peak hour, which represent a worst-case scenario when the road network experiences the maximum background traffic demand and when available spare capacity of the road network is at its most limited. The number of construction vehicles modelled for the construction assessment corresponds to the highest number of construction vehicle movements generated at each construction site during the morning and evening peak period and assumes that each construction phase occurs concurrently, representing a worst-case construction traffic scenario.

In addition, a review of Saturday traffic volumes compared to weekday traffic volumes generally indicates that weekday peak hour traffic volumes are higher than Saturday peak hour traffic volumes. Hence, a quantitative assessment on Saturdays has not been carried out. Although construction vehicles would be generated on Saturdays, the addition of construction vehicles on the road would be below the peak hour volumes on a weekday, and therefore would not represent a worst-case scenario.

2.3. Performance indicators

The performance of a road network is largely dependent on the operating performance of intersections, which form critical capacity control points. The performance indicators that are reported for this assessment include:

- Intersection Level of Service – based on criteria outlined in Table 2-1 and defined in the *Guide to Traffic Generating Developments* (Roads and Traffic Authority, 2002). The average delay assessed for signalised intersections is for all movements. The average delay assessed for priority (sign-controlled) intersections is for the worst movement and is expressed in seconds per vehicle
- Maximum queue length on each approach (in metres) over the peak hour.

Table 2-1: Intersection Level of Service criteria

Level of Service	Average delay per vehicle (seconds per vehicle)	Traffic signals and roundabouts
A	Less than 15	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity; at signals, incidents will cause delays Roundabouts require other control mode
F	Over 70	Extra capacity required

Source: *Guide to Traffic Generating Developments* (Roads and Traffic Authority, 2002)

It is generally accepted that when intersection performance falls to Level of Service D, investigations should be initiated to determine if suitable remediation can be provided. However, limited road capacity and high demand mean that Level of Service E and Level of Service F are regularly experienced by motorists, particularly during peak periods.

3. Construction assessment

3.1. Study area

The study area for the construction transport assessment is informed by the construction vehicle routes at each of the following locations:

- Westmead metro station
- Parramatta metro station
- Sydney Olympic Park metro station
- North Strathfield metro station
- Burwood North Station
- Five Dock Station
- The Bays Station
- Pyrmont Station
- Hunter Street Station (Sydney CBD)
- Clyde stabling and maintenance facility and Rosehill services facility.

Figure 3-1 provides an overview of the construction site locations for the proposal.

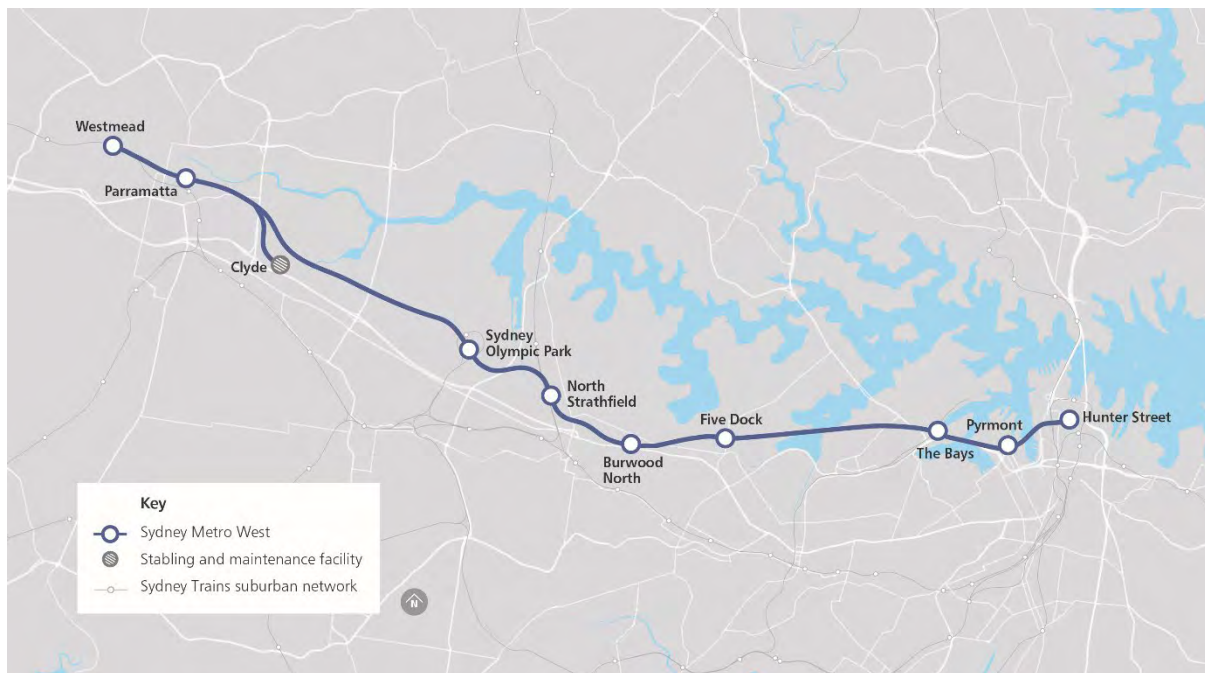


Figure 3-1: Construction transport assessment study area

3.2. Key assumptions

Key assumptions included in the analysis of potential construction transport impacts are outlined in the following sections.

3.2.1. 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 3-2. 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 the Environmental Impact Statement. Figure 3-2 also shows how this proposal interrelates to the work carried out under the previous Sydney Metro West planning applications.

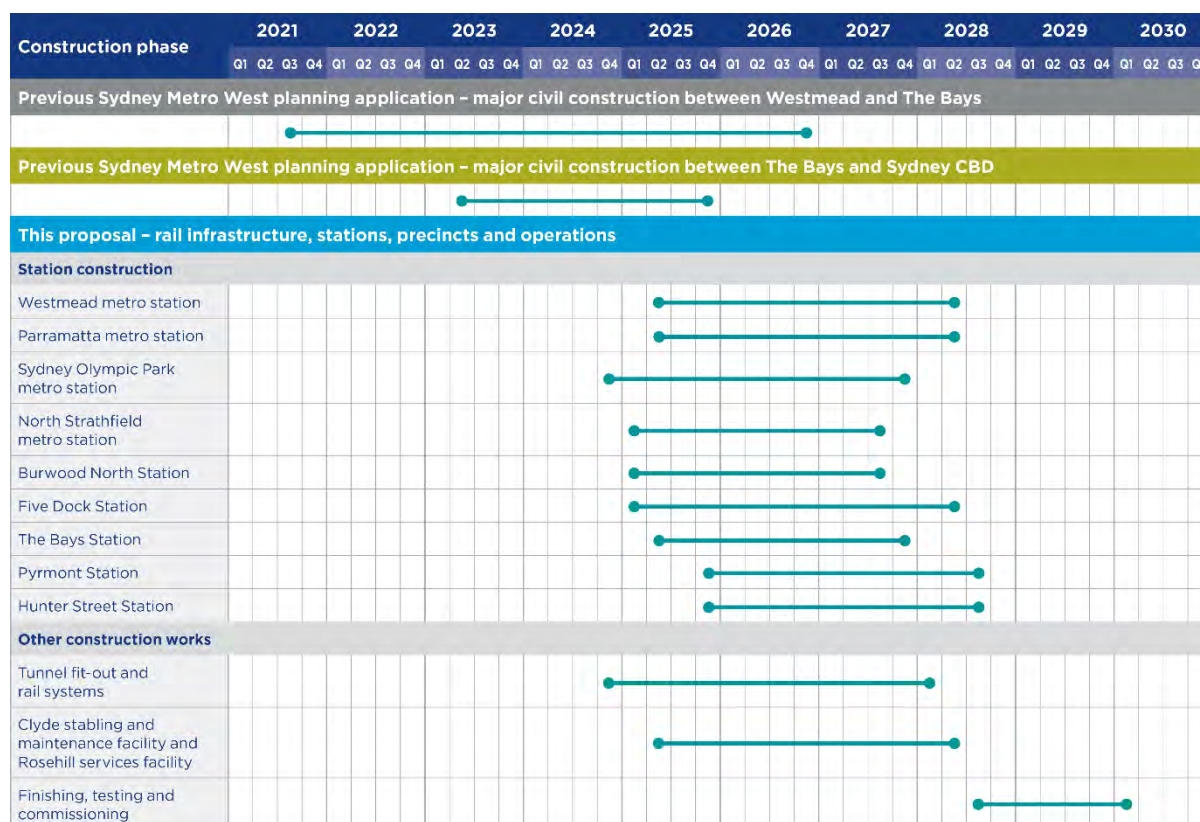


Figure 3-2: Indicative construction program

3.2.2. Construction vehicle types

The anticipated construction vehicle numbers are based on factors such as site accessibility (factoring any constraints on the local road network), volumes of material to be transported from the construction site, materials required to be delivered to the construction site and construction activities. The heavy vehicle types and sizes selected and shown in Table 3-1 are based on the maximum sized vehicles anticipated to be able to service the construction site. Larger vehicles may also be required for oversize deliveries or those under the Safety, Productivity and Environment Construction Transport Scheme (SPECTS). The scheme allows greater road network access for participating heavy vehicles and the ability to carry more construction materials in return for meeting higher environmental, safety and compliance standards.

Table 3-1: Construction vehicle types

Heavy vehicle type	Capacity	Maximum length (metres)	Construction site
Rigid truck	8 cubic metres	12.5	Pymont Station, Hunter Street Station (Sydney CBD)
Rigid truck and / or truck and dog	20 cubic metres	19	Westmead metro station, Parramatta metro station, Sydney Olympic Park metro station, North Strathfield metro station, Burwood North Station, Five Dock Station, The Bays Station, Clyde stabling and maintenance facility, Rosehill services facilities
Semi-trailer and low-loaders ¹	10-30 tonnes	13-19	Pymont Station, Hunter Street Station (Sydney CBD)

¹Occasional semi-trailer and low-loaders would be required at other construction sites

3.2.3. Construction hours

The majority of the aboveground construction activities would be carried out during the following daytime construction hours:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 6pm
- No work on Sundays or public holidays.

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 vehicle movements and material deliveries at these locations.

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 3-2. 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 Environmental Protection Authority as required.

Table 3-2: Proposed construction hours

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 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 material 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.

3.2.4. Construction haulage routes and volumes

The construction haulage routes assessed for each construction site are provided in Sections 3.7 to 3.15. Construction traffic generated by each construction site would vary according to each construction phase (as described in Sections 3.7 to 3.15). The traffic modelling assessment has conservatively assumed each construction phase would occur concurrently and includes the highest number of light vehicles and heavy vehicles generated to and from each construction site during the morning and evening peak periods. This includes heavy vehicles for all construction activities for this proposal, including those associated with spoil management. The peak hour construction vehicle movements used in the construction traffic modelling assessment are shown in Table 3-3.

Table 3-3: Peak hour construction vehicle movements

Construction site	Number of movements in the morning and evening peak hours ¹	
	Light vehicles	Heavy vehicles
Westmead metro station	58	38
Parramatta metro station	38	34
Sydney Olympic Park metro station	36	28
North Strathfield metro station	58	38
Burwood North Station northern	58	38
Burwood North Station southern	28	24
Five Dock Station western	40	28
Five Dock Station eastern	36	28
The Bays Station	38	34
Pymont Station western	32	24
Pymont Station eastern	36	26
Hunter Street Station (Sydney CBD) western	38	28
Hunter Street Station (Sydney CBD) eastern	34	26
Clyde stabling and maintenance facility	88	46
Rosehill services facility	16	18

¹Movements include construction vehicles accessing and egressing each construction site during the morning and evening peak hours

3.2.5. Construction assessment year

The peak construction year that has been assessed is 2026.

An assessment of cumulative construction impacts has been carried out, which considers projects that fall within the vicinity of this proposal, as well as projects with construction vehicle routes that use roads near the proposal construction sites. Further details are provided in Section 3.16.

3.2.6. Construction worker parking

The approach to the management of construction worker parking during construction of this proposal is outlined in Appendix G (Construction Traffic Management Framework) (CTMF) of the Environmental Impact Statement.

There is potential that construction workers may park in local streets around the sites which could reduce local parking availability, particularly in locations where existing parking restrictions allow for all-day parking.

Some construction worker parking would be provided at the Clyde stabling and maintenance facility and Rosehill services facility construction site and The Bays Station construction site, although it would not meet the expected full demand based on indicative workforce numbers. Shuttle bus services to transfer construction workers to and from major transport interchange(s) would be considered. The final arrangements for this service would be confirmed during detailed construction planning for this proposal and may be coordinated with other concurrent transport projects in consultation with Transport for NSW.

Parking for construction workers would not be provided at all sites due to the constrained nature of the construction sites. However, each construction site would typically provide parking spaces intended to be used by trade vehicles or other light vehicles that are required to travel between construction sites.

The majority of construction sites are located in close proximity to public transport services and construction workers would be encouraged to use these services or existing commercial car parking facilities.

3.3. Pedestrian, cyclist and road user safety

The introduction of additional heavy vehicles on the road network has the potential to result in safety impacts on pedestrians, cyclists and other road users, especially where there is an increased likelihood of interaction with pedestrians and cyclists.

Key locations where pedestrian and cyclist safety issues may arise include:

- Construction site access and egress points where construction vehicles would interface with pedestrians using surrounding footpaths. This would be especially important in Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Five Dock, Pyrmont and Hunter Street (Sydney CBD) where there are existing high volumes of pedestrians

- Construction sites where access and egress points, or construction vehicle routes, would interface with marked cycle routes. This would occur at the Parramatta metro station, Sydney Olympic Park metro station, North Strathfield metro station, Burwood North Station, Five Dock Station and Pyrmont Station construction sites
- Locations where footpath widths are reduced around construction sites.

Access and egress arrangements at construction sites have been developed with consideration for pedestrian, cyclist and motorist safety. For example, the need for construction vehicles to perform a right turn to or from an arterial road to access a construction site has been avoided where possible.

Appropriate controls would be established where vehicles are required to cross footpaths to access construction sites. This may include manual supervision, physical barriers or temporary traffic signals as required. Road safety audits would be carried out as part of construction traffic management planning for each construction site.

In addition, the Sydney Metro CTMF outlines the requirements in relation to construction phase road safety audits and the management of risks to vulnerable road users (such as pedestrians and cyclists). This includes measures such as:

- Assessing the suitability of construction haulage routes through sensitive land use areas with respect to road safety
- Deployment of speed awareness signs in conjunction with variable message signs near construction sites to provide alerts to drivers
- Providing community education and awareness about sharing the road safely with heavy vehicles
- Specific construction driver training to understand route constraints, safety and environmental considerations such as sharing the road safely with other road users, and limiting the use of compression braking
- Requiring technology and equipment to eliminate heavy vehicle blind spots, monitor vehicle location and driver behaviour, and improve vehicle safety standards.

3.4. Special events

A large number of special events occur within the Parramatta and Sydney CBD areas, and the Sydney Olympic Park and Darling Harbour precincts. In addition, special events are held at the Rosehill Gardens racecourse.

The Transport for NSW special events management guidelines identify the following classes of special events:

- Class 1: an event that impacts major transport and traffic systems and there is significant disruption to the non-event community. For example, an event that affects a principal transport route in Sydney, or one that reduces the capacity of the main highway through a country town

- Class 2: is an event that impacts local transport and traffic systems and there is low scale disruption to the non-event community. For example, an event that blocks off the main street of a town or shopping centre but does not impact a principal transport route or highway
- Class 3: is an event with minimal impact on local roads and negligible impact on the non-event community. For example, an on-street neighbourhood Christmas party
- Class 4: is an event that is conducted entirely under Police control (but is not a protest or demonstration). For example, a small march conducted with a Police escort.

The approach to special event coordination is outlined in the Sydney Metro CTMF.

Liaison would occur with event organisers of Class 1 and 2 events, and (as relevant) Transport for NSW to provide appropriate management of construction vehicle movements to manage potential impacts on event patrons, the general public and the construction works. This may involve measures such as temporary adjustment to construction vehicle routes, construction working hours or potentially stopping works for the duration of the event.

Lane and road closures would be avoided during special events. Special events and the impact to transport are particularly important around the Parramatta metro station construction site, Sydney Olympic Park metro station construction site, Pyrmont Station construction site, Hunter Street Station (Sydney CBD) construction site, Clyde stabling and maintenance facility and Rosehill services facility construction site. These impacts are discussed further in Section 3.8.2, Section 3.9.2, Section 3.14.2, Section 3.15.2 and Section 3.16.2 respectively.

3.5. Emergency vehicles

The introduction of construction traffic is anticipated to result in minor impacts on intersection performance at most construction sites. Construction sites would be arranged so that emergency vehicle access to nearby buildings and the surrounding area is maintained, or alternative arrangements are in place as determined in consultation with relevant emergency services. Construction sites may also be made available for emergency vehicle passage if required. Ongoing consultation would be carried out with emergency services providers in relation to changed traffic conditions. This is particularly important in Westmead due to the close proximity of the Westmead metro station construction site to the Westmead health precinct. Emergency vehicle access for this site is discussed further in Section 3.7.2.

3.6. Road condition

The increase in construction traffic, in particular heavy vehicles, on the road network has the potential to impact the condition of roads along construction vehicle routes.

A pre-construction condition survey would be carried out to document the existing condition of all local roads along construction vehicles routes between the construction site and the arterial road network. Upon completion, a post-construction condition survey would be carried out to determine whether construction activities and/or construction vehicles have caused sections of road to deteriorate.

A report would be prepared by the construction contractor in consultation with Transport for NSW and relevant councils, detailing the findings of the pre-construction and post-construction condition surveys and any remediation works required. Damage attributed to construction works would be rectified and/or compensated by the construction contractor, in line with any relevant Transport for NSW and council requirements.

3.7. Westmead metro station construction site

3.7.1. Baseline transport environment

(a) **Active transport network**

Footpaths are provided along the majority of roads in the vicinity of the Westmead metro station construction site. Controlled crossings are provided on all approaches of the Hawkesbury Road / Priddle Street, Hawkesbury Road / Railway Parade and Hawkesbury Road / Darcy Road intersections, and on the majority of approaches of the Alexandra Avenue / Hassall Street and Hawkesbury Road / Alexandra Avenue intersections.

A staged pedestrian crossing is provided on the western approach of the Hawkesbury Road / Darcy Road intersection to accommodate North-West Transitway buses which travel in dedicated bus lanes in the middle of the road and pick-up and drop-off passengers at bus stops located near the intersection. Further north, there is a zebra crossing across Queens Road and on Hawkesbury Road between Queens Road and the entrance to the Westmead Hospital car park and emergency area. Closer to the construction site, a zebra crossing is provided on Railway Parade, facilitating movements to and from the northern side of the existing Westmead Station, and a raised zebra crossing is provided on Grand Avenue, accommodating movements to and from Westmead Public School.

There are high levels of pedestrian activity around the existing Westmead Station and the health and education precinct located north of the rail line, with key pedestrian desire lines along Hawkesbury Road and Darcy Road. Darcy Road is a signposted High Pedestrian Activity Area between east of Bridge Road and Hawkesbury Road. Land use south of the rail line is predominately residential with lower pedestrian volumes. Westmead Public School is also located south of the rail line on the western side of Hawkesbury Road to the south of Grand Avenue, generating trips associated with staff and school students during the morning and afternoon peak periods. Pedestrian refuge islands and zebra crossings along with traffic calming devices such as speed humps are present throughout the area to accommodate local walking trips and vulnerable user groups such as school students.

Construction of Parramatta Light Rail (Stage 1) is currently occurring in Westmead, with temporary alterations to the active transport network along Hawkesbury Road and its adjoining side streets. Where possible, footpaths and pedestrian crossings have been maintained, with new crossings installed where footpath closures are required.

The cycle network surrounding the Westmead metro station construction site is shown in Figure 3-3 and consists of a low difficulty on-road route along Queens Road and within Parramatta Park, and off-road shared paths on Mons Road, Darcy Road and Hawkesbury Road. There is also a separated on-road cycle lane on the north side of Queens Road. The off-road shared paths and cycle lanes provide east-west connectivity between Parramatta CBD, Parramatta Park, the Westmead health and education precinct, and towards the north-western suburbs. Cyclists can cross Hawkesbury Road using a marked cycle path on the zebra crossing located north of Queens Road.

Bicycle racks are located at the existing Westmead Station north entrance on Railway Parade and the south entrance on Alexandra Avenue. Bicycle lockers are also provided on Alexandra Avenue near Hassall Street.



Figure 3-3: Cycle network surrounding the Westmead metro station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Greater Parramatta cycleways network map (City of Parramatta, 2021)

(b) Public transport network

The existing Westmead Station is served by the T1 Western Line and the T5 Cumberland Line on the Sydney Trains network. These rail lines provide direct connections to Penrith, Richmond, Blacktown, Parramatta, Liverpool, Leppington, Strathfield, Sydney CBD, Chatswood and Hornsby. Westmead Station is also on the NSW TrainLink network as part of the Blue Mountains Line, providing connections to Bathurst, the Blue Mountains, Strathfield and Central.

Westmead is served by 18 bus routes operated by Transit Systems and Hillsbus, including two NightRide bus routes. Major bus stops are located in close proximity to the existing Westmead Station and Westmead health and education precinct along Darcy Road and Alexandra Avenue. These roads form part of the North-West Transitway, which is a bus rapid transit route between Parramatta and Rouse Hill consisting of bus-only lanes and dedicated bus roadways. Local buses also operate on the North-West Transitway and the local road network, providing connections to Wentworthville, Seven Hills, Blacktown and Merrylands. Within the immediate surrounds of the site, bus stops on local roads are provided on Church Avenue, Pye Street and Good Street. The area is also served by 22 school bus routes.

Due to current construction works associated with Parramatta Light Rail (Stage 1), bus stops located on Hawkesbury Road have been removed.

Ferry services do not operate in close proximity to the Westmead metro station construction site.

From 2023, light rail services will operate in Westmead as part of Parramatta Light Rail (Stage 1). The light rail will run along Hawkesbury Road with the terminus located on the corner of Hawkesbury Road and Railway Parade.

The public transport network surrounding the Westmead metro station construction site is shown in Figure 3-4.



Figure 3-4: Public transport network surrounding the Westmead metro station construction site

Sources: Hills District Bus Guide – Network Map (Hillsbus, 2021); Parramatta, Fairfield & Liverpool region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

On-street parking is provided on both sides of most local roads and is generally time-restricted to two hours on weekdays and Saturdays. Near the construction site, on-street parking is provided on the eastern side of Hawkesbury Road south of Alexandra Avenue and along the southern side of Alexandra Avenue east of Hassall Street. North of the rail line, unrestricted 90-degree parking is provided along the southern side of Railway Parade, primarily serving rail customers using the existing Westmead Station.

During the work carried out under the previous Sydney Metro West planning application, parking spaces adjacent to the construction site along Hassall Street and Bailey Street will be temporarily removed.

A taxi zone is located on the northern side of Railway Parade between Hawkesbury Road and Ashley Lane.

There are no kiss and ride or loading zones on the roads immediately surrounding the Westmead metro station construction site. A no parking zone, with the exception of Australia Post vehicles, is located on the southern side of Railway Parade and operates as an informal kiss and ride zone.

(d) **Traffic volumes and patterns**

Great Western Highway is an arterial road that carries a high volume of traffic. A westbound peak direction exists during the morning and evening peak, with traffic volumes as high as 2,220 vehicles during the evening peak hour.

Hawkesbury Road is a local road south of Alexandra Avenue and north of Darcy Road, and is a regional road between Alexandra Avenue and Darcy Road. It exhibits a northbound morning peak direction and a southbound evening peak direction. Near its intersection with Alexandra Avenue, peak hour volumes on Hawkesbury Road are up to 660 vehicles. Alexandra Avenue runs east-west and forms part of the North-West Transitway. Alexandra Avenue carries volumes of up to 570 vehicles during the peak hour and exhibits an eastbound morning peak direction and a westbound evening peak direction.

Hassall Street is a local road that has a northbound morning peak and southbound evening peak direction. Traffic volumes in the peak direction are between 360 and 420 vehicles per hour, more than double the volume experienced in the counter-peak direction. Bailey Street and Priddle Street are also local roads that carry lower traffic volumes of between 30 and 170 vehicles per hour in each direction.

Due to construction of Parramatta Light Rail (Stage 1), temporary road closures are currently in place throughout the Westmead health and education precinct. This includes full or partial closure of sections of Hawkesbury Road, Farm House Road and Hainsworth Street. Any permanent road network changes as part of Parramatta Light Rail (Stage 1), which will be implemented by 2023, have been incorporated into the construction traffic modelling assessment and are discussed in Section 3.7.2.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-4.

Table 3-4: Existing peak hour traffic volumes by direction (2021) – Westmead metro station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Alexandra Avenue east of Hawkesbury Road	Eastbound	570	360
	Westbound	470	430
Great Western Highway west of Hawkesbury Road	Eastbound	1,280	1,080
	Westbound	1,490	2,220
Bailey Street east of Hawkesbury Road	Eastbound	50	50
	Westbound	60	170

Priddle Street east of Hawkesbury Road	Eastbound	80	30
	Westbound	120	150
Hawkesbury Road south of Alexandra Avenue	Northbound	630	360
	Southbound	420	660
Hassall Street south of Alexandra Avenue	Northbound	420	110
	Southbound	150	360

Sources: Traffic surveys from June 2021 and Sydney Coordinated Adaptive Traffic System (SCATS) detector volumes from June 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Westmead metro station construction site is shown in Table 3-5.

Modelled intersection performance indicates that the Hawkesbury Road / Great Western Highway / Coleman Street intersection currently performs at Level of Service E and F during the morning and evening peak hours, respectively. This is due to high traffic volumes on the majority of approaches.

All other intersections currently perform at Level of Service D or better.

Table 3-5: Modelled peak hour baseline intersection performance (2021) – Westmead metro station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Hawkesbury Road / Great Western Highway / Coleman Street (signalised)					
Morning	4,034	63	E	NB	435
				EB	250
				SB	235
				WB	165
Evening	4,162	81	F	NB	345
				EB	195
				SB	235
				WB	440
Hawkesbury Road / Amos Street (signalised)					
Morning	1,191	13	A	NB	45
				EB	-
				SB	65
				WB	20
Evening	1,395	14	A	NB	55
				EB	-
				SB	120
				WB	25
Bailey Street / Hassall Street (roundabout)					
Morning	694	10	A	NB	15
				EB	<5
				SB	<5

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	<5
Evening	617	10	A	NB	5
				EB	<5
				SB	15
				WB	<5
				Hawkesbury Road / Alexandra Avenue (signalised)	
Morning	2,361	52	D	NB	195
				EB	140
				SB	100
				WB	140
Evening	2,014	37	C	NB	90
				EB	85
				SB	100
				WB	110
Hawkesbury Road / Priddle Street (signalised)					
Morning	1,218	14	A	NB	40
				EB	-
				SB	40
				WB	10
Evening	1,385	19	B	NB	25
				EB	-
				SB	75
				WB	15
Alexandra Avenue / Hassall Street (signalised)					
Morning	1,470	16	B	NB	40
				EB	45
				SB	-
				WB	65
Evening	1,252	17	B	NB	10
				EB	25
				SB	-
				WB	90
Hawkesbury Road / Bailey Street (priority controlled)					
Morning	1,193	20	B	NB	5
				EB	-
				SB	<5
				WB	<5
Evening	1,266	25	B	NB	<5
				EB	-
				SB	<5
				WB	10
Hassall Street / Priddle Street (priority controlled)					
Morning	578	6	A	NB	15
				EB	<5
				SB	<5
				WB	<5
Evening	363	7	A	NB	<5
				EB	<5

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				SB	<5
				WB	<5

3.7.2. Construction impact assessment

(a) **Construction site location and access**

The Westmead metro station construction site is bound by Hawkesbury Road, Bailey Street, Hassall Street and the existing rail corridor. Roads forming part of the primary construction vehicle route include the Great Western Highway, Pitt Street, Park Parade, Alexandra Avenue, Hassall Street and Hawkesbury Road as shown in Figure 3-5. Primary site access would be right-in via Hassall Street and left-out via Hawkesbury Road.

Access to the existing rail corridor would also be required. Generally, this would occur during scheduled rail possessions and outside of peak periods. Various access gates may be used during these rail possession works including the existing gate located on Alexandra Avenue near Hassall Street. New access gates are proposed to be constructed on Railway Parade to the east of the existing station, and on Alexandra Avenue to the west of Hawkesbury Road. Other existing access gates along the T1 Western Line corridor generally located between the existing Westmead Station and Bridge Street may also be used less frequently and associated with works such as utility relocations within the existing rail corridor.

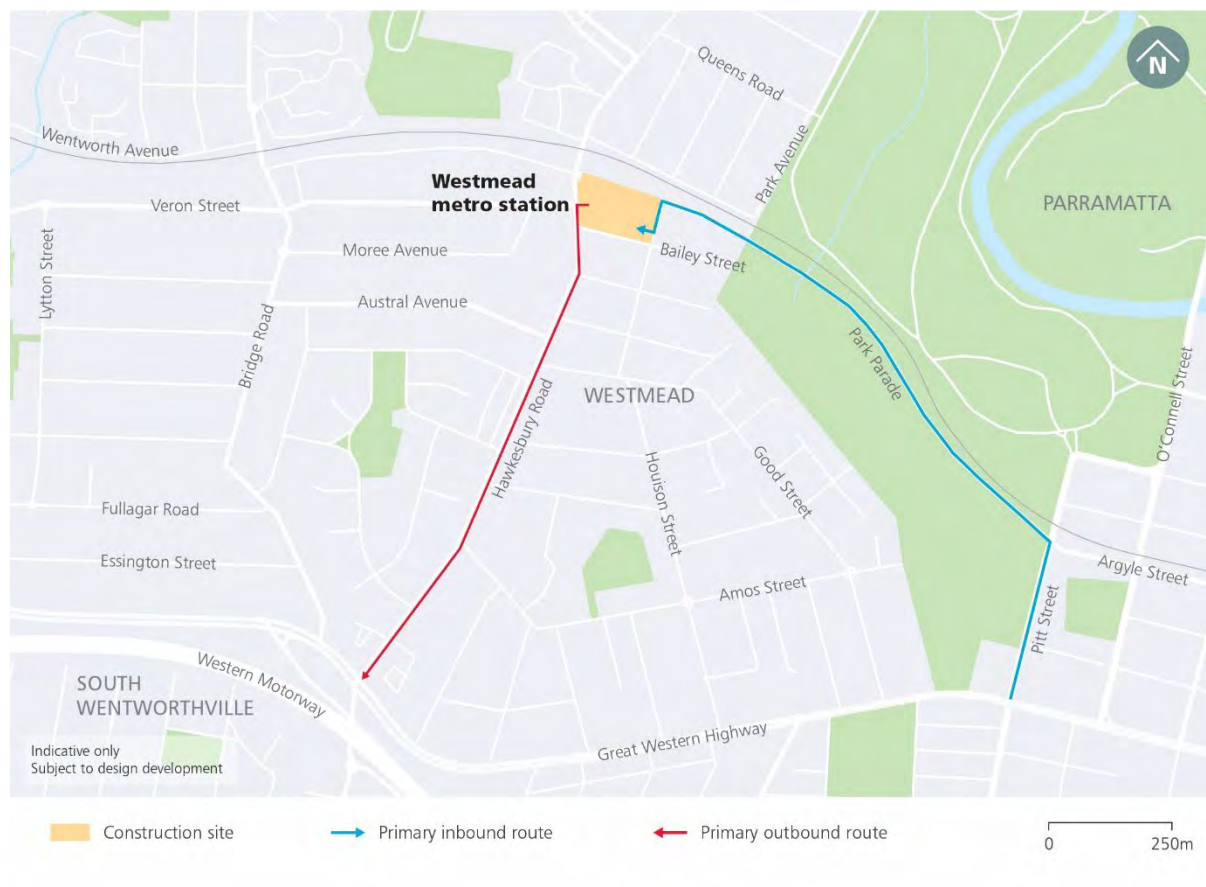


Figure 3-5: Westmead metro station construction site indicative construction vehicle routes

Road network changes associated with Parramatta Light Rail (Stage 1) will be in operation when peak construction activity for this proposal occurs in 2026. Road network changes in Westmead, and the associated redistribution of traffic resulting from the road network changes, have been incorporated into the '2026 without proposal' and '2026 with proposal' traffic models. These changes include:

- A centre-running light rail alignment along Hawkessbury Road from Darcy Road to Hainsworth Street
- The removal of right turn movements from the following intersections:
 - Hawkessbury Road / Queens Road
 - Hawkessbury Road / Jessie Street
 - Hainsworth Street / The Children's Hospital at Westmead visitor car park access
- New traffic signals at the following intersections:
 - Hawkessbury Road / Caroline Street
 - Hainsworth Street / Bridge Road.

(b) Construction activities

Key construction activities anticipated at the Westmead metro station construction site include:

- Enabling and site establishment work
- Construction of the station and structures for non-station use
- Station fit-out
- Excavation and fit-out of a new underground concourse which would connect from the Sydney Metro station to the Sydney Trains platforms
- 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 network, including:
 - Construction and fit-out of a new aerial concourse above the existing rail corridor to the east of the existing Hawkesbury Road bridge
 - Upgrade to the western side of the existing Hawkesbury Road bridge
 - 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 bridge 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
- Finishing work, testing and commissioning.

To carry out excavation works for the underground concourse, Alexandra Avenue between Hawkesbury Road and Hassall Street would be closed for a period of around 12 to 18 months. During this period, a temporary detour would be put in place via Hassall Street and Bailey Street or Priddle Street. This would include temporary:

- Signalisation of the Hawkesbury Road / Bailey Street intersection
- Signalisation of the Hassall Street / Bailey Street intersection
- Modified traffic signals at the Hawkesbury Road / Alexandra Avenue intersection
- Modified traffic signals at the Alexandra Avenue / Hassall Street intersection.

(c) Construction vehicle movements

Construction vehicles would access and egress the Westmead metro station construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the site per hour during the various phases of construction are shown in Figure 3-6 and Figure 3-7. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-6.

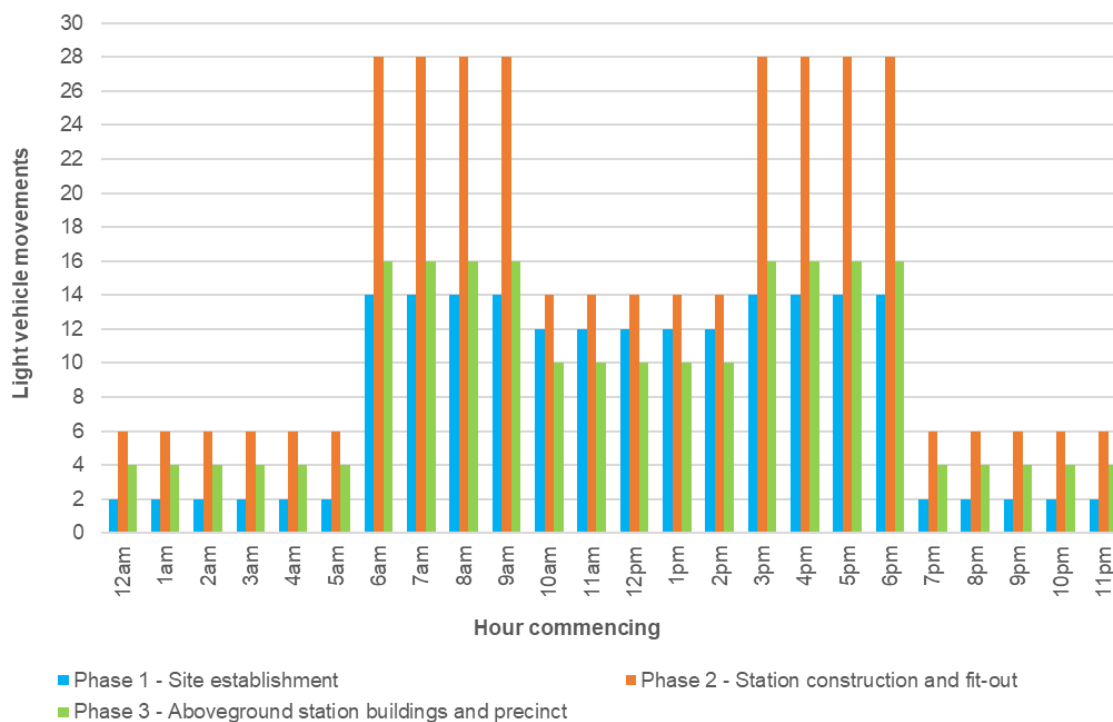


Figure 3-6: Hourly light vehicle movements (arrival and departure) at the Westmead metro station construction site

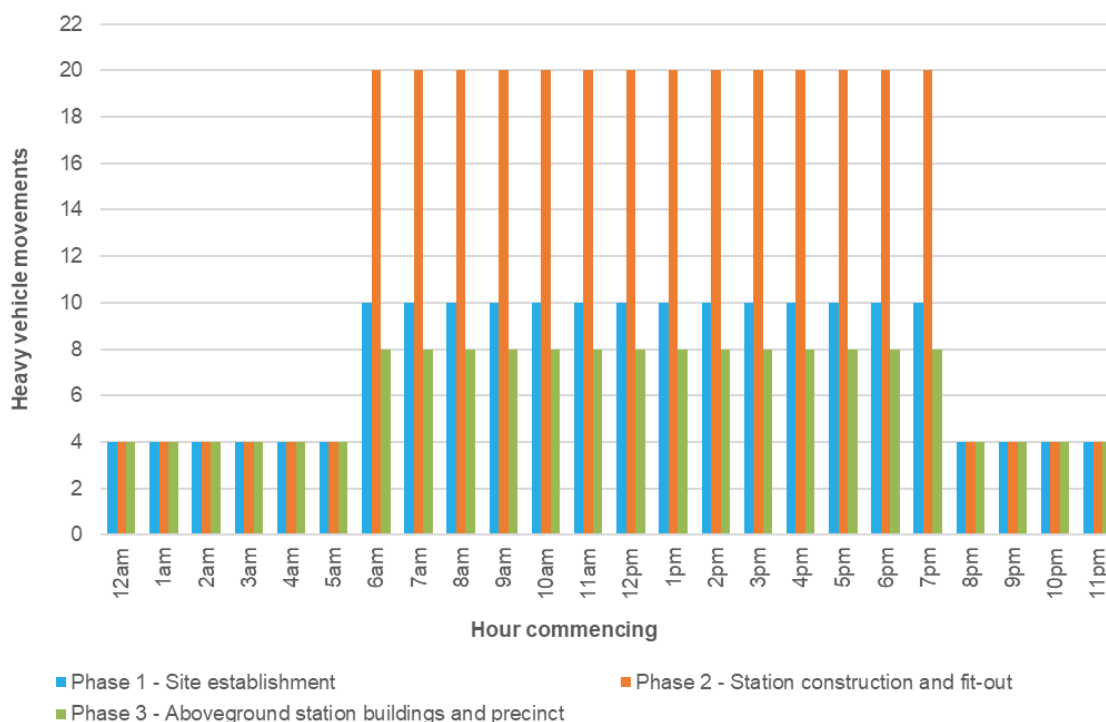


Figure 3-7: Hourly heavy vehicle movements (arrival and departure) at the Westmead metro station construction site

Table 3-6: Daily construction movements per day by phase – Westmead metro station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Phase 1 – Site establishment	194	180	374
Phase 2 – Station construction and fit-out	360	320	680
Phase 3 – Aboveground station buildings and precinct	222	152	374

(d) Impacts on the active transport network

For the majority of the construction period for this proposal, there would be no changes to the existing pedestrian and cyclist facilities.

During the temporary closure of Alexandra Avenue for about 12 to 18 months, pedestrian access to the existing Westmead Station from the south, and connectivity between Hawkesbury Road and Hassall Street, would be maintained during the construction of this proposal, although some short-term adjustments (for around a few months) may be required. Any short-term adjustments would be minor in nature with minimal increases in walking distances for Sydney Trains customers.

Precinct construction work around the Westmead metro station construction site such as the establishment of bus stops on Hawkesbury Road and creation of a low speed zone on Railway Parade may require short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Hawkesbury Road is designated as an on-road cycle environment of moderate difficulty. Hawkesbury Road would be used by construction vehicles travelling from the Westmead metro station construction site. Impacts on cyclists on this road would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Section 4 would be implemented during construction.

(e) Impacts on the public transport network

For the majority of the construction period for this proposal, there would be no changes to the operation of bus routes or bus stops in the vicinity of the site.

During the temporary closure of Alexandra Avenue:

- Buses that currently travel along Alexandra Avenue east of Hawkesbury Road would be required to travel on the temporary detour route via Hassall Street, Bailey Street or Priddle Street and Hawkesbury Road. This would result in an additional travel distance of around 150 metres and would be a minor impact
- The bus stops located on this section of Alexandra Avenue would need to be temporarily relocated to east of Hassall Street or onto Hassall Street. These bus stops serve 12 bus routes including the North-West Transitway and NightRide bus services. The relocated bus stops may result in bus customers walking up to an additional 200 metres and is considered a minor impact. The location of the relocated bus stops would be determined in consultation with Transport for NSW, Cumberland City Council, and relevant bus operators.

Roads forming part of the Westmead metro station construction vehicle route that are also used by buses include Great Western Highway, Hawkesbury Road and Hassall Street. Impacts on these buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

Three light rail stops will be provided along Hawkesbury Road as part of Parramatta Light Rail (Stage 1) and service the existing Westmead Station, Westmead Hospital and the Children's Hospital at Westmead. Construction vehicles are not proposed to (but on occasion may be required to) travel on Hawkesbury Road north of Alexandra Avenue and therefore no impacts on the light rail network are anticipated.

Works would be required within the rail corridor at and around the existing Westmead Station and would primarily be carried out during scheduled Sydney Trains rail possessions. Rail replacement bus services, which operate during the rail possessions, would be provided. Sydney Trains would be consulted with during detailed construction planning of the proposal, with works coordinated with scheduled Sydney Trains rail possessions where possible to minimise impacts on the operation of the rail network. In addition, there may be a need for works to be carried out outside of scheduled Sydney Trains rail possessions. Consultation would be carried out with Sydney Trains to minimise potential disruptions to rail services and so that customers receive advanced notification of the proposed works and information on alternative travel options.

(f) Impacts on parking and property access

Work carried out under the previous Sydney Metro West planning application will include the temporary removal of about 10 on-street parking spaces along Hassall Street and 10 on-street parking spaces along Bailey Street adjacent to the construction site. These spaces would continue to be removed during construction of this proposal.

In addition, construction of this proposal would require:

- The short-term periodic removal of about 27 spaces on Railway Parade during rail possessions only
- The short-term periodic removal of about 50 spaces on Alexandra Avenue (west of Hawkesbury Road) during rail possessions only.

Additional on-street parking spaces would also be removed near the Hawkesbury Road / Bailey Street intersection (about four spaces) and the Hassall Street / Bailey Street intersection (about 10 spaces) to allow for the temporary detour during the temporary closure of Alexandra Avenue.

To facilitate precinct construction work, there may be short-term closures (for around a few months) of some on-street parking spaces on Railway Parade to create a low speed zone.

The combined removal of on-street parking spaces would continue to have minor impacts given the availability of parking on other local roads nearby, and the permanent demolition of properties that currently generate parking demand. The additional parking loss associated with construction of this proposal would be minor considering it would occur periodically during rail possession works and during the temporary closure of Alexandra Avenue. Opportunities to mitigate impacts on on-street parking would be explored in consultation with Cumberland City Council during construction planning (refer to Chapter 4).

(g) Impacts on road network performance

Scenario – Alexandra Avenue open between Hawkesbury Road and Hassall Street

For the majority of construction of this proposal, there would be no changes to the functionality of the surrounding road network.

Intersection performance results for the '2026 without proposal' (without construction vehicles and Alexandra Avenue open) and '2026 with proposal' (with construction vehicles and Alexandra Avenue open) scenarios are summarised in Table 3-7.

During the morning peak hour (7.45am to 8.45am) and evening peak hour (4.45pm to 5.45pm) presented in this assessment, it is anticipated that the Westmead metro station construction site would generate a total of 58 light vehicle movements (29 light vehicles travelling to and from the construction site) and 38 heavy vehicle movements (19 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Hawkesbury Road / Great Western Highway / Coleman Street during the morning and evening peak hours
- Hawkesbury Road / Alexandra Avenue during the morning peak hour
- Alexandra Avenue / Hassall Street during the morning peak hour.

The performance of intersections along Great Western Highway and Alexandra Avenue is due to high background traffic volumes on all approaches, resulting in increased congestion and these intersections operating over capacity.

Modelled intersection performance with construction traffic indicates that the following intersections would experience a decrease in Level of Service:

- Hawkesbury Road / Amos Street during the morning peak hour – from Level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic
- Hawkesbury Road / Priddle Street during the evening peak hour – from Level of Service D to F. This is due to the additional construction vehicles travelling on Hawkesbury Road in the southbound direction, resulting in a redistribution of green times and increased average delays on the Hawkesbury Road north approach

- Hawkesbury Road / Bailey Street during the evening peak hour – from Level of Service D to F. This is due to additional construction vehicles traveling on Hawkesbury Road in the southbound direction in conjunction with the intersection being unsignalised where the worst movement is reported, which corresponds to vehicles turning right out of Bailey Street onto Hawkesbury Road. The increase in traffic on Hawkesbury Road in the southbound direction would result in fewer gaps for vehicles to turn right from Bailey Street.

All other intersections that would operate at Level of Service F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered major when compared against road network performance without the proposal and therefore mitigation measures would be required to reduce the anticipated impacts. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-7: Modelled intersection performance (2026) – Westmead metro station construction site (Alexandra Avenue open)

Intersection and peak hour	2026 without proposal				2026 with proposal					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		
Hawkesbury Road / Great Western Highway / Coleman Street (signalised)										
Morning	4,931	>100	F	NB	>500	4,981	>100	F	NB	>500
				EB	360				EB	360
				SB	>500				SB	>500
				WB	225				WB	225
Evening	4,727	>100	F	NB	>500	4,778	>100	F	NB	>500
				EB	260				EB	260
				SB	425				SB	>500
				WB	>500				WB	>500
Hawkesbury Road / Amos Street (signalised)										
Morning	1,556	14	A	NB	70	1,606	16	B	NB	75
				EB	-				EB	-
				SB	100				SB	125
				WB	25				WB	25
Evening	1,698	20	B	NB	80	1,748	28	B	NB	85

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				EB	-				EB	-
				SB	220				SB	305
				WB	30				WB	30
Bailey Street / Hassall Street (roundabout)										
Morning	895	11	A	NB	25	895	11	A	NB	25
				EB	<5				EB	<5
				SB	5				SB	5
				WB	<5				WB	<5
Evening	702	10	A	NB	5	702	10	A	NB	5
				EB	<5				EB	<5
				SB	15				SB	15
				WB	<5				WB	<5
Hawkesbury Road / Alexandra Avenue (signalised)										
Morning	2,909	>100	F	NB	330	2,909	>100	F	NB	330
				EB	325				EB	325
				SB	100				SB	100
				WB	190				WB	190
Evening	2,492	42	C	NB	115	2,492	42	C	NB	115
				EB	110				EB	110
				SB	100				SB	100
				WB	125				WB	125
Hawkesbury Road / Priddle Street (signalised)										
Morning	1,737	15	B	NB	65	1,787	16	B	NB	65
				EB	-				EB	-
				SB	65				SB	75
				WB	15				WB	15
Evening	1,775	48	D	NB	30	1,825	73	F	NB	30
				EB	-				EB	-
				SB	130				SB	130
				WB	60				WB	60
Alexandra Avenue / Hassall Street (signalised)										
Morning	2,324	>100	F	NB	>500	2,375	>100	F	NB	>500
				EB	65				EB	65
				SB	-				SB	-
				WB	455				WB	455
Evening	1,498	35	C	NB	15	1,548	34	C	NB	15
				EB	30				EB	30
				SB	-				SB	-
				WB	200				WB	200
Hawkesbury Road / Bailey Street (priority controlled)										
Morning	1,575	36	C	NB	5	1,625	40	C	NB	5
				EB	-				EB	-
				SB	<5				SB	<5
				WB	<5				WB	<5

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,580	54	D	NB	5	1,631	71	F	NB	5
				EB	-				EB	-
				SB	50				SB	140
				WB	20				WB	25
Hassall Street / Priddle Street (priority controlled)										
Morning	705	8	A	NB	30	705	8	A	NB	30
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	<5				WB	<5
Evening	433	8	A	NB	<5	433	8	A	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	<5				WB	<5

Scenario – Alexandra Avenue closed between Hawkesbury Road and Hassall Street

As identified above, excavation of the underground concourse would require the temporary closure of Alexandra Avenue between Hawkesbury Road and Hassall Street for about 12 to 18 months. During this period, a detour route would be provided via Hassall Street, Bailey Street or Priddle Street and Hawkesbury Road.

Intersection performance results for the '2026 without proposal' (without construction vehicles and Alexandra Avenue open) and '2026 with proposal' (with construction vehicles and Alexandra Avenue closed) scenarios are summarised in Table 3-8.

During the morning peak hour (7.45am to 8.45am) and evening peak hour (4.45pm to 5.45pm) presented in this assessment, it is anticipated that the Westmead metro station construction site would generate a total of 58 light vehicle movements (29 light vehicles travelling to and from the construction site) and 38 heavy vehicle movements (19 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance with construction traffic and Alexandra Avenue closed between Hawkesbury Road and Hassall Street indicates that the following intersections would experience a decrease in Level of Service:

- Hawkesbury Road / Amos Street during the morning peak hour – from Level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic

- Bailey Street / Hassall Street during the morning and evening peak hours – from Level of Service A to F and A to C, respectively. This is due to the substantial increase in traffic as a result of the detour route, in conjunction with the introduction of traffic signals, the presence of parking lanes and limited storage space for vehicles turning right on all approaches
- Hawkesbury Road / Priddle Street during the morning peak hour – from Level of Service B to F. This is due to the substantial increase in traffic as a result of the detour route, particularly on the Priddle Street approach and Hawkesbury Road north approach, resulting in increased average delays and queues
- Hawkesbury Road / Bailey Street during the morning and evening peak hours – from Level of Service C to F and D to F, respectively. Similar to the Hawkesbury Road / Priddle Street intersection, this is due to the substantial increase in traffic as a result of the detour route, particularly on the Bailey Street approach and Hawkesbury Road north approach, resulting in increased average delays and queues
- Hawkesbury Road / Priddle Street during the morning peak hour – from Level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic.

Analysis of modelled intersection performance results shows that at some locations, changes to the road network to accommodate construction activities and the addition of construction traffic would result in an improvement in intersection performance. This would occur at the following intersections:

- Hawkesbury Road / Alexandra Avenue during the evening peak hour – from Level of Service C to B
- Alexandra Avenue / Hassall Street during the morning and evening peak hours – from Level of Service F to B and C to B, respectively.

The improvement in performance at these intersections is due to fewer conflicting movements as these intersections would be modified with the removal of one or two approaches to accommodate the closure of Alexandra Avenue.

The impact of construction vehicles and the detour route when Alexandra Avenue is closed on overall road network performance is considered major when compared to road network performance without the proposal and therefore mitigation measures would be required to reduce the anticipated impacts. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-8: Modelled intersection performance (2026) – Westmead metro station construction site (Alexandra Avenue closed)

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Hawkesbury Road / Great Western Highway / Coleman Street (signalised)										
Morning	4,931	>100	F	NB	>500	4,981	>100	F	NB	>500
				EB	360				EB	360
				SB	>500				SB	>500
				WB	225				WB	225
Evening	4,727	>100	F	NB	>500	4,778	>100	F	NB	>500
				EB	260				EB	260
				SB	425				SB	>500
				WB	>500				WB	>500
Hawkesbury Road / Amos Street (signalised)										
Morning	1,556	14	A	NB	70	1,606	16	B	NB	75
				EB	-				EB	-
				SB	100				SB	125
				WB	25				WB	25
Evening	1,698	20	B	NB	80	1,748	28	B	NB	85
				EB	-				EB	-
				SB	220				SB	305
				WB	30				WB	30
Bailey Street / Hassall Street (roundabout without proposal, signalised with proposal)										
Morning	895	11	A	NB	25	2,056	94	F	NB	130
				EB	<5				EB	140
				SB	5				SB	105
				WB	<5				WB	<5
Evening	702	10	A	NB	5	1,664	41	C	NB	120
				EB	<5				EB	45
				SB	15				SB	90
				WB	<5				WB	<5
Hawkesbury Road / Alexandra Avenue (signalised)										
Morning	2,909	>100	F	NB	330	3,182	>100	F	NB	>500
				EB	325				EB	460
				SB	100				SB	100
				WB	190				WB	-
Evening	2,492	42	C	NB	115	2,462	26	B	NB	185
				EB	110				EB	100
				SB	100				SB	95
				WB	125				WB	-
Hawkesbury Road / Priddle Street (signalised)										
Morning	1,737	15	B	NB	65	2,626	>100	F	NB	>500
				EB	-				EB	-
				SB	65				SB	130
				WB	15				WB	195

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,775	48	D	NB	30	2,338	48	D	NB	90
				EB	-				EB	-
				SB	130				SB	130
				WB	60				WB	140
				Alexandra Avenue / Hassall Street (signalised)						
Morning	2,324	>100	F	NB	>500	1,964	20	B	NB	375
				EB	65				EB	-
				SB	-				SB	-
				WB	455				WB	30
				Evening	1,498				35	C
EB	30	EB	-							
SB	-	SB	-							
WB	200	WB	60							
Hawkesbury Road / Bailey Street (priority controlled without proposal, signalised with proposal)										
Morning	1,575	36	C	NB	5	3,279	>100	F	NB	130
				EB	-				EB	-
				SB	<5				SB	>500
				WB	<5				WB	235
				Evening	1,580				54	D
EB	-	EB	-							
SB	50	SB	>500							
WB	20	WB	235							
Hassall Street / Priddle Street (priority controlled)										
Morning	705	8	A	NB	30	1,296	18	B	NB	155
				EB	<5				EB	300
				SB	<5				SB	<5
				WB	<5				WB	<5
				Evening	433				8	A
EB	<5	EB	5							
SB	<5	SB	<5							
WB	<5	WB	<5							

(h) Emergency vehicles

For the majority of construction of this proposal, there would be no changes to the routes available to emergency vehicles access to the Westmead health precinct.

Emergency response services, in particular those travelling to and from the Westmead health precinct would potentially be impacted by the temporary closure of Alexandra Avenue. During this period, emergency vehicles that currently use Alexandra Avenue to travel between the Westmead health precinct and Parramatta CBD would be diverted onto Bailey Street or Priddle Street and Hassall Street. Ambulance Service of NSW would be consulted about the proposed road network changes during construction, and mitigation strategies would be detailed in the Construction Traffic Management Plan for the site (refer to Chapter 4). The potential for ambulance services to travel through the site in specific circumstances would be further investigated as this proposal progresses.

(i) Construction impacts summary

Figure 3-8 and Figure 3-9 provide a summary of construction impacts on road network performance. Figure 3-10 provides a summary of construction impacts on parking, access, public transport and active transport.



Figure 3-8: Road network performance summary – Westmead metro station construction site (Alexandra Avenue open)

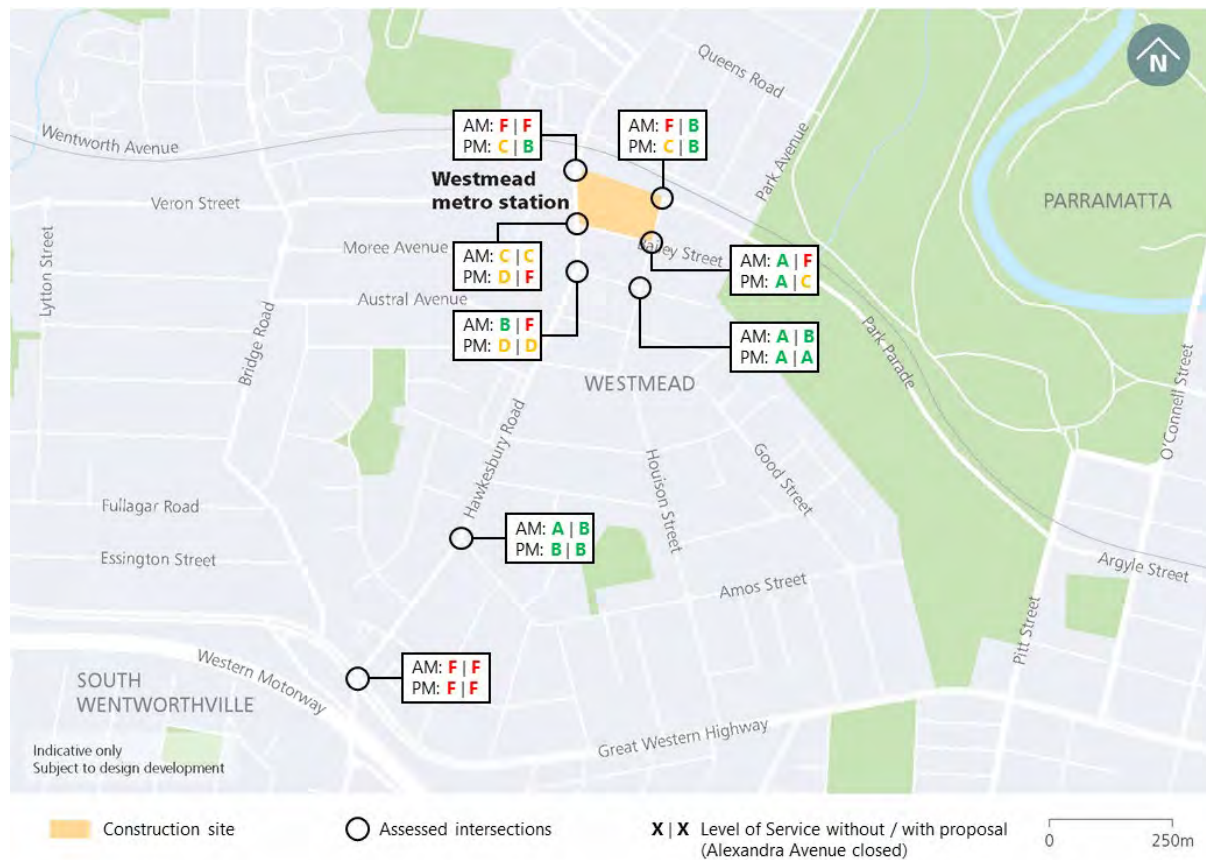


Figure 3-9: Road network performance summary – Westmead metro station construction site (Alexandra Avenue closed)



Figure 3-10: Parking, access, public transport and active transport construction impact summary – Westmead metro station construction site

3.8. Parramatta metro station construction site

3.8.1. Baseline transport environment

(a) Active transport network

The pedestrian network surrounding the Parramatta metro station construction site is well developed. Footpaths are provided along both sides of all roads and controlled crossings are provided at all signalised intersections. A scramble crossing operates at the George Street / Smith Street intersection.

During the work carried out under the previous Sydney Metro West planning application, Horwood Place will be closed, with pedestrians required to travel via Church Street or Smith Street as an alternative north-south route. In addition, Batman Walk will be closed and new traffic signals will be installed at the site access on George Street and will include pedestrian crossings.

Construction of Parramatta Light Rail (Stage 1) is currently occurring in Parramatta CBD, with temporary alterations to the active transport network, particularly along Church Street and Macquarie Street. This includes road closures, minor detours and reduced footpath widths.

Pedestrian volumes are typically high throughout the day, with increased pedestrian activity towards the existing Parramatta Station, bus interchange and Westfield Parramatta shopping centre. Church Street is the main north-south pedestrian route and has been closed to general traffic to accommodate construction of Parramatta Light Rail (Stage 1). In the east-west direction, pedestrian levels are high on Phillip Street, George Street, Macquarie Street, Darcy Street, Hassall Street and Argyle Street, providing connectivity between Parramatta Park, Parramatta CBD and Harris Park.

Signposted High Pedestrian Activity Areas include:

- Phillip Street between Marsden Street and Charles Street
- Charles Street between Phillip Street and George Street.

The cycle network surrounding the Parramatta metro station construction site is shown in Figure 3-11 and consists of on-road and off-road cycle routes. On-road east-west cycle routes are provided on Phillip Street, George Street and Macquarie Street, connecting to shared paths along O'Connell Street, Elizabeth Street, Macarthur Street and Harris Street that provide connectivity to the Parramatta River and Parramatta Park. These shared paths also provide regional connections to the north-western suburbs towards the west and to locations along the Parramatta River towards the east.

On-road north-south cycle routes are located along O'Connell Street, Elizabeth Street, Smith Street and Church Street. These provide local connectivity to North Parramatta and Harris Park. Cyclists have the opportunity to cross Parramatta River at Noller Bridge, O'Connell Street, Elizabeth Street, Charles Street Weir and Macarthur Street. During the work carried out under the previous Sydney Metro West planning application, the on-road cycle route on Horwood Place will be closed.

Bicycle lockers are located near the existing Parramatta Station on Wentworth Street and at the corner of Darcy Street and Station Street East. In addition, a bicycle shed is located at the corner of Hassall Street and Station Street East.

The active transport network will be modified in Parramatta CBD as part of Parramatta Light Rail (Stage 1). These changes, which will be implemented by 2023 include new pedestrian zones on Church Street and Macquarie Street, modification of scramble and midblock pedestrian crossings surrounding the construction site on Church Street, Macquarie Street, George Street and Smith Street, and adjustments to cycle routes on Macquarie Street.

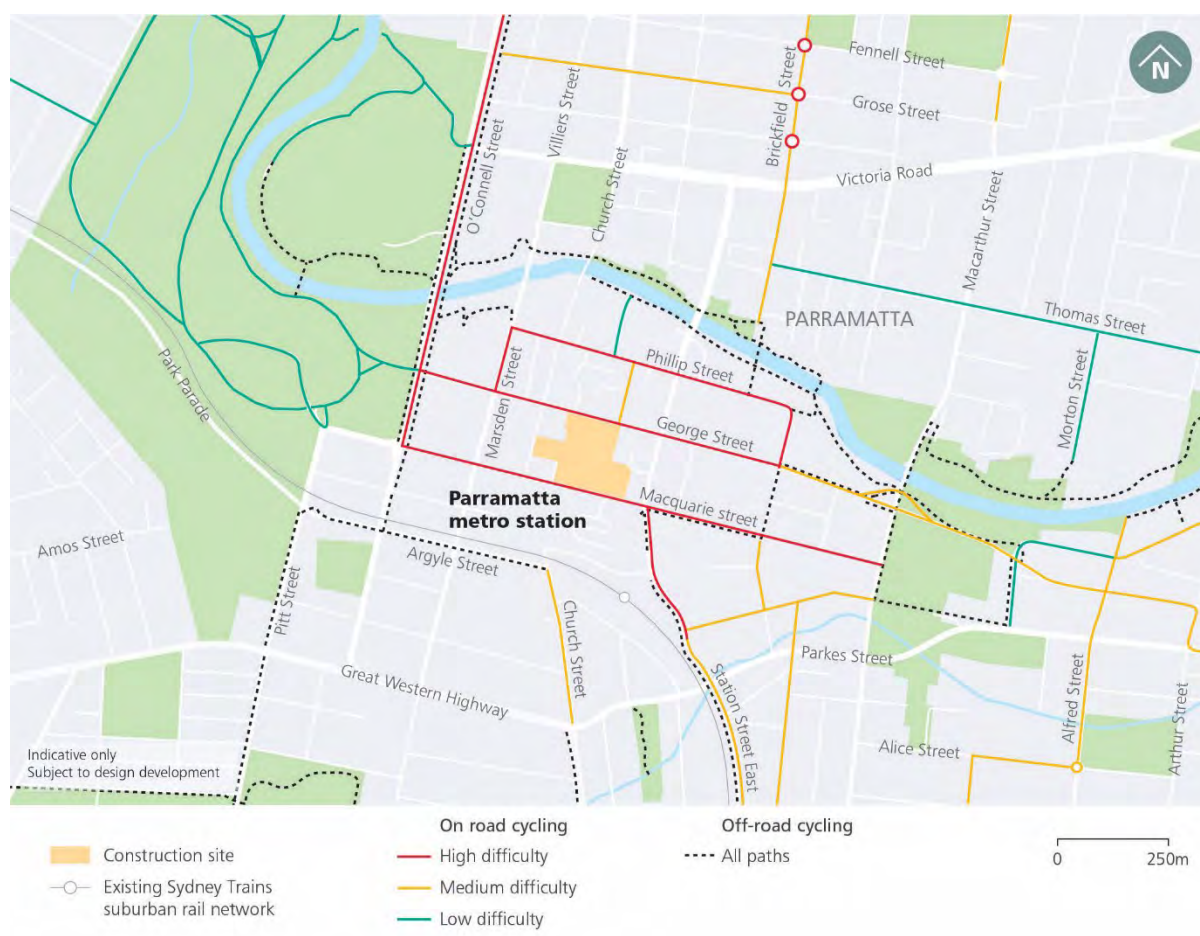


Figure 3-11: Cycle network surrounding the Parramatta metro station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Greater Parramatta cycleways network map (City of Parramatta, 2021)

(b) Public transport network

Parramatta CBD is well served by public transport services. The existing Parramatta Station is served by three lines on the Sydney Trains network: the T1 Western Line, the T2 Inner West and Leppington Line and the T5 Cumberland Line. These rail lines provide direct connections to Penrith, Richmond, Blacktown, Liverpool, Leppington, Strathfield, Sydney CBD, Chatswood and Hornsby. The existing Parramatta Station is also on the NSW TrainLink network as part of the Blue Mountains and Western NSW Lines, providing connections to Broken Hill, Dubbo, Bathurst, the Blue Mountains, Strathfield and Central.

A substantial number of buses serve the Parramatta CBD, originating and terminating at the Parramatta interchange on Argyle Street. The Parramatta interchange is a major transport hub allowing customers to easily transfer between the suburban rail network, intercity rail network, regional rail network, bus network and the future Parramatta Light Rail (Stage 1). Buses are operated by Sydney Buses, Hillsbus, Transdev NSW and Transit Systems, with 46 routes accessible at the Parramatta interchange including four NightRide routes. These buses serve Greater Sydney via local roads or major bus corridors. The busiest roads for buses include Smith Street, Wilde Avenue, Victoria Road and Argyle Street.

Two transitways converge at the Parramatta interchange: the North-West Transitway (as discussed in Section 3.7.1) and the Liverpool to Parramatta Transitway, which is a bus rapid transit route consisting of bus-only lanes and dedicated bus roadways between Liverpool and Parramatta. In the Parramatta CBD, the Liverpool to Parramatta Transitway runs along Argyle Street, Pitt Street and Great Western Highway. Bus lanes also exist on both sides of the road on Smith Street and Station Street East in the Parramatta CBD. The area is also served by 41 school bus routes.

A free shuttle bus service operates in the Parramatta CBD as a one-way loop via Charles Street, George Street, O'Connell Street, Grose Street, Villiers Street, Marist Place and Phillip Street. This service is operated by Transdev NSW and takes about 22 minutes to complete one circuit.

Western Sydney University also operates a shuttle bus service, transporting staff and students between its Parramatta campuses, as shown in Figure 3-12. The service is accessible near the Western Sydney University Parramatta City campus on Smith Street.

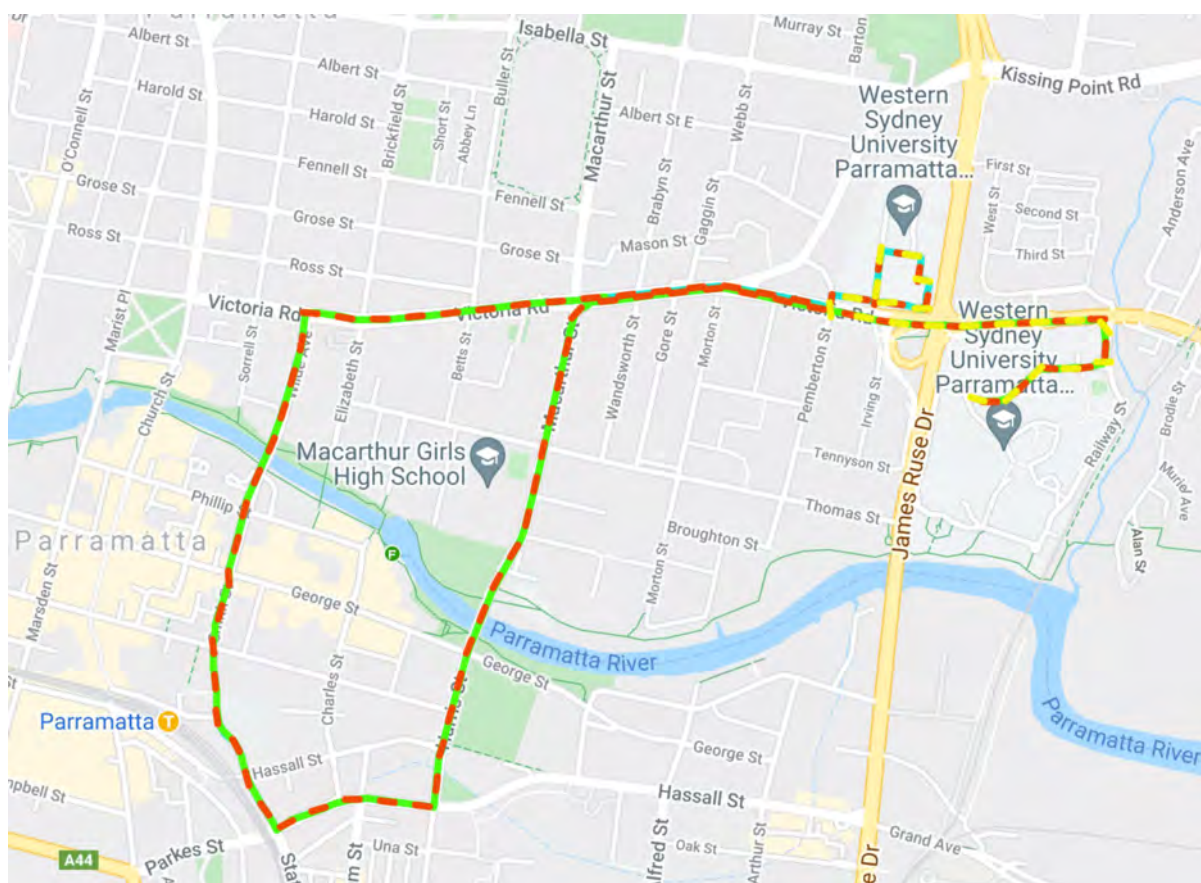


Figure 3-12: Western Sydney University Parramatta shuttle bus service route

Source: Shuttle Tracker (Western Sydney University, 2021)

Parramatta Leagues Club privately operates a courtesy shuttle bus service for members and guests living locally in the area. The service does not travel on a fixed route, instead picking up and dropping of passengers at their place of residence.

Ferry services are accessible at the Parramatta Wharf located about 600 metres north-east of the construction site via the active transport or road networks. The F3 Parramatta River Line operates to and from this wharf, providing connections between Parramatta and Circular Quay.

From 2023, light rail services will operate in Parramatta CBD as part of Parramatta Light Rail (Stage 1). The light rail will run along Church Street, Macquarie Street and Harris Street.

The public transport network surrounding the Parramatta metro station construction site is shown in Figure 3-13.



Figure 3-13: Public transport network surrounding the Parramatta metro station construction site

Sources: Hills District Bus Guide – Network Map (Hillsbus, 2021); Region 7 bus services (Sydney Buses, 2021); Parramatta, Bankstown and Liverpool bus network map (Transdev NSW, 2021); Parramatta, Fairfield & Liverpool region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

On-street parking in Parramatta consists of unticketed and ticketed parking. Immediately surrounding the construction site, there are some ticketed on-street parking spaces along George Street, and no on-street parking spaces are provided on Smith Street and Macquarie Street. Parking spaces located on Horwood Place will be permanently removed during the work carried out under the previous Sydney Metro West planning application.

Kiss and ride and loading zones are located throughout the Parramatta CBD. Taxi zones are located close to Parramatta Station on Fitzwilliam Street and Valentine Avenue. Figure 3-14 provides a summary of existing on-street parking arrangements in the Parramatta CBD.

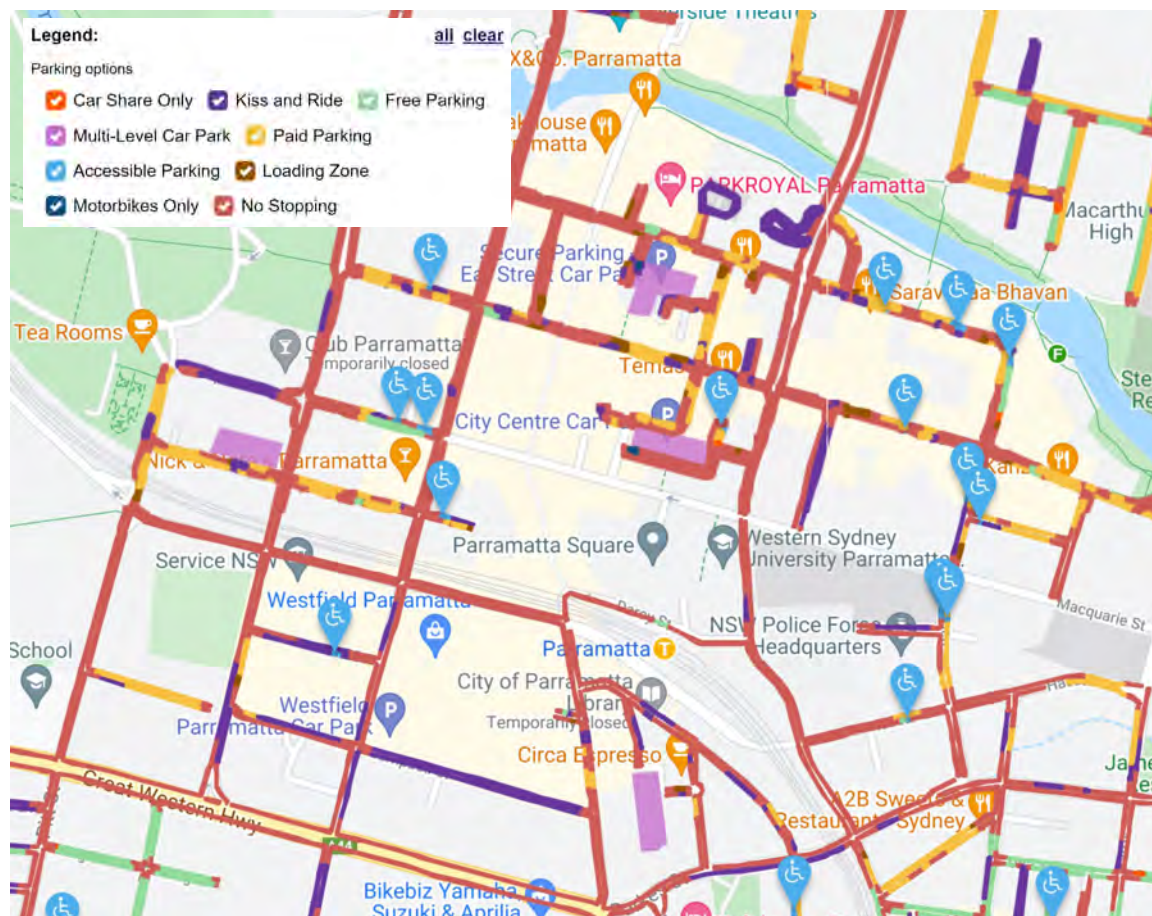


Figure 3-14: On-street parking arrangements in the Parramatta CBD

Source: City of Parramatta – Parking Finder (City of Parramatta, 2021)

(d) Traffic volumes and patterns

Great Western Highway is an arterial road. Near Pitt Street it experiences a distinct eastbound morning peak and westbound evening peak direction, with traffic volumes of at least 1,700 vehicles. O'Connell Street, a sub-arterial road, operates in both directions north of Macquarie Street, and south of Macquarie Street it operates in the southbound direction only. Traffic volumes are greater than 1,300 vehicles in each direction reaches as high as 1,720 vehicles during the morning peak hour in the northbound direction.

Macquarie Street west of O'Connell Street is a regional road that also carries a high volume of traffic and operates one-way in the eastbound direction with 1,880 vehicles during the morning peak hour and 1,510 vehicles during the evening peak hour. Macquarie Street east of O'Connell Street is a local road that carries a lower volume of traffic. Pitt Street is a regional road that carries between 870 and 1,270 vehicles in the northbound direction during both peak hours, and up to 30 buses in the southbound direction during both peak hours. General traffic and buses are permitted to travel on Pitt Street in the northbound direction and only buses are permitted to travel in the southbound direction.

Parkes Street is also a regional road that carries similar traffic volumes during the morning peak hour of between 710 and 740 vehicles, and a distinct eastbound peak direction during the evening peak hour of 920 vehicles, almost double the volume in the westbound direction.

George Street is a local road that exhibits an eastbound peak direction during the morning peak hour and a westbound peak direction during the evening peak hour. Traffic volumes in the peak direction are at least 400 vehicles.

On the weekday surveyed, Harris Street south of George Street, which is a regional road north of Parkes Street, operated in the southbound direction only, with peak hour volumes between 540 and 660 vehicles.

Road network changes as part of work carried out under the previous Sydney Metro West planning application have been incorporated into the construction traffic modelling assessment in Section 3.8.2 and include:

- Closure of Horwood Place
- New traffic signals at the site access on George Street
- Realignment of Macquarie Lane providing a vehicular connection between Macquarie Street and Smith Street. This will remain open to the public.

Due to construction of Parramatta Light Rail (Stage 1), temporary road closures are currently in place throughout Parramatta CBD. This includes full or partial closure of sections of Church Street, Macquarie Street, Harris Street and George Street. Any permanent road network changes as part of Parramatta Light Rail (Stage 1), which will be implemented by 2023, have been incorporated into the construction traffic modelling assessment and are discussed in Section 3.8.2.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-9.

Table 3-9: Existing peak hour traffic volumes by direction (2021) – Parramatta metro station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Great Western Highway west of Pitt Street	Eastbound	1,750	1,310
	Westbound	1,010	1,700
Macquarie Street west of O'Connell Street	Eastbound	1,880	1,510
	Westbound	-	-
George Street east of Church Street	Eastbound	440	310
	Westbound	200	410
Parkes Street east of Harris Street	Eastbound	710	920
	Westbound	740	490
Harris Street south of George Street	Northbound	-	-
	Southbound	540	660
Pitt Street north of Great Western Highway	Northbound	1,270	870
	Southbound	20	30
O'Connell Street south of George Street	Northbound	1,720	1,370
	Southbound	1,540	1,450

Source: Traffic surveys from March 2021

(e) **Baseline intersection performance**

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Parramatta metro station construction site is shown in Table 3-10.

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

- Great Western Highway / Pitt Street during the morning and evening peak hours
- Pitt Street / Park Parade / Argyle Street during the morning peak hour.

Key points include:

- The existing performance of the Great Western Highway / Pitt Street intersection during the morning and evening peak hours is due to high traffic volumes on Great Western Highway in the peak direction
- The existing performance of the Pitt Street / Park Parade / Argyle Street intersection during the morning peak hour is due to high traffic volumes on Pitt Street and Park Parade, resulting in increased congestion.

Table 3-10: Modelled peak hour baseline intersection performance (2021) – Parramatta metro station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Great Western Highway / Pitt Street (signalised)					
Morning	4,383	63	E	NB	165
				EB	450
				SB	20
				WB	355
Evening	4,185	96	F	NB	120
				EB	210
				SB	45
				WB	>500
Pitt Street / Park Parade / Argyle Street (signalised)					
Morning	2,660	65	E	NB	335
				EB	450
				SB	-
				WB	105
Evening	2,354	35	C	NB	170
				EB	115
				SB	-
				WB	240
Macquarie Street / O'Connell Street (signalised)					
Morning	3,857	22	B	NB	-
				EB	230
				SB	215
				WB	35
Evening	3,601	14	A	NB	-
				EB	115
				SB	75
				WB	80
Macquarie Street / Marsden Street (signalised)					
Morning	1,518	7	A	NB	70
				EB	-
				SB	55
				WB	<5
Evening	1,722	7	A	NB	60
				EB	-
				SB	100
				WB	<5
Macquarie Street / Horwood Place (priority controlled)					
Morning	37	5	A	NB	-
				EB	-
				SB	<5
				WB	<5
Evening	22	5	A	NB	-
				EB	-
				SB	<5
				WB	<5

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
George Street / O'Connell Street (signalised)					
Morning	3,739	49	D	NB	120
				EB	-
				SB	>500
				WB	25
Evening	3,252	16	B	NB	95
				EB	-
				SB	165
				WB	60
George Street / Marsden Street (signalised)					
Morning	1,753	23	B	NB	85
				EB	65
				SB	105
				WB	45
Evening	2,091	23	B	NB	75
				EB	35
				SB	145
				WB	80
George Street / Church Street (signalised)					
Morning	685	6	A	NB	-
				EB	85
				SB	-
				WB	5
Evening	775	6	A	NB	-
				EB	60
				SB	-
				WB	25
George Street / Horwood Place (priority controlled)					
Morning	838	6	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Evening	876	6	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
George Street / Smith Street (signalised)					
Morning	1,408	39	C	NB	40
				EB	90
				SB	90
				WB	30
Evening	1,528	36	C	NB	60
				EB	70
				SB	60
				WB	40
George Street / Charles Street (signalised)					
Morning	1,427	25	B	NB	85
				EB	75

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,379	25	B	SB	50
				WB	30
				NB	75
				EB	90
				SB	35
				WB	25
George Street / Macarthur Street / Harris Street (signalised)					
Morning	1,365	28	B	NB	-
				EB	115
				SB	215
				WB	-
Evening	1,758	32	C	NB	-
				EB	155
				SB	240
				WB	-
Harris Street / Macquarie Street (signalised)					
Morning	576	<5	A	NB	-
				EB	-
				SB	10
				WB	-
Evening	695	<5	A	NB	-
				EB	-
				SB	95
				WB	-
Harris Street / Parkes Street (signalised)					
Morning	2,389	48	D	NB	125
				EB	140
				SB	170
				WB	180
Evening	2,351	47	D	NB	105
				EB	155
				SB	190
				WB	115
Harris Street / Hassall Street (priority controlled)					
Morning	1,059	<5	A	NB	<5
				EB	-
				SB	<5
				WB	-
Evening	1,011	<5	A	NB	<5
				EB	-
				SB	<5
				WB	-

3.8.2. Construction impact assessment

(a) Construction site location and access

The Parramatta metro station construction site is located within the block bound by George Street, Church Street, Macquarie Street and Smith Street. Roads forming part of the primary construction vehicle route include Great Western Highway, Pitt Street, Macquarie Street, O'Connell Street, George Street, Macquarie Lane, Smith Street, Harris Street and Parkes Street as shown in Figure 3-15. Roads forming part of the secondary construction vehicle route include O'Connell Street north of George Street, Victoria Road, Smith Street south of Macquarie Lane, Station Street East and Parkes Street west of Hassall Street. Two primary site access points are proposed, with right-in, left-out for the northern site access to and from George Street, and left-in, left-out for the southern site access to and from the realigned Macquarie Lane.



Figure 3-15: Parramatta metro station construction site indicative construction vehicle routes

Road network changes associated with Parramatta Light Rail (Stage 1) will be in operation when peak construction activity for this proposal occurs in 2026. Road network changes in Parramatta CBD, and the associated redistribution of traffic resulting from the road network changes, have been incorporated into the '2026 without proposal' and '2026 with proposal' traffic models. These changes include:

- Closure of Church Street to vehicular traffic between Market Street and Macquarie Street
- Closure of Macquarie Street to vehicular traffic between Horwood Place and Smith Street
- Conversion of Macquarie Street to one-way eastbound between Marsden Street and Horwood Place, and between Smith Street and Harris Street
- Conversion of George Street to two-way operation
- Changes to allowed movements at the following intersections:
 - Church Street / George Street
 - Church Street / Macquarie Street
 - Macquarie Street / O'Connell Street
 - Macquarie Street / Marsden Street
 - Macquarie Street / Horwood Place
 - Macquarie Street / Smith Street
 - Macquarie Street / Harris Street
 - George Street / Harris Street / Macarthur Street.

(b) Construction activities

Key construction activities anticipated at the Parramatta metro station construction site include:

- Enabling and site establishment work, including:
 - Installation of an acoustic shed over the rail systems fit-out shaft at the western end of the station box
 - 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 and adjacent station development
- Construction of station precinct and interchange facilities, including:
 - public domain works 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.

(c) Construction vehicle movements

Construction vehicles would access and egress the Parramatta metro station construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the site per hour during the various phases of construction are shown in Figure 3-16 and Figure 3-17. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-11.

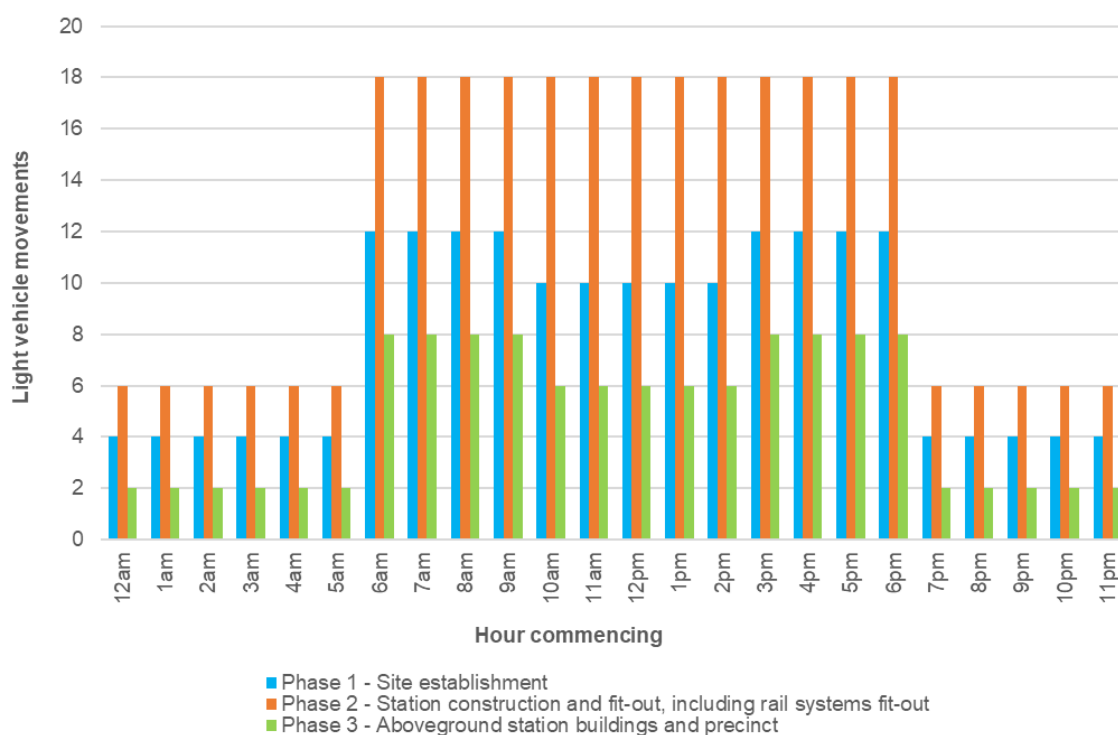


Figure 3-16: Hourly light vehicle movements (arrival and departure) at the Parramatta metro station construction site

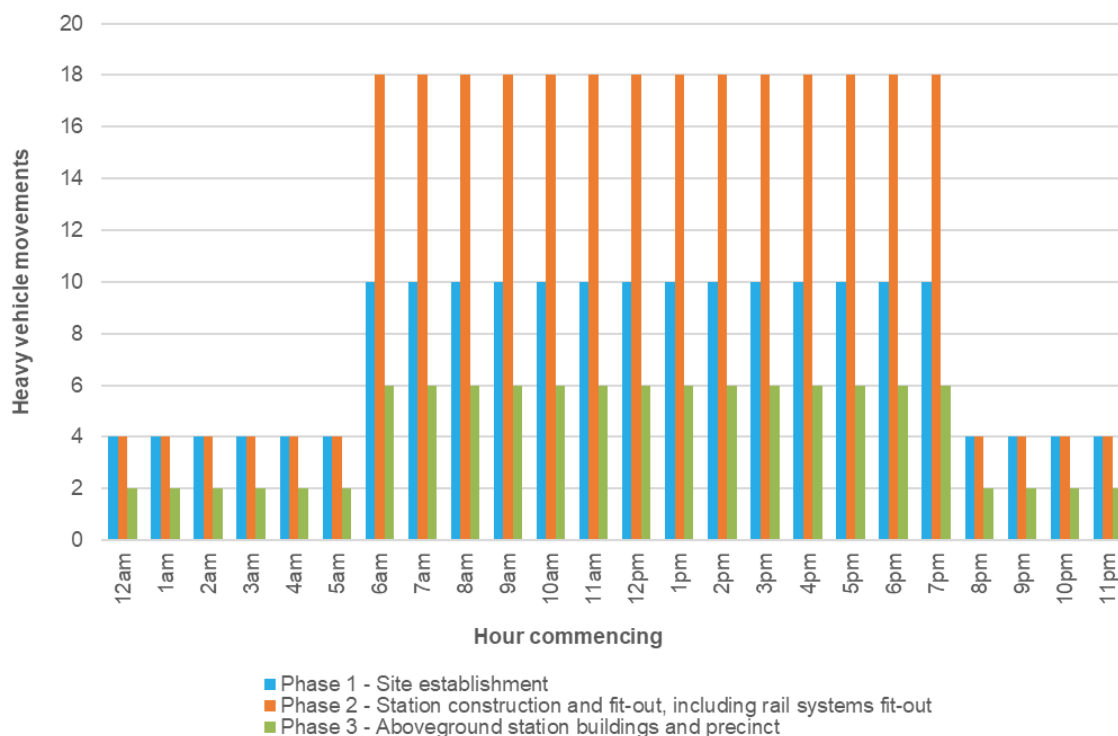


Figure 3-17: Hourly heavy vehicle movements (arrival and departure) at the Parramatta metro station construction site

Table 3-11: Daily construction movements per day by phase – Parramatta metro station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Phase 1 – Site establishment	190	180	370
Phase 2 – Station construction and fit-out, including rail systems fit-out	300	292	592
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

Changes to the active transport network as part of work carried out under the previous Sydney Metro West planning application would continue during construction of this proposal.

These include:

- The closure of the north-south link along Horwood Place. However, during construction of this proposal, a temporary pedestrian route (known as Civic Link) would be provided between Macquarie Street and George Street, although some short-term closures (for around a few months) may be required
- The closure of Batman Walk between Macquarie Street and Macquarie Lane.

Precinct construction work around the Parramatta metro station construction site such as the establishment of a new taxi zone on George Street, establishment of bus stops on Smith Street and a new signalised pedestrian crossing on Smith Street may require some short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

O'Connell Street, George Street and Macquarie Street are designated on-road cycle environments of moderate and high difficulty. These roads would be used by construction vehicles travelling to and from the Parramatta metro station construction site. Furthermore, construction vehicles would travel adjacent to or across shared paths along Pitt Street, O'Connell Street, Macquarie Street, George Street, Charles Street and Harris Street. Impacts on cyclists on these roads would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Roads forming part of the Parramatta metro station construction vehicle route that are also used by buses include Great Western Highway, Pitt Street, George Street, Smith Street and Parkes Street. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network. No impacts are anticipated on the operation of bus stops.

Light rail stops will be provided along Church Street and Macquarie Street as part of Parramatta Light Rail (Stage 1). Construction vehicles would interface with the light rail network at the George Street / Church Street intersection and on Macquarie Street between Church Street and Macquarie Lane. Impacts on the light rail network would be minor and limited to a potential increase in travel time due to additional construction vehicles on the road network.

(f) Impacts on parking and property access

No impacts on parking and property access are anticipated during construction.

During the work carried out under the previous Sydney Metro West planning application, temporary alternative rear access will be provided for properties fronting Church Street and George Street who currently have access from Horwood Place. This would be maintained during construction of this proposal. Similarly, access from Macquarie Lane to properties fronting Smith Street that would remain during construction would be maintained via the realigned laneway. Vehicular access to the back of house service building and fire hydrant for the property located on 69 George Street would continue to be restricted during construction of this proposal.

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-12.

During the morning peak hour (8am to 9am) and evening peak hour (4.45pm to 5.45pm) presented in this assessment, it is anticipated that the Parramatta metro station construction site would generate a total of 38 light vehicle movements (19 light vehicles travelling to and from the construction site) and 34 heavy vehicle movements (17 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Great Western Highway / Pitt Street during the morning and evening peak hours
- Pitt Street / Park Parade / Argyle Street during the morning peak hour
- George Street / Smith Street during the morning peak hour
- Harris Street / Parkes Street during the morning and evening peak hours.

The performance of intersections along Pitt Street and Harris Street is due to high background traffic volumes on all approaches, resulting in increased average delays and these intersections operating over capacity.

The performance of the George Street / Smith Street intersection during the morning peak hour is due to high background traffic volumes on Smith Street in conjunction with a filtered right turn on the George Street west approach which increases average delay at the intersection.

Modelled intersection performance with construction traffic indicates that the Pitt Street / Park Parade / Argyle Street intersection would decrease from Level of Service D to F during the evening peak. This is due to the additional construction vehicles travelling on Pitt Street in the northbound direction, resulting in increased congestion. Additional investigations into measures to mitigate the forecast impacts at this intersection would be examined during detailed construction planning in accordance with the Sydney Metro CTMF and detailed in Construction Traffic Management Plans prepared for this site.

All other intersections would perform at the same Level of Service compared to the scenario without construction traffic. Furthermore, all other intersections that would operate at Level of Service E or F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered minor when compared to road network performance without the proposal, with the exception of the Pitt Street / Park Parade / Argyle Street intersection where its performance would decrease from Level of Service D to F during the evening peak. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-12: Modelled intersection performance (2026) – Parramatta metro station construction site

Intersection and peak hour	2026 without proposal				2026 with proposal					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		
Great Western Highway / Pitt Street (signalised)										
Morning	4,929	>100	F	NB	350	5,018	>100	F	NB	440
				EB	>500				EB	>500
				SB	20				SB	20
				WB	>500				WB	475
Evening	4,759	>100	F	NB	120	4,847	>100	F	NB	120
				EB	225				EB	335
				SB	40				SB	40
				WB	>500				WB	>500
Pitt Street / Park Parade / Argyle Street (signalised)										
Morning	3,111	>100	F	NB	440	3,199	>100	F	NB	450
				EB	>500				EB	>500
				SB	-				SB	-
				WB	110				WB	110
Evening	2,731	53	D	NB	250	2,819	71	F	NB	335

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				EB	175				EB	185
				SB	-				SB	-
				WB	375				WB	450
Macquarie Street / O'Connell Street (signalised)										
Morning	4,143	13	A	NB	-	4,181	13	A	NB	-
				EB	190				EB	180
				SB	160				SB	160
				WB	-				WB	-
Evening	4,049	12	A	NB	-	4,087	13	A	NB	-
				EB	205				EB	210
				SB	195				SB	200
				WB	-				WB	-
Macquarie Street / Marsden Street (signalised)										
Morning	1,282	19	B	NB	55	1,300	20	B	NB	55
				EB	50				EB	50
				SB	55				SB	55
				WB	-				WB	-
Evening	1,048	19	B	NB	45	1,066	19	B	NB	45
				EB	30				EB	30
				SB	55				SB	55
				WB	-				WB	-
Macquarie Street / Church Street (signalised)										
Morning	56	17	B	NB	-	74	17	B	NB	-
				EB	5				EB	10
				SB	5				SB	5
				WB	<5				WB	<5
Evening	44	18	B	NB	-	62	16	B	NB	-
				EB	<5				EB	5
				SB	5				SB	5
				WB	<5				WB	<5
Macquarie Street / Horwood Place (priority controlled)										
Morning	14	<5	A	NB	-	31	<5	A	NB	-
				EB	<5				EB	<5
				SB	-				SB	-
				WB	<5				WB	<5
Evening	14	<5	A	NB	-	31	<5	A	NB	-
				EB	<5				EB	<5
				SB	-				SB	-
				WB	<5				WB	<5
George Street / O'Connell Street (signalised)										
Morning	3,984	34	C	NB	125	4,004	35	C	NB	125
				EB	-				EB	-
				SB	345				SB	350
				WB	80				WB	90

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	3,881	33	C	NB	100	3,901	35	C	NB	100
				EB	-				EB	-
				SB	290				SB	295
				WB	200				WB	200
George Street / Marsden Street (signalised)										
Morning	1,346	22	B	NB	45	1,366	21	B	NB	45
				EB	80				EB	85
				SB	45				SB	45
				WB	20				WB	20
Evening	1,388	23	B	NB	55	1,408	23	B	NB	55
				EB	55				EB	60
				SB	55				SB	55
				WB	50				WB	45
George Street / Church Street (signalised)										
Morning	539	6	A	NB	10	559	5	A	NB	10
				EB	35				EB	35
				SB	10				SB	10
				WB	20				WB	10
Evening	592	<5	A	NB	5	612	<5	A	NB	5
				EB	20				EB	20
				SB	5				SB	5
				WB	20				WB	20
George Street / Site Access (signalised)										
Morning	832	<5	A	NB	<5	674	<5	A	NB	10
				EB	10				EB	5
				SB	-				SB	-
				WB	<5				WB	20
Evening	636	<5	A	NB	<5	869	<5	A	NB	10
				EB	5				EB	<5
				SB	-				SB	-
				WB	20				WB	40
George Street / Horwood Place (priority controlled)										
Morning	820	10	A	NB	-	840	11	A	NB	-
				EB	<5				EB	<5
				SB	10				SB	15
				WB	<5				WB	<5
Evening	1,068	17	B	NB	-	1,088	19	B	NB	-
				EB	<5				EB	<5
				SB	45				SB	50
				WB	<5				WB	<5
George Street / Smith Street (signalised)										
Morning	1,942	57	E	NB	45	1,980	69	E	NB	55
				EB	125				EB	130
				SB	250				SB	325

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	50				WB	45
Evening	2,327	31	C	NB	65	2,365	40	C	NB	65
				EB	125				EB	130
				SB	185				SB	240
				WB	25				WB	25
				George Street / Charles Street (signalised)						
Morning	1,249	26	B	NB	65	1,287	26	B	NB	65
				EB	45				EB	60
				SB	30				SB	35
				WB	70				WB	65
Evening	1,247	27	B	NB	70	1,285	26	B	NB	70
				EB	95				EB	105
				SB	50				SB	50
				WB	25				WB	25
George Street / Macarthur Street / Harris Street (signalised)										
Morning	2,193	15	B	NB	55	2,231	16	B	NB	55
				EB	75				EB	75
				SB	75				SB	80
				WB	-				WB	-
Evening	2,573	32	C	NB	110	2,611	33	C	NB	115
				EB	175				EB	175
				SB	220				SB	240
				WB	-				WB	-
Harris Street / Macquarie Street (signalised)										
Morning	1,207	5	A	NB	35	1,245	5	A	NB	35
				EB	10				EB	10
				SB	30				SB	40
				WB	10				WB	10
Evening	1,682	20	B	NB	90	1,720	19	B	NB	85
				EB	80				EB	85
				SB	75				SB	90
				WB	5				WB	5
Harris Street / Parkes Street (signalised)										
Morning	2,876	>100	F	NB	330	2,914	>100	F	NB	320
				EB	175				EB	180
				SB	190				SB	190
				WB	230				WB	240
Evening	2,825	73	F	NB	160	2,863	80	F	NB	185
				EB	270				EB	270
				SB	190				SB	190
				WB	170				WB	170
Harris Street / Hassall Street (signalised)										
Morning	1,411	16	B	NB	135	1,448	16	B	NB	135
				EB	215				EB	215

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,474	21	B	SB	60	1,512	21	B	SB	100
				WB	-				WB	-
				NB	125				NB	125
				EB	130				EB	145
				SB	95				SB	100
				WB	-				WB	-

(h) Special events

A large number of special events are held in the Parramatta CBD at various locations. Major special events in the Parramatta CBD are shown in Table 3-13.

Table 3-13: Special events in the Parramatta CBD

Indicative month	Event	Location
December / January	New Year's Eve	Centenary Square
January	Australia Day	Parramatta Park
February	Lunar New Year	Centenary Square
February	Tropfest	Parramatta Park
March	Parramasala	Prince Alfred Park
July	Winterlight Festival	Prince Alfred Park
July	Burramatta NAIDOC	Parramatta River Foreshore
October	Parramatta Lanes Festival	Throughout Parramatta CBD
November	Loy Krathong: Thai Water Festival	Parramatta River Foreshore
November	Christmas in Parramatta	Centenary Square
Year-round	Various sporting events	Western Sydney Stadium

Centenary Square is located adjacent to the south-western corner of the Parramatta metro station construction site. However, construction work is not anticipated to directly impact the operation of special events scheduled there. Pedestrian access along major pedestrian desire lines to and from Centenary Square, the other venues identified above, and Parramatta interchange such as Church Street, Phillip Street, George Street, Macquarie Street and Argyle Street would be maintained during construction.

In recent years, the Parramatta Lanes Festival has used Centenary Square and other locations throughout Parramatta CBD. Event organisers would be consulted about the proposed construction works in order to allow sufficient time for them to consider the event's interaction with this proposal.

Chapter 4 outlines mitigation measures that would be implemented to minimise impacts during special events, which would be detailed in future Construction Traffic Management Plans.

(i) Construction impacts summary

Figure 3-18 provides a summary of construction impacts on road network performance. Figure 3-19 provides a summary of construction impacts on parking, access, public transport and active transport.

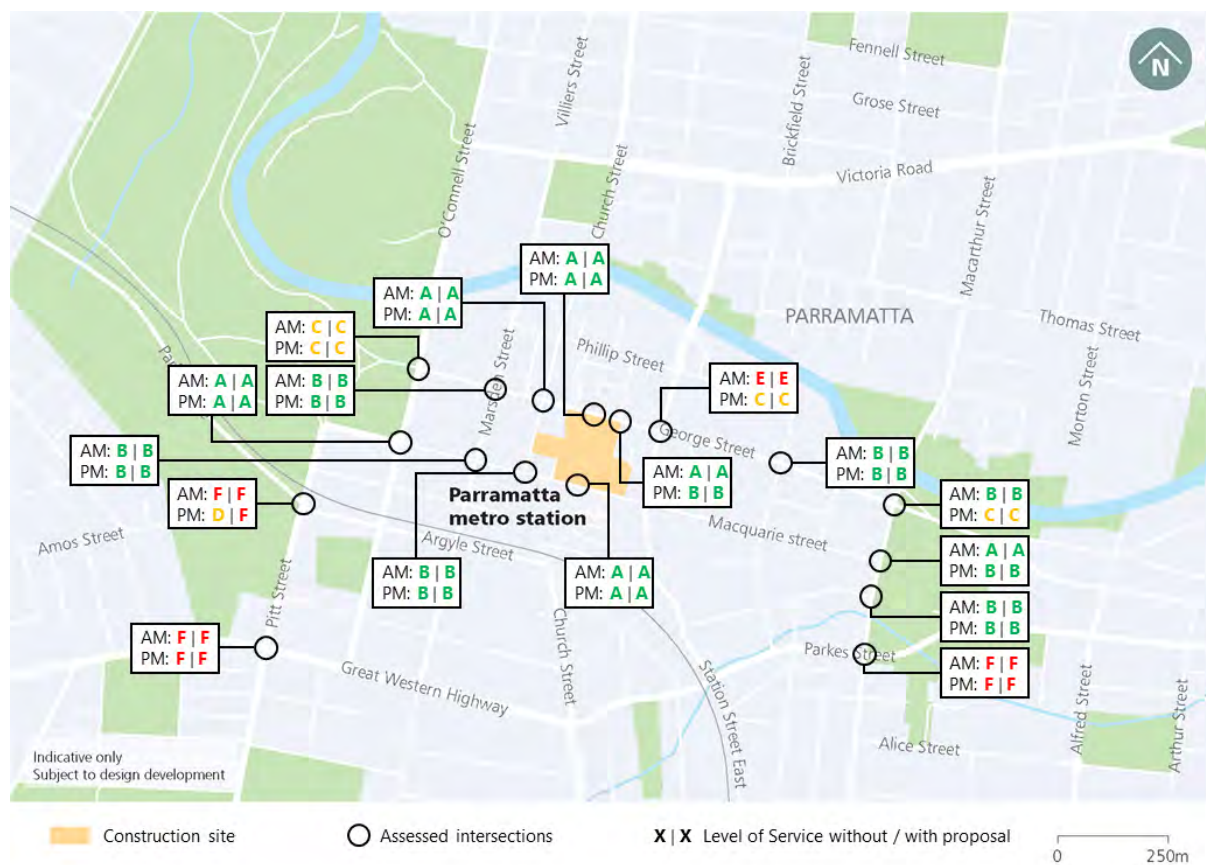


Figure 3-18: Road network performance summary – Parramatta metro station construction site

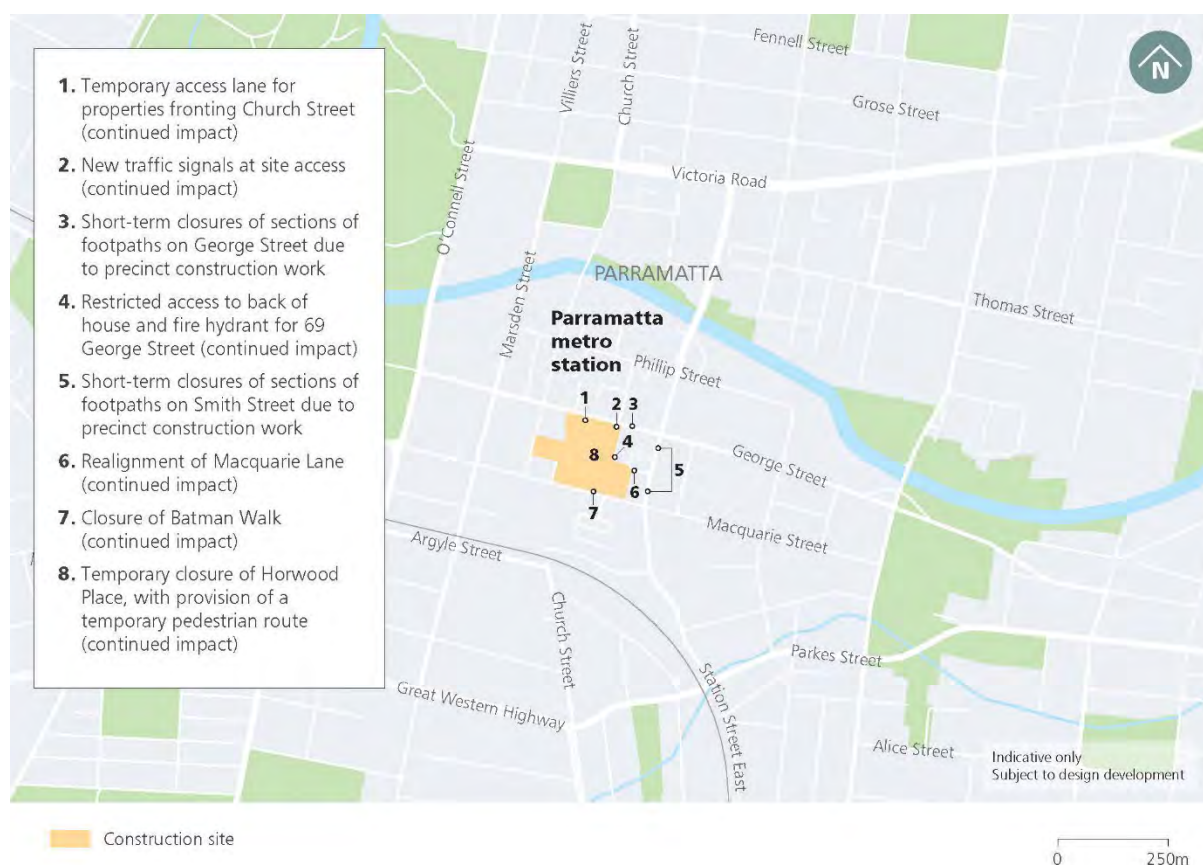


Figure 3-19: Parking, access, public transport and active transport construction impact summary – Parramatta metro station construction site

3.9. Sydney Olympic Park metro station construction site

3.9.1. Baseline transport environment

(a) Active transport network

The pedestrian network around the Sydney Olympic Park metro station construction site is well established, with wide footpaths and large, paved pedestrian areas to accommodate large crowds in the precinct during major special events. There are few signalised intersections in the precinct and no formal pedestrian crossing facilities immediately surrounding the construction site. However, given that local roads such as Herb Elliott Avenue, Showground Road and Figtree Drive carry low vehicle volumes and have a 40 kilometres per hour signposted speed limit, pedestrians are generally able to cross the road safely.

A wide median exists on Olympic Boulevard, allowing pedestrians to undertake a staged crossing if required. Pedestrians can also cross Sarah Durack Avenue and Australia Avenue, which both have a 60 kilometres per hour signposted speed limit, at signalised pedestrian crossings at the Sarah Durack Avenue / Olympic Boulevard, Sarah Durack Avenue / Australia Avenue and Australia Avenue / Herb Elliott Avenue intersections. South of the construction site, pedestrian activated signals are located on the Homebush Bay Drive ramps at the Homebush Bay Drive / Australia Avenue / Underwood Road roundabout.

Major pedestrian desire lines in the Sydney Olympic Park precinct are generally between the existing Olympic Park Station and the various stadiums and arenas located throughout the precinct, particularly during special events such as concerts or sporting events. There is also an east-west pedestrian desire line along Dawn Fraser Avenue where numerous businesses operate along the southern frontage.

The cycle network surrounding the Sydney Olympic Park metro station construction site is shown in Figure 3-20 and is well developed, consisting of on-road and off-road cycle routes. Marked cycle lanes of moderate difficulty are provided in the shoulder of both sides of the following roads:

- Australia Avenue
- Sarah Durack Avenue
- Edwin Flack Avenue
- Dawn Fraser Avenue
- Olympic Boulevard
- Bennelong Parkway
- Old Hill Link
- Kevin Coombes Avenue.

On-road cycle routes of low difficulty are located along Shirley Strickland Avenue and Rod Laver Drive. Off-road shared paths also feature throughout the precinct, particularly west of Olympic Boulevard around the Aquatic and Athletic Centres and the Warm Up Arena, and east of Australia Avenue around Bicentennial Park. The shared paths generally serve recreational users and provide access to on-road cycle routes that serve local trips as well as linking to the regional cycle network including the M4 Motorway cycleway and the Cooks River cycleway, which is a 30-kilometre shared path that generally follows the Cooks River between Ryde and Kyeemagh. Three defined cycle circuits exist within the Sydney Olympic Park precinct including the Olympic Circuit, River Heritage Circuit and Parklands Circuit. These circuits comprise both on-road and off-road cycle paths already discussed, as well as other cycle paths located north of Bicentennial Park and Dawn Fraser Avenue.

Bicycle racks are provided throughout the Sydney Olympic Park precinct. Within the immediate vicinity of the construction site, these are located on Herb Elliott Avenue, Olympic Boulevard and Dawn Fraser Avenue.



Figure 3-20: Cycle network surrounding the Sydney Olympic Park metro station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Greater Parramatta cycleways network map (City of Parramatta, 2021)

(b) Public transport network

The existing Olympic Park Station is served by the T7 Olympic Park Line on the Sydney Trains network, which operates as a shuttle between Olympic Park and Lidcombe. During major special events held at the Sydney Olympic Park precinct, direct trains run between Olympic Park and Central. In addition, some westbound services may extend past Lidcombe to Blacktown, Leppington and Campbelltown.

Bus stops are located on Edwin Flack Avenue, Dawn Fraser Avenue, Park Street and Australia Avenue, serving three bus routes operated by Sydney Buses (including a NightRide service) and one bus route operated by Transit Systems. These buses provide connections to Parramatta, Burwood, Chatswood, Rhodes and Sydney CBD. Bus customers are able to transfer to the Sydney Trains network at the existing Olympic Park Station, with bus stops located on Dawn Fraser Avenue providing access to the station at its western end, and bus stops on Park Street providing access to the station at its eastern end. Another bus route operated by Transit Systems serves the Lidcombe local area, with the closest bus stops located on Carter Street about 800 metres away from the site.

On Demand bus services operated by Transit Systems are directly accessible from the site, connecting Sydney Olympic Park to Concord, Rhodes, Mortlake, Cabarita, Bayview Park, Five Dock, Canada Bay, Burwood, Strathfield and North Strathfield. The areas serviced are shown in Figure 3-21.



Figure 3-21: On Demand bus services connecting Sydney Olympic Park, Concord, Rhodes, Mortlake, Cabarita, Bayview Park, Five Dock, Canada Bay, Burwood, Strathfield and North Strathfield

Source: Inner West On Demand Service (Transport for NSW, 2021)

During major events held at Sydney Olympic Park, nine additional bus routes operate. Four routes arrive and depart from bus stands at the Aquatic Terminal, located on Olympic Drive between Figtree Drive and Herb Elliott Avenue. The other five bus routes arrive and depart from bus stands at the Plaza Terminal, located on Olympic Drive between Barrier Street and Kevin Coombs Avenue.

School buses also service the area, with two school bus routes.

Ferry services do not operate in close proximity to the construction site, with the Olympic Park Wharf located about 3.6 kilometres away.

Light rail is proposed to serve the Sydney Olympic Park precinct as part of Parramatta Light Rail (Stage 2). This project is currently in the planning stage and if approved, would connect with Stage 1 and provide 10 to 12 light rail stops over 10 kilometres.

The public transport network surrounding the Sydney Olympic Park metro station construction site is shown in Figure 3-22.



Figure 3-22: Public transport network surrounding the Sydney Olympic Park metro station construction site

Sources: Region 7 bus services (Sydney Buses, 2021); Inner West and Southern region network (Transit Systems, 2021); Sydney Olympic Park – Major Event Bus Routes (Transport for NSW, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

Unticketed, time-limited on-street parking spaces are available along Olympic Boulevard, Murray Rose Avenue, Dawn Fraser Avenue, Figtree Drive, Herb Elliott Avenue, Showground Road, Grand Parade and Parkview Drive. There are also ticketed on-street parking spaces available along Herb Elliott Avenue, Dawn Fraser Avenue and Showground Road. During major special events, on-street parking may not be available due to road closures in place around the Sydney Olympic Park precinct.

A number of other on-street parking arrangements exist on Herb Elliott Avenue and include parking for motorbikes, a loading zone on the northern side about 90 metres east of Showground Road and a kiss and ride zone near Olympic Boulevard.

There is a mail zone on the western side of Showground Road and a loading zone on the southern side of Dawn Fraser Avenue between Showground Road and Park Street.

(d) Traffic volumes and patterns

Hill Road is a regional road that exhibits a southbound peak direction during the morning and evening peak, accommodating up to 1,020 vehicles.

Local roads within the Sydney Olympic Park precinct such as Sarah Durack Avenue, Edwin Flack Avenue and Old Hill Link carry moderate volumes of traffic of up to 540 vehicles in the peak direction.

Olympic Boulevard, Herb Elliott Avenue and Figtree Drive are local roads that are signposted with a 40 kilometres per hour speed limit and carry low volumes of traffic of up to 220 vehicles per hour in each direction. On Herb Elliott Avenue and Figtree Drive, a westbound morning peak direction represents trips to the precinct and an eastbound evening peak direction represents trips to away from the precinct.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-14.

Table 3-14: Existing peak hour traffic volumes by direction (2021) – Sydney Olympic Park metro station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Herb Elliott Avenue west of Australia Avenue	Eastbound	120	220
	Westbound	170	90
Sarah Durack Avenue west of Olympic Boulevard	Eastbound	370	430
	Westbound	330	540
Figtree Drive west of Australia Avenue	Eastbound	90	100
	Westbound	110	100
Old Hill Link west of Edwin Flack Avenue	Eastbound	220	170
	Westbound	120	280
Hill Road north of M4 Western Motorway	Northbound	660	780
	Southbound	1,020	990
Olympic Boulevard north of Sarah Durack Avenue	Northbound	130	200
	Southbound	70	150
Edwin Flack Avenue north of Sarah Durack Avenue	Northbound	330	540
	Southbound	370	420

Sources: Traffic surveys from March 2021 and SCATS detector volumes from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Sydney Olympic Park metro station construction site is shown in Table 3-15.

Modelled intersection performance indicates that all intersections perform at Level of Service C or better during the morning and evening peak hours.

Table 3-15: Modelled peak hour baseline intersection performance (2021) – Sydney Olympic Park metro station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
M4 Western Motorway EB ramps / Hill Road (priority controlled)					
Morning	1,838	15	B	NB	<5
				EB	10
				SB	<5
				WB	-
Evening	1,927	18	B	NB	<5
				EB	15
				SB	<5
				WB	-
Hill Road / John Ian Wing Parade (signalised)					
Morning	2,029	18	B	NB	70
				EB	80
				SB	60
				WB	<5
Evening	2,154	15	B	NB	80
				EB	45
				SB	60
				WB	<5
Hill Road / Old Hill Link (signalised)					
Morning	1,662	12	A	NB	30
				EB	-
				SB	70
				WB	10
Evening	1,878	13	A	NB	25
				EB	-
				SB	65
				WB	20
Edwin Flack Avenue / Old Hill Link (signalised)					
Morning	643	15	B	NB	15
				EB	20
				SB	10
				WB	-
Evening	803	18	B	NB	30
				EB	20
				SB	15
				WB	-
Edwin Flack Avenue / Dawn Fraser Avenue / Uhrig Road (signalised)					
Morning	842	25	B	NB	20
				EB	40
				SB	20
				WB	25
Evening	995	25	B	NB	25
				EB	30

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				SB	25
				WB	45
Edwin Flack Avenue / Shane Gould Avenue / Birnie Avenue (signalised)					
Morning	1,331	29	C	NB	40
				EB	70
				SB	45
				WB	5
Evening	1,665	33	C	NB	100
				EB	70
				SB	50
				WB	15
Edwin Flack Avenue / Sarah Durack Avenue (signalised)					
Morning	776	7	A	NB	-
				EB	<5
				SB	<5
				WB	5
Evening	1,042	6	A	NB	-
				EB	<5
				SB	<5
				WB	10
Olympic Boulevard / Sarah Durack Avenue (signalised)					
Morning	1,023	16	B	NB	10
				EB	30
				SB	10
				WB	25
Evening	1,386	19	B	NB	15
				EB	30
				SB	20
				WB	40
Olympic Boulevard / Figtree Drive (priority controlled)					
Morning	281	<5	A	NB	<5
				EB	-
				SB	<5
				WB	<5
Evening	386	<5	A	NB	<5
				EB	-
				SB	<5
				WB	<5
Olympic Boulevard / Herb Elliott Avenue (priority controlled)					
Morning	361	<5	A	NB	<5
				EB	-
				SB	<5
				WB	<5
Evening	455	5	A	NB	<5
				EB	-
				SB	<5
				WB	<5

3.9.2. Construction impact assessment

(a) Construction site location and access

The Sydney Olympic Park metro station construction site is located within the block bound by Herb Elliott Avenue, Australia Avenue, Figtree Drive and Olympic Boulevard. Roads forming part of the primary construction vehicle route include the M4 Western Motorway, Hill Road, Old Hill Link, Edwin Flack Avenue, Sarah Durack Avenue, Olympic Boulevard, Herb Elliott Avenue and Figtree Drive as shown in Figure 3-23. Roads forming part of the secondary construction vehicle route include Herb Elliott Avenue and Figtree Drive east of the construction site, Australia Avenue and Homebush Bay Drive. Primary site access would be right-in from Herb Elliott Avenue and egress would be left-out to Herb Elliott Avenue and right-out to Figtree Drive.



Figure 3-23: Sydney Olympic Park metro station construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Sydney Olympic Park metro station construction site include:

- Enabling and site establishment work
- Earthworks to level the site with the surrounding road network

- Construction of the station and structure for non-station use
- station fit
- Construction of station precinct and interchange facilities, including provisioning for adjacent and over station development
- Finishing work, testing and commissioning.

(c) Construction vehicle movements

Construction vehicles would access and egress the Sydney Olympic Park metro station construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the site per hour during the various phases of construction are shown in Figure 3-24 and Figure 3-25. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-16.

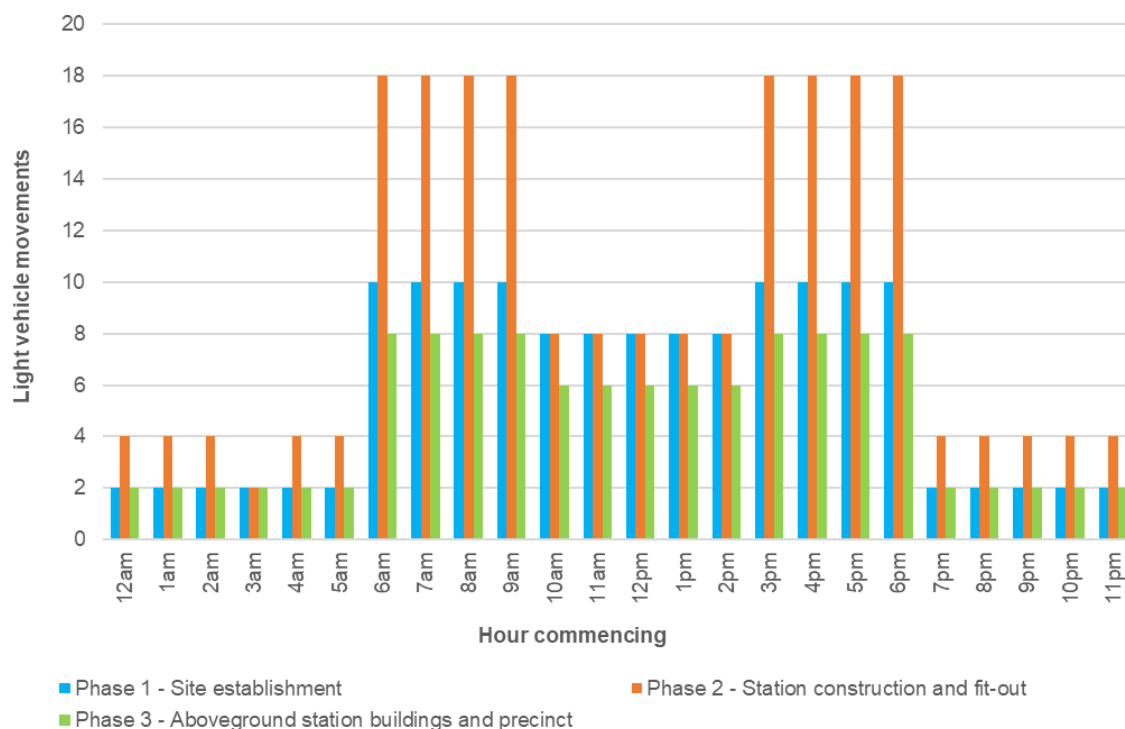


Figure 3-24: Hourly light vehicle movements (arrival and departure) at the Sydney Olympic Park metro station construction site

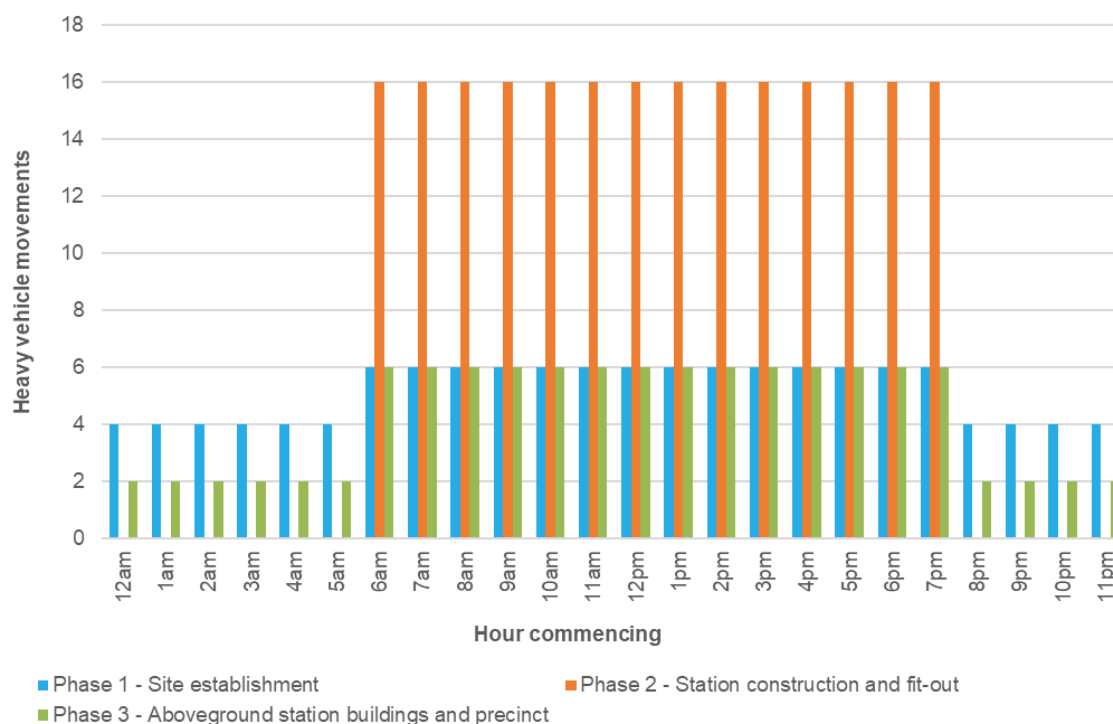


Figure 3-25: Hourly heavy vehicle movements (arrival and departure) at the Sydney Olympic Park metro station construction site

Table 3-16: Daily construction movements per day by phase – Sydney Olympic Park metro station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	226	224	450
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

Existing pedestrian and cycle routes surrounding the Sydney Olympic Park metro station construction site would be maintained throughout construction.

Precinct construction work around the Sydney Olympic Park metro station construction site such as the establishment of a new taxi zone and kiss and ride zones on Herb Elliott Avenue, establishment of bus stops on Figtree Drive and new pedestrian crossings on Herb Elliott Avenue and Figtree Drive may require short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Olympic Boulevard, Sarah Durack Avenue, Edwin Flack Avenue and Old Hill Link are designated on-road cycle environments of moderate difficulty. These roads would be used by construction vehicles travelling to and from the Sydney Olympic Park metro station construction site. Furthermore, construction vehicles would travel adjacent to or across shared paths along Hill Road, Birnie Avenue and Sarah Durack Avenue. Impacts on cyclists on these roads would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Roads forming part of the Sydney Olympic Park metro station construction vehicle route that are also used by buses include Sarah Durack Avenue, Edwin Flack Avenue, Old Hill Link and Hill Road. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network. During special events, construction vehicle movements would be limited where required to minimise impacts on special event bus services. No impacts are anticipated on the operation of regular customer and special event bus stops.

The proposed alignment of Parramatta Light Rail (Stage 2) in the Sydney Olympic Park precinct includes Australia Avenue and Dawn Fraser Avenue. The construction vehicle routes interface with the proposed alignment at the Edwin Flack Avenue / Dawn Fraser Avenue / Uhrig Road intersection where construction vehicles would cross the light rail line. If Parramatta Light Rail (Stage 2) is approved and in operation during construction of this proposal, impacts on the light rail network would be minimal given that the interface between light rail vehicles and vehicles using the road network would be controlled by traffic signals at the Edwin Flack Avenue / Dawn Fraser Avenue / Uhrig Road intersection.

No impacts on the rail network are anticipated during construction.

(f) Impacts on parking and property access

To facilitate precinct construction work, there may be short-term closures (for around a few months) of some on-street parking spaces on Herb Elliott Avenue to establish a new taxi zone, kiss and ride zones and a pedestrian crossing, and on Figtree Drive to establish new bus stops. Impacts are anticipated to be minor given that these parking spaces would be removed for a short duration. Opportunities to mitigate on-street parking impacts would be explored in consultation with Sydney Olympic Park Authority during construction planning (refer to Chapter 4).

No impacts on property access are anticipated during construction.

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-17.

During the morning peak hour (8am to 9am) and evening peak hour (5pm to 6pm) presented in this assessment, it is anticipated that the Sydney Olympic Park metro station construction site would generate a total of 36 light vehicle movements (18 light vehicles travelling to and from the construction site) and 28 heavy vehicle movements (14 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the Edwin Flack Avenue / Shane Gould Avenue / Birnie Avenue intersection would perform at Level of Service F during the morning peak hour. This is due to high background traffic volumes on all approaches, particularly in the northbound direction, resulting in increased average delays on the south approach and the intersection operating over capacity.

All other intersections would perform at Level of Service D or better without construction traffic.

Modelled intersection performance with construction traffic indicates that the following intersections would experience a decrease in Level of Service:

- M4 Western Motorway ramps / Hill Road during the evening peak hour – from Level of Service B to C. The intersection would still operate with spare capacity with the addition of construction traffic
- Edwin Flack Avenue / Shane Gould Avenue / Birnie Avenue during the evening peak hour – from Level of Service D to E. This is due to the additional construction vehicles travelling on Edwin Flack Avenue in both directions, resulting in increased congestion.

The Edwin Flack Avenue / Shane Gould Avenue / Birnie Avenue intersection would continue to operate over capacity and at Level of Service F during the morning peak hour.

The impact of construction vehicles on overall road network performance is considered minor and therefore mitigation measures are not required.

Table 3-17: Modelled intersection performance (2026) – Sydney Olympic Park metro station construction site

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
M4 Western Motorway EB ramps / Hill Road (priority controlled)										
Morning	2,214	21	B	NB	<5	2,281	25	B	NB	<5
				EB	20				EB	30
				SB	<5				SB	<5
				WB	-				WB	-
Evening	2,279	23	B	NB	<5	2,346	29	C	NB	<5
				EB	30				EB	45
				SB	<5				SB	<5
				WB	-				WB	-
Hill Road / John Ian Wing Parade (signalised)										
Morning	2,468	21	B	NB	90	2,525	20	B	NB	100
				EB	125				EB	115
				SB	80				SB	85
				WB	<5				WB	<5
Evening	2,295	16	B	NB	100	2,362	15	B	NB	105
				EB	50				EB	50
				SB	55				SB	60
				WB	<5				WB	<5
Hill Road / Old Hill Link (signalised)										
Morning	1,960	14	A	NB	35	2,027	14	A	NB	45
				EB	-				EB	-
				SB	95				SB	95
				WB	10				WB	15
Evening	2,109	13	A	NB	35	2,177	14	A	NB	35
				EB	-				EB	-
				SB	75				SB	80
				WB	20				WB	25
Edwin Flack Avenue / Old Hill Link (signalised)										
Morning	1,077	16	B	NB	45	1,144	18	B	NB	50
				EB	20				EB	35
				SB	15				SB	15
				WB	-				WB	-
Evening	1,051	20	B	NB	40	1,118	21	B	NB	50
				EB	35				EB	45
				SB	20				SB	25
				WB	-				WB	-
Edwin Flack Avenue / Dawn Fraser Avenue / Uhrig Road (signalised)										
Morning	1,127	26	B	NB	30	1,195	26	B	NB	35
				EB	50				EB	50
				SB	25				SB	30
				WB	35				WB	35

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,566	25	B	NB	40	1,634	25	B	NB	50
				EB	30				EB	30
				SB	55				SB	60
				WB	55				WB	55
Edwin Flack Avenue / Shane Gould Avenue / Birnie Avenue (signalised)										
Morning	2,507	92	F	NB	285	2,575	>100	F	NB	395
				EB	245				EB	245
				SB	115				SB	115
				WB	5				WB	5
Evening	2,657	46	D	NB	260	2,724	57	E	NB	330
				EB	125				EB	140
				SB	125				SB	130
				WB	25				WB	25
Edwin Flack Avenue / Sarah Durack Avenue (signalised)										
Morning	2,078	7	A	NB	-	2,145	7	A	NB	-
				EB	<5				EB	<5
				SB	5				SB	5
				WB	25				WB	35
Evening	1,794	6	A	NB	-	1,861	6	A	NB	-
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	20				WB	25
Olympic Boulevard / Sarah Durack Avenue (signalised)										
Morning	1,327	18	B	NB	10	1,395	19	B	NB	10
				EB	40				EB	45
				SB	10				SB	15
				WB	40				WB	40
Evening	1,621	19	B	NB	20	1,688	20	B	NB	20
				EB	35				EB	40
				SB	20				SB	25
				WB	50				WB	50
Olympic Boulevard / Figtree Drive (priority controlled)										
Morning	327	<5	A	NB	<5	395	<5	A	NB	<5
				EB	-				EB	-
				SB	<5				SB	<5
				WB	<5				WB	<5
Evening	417	<5	A	NB	<5	484	<5	A	NB	<5
				EB	-				EB	-
				SB	<5				SB	<5
				WB	<5				WB	<5
Olympic Boulevard / Herb Elliott Avenue (priority controlled)										
Morning	428	5	A	NB	<5	479	6	A	NB	<5
				EB	-				EB	-
				SB	<5				SB	<5

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	509	5	A	WB	<5	560	6	A	WB	<5
				NB	<5				NB	<5
				EB	-				EB	-
				SB	<5				SB	<5
				WB	<5				WB	5

(h) Special events

A large number of events of varying size are held each year at Sydney Olympic Park, with the existing Olympic Park Station being a major transport hub for access to and from these events. Larger events held within the precinct include the following:

- Sydney Royal Easter Show
- Supernova Comic Con and Gaming
- Sydney Festival
- Music concerts
- Football matches (Rugby Union, Rugby League and Australian Football League)
- Soccer matches
- Other sporting events.

During major special events, there are high levels of pedestrian activity throughout the Sydney Olympic Park precinct. Venues in the precinct that cater to large scale events include ANZ Stadium, Qudos Bank Arena and Sydney Showground. Major pedestrian desire lines comprise trips between car parks, venues within the precinct, major event bus stops on Olympic Boulevard and the existing Olympic Park Station. These pedestrian desire lines would fall within the immediate vicinity of the Sydney Olympic Park metro station construction site with the potential for conflict between pedestrians and construction vehicles and impacts on pedestrian movement and accessibility. During major special events these impacts are considered major and would require mitigation measures to reduce the anticipated impacts. Further, construction vehicle movements to and from the construction site may be restricted during special events that involve the closure of the western end of Herb Elliott Avenue. The planning and development of appropriate restrictions to minimise impacts on the transport and traffic network during special events would be determined in consultation with relevant parts of Transport for NSW and other relevant agencies.

Chapter 4 outlines mitigation measures that would be implemented to minimise impacts during special events which would be detailed in future Construction Traffic Management Plans.

(i) Construction impacts summary

Figure 3-26 provides a summary of construction impacts on road network performance. Figure 3-27 provides a summary of construction impacts on parking, access, public transport and active transport.

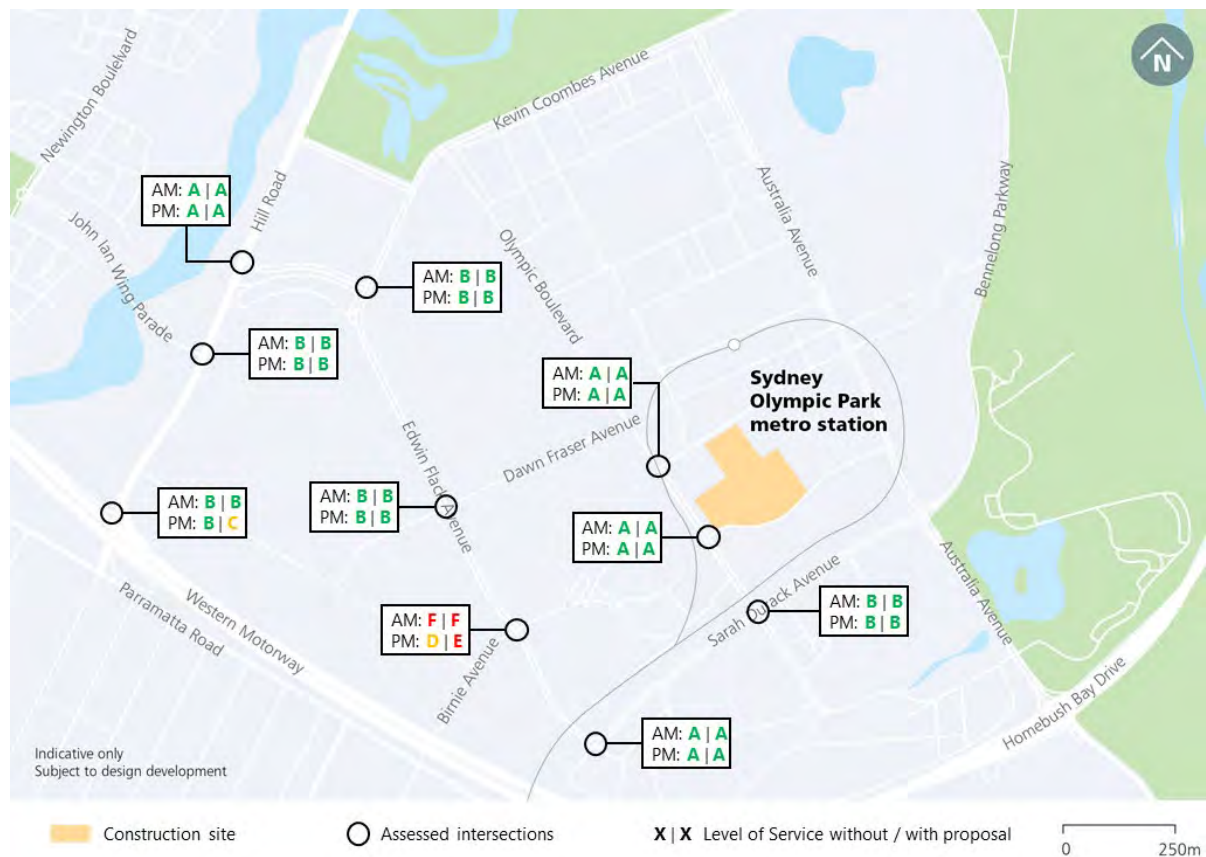


Figure 3-26: Road network performance summary – Sydney Olympic Park metro station construction site



Figure 3-27: Parking, access, public transport and active transport construction impact summary – Sydney Olympic Park metro station construction site

3.10. North Strathfield metro station construction site

3.10.1. Baseline transport environment

(a) Active transport network

Footpaths exist on both sides of most streets in the vicinity of the North Strathfield metro station construction site, except on Queen Street south of Pomeroy Street where the footpath on the western side will be removed during the work carried out under the previous Sydney Metro West planning application. As part of this work, the speed hump on Beronga Street east of Queen Street will be converted to a raised zebra crossing to facilitate north-south pedestrian movements along the footpath on the eastern side of Queen Street. In addition, traffic signals including pedestrian crossings will be provided at the Queen Street / Wellbank Street intersection, serving a key pedestrian desire line between the existing North Strathfield Station, the shops fronting Queen Street and the residential properties located east of the rail line. There are no signalised pedestrian crossings immediately surrounding the site. Signalised pedestrian crossings are also provided along Concord Road and at the Pomeroy Street / George Street intersection. In the north-south direction, pedestrian movements are higher along Concord Road, particularly around the businesses operating between Correys Avenue and Homedale Avenue.

The existing rail line also presents a barrier to east-west movements. Opportunities to cross the rail line are provided via the pedestrian bridge accessible from Queen Street at its eastern end and via Hamilton Street East or Pomeroy Street at its western end. Footpaths are also provided on both sides of the Pomeroy Street overpass.

The cycle network surrounding the North Strathfield metro station construction site is shown in Figure 3-28. There are no designated cycle paths in the immediate vicinity of the construction site. West of the rail line, there are moderate difficulty on-road cycle routes along Underwood Road, Bridge Road, Pomeroy Street and The Crescent. Shared paths near Powells Creek form part of the Cooks River cycleway, providing connectivity to Ryde, the Sydney Olympic Park precinct, Strathfield and suburbs along the Cooks River towards Botany Bay. East of the rail line, there is a mix of on-road and off-road cycle routes south of the construction site along Concord Road, Patterson Street and Gipps Street, which provide east-west connections from Homebush and Strathfield to the Inner West.

Bicycle racks are located on both sides of the existing North Strathfield Station. In addition, bicycle lockers are located on Queen Street.

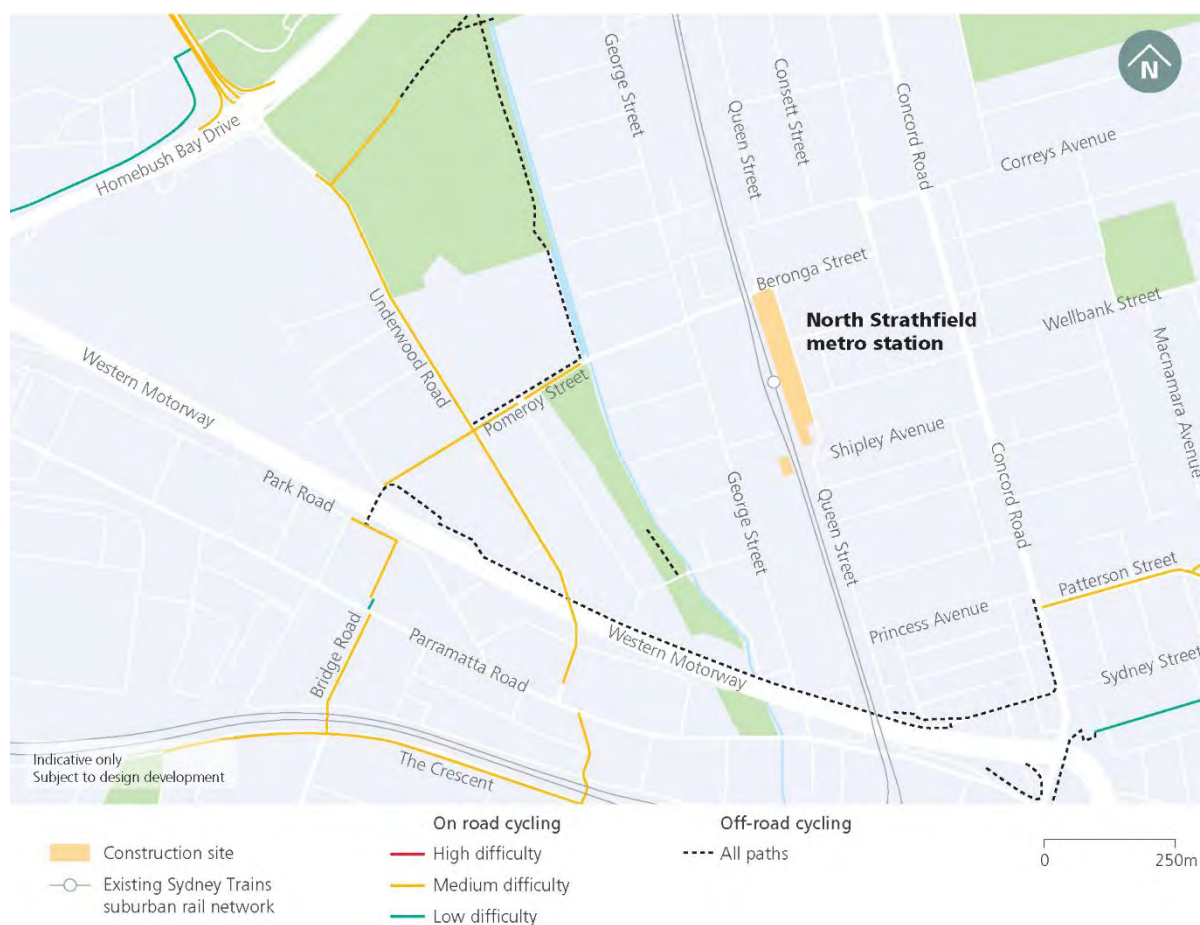


Figure 3-28: Cycle network surrounding the North Strathfield metro station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Interim Bike Network Map (City of Canada Bay, 2019)

(b) Public transport network

The existing North Strathfield Station is served by the T9 Northern Line on the Sydney Trains network, providing direct connections to Epping, Strathfield, Sydney CBD, Chatswood and Hornsby.

There are no scheduled bus routes that directly serve the existing North Strathfield Station. On the western side of the rail line, two bus routes travel on Underwood Road about 600 metres west of the construction site. These bus routes are operated by Sydney Buses and Transit Systems and provide connections to Burwood, Rhodes and Parramatta. On the eastern side of the rail line, four bus routes travel on Concord Road and Wellbank Street about 500 metres east of the construction site. Three of these services are operated by Sydney Buses (including two NightRide services) and a service operated by Transit Systems, providing connections to Macquarie Park, Hurstville, Ryde, Burwood, Sydney CBD, Parramatta and Hornsby.

On Demand bus services operated by Transit Systems are directly accessible from the site, connecting North Strathfield to Sydney Olympic Park, Concord, Rhodes, Mortlake, Cabarita, Bayview Park, Five Dock, Canada Bay, Burwood and Strathfield. The areas serviced are shown in Figure 3-21.

School buses also service the area, with 21 school bus routes. During the work carried out under the previous Sydney Metro West planning application, the bus stops on the western and eastern sides of Queen Street north of Wellbank Street that serves school buses will be temporarily relocated to a nearby location.

Ferry services do not operate in close proximity to the North Strathfield metro station construction site.

The public transport network surrounding the North Strathfield metro station construction site is shown in Figure 3-29.

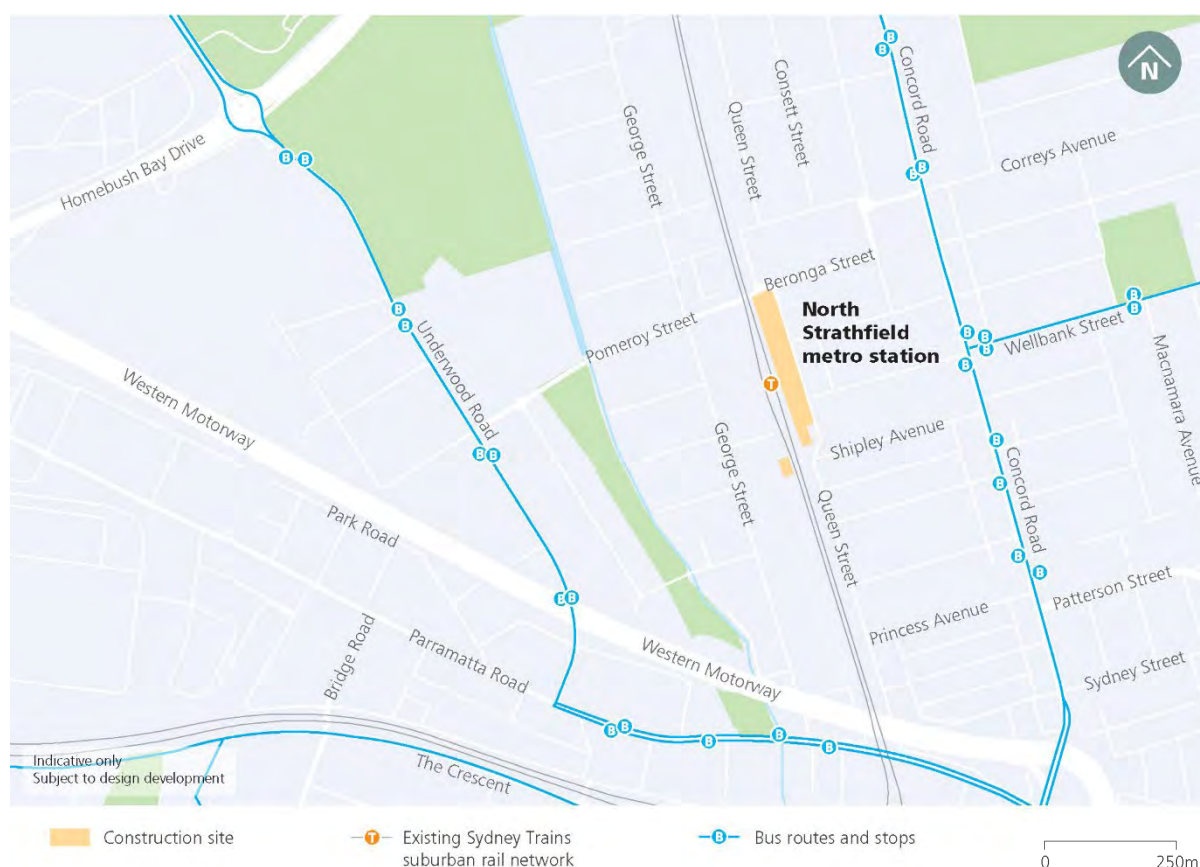


Figure 3-29: Public transport network surrounding the North Strathfield metro station construction site

Sources: Region 7 bus services (Sydney Buses, 2021); Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

A mix of time-restricted and unrestricted on-street parking is provided on roads near the North Strathfield metro station construction site including Queen Street, Beronga Street, Waratah Street, Wellbank Street and Shipley Avenue. On-street parking spaces close to North Strathfield Station are generally time-restricted. Weekday peak period clearways operate on Concord Road, with on-street parking available on the eastern side only outside of these periods.

During the work carried out under the previous Sydney Metro West planning application, parking spaces will be temporarily removed at the following locations:

- About 24 on-street parking spaces on the western side of Queen Street between Wellbank Street and Pomeroy Street
- About three on-street parking spaces on Queen Street north of Pomeroy Street
- About three on-street parking spaces on the western side of Queen Street south of Wellbank Street.

In addition, the kiss and ride zone on the western side of Queen Street north of Wellbank Street will be temporarily relocated to a nearby location.

A mail zone is located on the eastern side of Queen Street near Wellbank Street. There are no loading zones on roads immediately surrounding the construction site.

(d) **Traffic volumes and patterns**

Parramatta Road is an arterial road. West of Concord Road, it carries between 1,210 and 1,490 vehicles in each direction during peak hours. Concord Road, which is also an arterial road, carries a similar volume of traffic of up to 1,330 vehicles in each direction during peak hours. A southbound peak direction occurs during the morning and evening peak hours.

North-west of the existing North Strathfield Station, Pomeroy Street and Underwood Road are regional roads that carry peak hour traffic volumes between 800 and 1,150 vehicles in each direction. Adjacent to the rail line, Queen Street (Wellbank Street to Beronga Street) and Wellbank Street (Concord Road to Queen Street) are also regional roads that carry lower peak hour traffic volumes between 400 and 490 vehicles in each direction.

Road network changes as part of work carried out under the previous Sydney Metro West planning application have been incorporated into the construction traffic modelling assessment in Section 3.10.2 and include new traffic signals at the Queen Street / Wellbank Street intersection.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-18.

Table 3-18: Existing peak hour traffic volumes by direction (2021) – North Strathfield metro station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Parramatta Road west of Concord Road	Eastbound	1,210	1,490
	Westbound	1,250	1,320
Wellbank Street east of Queen Street	Eastbound	350	390
	Westbound	350	400
Pomeroy Street west of Queen Street	Eastbound	800	900
	Westbound	950	860
Underwood Road north of Pomeroy Street	Northbound	970	870
	Southbound	970	1,150
Concord Road north of Parramatta Road	Northbound	960	780
	Southbound	1,170	1,330
Concord Road south of Wellbank Street	Northbound	1,020	980
	Southbound	1,180	1,090
Queen Street north of Wellbank Street	Northbound	410	450
	Southbound	440	490

Source: Traffic surveys from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the North Strathfield metro station construction site is shown in Table 3-19.

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

- Queen Street / Beronga Street / Pomeroy Street during the morning peak hour
- Pomeroy Street / Ismay Avenue during the morning and evening peak hours
- Pomeroy Street / Underwood Road during the evening peak hour.

Key points include:

- The existing performance of the Queen Street / Beronga Street / Pomeroy Street intersection during the morning peak hour is due to its configuration as a roundabout where the worst movement is reported. This corresponds to the Queen Street northbound movement
- The existing performance of the Pomeroy Street / Ismay Street intersection during the morning and evening peak hours is due to its configuration as a roundabout where the worst movement is reported. This corresponds to the Pomeroy Street westbound movement during the morning peak hour and the Ismay Avenue northbound movement during the evening peak hour, which carry high traffic volumes that are constrained to a single lane on approach to the roundabout
- The existing performance of the Pomeroy Street / Underwood Road intersection during the evening peak hour is due to high traffic volumes travelling through the intersection in conjunction with the presence of kerbside parking lanes and split signal phasing on the Pomeroy Street approaches which reduce the capacity and efficiency of the intersection.

Table 3-19: Modelled peak hour baseline intersection performance (2021) – North Strathfield metro station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Concord Road / Wellbank Street (signalised)					
Morning	2,436	19	B	NB	55
				EB	40
				SB	95
				WB	75
Evening	2,635	30	C	NB	80
				EB	45
				SB	190
				WB	70

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Queen Street / Wellbank Street (priority controlled)					
Morning	1,039	15	B	NB	<5
				EB	-
				SB	5
				WB	10
Evening	1,086	16	B	NB	5
				EB	-
				SB	5
				WB	10
Queen Street / Beronga Street / Pomeroy Street (roundabout)					
Morning	2,027	81	F	NB	200
				EB	35
				SB	15
				WB	70
Evening	1,985	13	A	NB	50
				EB	980
				SB	10
				WB	25
Pomeroy Street / George Street (signalised)					
Morning	2,608	51	D	NB	90
				EB	410
				SB	95
				WB	95
Evening	2,466	50	D	NB	70
				EB	345
				SB	75
				WB	120
Pomeroy Street / Ismay Avenue (roundabout)					
Morning	2,186	>100	F	NB	50
				EB	110
				SB	-
				WB	>500
Evening	1,945	>100	F	NB	>500
				EB	40
				SB	-
				WB	260
Pomeroy Street / Underwood Road (signalised)					
Morning	2,636	46	D	NB	170
				EB	10
				SB	325
				WB	130
Evening	2,602	71	F	NB	105
				EB	10
				SB	470
				WB	130
Homebush Bay Drive / Underwood Road / Australia Avenue (roundabout)					
Morning	4,549	20	B	NB	50
				EB	15

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	4,979	42	C	SB	30
				WB	35
				NB	125
				EB	15
				SB	35
				WB	50

3.10.2. Construction impact assessment

(a) Construction site location and access

The North Strathfield metro station main construction site is bound by Beronga Street, Queen Street and the existing rail line. The construction footprint extends south to near Shipley Avenue and to the western side of the rail corridor to near Hamilton Street East. Roads forming part of the primary construction vehicle route include the M4 Western Motorway, Concord Road, Wellbank Street, Queen Street, Pomeroy Street, Underwood Road and Homebush Bay Drive as shown in Figure 3-30. Two primary site access points are proposed, with left-in, left-out for the northern site access and right-in, left-out for the southern site access to and from Queen Street.

Access within the rail corridor would also be required. Generally, this would occur during scheduled rail possessions and outside of peak periods. Various access gates may be used during these rail possession works including those located on Queen Street and Hamilton Street East. Other existing access gates along the rail corridor generally located between Strathfield Station and Rhodes Station may also be used less frequently and associated with works such as utility relocations within the existing rail corridor.

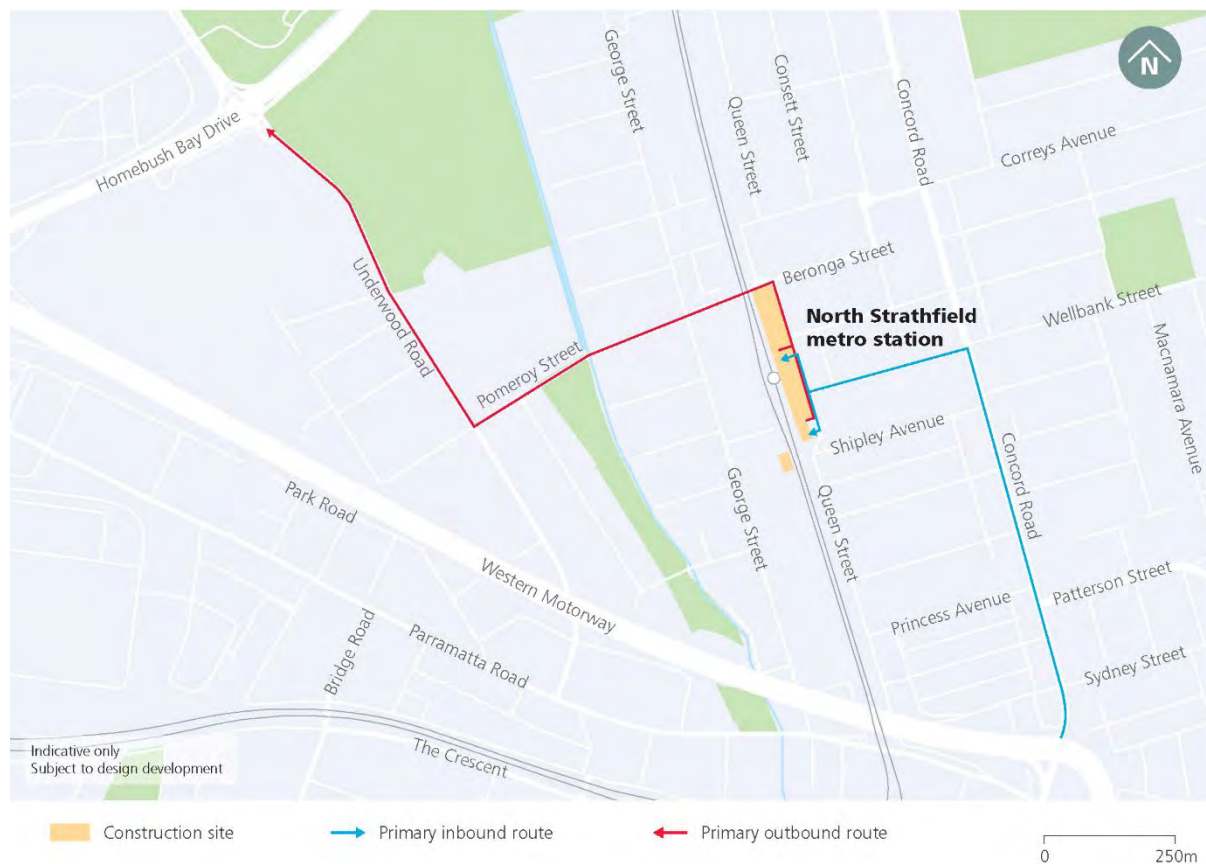


Figure 3-30: North Strathfield metro station construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the North Strathfield metro station construction site 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 the 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.

(c) Construction vehicle movements

Construction vehicles would access and egress the North Strathfield metro station construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the site per hour during the various phases of construction are shown in Figure 3-31 and Figure 3-32. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-20.

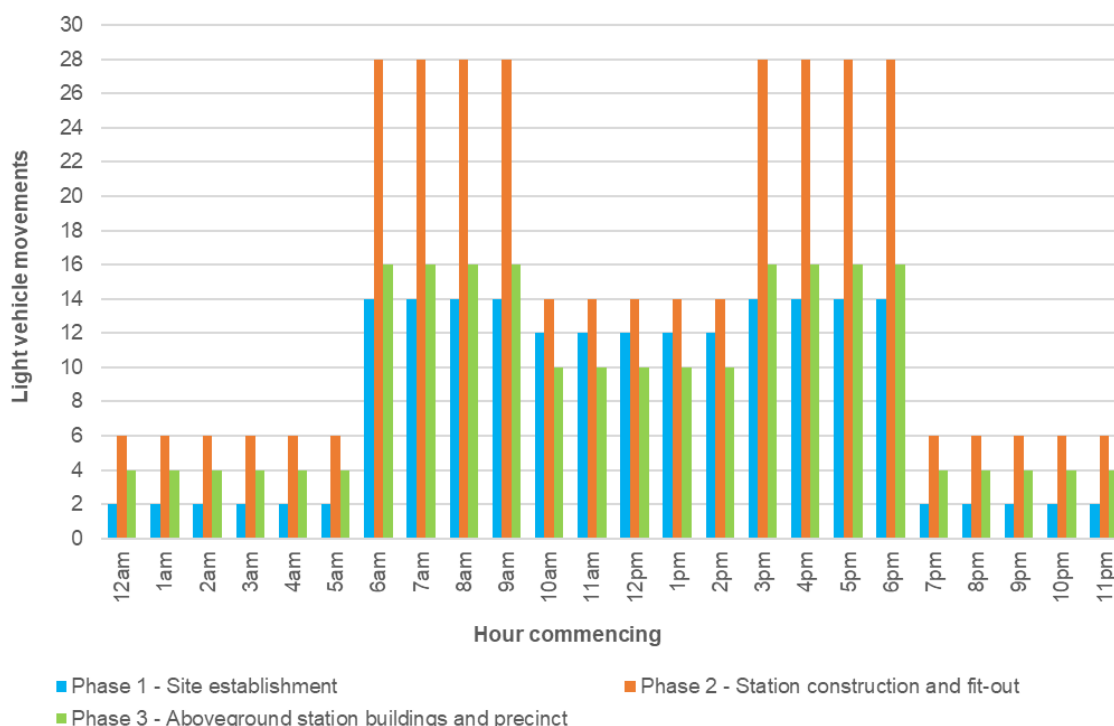


Figure 3-31: Hourly light vehicle movements (arrival and departure) at the North Strathfield metro station construction site

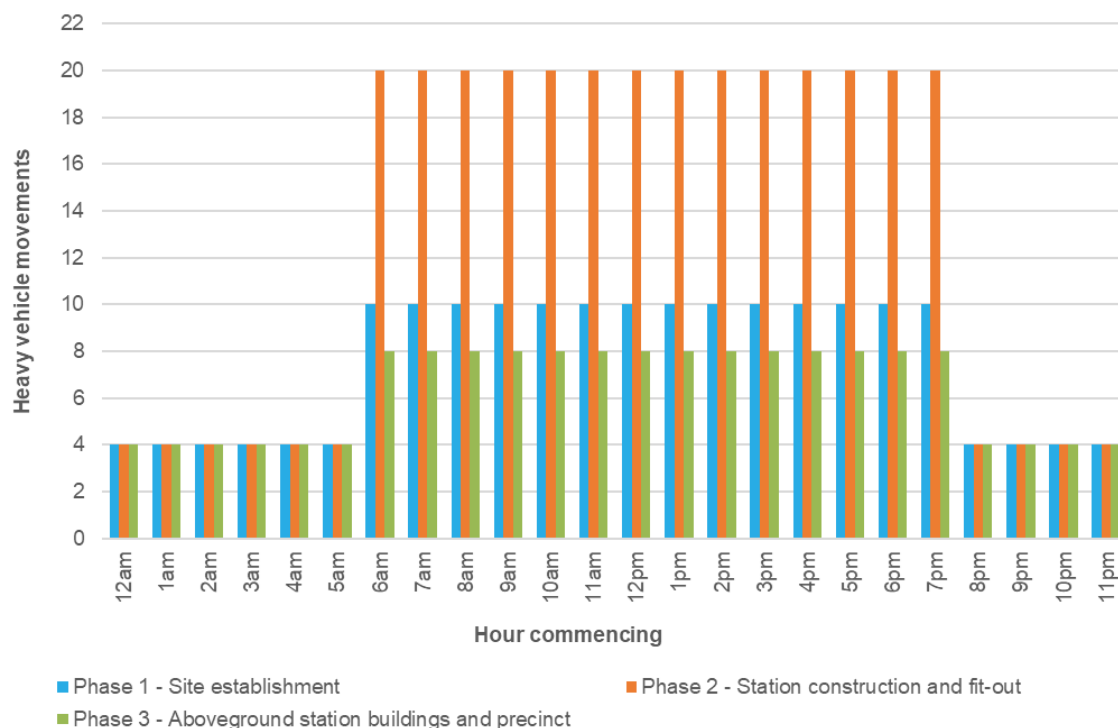


Figure 3-32: Hourly heavy vehicle movements (arrival and departure) at the North Strathfield metro station construction site

Table 3-20: Daily construction movements per day by phase – North Strathfield metro station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Phase 1 – Site establishment	194	180	374
Phase 2 – Station construction and fit-out	360	320	680
Phase 3 – Aboveground station buildings and precinct	222	152	374

(d) Impacts on the active transport network

The changes that will be implemented during the work carried out under the previous Sydney Metro West planning application would continue during construction of this proposal. This would include:

- Closure of the footpath on the western side of Queen Street between Wellbank Street and Pomeroy Street
- Provision of a raised zebra crossing on Beronga Street east of Queen Street

- The introduction of traffic signals and associated pedestrian crossings at the Queen Street / Wellbank Street intersection. These traffic signals would also be retained during operation of this proposal.

Access to the pedestrian footbridge on the southern end of the existing North Strathfield Station would be maintained during construction works. The access would be temporarily reconfigured so that connectivity to and from the station is maintained and to minimise disruption to pedestrian movements.

Precinct construction work around the North Strathfield metro station construction site such as new pedestrian crossings at the Queen Street / Waratah Street intersection, establishment of bus stops on Queen Street and new kiss and ride zones on Queen Street and Hamilton Street East may require short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Pomeroy Street and Underwood Road are designated on-road cycle environments of moderate difficulty. These roads would be used by construction vehicles travelling to and from the North Strathfield metro station construction site. Furthermore, construction vehicles would travel adjacent to shared paths along Concord Road and Pomeroy Street. Impacts on cyclists on these roads would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Roads forming part of the North Strathfield metro station construction vehicle route that are also used by buses include Concord Road and Underwood Road. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

The school bus stops on the western and eastern sides of Queen Street north of Wellbank Street that will be relocated during the work carried out under the previous Sydney Metro West planning application would continue to operate in their relocated position.

Works would be required within the rail corridor at and around the existing North Strathfield Station and would primarily be carried out during scheduled Sydney Trains rail possessions. Rail replacement bus services, which operate during the rail possessions, would be provided. Sydney Trains would be consulted with during detailed construction planning of the proposal, with works coordinated with scheduled Sydney Trains rail possessions where possible to minimise impacts on the operation of the rail network. In addition, there may be a need for works to be carried out outside of scheduled Sydney Trains rail possessions. Consultation would be carried out with Sydney Trains to minimise potential disruptions to rail services and so that customers receive advanced notification of the proposed works and information on alternative travel options.

(f) Impacts on parking and property access

The parking spaces that will be removed on Queen Street during the work carried out under the previous Sydney Metro West planning application would continue to be removed during construction of this proposal. These spaces would also be permanently removed for operation of this proposal. Similarly, 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. In addition, about 17 on-street parking spaces located on the eastern side of Queen Street between Wellbank Street and Pomeroy Street would also be removed during construction of the proposal. This parking removal would allow for two traffic lanes to be maintained on Queen Street. Most of these spaces would also be permanently removed for operation of this proposal.

To facilitate precinct construction work, there may be some short-term closures (for around a few months) of some on-street parking 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.

The combined removal of on-street parking spaces would have moderate impacts given that there is limited spare parking capacity on nearby streets that could accommodate the additional parking demand. Opportunities to mitigate on-street parking impacts would be explored in consultation with the City of Canada Bay Council during construction planning (refer to Chapter 4).

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-21.

During the morning peak hour (7.45am to 8.45am) and evening peak hour (4.45pm to 5.45pm) presented in this assessment, it is anticipated that the North Strathfield metro station construction site would generate a total of 58 light vehicle movements (29 light vehicles travelling to and from the construction site) and 38 heavy vehicle movements (19 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Queen Street / Beronga Street / Pomeroy Street during the morning and evening peak hours
- Pomeroy Street / George Street during the morning and evening peak hours
- Pomeroy Street / Ismay Street during the morning and evening peak hours
- Pomeroy Street / Underwood Road during the morning and evening peak hours
- Homebush Bay Drive / Underwood Road / Australia Avenue during the evening peak hour.

The performance of intersections along Pomeroy Street is due to high background traffic volumes on all approaches, in conjunction with the presence of parking lanes that restrict traffic to a single lane, resulting in increased average delays and all intersections operating over capacity.

The performance of the Homebush Bay Drive / Underwood Road / Australia Avenue intersection is due to high background traffic volumes on all approaches and the intersection operating as a roundabout where the worst movement is reported. This corresponds to the Underwood Road northbound movement.

Modelled intersection performance with construction traffic indicates that the Queen Street / Wellbank Street intersection would decrease from Level of Service B to C during the evening peak hour. This intersection would still operate with spare capacity with the addition of construction traffic.

All other intersections would perform at the same Level of Service compared to the scenario without construction traffic. Furthermore, intersections that would operate at Level of Service F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered minor and therefore mitigation measures are not required.

Table 3-21: Modelled intersection performance (2026) – North Strathfield metro station construction site

Intersection and peak hour	2026 without proposal				2026 with proposal			
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)
Concord Road / Wellbank Street (signalised)								
Morning	2,589	29	C	NB 60	2,640	29	C	NB 65
				EB 90				EB 90
				SB 100				SB 100

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	100				WB	100
Evening	2,827	37	C	NB	90	2,878	37	C	NB	100
				EB	55				EB	55
				SB	210				SB	210
				WB	105				WB	210
				WB	105				WB	105
Queen Street / Wellbank Street (signalised)										
Morning	1,272	25	B	NB	15	1,322	28	B	NB	15
				EB	-				EB	-
				SB	100				SB	115
				WB	105				WB	130
Evening	1,299	26	B	NB	15	1,349	30	C	NB	15
				EB	-				EB	-
				SB	105				SB	115
				WB	130				WB	155
Queen Street / Beronga Street / Pomeroy Street (roundabout)										
Morning	2,405	>100	F	NB	225	2,456	>100	F	NB	225
				EB	>500				EB	>500
				SB	210				SB	210
				WB	150				WB	155
Evening	2,305	77	F	NB	225	2,358	>100	F	NB	225
				EB	>500				EB	>500
				SB	25				SB	25
				WB	35				WB	35
Pomeroy Street / George Street (signalised)										
Morning	3,032	>100	F	NB	245	3,082	>100	F	NB	335
				EB	455				EB	>500
				SB	265				SB	295
				WB	120				WB	265
Evening	2,844	>100	F	NB	115	2,895	>100	F	NB	115
				EB	>500				EB	>500
				SB	200				SB	300
				WB	235				WB	445
Pomeroy Street / Ismay Avenue (roundabout)										
Morning	2,574	>100	F	NB	>500	2,624	>100	F	NB	>500
				EB	200				EB	200
				SB	-				SB	-
				WB	420				WB	>500
Evening	2,333	>100	F	NB	>500	2,383	>100	F	NB	>500
				EB	200				EB	200
				SB	-				SB	-
				WB	>500				WB	>500
Pomeroy Street / Underwood Road (signalised)										
Morning	2,843	>100	F	NB	350	2,894	>100	F	NB	350
				EB	15				EB	15

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	2,927	>100	F	SB	>500	2,978	>100	F	SB	>500
				WB	130				WB	130
				NB	105				NB	110
				EB	10				EB	10
				SB	>500				SB	>500
				WB	130				WB	130
Homebush Bay Drive / Underwood Road / Australia Avenue (roundabout)										
Morning	5,262	48	D	NB	90	5,313	48	D	NB	125
				EB	20				EB	20
				SB	55				SB	55
				WB	105				WB	105
Evening	5,714	>100	F	NB	>500	5,764	>100	F	NB	>500
				EB	15				EB	15
				SB	50				SB	50
				WB	215				WB	205

(h) **Construction impacts summary**

Figure 3-33 provides a summary of construction impacts on road network performance.

Figure 3-34 provides a summary of construction impacts on parking, access, public transport and active transport.



Figure 3-33: Road network performance summary – North Strathfield metro station construction site

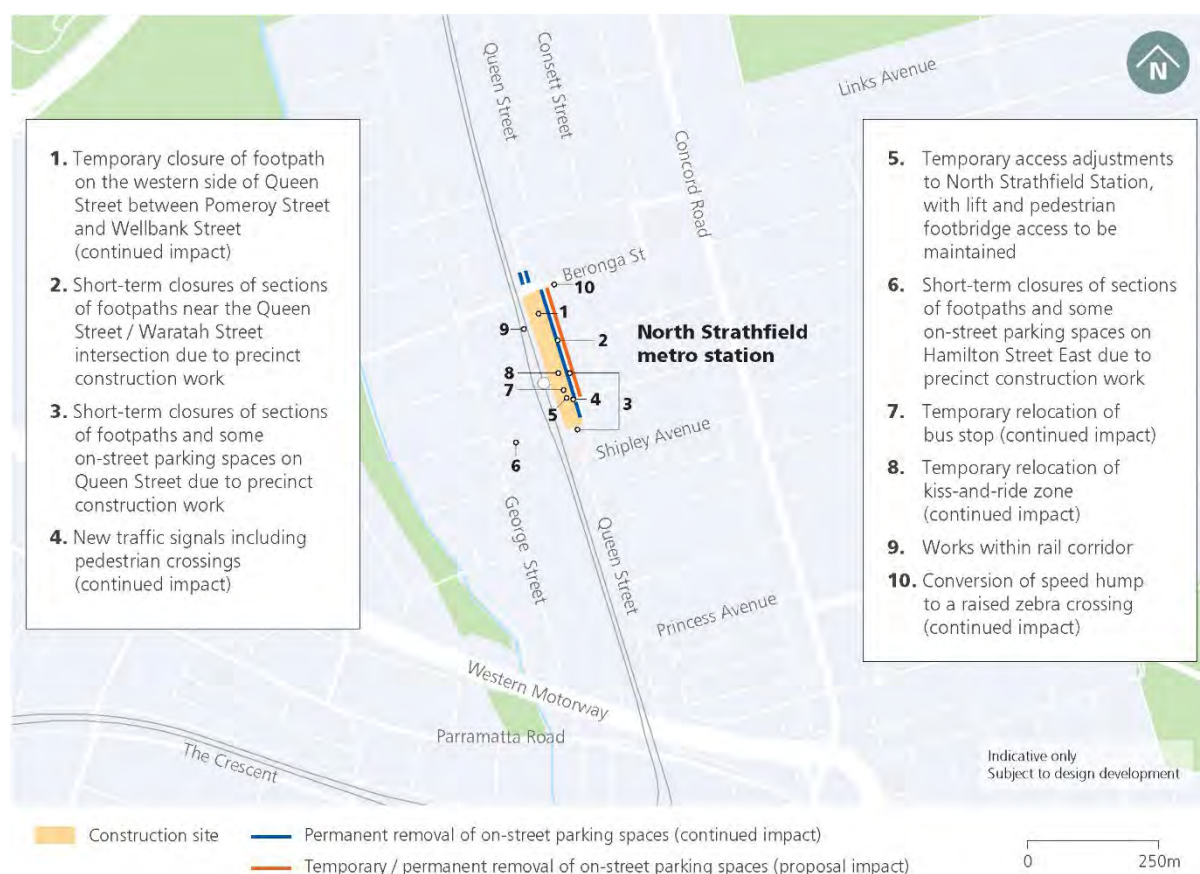


Figure 3-34: Parking, access, public transport and active transport construction impact summary – North Strathfield metro station construction site

3.11. Burwood North Station construction site

3.11.1. Baseline transport environment

(a) Active transport network

The Burwood North Station construction site is located along Parramatta Road, which is a developed corridor with businesses fronting both sides and high pedestrian activity in the vicinity of these businesses. Pedestrian activity is also high on Burwood Road between Parramatta Road, Burwood Park and the Burwood commercial area. Immediately surrounding the site, footpaths are also located on both sides of Burwood Road, Loftus Street and Esher Street. Given that Parramatta Road is a major corridor carrying high volumes of traffic throughout the day, north-south pedestrian crossing opportunities are generally limited to signalised intersections.

Signalised pedestrian crossings are provided on all approaches of the Parramatta Road / Burwood Road intersection, on two of the three approaches of the Parramatta Road / Shaftesbury Road intersection and on the north approach of the Parramatta Road / Broughton Street intersection. Pedestrians may also cross Parramatta Road near Broughton Street and Britannia Avenue via a pedestrian bridge. This bridge improves pedestrian safety at the intersection as it caters to vulnerable pedestrian user groups such as school children at St Mary's Catholic Primary School and Parish, and the elderly at St Mary's Villa Residential Aged Care facility. At the Parramatta Road / Loftus Street intersection, a pedestrian refuge island is provided on Loftus Street, allowing pedestrians to complete a staged crossing if required. There are no pedestrian facilities along Neichs Lane and Esher Lane.

The cycle network surrounding the Burwood North Station construction site is shown in Figure 3-35 and consists of on-road and off-road cycle routes. The Broughton Street bridge discussed above may also be used by cyclists. This bridge and the shared path along the southern side of Parramatta Road between the bridge and Grantham Street provide north-south connectivity to the regional cycle network via moderate and high difficulty on-road cycle routes in Burwood and Enfield towards the Cooks River cycleway. East-west connectivity is provided along Patterson Street, Gipps Street, Queens Road, Stanley Street and shared paths located within recreational areas, linking Burwood and Concord to the Inner West. Off-road shared paths are provided in St Lukes Park, St Lukes Oval and Queen Elizabeth Park.



Figure 3-35: Cycle network surrounding the Burwood North Station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Bicycle Routes (Burwood Council, 2021); Interim Bike Network Map (City of Canada Bay, 2019)

(b) Public transport network

There are no train stations located in the immediate surrounds of the Burwood North Station construction site. The nearest rail services are accessible from Burwood Station, located about 900 metres south of the site. Burwood Station is served by the T1 Western Line, T2 Inner West and Leppington Line and T9 Northern Line on the Sydney Trains network. These lines provide direct connections to Penrith, Richmond, Blacktown, Parramatta, Liverpool, Leppington, Strathfield, Epping, Sydney CBD, Chatswood and Hornsby.

Burwood and Concord are well served by buses, with 25 bus routes operated by Transdev NSW, Transit Systems, including NightRide bus routes which are operated by Sydney Buses and Hillsbus. The majority of these buses pass through or terminate near Burwood Station, allowing bus customers to transfer to suburban rail services.

Bus stops near Burwood Station are located about 600 metres south of the construction sites. Closer to the site, bus stops are located on Parramatta Road and Burwood Road. One bus stop located on the southern side of Parramatta Road between Burwood Road and Esher Street will be temporarily relocated during the work carried out under the previous Sydney Metro West planning application.

A bus route is also accessible on Crane Street, about 600 metres north of the construction site. The busiest roads for buses include Parramatta Road, Burwood Road, Railway Parade and local roads surrounding the Westfield Burwood shopping centre including Victoria Street, Wilga Street and Shaftesbury Road. Buses from Burwood and Concord provide connections to Liverpool, Parramatta, Strathfield, Macquarie Park, Chatswood, Sydney CBD, Hurstville, Rockdale and Sydney Airport.

On Demand bus services operated by Transit Systems are directly accessible from the site, connecting Burwood to Strathfield, North Strathfield, Sydney Olympic Park, Concord, Rhodes, Mortlake, Cabarita, Bayview Park, Five Dock and Canada Bay. The areas serviced are shown in Figure 3-21.

School buses also service the area, with 37 school bus routes.

Ferry services do not operate in close proximity to the Burwood North Station construction site.

The public transport network surrounding the Burwood North Station construction site is shown in Figure 3-36.

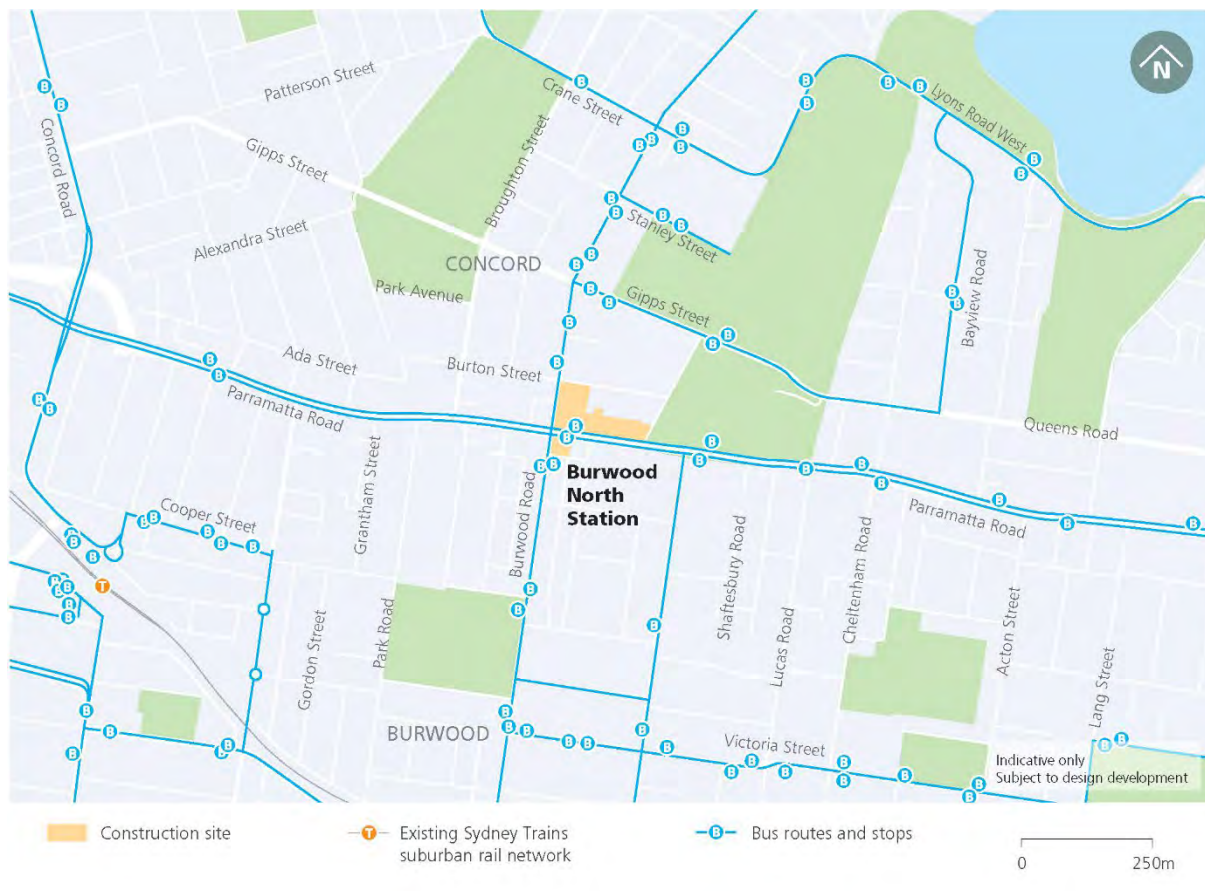


Figure 3-36: Public transport network surrounding the Burwood North Station construction site

Sources: Parramatta, Bankstown and Liverpool bus network map (Transdev NSW, 2021); Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

On-street parking is provided on both sides of most roads including Loftus Street, Burton Street, Broughton Street and Gipps Street east of Burwood Road. The majority of these on-street parking spaces do not have any time restrictions. West of Burwood Road, on-street parking is prohibited on both sides of Gipps Street during weekday peak periods to allow for two trafficable lanes in each direction. On-street parking spaces provided on Burwood Road close to Gipps Street are not time-restricted. Near Parramatta Road, parking is prohibited on both sides of Burwood Road during weekday peak periods, with time-restricted parking available outside of these hours.

On-street parking along Parramatta Road is generally not provided with clearways in operation seven days a week during daytime hours (6am to 7pm Monday to Friday, 8am to 8pm Saturday and Sunday), and no parking or no stopping zones along most sections of the corridor.

During the work carried out under the previous Sydney Metro West planning application, parking spaces will be temporarily removed at the following locations:

- About 22 on-street parking spaces on the southern side of Burton Street between Loftus Street and Burwood Road
- About seven on-street parking spaces on the western side of Loftus Street between Parramatta Road and Burton Street
- About two on-street parking spaces on the eastern side of Loftus Street near Burton Street
- About five on-street parking spaces on the eastern side of Burwood Road between Parramatta Road and Burton Street.

There are no kiss and ride, loading or taxi zones on roads immediately surrounding the Burwood North Station construction site.

(d) Traffic volumes and patterns

Parramatta Road is an arterial road that carries a high volume of traffic throughout the day, typically around 2,000 vehicles per hour in the peak direction during the morning and evening peak periods. An eastbound peak direction is evident during both peak periods. Gipps Street is also an arterial road that carries peak hour traffic volumes of up to 970 vehicles in the peak each direction. Burwood Road is a regional road between Parramatta Road and Crane Street and carries a moderate peak hour traffic volume of up to 590 vehicles in each direction.

Low peak volumes of about 20 vehicles per hour travel on Loftus Street, which is a local road, in the northbound direction. In the southbound direction, low volumes of about 130 and 90 vehicles per hour were recorded during the morning and evening peaks, respectively.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-22.

Table 3-22: Existing peak hour traffic volumes by direction (2021) – Burwood North Station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Parramatta Road west of Broughton Street	Eastbound	2,160	2,040
	Westbound	1,510	1,470
Parramatta Road west of Loftus Street	Eastbound	1,970	1,940
	Westbound	1,460	1,490
Gipps Street west of Loftus Street	Eastbound	960	830
	Westbound	710	970
Burwood Road south of Parramatta Road	Northbound	430	480
	Southbound	590	500
Loftus Street north of Parramatta Road	Northbound	20	20
	Southbound	130	90

Source: Traffic surveys from March 2021

(e) **Baseline intersection performance**

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Burwood North Station construction site is shown in Table 3-23.

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

- Gipps Street / Loftus Street during the morning and evening peak hours
- Gipps Street / Burwood Road during the evening peak hour.

Key points include:

- The existing performance of the Gipps Street / Loftus Street intersection during the morning and evening peak hours is due to this intersection being unsignalised where the worst movement is reported, which corresponds to vehicles turning right out of Loftus Street onto Gipps Street. Loftus Street is a minor road and therefore vehicles must give way to vehicles travelling on Gipps Street
- The existing performance of the Gipps Street / Burwood Road intersection during the evening peak hour is due to high through movement volumes Gipps Street, the presence of kerbside parking lanes and filtered right turns on the Burwood Road approaches which increases congestion at the intersection.

Table 3-23: Modelled peak hour baseline intersection performance (2021) – Burwood North Station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Burwood Road (signalised)					
Morning	5,071	27	B	NB	120
				EB	220
				SB	165
				WB	210
Evening	4,797	25	B	NB	170
				EB	150
				SB	160
				WB	210
Parramatta Road / Loftus Street (priority controlled)					
Morning	4,127	11	A	NB	-
				EB	<5
				SB	10
				WB	<5
Evening	3,822	8	A	NB	-
				EB	<5
				SB	<5
				WB	<5
Loftus Street / Burton Street (priority controlled)					
Morning	232	5	A	NB	<5
				EB	<5
				SB	<5
				WB	-
Evening	227	5	A	NB	<5
				EB	<5
				SB	<5
				WB	-
Burwood Road / Burton Street (roundabout)					
Morning	1,188	22	B	NB	15
				EB	20
				SB	55
				WB	<5
Evening	1,086	11	A	NB	20
				EB	5
				SB	20
				WB	<5
Gipps Street / Loftus Street (priority controlled)					
Morning	1,933	>100	F	NB	10
				EB	35
				SB	-
				WB	<5
Evening	1,931	94	F	NB	5
				EB	50
				SB	-
				WB	<5

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Gipps Street / Burwood Road (signalised)					
Morning	2,646	24	B	NB	80
				EB	160
				SB	115
				WB	100
Evening	2,611	69	E	NB	135
				EB	150
				SB	125
				WB	365
Gipps Street / Broughton Street (signalised)					
Morning	2,734	45	D	NB	110
				EB	190
				SB	160
				WB	150
Evening	2,664	46	D	NB	155
				EB	90
				SB	75
				WB	325
Concord Road / Patterson Street (signalised)					
Morning	3,502	55	D	NB	75
				EB	-
				SB	460
				WB	155
Evening	3,537	52	D	NB	160
				EB	-
				SB	400
				WB	190

3.11.2. Construction impact assessment

(a) Construction site location and access

The Burwood North Station construction site would comprise two separate sites, a northern site and a southern site on either side of Parramatta Road. The northern site would be located on Parramatta Road between Burwood Road and Loftus Street, and the southern site would be located on the corner of Parramatta Road and Burwood Road.

Roads forming part of the primary construction vehicle route for the northern site include Parramatta Road, Loftus Street, Burton Street, Burwood Road, Gipps Street, Patterson Street, Concord Road and M4 Western Motorway as shown in Figure 3-37. Primary access to the site would be left-in from Burton Street for heavy vehicles excluding semi-trailers and left-in from Parramatta Road for all vehicles. Primary egress from the site would be left-out to Loftus Street, Burwood Road or Burton Street for heavy vehicles excluding semi-trailers and left-out to Parramatta Road for all vehicles.

Roads forming part of the primary construction vehicle route for the southern site include Parramatta Road, Loftus Street, Burton Street and Burwood Road as shown in Figure 3-38. Roads forming part of the secondary construction vehicle route include Burwood Road south of the southern construction site, Milton Street and Shaftesbury Road. Primary access to the site would be left-in from Burwood Road and egress from the site would be left-out to Parramatta Road.

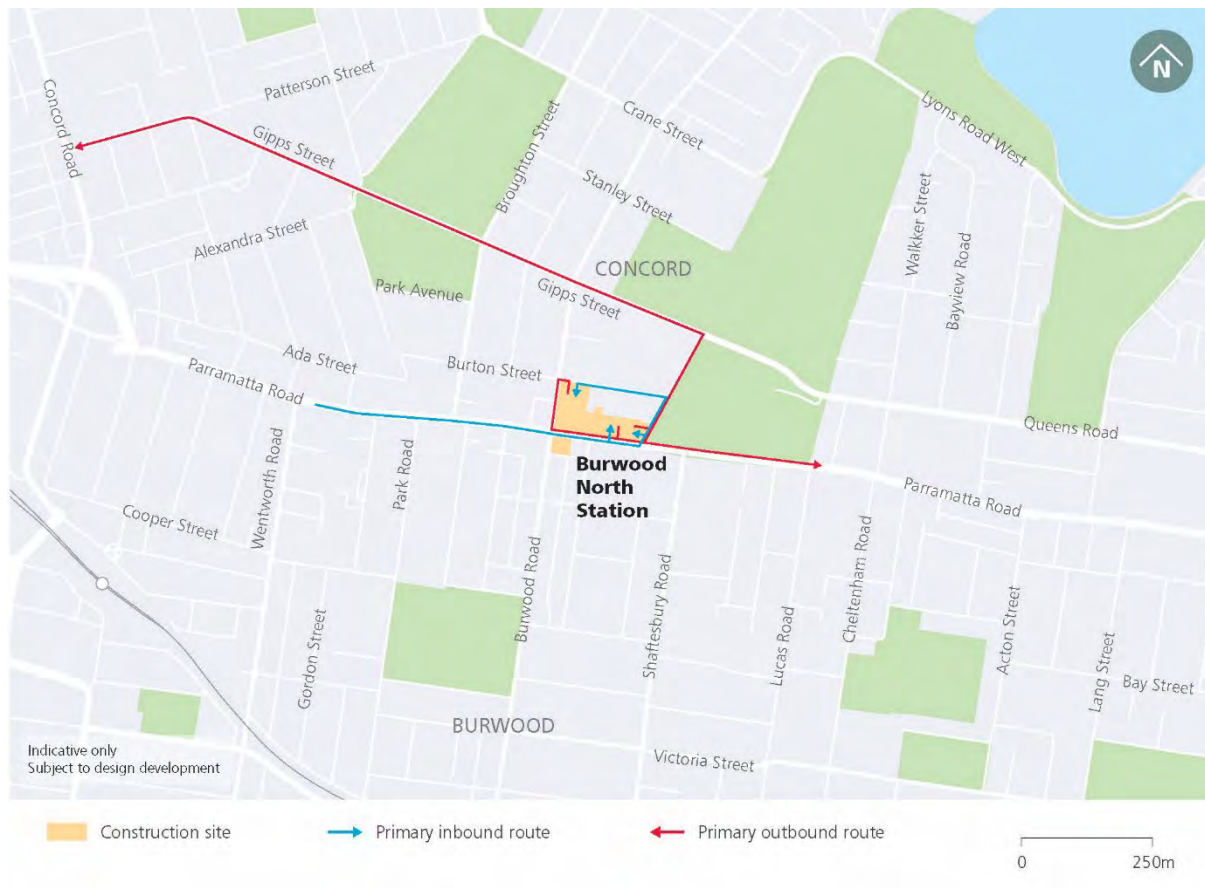


Figure 3-37: Burwood North Station northern construction site indicative construction vehicle routes



Figure 3-38: Burwood North Station southern construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Burwood North Station construction site 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 Station 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 provision for adjacent station development
- Access for tunnel fit-out and rail systems work
- Finishing work, testing and commissioning.

(c) Construction vehicle movements

Construction vehicles would access and egress the Burwood North Station northern and southern construction sites during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the sites per hour during the various phase of construction are shown in Figure 3-39 and Figure 3-40 for the northern construction site and Figure 3-41 and Figure 3-42 for the southern construction site. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-24.

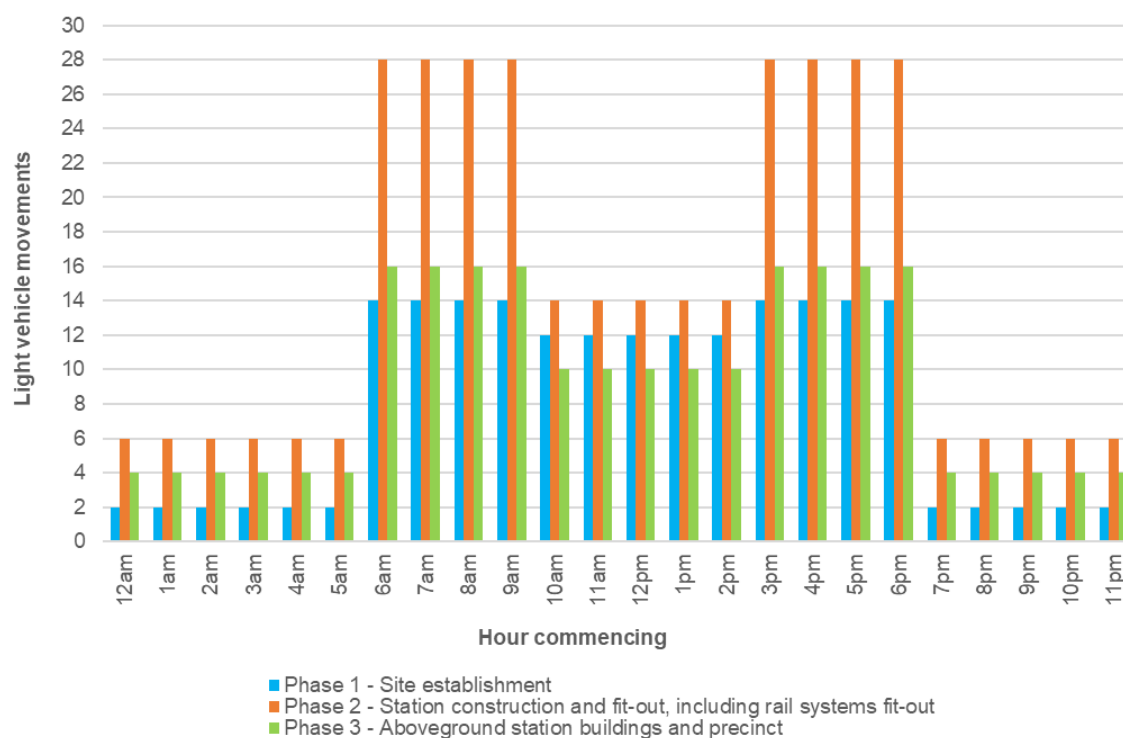


Figure 3-39: Hourly light vehicle movements (arrival and departure) at the Burwood North Station northern construction site

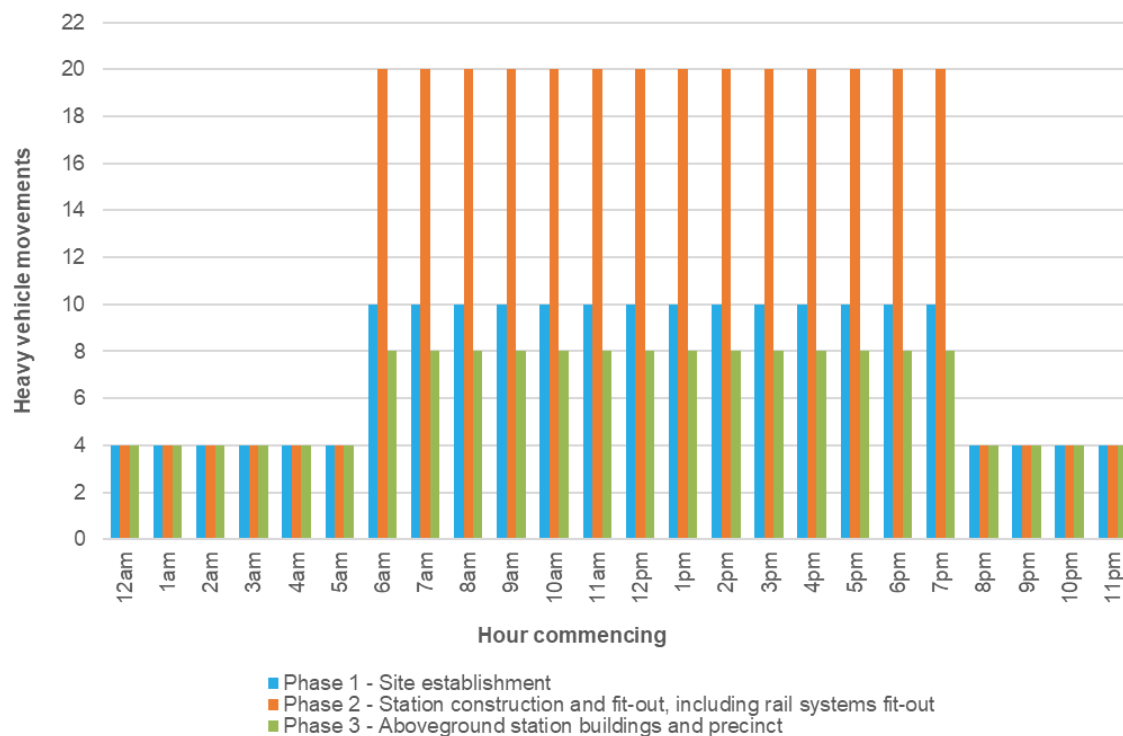


Figure 3-40: Hourly heavy vehicle movements (arrival and departure) at the Burwood North Station northern construction site

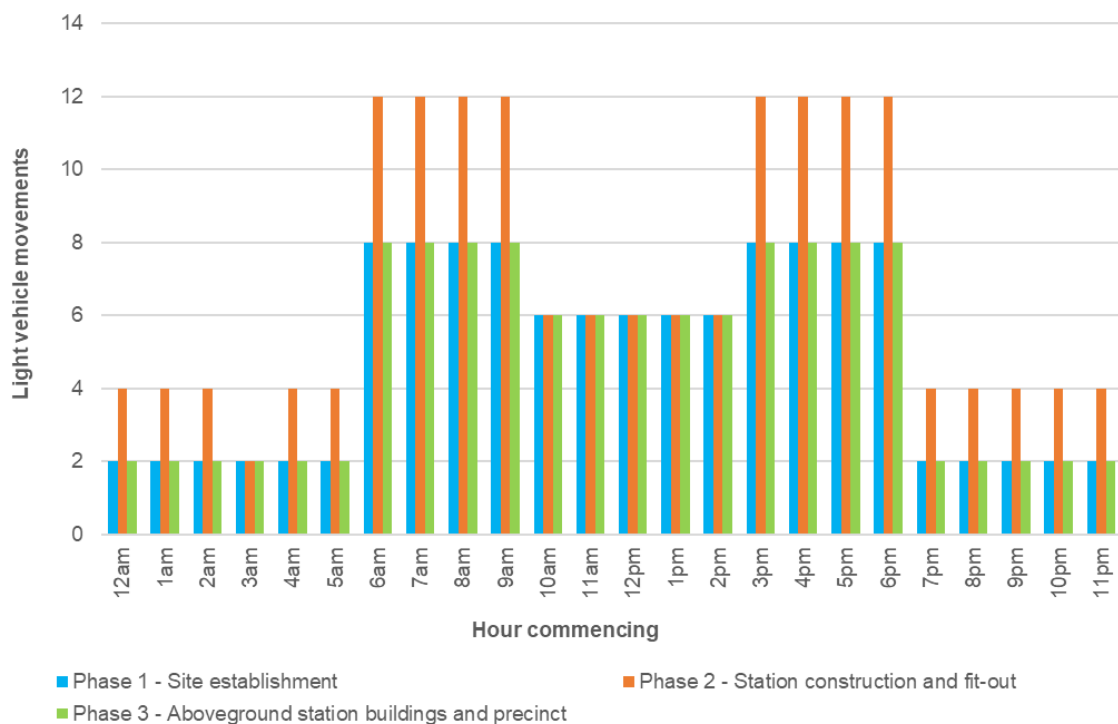


Figure 3-41: Hourly light vehicle movements (arrival and departure) at the Burwood North Station southern construction site

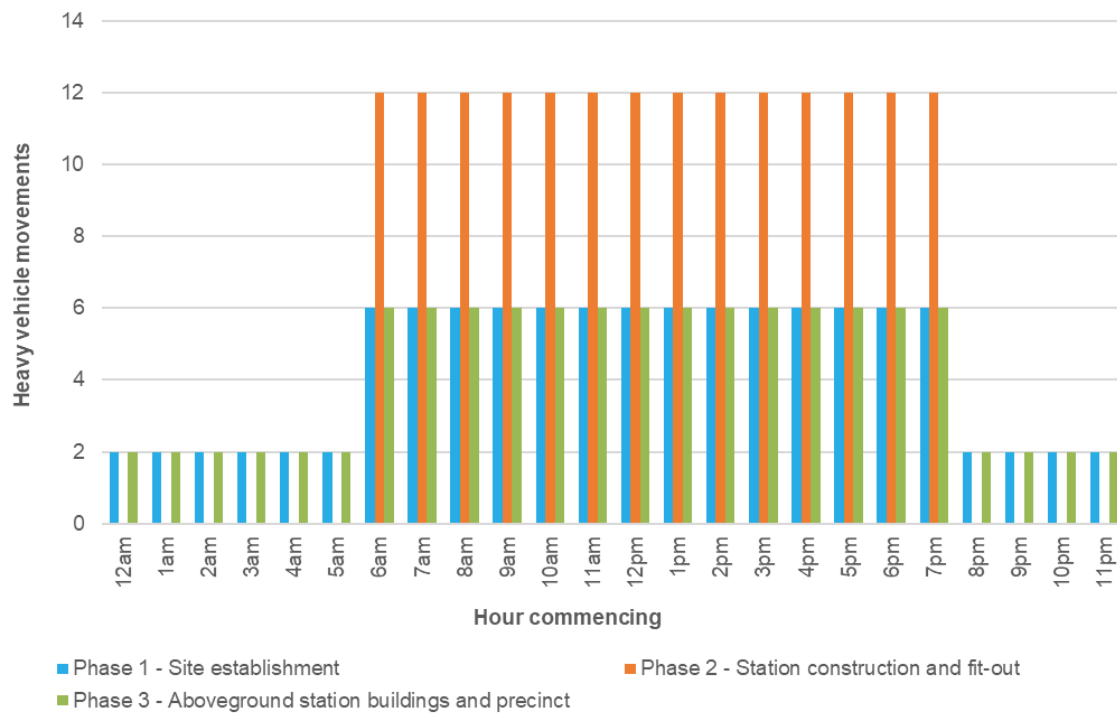


Figure 3-42: Hourly heavy vehicle movements (arrival and departure) at the Burwood North Station southern construction site

Table 3-24: Daily construction movements per day by phase – Burwood North Station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Burwood North Station northern construction site			
Phase 1 – Site establishment	194	180	374
Phase 2 – Station construction and fit-out, including rail systems fit-out	360	320	680
Phase 3 – Aboveground station buildings and precinct	222	152	374
Burwood North Station southern construction site			
Phase 1 – Site establishment	116	104	220
Phase 2 – Station construction and fit-out	168	168	336
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

Existing pedestrian and cycle routes surrounding the Burwood North Station construction site would be maintained throughout construction.

Precinct construction work around the Burwood North Station construction site such as the establishment of new bus stops, a new taxi zone and kiss and ride zones on Burwood Road, installation of traffic signals including pedestrian crossings at the Burwood Road / Burton Street intersection, and a new kiss and ride zone on Burton Street may require short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

Patterson Street and Gipps Street are designated on-road cycle environments of moderate and high difficulty. These roads would be used by construction vehicles travelling from the Burwood North Station northern construction site. Furthermore, construction vehicles would travel adjacent to shared paths along Parramatta Road and Concord Road. Impacts on cyclists on these roads would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Section 4 would be implemented during construction.

(e) Impacts on the public transport network

The bus stop on Parramatta Road 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. Roads forming part of the Burwood North Station construction vehicle route that are also used by buses include Parramatta Road, Burwood Road and Gipps Street. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

(f) Impacts on parking and property access

The parking spaces removed on Loftus Street, Burton Street and Burwood Road as part of work carried out under the previous Sydney Metro West planning application would continue to be removed during construction of this proposal. The parking spaces on Loftus Street, Burwood Road and about five of the spaces on Burton Street would also be permanently removed for operation for this proposal.

To facilitate precinct construction work, there may be short-term closures (for around a few months) of some on-street parking spaces on Burwood Road to establish new bus stops and on Burton Street to establish a new kiss and ride zone. Impacts are anticipated to be minor given that these parking spaces would be removed for a short duration. Opportunities to mitigate impacts on on-street parking would be explored in consultation with the City of Canada Bay during construction planning (refer to Chapter 4).

No impacts on property access are anticipated during construction.

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-25.

During the morning peak hour (7.45am to 8.45am) and evening peak hour (5.15pm to 6.15pm) presented in this assessment, it is anticipated that the Burwood North Station northern construction site would generate a total of 58 light vehicle movements (29 light vehicles travelling to and from the construction site) and 38 heavy vehicle movements (19 heavy vehicles travelling to and from the construction site), and the Burwood North Station southern construction site would generate a total of 28 light vehicle movements (14 light vehicles travelling to and from the construction site) and 24 heavy vehicle movements (12 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Gipps Street / Loftus Street during the morning and evening peak hours
- Gipps Street / Burwood Street during the morning and evening peak hours
- Gipps Street / Broughton Street during the morning and evening peak hours
- Concord Road / Patterson Street during the morning and evening peak hours.

The performance of intersections along Gipps Street is due to high background traffic volumes on all approaches, in conjunction with the presence of parking lanes on Broughton Street and Burwood Road that restrict traffic to a single lane, resulting in increased average delays and all intersections operating over capacity.

The performance of the Concord Road / Patterson Street intersection is due to high background traffic volumes on all approaches resulting in the intersection operating over capacity.

Modelled intersection performance with construction traffic indicates that all intersections would perform at the same Level of Service compared to the scenario without construction traffic. Furthermore, intersections that would operate at Level of Service E or F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered minor and therefore mitigation measures are not required.

Table 3-25: Modelled intersection performance (2026) – Burwood North Station construction site

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Burwood Road (signalised)										
Morning	5,526	31	C	NB	130	5,646	34	C	NB	125
				EB	280				EB	315
				SB	165				SB	165
				WB	255				WB	270
Evening	5,213	31	C	NB	180	5,333	32	C	NB	180
				EB	175				EB	190
				SB	165				SB	165
				WB	270				WB	285
Parramatta Road / Loftus Street (priority controlled)										
Morning	4,423	11	A	NB	-	4,500	11	A	NB	-
				EB	<5				EB	<5
				SB	10				SB	10
				WB	<5				WB	<5
Evening	4,117	9	A	NB	-	4,194	9	A	NB	-
				EB	<5				EB	<5
				SB	5				SB	5
				WB	<5				WB	<5
Loftus Street / Burton Street (priority controlled)										
Morning	256	5	A	NB	<5	286	6	A	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	-				WB	-
Evening	272	5	A	NB	<5	302	5	A	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	-				WB	-
Burwood Road / Burton Street (roundabout)										
Morning	1,275	36	C	NB	15	1,289	36	C	NB	15
				EB	25				EB	25
				SB	95				SB	95
				WB	<5				WB	5
Evening	1,263	14	A	NB	25	1,278	14	A	NB	25
				EB	10				EB	10
				SB	35				SB	45
				WB	<5				WB	5
Gipps Street / Loftus Street (priority controlled)										
Morning	2,358	>100	F	NB	75	2,374	>100	F	NB	75
				EB	100				EB	100
				SB	-				SB	-
				WB	<5				WB	<5

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	2,283	>100	F	NB	15	2,299	>100	F	NB	15
				EB	85				EB	85
				SB	-				SB	-
				WB	<5				WB	<5
Gipps Street / Burwood Road (signalised)										
Morning	3,005	64	E	NB	140	3,021	64	E	NB	140
				EB	195				EB	195
				SB	455				SB	455
				WB	120				WB	125
Evening	3,020	>100	F	NB	215	3,036	>100	F	NB	215
				EB	225				EB	225
				SB	180				SB	180
				WB	>500				WB	>500
Gipps Street / Broughton Street (signalised)										
Morning	2,964	71	F	NB	265	2,980	76	F	NB	290
				EB	305				EB	305
				SB	110				SB	110
				WB	180				WB	190
Evening	3,068	68	E	NB	330	3,084	67	E	NB	330
				EB	105				EB	105
				SB	125				SB	125
				WB	325				WB	325
Concord Road / Patterson Street (signalised)										
Morning	3,792	86	F	NB	85	3,807	86	F	NB	85
				EB	-				EB	-
				SB	>500				SB	>500
				WB	230				WB	230
Evening	3,802	72	F	NB	215	3,818	71	F	NB	215
				EB	-				EB	-
				SB	495				SB	495
				WB	245				WB	245

(h) Construction impacts summary

Figure 3-43 provides a summary of construction impacts on road network performance. Figure 3-44 provides a summary of construction impacts on parking, access, public transport and active transport.



Figure 3-43: Road network performance summary – Burwood North Station construction site

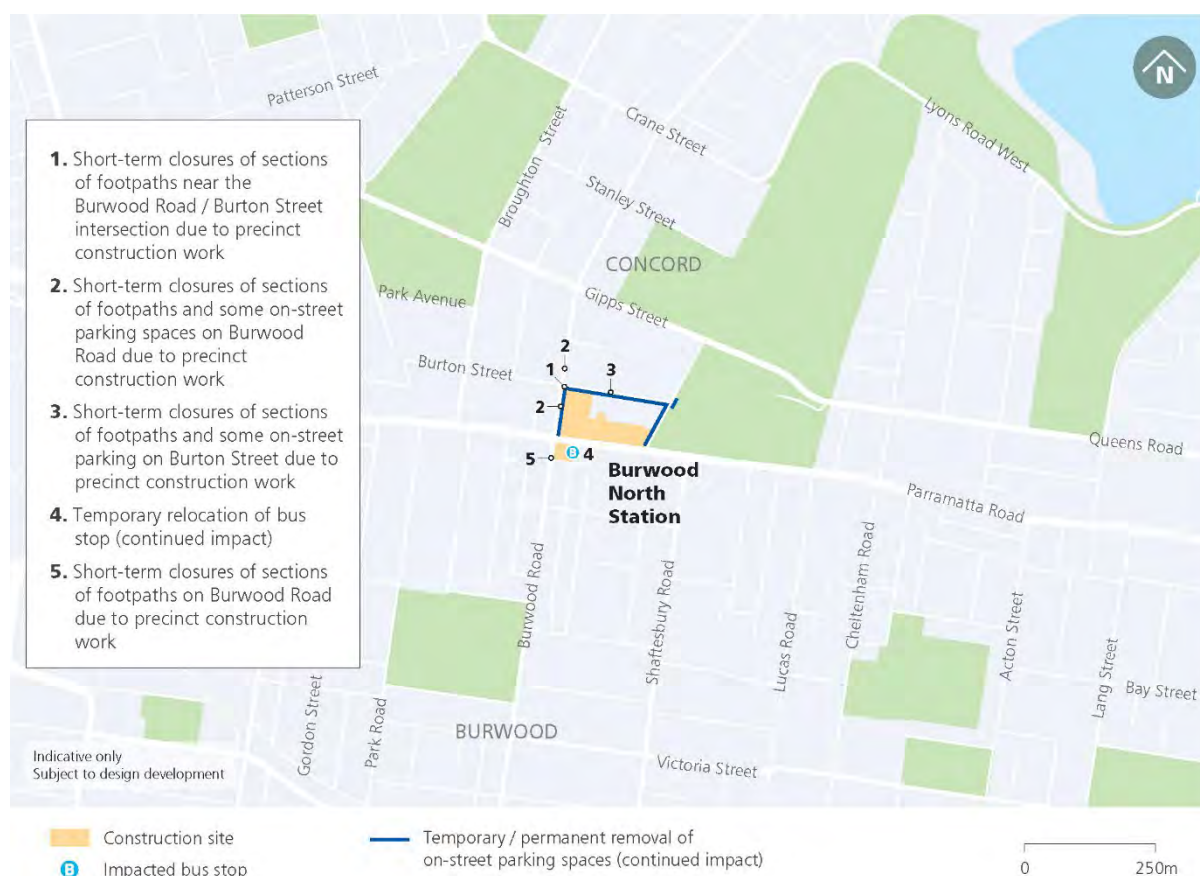


Figure 3-44: Parking, access, public transport and active transport construction impact summary – Burwood North Station construction site

3.12. Five Dock Station construction site

3.12.1. Baseline transport environment

(a) Active transport network

Footpaths are provided along both sides of all roads in the vicinity of the Five Dock Station construction site. Five Dock is a well-established local centre with numerous businesses fronting Great North Road, which is also a north-south pedestrian desire line. Signalised pedestrian crossings are provided on all approaches of the Great North Road / Ramsay Road / First Avenue, Great North Road / Garfield Street and Great North Road / Lyons Road intersections, and on three of the four approaches of the Great North Road / Queens Road / Fairlight Street intersection. Towards the town centre and near the proposed station location, east-west movements across Great North Road are also facilitated via a signalised midblock crossing in front of Fred Kelly Place, and a raised zebra crossing near Henry Street.

East of Great North Road and immediately surrounding the construction site, there are no controlled pedestrian crossings on Second Avenue and Waterview Street. Similarly, west of Great North Road, there are no controlled pedestrian crossings on East Street and West Street. There is a cul de sac at the southern end of East Street which is also contiguous with the pedestrian only area around Fred Kelly Place and Five Dock Library. Barnstaple Road, Second Avenue and First Avenue provide east-west connections between the town centre and Five Dock Park.

The cycle network surrounding the Five Dock Station construction site is shown in Figure 3-45 and consists primarily of moderate difficulty on-road cycle routes. These roads include Lyons Road West, Henry Street, Barnstaple Road, First Avenue and Queens Road, serving local cycle trips and providing connectivity to the wider cycle network towards Concord and Strathfield in the west, and the Inner West towards the east. Provision of off-road cycle paths is minimal and limited to short cycle paths near two roundabouts on Lyons Road West, and a shared path along the southern side of Iron Cove Creek between Dobroyd Parade and Wolseley Street.



Figure 3-45: Cycle network surrounding the Five Dock Station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Interim Bike Network Map (City of Canada Bay, 2019)

(b) Public transport network

The rail and light rail networks are not located in close proximity to the Five Dock Station construction site. The nearest train stations are located more than two kilometres away at either Croydon or Ashfield. The nearest light rail stops – Marion and Hawthorne – are also located more than two kilometres away in Leichhardt.

Bus stops in Five Dock are located on Great North Road, Lyons Road, Lyons Road West, Garfield Street, Harris Road, First Avenue, Ingham Avenue, Ramsay Road and Parramatta Road. There are 16 bus routes serving the area including four NightRide bus routes accessible on Parramatta Road. All bus routes are operated by Transit Systems, except for NightRide bus routes which are operated by Hillsbus and Sydney Buses. The bus routes provide connections to Abbotsford, Drummoyne, Sydney CBD, Hurlstone Park, Hurstville and Burwood.

On Demand bus services operated by Transit Systems are directly accessible from the site, connecting Five Dock to Canada Bay, Burwood, Strathfield, North Strathfield, Sydney Olympic Park, Concord, Rhodes, Mortlake, Cabarita and Bayview Park. The areas serviced are shown in Figure 3-21.

School buses also service the area, with 46 school bus routes.

Ferry services do not operate in close proximity to the Five Dock Station construction site.

The public transport network surrounding the Five Dock Station construction site is shown in Figure 3-46.

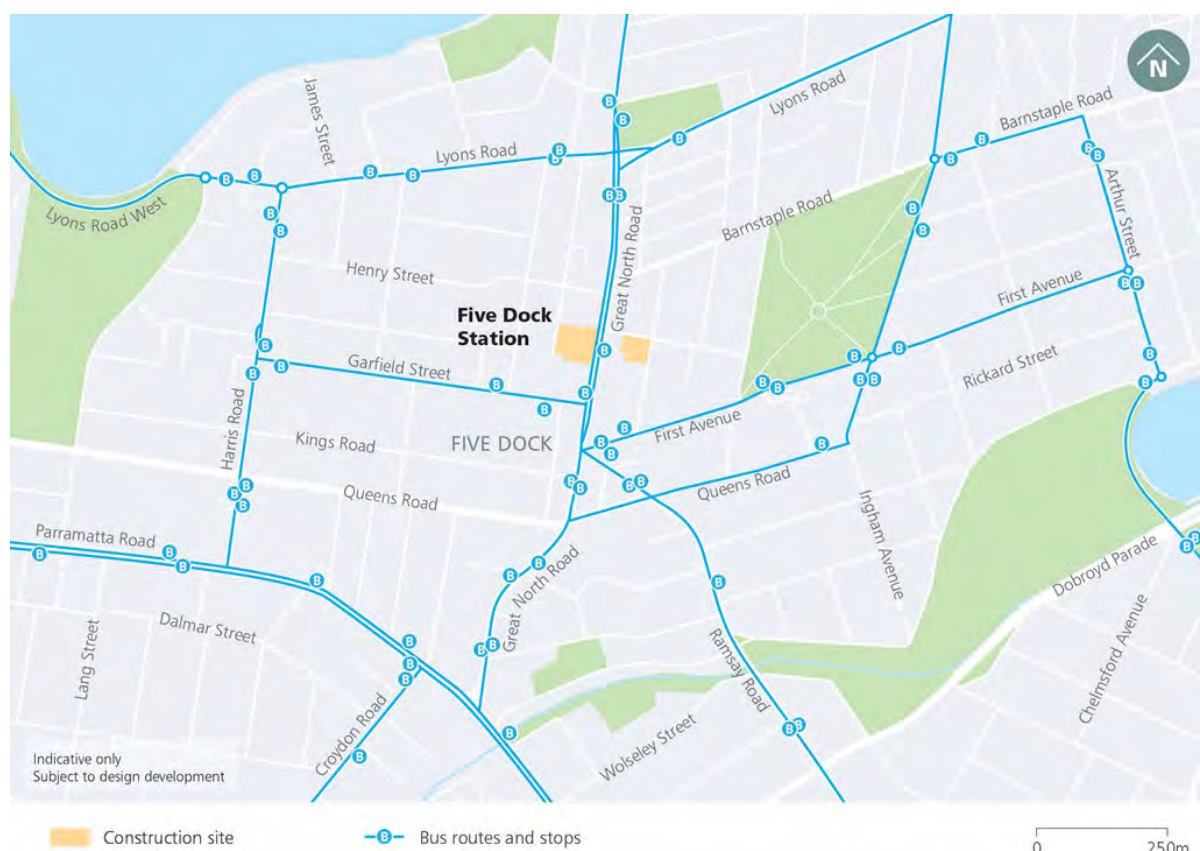


Figure 3-46: Public transport network surrounding the Five Dock Station construction site

Source: Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

On-street parking is provided on both sides of Great North Road, with time-restricted parking near the Five Dock town centre between Barnstaple Road and Queens Road. On-street parking is also available on both sides of local and collector roads such as First Avenue, Waterview Street, Second Avenue, East Street, Henry Street and Garfield Street, consisting of time-restricted and unrestricted spaces.

During the work carried out under the previous Sydney Metro West planning application, parking spaces will be temporarily removed at the following locations:

- About 12 on-street parking spaces on the western side of Great North Road
- About five on-street parking spaces on the western side of Waterview Street
- About five on-street parking spaces on the southern side of Second Avenue.

A loading zone is located on the northern side of Henry Street near Great North Road and a mail zone is located on the northern side of Garfield Street near Great North Road. There are no kiss and ride zones on roads immediately surrounding the Five Dock Station construction site.

(d) Traffic volumes and patterns

Parramatta Road is an arterial road that carries a high volume of traffic of up to 1,940 vehicles in the peak direction. An eastbound peak direction is evident during both peak periods. Near Great North Road, an eastbound peak direction is evident, with eastbound volumes between 180 and 620 vehicles higher than westbound volumes during both peak hours. Lyons Road is an arterial road that exhibits an eastbound morning peak hour and a westbound evening peak hour, with peak direction volumes of up to 1,090 vehicles per hour.

Lower traffic volumes are experienced on Great North Road given that traffic is often constrained to one lane in each direction. During peak periods, Great North Road carries traffic volumes between 520 and 640 vehicles per hour. First Avenue, which is accessible from Great North Road, is a collector road that carries higher traffic volumes in the eastbound direction during the morning and evening peak hours of up to 380 vehicles.

Local roads such as Second Avenue and Waterview Street carry low traffic volumes of about 110 vehicles or less.

Road network changes as part of work carried out under the previous Sydney Metro West planning application have been incorporated into the construction traffic modelling assessment in Section 3.12.2 and include:

- Temporary conversion of Waterview Street from two-way operation to one-way operation in the northbound direction from north of the Five Dock car park to Second Avenue
- Temporary conversion of Second Avenue from two-way operation to one-way operation in the westbound direction between Waterview Street and Great North Road.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-26.

Table 3-26: Existing peak hour traffic volumes by direction (2021) – Five Dock Station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Lyons Road east of Great North Road	Eastbound	980	840
	Westbound	830	1,090
Parramatta Road west of Great North Road	Eastbound	1,940	1,760
	Westbound	1,320	1,550
Parramatta Road east of Great North Road	Eastbound	1,930	1,830
	Westbound	1,490	1,650
First Avenue east of Great North Road	Eastbound	380	310
	Westbound	150	140
Second Avenue east of Great North Road	Eastbound	110	90
	Westbound	60	70

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Great North Road south of Lyons Road	Northbound	520	620
	Southbound	550	580
Great North Road north of Garfield Street	Northbound	540	620
	Southbound	550	640
Waterview Street north of First Avenue	Northbound	90	100
	Southbound	50	90

Source: Traffic surveys from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Five Dock Station construction site is shown in Table 3-27.

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

- Great North Road / Ramsay Road / First Avenue during the evening peak hour
- Great North Road / Lyons Road West / Lyons Road during the morning and evening peak hours.

Key points include:

- The existing performance of the Great North Road / Ramsay Road / First Avenue intersection during the evening peak hour is due to split signal phasing on the Ramsay Road and First Avenue approaches which reduce the efficiency of the intersection
- The existing performance of the Great North Road / Lyons Road West / Lyons Road intersection during the morning and evening peak hours is due to high through movement volumes on Lyons Road and split signal phasing on the Great North Road approaches which reduce the efficiency of the intersection.

Table 3-27: Modelled peak hour baseline intersection performance (2021) – Five Dock Station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Great North Road (signalised)					
Morning	4,464	53	D	NB	-
				EB	490
				SB	105
				WB	205

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	4,160	27	B	NB	-
				EB	255
				SB	95
				WB	145
Great North Road / Queens Road / Fairlight Street (signalised)					
Morning	2,369	34	C	NB	130
				EB	80
				SB	160
				WB	120
Evening	2,226	30	C	NB	110
				EB	100
				SB	145
				WB	130
Great North Road / Ramsay Road / First Avenue (signalised)					
Morning	1,657	33	C	NB	155
				EB	-
				SB	90
				WB ¹	85
				WB ²	45
Evening	1,744	64	E	NB	145
				EB	-
				SB	90
				WB ¹	275
				WB ²	45
Waterview Street / First Avenue (priority controlled)					
Morning	636	8	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Evening	591	7	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Waterview Street / Second Avenue (priority controlled)					
Morning	241	10	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Evening	224	8	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Great North Road / Garfield Street (signalised)					
Morning	1,451	25	B	NB	90
				EB	65
				SB	80
				WB	-

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,617	24	B	NB	90
				EB	55
				SB	80
				WB	-
Great North Road / Second Avenue (priority controlled)					
Morning	1,262	16	B	NB	10
				EB	-
				SB	105
				WB	<5
Evening	1,436	18	B	NB	10
				EB	-
				SB	315
				WB	25
Great North Road / Lyons Road West / Lyons Road (signalised)					
Morning	3,283	62	E	NB	150
				EB	200
				SB	200
				WB	220
Evening	3,521	88	F	NB	300
				EB	215
				SB	155
				WB	>500

¹Ramsay Road WB approach

²First Avenue WB approach

3.12.2. Construction impact assessment

(a) Construction site location and access

The Five Dock Station construction site would comprise two separate sites, a western site and an eastern site on either side of Great North Road. The Five Dock Station western construction site would be located between Great North Road and East Street to the north of Fred Kelly Place. The Five Dock Station eastern construction site would be located on the corner of Waterview Street and Second Avenue.

Roads forming part of the primary construction vehicle route for the Five Dock Station western construction site include Parramatta Road, Great North Road and Lyons Road as shown in Figure 3-47. Roads forming part of the secondary construction vehicle route include Lyons Road West and Harris Road. Primary site access would be left-in, left-out via Great North Road.

Roads forming part of the primary construction vehicle route for the Five Dock Station eastern construction site include Parramatta Road, Great North Road, First Avenue, Waterview Street and Second Avenue as shown in Figure 3-47. Roads forming part of the secondary construction vehicle route include Waterview Street north of the eastern construction site, Barnstaple Road, Ingham Avenue, Lyons Road west of Great North Road and Harris Road. Primary access to the site would be left-in from Waterview Street and egress from the site would be left-out to Waterview Street and Second Avenue.



Figure 3-47: Five Dock Station construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Burwood North Station construction site 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.

(c) Construction vehicle movements

Construction vehicles would access and egress the Five Dock Station western and eastern construction sites during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the sites per hour during the various phase of construction are shown in Figure 3-48 and Figure 3-49 for the western construction site and Figure 3-50 and Figure 3-51 for the eastern construction site. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-28.

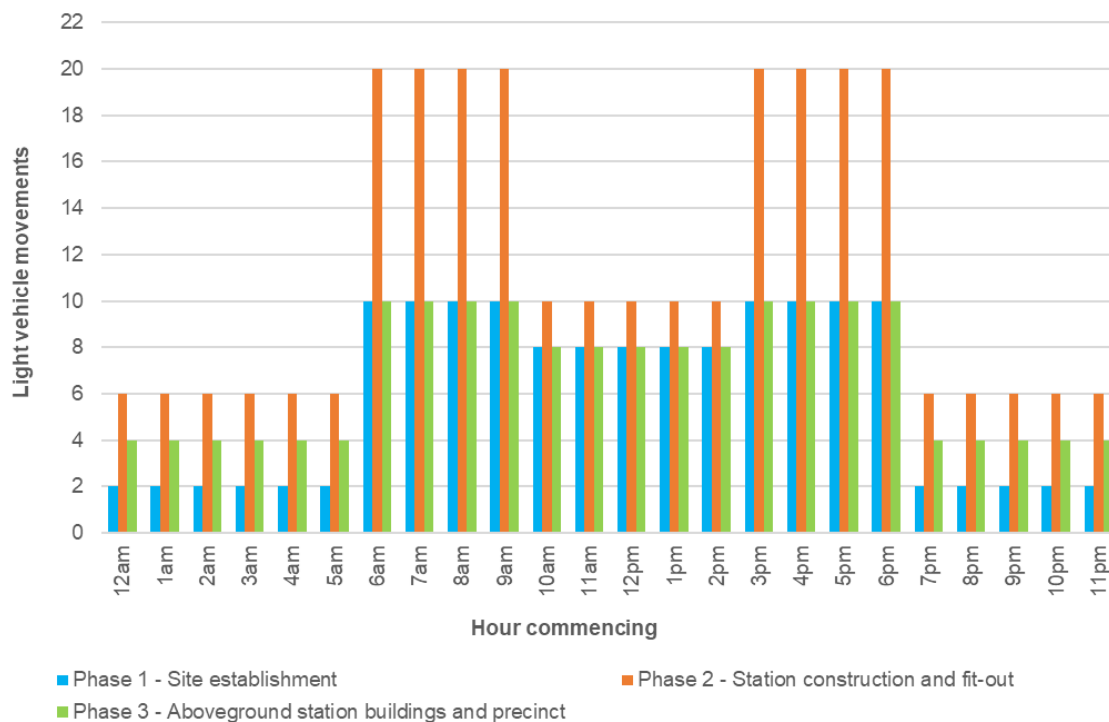


Figure 3-48: Hourly light vehicle movements (arrival and departure) at the Five Dock Station western construction site

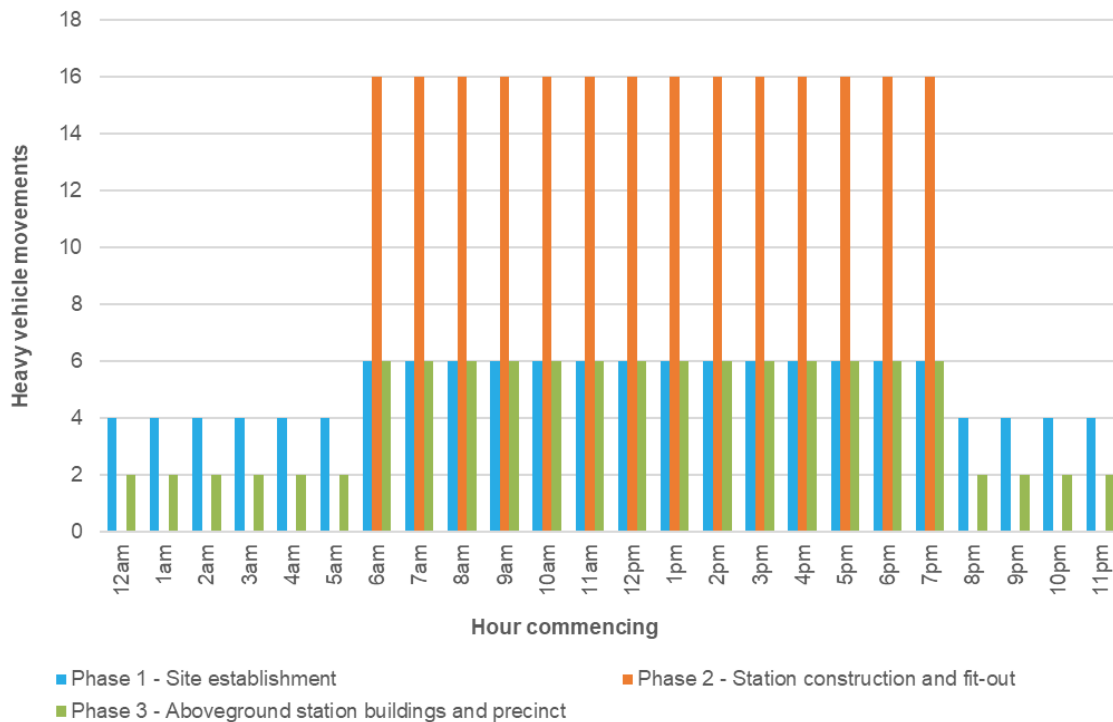


Figure 3-49: Hourly heavy vehicle movements (arrival and departure) at the Five Dock Station western construction site

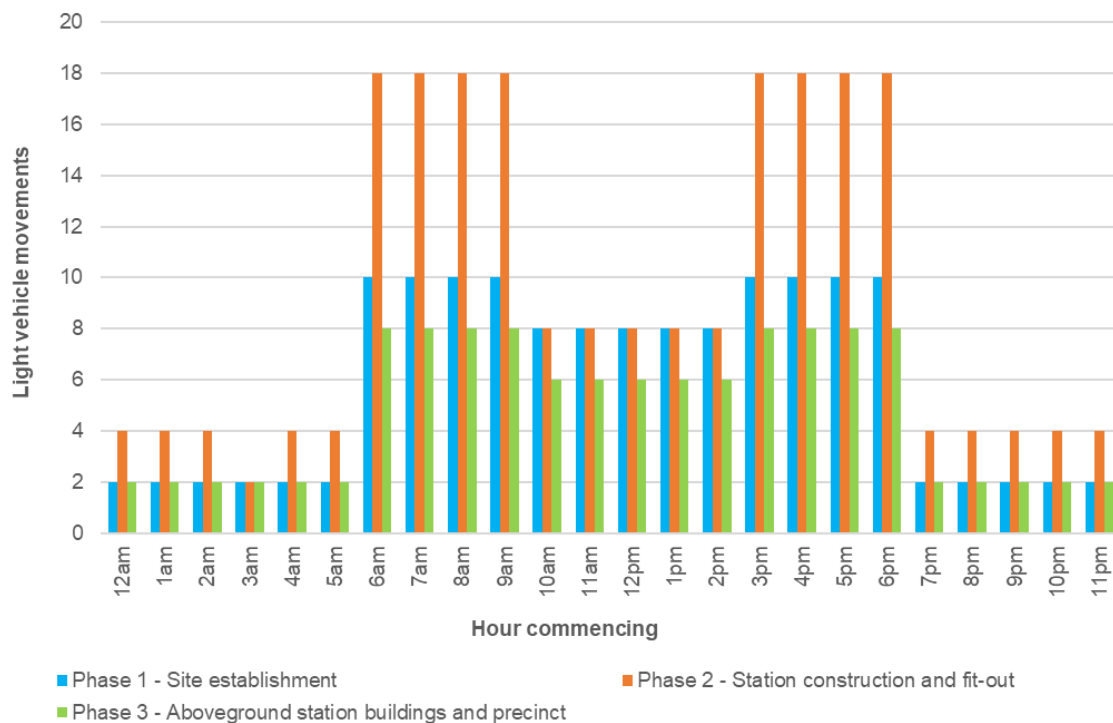


Figure 3-50: Hourly light vehicle movements (arrival and departure) at the Five Dock Station eastern construction site

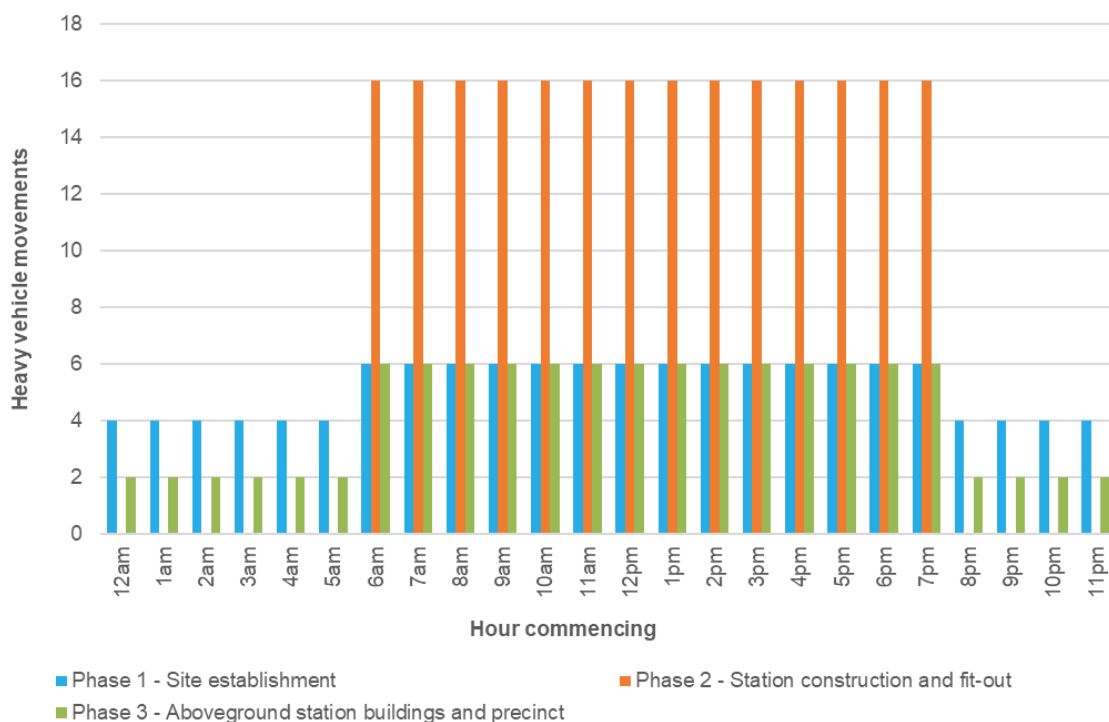


Figure 3-51: Hourly heavy vehicle movements (arrival and departure) at the Five Dock Station eastern construction site

Table 3-28: Daily construction movements per day by phase – Five Dock Station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Five Dock Station western construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	276	224	500
Phase 3 – Aboveground station buildings and precinct	164	104	268
Five Dock Station eastern construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	226	224	450
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

Existing pedestrian and cycle routes surrounding the Five Dock Station construction sites would be maintained throughout construction.

Precinct construction work around the Five Dock Station construction site such as the establishment of new bus stops on Great North Road, new kiss and ride zones on East Street, Second Avenue, Waterview Street and Garfield Street, and a taxi zone on Garfield Street may require short-term closures (for around a few months) of sections of footpaths which may result in some minor additional travel times for pedestrians. Appropriate diversions would be established to safely guide pedestrians around work zones.

The Five Dock Station western construction site is located adjacent to Fred Kelly Place, which generates a substantial amount of pedestrian activity. Appropriate controls would be employed so that pedestrian safety is maintained throughout construction, as discussed in Section 3.3. No other impacts on pedestrians are anticipated during construction.

First Avenue is designated as an on-road cycle route of moderate difficulty. First Avenue would be used by construction vehicles travelling to the Five Dock Station eastern construction site. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Roads forming part of the Five Dock Station construction vehicle route that are also used by buses include Parramatta Road, Great North Road, Lyons Road and First Avenue. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network. No impacts are anticipated on the operation of bus stops.

(f) Impacts on parking and property access

The parking spaces removed on Great North Road, Second Avenue and Waterview Street as part of work carried out under the previous Sydney Metro West planning application would continue to be removed during construction of this proposal. The majority of these spaces would also be permanently removed for operation of this proposal. Potential impacts would continue to be minimal given the low number of lost parking spaces and the availability of parking on nearby streets.

To facilitate precinct construction work, there may be short-term closures (for around a few months) of some on-street parking spaces on Great North Road to establish new bus stops, on East Street, Second Avenue, Waterview Street to establish new kiss and ride zones, and on Garfield Street to establish a new kiss and ride zone and a taxi zone. Impacts are anticipated to be minor given that these parking spaces would be removed for a short duration. Opportunities to mitigate impacts on on-street parking would be explored in consultation with the City of Canada Bay during construction planning (refer to Chapter 4).

The temporary road network changes (one-way operation of sections of both Waterview Street and Second Avenue) that will be implemented as part of work carried out under the previous Sydney Metro West planning application would continue to operate temporarily during construction of this proposal. Residents of Waterview Street between First Avenue and Second Avenue would continue to experience minor impacts due to an additional travel time of up to three minutes.

There is the potential for conflict between vehicles exiting the Five Dock Station western construction site and vehicles exiting the St Albans Anglican Church driveway. Construction vehicle movements would be managed during church service times so that the potential for conflict with church patrons is minimised. There would be no other impacts on private property access.

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-29.

During the morning peak hour (7.30am to 8.30am) and evening peak hour (4.45pm to 5.45pm) presented in this assessment, it is anticipated that the Five Dock Station western construction site would generate a total of 40 light vehicle movements (20 light vehicles travelling to and from the construction site) and 28 heavy vehicle movements (14 heavy vehicles travelling to and from the construction site), and the Five Dock Station eastern construction site would generate a total of 36 light vehicle movements (18 light vehicles travelling to and from the construction site) and 28 heavy vehicle movements (14 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Parramatta Road / Great North Road during the morning peak hour
- Great North Road / Ramsay Road / First Avenue during the evening peak hour
- Great North Road / Garfield Street during the morning peak hour
- Great North Road / Lyons Road West / Lyons Road during the morning and evening peak hours.

The performance of the Parramatta Road / Great North Road intersection during the morning peak hour is due to high background traffic volumes on all approaches resulting in the intersection operating over capacity.

The performance of the Great North Road / Ramsay Road / First Avenue intersection during the evening peak hour and the Great North Road / Garfield Street intersection during the morning peak hour is due an increase in background traffic volumes resulting in increased average delays, particularly on the Ramsay Road and Garfield Street approaches, respectively.

The performance of the Great North Road / Lyons Road West / Lyons Road intersection is due to high background traffic volumes along Lyons Road and Lyons Road West in conjunction with the presence of parking lanes on the Great North Road approaches, resulting in increased average delays and the intersection operating over capacity.

Modelled intersection performance with construction traffic indicates that the following intersections would experience a decrease in Level of Service:

- Parramatta Road / Great North Road during the evening peak hour – from Level of Service D to E. This is due to additional construction vehicles turning right from Parramatta Road into Great North Road and left from Great North Road into Parramatta Road, resulting in a redistribution of green times and increased average delays on the north and east approaches
- Great North Road / Queens Road / Fairlight Street during the morning and evening peak hours – from Level of Service D to E and C to D, respectively. This is due to additional construction vehicles travelling on Great North Road in the southbound direction, resulting in increased average delays on the north approach
- Great North Road / Ramsay Road / First Avenue during the morning and evening peak hours – from Level of Service C to D and E to F, respectively. This is due to additional construction vehicles travelling on Great North Road in both directions and on First Avenue in the eastbound direction, resulting in a substantial increase in average delay on the Ramsay Road approach.

All other intersections that would operate at Level of Service E or F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered major when compared against road network performance without the proposal and therefore mitigation measures would be required to reduce the anticipated impacts. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-29: Modelled intersection performance (2026) – Five Dock Station construction site

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Great North Road (signalised)										
Morning	5,366	>100	F	NB	-	5,469	>100	F	NB	-
				EB	>500				EB	>500
				SB	150				SB	125
				WB	430				WB	>500
Evening	5,012	49	D	NB	-	5,136	67	E	NB	-
				EB	375				EB	375
				SB	155				SB	135
				WB	365				WB	>500
Great North Road / Queens Road / Fairlight Street (signalised)										
Morning	2,834	56	D	NB	110	2,937	68	E	NB	120
				EB	190				EB	190
				SB	240				SB	340
				WB	220				WB	220
Evening	2,486	35	C	NB	125	2,589	44	D	NB	135
				EB	100				EB	100
				SB	155				SB	235
				WB	195				WB	195
Great North Road / Ramsay Road / First Avenue (signalised)										
Morning	1,864	31	C	NB	90	1,967	44	D	NB	140
				EB	-				EB	-
				SB	90				SB	90
				WB ¹	105				WB ¹	145
				WB ²	40				WB ²	40
Evening	1,847	68	E	NB	120	1,951	91	F	NB	130
				EB	-				EB	-
				SB	90				SB	90
				WB ¹	205				WB ¹	405
				WB ²	60				WB ²	55
Waterview Street / First Avenue (priority controlled)										
Morning	813	8	A	NB	<5	846	9	A	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	5				WB	5
Evening	884	9	A	NB	<5	908	9	A	NB	<5
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	5				WB	5
Waterview Street / Second Avenue (priority controlled)										
Morning	252	11	A	NB	<5	268	12	A	NB	<5
				EB	-				EB	-
				SB	<5				SB	<5

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	<5				WB	<5
Evening	199	9	A	NB	<5	216	9	A	NB	<5
				EB	-				EB	-
				SB	<5				SB	<5
				WB	<5				WB	<5
				Great North Road / Garfield Street (signalised)						
Morning	1,602	96	F	NB	85	1,672	>100	F	NB	90
				EB	300				EB	330
				SB	80				SB	80
				WB	-				WB	-
Evening	1,606	32	C	NB	90	1,676	36	C	NB	90
				EB	85				EB	110
				SB	80				SB	80
				WB	-				WB	-
Great North Road / Second Avenue (priority controlled)										
Morning	1,345	18	B	NB	<5	1,415	19	B	NB	<5
				EB	-				EB	-
				SB	395				SB	485
				WB	35				WB	70
Evening	1,354	16	B	NB	<5	1,423	16	B	NB	<5
				EB	-				EB	-
				SB	270				SB	370
				WB	20				WB	55
Great North Road / Lyons Road West / Lyons Road (signalised)										
Morning	3,500	89	F	NB	180	3,536	97	F	NB	255
				EB	225				EB	250
				SB	265				SB	265
				WB	340				WB	380
Evening	3,719	>100	F	NB	325	3,755	>100	F	NB	345
				EB	305				EB	305
				SB	200				SB	200
				WB	>500				WB	>500

¹Ramsay Road WB approach

²First Avenue WB approach

(h) Construction impacts summary

Figure 3-52 provides a summary of construction impacts on road network performance. Figure 3-53 provides a summary of construction impacts on parking, access, public transport and active transport.

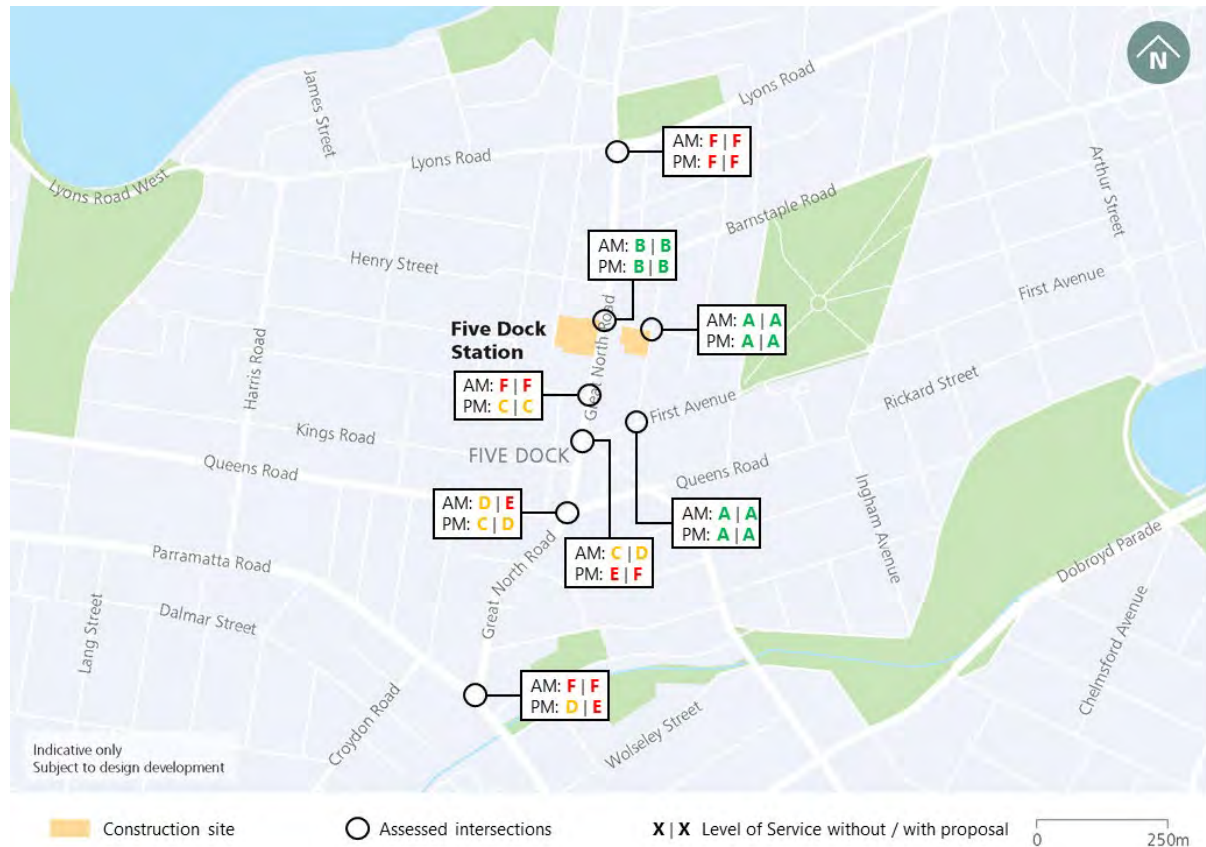


Figure 3-52: Road network performance summary – Five Dock Station construction site

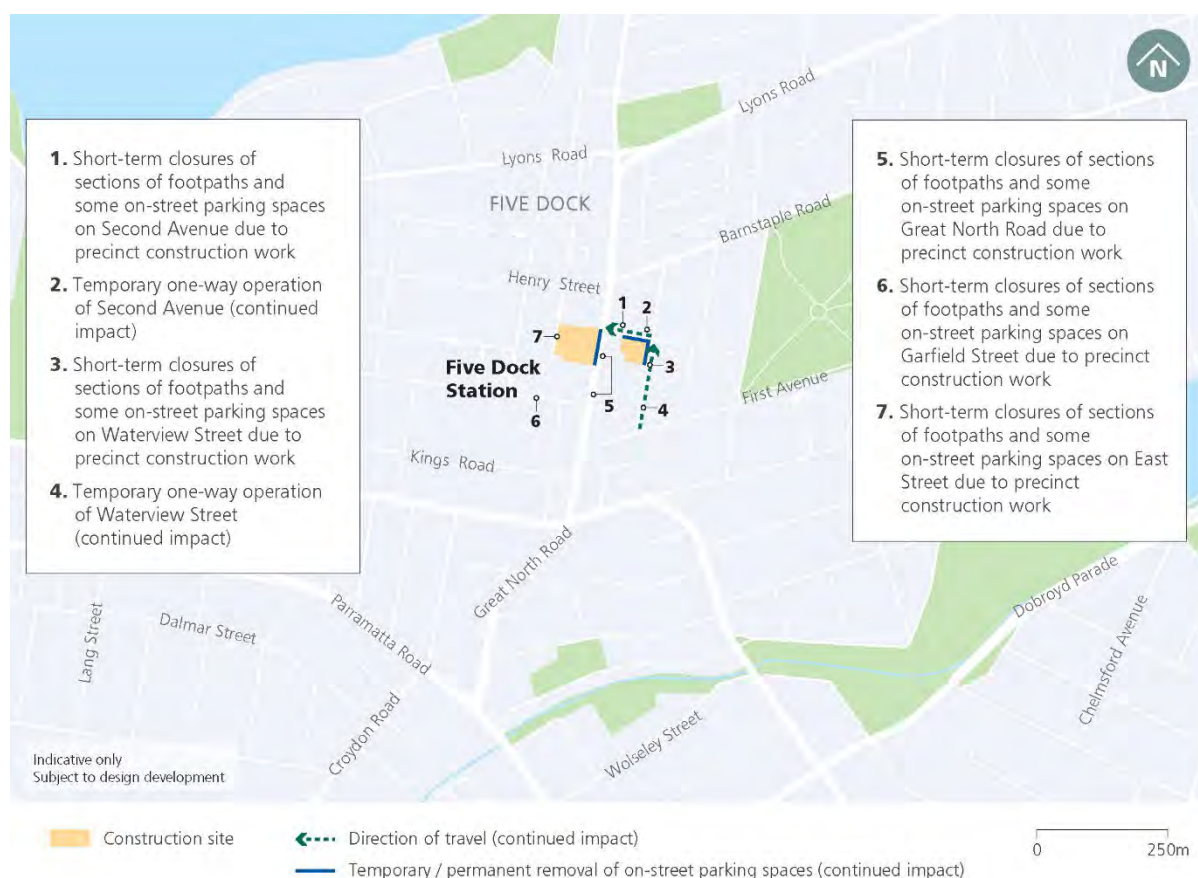


Figure 3-53: Parking, access, public transport and active transport construction impact summary – Five Dock Station construction site

3.13. The Bays Station construction site

3.13.1. Baseline transport environment

(a) Active transport network

Footpaths are provided along both sides of Victoria Road, James Craig Road and Robert Street. Solomons Way and sections of Sommersville Road are not open to the general public, however there are some formal footpaths on sections of one side of both roads. Surrounding the construction site, signalised pedestrian crossings are provided on the east approach of the Victoria Road / Robert Street intersection, the west approach of the Victoria Road / The Crescent intersection and the east approach of the James Craig Road / The Crescent intersection. Medians are provided at the roundabout on James Craig Road east of The Crescent, allowing pedestrians to undertake a staged movement if required.

Pedestrian activity within the immediate vicinity of the construction site is low given the marine and industrial land uses present. However, the predominately residential areas in surrounding suburbs such as Rozelle, Balmain, Glebe and Annandale have a well-developed pedestrian network.

The cycle network surrounding The Bays Station construction site is shown in Figure 3-54 and is well established with provision of a number of off-road shared paths and on-road cycle routes. Off-road shared paths are provided at the following locations:

- Eastern side of Victoria Road
- Western side of Victoria Road north of Wellington Street
- Northern side of the ANZAC Bridge
- Northern side of James Craig Road
- Southern and eastern side of The Crescent
- Robert Street east of Buchanan Street
- Railway Parade near Rozelle Bay light rail stop
- Throughout Jubilee Park
- Western side of Whites Creek.

On-road cycle routes are generally on local and collector roads including Balmain Road, Darling Street, Lilyfield Road and Robert Street serving east-west trips. Local north-south cycle connections to these roads include Crescent Street, Gordon Street, Denison Street and Cecily Street. The area is well serviced by the regional cycle network, either in the east-west direction via ANZAC Bridge, Lilyfield Road or Balmain Road, or in the north-south direction via Victoria Road, The Crescent and Young Street.

The active transport network within the vicinity of The Bay Station construction site will be modified to accommodate M4-M5 Link, which is part of the WestConnex program of works. These changes, which will be implemented by 2023, include the following:

- Rozelle Rail Yards link: provision of an off-road active transport east-west connection between The Bay Run and Greenway in the west to ANZAC Bridge and Sydney CBD in the east
- Whites Creek link: provision of a link between Callan Park, Rozelle Rail Yards and Parramatta Road via a predominately off-road active transport link along Whites Creek to Easton Park
- Rozelle land bridge: provision of a link from Bicentennial Park and Glebe foreshore to Rozelle Rail Yards and Easton Park, providing north-south connectivity between Glebe, Annandale, Rozelle and Balmain.



Figure 3-54: Cycle network surrounding The Bays Station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Sydney cycling map (City of Sydney, 2021)

(b) Public transport network

There are no train stations located in close proximity to The Bays Station construction site. The light rail network is accessible at the Rozelle Bay light rail stop, located about 500 metres south of the site. The Rozelle Bay light rail stop is served by the L1 Dulwich Hill Line.

Victoria Road is a major bus corridor adjacent to the construction site. A morning peak period bus lane operates on Victoria Road in the southbound direction.

Two bus operators, Transit Systems and Sydney Buses, provide services via 12 bus routes that travel on Victoria Road and provide connections between Sydney CBD, the Inner West, northern suburbs and western suburbs. Nearly all buses travel on the Western Distributor to and from Sydney CBD, with one bus route operating on collector and arterial roads through Glebe and via the Parramatta Road bus corridor to access Sydney CBD. Transit Systems also operates two additional bus routes accessible from Darling Street, located about 900 metres north of the site, and another bus route is accessible from Glebe Point Road near the southern side of Rozelle Bay, about 1.2 kilometres south of the site.

School buses also service the area, with five school bus routes.

The White Bay Cruise Terminal is located about one kilometre from the construction site and serves cruise ships when the Overseas Passenger Terminal at Circular Quay is occupied. Captain Cook Cruises operates a ferry service between the White Bay Cruise Terminal and Barangaroo on days when cruise ships are docked at the White Bay Cruise Terminal. On cruise ship days, access to the White Bay Cruise Terminal is provided via James Craig Road only, with no access permitted from Robert Street.

The public transport network surrounding The Bays Station construction site is shown in Figure 3-55.



Figure 3-55: Public transport network surrounding The Bays Station construction site

Sources: Region 7 bus services (Sydney Buses, 2021); Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

Parking is prohibited in both directions along City West Link and The Crescent east of City West Link, with clearways in operation at all times. In addition, on-street parking is not permitted along James Craig Road and The Crescent south of City West Link.

Parking is permitted on the northern side of Robert Street west of Mullens Street except during the weekday afternoon peak period. Furthermore, angled parking is permitted on both sides of Robert Street east of Mullens Street. This also includes parking for motorcycles.

There are no kiss and ride, loading zone or taxi zones on roads immediately surrounding the construction site.

(d) Traffic volumes and patterns

Traffic volumes are high on City West Link, The Crescent and Victoria Road in both directions. These are arterial roads that carry volumes between 1,660 and 3,730 vehicles per hour in each direction. Eastbound volumes on City West Link and The Crescent are generally higher than westbound volumes during the morning and evening peak hours. On Victoria Road, a distinct southbound peak direction is evident during the morning peak hour. Traffic volumes are similar in both directions during the evening peak hour.

Substantially lower volumes of up to 140 vehicles per hour are experienced on James Craig Road, which is a local road.

The future road network within the vicinity of The Bays Station construction site will be modified to accommodate WestConnex Rozelle Interchange. Additional road network changes as part of Western Harbour Tunnel, which will connect to the WestConnex Rozelle Interchange and the surface road network in Rozelle, have been incorporated into the construction traffic modelling assessment in Section 3.13.2 and includes a north approach and modified traffic signals at The Crescent / City West Link intersection.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-30.

Table 3-30: Existing peak hour traffic volumes by direction (2021) – The Bays Station construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
The Crescent west of James Craig Road	Eastbound	3,260	2,970
	Westbound	2,280	2,510
City West Link west of The Crescent	Eastbound	2,650	2,440
	Westbound	1,660	1,970
James Craig Road east of The Crescent	Eastbound	130	40
	Westbound	60	140
Victoria Road north of The Crescent	Northbound	1,720	2,890
	Southbound	3,730	2,820

Source: Traffic surveys from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of The Bays Station construction site is shown in Table 3-31.

Modelled intersection performance indicates that the City West Link / The Crescent intersection currently performs at Level of Service F during the morning peak hour. This is due to high through movement traffic volumes conflicting with right turning and cross-street traffic, in conjunction with substantial queuing along City West Link in the eastbound direction

Table 3-31: Modelled peak hour baseline intersection performance (2021) – The Bays Station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
City West Link / The Crescent (signalised)					
Morning	6,244	87	F	NB	205
				EB	>500
				SB	-
				WB	235
Evening	6,429	39	C	NB	165
				EB	>500
				SB	-
				WB	355
The Crescent / James Craig Road (signalised)					
Morning	5,937	15	B	NB	30
				EB	>500
				SB	-
				WB	135
Evening	6,228	13	A	NB	40
				EB	375
				SB	-
				WB	245

3.13.2. Construction impact assessment

(a) Construction site location and access

The Bays Station construction site is bound by Victoria Road, Robert Street and White Bay. Roads forming part of the primary construction vehicle route include City West Link, The Crescent, James Craig Road, Sommerville Road, Solomons Way and Port Access Road as shown in Figure 3-56. Roads forming part of the secondary construction vehicle route include Robert Street and Victoria Road. Primary site access would be to and from Port Access Road. Robert Street would only be used in emergencies or for special vehicular movements. Construction vehicles would be required to use Robert Street to construct the new intersection at Robert Street / Precinct Street and associated line marking.

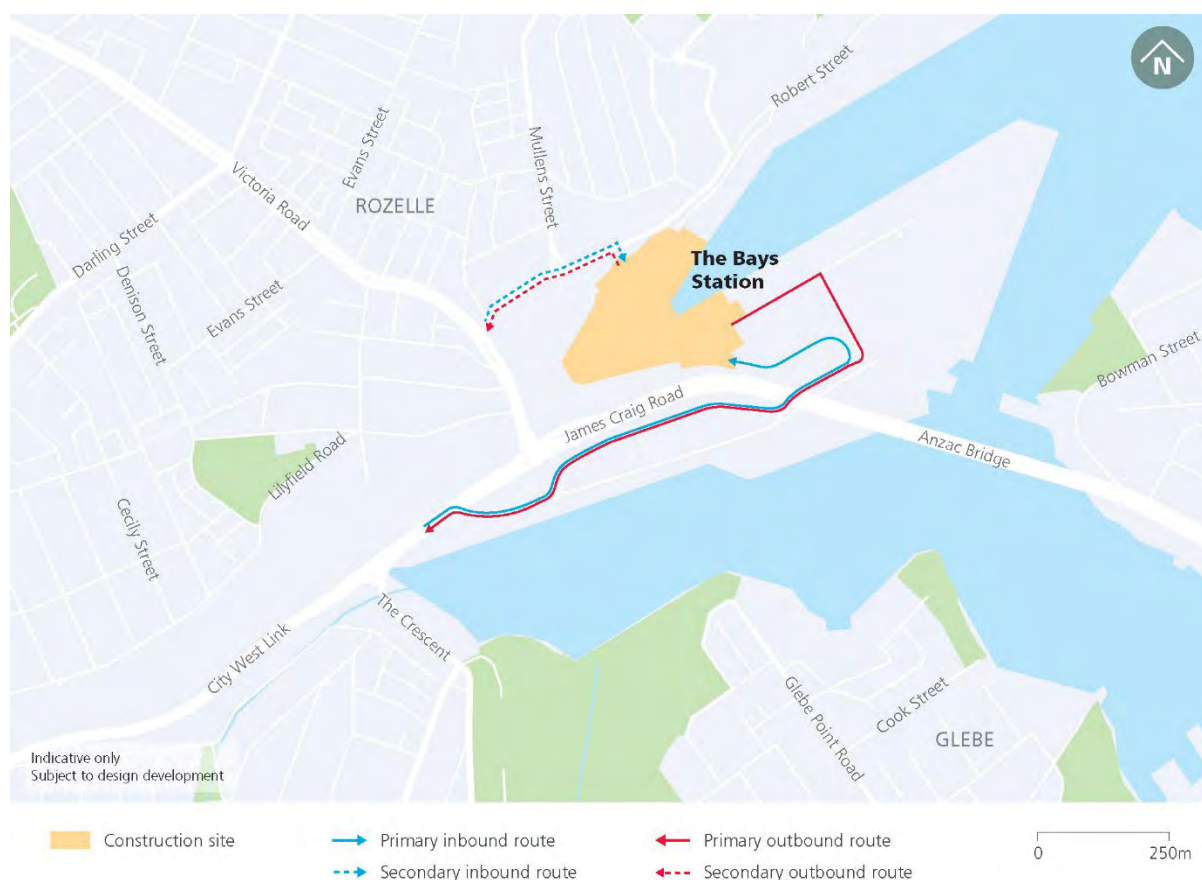


Figure 3-56: The Bays Station construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at The Bays Station construction site 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 Port Access Road 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 Port Access Road

- 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.

(c) **Construction vehicle movements**

Construction vehicles would access and egress The Bays Station construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the site per hour during the various phases of construction are shown in Figure 3-57 and Figure 3-58. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-32.

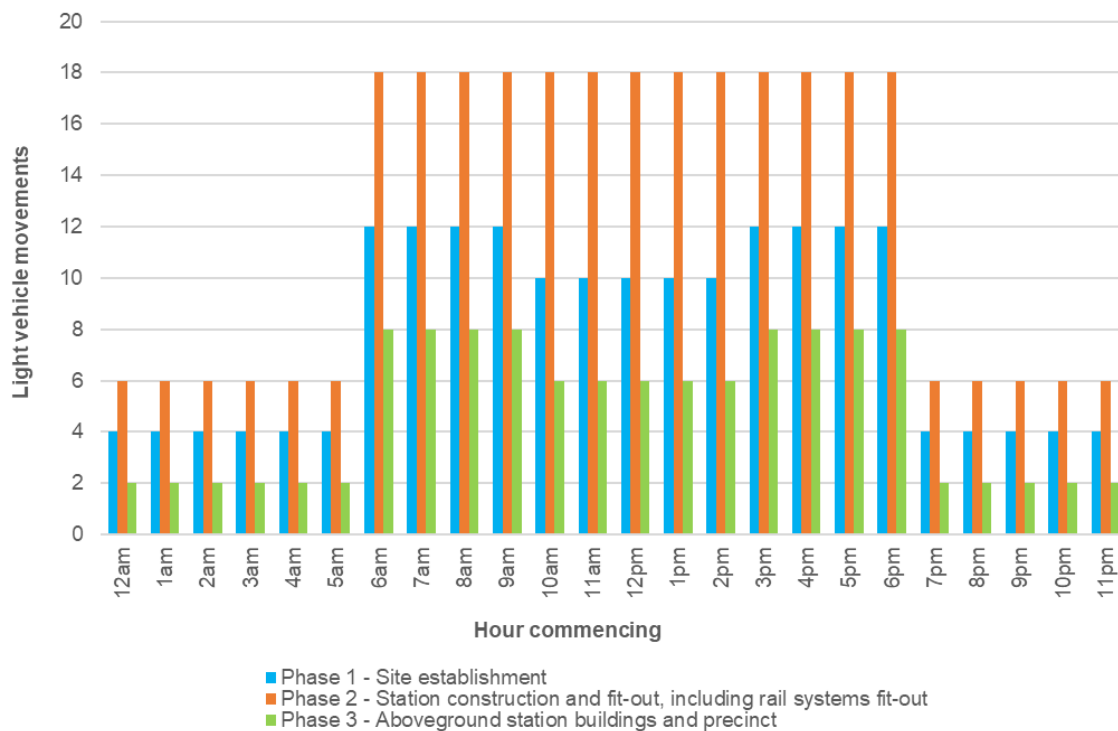


Figure 3-57: Hourly light vehicle movements (arrival and departure) at The Bays Station construction site

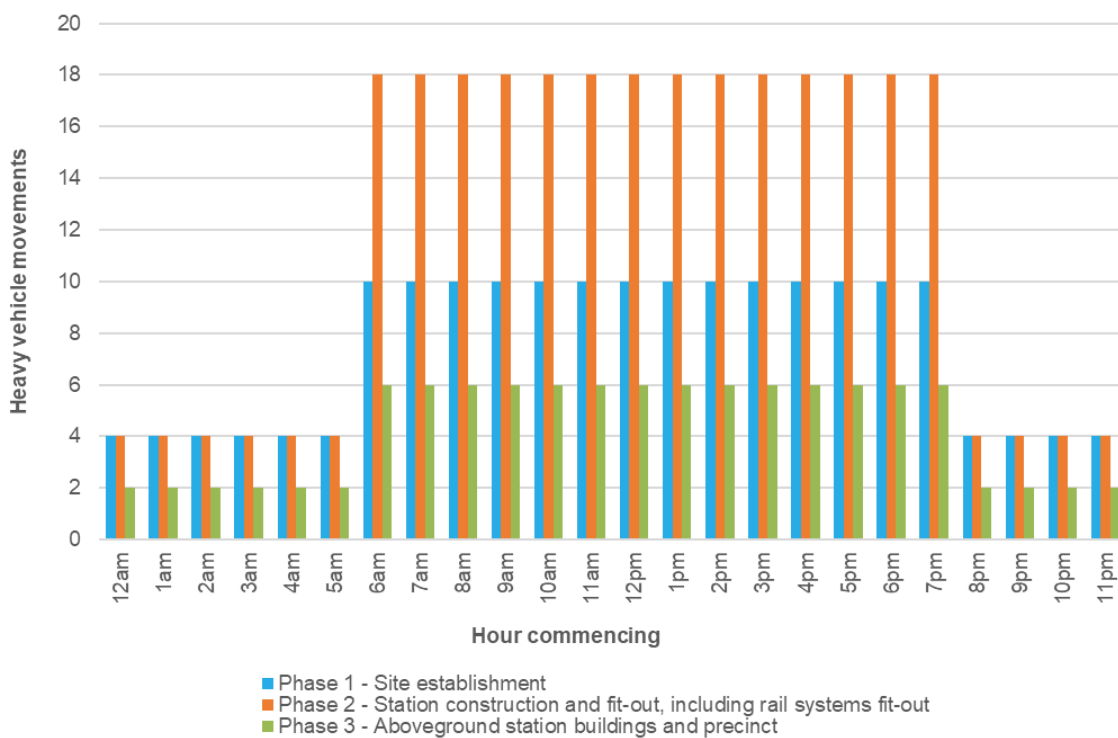


Figure 3-58: Hourly heavy vehicle movements (arrival and departure) at The Bays Station construction site

Table 3-32: Daily construction movements per day by phase – The Bays Station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Phase 1 – Site establishment	190	180	370
Phase 2 – Station construction and fit-out, including rail systems fit-out	300	292	592
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

Existing pedestrian and cycle routes surrounding The Bays Station construction site would be maintained throughout construction.

Construction vehicles would travel adjacent to or across shared paths along Victoria Road, The Crescent and James Craig Road. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

The Crescent is used by buses and also forms part of the construction vehicle route for The Bays Station construction site. Minimal impacts on buses are expected and would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network. No impacts are anticipated on the operation of bus stops.

No impacts on the light rail network or the White Bay Cruise Terminal are anticipated during construction.

(f) Impacts on parking and property access

Some parking spaces along Robert Street would be temporarily removed for short periods (for around a few months) during construction works for the new Robert Street / Precinct Street intersection and associated linemarking. Some parking spaces along Robert Street would be permanently removed once the new intersection is operational. Impacts are anticipated to be minor during construction given the short-term removal of these parking spaces and availability of alternative on-street parking nearby. Opportunities to mitigate impacts on on-street parking would be explored in consultation with Inner West Council during construction planning (refer to Chapter 4).

(g) Impacts on road network performance

Intersection performance results for the ‘2026 without proposal’ (without construction vehicles) and ‘2026 with proposal’ (with construction vehicles) scenarios are summarised in Table 3-33.

During the morning peak hour (7.15am to 8.15am) and evening peak hour (5pm to 6pm) presented in this assessment, it is anticipated that The Bays Station construction site would generate a total of 38 light vehicle movements (19 light vehicles travelling to and from the construction site) and 34 heavy vehicle movements (17 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance with construction traffic indicates that all intersections would perform at the same Level of Service compared to the scenario without construction traffic.

The impact of construction vehicles on overall road network performance is considered minor and therefore mitigation measures are not required.

Table 3-33: Modelled intersection performance (2026) – The Bays Station construction site

Intersection and peak hour	2026 without proposal				2026 with proposal					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		
City West Link / The Crescent (signalised)										
Morning	6,172	28	B	NB	90	6,247	27	B	NB	90
				EB	210				EB	210
				SB	30				SB	30
				WB	200				WB	205
Evening	6,041	33	C	NB	120	6,117	32	C	NB	120
				EB	165				EB	165
				SB	40				SB	40
				WB	235				WB	240
The Crescent / James Craig Road (signalised)										
Morning	3,798	8	A	NB	25	3,874	10	A	NB	35
				EB	60				EB	60
				SB	-				SB	-
				WB	145				WB	160
Evening	4,592	12	A	NB	35	4,667	13	A	NB	40
				EB	80				EB	80
				SB	-				SB	-
				WB	245				WB	245

(h) Construction impacts summary

Figure 3-59 provides a summary of construction impacts on road network performance. Figure 3-60 provides a summary of construction impacts on parking, access, public transport and active transport.



Figure 3-59: Road network performance summary – The Bays Station construction site

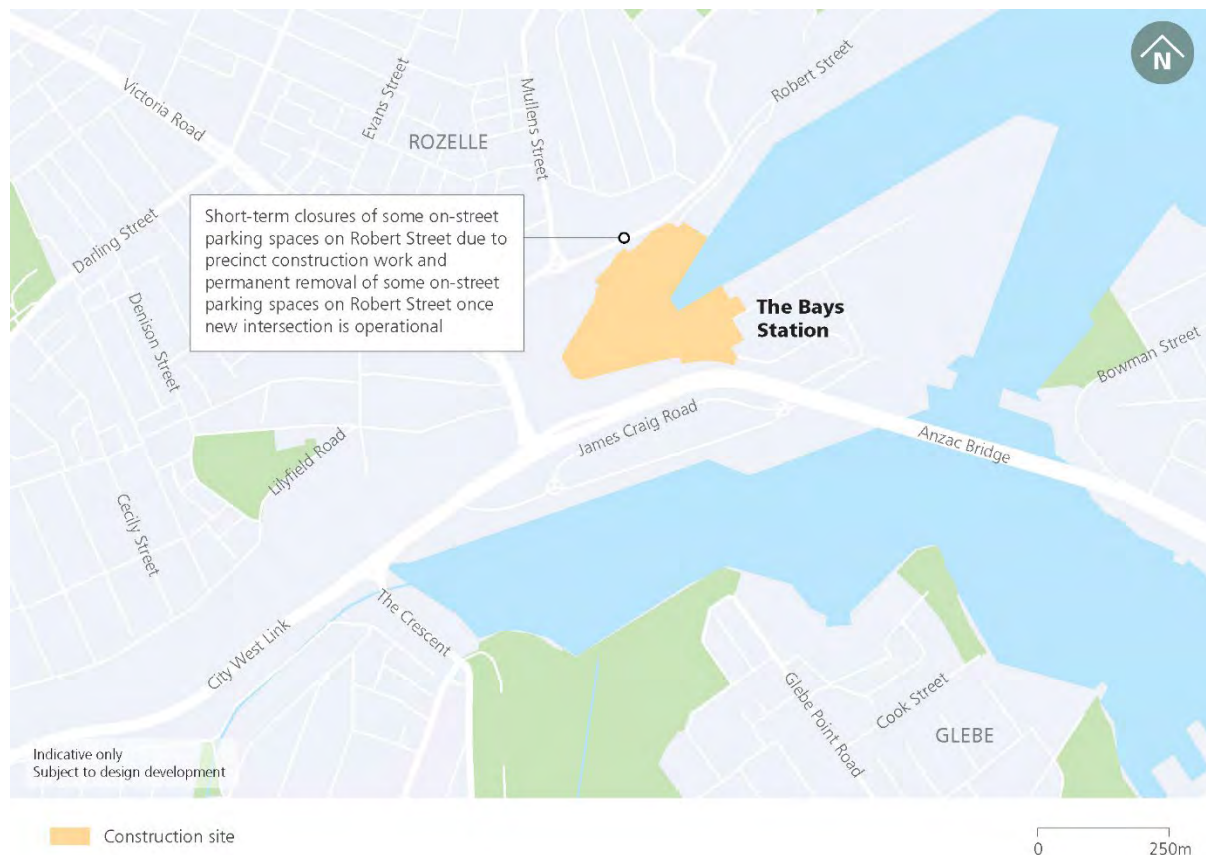


Figure 3-60: Parking, access, public transport and active transport construction impact summary – The Bays Station construction site

3.14. Pyrmont Station construction site

3.14.1. Baseline transport environment

(a) Active transport network

Footpaths, some of which are narrow, are provided along the majority of roads in the vicinity of the Pyrmont Station construction site, with the exception of the Western Distributor and Darling Drive. Near the construction site, signalised crossings are provided on all approaches of the following intersections:

- Pyrmont Bridge Road / Bank Street
- Pyrmont Bridge Road / Harris Street
- Pyrmont Bridge Road / Pyrmont Street
- Union Street / Murray Street / Darling Drive
- Union Street / Edward Street
- Pyrmont Street / Union Street.

A zebra crossing is provided across Union Street at the Pyrmont Bridge Road / Union Street intersection.

Pedestrian activity in Pyrmont is high as the surrounding land use is primarily residential, commercial, educational and retail. High Pedestrian Activity Areas, with a signposted speed limit of 40 kilometres per hour, are located on roads in the vicinity of the Pyrmont Bay light rail stop, Harbourside shopping centre, Pyrmont Bridge and The Star.

As part of work carried out under the previous Sydney Metro West planning application, the footpath on the southern side of Union Street between Pyrmont Street and Pyrmont Bridge Road would be temporarily closed to allow for two-way traffic flow along Union Street, with the footpath on the northern side of Union Street to be maintained. The separated cycleway and adjacent footpath on the northern side of Union Street would be unaffected by the proposed works.

The cycle network surrounding the Pyrmont Station construction site is shown in Figure 3-61 and consists of separated cycleways along Union Street, Miller Street and Saunter Street, off-road shared paths on Pyrmont Bridge, along Darling Drive south of the Convention light rail stop and through the Darling Harbour precinct, a high difficulty on-road cycle route on Pyrmont Bridge Road / Bridge Road, a moderate difficulty on-road cycle route along Darling Drive north of the Convention light rail stop, and low difficulty on-road cycle routes on Bulwarra Road, Allen Street and Murray Street. These cycling facilities provide connectivity between ANZAC Bridge, Pyrmont, Sydney CBD and the wider cycling network.



Figure 3-61: Cycle network surrounding the Pyrmont Station construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Sydney cycling map (City of Sydney, 2021)

(b) Public transport network

There are no train stations located in close proximity to the Pyrmont Station construction site. The light rail network is accessible at the nearby Convention, Pyrmont Bay, The Star, John Street Square, Fish Market and Wentworth Park light rail stops which are served by the L1 Dulwich Hill Line.

Near the construction site, Pyrmont is served by two bus routes operated by Transit Systems and Sydney Buses. These bus routes provide access to the Sydney CBD, Bondi Junction, Rozelle, Drummoyne, Ryde and Parramatta. Bus stops are located on Harris Street and Miller Street.

As part of work carried out under the previous Sydney Metro West planning application, the bus stop on Pyrmont Bridge Road adjacent to the Pyrmont Station western construction site would be decommissioned for the duration of construction. This stop is not currently used by timetabled bus services.

Ferry services are accessible at Pyrmont Bay wharf, which is located about 300 metres east of the site. The F4 Pyrmont Bay route operates from this wharf, providing connections to Barangaroo, Milsons Point and Circular Quay.

The public transport network surrounding the Pyrmont Station construction site is shown in Figure 3-62.

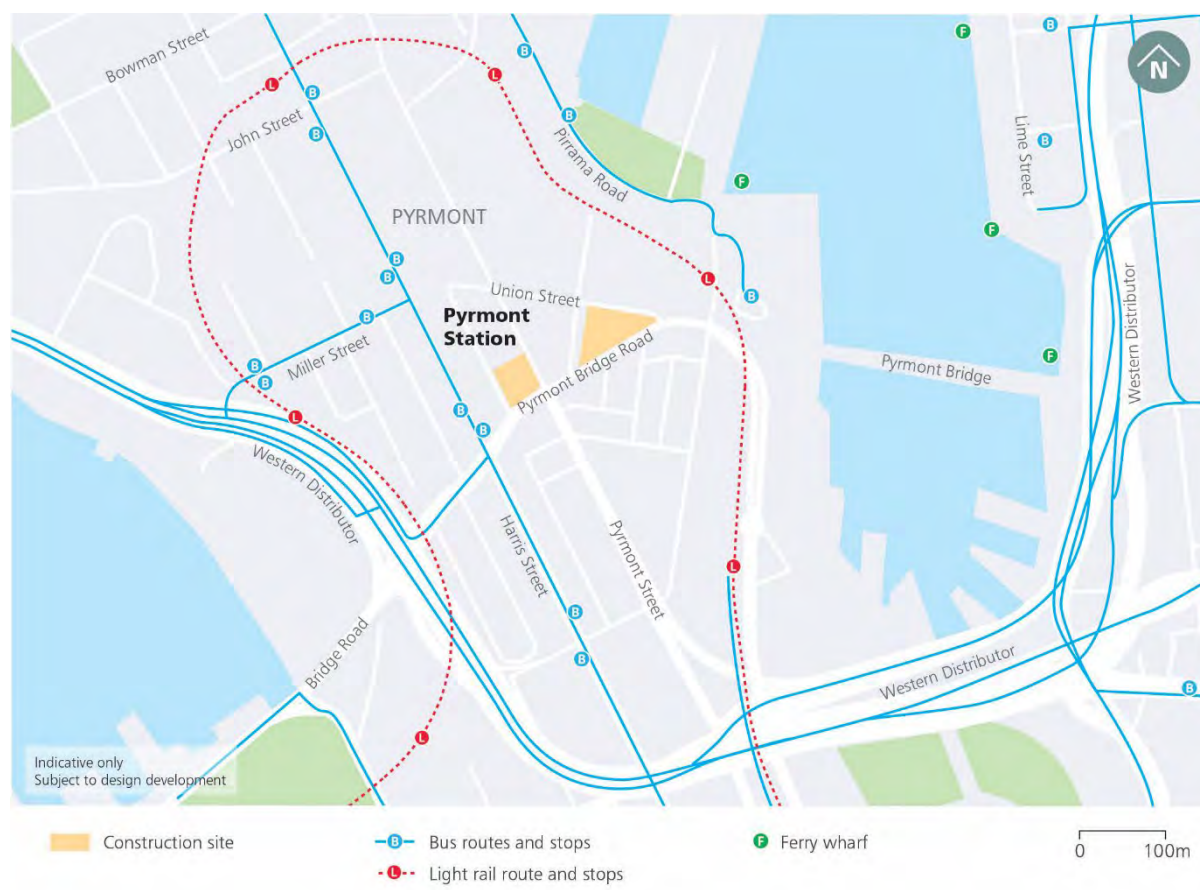


Figure 3-62: Public transport network surrounding the Pyrmont Station construction site

Sources: Region 7 bus services (Sydney Buses, 2021); Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

In the vicinity of the Pyrmont Station construction site, clearways are in operation at the following locations:

- Pyrmont Bridge Road in the eastbound direction west of Pyrmont Street – 6am to 10am and 3pm to 7pm Monday to Friday
- Harris Street in the northbound direction between Allen Street and Pyrmont Bridge Road – 6am to 10am and 3pm to 7pm Monday to Friday
- Harris Street in the southbound direction south of Allen Street – 6am to 10am and 3pm to 7pm Monday to Friday
- Harris Street in the northbound direction between Allen Street and Thomas Street – 3pm to 7pm Monday to Friday.

Outside of clearway restrictions, on-street parking is generally provided on roads surrounding the site including Harris Street, Pyrmont Street, Union Street, Miller Street and Edward Street and are generally ticketed and time-restricted on all days. On-street parking is not provided on Pyrmont Bridge Road or Darling Drive.

Other on-street parking arrangements include loading zones at various times at multiple locations surrounding the site, including on Pyrmont Street, Miller Street, Union Street and Harris Street. In addition, there are several mail zones located on Harris Street. A taxi zone is located on the eastern side of Harris Street, south of William Henry Street adjacent to the Powerhouse Museum as well as on the western side of Darling Drive near the Convention light rail stop.

As part of work carried out under the previous Sydney Metro West planning application, about 27 on-street parking spaces and a loading zone would be temporarily removed along both sides of Union Street between Pyrmont Street and Pyrmont Bridge Road. Two-way traffic flow would be maintained along Union Street, however, there may be periods when Union Street may need to be modified to accommodate the works.

(d) Traffic volumes and patterns

Darling Drive / Pyrmont Bridge Road / Bridge Road is a collector road that connects Ultimo to Camperdown via Pyrmont and provides connections to arterial roads and motorways including Parramatta Road and the Western Distributor. Near the construction site during the morning peak hour, the peak direction on Pyrmont Bridge Road is eastbound with volumes of about 1,270 vehicles. During the evening peak hour, the peak direction is also eastbound with a lower volume of about 760 vehicles.

Harris Street is a collector road that connects Pyrmont to Ultimo at George Street / Broadway and exhibits a northbound morning and evening peak direction. Near its intersection with Pyrmont Bridge Road, peak hour volumes on Harris Street are up to 470 vehicles. Further south, near its intersection with Fig Street / Western Distributor, peak hour volumes on Harris Street are up to 910 vehicles.

Pyrmont Street is a local road that carries volumes ranging from 150 to 490 vehicles per hour in each direction and exhibits a southbound morning and evening peak direction.

Union Street / Miller Street is a local road that carries traffic volumes ranging between 40 and 160 vehicles per hour in each direction during peak periods.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-34.

Table 3-34: Existing peak hour traffic volumes by direction (2021) – Pyrmont Station construction site

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

Source: Traffic surveys from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Pyrmont Station construction site is shown in Table 3-35.

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

- Pyrmont Bridge Road / Bank Street / Western Distributor ramps during the morning peak hour
- Bank Street / Western Distributor ramps during the morning peak hour
- Harris Street / Fig Street / Western Distributor ramps during the morning peak hour.

Key points include:

- The existing performance of the Pyrmont Bridge Road / Bank Street / Western Distributor ramps intersection and the Bank Street / Western Distributor ramps intersection during the morning peak hour is due to a high number of conflicting movements through the interchange in conjunction with high traffic volumes entering and exiting the Western Distributor
- The existing performance of the Harris Street / Fig Street / Western Distributor intersection during the morning peak hour is due to high traffic volumes on all approaches.

Table 3-35: Modelled peak hour baseline intersection performance (2021) – Pyrmont Station construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Pyrmont Bridge Road / Bank Street / Western Distributor EB entry ramp and WB exit ramp (signalised)					
Morning	3,279	77	F	NB	275
				EB	175
				SB	80
				WB	10
Evening	2,894	53	D	NB	150
				EB	155
				SB	70
				WB	10
Bank Street / Western Distributor WB entry ramp and EB exit ramp (signalised)					
Morning	1,332	69	E	NB	50
				EB	-
				SB	150
				WB	115
Evening	906	49	D	NB	15
				EB	-
				SB	120
				WB	45
Pyrmont Bridge Road / Western Distributor EB exit ramp (priority controlled)					
Morning	1,855	10	A	NB	-
				EB	<5
				SB	35
				WB	85
Evening	1,396	7	A	NB	-
				EB	<5
				SB	15
				WB	105
Pyrmont Bridge Road / Harris Street (signalised)					
Morning	2,232	22	B	NB	75
				EB	160
				SB	85
				WB	35
Evening	1,817	25	B	NB	55
				EB	85
				SB	70
				WB	45
Pyrmont Bridge Road / Pyrmont Street (signalised)					
Morning	1,665	23	B	NB	-
				EB	65
				SB	90
				WB	25
Evening	1,561	26	B	NB	-
				EB	35
				SB	95
				WB	25

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Pymont Bridge Road / Union Street (priority controlled)					
Morning	704	12	A	NB	-
				EB	<5
				SB	<5
				WB	<5
Evening	675	12	A	NB	-
				EB	<5
				SB	<5
				WB	<5
Darling Drive / Union Street / Murray Street (signalised)					
Morning	1,066	28	B	NB	20
				EB	40
				SB	15
				WB	25
Evening	997	32	C	NB	15
				EB	25
				SB	50
				WB	40
Darling Drive / Harbourside access road (roundabout)					
Morning	580	10	A	NB	10
				EB	-
				SB	5
				WB	<5
Evening	469	10	A	NB	10
				EB	-
				SB	<5
				WB	<5
Union Street / Edward Street (signalised)					
Morning	496	16	B	NB	15
				EB	5
				SB	<5
				WB	<5
Evening	674	17	B	NB	20
				EB	10
				SB	20
				WB	<5
Union Street / Pymont Street (signalised)					
Morning	831	24	B	NB	40
				EB	10
				SB	55
				WB	10
Evening	1,053	29	C	NB	35
				EB	10
				SB	110
				WB	35
Harris Street / Allen Street (signalised)					
Morning	1,809	38	C	NB	85
				EB	225

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	1,446	24	B	SB	60
				WB	-
				NB	25
				EB	105
				SB	75
				WB	-
Harris Street / Fig Street / Western Distributor ramps (signalised)					
Morning	3,841	84	F	NB	55
				EB	270
				SB	205
				WB	335
Evening	3,742	36	C	NB	50
				EB	255
				SB	150
				WB	105

3.14.2. Construction impact assessment

(a) Construction site location and access

The Pyrmont Station construction site would comprise two separate sites, a western site and an eastern site on the northern side of Pyrmont Bridge Road. The Pyrmont Station western construction site would be located on the north-western corner of Pyrmont Street and Pyrmont Bridge Road. The Pyrmont Station eastern construction site would be bound by Pyrmont Bridge Road, Union Street and Edward Street.

Roads forming part of the primary construction vehicle route for the Pyrmont Station western and eastern construction sites include the Western Distributor, Pyrmont Bridge Road, Darling Drive, Union Street, Pyrmont Street and Harris Street as shown in Figure 3-63. Primary site access would be left-in, left-out to and from Pyrmont Bridge Road for both sites. The left turn outbound movement from Union Street into Pyrmont Street may be limited to vehicles of a certain size which would be further examined during detailed construction planning in accordance with the Sydney Metro CTMF and detailed Construction Traffic Management Plans. Sydney Metro are also investigating the use of Pyrmont Street south of Pyrmont Bridge Road, rather than Harris Street, to access the Western Distributor.



Figure 3-63: Pymont Station construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Pymont Station construction site 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.

(c) Construction vehicle movements

Construction vehicles would access and egress the Pyrmont Station western and eastern construction sites during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the sites per hour during the various phase of construction are shown in Figure 3-64 and Figure 3-65 for the western construction site and Figure 3-66 and Figure 3-67 for the eastern construction site. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-36.

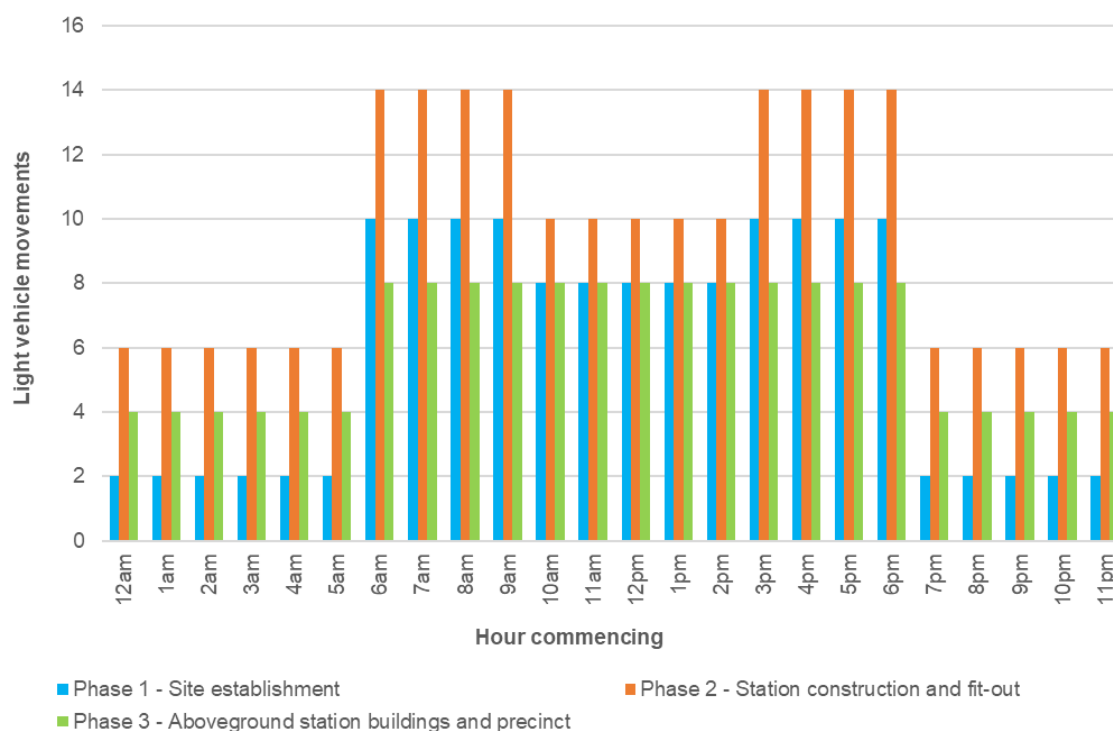


Figure 3-64: Hourly light vehicle movements (arrival and departure) at the Pyrmont Station western construction site

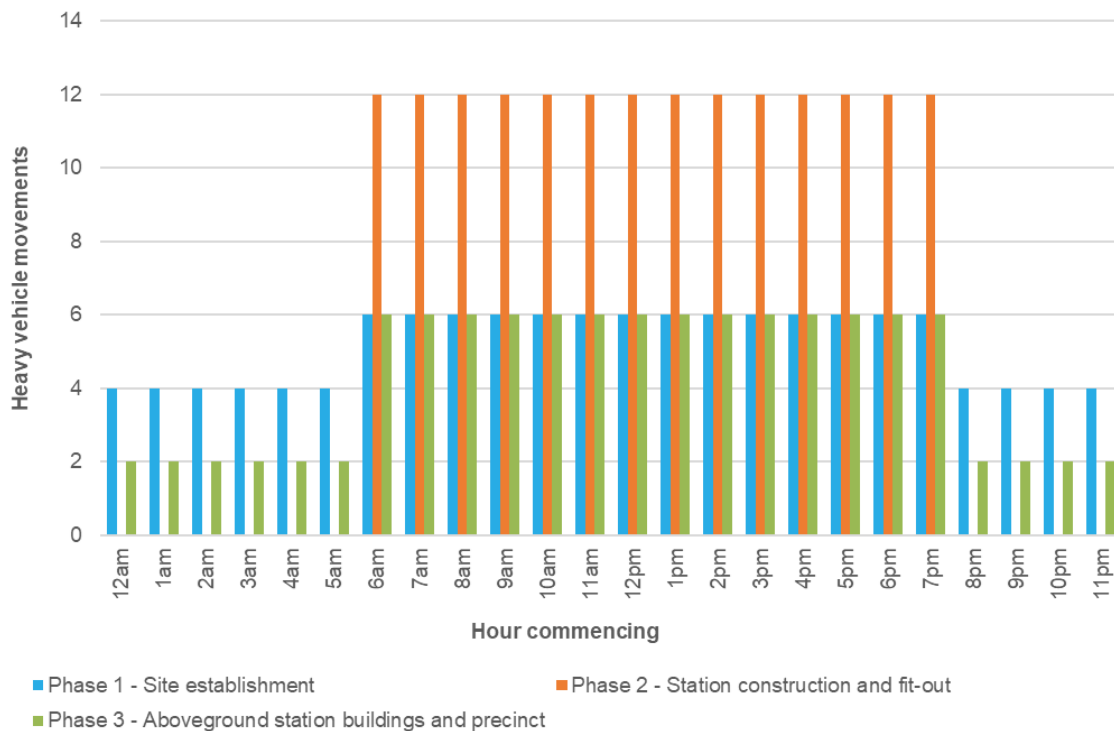


Figure 3-65: Hourly heavy vehicle movements (arrival and departure) at the Pyrmont Station western construction site

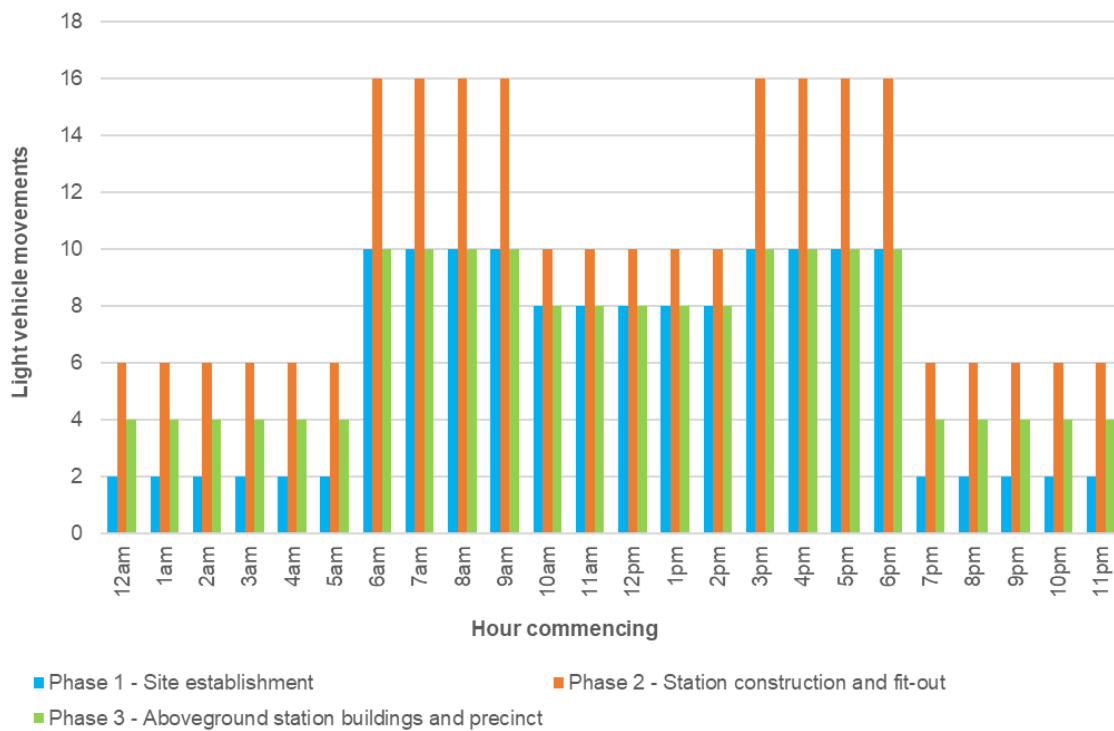


Figure 3-66: Hourly light vehicle movements (arrival and departure) at the Pyrmont Station eastern construction site

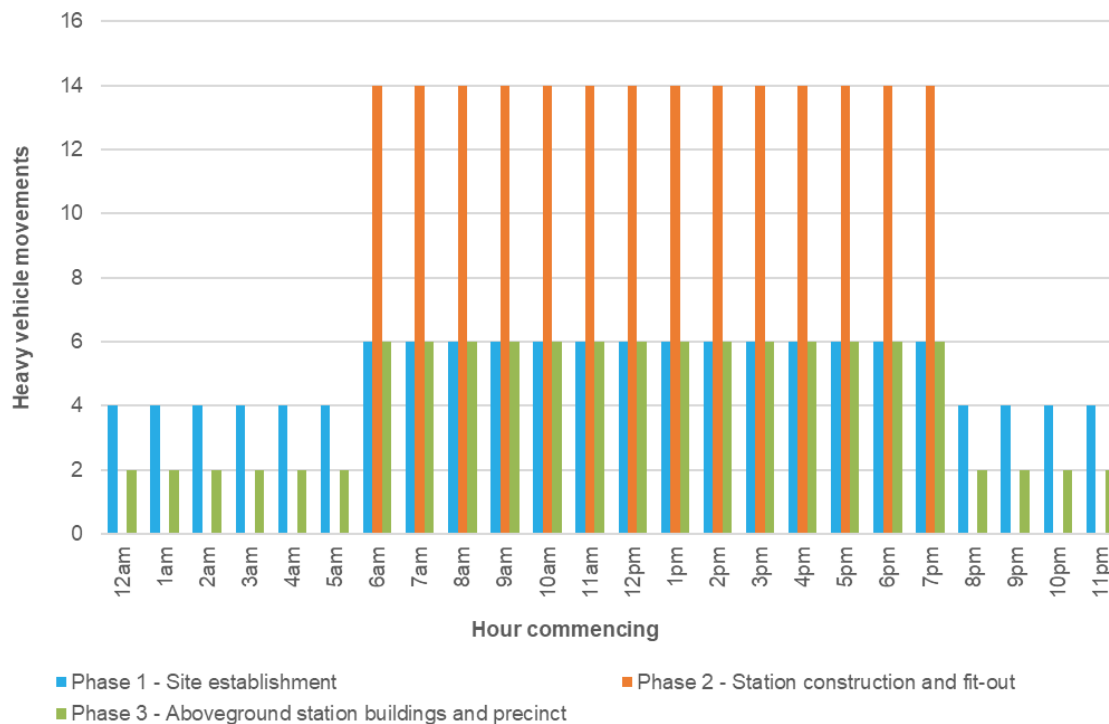


Figure 3-67: Hourly heavy vehicle movements (arrival and departure) at the Pyrmont Station eastern construction site

Table 3-36: Daily construction movements per day by phase – Pyrmont Station construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Pyrmont Station western construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	228	168	396
Phase 3 – Aboveground station buildings and precinct	148	104	252
Pyrmont Station eastern construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	244	196	440
Phase 3 – Aboveground station buildings and precinct	164	104	268

(d) Impacts on the active transport network

The footpath on the southern side of Union Street adjacent to the eastern construction site that would be temporarily closed during work carried out under the previous Sydney Metro West planning application would continue to be temporarily closed during construction of this proposal. This continued impact would be minimal given that east-west connectivity would be maintained via the footpath on the northern side of Union Street.

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

Pyrmont Bridge Road is designated as an on-road cycle route of high difficulty and Darling Drive is designated as an on-road cycle route of moderate difficulty. These roads would be used by construction vehicles travelling from the Pyrmont Station western and eastern construction sites. Furthermore, construction vehicles would travel adjacent to the cycle path along Union Street. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Roads forming part of the Pyrmont Station construction vehicle route that are also used by buses include Harris Street and Pyrmont Bridge Road. The proposed use of Harris Street for construction site access would be further examined during detailed construction planning in accordance with the Sydney Metro CTMF and detailed Construction Traffic Management Plans. Impacts on buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

The bus stop on Pyrmont Bridge Road adjacent to the western construction site that would be decommissioned as part of work carried out under the previous Sydney Metro West planning application would not be reinstated during construction of this proposal.

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

(f) Impacts on parking and property access

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

To facilitate precinct construction work, there may be short-term closures (for around a few months) of some on-street parking spaces on Pyrmont Street to establish a new kiss and ride zone. Impacts are anticipated to be minor given that these parking spaces would be removed for a short duration. Opportunities to mitigate impacts on on-street parking would be explored in consultation with the City of Sydney during construction planning (refer to Chapter 4).

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-37.

During the morning peak hour (8.15am to 9.15am) and evening peak hour (4.30pm to 5.30pm) presented in this assessment, it is anticipated that the Pyrmont Station western construction site would generate a total of 32 light vehicle movements (16 light vehicles travelling to and from the construction site) and 24 heavy vehicle movements (12 heavy vehicles travelling to and from the construction site), and the Pyrmont Station eastern construction site would generate a total of 36 light vehicle movements (18 light vehicles travelling to and from the construction site) and 26 heavy vehicle movements (13 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Pyrmont Bridge Road / Bank Street / Western Distributor ramps during the morning peak hour
- Bank Street / Western Distributor ramps during the morning and evening peak hours
- Harris Street / Fig Street / Western Distributor ramps during the morning peak hour.

The performance of these intersections is due to high background traffic volumes on the majority of approaches in conjunction with a high number of conflicting movements and high traffic volumes entering and exiting the Western Distributor, resulting in increased average delays and these intersections operating over capacity.

Modelled intersection performance with construction traffic indicates that the following intersections would experience a decrease in Level of Service:

- Pyrmont Bridge Road / Union Street during the morning and evening peak hours – from Level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic

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

All other intersections that would operate at Level of Service E or F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered minor when compared to road network performance without the proposal, with the exception of the Union Street / Pyrmont Street intersection where its performance would decrease from Level of Service C to F during the evening peak. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-37: Modelled intersection performance (2026) – Pyrmont Station construction site

Intersection and peak hour	2026 without proposal				2026 with proposal					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		
Pyrmont Bridge Road / Bank Street / Western Distributor EB entry ramp and WB exit ramp (signalised)										
Morning	3,420	>100	F	NB	380	3,451	>100	F	NB	380
				EB	165				EB	170
				SB	80				SB	80
				WB	10				WB	10
Evening	2,928	46	D	NB	110	2,959	46	D	NB	110
				EB	130				EB	130
				SB	70				SB	70
				WB	10				WB	10
Bank Street / Western Distributor WB entry ramp and EB exit ramp (signalised)										

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Morning	1,479	>100	F	NB	75	1,509	>100	F	NB	75
				EB	-				EB	-
				SB	245				SB	265
				WB	125				WB	125
Evening	892	59	E	NB	10	922	58	E	NB	20
				EB	-				EB	-
				SB	145				SB	145
				WB	40				WB	40
Pymont Bridge Road / Western Distributor EB exit ramp (priority controlled)										
Morning	1,888	10	A	NB	-	1,981	12	A	NB	-
				EB	<5				EB	<5
				SB	40				SB	55
				WB	180				WB	195
Evening	1,515	7	A	NB	-	1,607	7	A	NB	-
				EB	<5				EB	<5
				SB	15				SB	15
				WB	145				WB	150
Pymont Bridge Road / Harris Street (signalised)										
Morning	2,311	22	B	NB	70	2,435	22	B	NB	70
				EB	180				EB	195
				SB	75				SB	75
				WB	45				WB	50
Evening	2,137	26	B	NB	60	2,261	26	B	NB	60
				EB	110				EB	120
				SB	100				SB	105
				WB	50				WB	60
Pymont Bridge Road / Pymont Street (signalised)										
Morning	1,747	25	B	NB	-	1,872	26	B	NB	-
				EB	70				EB	85
				SB	110				SB	120
				WB	25				WB	25
Evening	1,682	27	B	NB	-	1,806	28	B	NB	-
				EB	35				EB	40
				SB	105				SB	115
				WB	25				WB	25
Pymont Bridge Road / Union Street (priority controlled)										
Morning	816	14	A	NB	-	908	16	B	NB	-
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	<5				WB	<5
Evening	748	13	A	NB	-	841	15	B	NB	-
				EB	<5				EB	<5
				SB	<5				SB	<5
				WB	<5				WB	<5

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Darling Drive / Union Street / Murray Street (signalised)										
Morning	1,166	28	B	NB	20	1,227	28	B	NB	20
				EB	45				EB	55
				SB	15				SB	15
				WB	30				WB	40
Evening	1,100	32	C	NB	15	1,161	33	C	NB	15
				EB	30				EB	35
				SB	60				SB	60
				WB	50				WB	65
Darling Drive / Harbourside access road (roundabout)										
Morning	654	10	A	NB	10	683	11	A	NB	10
				EB	-				EB	-
				SB	10				SB	10
				WB	<5				WB	<5
Evening	479	10	A	NB	10	508	11	A	NB	10
				EB	-				EB	-
				SB	<5				SB	5
				WB	<5				WB	<5
Union Street / Edward Street (signalised)										
Morning	557	16	B	NB	20	588	16	B	NB	20
				EB	5				EB	5
				SB	<5				SB	<5
				WB	<5				WB	<5
Evening	723	17	B	NB	20	755	17	B	NB	20
				EB	10				EB	10
				SB	20				SB	20
				WB	<5				WB	<5
Union Street / Pyrmont Street (signalised)										
Morning	952	28	B	NB	60	983	54	D	NB	105
				EB	10				EB	10
				SB	75				SB	110
				WB	10				WB	25
Evening	1,167	36	C	NB	55	1,199	82	F	NB	105
				EB	10				EB	10
				SB	130				SB	225
				WB	45				WB	90
Harris Street / Allen Street (signalised)										
Morning	1,782	36	C	NB	55	1814	51	D	NB	65
				EB	250				EB	350
				SB	15				SB	30
				WB	-				WB	-
Evening	1,371	22	B	NB	25	1,402	23	B	NB	25
				EB	95				EB	100
				SB	50				SB	60

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	-				WB	-
Harris Street / Fig Street / Western Distributor ramps (signalised)										
Morning	3,958	>100	F	NB	45	3,989	>100	F	NB	45
				EB	260				EB	260
				SB	200				SB	250
				WB	>500				WB	>500
Evening	3,694	34	C	NB	60	3,725	35	C	NB	60
				EB	230				EB	230
				SB	115				SB	125
				WB	130				WB	130

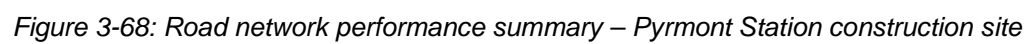
(h) Special events

Special events in the vicinity of the Pyrmont Station construction site are centred in the Darling Harbour precinct and Sydney CBD, which is accessible via Pyrmont Bridge. Pedestrian activity increases significantly during these special events, particularly at the Darling Drive / Union Street / Murray Street intersection which provides pedestrian access between Pyrmont and the Darling Harbour precinct, and between Pyrmont and Sydney CBD via Pyrmont Bridge. These pedestrian desire lines would fall within the immediate vicinity of the Pyrmont Station construction site with the potential for conflict between pedestrians and construction vehicles and impacts on pedestrian movement and accessibility. During special events these impacts are considered major and would require mitigation measures to reduce the anticipated impacts. Further, Pyrmont Bridge Road, Pyrmont Bridge, Darling Drive, Union Street and Murray Street form part of the route for the Sydney Running Festival which is held every year in September. Event organisers would be consulted about the proposed construction works in order to allow sufficient time for them to consider the event's interaction with this proposal. The planning and development of appropriate restrictions to minimise impacts on the transport and traffic network during special events would be determined in consultation with relevant parts of Transport for NSW and other relevant agencies.

Chapter 4 outlines mitigation measures that would be implemented to minimise impacts during special events, which would be detailed in future Construction Traffic Management Plans.

(i) Construction impacts summary

Figure 3-68 provides a summary of construction impacts on road network performance. Figure 3-69 provides a summary of construction impacts on parking, access, public transport and active transport.



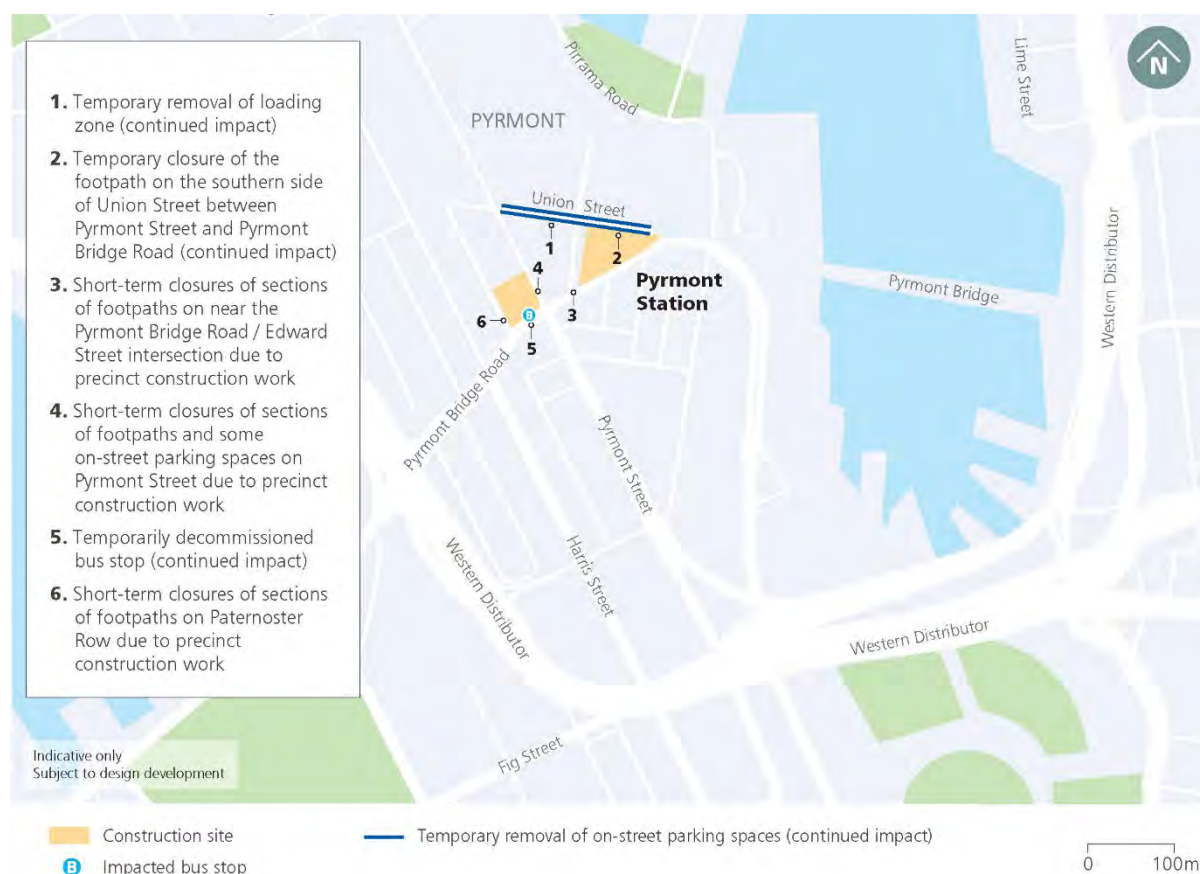


Figure 3-69: Parking, access, public transport and active transport construction impact summary – Pyrmont Station construction site

3.15. Hunter Street Station (Sydney CBD) construction site

3.15.1. Baseline transport environment

(a) Active transport network

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

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

The cycle network surrounding the Hunter Street Station (Sydney CBD) construction site is shown in Figure 3-70 and consists of on-road and off-road cycle routes. An off-road cycle path is provided on the eastern side of Kent Street between the Western Distributor on-ramp and Liverpool Street and provides north-south connectivity to the wider cycling network at Pyrmont Bridge and the Sydney Harbour Bridge. A shared path is provided on the eastern side of Macquarie Street between north of Albert Street and Bent Street and connects to the shared path on the Cahill Expressway. In July 2020, a pop-up cycleway was opened on the western side of Pitt Street which provides north-south connectivity between Circular Quay and King Street. Moderate difficulty on-road cycle routes are located on Kent Street towards Millers Point, George Street north of Hunter Street and Phillip Street north of Bent Street. Macquarie Street is designated as a high difficulty on-road cycle route.

O-ring and u-rail bicycle parking facilities are located throughout the Sydney CBD including on Hunter Street, Margaret Street, Jamison Street and Kent Street.

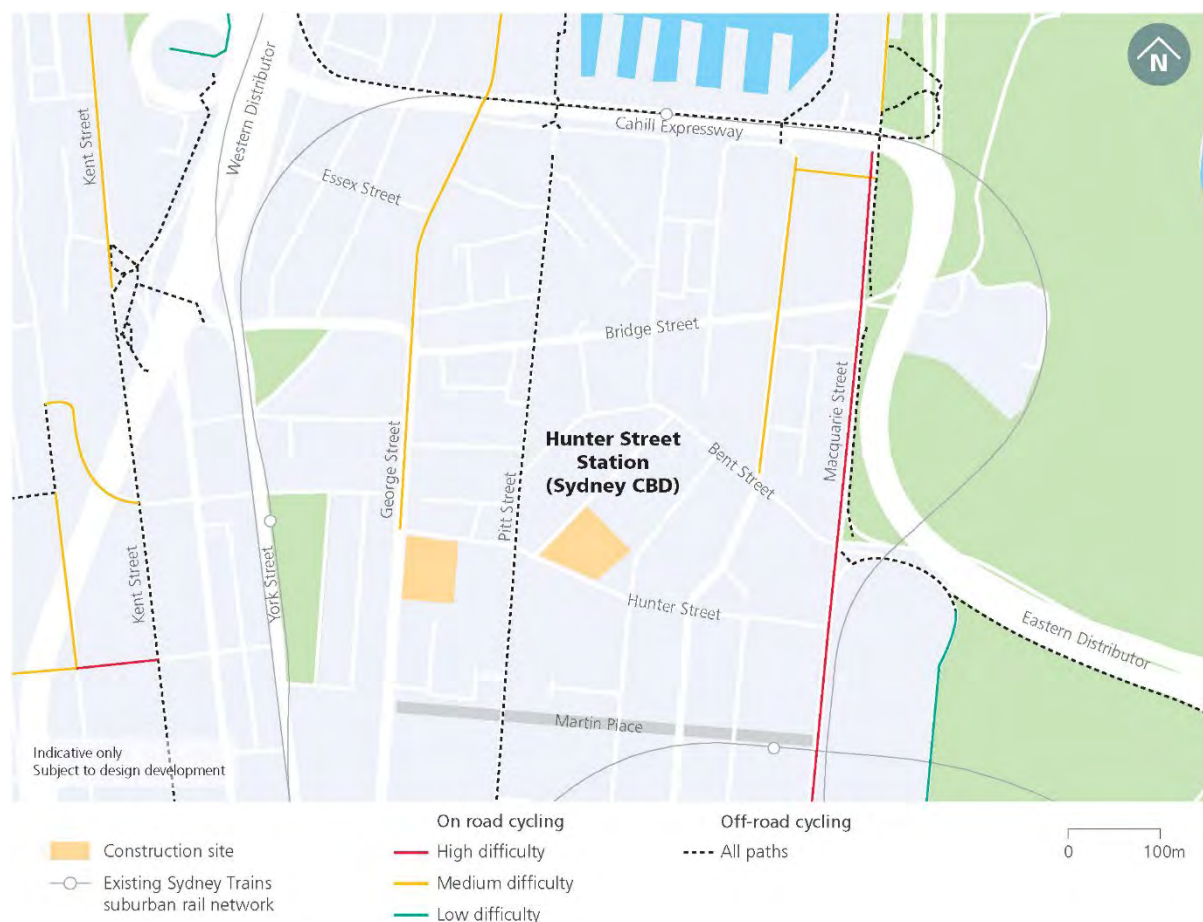


Figure 3-70: Cycle network surrounding the Hunter Street Station (Sydney CBD) construction site

Sources: Cycleway Finder (Transport for NSW, 2021); Sydney cycling map (City of Sydney, 2021)

(b) Public transport network

The Sydney CBD is well served by public transport services. Wynyard Station and Circular Quay Station are located near the Hunter Street Station (Sydney CBD) construction site. They are served by the T1 North Shore & Western Line, T2 Inner West & Leppington Line, T3 Bankstown Line, T8 Airport & South Line and T9 Northern Line, which provide direct connections to most areas of Sydney. Wynyard Station is also served by the Central Coast & Newcastle Line during the weekday morning and evening peak periods. Martin Place Station is located to the south-east of the site and is served by T4 Eastern Suburbs & Illawarra Line and South Coast Line, which provide direct connections to Bondi Junction, Sydenham, Sutherland, Waterfall, Wollongong and Kiama.

A substantial number of buses serve the Sydney CBD. Near the Hunter Street Station (Sydney CBD) construction site, bus stops located along York Street, Carrington Street, Clarence Street, Kent Street, Bridge Street, Phillip Street and Macquarie Street are served by 76 bus routes which connect the Sydney CBD to multiple locations across Sydney. These bus routes are operated by Forest Coach Lines, Hillsbus, Sydney Buses, Transdev NSW and Transit Systems. Bus interchanges are located at Wynyard Station on Clarence Street, York Street and Carrington Street; Circular Quay Station on Alfred Street; and Martin Place Station on Castlereagh Street and Elizabeth Street. The interchanges allow customers to easily transfer between buses and the suburban and intercity rail networks.

Light rail services operate along George Street and Alfred Street and are served by the L2 Randwick Line and L3 Kingsford Line which connect the Sydney CBD to Surry Hills, Moore Park, Kingsford and Randwick. The Circular Quay, Bridge Street and Wynyard light rail stops are located near the Hunter Street Station (Sydney CBD) construction site.

Ferry services are accessible at Circular Quay and Barangaroo. Circular Quay is served by all Sydney Ferries routes and Barangaroo is served by the F3 Parramatta River and F4 Pyrmont Bay routes. Privately operated commuter and sightseeing services are also accessible at Circular Quay and Barangaroo.

Sydney Metro City & Southwest, which is currently under construction, is planned to commence operation in 2024. In the vicinity of the Hunter Street Station (Sydney CBD) construction site, metro stations will be located at Martin Place and Barangaroo.

The public transport network surrounding the Hunter Street Station (Sydney CBD) construction sites is shown in Figure 3-71.



Figure 3-71: Public transport network surrounding the Hunter Street Station (Sydney CBD) construction site

Sources: Forest Network Map (Forest Coach Lines, 2021); Hills District Bus Guide – Network Map (Hillsbus, 2021); Region 7 bus services (Sydney Buses, 2021); Region 8 bus services (Sydney Buses, 2021); State Transit Eastern Suburbs (Sydney Buses, 2021); Chatswood, Hornsby and Berowra bus network map (Transdev NSW, 2021); Inner West and Southern region network (Transit Systems, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

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

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

As part of work carried out under the previous Sydney Metro West planning application, the following on-street parking spaces would be temporarily removed:

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

(d) **Traffic volumes and patterns**

Bridge Street is the main two-way east-west road near the construction site that facilitates connectivity between the Western Distributor, Cahill Expressway, Eastern Distributor and local roads in the Sydney CBD. Bridge Street experiences a westbound morning peak direction and eastbound evening peak direction with traffic volumes between 320 and 790 vehicles per hour in each direction. Hunter Street, Margaret Street and Bent Street are also east-west roads that carry traffic volumes of up to 570 vehicles in each direction.

Macquarie Street is the main two-way north-south road near the construction site that provides access between the Cahill Expressway, Eastern Distributor and the Sydney CBD. Macquarie Street carries traffic volumes of between 880 and 1,300 vehicles in each direction during the peak hour.

The road network near the construction site also consists of north-south local roads including Clarence Street, York Street, George Street, Pitt Street, O'Connell Street, Bligh Street and Castlereagh Street. These roads carry lower volumes of traffic of up to 680 vehicles per hour. Through traffic is not permitted on George Street south of Hunter Street.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-38.

Table 3-38: Existing peak hour traffic volumes by direction (2021) – Hunter Street Station (Sydney CBD) construction site

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Bridge Street west of Macquarie Street	Eastbound	460	790
	Westbound	730	320
Margaret Street east of Clarence Street	Eastbound	170	160
	Westbound	480	280
Hunter Street west of Macquarie Street	Eastbound	370	350
	Westbound	570	310
Bent Street west of Macquarie Street	Eastbound	320	460
	Westbound	570	430

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
O'Connell Street north of Hunter Street	Northbound	-	-
	Southbound	90	70
Macquarie Street north of Bent Street	Northbound	980	880
	Southbound	880	1,300
George Street north of Margaret Street	Northbound	110	90
	Southbound	-	-
Clarence Street north of Margaret Street	Northbound	370	680
	Southbound	-	-

Source: Traffic surveys from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Hunter Street Station (Sydney CBD) construction site is shown in Table 3-39.

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

All other intersections currently perform at Level of Service D or better.

Table 3-39: Modelled peak hour baseline intersection performance (2021) – Hunter Street Station (Sydney CBD) construction site

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Macquarie Street / Bridge Street / Cahill Expressway ramps (signalised)					
Morning	2,713	46	D	NB	210
				EB	60
				SB	20
				WB	115
Evening	2,906	31	C	NB	120
				EB	50
				SB	65
				WB	35
Bridge Street / Phillip Street (signalised)					
Morning	1,897	33	C	NB	90
				EB	55
				SB	15
				WB	50
Evening	1,849	30	C	NB	95
				EB	75
				SB	30

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	50
Bridge Street / Young Street (signalised)					
Morning	1,556	12	A	NB	10
				EB	60
				SB	30
				WB	30
Evening	1,562	11	A	NB	20
				EB	20
				SB	45
				WB	55
Bridge Street / Loftus Street (signalised)					
Morning	1,635	12	A	NB	40
				EB	55
				SB	-
				WB	90
Evening	1,763	14	A	NB	50
				EB	85
				SB	-
				WB	40
Macquarie Street / Bent Street / Eastern Distributor ramps (signalised)					
Morning	3,689	40	C	NB	90
				EB	85
				SB	185
				WB	150
Evening	4,183	41	C	NB	115
				EB	130
				SB	330
				WB	100
Bent Street / Phillip Street (signalised)					
Morning	1,875	40	C	NB	135
				EB	10
				SB	80
				WB	140
Evening	1,977	59	E	NB	85
				EB	35
				SB	60
				WB	275
Bent Street / Bligh Street (signalised)					
Morning	832	8	A	NB	-
				EB	10
				SB	-
				WB	50
Evening	891	6	A	NB	-
				EB	10
				SB	-
				WB	45
Bent Street / Loftus Street / O'Connell Street (priority controlled)					
Morning	677	13	A	NB	-

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	760	14	A	EB	<5
				SB	<5
				WB	<5
				NB	-
				EB	<5
				SB	<5
				WB	<5
Hunter Street / Pitt Street / O’Connell Street (signalised)					
Morning	1,467	55	D	NB	15
				EB	35
				SB ¹	120
				SB ²	65
				WB	130
Evening	1,367	34	C	NB	30
				EB	25
				SB ¹	45
				SB ²	30
				WB	55
Hunter Street / Castlereagh Street / Bligh Street (signalised)					
Morning	1,123	39	C	NB	-
				EB	50
				SB	20
				WB	145
Evening	1,166	30	C	NB	-
				EB	40
				SB	20
				WB	125
Hunter Street / Elizabeth Street / Chifley Square (signalised)					
Morning	2,262	28	B	NB	120
				EB	65
				SB	85
				WB	85
Evening	2,042	22	B	NB	110
				EB	40
				SB	55
				WB	45
Hunter Street / Macquarie Street (signalised)					
Morning	2,343	18	B	NB	105
				EB	70
				SB	50
				WB	-
Evening	2,312	17	B	NB	130
				EB	65
				SB	40
				WB	-
Hunter Street / George Street (signalised)					
Morning	339	24	B	NB	10
				EB	-

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	427	23	B	SB	<5
				WB	60
				NB	15
				EB	-
				SB	<5
				WB	75
Margaret Street / George Street (signalised)					
Morning	439	25	B	NB	<5
				EB	55
				SB	<5
				WB	-
Evening	517	18	B	NB	<5
				EB	50
				SB	<5
				WB	-
Margaret Street / Carrington Street (signalised)					
Morning	641	8	A	NB	20
				EB	<5
				SB	-
				WB	35
Evening	691	13	A	NB	25
				EB	15
				SB	-
				WB	50
Margaret Street / York Street (signalised)					
Morning	1,643	25	B	NB	-
				EB	60
				SB	80
				WB	60
Evening	1,685	23	B	NB	-
				EB	25
				SB	85
				WB	65
Margaret Street / Clarence Street (signalised)					
Morning	1,347	25	B	NB	60
				EB	65
				SB	-
				WB	75
Evening	1,484	25	B	NB	80
				EB	70
				SB	-
				WB	40
Clarence Street / Jamison Street (signalised)					
Morning	985	14	A	NB	25
				EB	-
				SB	-
				WB	25
Evening	1,285	9	A	NB	15

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				EB	-
				SB	-
				WB	20

¹ Pitt Street SB approach

² O'Connell Street SB approach

3.15.2. Construction impact assessment

(a) Construction site location and access

The Hunter Street Station (Sydney CBD) construction site would comprise two separate sites, a western site and an eastern site on either side of Hunter Street. The Hunter Street Station (Sydney CBD) western construction site would be located on the south-eastern corner of George Street and Hunter Street. The Hunter Street Station (Sydney CBD) eastern construction site would be located on the north-eastern corner of Hunter Street and O'Connell Street.

Roads forming part of the primary construction vehicle route for the Hunter Street Station (Sydney CBD) western construction site include the Cahill Expressway, Eastern Distributor, Bridge Street, Bent Street, Loftus Street, O'Connell Street, Hunter Street, Macquarie Street, George Street, Margaret Street, Clarence Street and Bradfield Highway as shown in Figure 3-72. Phillip Street is an additional road that forms part of the secondary construction vehicle route. Primary site access would be left-in from Hunter Street and egress would be left-out and right-out from Hunter Street. The proposed right-turn out of the site onto Hunter Street would require some form of traffic control so that construction vehicles can safely exit the site. Opportunities to facilitate this turn would be explored in consultation with Transport for NSW and the City of Sydney during detailed construction planning and may include temporary traffic signals or traffic controllers. For the purposes of this assessment, temporary traffic signals have been included at the site exit point. Sydney Metro are continuing to investigate the feasibility of the outbound route via George Street, Margaret Street, Clarence Street and Bradfield Highway in relation to the crossing of the light rail line and pedestrianised George Street.

Roads forming part of the primary construction vehicle route for the Hunter Street Station (Sydney CBD) eastern construction site include Cahill Expressway, Eastern Distributor, Bridge Street, Bent Street, Loftus Street, O'Connell Street, Hunter Street and Macquarie Street as shown in Figure 3-72. Phillip Street is an additional road that forms part of the secondary construction vehicle route. Primary access to the site would be left-in, left-out to and from O'Connell Street.



Figure 3-72: Hunter Street Station (Sydney CBD) construction site indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Hunter Street Station (Sydney CBD) construction site include:

- Enabling and site establishment work, including installation or retention of protection around the 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.

(c) Construction vehicle movements

Construction vehicles would access and egress the Hunter Street Station (Sydney CBD) western and eastern construction sites during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the sites per hour during the various phase of construction are shown in Figure 3-73 and Figure 3-74 for the western construction site and Figure 3-75 and Figure 3-76 for the eastern construction site. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-40.

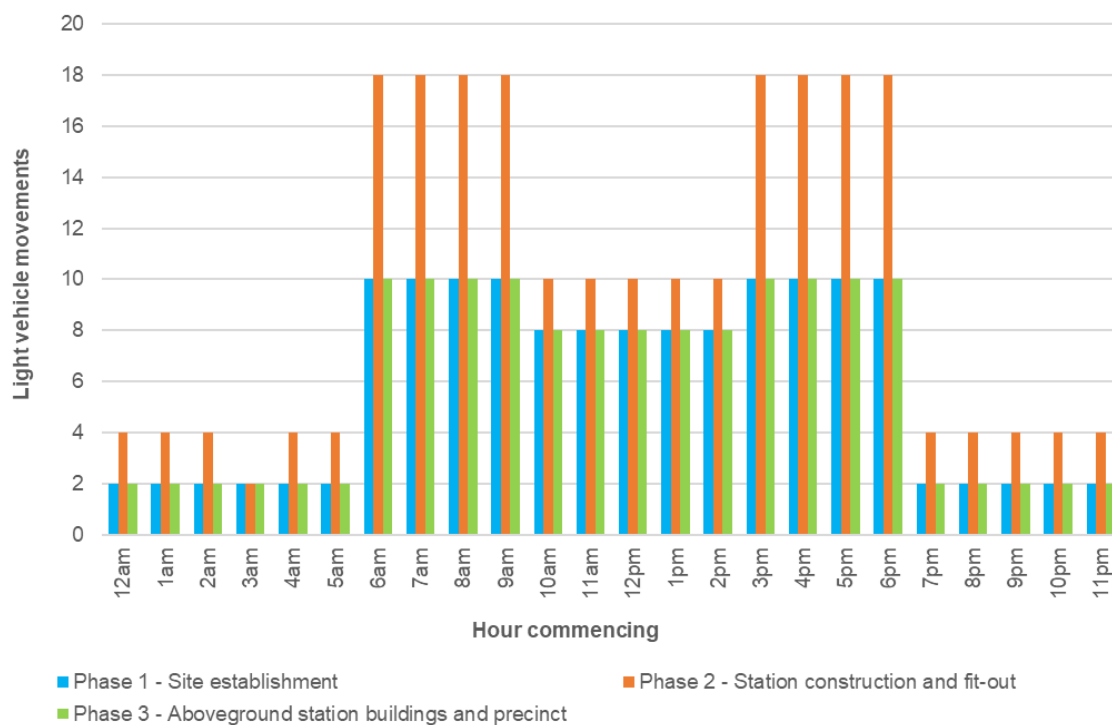


Figure 3-73: Hourly light vehicle movements (arrival and departure) at the Hunter Street Station (Sydney CBD) western construction site

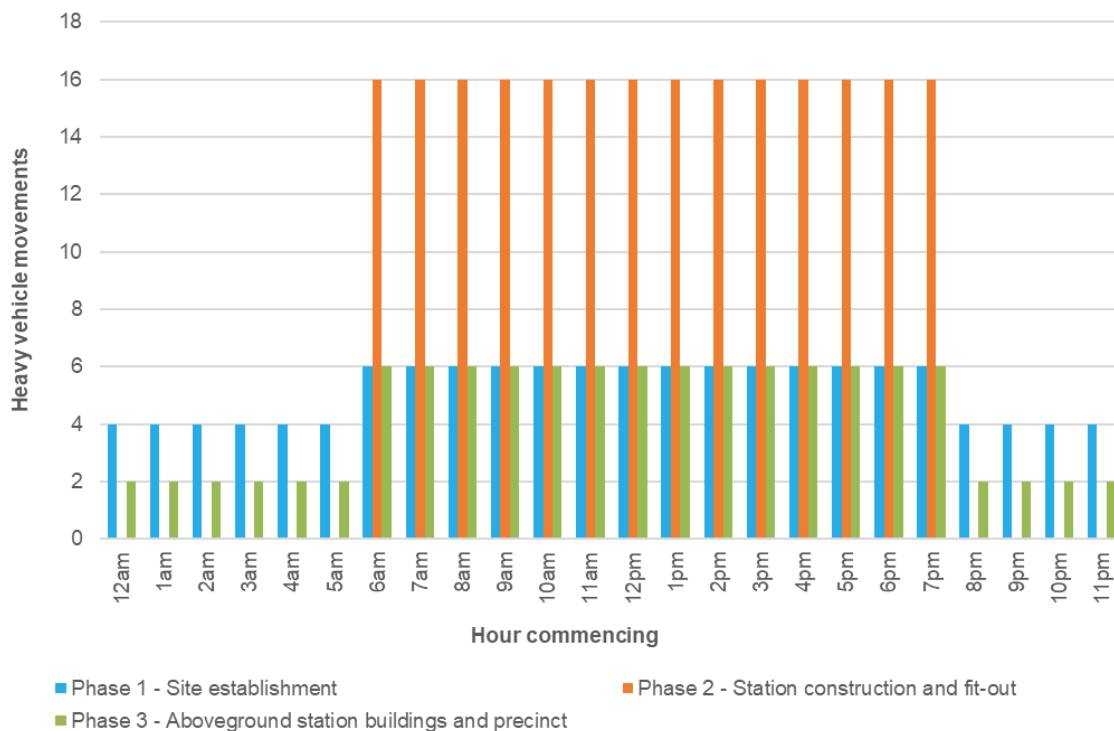


Figure 3-74: Hourly heavy vehicle movements (arrival and departure) at the Hunter Street Station (Sydney CBD) western construction site

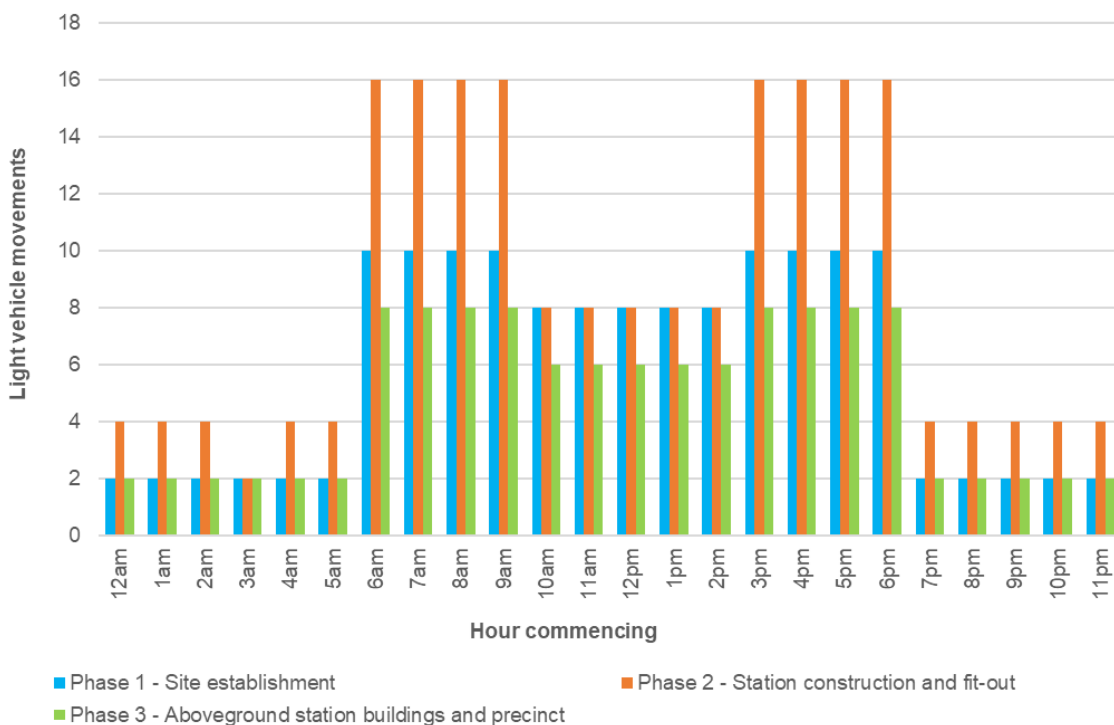


Figure 3-75: Hourly light vehicle movements (arrival and departure) at the Hunter Street Station (Sydney CBD) eastern construction site

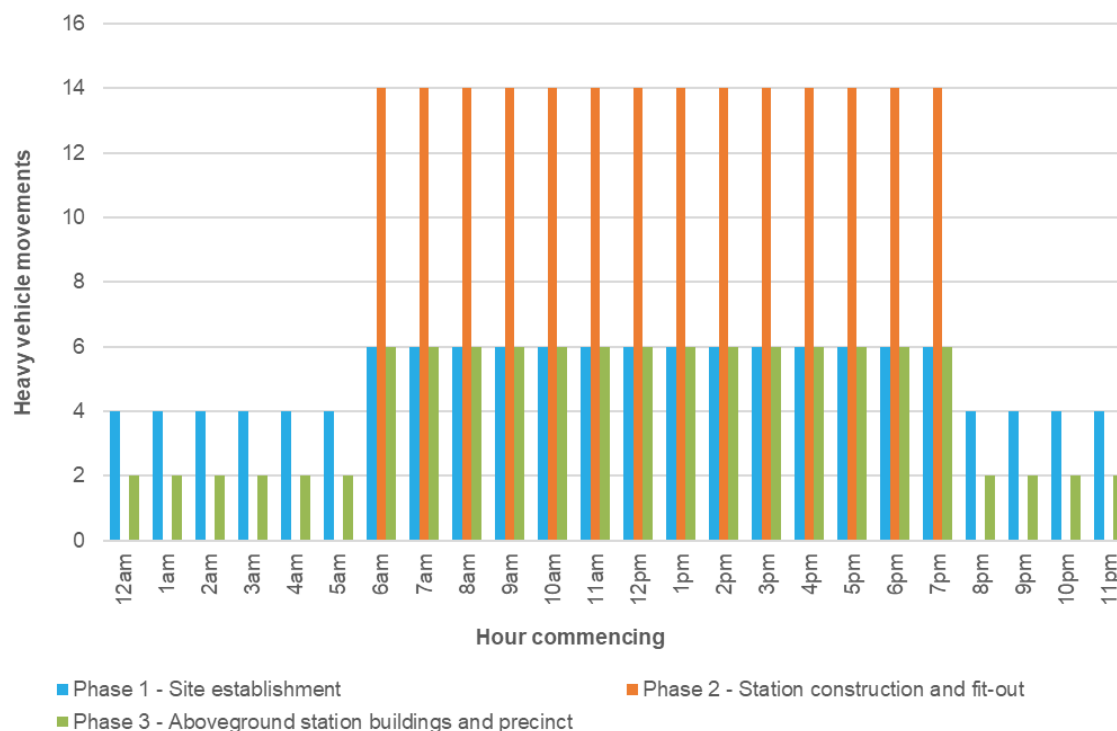


Figure 3-76: Hourly heavy vehicle movements (arrival and departure) at the Hunter Street Station (Sydney CBD) eastern construction site

Table 3-40: Daily construction movements per day by phase – Hunter Street Station (Sydney CBD) construction site

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Hunter Street Station (Sydney CBD) western construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	236	224	460
Phase 3 – Aboveground station buildings and precinct	142	104	246
Hunter Street Station (Sydney CBD) eastern construction site			
Phase 1 – Site establishment	142	124	266
Phase 2 – Station construction and fit-out	210	196	406
Phase 3 – Aboveground station buildings and precinct	116	104	220

(d) Impacts on the active transport network

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

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

Macquarie Street is designated as an on-road cycle route of high difficulty. Macquarie Street would be used by construction vehicles travelling from the Hunter Street Station (Sydney CBD) western and eastern construction sites. Furthermore, construction vehicles would travel adjacent to the shared path on Macquarie Street and across the cycle path on Pitt Street. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

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

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

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

(f) Impacts on parking and property access

The continued temporary impacts of removing on-street parking on Hunter Street and O'Connell Street adjacent to the western and eastern construction sites, respectively, and the extension of the duration of the existing restrictions on the parking lane on the northern side of Hunter Street would be minor given the low number of removed parking spaces and the availability of alternative on-street and off-street parking nearby. Opportunities to mitigate impacts on on-street parking would be explored in consultation with the City of Sydney during construction planning (refer to Section 4).

(g) Impacts on road network performance

Intersection performance results under the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-41.

During the morning peak hour (8.15am to 9.15am) and evening peak hour (5.45pm to 6.45pm) presented in this assessment, it is anticipated that the Hunter Street Station (Sydney CBD) western construction site would generate a total of 38 light vehicle movements (19 light vehicles travelling to and from the construction site) and 28 heavy vehicle movements (14 heavy vehicles travelling to and from the construction site), and the Hunter Street Station (Sydney CBD) eastern construction site would generate a total of 34 light vehicle movements (17 light vehicles travelling to and from the construction site) and 26 heavy vehicle movements (13 heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance without construction traffic indicates that the following intersections would perform at Level of Service E or F:

- Macquarie Street / Bridge Street / Cahill Expressway ramps during the morning peak hour
- Bridge Street / Phillip Street during the evening peak hour
- Bridge Street / Young Street during the evening peak hour
- Bridge Street / Loftus Street during the evening peak hour
- Macquarie Street / Bent Street during the evening peak hour
- Bent Street / Phillip Street during the morning and evening peak hours
- Hunter Street / Pitt Street / O'Connell Street during the morning peak hour.

The performance of intersections along Macquarie Street, Bridge Street, Bent Street and Pitt Street is due to high background traffic volumes on the majority of approaches, resulting in increased average delays and all intersections operating over capacity.

Modelled intersection performance with construction traffic indicates that the following intersections would experience a decrease in Level of Service:

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

- Hunter Street / Macquarie Street during the evening peak hour – from Level of Service B to D. This is due to additional construction vehicles travelling on Hunter Street in the eastbound direction, resulting in increased average delays on the Macquarie Street south approach and Hunter Street west approach. The intersection would still operate with spare capacity with the addition of construction traffic
- Hunter Street / George Street during the evening peak hour – from Level of Service B to C. The intersection would still operate with spare capacity with the addition of construction traffic
- Macquarie Street / Carrington Street during the evening peak hour – from Level of Service A to B. The intersection would still operate with spare capacity with the addition of construction traffic.

All other intersections that would operate at Level of Service E or F without construction traffic would continue to operate over capacity and at the same Level of Service with construction traffic.

The impact of construction vehicles on overall road network performance is considered minor when compared to road network performance without the proposal, with the exception of the Macquarie Street / Bent Street intersection where its performance would decrease from Level of Service E to F during the evening peak. Measures to improve road network performance are outlined in the Sydney Metro CTMF and may include:

- Managing construction vehicles to minimise movements during peak periods
- Traffic signal optimisation at an intersection or corridor level
- Active traffic management including the use of closed-circuit television cameras in conjunction with portable variable message signs to advise drivers of potential delays or the availability of less congested alternative routes.

Table 3-41: Modelled intersection performance (2026) – Hunter Street Station (Sydney CBD) construction site

Intersection and peak hour	2026 without proposal				2026 with proposal			
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)
Macquarie Street / Bridge Street / Cahill Expressway ramps (signalised)								
Morning	3,127	>100	F	NB 450	3,188	>100	F	NB 485
				EB 50				EB 50
				SB 20				SB 30
				WB 205				WB 240
Evening	3,406	35	C	NB 135	3,467	39	C	NB 145
				EB 50				EB 50
				SB 65				SB 65
				WB 45				WB 120

Intersection and peak hour	2026 without proposal				2026 with proposal					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		
Bridge Street / Phillip Street (signalised)										
Morning	2,519	42	C	NB	160	2,554	43	D	NB	160
				EB	115				EB	115
				SB	20				SB	20
				WB	50				WB	50
Evening	2,891	>100	F	NB	185	2,925	>100	F	NB	195
				EB	115				EB	115
				SB	30				SB	30
				WB	50				WB	50
Bridge Street / Young Street (signalised)										
Morning	2,191	18	B	NB	5	2,226	19	B	NB	5
				EB	105				EB	105
				SB	30				SB	30
				WB	100				WB	105
Evening	2,806	>100	F	NB	25	2,841	>100	F	NB	20
				EB	105				EB	105
				SB	90				SB	90
				WB	95				WB	50
Bridge Street / Loftus Street (signalised)										
Morning	2,425	17	B	NB	40	2,460	17	B	NB	40
				EB	175				EB	185
				SB	-				SB	-
				WB	105				WB	105
Evening	2,396	>100	F	NB	450	2,431	>100	F	NB	395
				EB	>500				EB	>500
				SB	-				SB	-
				WB	80				WB	40
Macquarie Street / Bent Street / Eastern Distributor ramps (signalised)										
Morning	4,025	48	D	NB	100	4,106	56	D	NB	110
				EB	110				EB	130
				SB	225				SB	240
				WB	180				WB	210
Evening	4,708	63	E	NB	115	4,789	75	F	NB	115
				EB	215				EB	220
				SB	400				SB	415
				WB	120				WB	130
Bent Street / Phillip Street (signalised)										
Morning	2,067	>100	F	NB	220	2,099	>100	F	NB	220
				EB	10				EB	10
				SB	190				SB	245
				WB	400				WB	485
Evening	2,264	92	F	NB	105	2,305	>100	F	NB	115
				EB	35				EB	35
				SB	80				SB	80

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	445				WB	>500
Bent Street / Bligh Street (signalised)										
Morning	871	17	B	NB	-	902	17	B	NB	-
				EB	10				EB	10
				SB	-				SB	-
				WB	50				WB	50
Evening	926	6	A	NB	-	958	6	A	NB	-
				EB	15				EB	10
				SB	-				SB	-
				WB	40				WB	40
Bent Street / Loftus Street / O’Connell Street (priority controlled)										
Morning	707	12	A	NB	-	774	15	B	NB	-
				EB	<5				EB	<5
				SB	<5				SB	5
				WB	<5				WB	<5
Evening	779	13	A	NB	-	845	17	B	NB	-
				EB	<5				EB	<5
				SB	<5				SB	5
				WB	<5				WB	<5
Hunter Street / Pitt Street / O’Connell Street (signalised)										
Morning	1,547	74	F	NB	15	1,632	>100	F	NB	15
				EB	35				EB	45
				SB ¹	165				SB ¹	190
				SB ²	90				SB ²	135
				WB	170				WB	175
Evening	1,467	37	C	NB	30	1,552	52	D	NB	30
				EB	25				EB	30
				SB ¹	55				SB ¹	75
				SB ²	40				SB ²	80
				WB	70				WB	105
Hunter Street / Castlereagh Street / Bligh Street (signalised)										
Morning	1,273	56	D	NB	-	1,322	54	D	NB	-
				EB	50				EB	50
				SB	25				SB	30
				WB	220				WB	190
Evening	1,320	45	D	NB	-	1,369	43	D	NB	-
				EB	45				EB	60
				SB	25				SB	25
				WB	195				WB	185
Hunter Street / Elizabeth Street / Chifley Square (signalised)										
Morning	2,669	26	B	NB	155	2,719	27	B	NB	160
				EB	80				EB	90
				SB	90				SB	90
				WB	80				WB	80

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Evening	2,272	22	B	NB	120	2,321	22	B	NB	120
				EB	50				EB	55
				SB	65				SB	60
				WB	50				WB	50
Hunter Street / Macquarie Street (signalised)										
Morning	2,568	21	B	NB	125	2,618	21	B	NB	135
				EB	95				EB	125
				SB	65				SB	60
				WB	-				WB	-
Evening	2,611	23	B	NB	180	2,660	45	D	NB	280
				EB	100				EB	215
				SB	60				SB	75
				WB	-				WB	-
Hunter Street / Site Access (signalised)										
Morning	356	<5	A	NB	<5	422	9	A	NB	10
				EB	10				EB	20
				SB	-				SB	-
				WB	30				WB	50
Evening	467	<5	A	NB	<5	534	7	A	NB	15
				EB	15				EB	20
				SB	-				SB	-
				WB	45				WB	65
Hunter Street / George Street (signalised)										
Morning	381	29	C	NB	10	398	40	C	NB	10
				EB	-				EB	-
				SB	<5				SB	<5
				WB	50				WB	50
Evening	495	26	B	NB	15	512	34	C	NB	15
				EB	-				EB	-
				SB	<5				SB	<5
				WB	50				WB	50
Margaret Street / George Street (signalised)										
Morning	453	26	B	NB	<5	469	25	B	NB	<5
				EB	60				EB	60
				SB	<5				SB	<5
				WB	-				WB	-
Evening	582	23	B	NB	<5	599	23	B	NB	<5
				EB	80				EB	80
				SB	<5				SB	<5
				WB	-				WB	-
Margaret Street / Carrington Street (signalised)										
Morning	661	8	A	NB	20	678	8	A	NB	20
				EB	5				EB	5
				SB	-				SB	-

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
				WB	40				WB	45
Evening	766	14	A	NB	30	783	19	B	NB	35
				EB	15				EB	20
				SB	-				SB	-
				WB	55				WB	85
				Margaret Street / York Street (signalised)						
Morning	1,869	25	B	NB	-	1,886	25	B	NB	-
				EB	60				EB	60
				SB	95				SB	100
				WB	70				WB	75
Evening	1,853	23	B	NB	-	1,869	23	B	NB	-
				EB	30				EB	25
				SB	95				SB	95
				WB	75				WB	75
Margaret Street / Clarence Street (signalised)										
Morning	1,614	26	B	NB	70	1,631	27	B	NB	70
				EB	105				EB	110
				SB	-				SB	-
				WB	75				WB	75
Evening	1,697	27	B	NB	100	1,714	27	B	NB	100
				EB	115				EB	115
				SB	-				SB	-
				WB	40				WB	45
Clarence Street / Jamison Street (signalised)										
Morning	1,260	16	B	NB	45	1,277	16	B	NB	45
				EB	-				EB	-
				SB	-				SB	-
				WB	35				WB	35
Evening	1,443	11	A	NB	35	1,460	12	A	NB	100
				EB	-				EB	-
				SB	-				SB	-
				WB	25				WB	25

¹Pitt Street SB approach

²O'Connell Street SB approach

(h) Special events

A large number of special events are held in the Sydney CBD at various locations including The Domain, The Rocks and the Sydney Harbour foreshore. Major special events in the Sydney CBD are shown in Table 3-42.

Table 3-42: Special events in the Sydney CBD

Indicative month	Event	Location
December / January	New Year's Eve	Throughout Sydney CBD
January	Field Day	The Domain
January	Australia Day	Throughout Sydney CBD
January	Sydney Festival	Throughout Sydney CBD
March	Mardi Gras	Oxford Street, Hyde Park
April	ANZAC Day	Martin Place
May / June	VIVID Sydney	Throughout Sydney CBD
June	Sydney Film Festival	Throughout Sydney CBD
August	City 2 Surf	Hyde Park, William Street
September	Sydney Running Festival	Throughout Sydney CBD
October	Nigh Noodle Market	Hyde Park
December	Carols in the Domain	The Domain
December	Sydney to Hobart	Sydney Harbour foreshore

During major special events, there are high levels of pedestrian activity throughout the Sydney CBD. Major pedestrian desire lines comprise trips between venues within the Sydney CBD, various public transport stops and car parks. These pedestrian desire lines would fall within the immediate vicinity of the Hunter Street Station (Sydney CBD) construction site with the potential for conflict between pedestrians and construction vehicles and impacts on pedestrian movement and accessibility. During major special events these impacts are considered major and would require mitigation measures to reduce the anticipated impacts. Further, movements to and from the construction site would be restricted during major special events including New Year's Eve and VIVID Sydney that involve the temporary pedestrianisation of roads to facilitate large pedestrian volumes. In addition, during major events the City of Sydney may suspend or restrict the operation of a works zone and special traffic arrangements may be required during the Christmas and New Year period (generally from 1 December to 2 January). The planning and development of appropriate restrictions to minimise impacts on the transport and traffic network during special events would be determined in consultation with relevant parts of Transport for NSW and other relevant agencies.

Chapter 4 outlines mitigation measures that would be implemented to minimise impacts during special events, which would be detailed in future Construction Traffic Management Plans.



Figure 3-78: Parking, access, public transport and active transport construction impact summary – Hunter Street Station (Sydney CBD) construction site

3.16. Clyde stabling and maintenance facility and Rosehill services facility construction sites

3.16.1. Baseline transport environment

(a) Active transport network

The pedestrian network around the Clyde stabling and maintenance facility and Rosehill services facility construction sites is limited given the industrial land uses to the east of Rosehill Gardens racecourse and north of Duck River. Footpaths are located on Wentworth Street south of Kay Street, Martha Street, James Ruse Drive and Parramatta Road. Unwin Street and Kay Street will be realigned during the work carried out under the previous Sydney Metro West planning application, with provision of pedestrian and cyclist facilities.

The closest formal pedestrian crossing facilities are located at the Parramatta Road / Wentworth Street intersection via signalised pedestrian crossings, about 550 metres away from the site access. In addition, James Ruse Drive forms a barrier to east-west movements. These movements are limited to at-grade crossings at the Parramatta Road / James Ruse Drive intersection and a pedestrian bridge that connects to Oak Street. Both are located a considerable distance from the construction site.

The former Rosehill Station footbridge is currently informally used to access Rosehill Gardens racecourse from the associated car park during events. The former Rosehill Station and footbridge will be permanently removed as part of work under the previous Sydney Metro West planning application, and provision will be made for an alternative crossing of the former T6 Carlingford Line to maintain access to Rosehill Gardens racecourse.

Given the limited pedestrian infrastructure, typical pedestrian volumes within the immediate vicinity of the construction site are low. Exceptions are during events held at Rosehill Gardens racecourse, where pedestrian volumes are concentrated around car parks and access gates.

The cycle network surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites is shown in Figure 3-79 with limited facilities throughout the area. Near the southern boundary of the Clyde stabling and maintenance facility and Rosehill services facility construction sites there is the M4 Motorway cycleway, which is a 15-kilometre shared path between South Wentworthville and Sydney Olympic Park, generally following the M4 Western Motorway alignment. A shared path that runs along the northern side of Parramatta Road connects to the M4 Motorway cycleway via Kendall Street and Martha Street, which are designated moderate difficulty on-road cycle routes. There is also a short section of Alfred Street between Prospect Street and Virginia Street that is also designated as a moderate difficulty on-road cycle route.

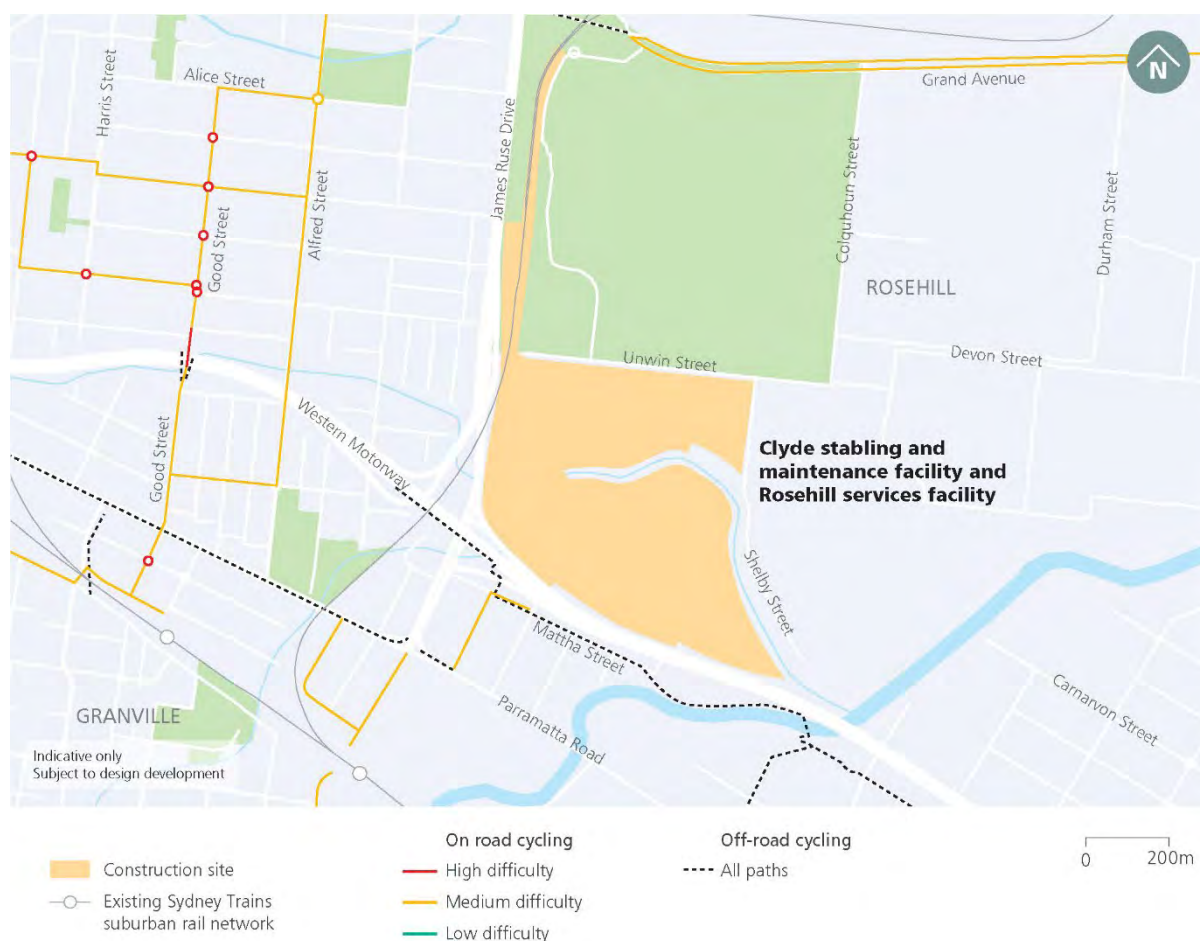


Figure 3-79: Cycle network surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites

Sources: Cycleway Finder (Transport for NSW, 2021); Greater Parramatta cycleways network map (City of Parramatta, 2021)

(b) Public transport network

There are no train stations located within the immediate surrounds of the Clyde stabling and maintenance facility and Rosehill services facility construction sites. The nearest rail services are accessible from Clyde Station on the Sydney Trains network, located about one kilometre from the site. Clyde Station is served by the T1 Western Line and T2 Inner West and Leppington Line.

A few bus routes operate near the Clyde stabling and maintenance facility and Rosehill services facility construction sites and are accessible at bus stops located at least 500 metres from the site on Parramatta Road, James Ruse Drive and Alfred Street. Two bus routes which are operated by Transdev NSW travel on James Ruse Drive or Alfred Street, before continuing on Parramatta Road. These services provide connections to Bankstown, Parramatta and Sutherland. Two NightRide bus services operated by Hillsbus are accessible from Parramatta Road or James Ruse Drive and provide connectivity between Sydney CBD and Fairfield or Carlingford. The area is also served by five school bus routes.

Ferry services do not operate in close proximity to the Clyde stabling and maintenance facility and Rosehill services facility construction sites.

The public transport network surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites is shown in Figure 3-80.

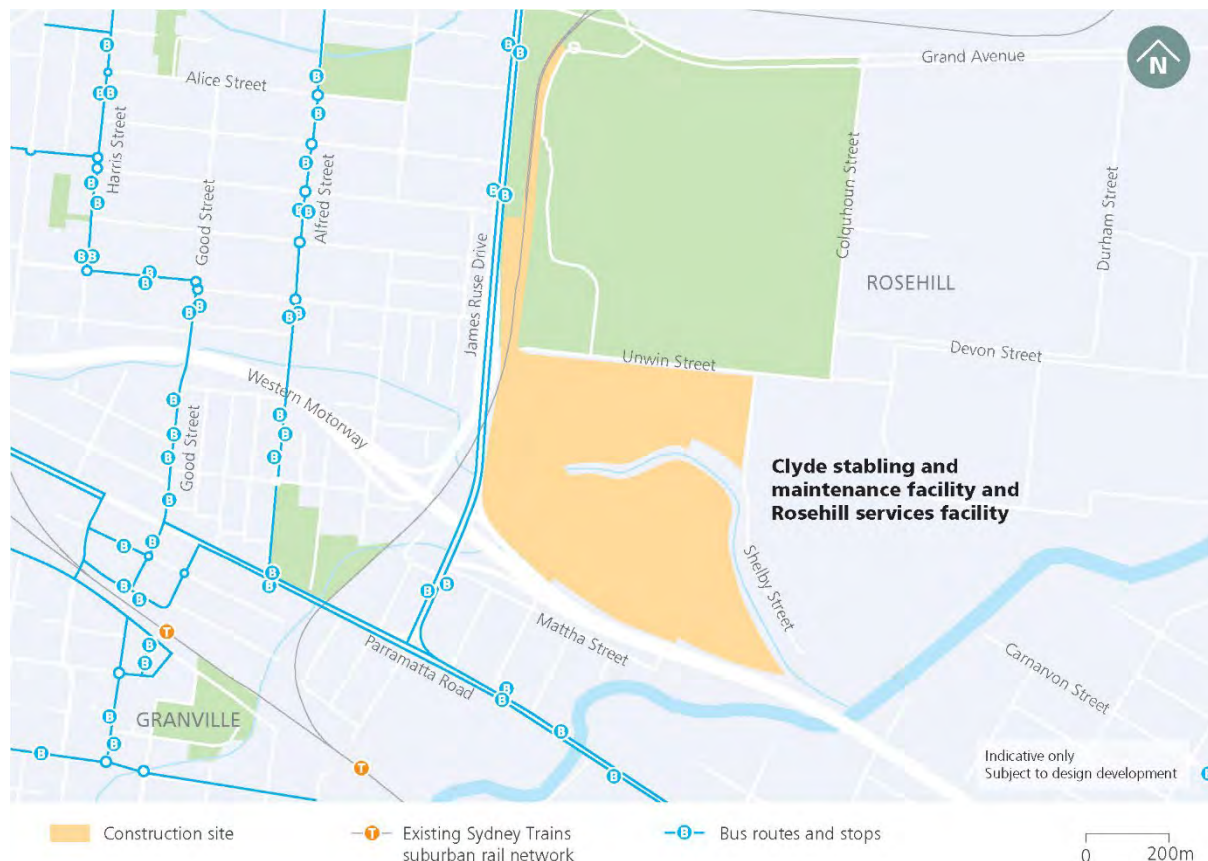


Figure 3-80: Public transport network surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites

Source: Parramatta, Bankstown and Liverpool bus network map (Transdev NSW, 2021)

(c) On-street parking, loading, servicing and pick-up arrangements

Unrestricted on-street parking is provided on Unwin Street and Wentworth Street. Parking is prohibited on James Ruse Drive with clearways in operation at all times. Similarly, parking is prohibited on Parramatta Road with clearways in operation seven days a week during daytime hours (6 am to 7 pm Monday to Friday, 8 am to 8 pm Saturday and Sunday). On-street parking currently provided on Kay Street and near the Wentworth Street / Kay Street intersection will be permanently removed due to the realignment of Unwin Street and Kay Street as part of work carried out under the previous Sydney Metro West planning application.

There are no kiss and ride, loading or taxi zones on roads immediately surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites.

(d) Traffic volumes and patterns

Parramatta Road is an arterial road that carries high traffic volumes of at least 1,720 vehicles during the peak hour in each direction. Eastbound volumes are slightly higher than westbound volumes the morning and evening peak hours.

Local roads such as Wentworth Street and Martha Street carry substantially lower traffic volumes of up to 250 vehicles and 40 vehicles per hour in each direction during peak periods, respectively.

Road network changes as part of work carried out under the previous Sydney Metro West planning application have been incorporated into the construction traffic modelling assessment in Section 3.16.2 and includes the realignment of Unwin Street and Kay Street around the construction site. This would provide for continued B-double access around the construction site.

Approximate peak hour midblock volumes on key access roads are shown in Table 3-43.

Table 3-43: Existing peak hour traffic volumes by direction (2021) – Clyde stabling and maintenance facility and Rosehill services facility construction sites

Road	Direction	Morning peak hour volume (vehicles per hour)	Evening peak hour volume (vehicles per hour)
Parramatta Road west of Wentworth Street	Eastbound	2,050	2,130
	Westbound	1,890	1,720
Martha Street east of Wentworth Street	Eastbound	40	20
	Westbound	30	30
Wentworth Street north of Parramatta Road	Northbound	250	100
	Southbound	140	110

Source: SCATS detector volumes from March 2021

(e) Baseline intersection performance

Modelled intersection performance during the morning and evening peak hours for key intersections in the vicinity of the Clyde stabling and maintenance facility and Rosehill services facility construction sites is shown in Table 3-44.

Modelled intersection performance indicates that all intersections perform at Level of Service A or B during the morning and evening peak hours.

Table 3-44: Modelled peak hour baseline intersection performance (2021) – Clyde stabling and maintenance facility and Rosehill services facility construction sites

Intersection and peak hour	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Wentworth Street (signalised)					
Morning	4,458	15	B	NB	-
				EB	400
				SB	55
				WB	165
Evening	4,235	10	A	NB	-
				EB	345
				SB	35
				WB	130
Wentworth Street / Martha Street (priority controlled)					
Morning	481	11	A	NB	<5
				EB	<5
				SB	<5
				WB	<5
Evening	271	9	A	NB	<5
				EB	<5
				SB	<5
				WB	<5

3.16.2. Construction impact assessment

(a) Construction site location and access

The Clyde stabling and maintenance facility is bound by Shirley Street, Unwin Street, James Ruse Drive and the M4 Western Motorway. Roads forming part of the primary construction vehicle route include Parramatta Road, Wentworth Street, Deniehy Street and Martha Street as shown in Figure 3-81. Primary site access would be from Wentworth Street and egress would be from Wentworth Street and Deniehy Street.

The Rosehill services facility lies within the construction boundary of the Clyde stabling and maintenance facility construction site at its northern end, near the south-western corner of Unwin Street and Shirley Street. Roads forming part of the primary construction vehicle route include Parramatta Road, Wentworth Street and Unwin Street as shown in Figure 3-81. Primary site access would be right-in, left-out, to and from Unwin Street.



Figure 3-81: Clyde stabling and maintenance facility and Rosehill services facility construction sites indicative construction vehicle routes

(b) Construction activities

Key construction activities anticipated at the Clyde stabling and maintenance facility construction site 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, cleaners, security and fire control buildings, a train wash facility and an operational water treatment plant
- 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
 - Electrical fit-out
 - Signalling and communications works

- Rehabilitation and revegetation work within the Duck Creek and A'Beckett's Creek riparian zone
- Finishing work, testing and commissioning.

Key construction activities anticipated at the Rosehill services facility construction site 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 and traction substation
- Access for tunnel fit-out and rail systems work
- Construction and fit-out of a traction substation
- Finishing work, testing and commissioning
- Demobilisation of construction plant, equipment, and other temporary construction site elements.

(c) Construction vehicle movements

Construction vehicles would access and egress the Clyde stabling and maintenance facility construction site and the Rosehill services facility construction site during the hours identified in Table 3-2.

The anticipated number of construction vehicle movements to and from the sites per hour during the various phase of construction are shown in Figure 3-82 and Figure 3-83 for the Clyde stabling and maintenance facility construction site and Figure 3-84 and Figure 3-85 for the Rosehill services facility construction site. Construction vehicles have been assumed to travel to and from the construction site within the hour, for example eight heavy vehicle movements during an hour would comprise four heavy vehicle movements to the construction site and four heavy vehicle movements from the construction site.

The total daily number of construction vehicle movements for each stage is provided in Table 3-45.

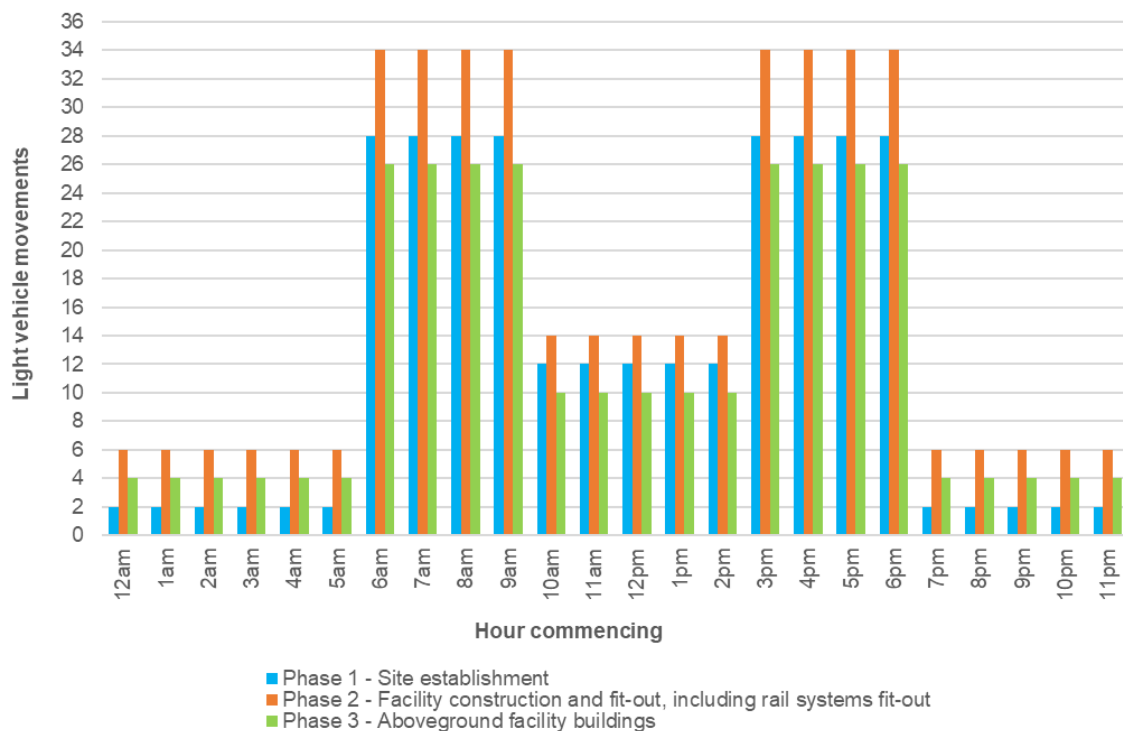


Figure 3-82: Hourly light vehicle movements (arrival and departure) at the Clyde stabling and maintenance facility construction site

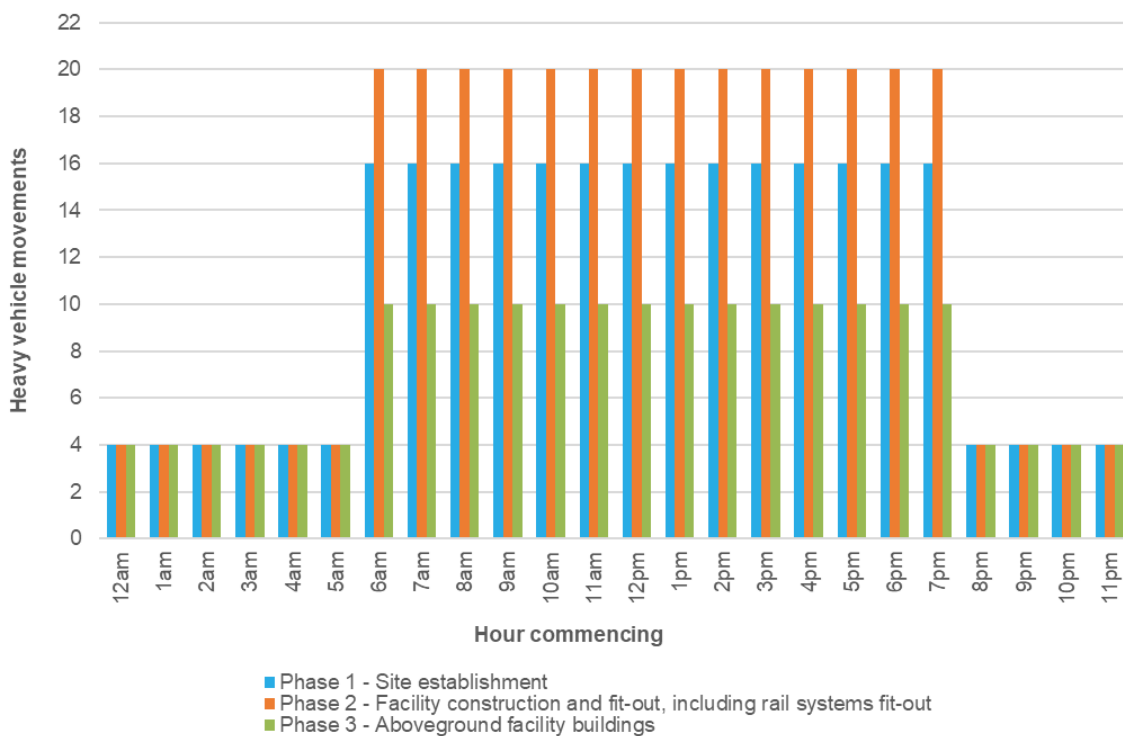


Figure 3-83: Hourly heavy vehicle movements (arrival and departure) at the Clyde stabling and maintenance facility construction site

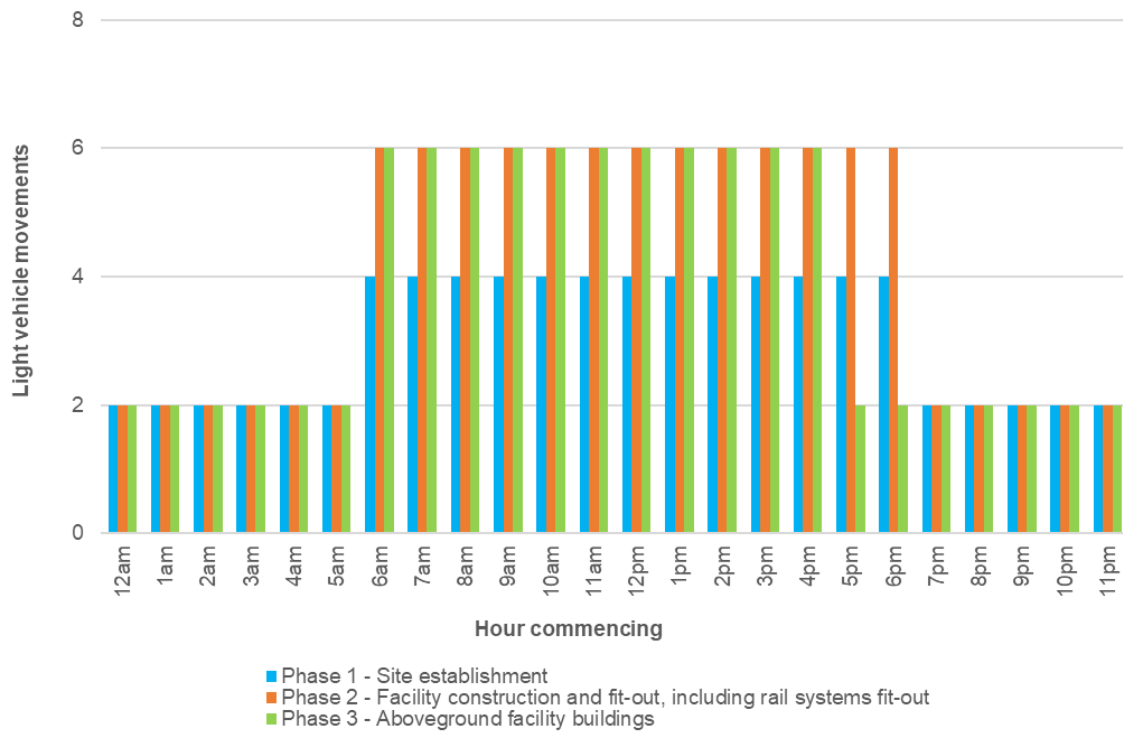


Figure 3-84: Hourly light vehicle movements (arrival and departure) at the Rosehill services facility construction site

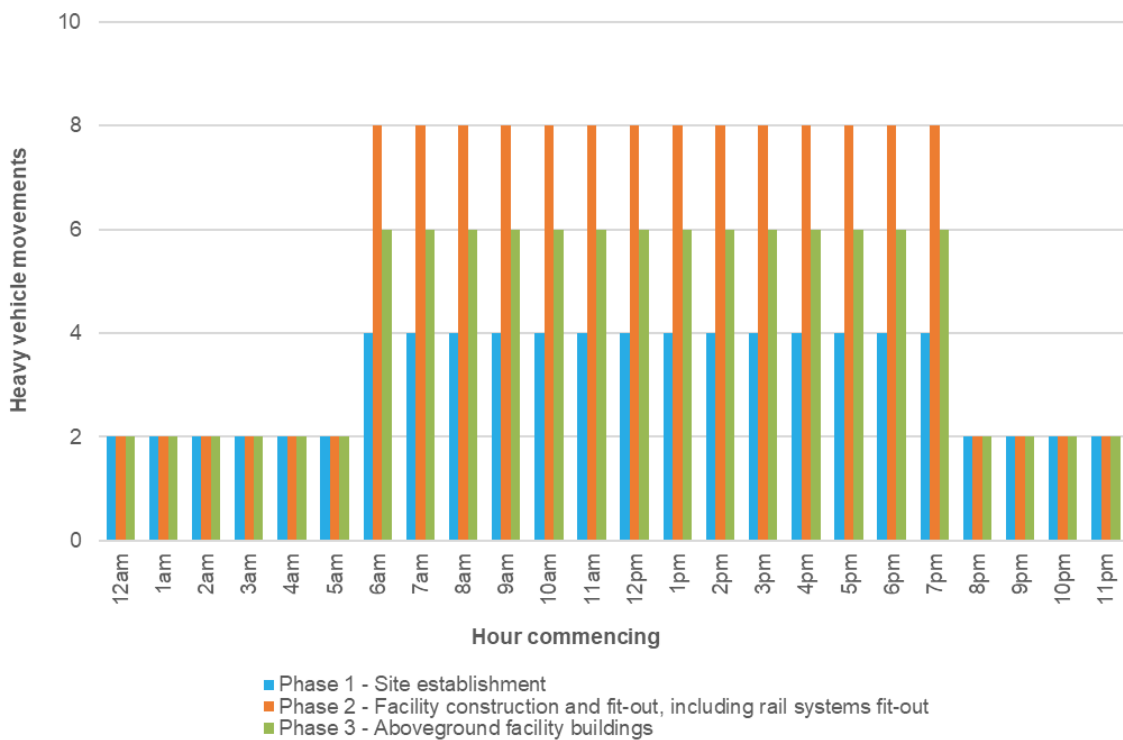


Figure 3-85: Hourly heavy vehicle movements (arrival and departure) at the Rosehill services facility construction site

Table 3-45: Daily construction movements per day by phase – Clyde stabling and maintenance facility and Rosehill services facility construction sites

Phase	Total movements per day		
	Light vehicles	Heavy vehicles	Total
Clyde stabling and maintenance facility construction site			
Phase 1 – Site establishment	306	264	570
Phase 2 – Facility construction and fit-out, including rail systems fit-out	408	320	728
Phase 3 – Aboveground facility buildings	302	180	482
Rosehill services facility construction site			
Phase 1 – Site establishment	74	76	150
Phase 2 – Facility construction and fit-out, including rail systems fit-out	100	132	232
Phase 3 – Aboveground facility buildings	92	104	196

(d) Impacts on the active transport network

During the work carried out under the previous Sydney Metro West planning application, the former Rosehill Station and footbridge will be permanently removed, and provision will be made for an alternative crossing of the former T6 Carlingford Line to maintain access to Rosehill Gardens racecourse. This alternative crossing would be maintained during construction of this proposal.

Other existing pedestrian and cycle routes surrounding the Clyde stabling and maintenance facility and Rosehill services facility construction sites would be maintained throughout construction.

Construction vehicles would travel adjacent to or across shared paths along Parramatta Road and Martha Street. Impacts on cyclists would be minor given that cyclists would be interacting with a low number of additional heavy vehicles. To address potential conflicts, mitigation measures as provided in Chapter 4 would be implemented during construction.

(e) Impacts on the public transport network

Bus services operate on Parramatta Road, which also forms part of the Clyde stabling and maintenance facility and Rosehill services facility construction vehicle routes. Minimal impacts on buses are expected and would be limited to a potential minor increase in travel time due to the additional construction vehicle routes on the road network. No impacts are anticipated on the operation of bus stops.

No impacts on the rail network are anticipated during construction.

(f) Impacts on parking and property access

No impacts on parking and property access are anticipated during construction.

(g) Impacts on road network performance

Intersection performance results for the '2026 without proposal' (without construction vehicles) and '2026 with proposal' (with construction vehicles) scenarios are summarised in Table 3-46.

During the morning peak hour (7.15am to 8.15am) and evening peak hour (6pm to 7pm) presented in this assessment, it is anticipated that the Clyde stabling and maintenance facility construction site would generate a total of 88 light vehicle movements (44 light vehicles travelling to and from the construction site) and 46 heavy vehicle movements (23 heavy vehicles travelling to and from the construction site), and the Rosehill services facility construction site would generate a total of 16 light vehicle movements (eight light vehicles travelling to and from the construction site) and 18 heavy vehicle movements (nine heavy vehicles travelling to and from the construction site). As discussed in Section 2.2, the peak hours presented in this assessment were selected to represent the times when background traffic demand is at its greatest.

Modelled intersection performance with construction traffic indicates that the Parramatta Road / Wentworth Street intersection would decrease from Level of Service B to C and A to B during the morning and evening peak hours, respectively. This intersection would still operate with spare capacity with the addition of construction traffic.

The Wentworth Street / Martha Street intersection would perform at Level of Service A with and without construction traffic.

The impact of construction vehicles on overall road network performance is considered minor and therefore mitigation measures are not required.

Table 3-46: Modelled intersection performance (2026) – Clyde stabling and maintenance facility and Rosehill services facility construction sites

Intersection and peak hour	2026 without proposal					2026 with proposal				
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	
Parramatta Road / Wentworth Street (signalised)										
Morning	4,754	16	B	NB	-	4,931	36	C	NB	-
				EB	460				EB	>500
				SB	50				SB	135
				WB	200				WB	265
Evening	4,705	10	A	NB	-	4,882	21	B	NB	-
				EB	450				EB	>500
				SB	5				SB	70
				WB	185				WB	195

Intersection and peak hour	2026 without proposal				2026 with proposal			
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LOS	Maximum queue length by directional approach (metres)
Wentworth Street / Martha Street (priority controlled)								
Morning	272	9	A	NB	448	12	A	NB
				EB				EB
				SB				SB
				WB				WB
Evening	142	8	A	NB	319	10	A	NB
				EB				EB
				SB				SB
				WB				WB

(h) Special events

Events are held throughout the year at Rosehill Gardens racecourse, including about 25 horse race meetings each year. Primary pedestrian and vehicle access points to Rosehill Gardens racecourse, and the majority of pedestrian and vehicle movements, are concentrated on Grand Avenue and James Ruse Drive. A secondary vehicle access point is located on Unwin Street. These pedestrian and vehicle access points to Rosehill Gardens racecourse would be maintained during construction of this proposal. Given the majority of pedestrian and vehicle movements during special events are located outside the immediate vicinity of the Clyde stabling and maintenance facility and Rosehill services facility construction sites, there is minimal potential for conflict between pedestrians, general traffic and construction vehicles and minimal potential for impacts on pedestrian and vehicle movements and accessibility. Therefore, mitigation measures are not required.

As part of the work carried out under the previous Sydney Metro West planning application, changes to existing pedestrian access to the racecourse from the west would be required. Provision of these proposed alternative access points to the racecourse would continue during construction of this proposal.

(i) Power supply route

The power supply route from the Camellia substation to the Rosehill services facility would be constructed by trenching within the road reserve. This trenching work would result in temporary changes to traffic arrangements potentially including the occupation of parking areas or the footpath. Two-way traffic would be maintained during the works. Where pedestrian footpaths are impacted, a suitable alternative route around the work area would be provided and signposted.

In addition, the work may result in reduced access to some properties for short periods of time (typically less than one day). In this event, suitable alternative arrangements would be discussed with the land owner.

As the works would progress along the power supply route alignment, the potential impacts in a particular location would be short-lived, typically occurring for up to two weeks.

(j) Construction impacts summary

Figure 3-86 provides a summary of construction impacts on road network performance.

Figure 3-87 provides a summary of construction impacts on parking, access, public transport and active transport.



Figure 3-86: Road network performance summary – Clyde stabling maintenance facility and Rosehill services facility construction sites

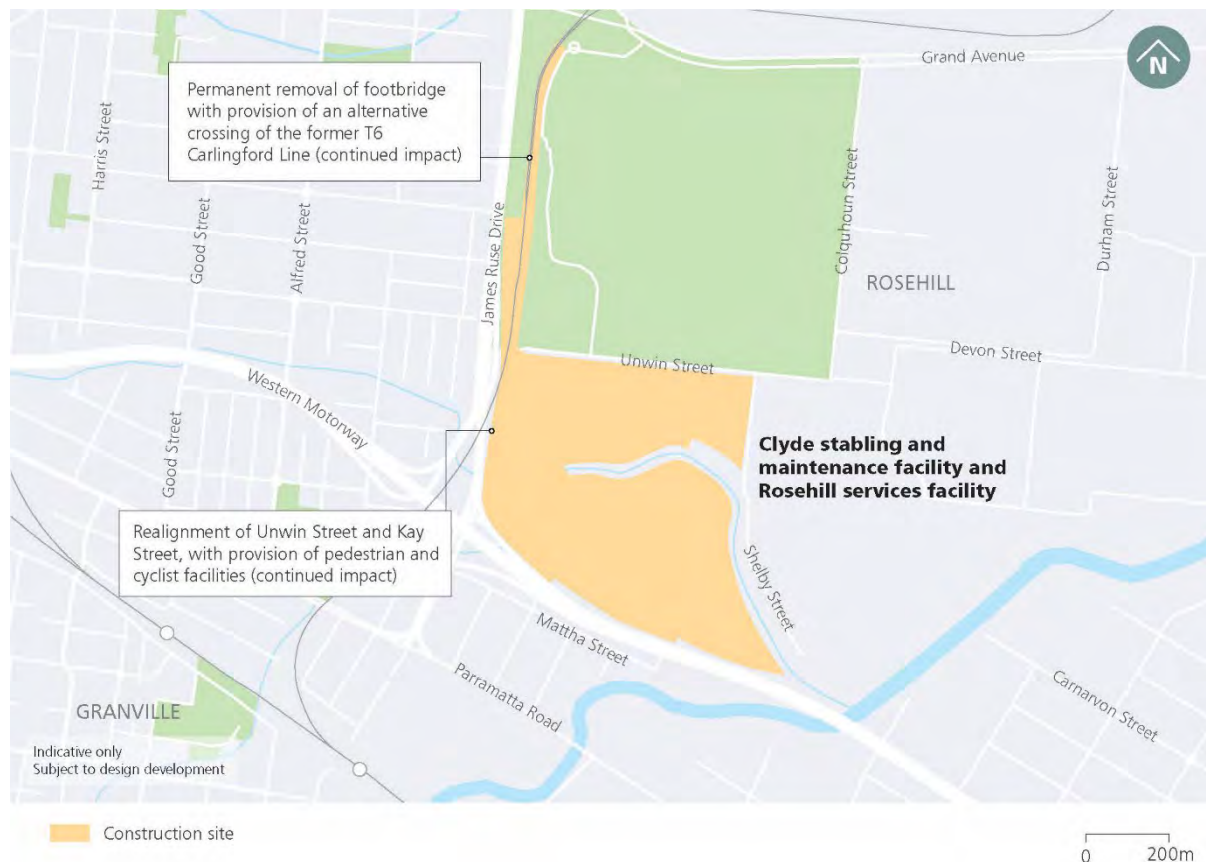


Figure 3-87: Parking, access, public transport and active transport construction impact summary – Clyde stabling maintenance facility and Rosehill services facility construction sites

3.17. Cumulative construction impacts

3.17.1. Assessment methodology

Projects that have been considered for the cumulative construction impact assessment are those which fall within the construction footprint of the proposal, as well as construction vehicle routes for those projects that use roads near the proposal construction sites. Projects deemed relevant for the cumulative construction impact assessment are:

- Sydney Metro West
 - Work carried out under the previous Sydney Metro West planning applications – potential cumulative impacts at all construction sites between Westmead metro station and Hunter Street Station (Sydney CBD)
- Parramatta Leagues Club Hotel – potential cumulative impacts at the Parramatta metro station construction site
- Site 2A and 2B, Sydney Olympic Park – potential cumulative impacts at the Sydney Olympic Park metro station construction site
- Site 43/44 Sydney Olympic Park – Stage 1 and 2 (6 Australia Avenue and 2 Herb Elliott Avenue) – potential cumulative impacts at the Sydney Olympic Park metro station construction site

- Western Harbour Tunnel – potential cumulative impacts at The Bays Station construction site
- Cockle Bay Wharf Redevelopment – potential cumulative impacts at the Pyrmont Station construction site and Hunter Street Station (Sydney CBD) construction site
- Sydney Metro City & Southwest – potential cumulative impacts at the Hunter Street Station (Sydney CBD) construction site
- Sydney Metro – Martin Place Over Station Development – potential cumulative impacts at the Hunter Street Station (Sydney CBD) construction site
- One Sydney Harbour – potential cumulative impacts at the Hunter Street Station (Sydney CBD) construction site
- 301 and 305 Kent Street Concept Hotel – potential cumulative impacts at the Hunter Street Station (Sydney CBD) construction site
- 50-52 Phillip Street New Hotel – potential cumulative impacts at the Hunter Street Station (Sydney CBD) construction site
- Clyde Terminal Conversion Project – potential cumulative impacts at the Clyde stabling and maintenance facility construction site and Rosehill services facility construction site.

The construction program of each project (using publicly available documents for most projects) has been analysed to determine the year that peak construction would occur, which corresponds to the maximum number of construction vehicles on the road network (representing the worst-case scenario). Given that the year of peak construction for all projects listed above is prior to 2026 (the construction year assessed for this proposal), and the majority of projects are expected to be completed by 2026, a qualitative assessment has been undertaken.

A cumulative construction traffic impact assessment has not been carried out at locations where no relevant projects have been identified. These locations are:

- North Strathfield metro station construction site
- Five Dock Station construction site.

In addition, there is no anticipated overlap in construction activities at the construction sites identified above between the work carried out under the previous Sydney Metro West planning application and this proposal.

3.17.2. Westmead metro station construction site

Work carried out under the previous Sydney Metro West planning application is scheduled to commence in 2021 with peak construction occurring in 2023. A review of the current construction program at the Westmead metro station construction site indicates that construction activities would occur through to 2026.

Roads that form part of primary construction vehicle routes that are common to both the work carried out under the previous Sydney Metro West planning application and construction of this proposal include Great Western Highway and Hawkesbury Road.

Although there is expected to be some concurrent works at the Westmead metro station construction site under both the approved major civil works and this proposal, this would be short-term and the peak construction vehicles for both activities would not coincide. The cumulative vehicle generation during this period is anticipated to be lower than the peak vehicles generated by this proposal.

3.17.3. Parramatta metro station construction site

A review of the construction program at the Parramatta metro station construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities under that approval would occur through to 2023. Therefore, there is no anticipated overlap in construction activities between the work carried out under the previous Sydney Metro West planning application and this proposal.

The construction timeframe for the Parramatta Leagues Club Hotel is not publicly available. However, a review of construction information indicates that O'Connell Street and Parkes Street form part of primary construction vehicle routes for the construction of Parramatta Leagues Club Hotel and this proposal. Construction vehicle volumes generated due to the construction of Parramatta Leagues Club Hotel would be low.

In addition, there would be minimal additional impacts on active transport, public transport, and parking and property access. Therefore, cumulative construction impacts at the Parramatta metro station construction site are anticipated to be minor.

3.17.4. Sydney Olympic Park metro station construction site

A review of the construction program at the Sydney Olympic Park metro station construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities under that approval would occur through to 2025.

Roads that form part of primary construction vehicle routes that are common to both the work carried out under the previous Sydney Metro West planning application and construction of this proposal include Olympic Boulevard, Sarah Durack Avenue and Edwin Flack Avenue. Based on the current construction planning there is not anticipated to be a substantial overlap of works occurring under both planning approvals.

The construction timeframes for Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park are not publicly available. However, a review of construction information indicates that Homebush Bay Drive, Australia Avenue and Herb Elliott Avenue east of the site form part of primary construction vehicle routes for the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park. These roads also form part of the secondary construction vehicle route for this proposal. Furthermore, Hill Road forms part of primary construction vehicle routes for the construction of Site 2A and 2B, Sydney Olympic Park and this proposal.

Construction vehicle volumes generated due to the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park are anticipated to be low. In addition, there would be minimal additional impacts on active transport, public transport, and parking and property access. Therefore, cumulative construction impacts at the Sydney Olympic Park metro station construction site are anticipated to be minor.

3.17.5. Burwood North Station construction site

A review of the construction program at the Burwood North Station construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities under that approval would occur through to 2023. Therefore, there is no anticipated overlap in construction activities between the work carried out under the previous Sydney Metro West planning application and this proposal.

In addition, there would be minimal additional impacts on active transport, public transport, and parking and property access. Therefore, cumulative construction impacts at the Burwood North Station construction site are anticipated to be minor.

3.17.6. The Bays Station construction site

A review of the construction program for the Western Harbour Tunnel indicates that main construction works would be occurring in 2023 at the Rozelle Rail Yards construction site. Tunnel fit-out and finishing, testing and commissioning, connection to Rozelle Interchange and site clean-up and demobilisation would be carried out in the first quarter of 2026.

City West Link forms part of primary construction vehicle routes for the construction of both the Western Harbour Tunnel and this proposal.

The last stages of work at the Rozelle Rail Yards construction site in the first quarter of 2026 are anticipated to generate a low number of construction vehicles. The duration of overlap between these last stages of work and peak construction of this proposal is short.

A review of the construction programs at The Bays Station construction site for the work carried out under the previous Sydney Metro West planning applications indicates that the final construction activities under those approvals would occur through to 2025. Although there is expected to be some concurrent works at The Bays Station construction site under the two preceding major civil works approvals and this proposal, this would be short-term and the peak construction vehicles for the activities would not coincide. The cumulative vehicle generation during this period is anticipated to be lower than the peak vehicles generated by this proposal.

In addition, there would be minimal additional impacts on active transport, public transport, and parking and property access. Therefore, cumulative construction impacts at The Bays Station construction site are anticipated to be manageable.

3.17.7. Pyrmont Station construction site

A review of the construction program at the Pyrmont Station construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities would occur through to 2025. Although there are expected to be some concurrent works at the Pyrmont Station construction site between that approval and this proposal, this would be short-term and the timing of peak construction vehicle generation for the activities would not coincide. The cumulative vehicle generation during this period is anticipated to be lower than the highest number of vehicles generated by this proposal.

The primary construction vehicle routes for the Cockle Bay Wharf Redevelopment do not overlap with primary construction vehicle routes for this proposal. Therefore, cumulative construction impacts at the Pyrmont Station construction site are anticipated to be minor.

3.17.8. Hunter Street Station (Sydney CBD) construction site

A review of the construction program at the Hunter Street Station (Sydney CBD) construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities would occur through to 2025. Although there are expected to be some concurrent works at the Hunter Street Station (Sydney CBD) construction site between that approval and this proposal, this would be short-term and the timing of peak construction vehicle generation for the activities would not coincide. The cumulative vehicle generation during this period is anticipated to be lower than the highest number of vehicles generated by this proposal.

Construction timeframes for the Cockle Bay Wharf Redevelopment, 301 and 305 Kent Street Concept Hotel and 50-52 Phillip Street New Hotel are not publicly available. However, a review of construction information indicates that Clarence Street forms part of primary construction vehicle routes for the construction of the Cockle Bay Wharf Redevelopment and this proposal. Furthermore, Bridge Street, Bent Street and Macquarie Street forms part of primary construction vehicle routes for the construction of 50-52 Phillip Street New Hotel and this proposal. Construction vehicle routes for 301 and 305 Kent Street Concept Hotel are not publicly available. However, given its proposed location, Clarence Street could also form part of primary construction routes for 301 and 305 Kent Street Concept Hotel.

Construction vehicle volumes generated due to the construction of the Cockle Bay Wharf Redevelopment, 301 and 305 Kent Street Concept Hotel and 50-52 Phillip Street New Hotel would likely be low. In addition, there would be minimal additional impacts on active transport, public transport, and parking and property access.

A review of the construction program for One Sydney Harbour indicates that peak construction activity occurred in September 2020, with final construction activities occurring in 2025. There are no local roads within the Sydney CBD network that form part of primary construction vehicle routes for both the construction of One Sydney Harbour and this proposal. A review of the construction programs for Sydney Metro City & Southwest and Sydney Metro - Martin Place Over Station Development indicates that the final construction activities at the Barangaroo Station construction site and Martin Place construction site would occur through to 2022. As a result, there is no anticipated overlap in construction activities between work carried out for Sydney Metro City & Southwest and this proposal. Therefore, cumulative construction impacts at the Hunter Street Station (Sydney CBD) construction site are anticipated to be manageable.

3.17.9. Clyde stabling and maintenance facility and Rosehill services facility construction sites

A review of the construction program at the Clyde stabling and maintenance facility construction site for the work carried out under the previous Sydney Metro West planning application indicates that the final construction activities would occur through to 2024. Therefore, there is no anticipated overlap in construction activities between that approval and this proposal.

Construction works for the Clyde Terminal Conversion Project would be completed before 2026. Therefore, cumulative construction impacts at the Clyde stabling and maintenance facility and Rosehill services facility construction sites are not anticipated.

4. Mitigation and management measures

The planning for this proposal and the arrangements of the construction sites have been developed to avoid and minimise transport and traffic related impacts where possible. This has included the following:

- Haulage routes have been developed in consultation with relevant councils, relevant parts of Transport for NSW and Sydney Olympic Park Authority, and have aimed to minimise the use of local roads and use the most efficient route to the arterial road network
- Selection of truck sizes at each construction site has considered a balance between reducing overall truck movements and manoeuvrability to, from and within the construction sites.

The approach to transport and traffic management during construction of the proposal, including the process for the development of all Traffic Management Plans, is outlined in Appendix G (Construction Traffic Management Framework) (CTMF) of the Environmental Impact Statement.

The CTMF is a Sydney Metro framework which provides the overall strategy and approach for construction traffic management, an outline of the traffic management requirements and processes common to all construction sites, and establishes the traffic management processes and acceptable criteria. It provides a linking document between the planning approval documentation and the construction traffic management documentation to be developed by the Principal Contractors, relevant to their scope of works. General key traffic management measures that would be adopted across all construction sites (where applicable and as required) include:

- The provision of directional signage and line marking to safely direct and guide drivers, cyclists and pedestrians past construction sites and to suitable alternative routes (if required) on the surrounding road network
- Notification of proposed changes and duration of changes using appropriate communication tools, for example newspapers (local or metropolitan), radio, project website, social media and direct community engagement
- Ongoing and direct coordination with relevant parts of Transport for NSW to mitigate congestion and provide rapid response should incidents or increased congestion occur as a direct result of the works. Notification of incidents or congestion would also be relayed to Sydney Metro and relevant Transport for NSW representatives immediately

- The management and coordination of construction vehicles to provide safe access to and from construction sites and across pedestrian paths. The type of traffic management to be employed at each construction site would depend on, and adjusted according to, the volume of pedestrians, passing traffic and the volume of construction vehicles. The types of management could include manual supervision, physical barriers, temporary / portable traffic signals (where approved by Transport for NSW, council or other road authority) or modification to existing traffic signals (where approved by Transport for NSW)
- The reduction of construction vehicle movements during network peak periods
- The management and coordination of construction vehicles to minimise movements through school zones when these zones are in operation
- Maintaining safe access to existing properties and businesses during the period of the works, or providing a suitable alternative
- Retaining existing on-street parking and restrictions, as far as is practicable.

The CTMF also details the requirement for the Principal Contractors to prepare detailed site-specific Construction Traffic Management Plans (CTMPs). The CTMPs would be developed for each construction site and detail items including access points, relevant signage, construction vehicle volumes, construction vehicle routes, swept paths, consultation and correspondence with relevant stakeholders, and any specific mitigation measures required to address any identified impacts associated with operation of the construction sites. The CTMPs would also include traffic guidance schemes, vehicle movement plans, pedestrian movement plans, parking management plans and traffic staging plans.

Residual impacts of this proposal that arise from engineering constraints or from construction activities, and which cannot be removed through the design are considered manageable. The mitigation measures would be reconfirmed as the proposal progresses to detailed design, and as more detailed construction management plans are developed.

A summary of mitigation measures identified for the proposal is provided in Table 4-1. These would be supplemented by mitigation measures detailed in Chapter 20 (Synthesis) of the Environmental Impact Statement with respect to cumulative impacts.

Table 4-1: Summary of construction transport mitigation measures

Reference	Mitigation measure	Application location(s) ¹
EIS-TT14	Where works are required within the rail corridor, Sydney Trains would be consulted to minimise potential disruptions to rail services. Works would be carried out during scheduled Sydney Trains rail possessions where possible, and customers would receive advanced notification of proposed works and information on alternative travel options.	WMS, NSMS
EIS-TT15	Opportunities to improve bus priority along the temporary detour route at Westmead metro station construction site would be investigated during detailed design.	WMS

Reference	Mitigation measure	Application location(s) ¹
EIS-TT16	Pedestrian and cyclist access would be maintained during the temporary closure of Alexandra Avenue. Wayfinding and customer information would be provided to guide pedestrians and cyclists to alternative routes.	WMS
EIS-TT17	The design of the temporary traffic arrangements at the Westmead metro station construction site during closure of Alexandra Avenue would consider construction traffic, alternate bus routes and bus stops, local vehicular traffic and pedestrian safety. The design of the temporary traffic arrangements would be undertaken in consultation with Transport for NSW, Schools Infrastructure, Health Infrastructure, relevant local councils and bus operators.	WMS
EIS-TT18	A temporary north-south pedestrian route would be provided between Macquarie Street and George Street at the Parramatta metro station construction site, although some short-term closures may be required.	PMS
EIS-TT19	Access would be maintained to the pedestrian footbridge at the existing North Strathfield Station. Any adjustments to the footbridge would be carried out in consultation with Transport for NSW.	NSMS
EIS-TT20	Construction site traffic generated at the Five Dock Station construction site would be managed to minimise movements during church services times at St Albans Anglican Church.	FDS

¹WMS: Westmead metro station; PMS: Parramatta metro station; SOPMS: Sydney Olympic Park metro station; NSMS: North Strathfield metro station; BNS: Burwood North Station; FDS: Five Dock Station; TBS: The Bays Station; PS: Pyrmont Station; HSS: Hunter Street (Sydney CBD) Station; CSMF: Clyde stabling and maintenance facility; RSF: Rosehill services facility.

4.1. Performance outcomes

Performance outcomes for Sydney Metro West were established as part of the concept assessment in the Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD (Sydney Metro, 2020). The performance outcomes related to construction transport are:

- Construction traffic and transport impacts on special events are minimised
- Safe routes for pedestrians and cyclists are provided around construction sites
- Safe access to properties is maintained
- Road occupancy is minimised, particularly in the Parramatta and Sydney CBDs
- Changes to the travel paths of road users, including bus routes, are minimised
- Affected emergency services and public transport operators are provided early communication on changes in traffic conditions
- Loss of on-street parking and loading zones is minimised
- Heavy vehicle routes are developed in consultation with relevant parts of Transport for NSW
- The use of local roads by heavy vehicles is minimised
- Safe access and egress is provided to and from construction sites.

Further details regarding how this proposal would achieve the performance outcomes is provided in Chapter 20 (Synthesis) of the Environmental Impact Statement.

5. References

Burwood Council (2021), *Bicycle Routes*

City of Canada Bay (2019), *Interim Bike Network Map*

City of Parramatta (2021), *Greater Parramatta cycleways network map*

City of Parramatta (2021), *City of Parramatta – Parking Finder*, available online:
<https://parramatta.spotparking.com.au/v2/finder#>

City of Sydney (2021), *Sydney cycling map*

Forest Coach Lines (2021), *Forest Network Map*

Hillsbus (2021), *Hills District Bus Guide – Network Map*

Roads and Maritime Services (2013), *Traffic Modelling Guidelines*

Roads and Traffic Authority (2002), *Guide to Traffic Generating Developments*

Sydney Buses (2021), *Region 7 bus services*

Sydney Buses (2021), *Region 8 bus services*

Sydney Buses (2021), *State Transit Eastern Suburbs*

Sydney Metro (2021), *Sydney Metro West Scoping Report – Rail infrastructure, stations, precincts and operations*

Transdev NSW (2021), *Chatswood, Hornsby and Berowra bus network map*

Transdev NSW (2021), *Parramatta, Bankstown and Liverpool bus network map*

Transit Systems (2021), *Inner West and Southern region network*

Transit Systems (2021), *Parramatta, Fairfield & Liverpool region network*

Transport for NSW (2018), *Guide to Traffic and Transport Management for Special Events*

Transport for NSW (2021), *Cycleway Finder*, available online: https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

Transport for NSW (2021), *Inner West On Demand Service*, available online:
<https://transportnsw.info/travel-info/ways-to-get-around/on-demand/inner-west>

Transport for NSW (2021), *Sydney Olympic Park – Major Event Bus Routes*, available online: <https://appln.transport.nsw.gov.au/mapservices/proxy/sop/map.html>

Western Sydney University (2021), *Shuttle Tracker*, available online:
https://api.transportme.com.au/transportme/public_tracking?op=127