Waterloo Metro Quarter - Over Station Development (OSD)

Preliminary Construction Environmental Management Statement

Applicable to:	Sydney Metro City & Southwest
Author:	Sydney Metro
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Executive Summary

Statement Purpose

This document has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for a concept State Significant Development Application (concept SSD Application) proposing over station development (OSD) above and adjacent to Waterloo Station. The Metro Quarter is proposed to be a mixed use development comprising residential, retail, commercial, community and other uses in addition to public domain upgrades. The SEARs call for the preparation of a Preliminary Construction Environmental Management Statement (the Statement) addressing how future construction stages will manage impacts to pedestrians, rail users, bus services and taxis.

OSD Overview

The concept SSD Application seeks approval for building envelopes, maximum Gross Floor Area (GFA) and use of the building envelopes for residential, commercial, retail and community purposes. Residential uses are proposed above the podium level in various building forms including three taller buildings of 23, 25 and 29 storeys. A total of 68,750 square metres GFA is proposed. The proposed supply of car spaces for the OSD is a maximum of 427 spaces, excluding service vehicle spaces and associated loading dock facilities, which are accessed via Botany Road and Wellington Street, as well as bicycle and motorcycle parking spaces.

Critical State Significant Infrastructure Approval

The Sydney Metro City & Southwest – Chatswood to Sydenham Critical State Significant Infrastructure Approval (CSSI Approval) establishes the general concept for the ground plane of Waterloo Station including access strategies for commuters, pedestrians and workers. Under the CSSI Approval, the main pedestrian access to the station is from the corner of Raglan and Cope Streets. Retail uses (approved under the CSSI Approval) would be located on the ground floor of the station development along the Cope Street frontage of the site. The station design has been developed having regard to its integration with the Metro Quarter OSD, and as a result, a second entrance to the station is to be provided from a proposed public plaza adjacent to Cope Street.

OSD Construction Traffic Management Principles

Construction would occur generally in accordance with the following:

- Metro contract requirements and relevant standards.
- Construction Traffic Haulage Routes (as provided for in the EIS and CSSI approval)
- Construction Traffic Management Framework (CTMF): The document provides the overall strategy and approach for construction traffic management for the Metro project, and an outline of the traffic management requirements and processes that will also apply to OSD construction at the Waterloo OSD site.

- Relevant traffic management methodologies and procedures approved previously for the site. (Note that these did not take account of the possibility of concurrent Metro station and OSD construction as outlined below).

OSD Construction Scenarios

Construction planning is proceeding on the basis of three possible staging scenarios:

- *Scenario 1:* OSD constructed while Metro construction is underway.
- *Scenario 2:* OSD construction may still be occurring after commencement of Metro station operation.
- *Scenario 3:* OSD construction starts after the Metro station is operational.

The anticipated construction timeline for each staging scenario is as follows:

- *Scenario 1:* Station work complete and station operational in 2024. OSD start: 2022. OSD completed by 2024.
- *Scenario 2:* Station work complete and station operational in 2024. OSD start: between 2021 and 2024 with completion post 2024.
- Scenario 3: Station work completed and station operational in 2024. OSD start: excavation of basement likely between 2021 and 2024, however above ground works post 2024.

The developer awarded the OSD development rights will determine the timeframe of the OSD construction and communicate these in a Construction Environmental Management Plan (CEMP) with the detailed SSD Application(s). Further details confirming the construction methodology and associated impact assessment and mitigation measures (including temporary pedestrian and service vehicle access arrangements) will also be provided with the future detailed SSD Application.

OSD Construction Impacts & Mitigation

A number of measures have been identified to minimise and mitigate construction impacts having regard to the three construction staging scenarios identified above. Mitigation strategies have also been developed to ensure that impacts on pedestrians, rail users, bus services and taxis are manageable for all three staging scenarios.

1.0 Purpose of this report

1.1 Background

This report accompanies a concept State Significant Development Application (concept SSD Application) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The concept SSD Application is made under Section 4.22 of the EP&A Act.

This report should be read in conjunction with the Nominated State Significant Precinct (SSP) Study – Waterloo, submitted to the Minister for Planning (the Minister) in July 2018. That study proposes new planning controls to facilitate the development proposed.

Sydney Metro is seeking to secure concept approval for over station development (OSD) above and adjacent to Waterloo Station comprising a podium and three taller buildings which include commercial, residential, and community land uses. The concept SSD Application seeks consent for a building envelope and use for residential, retail, commercial, entertainment, community and recreational purposes, maximum building height, maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking and the strategies and design parameters for the future detailed design of development.

Sydney Metro proposes to procure the construction of the OSD as part of an integrated station development package, which would result in the combined delivery of the station, OSD and public domain improvements. The station and its public domain elements form part of a separate planning approval for Critical State Significant Infrastructure (CSSI) approved by DPE on 9 January 2017.

As the development is within a rail corridor, is associated with railway infrastructure and is for “commercial premises or residential accommodation” with a Capital Investment Value of more than $30 million, the project is identified as State Significant Development (SSD) pursuant to Schedule 1, 19(2)(a) of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP).

This report has been prepared to outline the preliminary construction management impacts and specifically respond to the Secretary’s Environmental Assessment Requirements (SEARs) issued for the concept SSD Application on 29th June 2018 which states that the Environmental Impact Statement (EIS) is to address the following requirements:

Table 1: SEARs Requirements

Reference	SEARs Requirement	Where Addressed in Report
12	Describe preliminary construction traffic arrangements and management measures, including consideration of the cumulative construction traffic impacts from infrastructure works in the surrounding road/transport network, including Waterloo station and other developments including the Waterloo Estate State	Whole report

	Significant Precincts.	
Plans and documents	The EIS must include the following: • preliminary construction management statement	This report

1.2 Overview of the Sydney Metro in its context

The New South Wales (NSW) Government is implementing *Sydney's Rail Future*, a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future (Transport for NSW, 2012). Sydney Metro is a new standalone rail network identified in Sydney's Rail Future.

Sydney Metro is Australia's biggest public transport project. A new standalone metro railway system, this 21st century network will deliver 31 metro stations and 66 kilometres of new metro rail for Australia's biggest city — revolutionising the way Sydney travels. Services start in the first half of 2019 on Australia's first fully-automated railway.

Sydney Metro was identified in *Sydney's Rail Future*, as an integral component of the NSW Long Term Transport Master Plan, a plan to transform and modernise Sydney's rail network so it can grow with the city's population and meet the future needs of customers. In early 2018, the *Future Transport Strategy 2056* was released as an update to the NSW Long Term Transport Master Plan and Sydney's Rail Future. Sydney Metro City & Southwest is identified as a committed initiative in the *Future Transport Strategy 2056*.

Sydney Metro is comprised of three projects:

Sydney Metro Northwest — formerly the 36 kilometre North West Rail Link. This $8.3 billion project is now under construction and will open in the first half of 2019 with a metro train every four minutes in the peak.

Sydney Metro City & Southwest — a new 30 kilometre metro line extending the new metro network from the end of Sydney Metro Northwest at Chatswood, under Sydney Harbour, through the CBD and south west to Bankstown. It is due to open in 2024 with an ultimate capacity to run a metro train every two minutes each way through the centre of Sydney.

Sydney Metro West – a new underground railway connecting the Parramatta and Sydney central business districts. This once-in-a-century infrastructure investment will double the rail capacity of the Parramatta to Sydney CBD corridor and will establish future capacity for Sydney's fast growing west. Sydney Metro West will serve five key precincts at Westmead, Parramatta, Sydney Olympic Park, The Bays and the Sydney CBD. The project will also provide an interchange with the T1 Northern Line to allow faster connections for customers from the Central Coast and Sydney's north to Parramatta and the Sydney CBD.

Sydney's new metro, together with signalling and infrastructure upgrades across the existing Sydney suburban rail network, will increase the capacity of train services entering the Sydney CBD – from about 120 an hour currently to up to 200 services beyond 2024. That's an increase of up to 60 per cent capacity across the network to meet demand.

Figure 1: Sydney Metro alignment map

Sydney Metro includes the construction and operation of a new metro rail line from Chatswood, under Sydney Harbour through Sydney's CBD to Sydenham and on to Bankstown through the conversion of the existing line to metro standards.

The project also involves the delivery of six new metro stations, including at Waterloo, together with new underground platforms at Central. Once completed, Sydney Metro will have the ultimate capacity for 30 trains an hour (one every two minutes) through the CBD in each direction - a level of service never seen before in Sydney.

On 9 January 2017, the Minister approved the Sydney Metro City & Southwest - Chatswood to Sydenham application lodged by Sydney Metro as a Critical State Significant Infrastructure (CSSI) project (reference SSI 15_7400).

The CSSI Approval includes all physical work required to construct the CSSI, including the demolition of existing buildings and structures on each site. Importantly, the CSSI Approval also includes provision for the construction of below and above-ground structures and other components of future OSDs (including building infrastructure and space for future lift cores, plant rooms, access, parking and building services, as relevant to each site). The rationale for this delivery approach, as identified within the CSSI application, is to enable the OSDs to be more efficiently built and appropriately integrated into the metro station structure.

The EIS for the Chatswood to Sydenham alignment of the Sydney Metro City & Southwest project identified that the OSD would be subject to a separate assessment process.

Since the CSSI Approval was issued, Sydney Metro has lodged four modification applications to amend the CSSI Approval as outlined below:

- Modification 1- Victoria Cross and Artarmon Substation which involves relocation of the Victoria Cross northern services building from 194-196A Miller Street to 50 McLaren Street together with inclusion of a new station entrance at this location referred to as Victoria Cross North. 52 McLaren Street would also be used to support construction of these works. The modification also involves the relocation of the substation at Artarmon from Butchers Lane to 98 – 104 Reserve Road. This modification application was approved on 18 October 2017.
- Modification 2- Central Walk which involves additional works at Central Railway Station including construction of a new eastern concourse, a new eastern entry, and upgrades to suburban platforms. This modification application was approved on 21 December 2017.
- Modification 3 - Martin Place Station which involves changes to the Sydney Metro Martin Place Station to align with the Unsolicited Proposal by Macquarie Group Limited (Macquarie) for the development of the station precinct. The proposed modification involves a larger reconfigured station layout, provision of a new unpaid concourse link and retention of the existing MLC pedestrian link and works to connect into the Sydney Metro Martin Place Station. It is noted that if the Macquarie proposal does not proceed, the modification (if approved) would be surrendered. This modification application was approved on 22 March 2018.
- Modification 4 - Sydenham Station and Sydney Metro Trains Facility South which incorporated Sydenham Station and precinct works, the Sydney Metro Trains Facility South, works to Sydney Water's Sydenham Pit and Drainage Pumping Station and ancillary infrastructure and track and signalling works into the approved project. This modification application was approved on 13 December 2017.

Given the modifications, the CSSI Approval is now approved to operate to Sydenham Station and also includes the upgrade of Sydenham Station.

The remainder of the City & Southwest alignment (Sydenham to Bankstown) proposes the conversion of the existing heavy rail line and the upgrade of the existing railway stations along this alignment to metro standards. This part of the project, referred to as the Sydenham to Bankstown Upgrade, is the subject of a separate CSSI Application (Application No. SSI 17_8256), for which an EIS was exhibited between September and November 2017. A Response to Submissions and Preferred Infrastructure Report was submitted to DPE in June 2018 for further exhibition and assessment. This application is subject to assessment and determination by DPE, taking into consideration a further Response to Submissions Report which was submitted to DPE in September 2018.

1.3 Nominated State Significant Precinct

Following the decision to locate a metro station in Waterloo, the Minister determined that parts of Waterloo are of State planning significance which should be investigated for urban renewal through the SSP process. SSP study requirements for such investigations were issued by the Minister on 19 May 2017.

Investigation of the Precinct is being undertaken by UrbanGrowth NSW Development Corporation (UrbanGrowth NSW), in partnership with Sydney Metro and the Land and Housing Corporation (LAHC). The outcome of the SSP process will be new planning controls that will enable future development applications for renewal of the Precinct.

The Precinct includes two separate but contiguous and inter-related parts:

- The Waterloo Metro Quarter (the Metro Quarter)
- The Waterloo Estate (the Estate)

A separate SSP Study for the Metro Quarter was lodged in July 2018 in advance of the SSP Study for the Estate to provide a planning framework for the construction of OSD within the Metro Quarter. The staged submission of the Metro Quarter SSP Study also facilitates the proposed development to be delivered concurrently with the metro station, as an integrated station development.

As this concept SSD Application relies upon the planning framework proposed in the Metro Quarter SSP Study, it is anticipated that the SSP Study and the Environmental Impact Statement (EIS) for the SSD Application will be exhibited concurrently.

1.4 Planning relationship between Waterloo Station and the OSD

While the Waterloo Station and the OSD will form an integrated station development, the planning pathway defined under the EP&A Act requires separate approval for each component of the development. In this regard, the approved station works (CSSI Approval) are subject to the provisions of Part 5.1 of the EP&A Act (now referred to as Division 5.2) and the OSD component is subject to the provisions of Part 4 of the EP&A Act.

For clarity, the approved station works under the CSSI Approval included the construction of below and above ground structures necessary for delivering the station and also enabling construction of the integrated OSD. This included but is not limited to:

- demolition of existing development
- excavation
- station structure including concourse and platforms
- lobbies
- retail spaces within the station building
- public domain improvements associated with the station
- station portal link

- access arrangements including vertical transport such as escalators and lifts
- structural and service elements and the relevant space provisioning necessary for constructing OSD, such as columns and beams, space for lift cores, plant rooms, access, parking, retail and building services.

The vertical extent of the approved station works above ground level is defined by the 'transfer slab' level (which for Waterloo Station is defined by RL 33.1 over the northern station box and RL 35.1 over the southern station box), above which would sit the OSD. An example of this delineation is illustrated in **Figure 2** below.

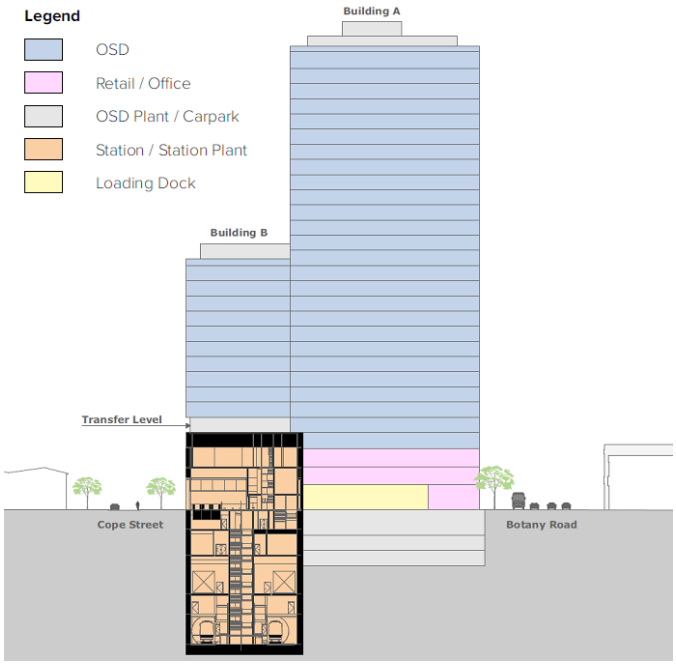

Figure 2: Delineation between station and OSD

It is noted that the structural and service requirements and space provisioning to support OSD vary from station to station. For example, based on the current level of design, Waterloo Station is not expected to provide for OSD lobbies, end of trip facilities and plant rooms. However, the detailed design may be amended to incorporate these elements as part of the integrated station development.

The CSSI Approval also establishes the general concept for the ground plane of Waterloo Station including access strategies for commuters, pedestrians and workers. In this regard, the main pedestrian access to the station would be via an entry located at the corner of from Raglan and Cope Streets. The station design has continued to be developed having regard to its integration with the Metro Quarter OSD, and as a result, a second entrance to the station is to be provided from a proposed public plaza adjacent to Cope Street. Retail uses (approved under the CSSI Approval) would be located on the ground floor of the station development along the Cope Street frontage of the site.

Since the issue of the CSSI Approval, Sydney Metro has undertaken sufficient design work to determine the space planning and general layout for the station and identification of those spaces within the station area that would be available for the OSD. In addition, undertaken design work has been undertaken to determine the technical requirements for the structural integration of the OSD with the station. This level of design work, together with the planning and design undertaken for the remainder of the Metro Quarter has informed the concept proposal for the OSD. It is noted that ongoing design development of the works to be delivered under the CSSI Approval would continue with a view to developing an Interchange Access Plan (IAP) and Station Design Precinct Plan (SDPP) for Waterloo Station to satisfy Conditions E92 and E101 of the CSSI Approval. The detailed design for the Metro Quarter would continue to evolve having regard to the IAP and SDPP.

Public domain improvement works immediately adjacent to Waterloo Station would be delivered as part of the CSSI Approval to support pedestrian movements between transport modes (including to new and relocated bus stops, bike parking on Cope Street, and taxi and kiss-and-ride bays on Cope Street), while other public domain works within the Metro Quarter are proposed as part of the OSD. Final details of public domain works for the OSD will be provided with the detailed SSD Application(s) following finalisation of the SDPP and IAP for the CSSI Approval.

1.5 The Site

The site is located within the City of Sydney Local Government Area (LGA).

The Metro Quarter comprises land to the west of Cope Street, east of Botany Road, south of Raglan Street and north of Wellington Street. The heritage listed Waterloo Congregational Church located at 103–105 Botany Road is within this block but is not part of the site.

The site has an approximate area of 1.287 hectares (refer to **Figure 3**).

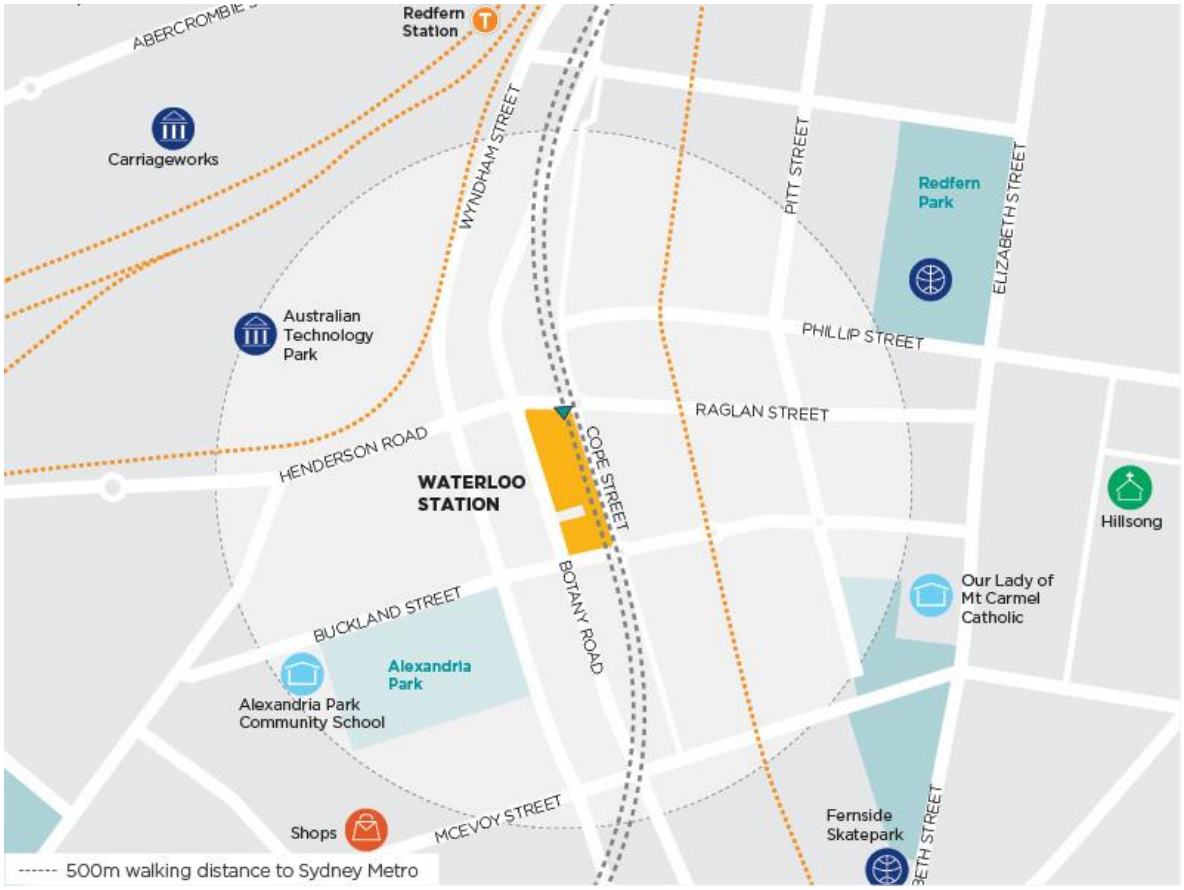

Figure 3: Waterloo Station location plan

1.6 Site context

The Metro Quarter is located in Redfern Street Village (see Figure 4) in the City of Sydney LGA approximately 3.3 kilometres south of Sydney CBD, 1 kilometre north of Green Square and less than 1 kilometre south of Redfern Station.

Directly east is Waterloo Estate, which is owned by the NSW Government and is under the management of NSW LAHC. The Waterloo Estate comprises 2,012 social housing dwellings and a small number of private dwellings in medium and high density forms, ranging from single storey attached dwellings to apartment towers of up to thirty storeys.

The Metro Quarter is less than 1 kilometre south-east of the Australian Technology Park (ATP), a technology micro-cluster that currently contains around 3,000 – 3,500 workers with a range of businesses in technology and creative industries; and a start-up/business incubator hub. It is set to grow into a business park that will soon accommodate new premises currently under construction (i.e. Commonwealth Bank of Australia has committed to two major office towers).

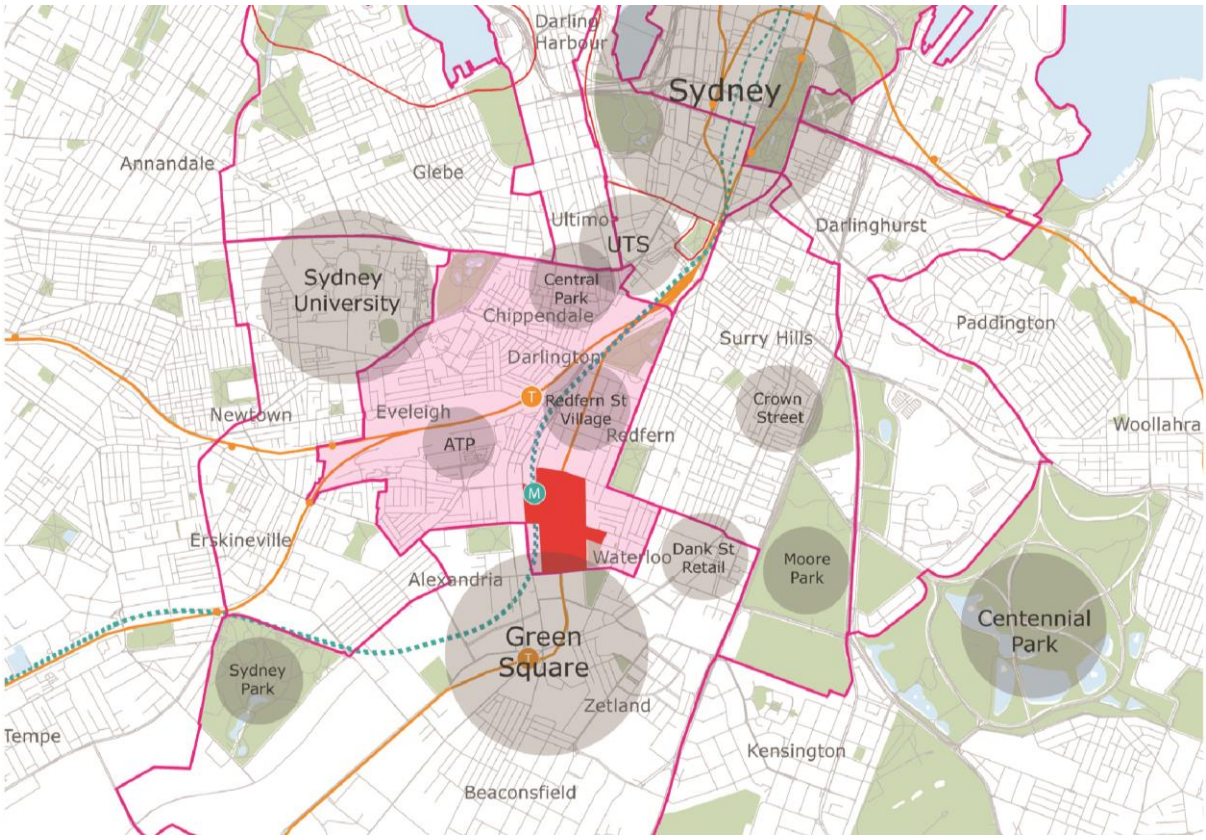

Figure 4: Location and site plan of the Waterloo State Significant Precinct (in red) and Redfern Street Village (in pink)

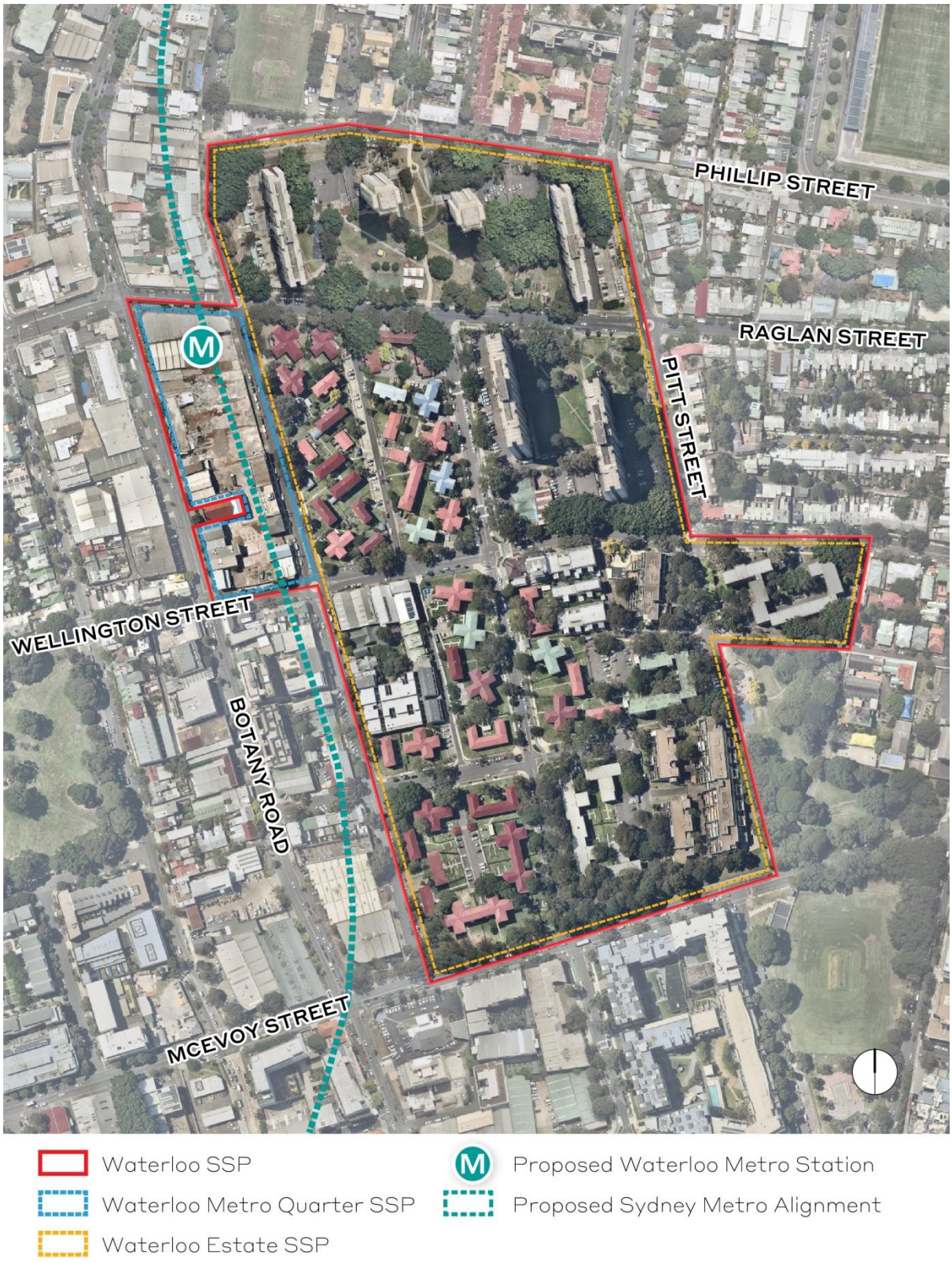

Figure 5: Nominated State Significant Precinct - Waterloo

1.7 Overview of the proposed development

The concept SSD Application seeks concept approval in accordance with section 4.22 of the EP&A Act for the OSD above the approved Waterloo Station. This application establishes the planning framework and strategies to inform the detailed design of the future OSD and specifically seeks planning approval for:

- Maximum building envelopes, including maximum building heights, street-wall heights and ground and upper level setbacks.
- A maximum gross floor area (GFA) of 68,750 square metres, comprising:
  - Approximately 56,200 square metres GFA of residential accommodation, providing for approximately 700 dwellings, including 5-10 percent affordable housing and 70 social housing dwellings
  - Approximately 3,905 square metres GFA of retail premises and entertainment facilities
  - Approximately 8,645 square metres GFA for business and commercial premises and community, health service and recreational facilities (indoor), including at least 2,000 square metres of floor space for community uses
- a three storey podium and a free standing building located within a public plaza, accommodating non-residential land uses
- residential uses above podium level in various building forms including three taller buildings of 23, 25 and 29 storeys (Reduced Level (RL) 96.9, 104.2 and 116.9 metres AHD respectively)
- use of OSD space provisioning within the footprint of the CSSI Approval
- public domain works, including open spaces, through-site links, footpaths, provision for cycle facilities, and enhanced pedestrian crossings and roads
- car parking for up to 427 vehicles
- cycle parking to support residential and non-residential land uses and visitors to the Metro Quarter. Approval is also being sought for space within the future basement for a bike hub which would also support future bike parking for Waterloo Station
- loading, vehicular and pedestrian access arrangements
- strategies for managing stormwater and drainage
- a strategy for the achievement of ecologically sustainable development
- a public art strategy
- provision for future signage zones
- a design excellence framework
- the future subdivision of parts of the OSD footprint (if required).

It is noted that the Sydney Metro comprises GFA of approximately 8,415 square metres on the site, approved under CSSI Approval. The total GFA for the integrated station development, including the station GFA is approximately 77,165 square metres, which is equivalent to an FSR of approximately 6:1.

Key parameters of the concept proposal based on the current level of design development are indicated at Figure 6 and Figure 7.

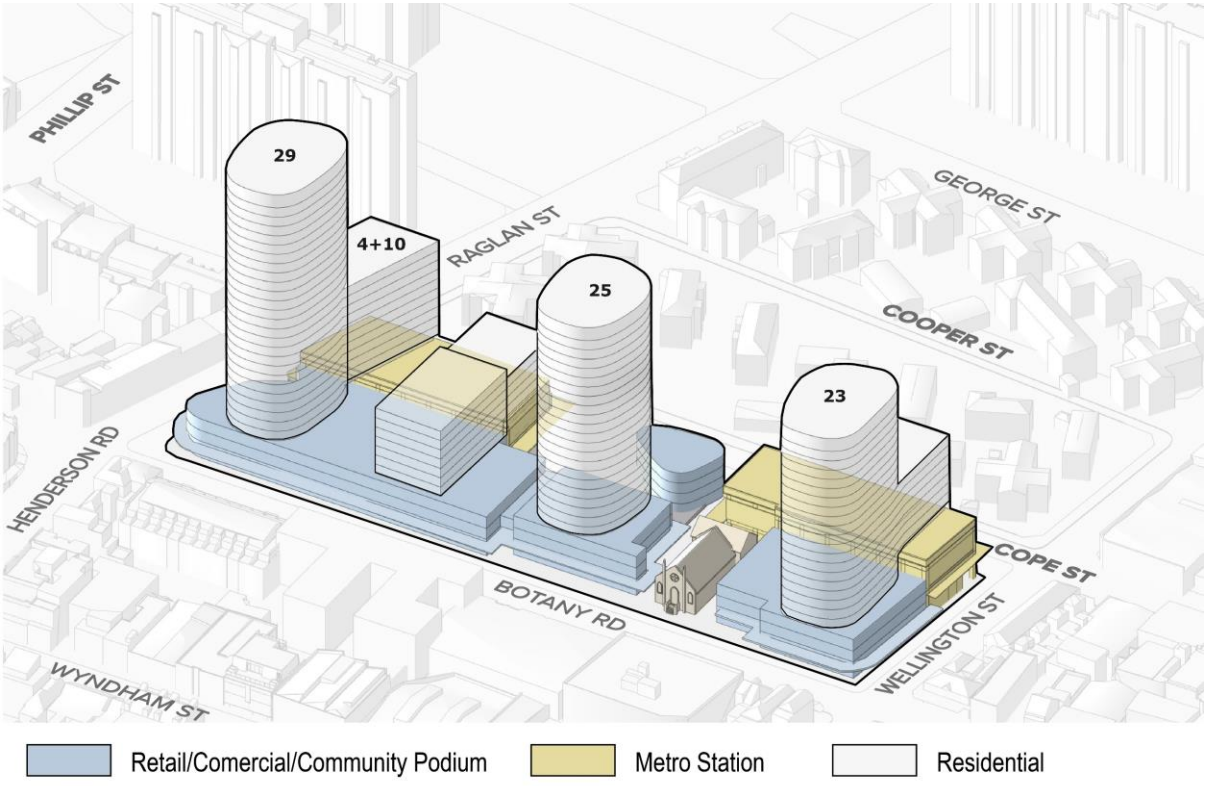

Figure 6: Proposing massing, viewed from the west

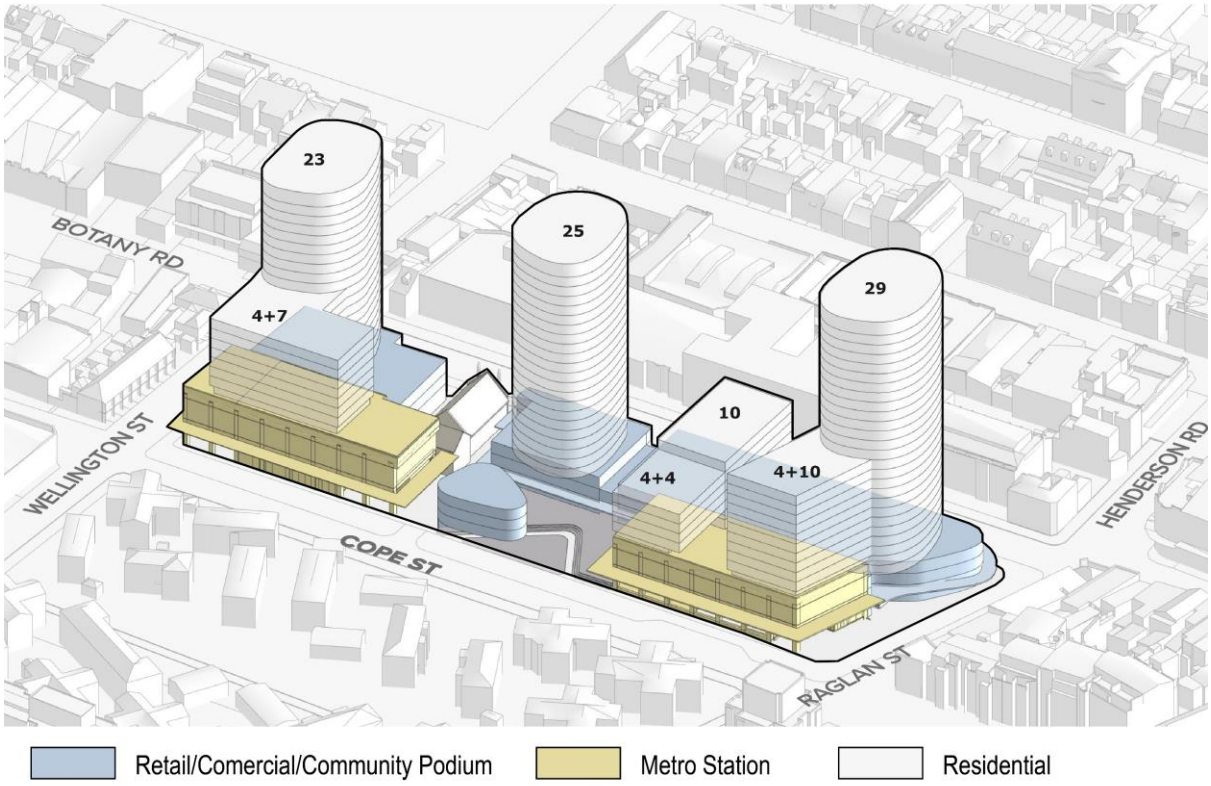

Figure 7: Proposed massing, viewed from the east

The proposal is a significant opportunity to contribute to the urban renewal process for the Waterloo SSP. The objective to deliver the Metro Quarter project as soon as reasonably possible after completion of the Sydney Metro works (earmarked to open 2024) would ensure buildings within the Metro Quarter are occupied to support maximum patronage of the proposed metro station.

The Metro Quarter would contain a mix of uses including residential, commercial, retail, community facilities and services and cultural opportunities sufficient for daily life to be provided for within the wider neighbourhood and to support the activation of the precinct. This would help make Waterloo one of the most connected and attractive inner-city places to live, work and visit.

1.8 Staging and framework for managing environmental impacts

Sydney Metro proposes to procure the delivery of the Metro Quarter integrated station development in one single package, which would entail the following works:

- station structure
- station fit-out, including mechanical and electrical
- OSD structure
- OSD fit-out, including mechanical and electrical.

Separate delivery packages are also proposed by Sydney Metro to deliver the excavation of the station boxes/shafts ahead of the integrated station development delivery package, and linewide systems (e.g. track, power, ventilation) and operational readiness works prior to the Sydney Metro City & Southwest metro system being able to operate.

Three possible staging scenarios have been identified for delivery of the integrated station development:

1. Scenario 1 – the station and OSD are constructed concurrently by constructing the transfer slab first and then building in both directions. Both the station and OSD would be completed in 2024.
2. Scenario 2 – the station is constructed first and ready for operation in 2024. OSD construction may still be incomplete or soon ready to commence after station construction is completed. This means that some or all OSD construction is likely to still be underway upon opening of the station in 2024.
3. Scenario 3 – the station is constructed first and ready for operation in 2024. The OSD is built at a later stage, with timing yet to be determined. This creates two distinct construction periods for the station and OSD. It is anticipated that excavation of the basement area of the OSD could occur between 2021 and 2024, however in this scenario, the above ground OSD works would occur post 2024.

Scenario 1 is the preferred option as it would provide for completion of the full integrated station development and therefore the optimum public benefit at the site at the earliest date possible (i.e. on or near 2024 when the station is operational).

However, given the delivery of the OSD could be influenced by property market forces, Scenarios 2 or 3 could also occur where there is a lag between completion of the station component of the integrated station development (station open and operational), and a subsequent development.

The final staging for the delivery of the OSD would be resolved as part of the detailed SSD Application(s).

For the purposes of providing a high level assessment of the potential environmental impacts associated with construction, the following have been considered:

- Impacts directly associated with the OSD, the subject of this SSD Application
- Cumulative impacts of the construction of the OSD at the same time as the station works (subject of the CSSI Approval).
- Cumulative impacts of the construction of the OSD at the same time as some of the development across the Waterloo Estate.

Given the integration of the delivery of the metro station with an OSD development, Sydney Metro proposes the framework detailed in Figure 8 to manage the design and environmental impacts, consistent with the framework adopted for the CSSI Approval.

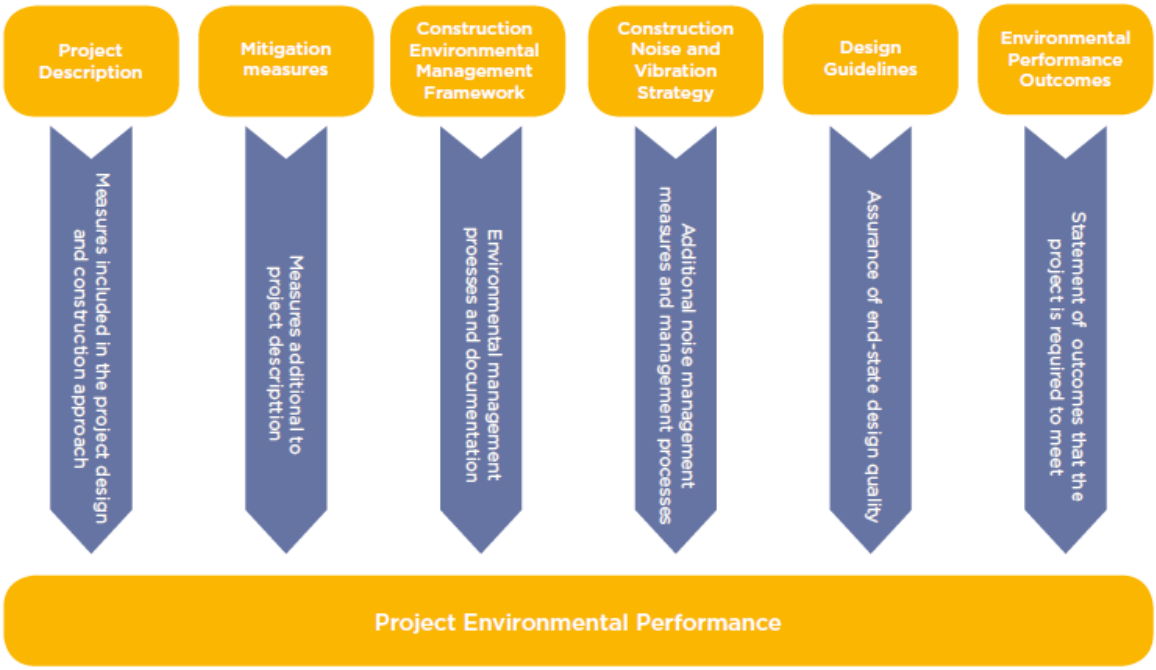

Figure 8: Project approach to environmental mitigation and management

This approach would be implemented until such time as completion of the station works (i.e. works under the CSSI Approval) is achieved. Beyond that point, standard construction environmental management practices would be implemented by the OSD developer in accordance with relevant guidelines and any conditions of approval.

2.0 Construction Traffic Management Principles

2.1 CSSI EIS & CSSI Approval Conditions

Condition A4 of Schedule 2 of the CSSI Approval states that except to the extent described in the EIS or PIR, any OSD, including associated future uses, does not form part of this CSSI and will be subject to the relevant assessment pathway prescribed by the EP&A Act. Notwithstanding, the construction haulage routes identified within the CSSI EIS (refer to Figure 9) are those that would generally apply to any OSD construction on the site whilst OSD works are undertaken concurrently with works approved by the CSSI, subject to CEMP preparation and road authority views.

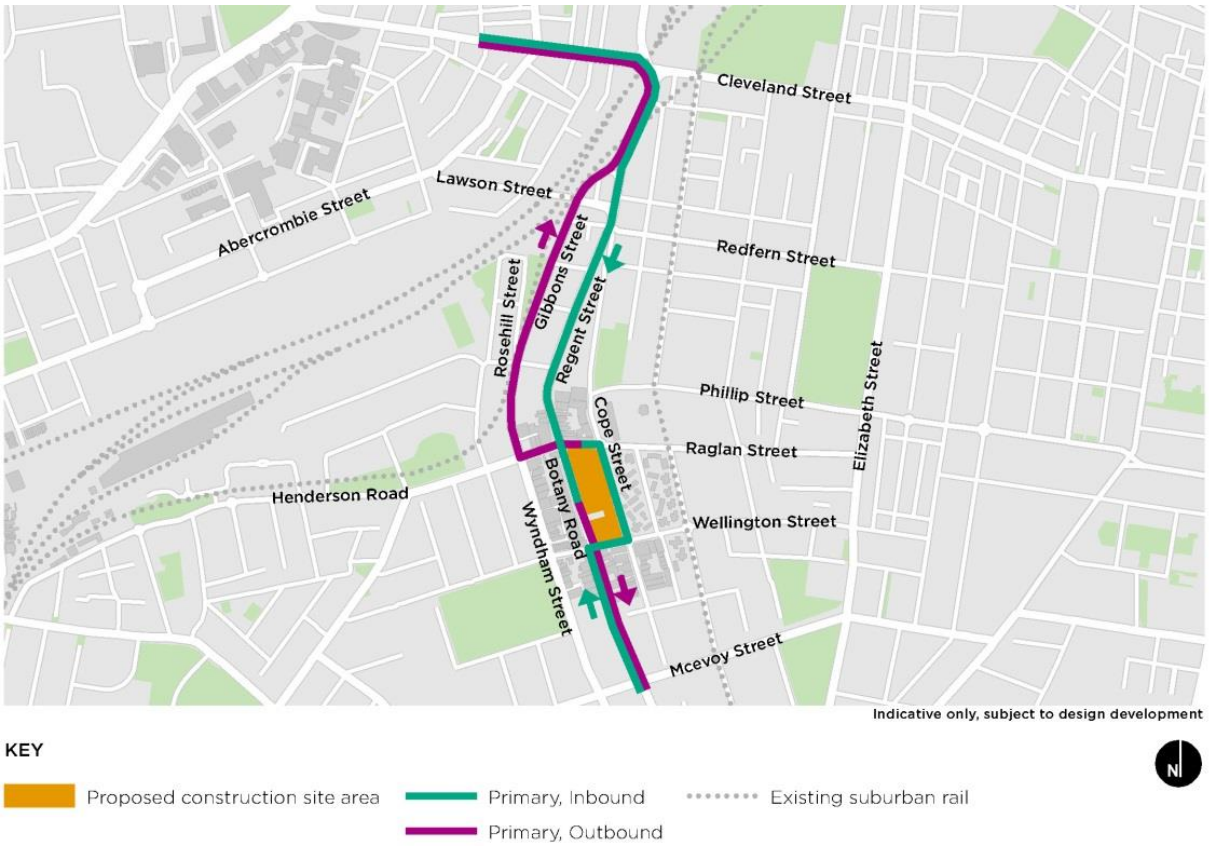

Figure 9: CSSI construction haulage routes, Waterloo Station

2.2 Construction Traffic Management Framework

The OSD does not form part of the Sydney Metro CSSI Approval dated 9 January 2017. The Construction Traffic Management Framework (CTMF) prepared by the Sydney Metro in accordance with Condition E81 of the CSSI Approval provides the overall strategy and approach for construction traffic management for the Sydney Metro City & Southwest project, and an outline of the traffic management requirements and processes that will be common to each of the proposed work sites. It establishes the traffic management processes and acceptable criteria to be considered and followed in managing roads and

footpaths adjacent to Project worksites. The principles and procedures outlined in the CTMF are proposed to apply to OSD construction where there is concurrent station and OSD construction, notwithstanding Clause A4, Schedule 2 of the CSSI Approval. However, the Sydney Coordination Office (SCO) and the Roads and Maritime Services (RMS) may require that additional OSD specific requirements are placed on any approval. The CTMF identifies a number of issues at the Waterloo site that CSSI CEMPs will need to address and mitigate for all staging scenarios. These include:

- Nearby residential and other development.
- Pedestrian and cyclist safety.
- Community/resident amenity.
- Impact on parking and traffic movements on Botany Road.
- Cumulative construction traffic from other developments.
- Access from Botany Road only, as far as is practicable.

Additionally, Appendix C of the CTMF identifies a number of RMS and SCO site specific access and routing operational imperatives as follows:

- RMS and SCO raise no objection to the use of truck and dogs for both day and night movements provided entry/exit is left in and left out during 7:00am to 10:00am and 4:00pm to 7:00pm.
- RMS and SCO prefer that access to and from the work site be via state roads.
- RMS and SCO raise no objection to a maximum number of truck movements (3 per hour) within morning and evening peak periods.
- SCO does not support the use of on-street parking zones by trucks, without prior approval.

The CEMP will also need to address the contractors approach to the management of active transport activities and the general public.

2.3 Other Recently Approved CEMPs for the Site

In early 2018 the Waterloo Site Operations CTMP was prepared by the tunnel and station excavation (TSE) Contractor and was endorsed by SCO and approved by RMS in May 2018. The Plan provides for left in and left out access via Botany Road, exit onto Raglan Street and left in and left out access via Wellington Street for non-spoil vehicles.

The OSD contractor may need vehicular access to and from the kerbside lanes fronting the site possibly designated as work zones. This would only be done following SCO and Council endorsement and RMS approval.

2.4 Other OSD Construction Considerations

2.4.1 Approvals

Sydney Metro contractors would be required to secure all required statutory approvals prior to the commencement of works. Refer to Section 6 of the CTMF for traffic management related approvals.

2.4.2 Hoardings

Hoardings would need to be placed around the perimeter of the site in accordance with relevant standards and having regard to Section 9.2 of the CTMF. The location of hoardings will need to be considered in conjunction with the required footpath widths to allow for functional pedestrian movements and queuing at bus stops and crossings.

2.4.3 Vulnerable Road Users

The OSD Contractor would be required to adopt applicable vulnerable road user safety measures, as outlined in the CTMF and in accordance with the Sydney Metro Principal Contractor Health and Safety Standard.

3.0 OSD Construction Methodologies

3.1 Construction Staging Scenarios

Construction planning is proceeding on the basis of three possible staging scenarios:

- *Scenario 1:* OSD constructed while Metro construction is underway.
- *Scenario 2:* OSD construction may still be occurring after commencement of Metro station operation.
- *Scenario 3:* OSD construction starts after commencement of Metro station operation, although below ground excavation may have occurred between 2021 and 2024.

These staging scenarios are indicatively illustrated in Figure 10 below.

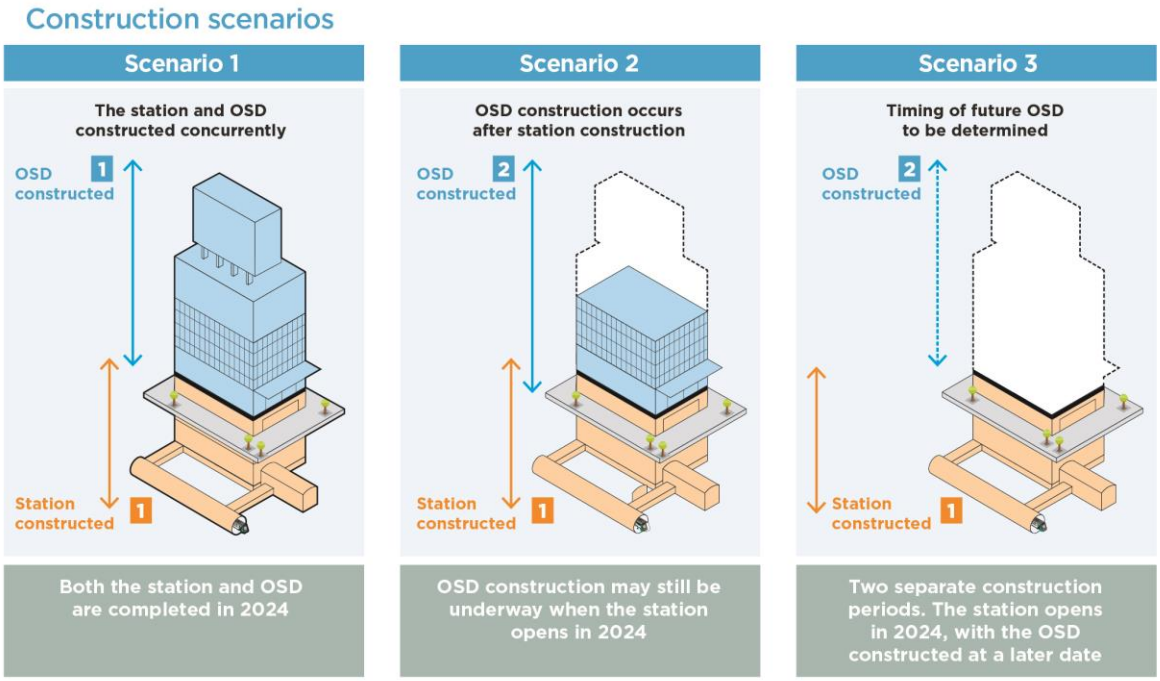

Figure 10: Waterloo OSD Construction Staging Scenarios, Sydney

Anticipated construction timelines for each staging scenario are as follows:

- *Scenario 1:* Station work complete and station operational in 2024. OSD start: 2022. OSD completed by 2024.
- *Scenario 2:* Station work complete and station operational in 2024. OSD start: between 2021 and 2024 with completion post 2024.
- Scenario 3: Station work completed and station operational in 2024. OSD start: excavation of basement likely between 2021 and 2024, however above ground works post 2024.

3.2 Scenario 1 - Concurrent Metro & OSD Construction

Metro station construction and OSD construction coincide. Vehicular access via Botany Road will be required for OSD construction. If the OSD and station works are delivered by separate contractors under the integrated station development contract shared use of site accesses may be required. If accesses cannot be shared for contractual reasons, the extent of kerbside impacts along streets is likely to be increased. Multiple tower cranes may be operational at the site during station and OSD construction. It is assumed that vehicular access to shared loading dock facilities would not be required during construction of the OSD. This is because the dock facilities will be at ground level and the nature of the site (with street frontages on all sides) provides flexibility for construction vehicle access.

3.3 Scenario 2 - OSD Construction continues after Metro Opening

The assumption is that station construction works have ceased and OSD construction continues after the metro station commences operations. While shared construction access is unlikely to be an issue, the operational metro station will have loading dock access via Botany Road which may also be an important point of access to and from the OSD work sites. OSD work site accesses may need to be focussed, where feasible, via frontage roads other than Botany Road. Alternatively, a temporary interim solution may need to be provided to service the station if construction works need to occur in this area. The OSD contractor may need to seek approval for loading or works zones on multiple street frontages. At least one and possibly more OSD tower cranes would be required.

3.4 Scenario 3 - OSD Construction starts after Metro Opening

The assumption is that station construction works have ceased, the metro station is operational and above ground works for OSD construction begins after the metro station commences operations. Metro construction activities are not assumed to coincide with OSD construction, other than potential for excavation of the OSD basements which may occur during the period when the station is under construction. As for Scenario 2, OSD work site accesses may need to be focussed, where feasible, via frontage roads other than Botany Road. The impacts and risks associated with two separate metro station and OSD construction periods are similar to Scenario 2. That is, OSD construction activities occurring above and around an operating metro station.

3.5 Other Cumulative Construction Impacts

The Waterloo Estate is planned to comprise in excess of 2,000 social housing dwellings at full development. Indicative staging plans (August 2018) suggest that the site may be redeveloped sequentially compartmentally over a twenty year period. For example the block bounded by Wellington Street, George Street, McEvoy Street and Cope Street, a precinct twice the area of the Metro Quarter, could be developed early in years 1-3. Similarly, the easternmost precinct of the Estate bounded by Wellington Street, Gibson Street, Kellick Street and Pitt Street may also be developed early in years 1-3. These two precincts are located remote from the Metro Quarter such that the routes of light and heavy construction traffic are unlikely to coincide with that for the purpose of OSD and metro station

construction. This physical separation would assist in avoiding cumulative construction traffic activity on the same roads, even in a situation where construction activity coincides in the 2021 – 2024 period.

Conversely, the Estate precinct immediately east of the Metro Quarter (bounded by Raglan, George, Wellington and Cope Streets) is scheduled to be redeveloped in years 4-6. This may mean that some or all of the construction periods do not coincide because they occur at different times. However, the proximity of the precinct to the OSD and metro station works means that there is a higher likelihood that Raglan, Cope and other streets would be used for light and heavy vehicle traffic. This is likely to be the case where the Estate precinct haulage routes seek to avoid residential streets and are linked back to Botany Road, the nearest arterial road.

Cumulative construction impacts from works on the Estate precincts and that on the OSD site will be mitigated where:

- The timing of the works activities do not coincide.
- Where work activities do coincide, CTMPs for Estate precincts more removed from the OSD site will require haulage routes that use different streets, focussed on accessing McEvoy Street rather than Botany Road as the nearest arterial road.
- Where work activities do coincide, CTMPs for Estate precincts close to the OSD site may require restrictions placed on the times during which haulage routes can be used to ensure that use does not coincide with OSD and/or Metro station haulage.

Further detailed construction planning would be undertaken and details submitted with the detailed SSD Application(s), with appropriate mitigation strategies identified to manage cumulative impacts.

4.0 Indicative Construction Traffic Generation

Indicative estimates of traffic generation associated with the metro station construction and fitout and the OSD works are provided below in Table 2. The estimates assume metro station and OSD construction coincide, that is, Scenario 1.

Table 2: Indicative Traffic Generation Estimates

Period / Vehicle Type												
	Peak Hour[1]			Non Peak Hour[2]			Evening[3]			Night[4]		
	Light	HV	Total	Light	HV	Total	Light	HV	Total	Light	HV	Total
Metro Station[5]	2	3	5	10	26	36	2	6	8	2	6	8
OSD[6]	2	3	5	8	20	28	2	10	12	2	10	12
Total	4	6	10	18	46	64	4	16	20	4	16	20

1. AM peak hour x 1 and PM peak hour x 1 (7-8am / 5-6pm). CTMF limits peak HV generation to 3/hr. Dispensation will be required where OSD and metro station generations coincide.
2. 9 hours (8-5pm)
3. 4 hours (6-10pm). OSD evening Heavy Vehicle (HV) generation may be restricted to less than that estimated above.
4. 9 hours (10pm-7am). OSD night time HV generation may be restricted to less than that estimated above.
5. Sourced from Sydney Metro Chatswood to Sydenham EIS, May 2016
6. SMDO Estimates (66,800m^3 = 5,350 30t trucks + other truck deliveries @ 43 truck arrivals per day on average)

The OSD heavy vehicle generation estimates are based on the assumption that 1 cubic metre of material has a mass of about 2.4 tonnes and that each 30-tonne truck carries about 12.5 cubic metres . The estimated 66,800 cubic metres of excavated material would generate about 5,350 30-tonne truck arrivals, or about 10,700 truck movements (in + out). Other heavy vehicles would also be generated by the site works, together totalling about 43 heavy vehicle arrivals per day, depending on the time taken to complete the works. This is considered a worst case estimate as it is anticipated that work on all buildings would occur at the same time. It is possible that the OSD works will be staged such that works on one building, for example the northern building, will proceed separately from the other buildings. This would have the effect of spreading estimated truck generations across different times mitigating the intensity of generations. Conversely, a worst case approach has been assumed in respect of site excavation which is assumed to be excavated once in its entirety, rather than in sections, such that all excavation truck generation will occur once over a yet to be defined period of time.

The CSSI EIS intersection analysis concluded that intersection performance is maintained at all intersections during the construction phase of the project except for the Cleveland Street / Regent Street intersection which deteriorates from LOS D to LOS E in the AM peak and LOS C to LOS D in the PM peak. This intersection is already operating close to its theoretical capacity. However, the deterioration in the degree of saturation in both the AM and PM peaks is minor and, therefore, the overall operational impact on the network would be minimal.

The EIS assessment did not include an assessment of concurrent metro station construction and OSD traffic (Scenario 1). The CSSI EIS analysis suggests that key intersections are likely to have the capacity to accommodate minor increases in peak hour traffic, with the possible exception of the Cleveland Street / Regent Street intersection in the AM peak. SCO and RMS, however, may still require that restrictions be placed on peak hour OSD heavy vehicle traffic generation in order to maintain road network efficiency.

This would be subject to detailed construction methodology planning and considered further as part of the detailed SSD Application(s).

5.0 Impacts and Preliminary Mitigation Proposals

The key impacts and possible mitigations for each staging scenario are considered separately below.

5.1 Scenario 1 - Concurrent Sydney Metro & OSD Construction

Pedestrians – the number of construction driveways along the roads fronting the site will need to be minimised and managed to reduce the likelihood of pedestrian – vehicular conflict. The risk to pedestrians in Scenario 1 is high because OSD construction would be occurring at the same time as the station construction. Specific pedestrian management measures would need to be put in place to manage pedestrians on all four frontages of the site. This may include a restriction on heavy vehicle access into and out of the site during the AM and PM peak periods.

Sydney Metro customers – The metro station would not yet be open and therefore Sydney Metro customers would not be moving into and out of the station. This mitigates risk compared to Scenario 2.

Buses and bus customers – OSD and station works would be ongoing which means that there is a low to moderate risk that construction vehicle activity may adversely impact bus operations along Botany Road Park and Wellington Street. Bus interchange prior to the Sydney Metro opening is planned to continue in Botany Road using existing bus stops. The number of construction site driveways along street frontages should be reduced to avoid pedestrian conflicts and encroachment into bus zones. It is anticipated that the number of site access driveways on Botany Road would be minimised.

Taxis – presently there are no existing taxi facilities on the streets fronting the site. If a taxi space or spaces are introduced on roads fronting the site between now and the commencement of OSD construction, replacement spaces may need to be provided if spaces are impacted for extended periods of time.

5.2 Scenario 2 - OSD Construction continues after Sydney Metro Opening

Pedestrians – the risk to pedestrians is high because OSD construction is occurring after the metro station has opened. Specific pedestrian management measures would need to be put in place to manage pedestrians on all four frontages to the site. This may include a restriction on heavy vehicle access into and out of the site during the AM and PM peak periods. Preparation of a site specific Pedestrian Management Plan in accordance with the Principal's General Specifications G10 – Traffic & Transport Management may also be required. Targeted footpath upgrades will be provided as part of the CSSI approval. Depending on the timing of the OSD works there may be a need to provide temporary pedestrian paths to accommodate peak demand periods and/or to and from relocated bus stops near the site. The would apply to both Scenarios 2 and 3.

Sydney Metro customers – the metro station works have been completed, the metro station is open and OSD contractor works are ongoing. This increases risks for Sydney Metro customers and pedestrians generally, if construction activities are not clearly

segregated. Depending on the construction methodology, temporary pedestrian paths, way finding and other signage may be required to mitigate cumulative works impacts.

Buses and bus customers – OSD construction vehicle activity and higher bus activity generated by operation of the Sydney Metro would coincide. Bus interchange for the new metro station will occur on Botany Road (and possibly on other streets) using relocated stops between Raglan and Wellington Streets. Under the CSSI Approval, bus stops will require legible temporary signage to identify construction related changes. Bus stop changes triggered by the OSD works may require similar legible signage changes. Measures will need to be put in place to manage pedestrian activity along Botany Road, Cope Street and other streets where bus customers, Sydney Metro customers and other pedestrian traffic interact. The number of OSD site driveways should be reduced to avoid pedestrian conflicts and encroachment into this bus zone in Botany Road.

Taxis – a new taxi rank with two spaces will be provided near the station entry along Raglan Street as part of the CSSI Approval. If the taxi rank area is impacted by OSD construction works, replacement taxi space(s) may need to be provided in the immediate vicinity of the site to mitigate the OSD related displacement.

Traffic and access - The OSD includes the provision of a shared loading dock for service vehicles adjacent to the northern station box and accessed from Botany Road. The operating metro station will require access to these dock facilities and temporary arrangements will be required if the loading dock is not completed by station opening. This would require careful management of pedestrian and vehicular conflicts along street frontages where the loading dock facilities are proposed to be located and accessed. Appendix C of the CTMF states that the SCO does not support the use of on-street parking zones by trucks, without prior approval. Any proposal to lift material to and from heavy vehicles located in the kerbside lanes to the site would need to be undertaken in accordance with relevant standards and only after SCO endorsement and RMS approval of the CEMP. Materials lifts are expected to be required along the Botany Road and Cope Street frontages to the site.

5.3 Scenario 3 - OSD Construction starts after Sydney Metro Opening

Pedestrians – the risk to pedestrians is similar to Scenario 2 because above ground OSD construction is occurring after the metro station has opened. As would be the case for Scenario 2, specific pedestrian management measures would need to be put in place to manage pedestrians on all four frontages to the site. The same temporary pedestrian path requirements would apply as outlined under Scenario 2 above.

Sydney Metro customers – As would be the case for Scenario 2, OSD contractor works occur after the metro station is operational. Construction management procedures and risk mitigations would be similar to those adopted for Scenario 2.

Buses and bus customers – As with Scenario 2, OSD construction vehicle activity and higher metro generated bus activity would coincide. Construction management procedures and risk mitigations would be similar to those adopted for Scenario 2.

Taxis – As with Scenario 2, OSD construction vehicle activity and the provision of new taxi bays for the metro station would coincide. Construction management procedures and risk mitigations would be similar to those adopted for Scenario 2.

6.0 Conclusions

This document has been prepared in accordance with the SEARs for a concept SSD Application proposing OSD above and adjacent to Waterloo Station. The SEARs calls for the preparation of a preliminary construction management statement (the Statement) addressing how future construction stages will manage impacts to pedestrians, rail users, bus services and taxis.
Three possible construction staging scenarios have been considered for the delivery of the integrated station development package:

Construction planning is proceeding on the basis of three possible staging scenarios:

- *Scenario 1:* OSD constructed while Metro construction is underway.
- *Scenario 2:* OSD construction may still be occurring after commencement of Metro station operation.
- *Scenario 3:* OSD construction starts after the Metro station is operational, although below ground excavation may have occurred between 2021 and 2024.

The preferred approach is for the metro station, OSD and public domain works to be constructed via a single integrated station development package (Scenario 1). This would mitigate many of the identified impacts associated with delivery of the works in the Waterloo Precinct and broader Sydney CBD area.

Whilst not yet approved, and irrespective of the staging scenario adopted, the construction traffic management principles outlined in the CTMF are those that will apply to integrated station development construction. The principles and mitigation strategies outlined in the CTMF and in this Statement will ensure that impacts on pedestrians, rail users, bus services and taxis are manageable for all three staging scenarios.