WATERLOO METRO QUARTER OVER STATION DEVELOPMENT

Environmental Impact Statement
Appendix Q – Construction Environmental Management Plan

SSD-10437 Southern Precinct

Detailed State Significant Development
Development Application

Prepared for **Waterloo Developer Pty Ltd**

30 September 2020

Reference	Description
Applicable SSD Applications	SSD-10437 Southern Precinct
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1. Glossary and abbreviations

Reference	Description
ACHAR	Aboriginal Cultural Heritage Assessment Report
ADG	Apartment Design Guide
AHD	Australian height datum
AQIA	Air Quality Impact Assessment
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
BC Reg	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
CEEC	critically endangered ecological community
CIV	capital investment value
CMP	Construction Management Plan
Concept DA	A concept DA is a staged application often referred to as a 'Stage 1' DA. The subject application constitutes a detailed subsequent stage application to an approved concept DA (SSD 9393) lodged under section 4.22 of the EP&A Act.
Council	City of Sydney Council
CPTED	Crime Prevention Through Environmental Design
CSSI approval	critical State significant infrastructure approval
CTMP	Construction Traffic Management Plan
DA	development application
DPIE	NSW Department of Planning, Industry and Environment
DRP	Design Review Panel
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPA Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	ecologically sustainable design

Reference	Description
GANSW	NSW Government Architect's Office
GFA	gross floor area
HIA	Heritage Impact Assessment
IAP	Interchange Access Plan
LGA	Local Government Area
NCC	National Construction Code
OSD	over station development
PIR	Preferred Infrastructure Report
POM	Plan of Management
PSI	Preliminary Site Investigation
RMS	Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No 55—Remediation of Land
SEPP 65	State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2009
SREP Sydney Harbour	State Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State significant development
SSD DA	State significant development application
SLEP	Sydney Local Environmental Plan 2012
Transport for NSW	Transport for New South Wales
TIA	Traffic Impact Assessment
The proposal	The proposed development which is the subject of the detailed SSD DA
The site	The site which is the subject of the detailed SSD DA
VIA	Visual Impact Assessment

Reference	Description
WMQ	Waterloo Metro Quarter
WMP	Waste Management Plan
WSUD	water sensitive urban design

2. Executive summary

This Construction Environmental Management Plan has been prepared by Waterloo Developer Pty Ltd to accompany a detailed State significant development (SSD), development application (DA) for the Southern Precinct over station development (OSD) at the Waterloo Metro Quarter site.

This report has been prepared to address the relevant conditions of the concept SSD DA (SSD 9393) and the Secretary's Environmental Assessment Requirements (SEARs) issued for the detailed SSD DA (SSD 10437).

This report concludes that the proposed Southern Precinct OSD is suitable and warrants approval subject to the implementation of the following mitigation measures.

- Integrated interface approach with the Integrated Station Development Contractor
- Set up of a secure and safe site compound minimising impacts to public and local community
- Clear understanding of site layout including work force accommodation and material handling
- Staged delivery of construction activities
- Traffic and Pedestrian control minimising impacts on the local road network and community
- Minimising the impact of the development to the Waterloo Congressional Church
- Robust procedures and systems in place for temporary works minimising site risks
- Active management of Noise and Vibration, Air Quality, Soil and Water quality to minimise impacts to local community and residents.
- Effective stakeholder management strategy to ensure clear communication and engagement.

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

3. Introduction

This report has been prepared to accompany a detailed State significant development (SSD) development application (DA) for the Southern Precinct over station development (OSD) at the Waterloo Metro Quarter site. The detailed SSD DA is consistent with the concept approval (SSD 9393) granted for the maximum building envelope on the site, as proposed to be modified.

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (DPIE) for assessment.

The detailed SSD DA seeks development consent for the design, construction and operation of:

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9-storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level retail tenancies including Makerspace and gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 April 2020 and issued for the detailed SSD DA. Specifically, this report has been prepared to respond to the SEARs requirements summarised below.

Item	Description of requirement	Section reference (this report)
2.	**Consistency with the Concept Approval**	
	The EIS shall: - demonstrate the proposal is consistent with the Concept Approval and provide details of consistency with any modification(s) to the concept approval if sought concurrently.	All Sections
	- include a staging and delivery plan (or be consistent with an approved plan) for the coordinated delivery of public	10. Construction Staging

	domain, car parking and other common facilities and any public benefits such as social and affordable housing.	
10.	**Noise and Vibration Impacts (Construction and Operation)**	
	The EIS shall: - include an assessment of construction noise and vibration impacts. The assessment must also outline proposed noise and vibration mitigation and monitoring procedures having particular regard for potential impacts to the adjoining heritage listed 'Waterloo Congregational Church' site.	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)
	- provide a quantitative assessment of any noise and vibration generating sources and activities during operation and outline mitigation measures (if necessary) to ameliorate and manage impacts including impacts on the adjoining heritage listed 'Waterloo Congregational Church' site.	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)
	- The noise and vibration impact assessment shall have regard to the recommendations of the Concept Acoustic Assessment Report, SLR consulting dated 9 November 2019.	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)
11.	**Construction Impacts**	
	The EIS shall include a Construction Environmental Management Plan, developed in consultation with TfNSW and Council, providing: - an assessment of potential impacts of the construction on surrounding buildings and the public domain, including air quality and odour impacts, dust emissions, water quality, stormwater runoff, groundwater seepage, soil pollution and construction and demolition waste, and proposed measures to mitigate any impacts.	13. Waste Management & Recycling 10. Construction Staging 15. Air Quality and Odour Management
	- assessment of the potential cumulative impacts (noise, vibration, traffic, air quality etc) of the proposed development with regards to the works being carried out on site as part of the Sydney Metro Chatswood to Sydenham approval (CSSI 7400) and other developments in proximity to the site during the construction phase.	17. Cumulative Impacts

Table 1 - SEARs requirements

This report has also been prepared in response to the following conditions of consent issued for the concept SSD DA (SSD 9393) for the OSD as summarised in the table below.

Item	Description of requirement	Section reference (this report)
	Construction Impact Assessment	
B21.	Future development applications shall provide analysis and assessment of the impacts of construction works and include: (a) Construction Traffic and Pedestrian Management Plan, as per Condition B9	9. Traffic & Pedestrian Management and EIS – Appendix J - Construction Traffic and Pedestrian Management Plan
	(b) Community Consultation and Engagement Plan(s)	19.Stakeholder Management & Communications
	(c) Noise and Vibration Impact Assessment	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)
	(d) Construction Waste Management Plan	13. Waste Management & Recycling
	(e) Air Quality Management Plan	15. Air Quality and Odour Management
B22.	The plans above may be prepared as part of a Construction Environmental Management Plan prepared for implementation under the conditions of any consent for future development applications, having regard to the Construction Environmental Management Framework and Construction Noise and Vibration Strategy prepared for the Sydney Metro City and Southwest (CSSI 7400).	14. Noise & Vibration Management and EIS – Appendix K – Noise and Vibration Assessment (Operational and Construction)
	Noise and Vibration Assessment	
B23.	Future development applications shall be accompanied by a Noise and Vibration Impact Assessment that demonstrates the following requirements are met: (a) vibration from construction activities does not exceed the vibration limits established in British Standard BS7385-2:1993 Excavation and measurement for vibration in buildings. A guide to damage levels from ground borne vibration. (b) vibration testing is conducted before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent damage. in the event the vibration	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)

	testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Applicant must review the construction methodology and, if necessary, propose additional mitigation measures. (c) advice of a heritage Specialist has been incorporated on methods and locations for installed equipment used for vibration movement and noise monitoring of heritage-listed structures.	
B24.	The Noise and Vibration Assessment must provide a quantitative assessment of the main noise generating sources and activities during operation. Details are to be included outlining any mitigating measures necessary to ensure the amenity of future sensitive land uses on the site and neighbouring sites is protected during the operation of the development.	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)
B25.	The Noise and Vibration must address the conclusions and recommendations of the Concept Acoustic Assessment Report, SLR Consulting dated 9 November 2019.	14. Noise & Vibration Management and EIS - Appendix K – Noise and Vibration Assessment (Operational and Construction)

Table 2 - Conditions of Concept Approval

4. The site

The site is located within the City of Sydney Local Government Area (LGA). The site is situated about 3.3 kilometres south of Sydney CBD and eight kilometres northeast of Sydney International Airport within the suburb of Waterloo.

The Waterloo Metro Quarter site comprises land to the west of Cope Street, east of Botany Road, south of Raglan Street and north of Wellington Street (refer to Figure 1). The heritage-listed Waterloo Congregational Church at 103–105 Botany Road is within this street block but does not form a part of the Waterloo Metro Quarter site boundaries.

The Waterloo Metro Quarter site is a rectangular shaped allotment with an overall site area of approximately 1.287 hectares.

The Waterloo Metro Quarter site comprises the following allotments and legal description at the date of this report. Following consolidation by Sydney Metro (the Principal) the land will be set out in deposited plan DP1257150.

- 1368 Raglan Street (Lot 4 DP 215751)
- 59 Botany Road (Lot 5 DP 215751)
- 65 Botany Road (Lot 1 DP 814205)
- 67 Botany Road (Lot 1 DP 228641)
- 124-128 Cope Street (Lot 2 DP 228641)
- 69-83 Botany Road (Lot 1, DP 1084919)
- 130-134 Cope Street (Lot 12 DP 399757)
- 136-144 Cope Street (Lots A-E DP 108312)
- 85 Botany Road (Lot 1 DP 27454)
- 87 Botany Road (Lot 2 DP 27454)
- 89-91 Botany Road (Lot 1 DP 996765)
- 93-101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891)
- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)
- 156-160 Cope Street (Lot 31 DP 805384)
- 107-117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)
- 170-174 Cope Street (Lot 2 DP 205942).

The detailed SSD DA applies to the Southern Precinct (the site) of the Waterloo Metro Quarter site. The site has an area of approximately 4830sqm. The subject site comprises the following allotments and legal description at the date of this report.

- 130–134 Cope Street (Lot 12 DP 399757) (Part)
- 136–144 Cope Street (Lots A-E DP 108312) (Part)
- 93–101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891) (Part)
- 156–160 Cope Street (Lot 31 DP 805384)
- 107–117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)
- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)

- 170–174 Cope Street (Lot 2 DP 205942).

The boundaries of the overall site are identified at Figure 1, and the subject site of the detailed SSD DA is identified at Figures 2 and 3. The site is reasonably flat with a slight fall to the south.

The site previously included three to five storey commercial, light industrial and shop top housing buildings. All previous structures except for an office building at the corner of Botany Road and Wellington Street have been demolished to facilitate construction of the new Sydney Metro Waterloo station. As such the existing site is predominately vacant and being used as a construction site. Construction of the Sydney metro is currently underway on site in accordance with critical State significant infrastructure approval (CSSI 7400).

Figure 1 - Aerial image of the site
Source: Urbis

The area surrounding the site consists of commercial premises to the north, light industrial and mixed-use development to the south, residential development to the east and predominantly commercial and light industry uses to the west.

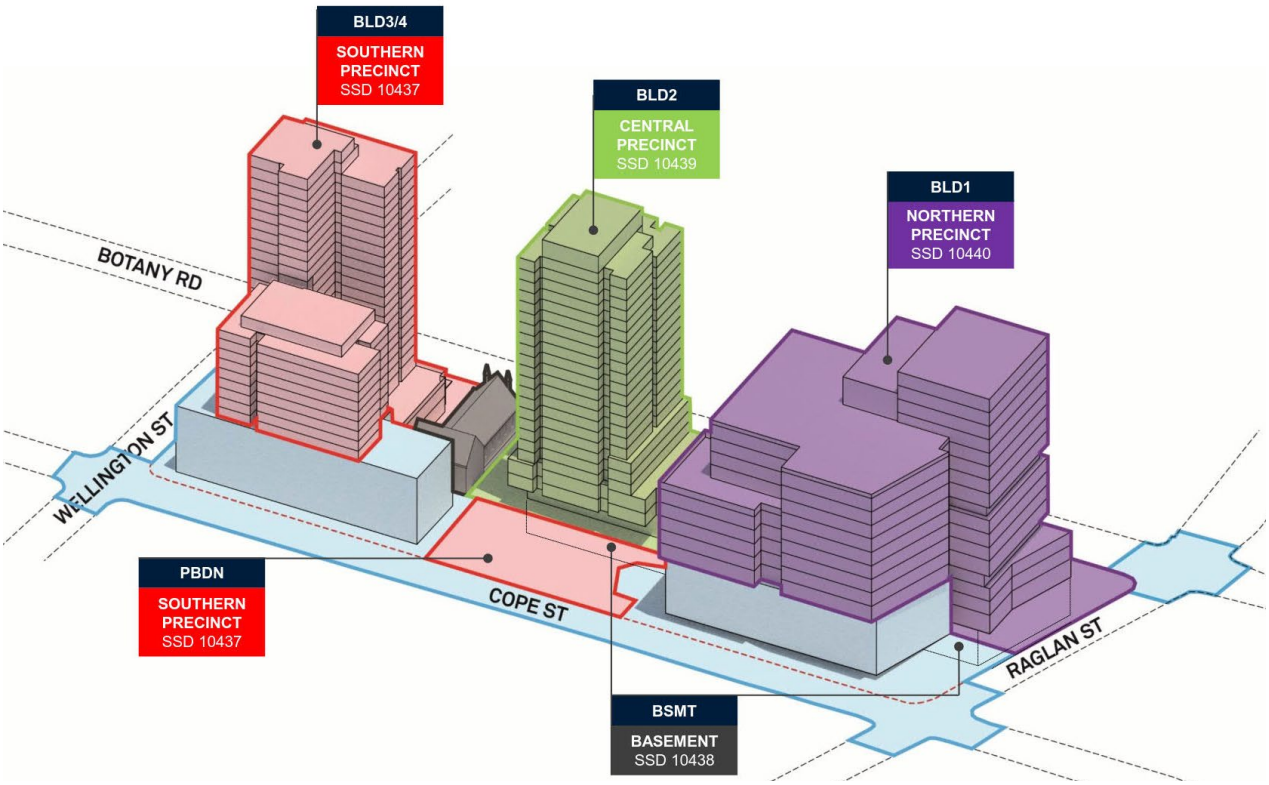

Figure 2 - Waterloo Metro Quarter site, with sub-precincts identified
Source: HASSELL

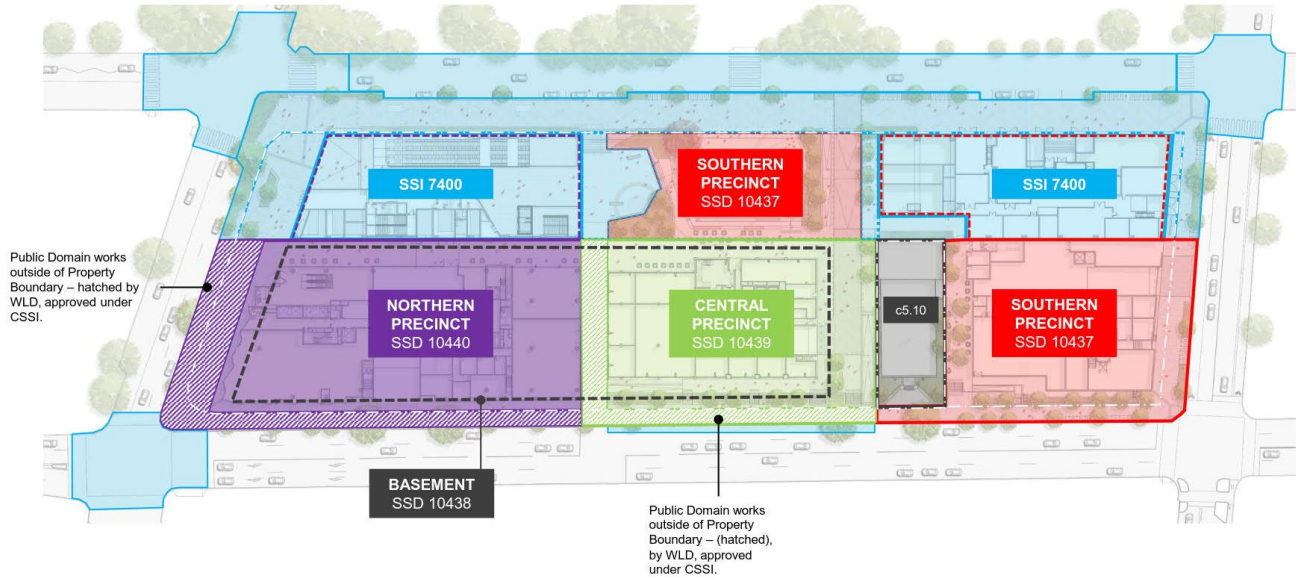

Figure 3 - Waterloo Metro Quarter site, with sub-precincts identified
Source: Waterloo Developer Pty Ltd

5. Background

5.1 About Sydney Metro

Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. A new standalone railway, this 21st century network will revolutionise the way Sydney travels.

There are four core components:

5.1.1 Sydney Metro North West

This project is now complete and passenger services commenced in May 2019 between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and $1 billion under budget.

5.1.2 Sydney Metro City & Southwest

Sydney Metro City & Southwest project includes a new 30km metro line extending metro rail from the end of Metro Northwest at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the ultimate capacity to run a metro train every two minutes each way through the centre of Sydney.

Sydney Metro City & Southwest will deliver new metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition, it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.

5.1.3 Sydney Metro West

Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs.

The locations of seven proposed metro stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays.

The NSW Government is assessing an optional station at Pyrmont and further planning is underway to determine the location of a new metro station in the Sydney CBD.

5.1.4 Sydney Metro Greater West

Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service.

The Australian and NSW governments are equal partners in the delivery of this new railway.

The Sydney Metro project is illustrated below.

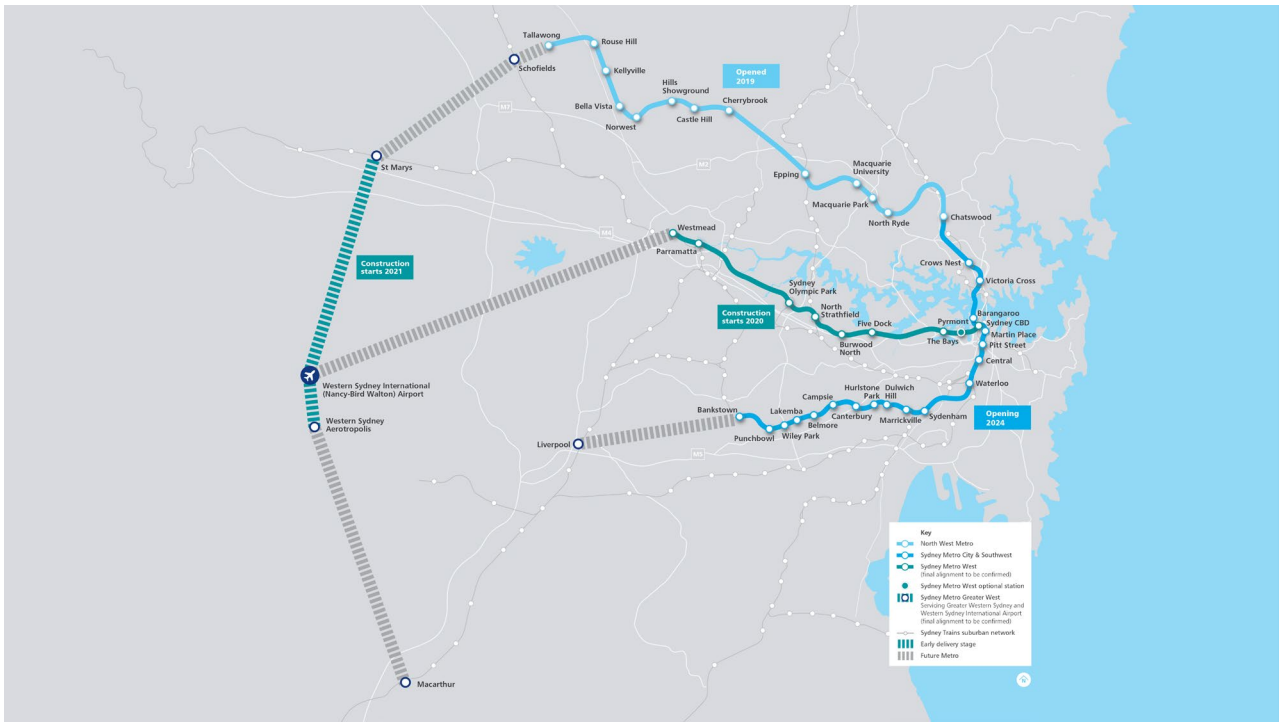

Figure 4 - Sydney Metro alignment map
Source: Sydney Metro

5.2 Sydney Metro CSSI Approval (SSI 7400)

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a critical State significant infrastructure (CSSI) project (reference SSI 7400) (CSSI approval). The terms of the CSSI approval includes all works required to construct the Sydney Metro Waterloo Station. The CSSI approval also includes the construction of below and above ground works within the metro station structure for appropriate integration with the OSD.

With regards to CSSI related works, any changes to the 'metro station box' envelope and public domain will be pursued in satisfaction of the CSSI conditions of approval and do not form part of the scope of the concept SSD DA or detailed SSD DA for the OSD.

Except to the extent described in the EIS or Preferred Infrastructure Report (PIR) submitted with the CSSI application, any OSD buildings and uses do not form part of the CSSI approval and will be subject to the relevant assessment pathway prescribed by the EP&A Act.

The delineation between the approved Sydney Metro works, generally described as within the two 'metro station boxes' and surrounding public domain works, and the OSD elements are illustrated in Figure 5.

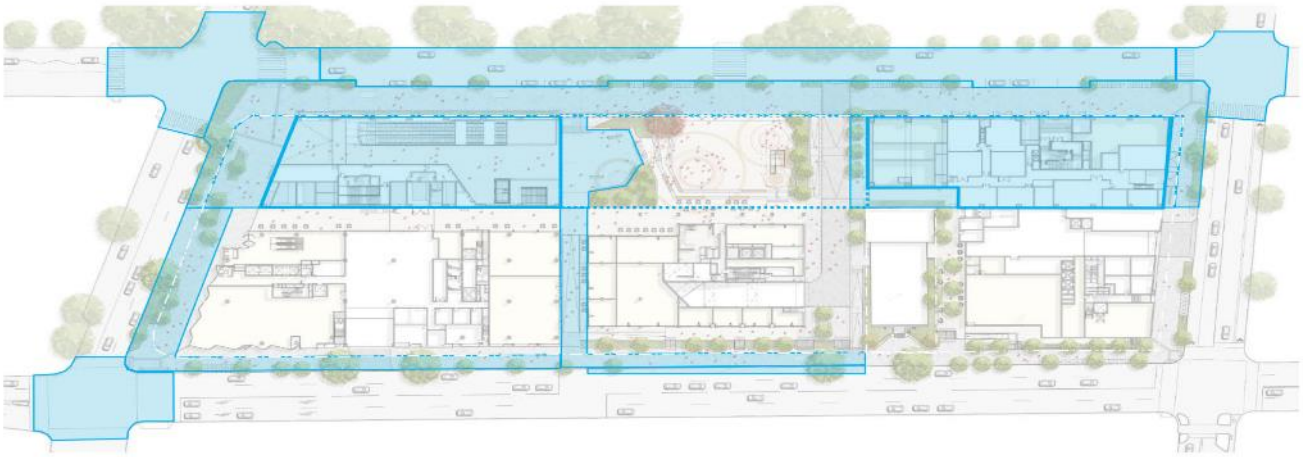

Figure 5 - CSSI Approval scope of works
Source: WL Developer Pty Ltd

5.3 Concept Approval (SSD 9393)

As per the requirements of clause 7.20 of the *Sydney Local Environmental Plan 2012* (SLEP), as the OSD exceeds a height of 25 metres above ground level (among other triggers), development consent is first required to be issued in a concept DA (formerly known as Stage 1 DA).

Development consent was granted on 10 December 2019 for the concept SSD DA (SSD 9393) for the Waterloo Metro Quarter OSD including:

- a maximum building envelope for podium, mid-rise and tower buildings
- a maximum gross floor area of 68,750sqm, excluding station floor space
- conceptual land use for non-residential and residential floor space
- minimum 12,000sqm of non-residential gross floor area including a minimum of 2,000sqm of community facilities
- minimum 5% residential gross floor area as affordable housing dwellings
- 70 social housing dwellings
- basement car parking, motorcycle parking, bicycle parking, and service vehicle spaces.

The detailed SSD DA seeks development consent for the OSD located within the Southern Precinct of the site, consistent with the parameters of this concept approval. Separate SSD DAs have been prepared and will be submitted for the Central Precinct, Northern Precinct and Basement proposed across the Waterloo Metro Quarter site.

A concurrent amending concept SSD DA has been prepared and submitted to the DPIE which proposed to make modifications to the approved building envelopes at the northern precinct and central building. This amending concept SSD DA does not impact the proposed development within the southern precinct.

6. Proposed development

6.1 Waterloo Metro Quarter Development

The Waterloo Metro Quarter OSD comprises four separate buildings, a basement carpark and public domain works adjacent to the Waterloo Metro station.

Separate SSD DAs will be submitted concurrently for the design, construction and operation of each building in the precinct;

- Southern precinct SSD-10437,
- Basement Car Park SSD-10438,
- Central precinct SSD-10439, and
- Northern precinct-SSD-10440.

An overview of the Development is included below for context. This detailed SSD DA seeks development consent for the design, construction and operation of the Southern Precinct:

6.1.1 Southern Precinct - Subject DA

The Southern Precinct comprises:

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9 storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level retail tenancies including Makerspace and gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington Streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

6.1.2 Basement Car Park

The Basement Car Park comprises:

- 2-storey shared basement car park and associated excavation comprising
- Ground level structure
- Carparking for the Commercial Building 1, Residential Building 2, social housing Building 4, Waterloo Congregational Church and Sydney Metro
- Service vehicle bays
- commercial end of trip and bicycle storage facilities

- Retail end of trip and bicycle storage facilities
- residential storage facilities
- shared plant and services.

6.1.3 Central Precinct

The Central Precinct comprises:

- 24-storey residential building (Building 2) comprising approximately 126 market residential and 24 affordable housing apartments, to be delivered as a mixture of 1 bedroom, 2 bedroom and 3 bedroom apartments
- Ground level retail tenancies, community hub, precinct retail amenities and basement car park entry
- level 1 and level 2 community facilities (as defined in the SLEP) intended to be operated as a childcare centre
- landscaping and private and communal open space at roof top levels to support the residential accommodation
- new public open space including the delivery of the Church Square, including vehicle access to the basement via a shared way from Cope Street, expanded footpaths and public domain upgrades on Botany Road
- external licensed seating areas
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

6.1.4 Northern Precinct

The Northern Precinct comprises:

- 17-storey commercial building (Building 1) comprising Commercial floor space, with an approximate capacity of 4000 workers
- ground level retail tenancies, loading dock facilities serving the northern and central precinct including Waterloo metro station
- landscaping and private open space at podium and roof top levels to support the commercial tenants
- new public open space including the delivery of the Raglan Street Plaza, Raglan Walk and expanded footpaths on Raglan Street and Botany Road and public domain upgrades
- external licensed seating areas
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

7. Station Works Contractor Interface & Handover

Effective interface management is based on timely communication and engagement with all identified stakeholders including, Authorities, Councils, Interface Contractors and customers throughout the course of the project.

Waterloo Developer Pty Ltd **(WL Developer)** will ensure that effective communication channels are established and maintained through regular correspondence, engagement, meetings, reporting and evaluation on an ongoing basis.

Working within the boundaries of the interface agreements and deed interface requirements, the elected interface manager will actively engage with interface parties to ensure that their requirements, particularly with respect to the reliability of their operations, are proactively sought, managed and delivered by the project team.

With respect to the external interfaces, there are significant Interface Contractor's works that run through the OSD Development that will create complex interfaces with the Waterloo ISD works. These interfaces will have to be carefully managed throughout the design and construction phase of the Waterloo OSD project.

WL Developer will work with John Holland Pty Ltd **(Station Contractor)** to ensure that the delivery and handover of the Station box is integrated. WL Developer will also identify if any of the site constraints or conditions are different from those identified in the Station Contractors Design and Assurance Documentation for the station handover.

Handover from the Station Contractor will be marked upon transfer of as-built documentation, engineering signoff and access to site is provided. The proposed interface with the Station Contractor will allow for early identification of changes in design so that change can be managed.

8. Site Establishment

8.1 Hoardings

Hoardings will be adjusted and installed by John Holland Building Pty Ltd following handover of the Southern Precinct work areas by the Station Contractor.

The site will be surrounded by both A-Class and B-Class hoardings along the perimeter of the site. These hoardings will be erected along Raglan Street, Cope Street, Wellington Street and Botany Road in the stages handed over by the Station Contractor. Refer to Figure 6.

All hoardings will be designed, installed, and maintained to ensure segregation of pedestrians, workforce and vehicles. As required, hoardings will be designed to provide overhead protection.

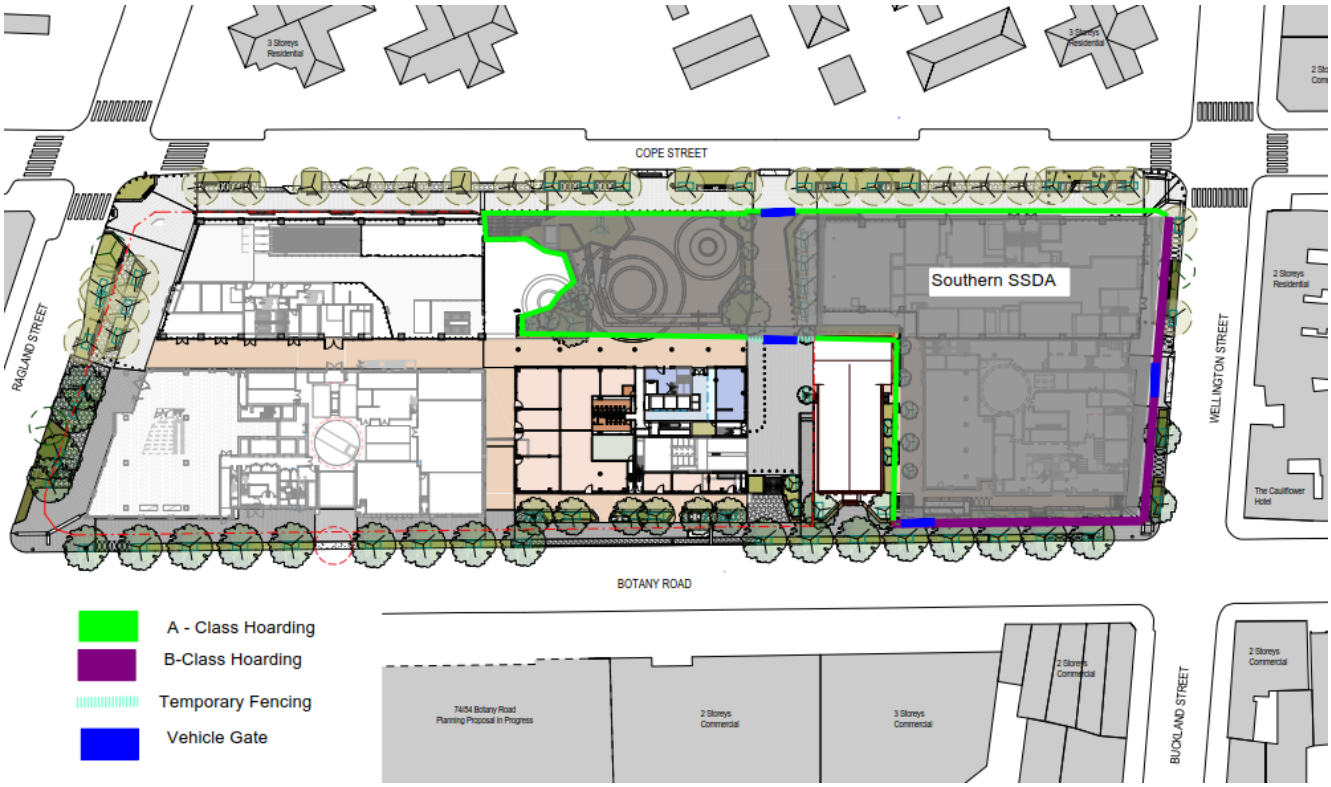

Figure 6 - Site Establishment Plan

8.2 Site Security & Gates

The site perimeter will be secured at all times with no unauthorised access permitted. Out of hours security patrols will be utilised strategically during the project. The focus will be on the back end of the project, as the potential for theft and vandalism increases. Shutdown periods (Christmas and Easter) will also be monitored by external security services.

Construction worker access to the site will be strictly controlled through a secured gate system and individuals will require personalised identity swipe cards. This creates a live record of the

workers on-site at any given time, which can be accessed in case of an emergency or during an evacuation.

The Southern Precinct site shall have hoardings and/or appropriate fencing to delineate between the Station Contractors site and the Southern Precinct works to ensure that Station Contractor and the Southern Precinct workforce cannot access the opposing work areas.

8.3 Project Office

The project office will be located within one block of the site and will include accommodation for project management staff.

8.4 Workforce Accommodation

Accommodation and amenities (Lunch sheds, office sheds, first aid sheds, change rooms, toilets) for the construction workforce will be provided in stages. Initial site accommodation sheds will be erected on top of the B class hoarding along the surrounding streets (Wellington Street, Botany Road and/or Raglan Street). As the works are progressed accommodation will be relocated into the basement and or lower floors of the building

Hours of Construction

The site working hours have been defined in section 4.1.2 of the Noise and Vibration report referred to in B25. The following Construction Hours are proposed, in accordance with City of Sydney standard hours: Construction hours are detail below.

- Monday to Friday: 7:00am – 6:00pm
- Saturday: 7:30am – 3:30pm
- Sunday: No work

There will be times when out of hours works may be required. An out of hours protocol for the assessment, management and approval of work outside of the standard construction hours will be prepared and submitted as required.

9. Traffic & Pedestrian Management

Taking into consideration that the site is surrounded by local residents and a main arterial traffic route (Botany Road), managing the flow of materials and equipment in and out of the construction site while maintaining the continuity of the development will be critical in a successful delivery of the project. Our planning will consider and successfully manage the maintenance of pedestrian and vehicular traffic flow to the surrounding buildings and roads. This will be detailed in an overall Construction Traffic Management Plan (CTMP) and, specific Traffic Control Plans detailing each management of pedestrian, vehicular construction and operational traffic at each stage of works. These plans will be updated as required throughout the delivery of the works. A Draft Construction Traffic and Pedestrian Management Plan has been prepared by PTC and is referenced in EIS Appendix AA. An overview of the key traffic and pedestrian management strategies is provided below.

9.1 Traffic Management

Traffic Control will be provided at the various access, egress gates & work zones to manage all vehicle deliveries, loading/unloading and general access/security of the gates during construction work hours. This will allow for a coordinated movement of traffic around site minimizing impacts to the community.

9.2 Pedestrian Management

The OSD Contractor will ensure that nearby stakeholders, residents, commuters and visitors to the Waterloo area are suitably informed of any required footpath closures, and we work with the City of Sydney Council to provide alternate travel paths, as required, throughout the delivery of the project.

During construction, pedestrians will have safe and functional access around the external perimeter of the site with overhead protection provided as required.

On completion, functional and safe footpaths around the perimeter of the site will be provided in accordance with the Separable Potion obligations detailed under the PDA, namely;

- Functional and safe footpaths will be provided with a clear width of at least
  a) 3.5 metres width along Raglan St
  b) 3.5 metres width along Botany Road; and
  c) 1.3 metres along Wellington Street for passing pedestrians, to facilitate safe interchange and access to the Station Lot.

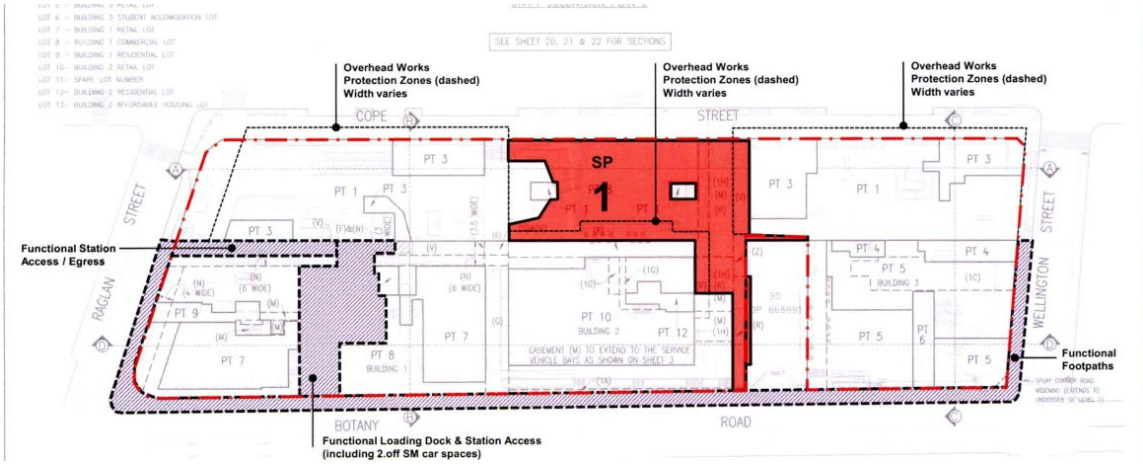

Figure 7 – Ground Level at Completion of SP1

9.3 Work Zones

Please refer to figure 7 below for the proposed Work Zones for the Southern Precinct works.

It is understood separate approval/s are required for these Work Zones from City of Sydney Council's Construction Regulation Unit (CRU) and/or the Roads & Maritime Services (RMS) (As applicable).

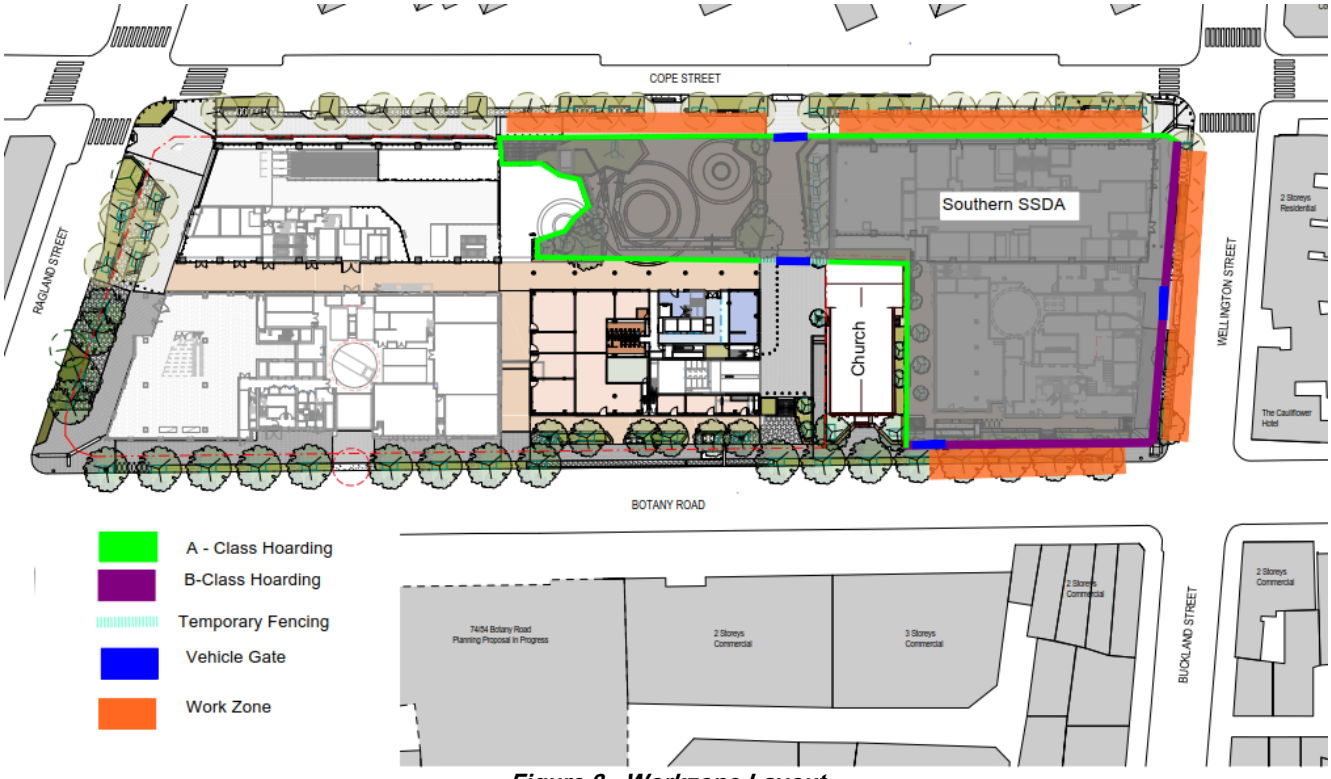

Figure 8 - Workzone Layout

9.4 Public Transport

The site is in close proximity to the public transport network with approximately 10 bus stops within walking distance (200 meters) from the site. Redfern Station is also a mere 10 minute walk from the site, making public transport highly accessible for commute to and from the site. A Green Travel Plan has been prepared by PTC and submitted at Appendix Y of the EIS. All staff, consultants and subcontractors will be encouraged to utilise the existing public transport available in close proximity to the site. There will be no onsite parking available.

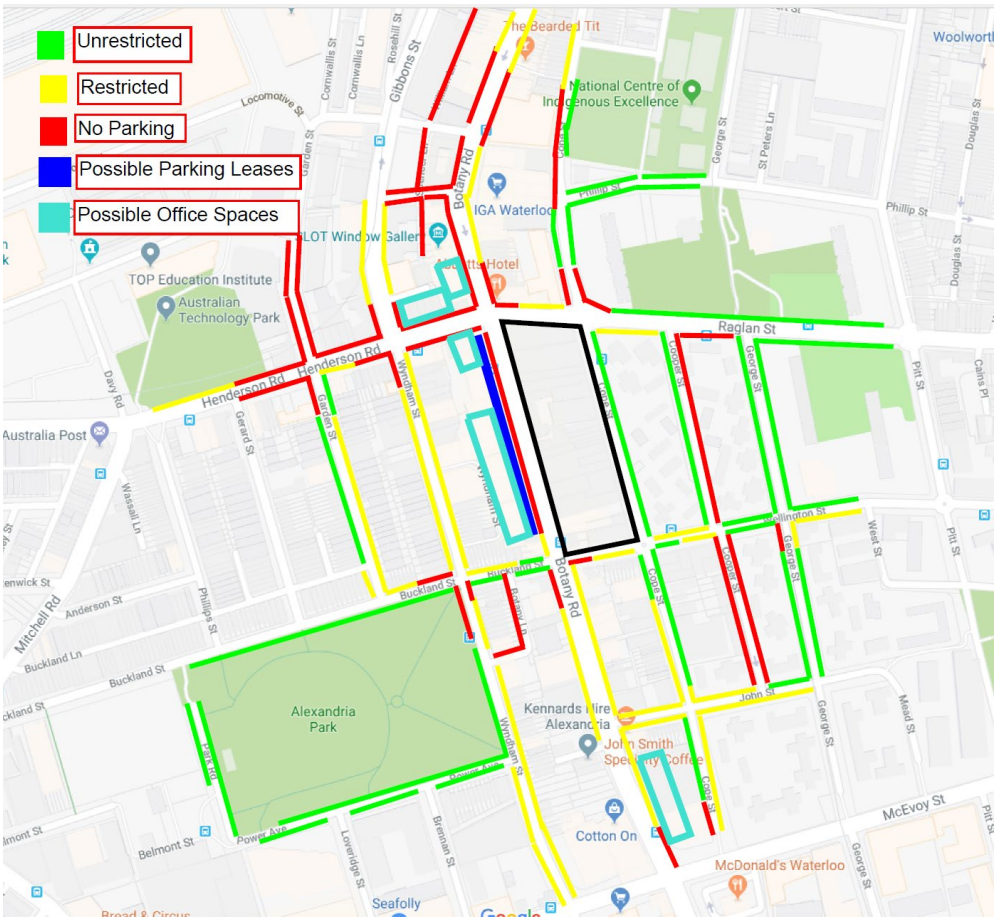

Figure 9 – On street Vehicle Parking

10. Construction Staging

The Southern Precinct consists of three building zones (highlighted red in the below figure) that integrate into the overall WMQ development. A staged delivery approach of the three key zones will be implemented in the following sequence.

1. Social Housing Building
2. Student Accommodation Building
3. Public Plaza (Cope Street)

The construction of each of these zones will be described in further detail throughout the following sections. The Southern Precinct will be delivered in conjunction with the Basement of the North and Central Buildings and will be the completed prior to the Northern and Central Precinct buildings.

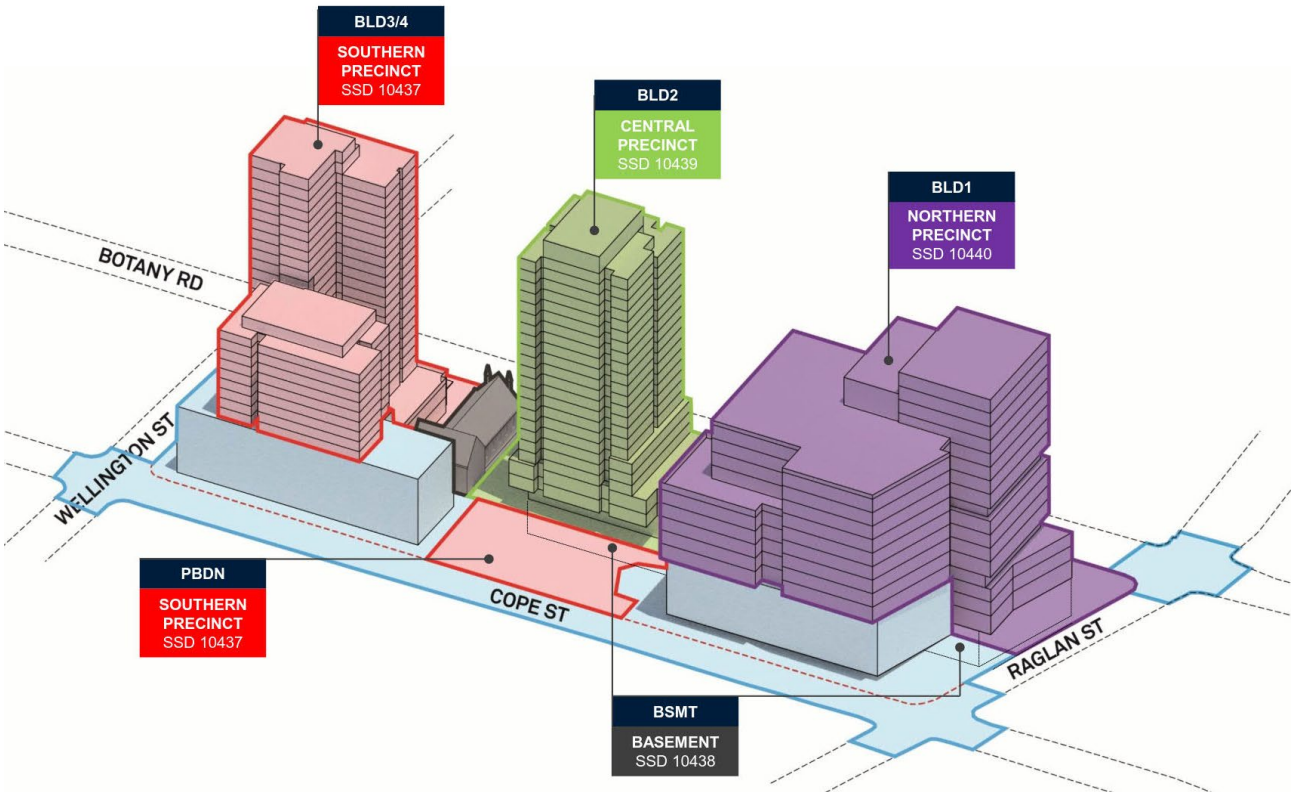

Figure 10 - Southern Precinct Sections

10.1 Student Accommodation Building

10.1.1 Contamination Removal / Site Remediation

Management of known contamination and remediation is subject to a separate approval process (being the CSSI consent). This will be completed prior to commencement of the Southern Precinct. As such, no further remediation assessment is considered warranted for the proposed development.

If unknown contamination, including contaminated groundwater seepage, is encountered at the Southern site this would be managed through an unexpected finds procedure developed for Construction activities which will be included in the further developed site CEMP.

10.1.2 Archaeological Investigations

Excavation and archaeological investigations in this area are subject to a separate approval process (being the CSSI consent). In conclusion, no further archaeological assessment is considered warranted for the proposed development.

10.1.3 Substructure

Upon completion of site investigation, remediation works, and archaeological investigations as described above, substructure works will commence as per the following sequence.

- Demolish existing concrete hardstand and dispose off-site
- Commence foundation piles from the top of the existing fill layer
- Stage 1: Detail Excavation, FRP Pile Caps/ Lift Pits
- Temporary Stockpile of clean sand material on northern end of OSD South block
- Backfill around Stage 1 pile caps, lift pits etc using stockpile of sand
- Stage 2: Detail Excavation, FRP Pile Caps and backfill around pile caps
- Entire Site: Import backfill material and lay/compact to underside of ground slab
- Form Reinforce and Pour OSD South Slab on Ground

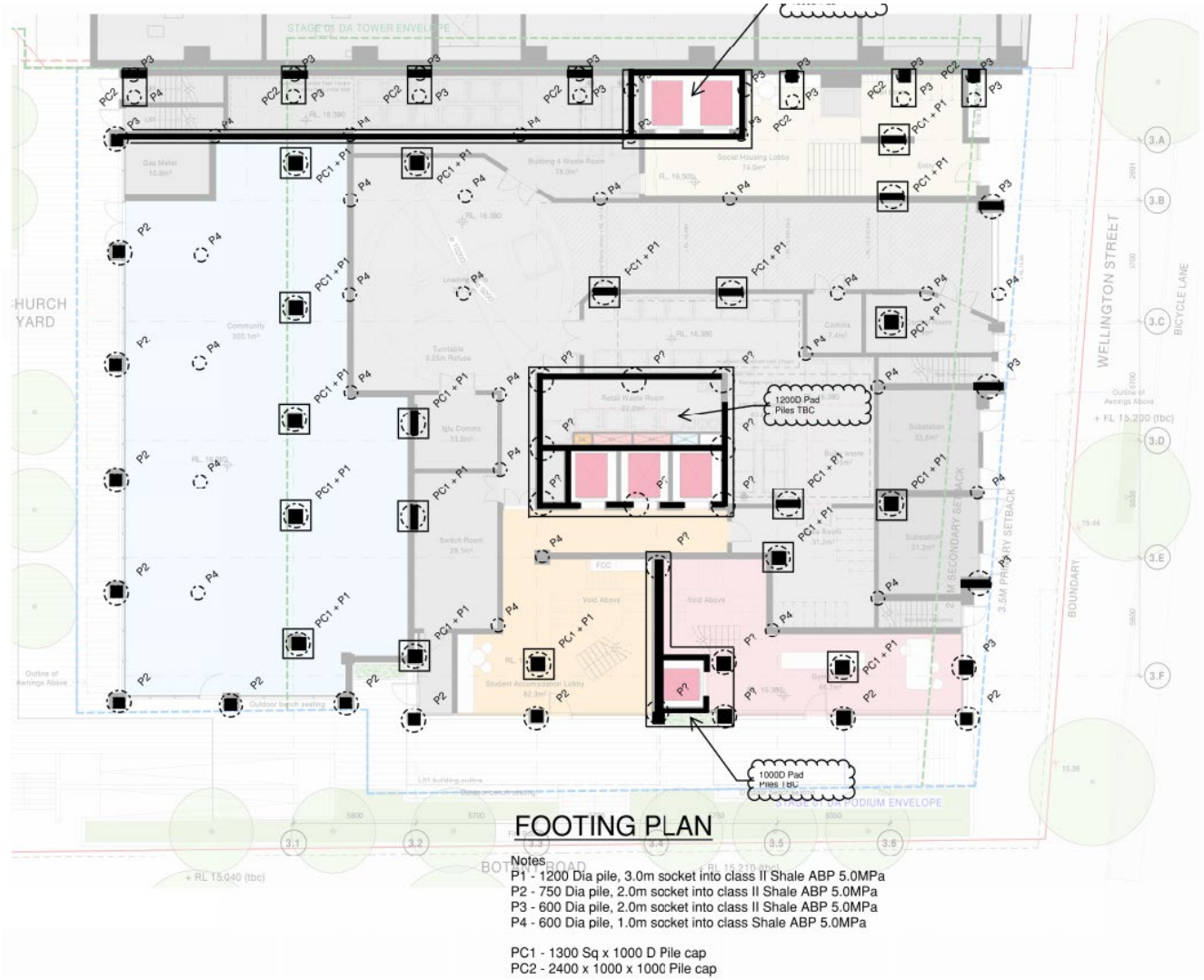

Figure 11 - Footing Plan

10.1.4 Podium

The student accommodation building consists of a podium that rises from Ground Floor to Level 3 and houses the entry lobby as well as a number of shared facilities including general breakout areas, a makers space and gym Towards the north of the building is an outdoor communal area which is situated on the level 2 podium as shown in the elevation below.

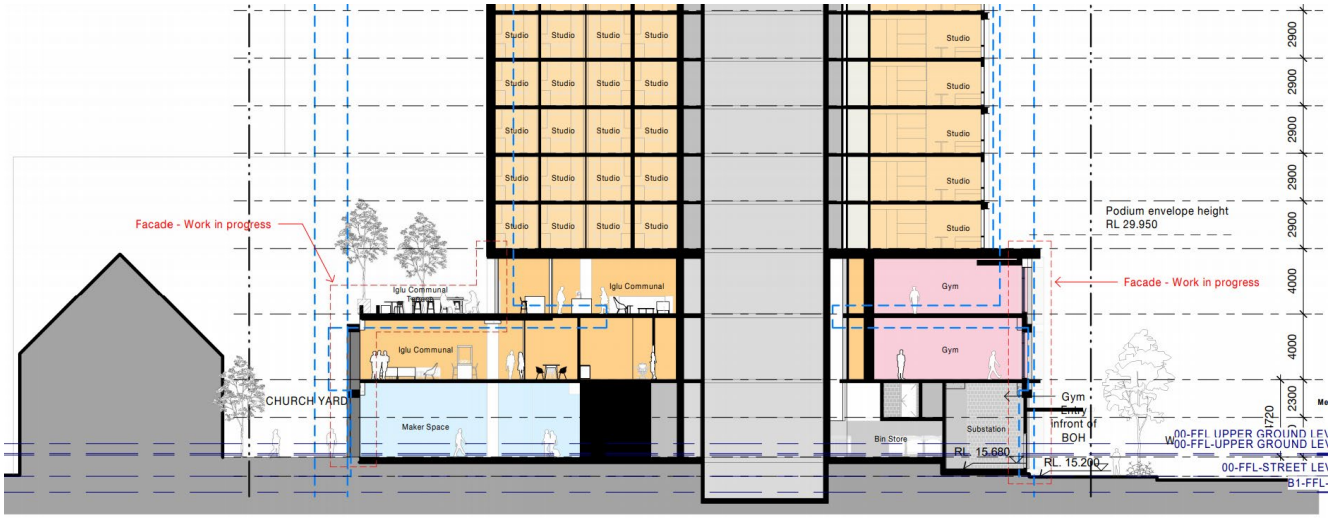

Figure 12 - Elevation Showing the Podium

10.1.5 Typical Floor FRP Construction

The Student Accommodation building consist of a total of 25 levels of which the first 3 are podium levels followed by 22 typical levels. The Student Accommodation structure consist primarily of post tension reinforced concrete slabs which will be formed using table forms or similar. Based on the size of the typical floor footprint, each level will be poured in two pours generally on a 6-day cycle.

Figure 13 - Typical Upper Level Slab Plan

10.1.6 Scaffold and Screens

A combination of both screens and scaffold will be utilised for edge protection as the building progresses through the varying construction stages. Scaffold will be utilised for the lower podium levels with screens being implemented on the typical floors.

The interface between Student and Social buildings will be considered during detailed construction programming.

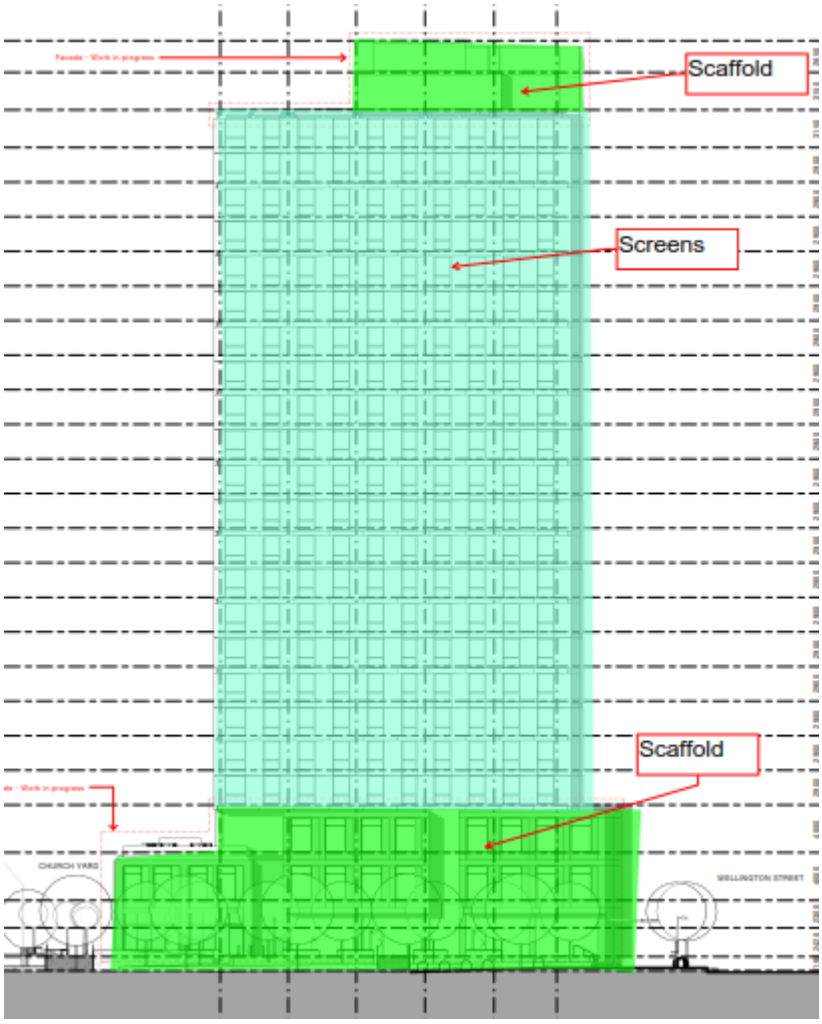

Figure 14 - Scaffold and Screen Mark-up

10.1.7 Façade

Façade for the buildings will involve precast panels and window walls. A detailed program will be developed upon designs being finalised for construction.

10.1.8 Commissioning and Testing

A commissioning plan will be developed for commission and testing purposes by the OSD Contactor. This will detail the guidelines to be followed for commission of the building. It will typically involve individual systems testing and an overall integrated system testing.

10.1.9 Fit out

The Student Accommodation Building consists of communal spaces located in the podium and a combination of single and twin occupancy studios on the typical residential levels above. Fit out for the Student Accommodation building will be done as per the requirements of the project brief provided by Student Accommodation owner.

10.2 Social Housing Building

10.2.1 Founding Slab

The Social Housing building is situated on top of the Station Box. As a result, construction of this building will commence immediately upon this area being handed over from the Station Contractor.

Due to the social housing first level being directly on top of the station box transfer level roof, a low height additional suspended slab will be introduced to account for required underfloor services (hydraulics etc) for the residential floor plate above. A bondek floor solution (or similar) is proposed to form this first suspended slab.

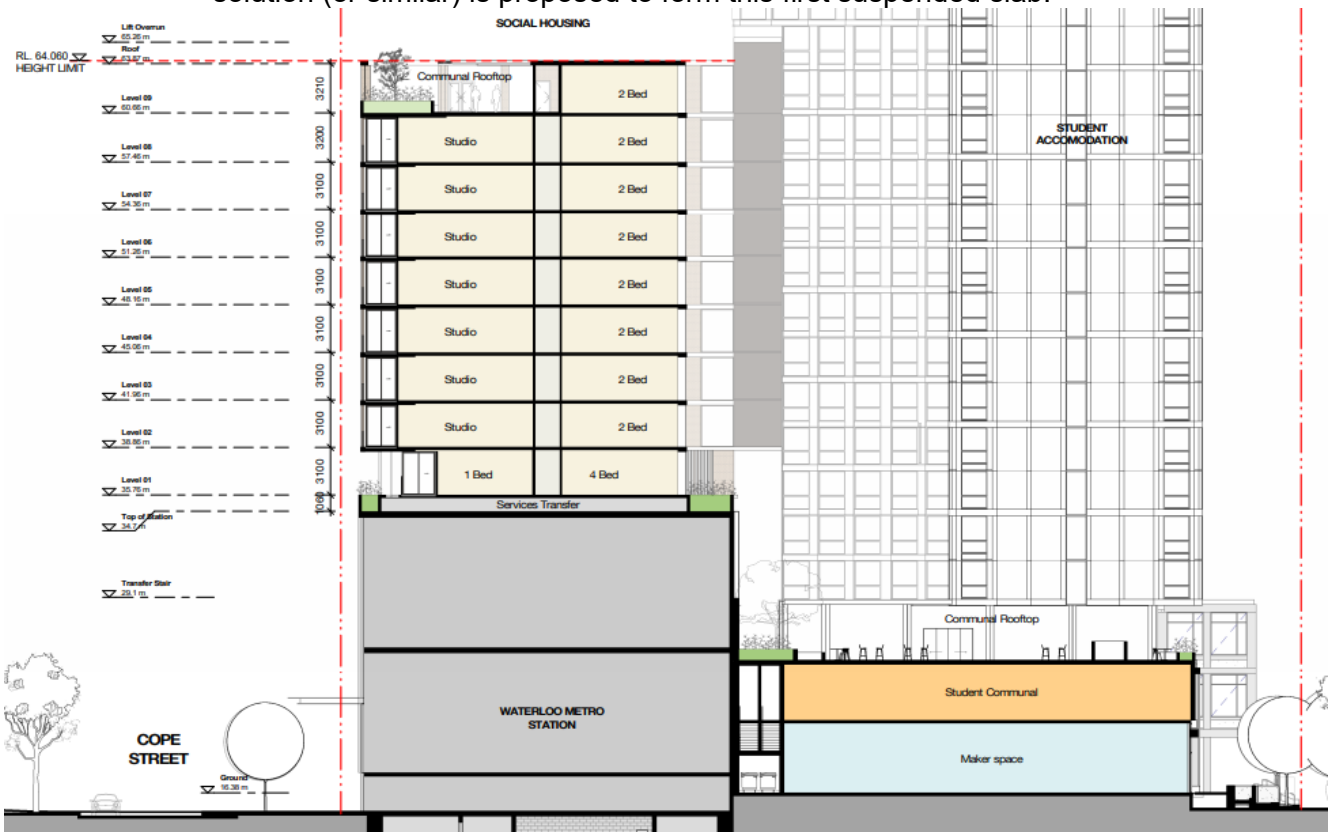

Figure 15 - Social Housing Elevation

10.2.2 Typical Floor FRP Construction

After completion of the founding slab works, typical floor construction for the social housing building will commence. There are a total of 8 levels in the building. The structure consists of a lift core and central core box for stairs. Typical floor structure consists of post tensioned reinforced concrete flat slabs which will be formed using table forms or similar.

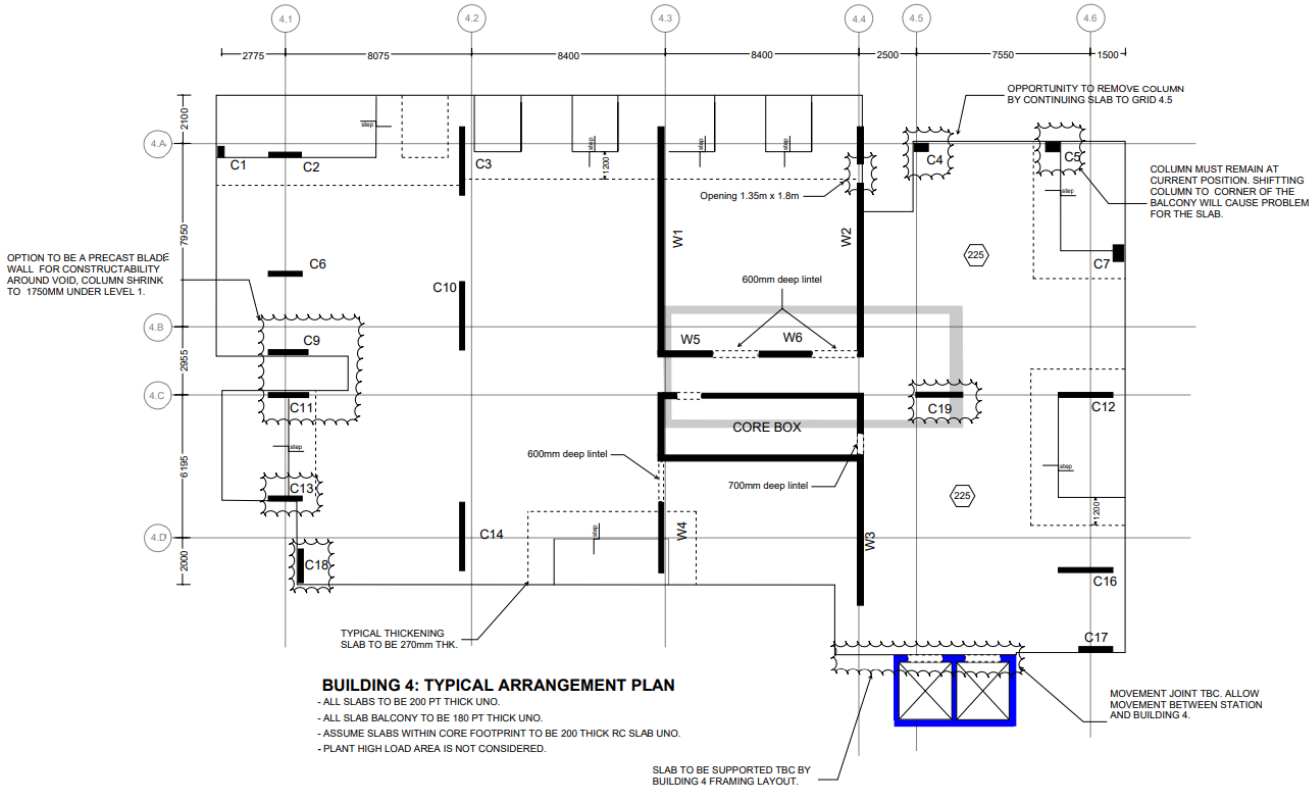

Figure 16 - Typical Floor Plan

10.2.3 Scaffold & Screens

A combination of both screens and scaffold will be considered for different sides and sections of the building for edge protection and access for façade installation.

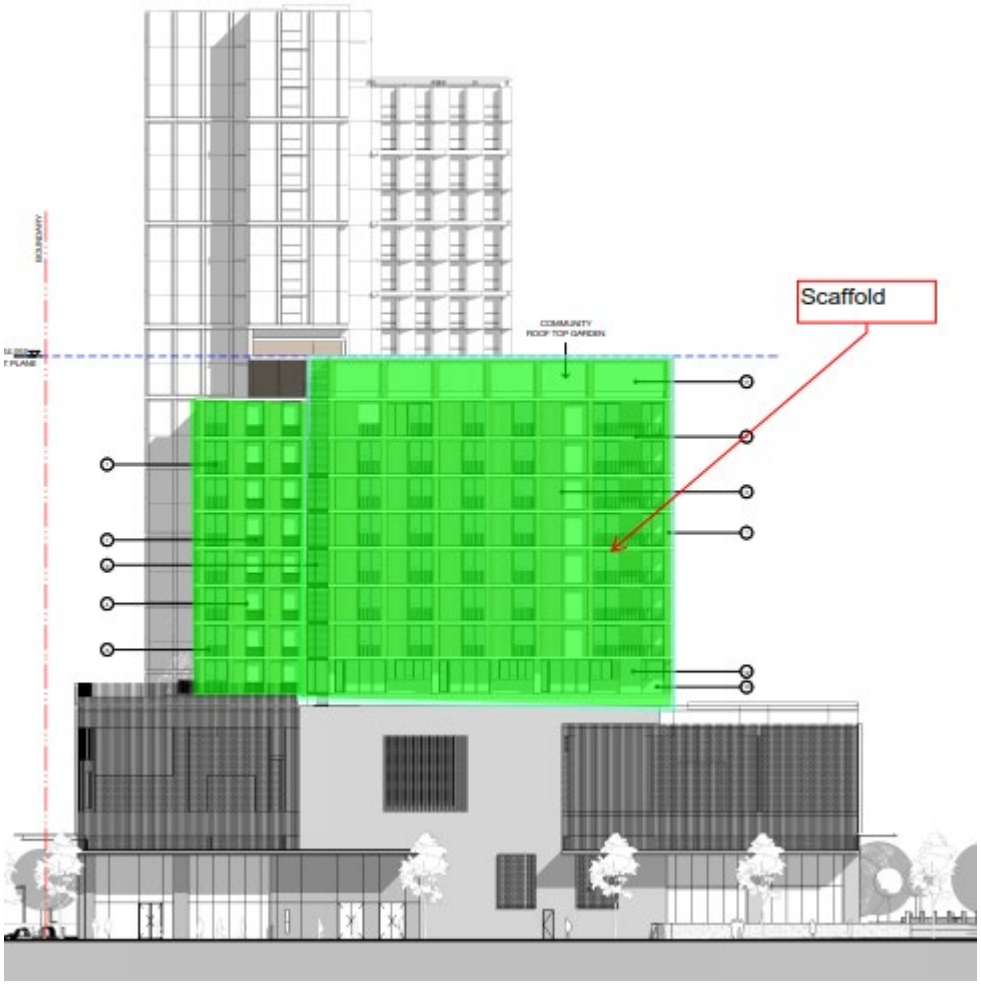

Figure 17 - Scaffold Mark-up

10.2.4 Façade

Façade for the buildings will primarily involve window walls. A detailed program will be developed upon designs being finalised for construction.

10.2.5 Fitout

Social Housing Fitout will commence directly after facade installation has been completed. A coordinated sequence and programme will be developed for typical floor fitout, following details being made available during the design phase.

10.2.6 Commissioning and Testing

A commissioning plan will be developed for commission and testing purposes by the OSD Contactor. This will detail the guidelines to be followed for commission of the building. It will typically involve individual systems testing and an overall integrated system testing.

10.3 Public Plaza (Cope Street)

Public Domain & Landscaping Works in Cope Street Plaza (adjacent the Central Precinct) are proposed as part of the Southern Precinct SSDA and will commence upon the tower cranes being demobilised towards the end of the building construction. These works will be staged to allow for pedestrian access to be maintained around the station and, if necessary, will involve temporary pedestrian diversions throughout the site, to complete the public domain works between boundary line and kerb. It is intended to complete the Public Plaza by Station handover.

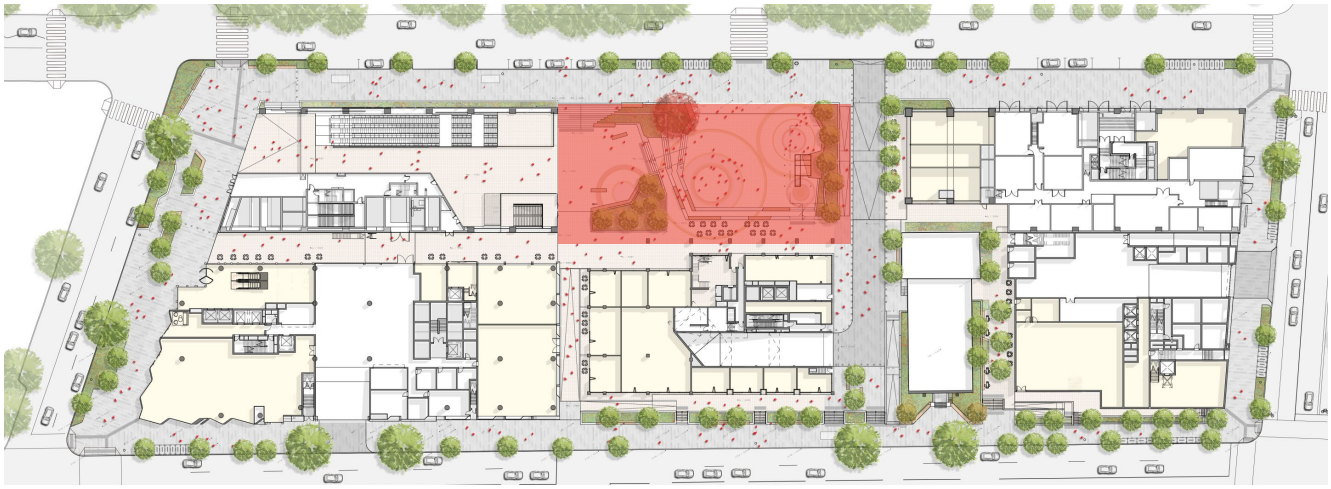

Figure 18 - Public Plaza

11. Temporary Works

The OSD Contractor has procedures around temporary works design, independent sign-off and verification. These are employed to ensure their efficient and effective operation and to maintain the safety of workers and the general public.

12. Material Handling

Efficient material handling is essential to the successful construction of the Southern Precinct There are several pieces of equipment that are critical to efficient material handling across the job, namely, tower cranes, hoists, concrete booms and loading platforms. The selected strategy and layout of this equipment is detailed further under the below subheadings.

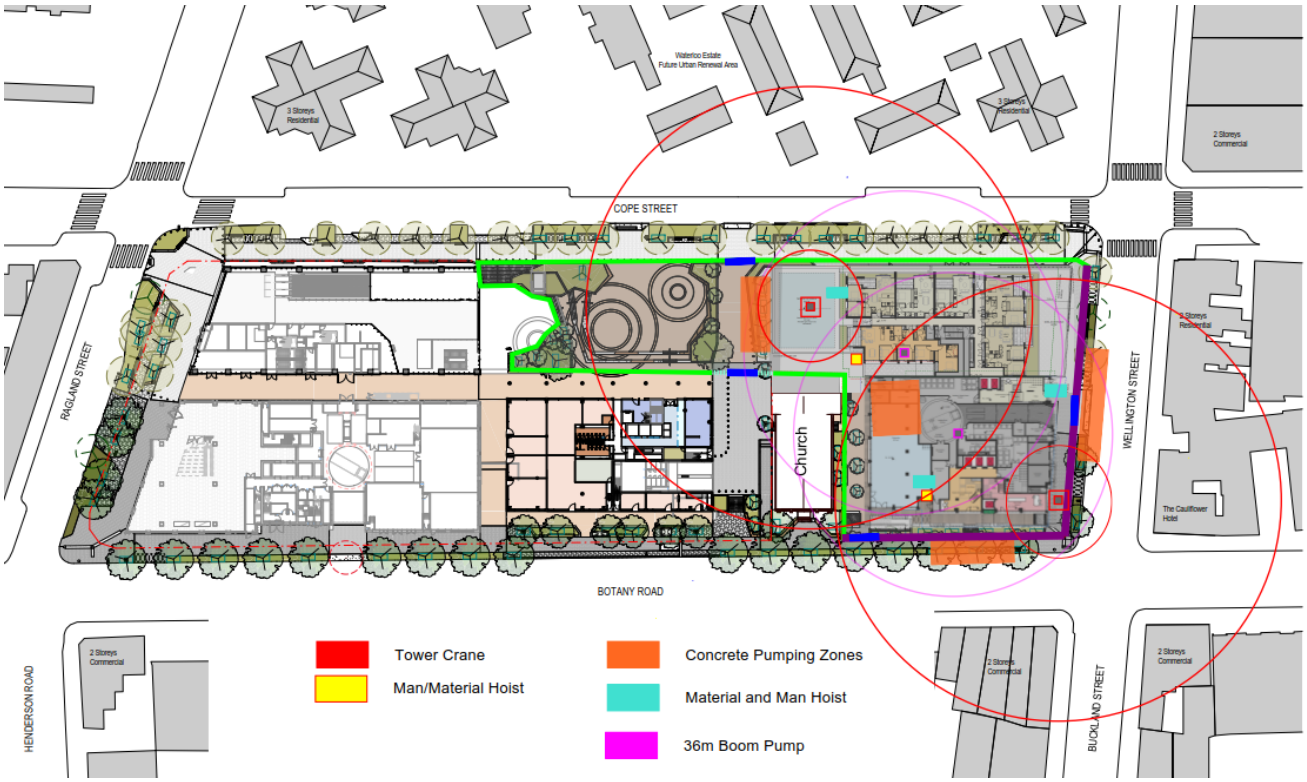

Figure 19 - Materials Handling

12.1 Tower Cranes

A total of Two (2) Tower Cranes are proposed to be utilised to service the Southern Precinct, refer above for layout.

12.2 Hoists and Loading Platforms

Hoists as well as loading platforms will be used in combination with the tower cranes to ensure efficient delivery of material to the desired location. Refer above figure for location of hoists and loading decks.

12.3 Concrete Pumping Zones and placement booms

Static concrete booms will be utilised to ensure efficient supply of concrete to the appropriate structural element. The use of static booms will reduce the need for mobile booms and therefore cut down on unnecessary people/plant interaction. The permanent feed location for the static boom will also assist with consistency in heavy vehicle movements around site.

13. Waste Management & Recycling

OSD Contractor will ensure that the project supply chain is responsible and accountable for maintaining a clean, clear and safe working environment. This will be documented in further detail in a Waste Management Plan **(WMP)** completed by a separate party appointed by the developer and submitted separately to this report. Typically, the head contractor of the site will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements. Bins will be provided for work areas and will be regularly removed to a suitable skip bin location for collection and transport from the site to the waste recycle facility.

Bins will be moved using the man and materials hoists and also by tower cranes, dependant on where they are loaded from, and the waste material being removed from site. Crane lifted steel bins will be used to service the top floors where structure trades will be working, and large wheelie bins/or similar will service the lower levels where fit-out and service trades will be working. The site skips will be suitably located to ensure easy pick-up by the waste subcontractor.

Excess materials generated throughout construction will be separated at an approved waste management facility. Auditable records will be kept of quantities of all materials both recycled and disposed to landfill. Records will be monitored to ensure any applicable recycling targets can be achieved. This information will be collected and reported in compliance with the WMP over the duration of the project. It is intended to engage a licenced entity for the purpose of waste management and recycling.

The EPA waste hierarchy, which sets priorities for the efficient use of resources, will be implemented during construction to minimise unnecessary waste generation.
The waste hierarchy is:

- avoidance including action to reduce the amount of waste generated by households, industry and all levels of government
- resource recovery including re-use, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources
- disposal including management of all disposal options in the most environmentally responsible manner.

To implement the waste hierarchy the following will be implemented, where practical and appropriate:

- Order materials in appropriate quantities and request minimal packaging;
- Give a high priority to using non-hazardous products where practical;
- Investigate packaging takeback schemes with suppliers during the procurement phase;

13.1 Waste types and classification

Waste will be classified according to the EPA's Waste Classification Guidelines 2014, prior to disposal. Spoil excavated is expected to be classified as excavated natural material (ENM) or as identified in a remediation action plan prepared for the site.

14. Noise & Vibration Management

Noise and vibration generated from construction activities occurring on site and its impact on site operations and workers will be managed to minimise adverse impact on neighbouring residents, businesses and associated building structures. Special consideration will be given to the neighbouring Waterloo Congregational Church during the construction of the Substructure and Ground Floor slab All noise generating activities are proposed to occur during the approved Standard Construction Hours. Primary source of noise generated will be associated with vehicle movements, generators, heavy machinery, hand-held machinery and tools.

Any noise activities proposed outside the nominated site operating hours will require prior written consent from the nominated approval authority. Noise limits during the construction works will meet the maximum allowable noise contribution.

During construction, the OSD Contractor will utilise existing noise impact assessment data, where required, to determine noise sources and confirm ambient background levels or alternatively will conduct baseline noise monitoring prior to construction work commencing. OSD Contractor may engage an acoustic consultant to monitor construction noise level during its activities, routine inspections of plant and equipment will be conducted to ensure performance relative to compliance requirements.

When planning for construction work that includes vibration, all practical efforts to protect vibration sensitive buildings and the amenity of adjoining stakeholders (specifically the church) will be considered. A practical and economical combination of vibration control measures will be applied to manage vibration impacts such as:

- Substitution by an alternative process
- Restricting times when work is carried out
- Screening or enclosures
- Consultation with affected residents
- Utilisation of temporary supports where deemed necessary

Stantec (Australia) Pty Ltd have been engaged by WL Developer to produce the Acoustic and Vibration Impact Assessment for the Southern Precent, provided in EIS Appendix CC. The EIS Appendix CC - Acoustic and Vibration Impact Assessment (Operational and Construction) and the conditions contained therein will be adhered to for the duration of the project.

15. Air Quality and Odour Management

The sources of air emissions from the proposed construction works, will be deemed to be minimal as the Southern Precinct does not have any basement levels and therefore no bulk excavation. The site impacts are primarily associated with traffic movements as a result of deliveries. e.g. concrete trucks. The generation of dust, air emissions or odours from the site can be a nuisance to adjacent land users, create unsafe working conditions on site and result in environmental degradation if not managed appropriately.

The minimisation of air borne pollution is an important component for the Construction Phase CEMP for the site. Air quality impacts shall be minimised or avoided by incorporation of appropriate dust suppression (e.g. sprinklers, misting and stabilised/cover stock piles) and air quality control measures at various stages of the project, this will generally be related to the of construction vehicles. Construction site layout and placement of plant would consider air quality impacts to nearby receivers, pedestrian, commercial receivers, public and road traffic.

16. Soil and Water Quality Management

16.1 Stormwater runoff

Water courses within the Project site catchment are heavily urbanised, with stormwater collected by developed stormwater networks. Environmental protection during construction will involve the installation, use and maintenance of a number of temporary erosion and sediment control measures as required in accordance with the following principles:

- Before undertaking excavation work implement all soil and water management controls required to minimise pollution of waters
- All erosion and sediment controls will be installed in accordance with NSW Blue Book Volumes 1 and 2D (Landcom, 2004 and DECC, 2008)
- Minimisation of soil erosion and mobilisation of sediment during rain events
- Use of suitable sediment retention structures and control measures to filter or retain mobilised sediment generated during rain events over surface disturbances
- Maximum sediment capture through effective positioning of temporary erosion and sediment control structures
- Regular inspection and maintenance of all erosion and sediment controls to ensure they are effective
- Ensure that any road, footpath, shared path or cycleway is at all times kept free of mud, dirt, dust, deleterious material, debris, obstructions and trip hazards
- Site exit controls may include wheel wash facilities. These measures would be put in place to mitigate the risk of any loss of fuels, lubricants, load or other substances
- Any spillage or build-up of such material or debris would be cleaned up as soon as practicable.

An erosion and sediment control plan will be developed for the site prior to the commencement of excavation. This will be prepared in accordance with the NSW Blue Book requirements. All stormwater will be managed to prevent off site pollution.

16.2 Groundwater Seepage

Groundwater inflow/seepage is expected to be minimal, based on the Southern Precinct being constructed above the water table. If ground water is encountered during piling and localised excavation points it will be dealt with via the unexpected finds procedure.

16.3 Soil

Potential impacts to soil will be limited to areas of landscaping within the Southern Precinct. Where soil pollution occurs as a result of spills or leaks, the impacted soil will be removed and disposed at an appropriately licenced facility. All known areas of contamination will be managed prior to commencement of the Southern Precinct in accordance with the CSSI approval.

17. Cumulative Impacts

The cumulative assessment considers the Waterloo Station works that are programmed to be occurring during the Southern Precinct construction. The timing for other external developments (e.g. renewal of the Waterloo social housing estate) are not planned to be undertaken concurrently with any of the Southern Precinct at this stage, therefore, specific impacts are not able to be assessed as part of this CEMP.

The CEMP that is further developed prior to commencement of construction would address any further Cumulative Impacts as a result of other developments in proximity to the Southern Precinct.

In accordance with the SEARS requirements, an assessment of the potential cumulative impacts of the proposed development with regards to the Station works (CSSI 7400) is provided in the below table.

Aspect	Impact	Mitigation Measure
Noise & Vibration	Disruption to the community from construction and additional traffic, including out of hours activities	Implementation of noise and vibration management requirements are detailed further in Noise and Vibration Plan. Site inspections and monitoring to confirm noise and vibration levels are being met will be implemented by the construction manager, environmental officers and supervisor
Traffic	Disruption to the community and road users from increased traffic	Implementation of traffic management requirements are detailed further in the CTMP
Air quality	Dust generation is expected to be minimal due to the stage of work and limited ground disturbance	Air quality will be managed in accordance with the requirements stipulated within this CEMP
Soil and Water	Minimal cumulative impacts are expected based on limited ground disturbance work at the site	Soil and Water will be managed in accordance with the requirements stipulated within this CEMP
Odour	Minimal cumulative impacts are expected based on limited ground disturbance work at the site	Odour will be managed in accordance with the requirements stipulated within this CEMP

Table 3 - Cumulative Impacts

18. Program Management

OSD Contractor has standardised processes and procedures to ensure that project planning and scheduling is consistent, transparent, efficient, and integrated across the delivery cycle of the project. This provides a greater level of certainty in delivery through robust benchmarked baseline programs and ensures that project controls are accurate and up-to-date.

The project team will have regular planning meetings to track, plan and disseminate information regarding the upcoming or ongoing activities. After implementation of the program, a structured cycle of monitoring and review will be maintained. Progress updates with the client will also be done periodically. These updates will be done by the project team members in charge of the works-activities.

19. Stakeholder Management & Communications

A stakeholder management plan will be developed prior to project commencement and community members/stakeholder will be engaged to address the implementation of project specific mitigation and management strategies in order to minimise the potential for negative impacts on the community in and around the construction site.

The WL Developer is committed to respecting and valuing all stakeholders and engaging positively with the community, government, and non-government stakeholders.

In order to achieve this, we propose to implement the following strategies;

- Establish and maintain effective and open communication with community members, stakeholders' groups and the WLD project partners
- Be open and accessible to the community, stakeholders and customers
- Listen and respond to what the community and stakeholders have to say
- Provide timely, informative communications material that clearly explains the project works and any potential impacts
- Identify and address key risks, impacts and opportunities
- Ensure there are "no surprises" for stakeholders, the community and WLD partners
- Conduct ourselves professionally in all that we do
- Actively look for opportunities to incorporate the community and stakeholder suggestions in the design, construction and delivery phases of the project

Identified below are some of the key stakeholders for the development;

- Waterloo Congregational Church
- Public Utility Authorities e.g. (Sydney Water, Jemena, Ausgrid, Telstra, Optus, NBN)
- Transport for New South Wales
- Roads and Maritime Services
- Sydney City Council
- Sydney Trains
- Police, Fire Brigade, Ambulance, Local Area Command Emergency Response Group
- Office of Environment and Heritage
- NSW Environmental and Protection Authority
- Local Government representatives
- Bus companies e.g. Sydney Buses
- Local residents
- Road users and Pedestrians
- Surrounding Business
- Community Interest Groups