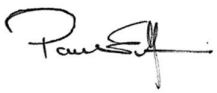
VICTORIA CROSS
OVER STATION DEVELOPMENT (OSD)

CONSTRUCTION AND SITE MANAGEMENT PLAN

(STATION & OSD)

Rev	Date	Details / Description
01	10/05/19	Issued for Internal Review
02	23/05/19	Submitted to Sydney Metro as DRAFT
03	18/06/19	Over Station Development Modifications
04	19/08/19	Over Station Development SSDA

DOCUMENT CONTROL / APPROVALS

Title:				
Document No:	SVC-SM-PLN-001001			
Document Path:	Z:\Victoria Cross\LLB\Station\H. Project Delivery\H06 Management Plans			
Disciplines	Construction			
	Name	**Position**	**Date**	**Signed/ Approved**
Originator(s)	Sefton Campbell	Construction Director		
Review	Sefton Campbell	Construction Director		
Approval	Paul Elkington	Project Director		

Distribution List of Registered Copies:

Copy Number	Issued to (Name)	Date	Position
001	Paul Elkington		Project Director
002	Sefton Campbell		Construction Director

Project Revision History

Revision	Date	Description	Section/ page No.	Approved
01	10/05/19	Issued for Internal Review	All	Yes
02	23/05/19	Submitted to Sydney Metro as DRAFT	All	Yes
04	19/08/19	Submitted for SSDA	All	Yes

TABLE OF CONTENTS

GENERAL INFORMATION

Acronyms

Acronym	Definition
AEO	Authorised Engineering Organisation
ASA	Asset Standards Authority
CSMP	Construction and Site Management Plan
CSSI	Critically Significant State Infrastructure
CTMP	Construction Traffic Management Plan
ISD	Over Station Development
VICX-ISD	Victoria Cross Integrated Station Development
OSD	Over Station Development
TCG	Traffic Control Group
TfNSW	Transport for New South Wales
TSE	Tunnel and Station Excavation Works
LiDAR	Light Detection And Ranging
STME	Stations Mechanical and Electrical Works
CBD	Central Business District
RL	Reduced Level
IRS's	Interface Requirement Specifications
BOH	Back of House
FOH	Front of House
SWTC	Scope of Works and Technical Criteria

Acronym	Definition
TW	Temporary Works

Definitions and Abbreviations

Glossary of commonly used terms and acronyms

Term	Description
AEO	Authorised Engineering Organisation - a supplier of a defined engineering service or product that has been assessed and granted pre-approval to undertake work on TfNSW infrastructure.
Principal Contractor	Lendlease
PHA	Preliminary Hazard Analysis - is performed to identify possible hazards that could be created by the system being designed. This information can then be used to reduce the severity or build-in safeguards against the effects of the identified hazards.
Principal	Sydney Metro
WH&S	Work Health and Safety - Work health and safety refers to the legislation, policies, procedures and activities that aim to protect the health, safety and welfare of all people at the workplace.

References and Standards

Document	Reference Title
Schedule C1	Scope of Works and Technical Criteria Appendix F2

PROJECT INTRODUCTION

This report has been prepared to accompany a detailed State Significant Development (SSD) development application (DA) for a commercial mixed-use Over Station Development (OSD) above the new Sydney Metro Victoria Cross Station. The detailed SSD DA is consistent with the Concept Approval (SSD 17_8874) granted for the maximum building envelope on the site, as proposed to be modified.

It should be noted that due to the Integrated nature of the Over Station Development (OSD) and the relationship to the adjoining Victoria Cross Station, the plan has been compiled as a combined Station and OSD CMP. Only those sections relevant to SSD DA are to be referred to when reviewing this plan for the purposes of the SSD DA submission.

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 (NSW DPIE) for assessment.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 6 May 2019. Specifically, this report has been prepared to respond to SEARs Application Number SSD-10294:

- Construction Management Plan
- Item 8 – Transport and Accessibility – provide a draft CPTMP to demonstrate the proposed management of impacts during construction.
- Item 11 – Noise & Vibration – outline measures to minimise and mitigate the potential noise and vibration impacts on surrounding occupiers of land.

In addition this report has also been prepared in response to the following condition of consent for the State Significant Development Concept (SSD 8874) for the OSD:

- B9 Construction Impact Assessment incl.
    - Construction Traffic Management Plan
    - Cumulative Construction Impact Assessment
    - Noise and Vibration Assessment
    - Community Consultation and Engagement Plans
    - Construction Waste Management Plan
    - Air Quality Management Plan

The detailed SSD DA seeks development consent for:

- Construction of a new commercial office tower with a maximum building height of RL 230 or 168 metres (approximately 42 storeys).
- The commercial tower includes a maximum GFA of approximately 61,500sqm, excluding floor space approved in the CSSI
- Integration with the approved CSSI proposal including though n0t limited to:
    - Structures, mechanical and electronic systems, and services; and
    - Vertical transfers;
- Use of spaces within the CSSI 'metro box' building envelope for the purposes of:
    - Retail tenancies;
    - Commercial office lobbies and space;
    - 161 car parking spaces within the basement for the purposes of the commercial office and retail use;

  - End of trip facilities; and
  - Loading and services access.
- Utilities and services provision.
- Signage locations (building identification signs).
- Stratum subdivision (staged).

The Site

The site is generally described as 155-167 Miller Street, 181 Miller Street, 187-189 Miller Street, and part of 65 Berry Street, North Sydney (the site). The site occupies various addresses/allotments and is legally described as follows:

- 155-167 Miller Street (SP 35644) (which incorporates lots 40 and 41 of Strata Plan 81092 and lots 37, 38 and 39 of Strata Plan 79612)
- 181 Miller Street (Lot 15/DP 69345, Lot 1 & 2/DP 123056, Lot 10/DP 70667)
- 187 Miller Street (Lot A/DP 160018)
- 189 Miller Street (Lot 1/DP 633088)
- Formerly part 65 Berry Street (Lot 1/DP 1230458)

Figure 01 – Site Aerial

Sydney Metro Description

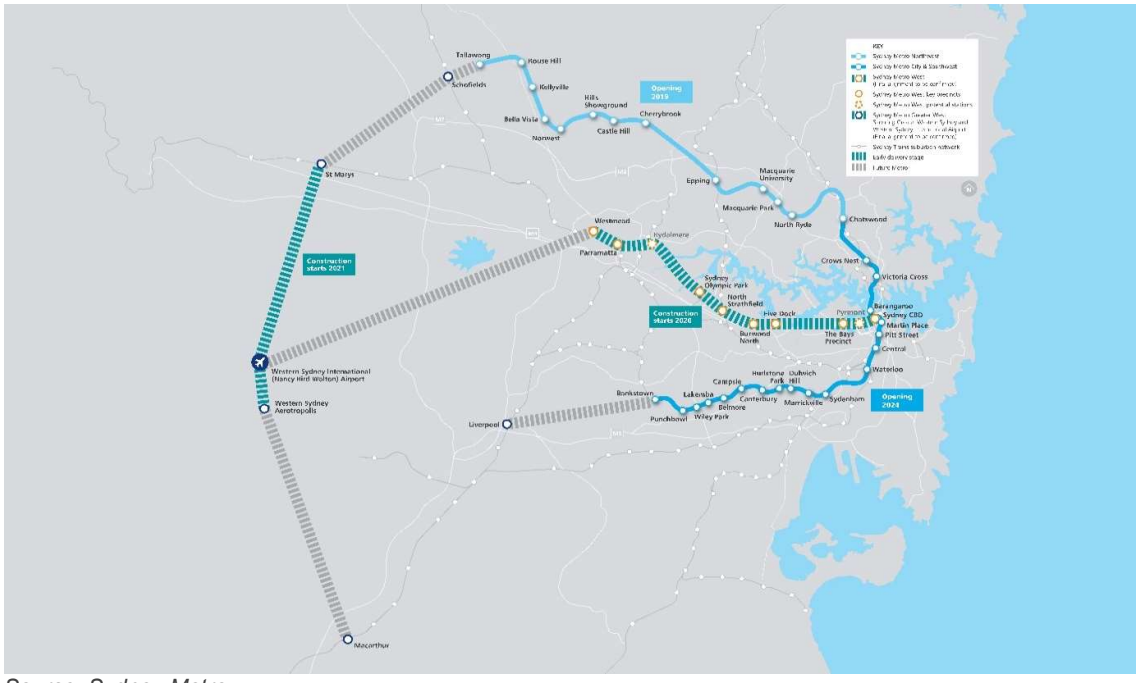
Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. Metro rail will be extended into the CBD and beyond to Bankstown in 2024. There will be new metro railway stations underground at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new metro platforms under Central.

In 2024, Sydney will have 31 metro railway stations and a 66 km standalone metro railway system – the biggest urban rail project in Australian history. There will be ultimate capacity for a metro train every two minutes in each direction under the Sydney city centre. The Sydney Metro project is illustrated in the Figure below.

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a Critical State Significant Infrastructure project (reference SSI 15_7400) (CSSI Approval). The terms of the CSSI Approval includes all works required to construct the Sydney Metro Victoria Cross Station, including the demolition of existing buildings and structures on both sites. The CSSI Approval also includes construction of below and above ground improvements with the metro station structure for appropriate integration with the OSD.

With regards to CSSI related works, any changes to the "metro 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 detailed SSD DA for the OSD.

Figure 02 – Sydney Metro Alignment Map



Source: Sydney Metro

The Construction and Site Management Plan (CSMP) considers the Station works approved under the Critical State Significant Infrastructure (CSSI) and the Over Station Development strategy (which is part of a State Significant Development Application (SSDA), focusing on the requirements of Sydney Metro for the unique station design and delivery solution on site.

DOCUMENT PURPOSE AND OBJECTIVES

The purpose of this document is to describe the procedures and processes that Lendlease will undertake to plan and execute the Project Works and Temporary Works for the Victoria Cross Station Integrated Station Development (VICX-ISD).

This plan has been developed to demonstrate compliance with Schedule C1 Scope of Works and Technical Criteria Appendix F2 – Project Administration. As well as the relevant SEARS and SSD Conditions of Consent as covered in the following sections (where relevant to the OSD works):

Item	Location in Document
Consent Condition B9 Construction Impact Assessment incl. ○ Construction Traffic Management Plan	Page 17-20
Consent Condition B9 Construction Impact Assessment incl. ○ Cumulative Construction Impact Assessment	Page 17-20
Consent Condition B9 Construction Impact Assessment incl. ○ Noise and Vibration Assessment	Page 52
Consent Condition B9 Construction Impact Assessment incl. ○ Community Consultation and Engagement Plans	Page 13
Consent Condition B9 Construction Impact Assessment incl. ○ Construction Waste Management Plan	Page 50-51
Consent Condition B9 Construction Impact Assessment incl. ○ Air Quality Management Plan	Page 53
Construction Management Plan	This report
SEARS Item 8 - Transport and Accessibility	Page 17-20
SEARS Item 11 Noise & Vibration	Page 52

SCOPE AND APPLICATION

The Over Station works are to be undertaken by Lendlease as part of the SSD project approval and are envisioned to be completed in a single construction phase upon handout of the workplace by TSE via Metro.

The Project Works include all permanent new infrastructure to enable the Victoria Cross Over Station Development (VC ISD) Contractor to satisfy the requirements of the Contract.

The Project Works include the following categories of works:

- Metro Station Works; and
- Over Station Development Works.

The new Victoria Cross Station will be a cavern station located in North Sydney beneath Miller Street between Berry and McLaren Streets.

TSE have been engaged by Sydney Metro to construct the tunnels, platform cavern, adits and station boxes, which will be handed over to the Contractor in early 2021.

The station will have two entrances:

a. The southern entrance bound by Miller, Berry and Denison Streets; and

b. The northern entrance on the corner of Miller and McLaren Streets.

Under the contract scope of works Lendlease will be required to interface with two other contractors who will be completing works within the station area. The Line Wide (LW) Contractor, who will be installing the bulk power system, traction power and tunnel ventilation, and the (TSOM) Contractor, who will be installing the communication equipment, controls and platform screen doors.

Sydney Metro have engaged a contractor to complete the tunnelling construction and station excavation for the Sydney Metro City & Southwest. This includes the excavation of the northern shaft, southern shaft, platform cavern and adits for the Victoria Cross Station.

On handover:

- The northern shaft and southern shaft will be temporarily supported and will be undrained; and
- The caverns and adits will be fully lined and permanently supported.

Under the Station Delivery Deed (SDD) the VC ISD will be required to complete:

Station Works:

- detailed excavation and associated drilling required for sumps, on-site detention tanks and foundations to support the structural works;
- all structural works for the station entrances, concourses, and island platform;
- track invert slab including underline crossings, earthing mats and drainage;
- plant and equipment rooms including fitout;
- public and staff toilets;
- architectural fitout of the station;
- electrical, fire, hydraulic, mechanical systems;

- building management control system;
- provisions for works by Interface Contractors;
- provisions for advertising, ATMs and vending machines;
- the civil and structural works for the tunnel ventilation system;
- lifts and escalators;
- signage, wayfinding and tactile indicators;
- external façade and awnings up to and including the Transfer Level;
- landscaping, public plaza and precinct activation works including the street scaping and furniture for the public domain;
- bicycle parking facilities;
- public art; and
- vehicle ramp, loading dock and waste collection facility for the station area.

Retail Works suitable for fitout by others, including:

- shell of the retail space tenancy units (including storage areas);
- base building services including LV power, cold water supply, chilled water loops (for air conditioning), fire systems, sewage facilities;
- grease traps and ventilation exhausts (where appropriate);
- waste collection facility for the retail areas;
- loading bay for the retail areas;
- telephone and data systems; and
- glazed shopfront finishes.

OSD Enabling Works:

- detailed excavation;
- structural works, including fire isolating structures;
- internal walls required to form passageways for access, egress and service reticulation;
- a waterproof, secure and operable building envelope;
- fire life safety systems;
- provisions for Utility Services; and
- stormwater and drainage works.

Third Party Works:

- (Local Area Works) the resurfacing or reconstruction of affected roads, footpaths, cycle ways or other public amenities, landscaping, furniture, signage, traffic control signals, street lighting, and traffic and transport management;
- (Utility Services Works) the identification, protection, diversion, reconstruction or repair of affected Utility Services and new Utility Service connections including
  A. manhole modifications in Miller Street;

B. stormwater attenuation storage in Denison Street;

C. Utility Services connections; and

D. Permanent infrastructure that is associated with the construction, modification or relocation of Utility Services.

- (Property Works) protection and adjustments to affected existing buildings and property, including demolition of built features.

The VC ISD Contractor must design and construct the Station Works and OSD Enabling Works to ensure that all building services required for the OSD's use, operation and maintenance have complete functional autonomy.

Over Station Development Works:

- Under the Project Delivery Agreement (PDA) the VC ISD will be required to complete all works above the Transfer Level and the fitout of the OSD related spaces located below the Transfer Level.

Temporary Works:

- Distressing any temporary rock anchors;
- Temporary arrangements to divert, guide and control pedestrians, public transport users, cyclists, traffic and to provide public access, amenity, security and safety during the works;
- Temporary arrangements for people including mobility impaired persons and vehicles to access all property, including public accessible space, affected by the Contractor's activities;
- Temporary arrangements for emergency services to access adjacent properties and the development;
- Temporary arrangements for people and vehicles to safely access the Construction Site;
- Temporary access stairs, walkways and platforms within the Construction Site;
- Temporary construction hoardings, fences, noise walls, access gates and barriers on and around the Construction Site;
- All environmental safeguards and measures necessary to mitigate environmental effects which may arise as a result of the Contractor's activities;
- Cleaning, maintenance, repair, replacement and reinstatement, as required, of all areas impacted by the Contractor's activities;
- Temporary site facilities required for the design and construction of the Project Works;
- Temporary arrangements for Utility Services;
- Temporary groundwater and stormwater collection, treatment and discharge systems and measures required to achieve discharge water quality required by all relevant Authorities and Approvals; and

- All other temporary works and measures required for the Contractor's activities.

The activities to be performed under the SDD include:

- The design, construction, delivery, testing, commissioning, operational readiness and handover activities for the Project Works and Temporary Works;
- Investigation, relocation, upgrading, installation, testing, commissioning, and protection of Utility Services as necessary in accordance with the Utility Service owners requirements;
- Management of interfaces with Interface Contractors including adopting an integrated and collaborative approach during design and construction;
- Obtaining all licences and approvals as required to deliver the Project Works and Temporary Works;
- Implementing effective and robust systems that address requirements for safety, quality, interfaces, performance, site management, stakeholder, community, sustainability, environmental management, workforce and industry participation;
- Management of impacts on the surrounding local areas including traffic, schools, nearby commercial areas, including management of heavy vehicles on public roads in accordance with the National Heavy Vehicle Law; and
- Preparation of all subdivision documents including the Subdivision Proposal, the Building Management Statement, section 88B instruments and any required subdivision plans to register the proposed subdivision of the land.

The activities to be performed under the OSD PDA include:

- Obtaining relevant statutory and regulatory approvals for the OSD Works;
- Making all the required Developer Payments to Sydney Metro;
- Designing, constructing and completing the OSD Works to effectively integrate with the Victoria Cross Station;
- Ensuring the Victoria Cross Station is able to operate independent of the OSD Works;
- Ensuring the station can operate in the event that the OSD Works are ongoing; and

TUNNEL AND STATION EXCAVATION WORKS CONTRACTOR INTERFACE AND HANDOVER

Interface with Tunnel and Station Excavation Works Contractor

The interface between Lendlease and the Tunnel and Station Excavation Works (TSE) Contractor is defined in Appendix E1 Interface Management.

Lendlease will work with the TSE Contractor to ensure that the project delivery and handover is integrated, and to identify if any of the site constraints or conditions are different from those identified in the TSE's Design and Assurance Documentation. Regular site inspections and progress reports from the TSE Contractor will assist the project team in managing any change in the TSE works.

In addition to these construction and design measures, Lendlease will regularly meet with Sydney Metro and TSE at fortnightly Victoria Cross Cooperation and Integration Control Group meetings to discuss community and stakeholder issues along with communication requirements. The purpose of this meeting is to share valuable stakeholder engagement insights across the project and coordinate messages regarding the Victoria Cross station activities to minimise impacts to the community.

Lendlease will attend various coordination meetings with TSE and Sydney Metro including the Communication Management Control Group meeting, Transport Traffic Liaison Group meeting, the Sydney Coordination Office Emergency Services fortnightly meeting when required to provide updates on the VICX-ISD program, provide details on traffic and pedestrian management or gain approvals required for specific work.

Handover and Demobilisation of Tunnel and Station Excavation Works

Handover and demobilisation of the TSE Contractor will be marked by the transfer of as-built documentation, engineering sign-offs and removal of plant and equipment from the North and South Station box areas. This information will be verified by our project team to ensure the data obtained is true and accurate. Any anomalies will be noted; significant anomalies will be addressed by the TSE Contractor prior to their demobilisation off-site. Our proposed interface with the TSE Contractor will allow for early identification of changes in design so that change can be managed.

Building Information Modelling will be used on the TSE as-built state with the capture of detailed survey or light detection and ranging (LiDAR) point cloud information to verify the full extent of TSE excavation and structural works. This will form part of our assurance information packages and in carrying out this activity early in the handover we will de-risk delivery of the construction milestones and assurance activities in the Stations Mechanical and Electrical Works (STME) stage. In addition the TSE Contractor will also complete the permanent tunnel structures that interface with the Victoria Cross Station structure. These include as shown below;

- The southern access adit Tunnel to the Metro Rail Tunnel;
- The northern access adit Tunnel to the Metro Rail Tunnel;
- The service access adit Tunnel to the Metro Connection Tunnel.

SITE ESTABLISHMENT

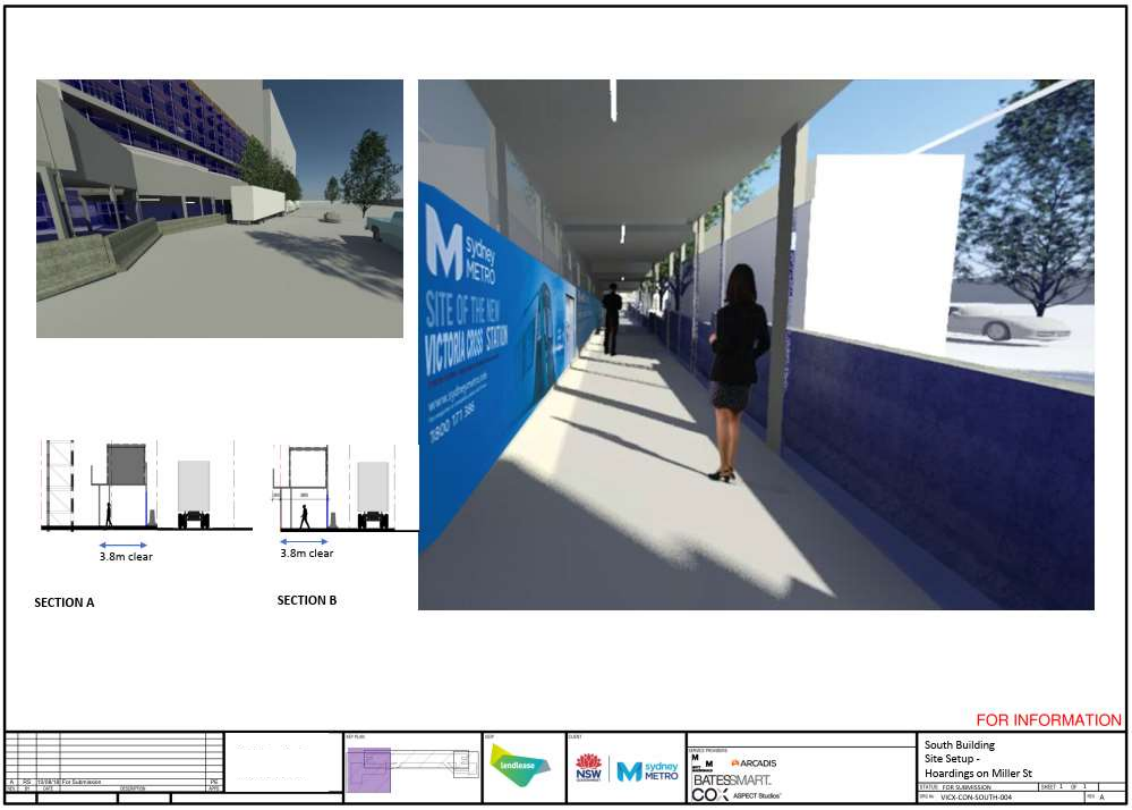
Hoardings

Hoardings will be handed over to Lendlease following completion of the works by the TSE Contractor in the North and South Sites.

B Class hoardings will be erected to the Miller Street, Berry Street, and Maclaren Street frontages. The hoardings will require branding and signage as per the Sydney Metro standards.

All hoardings will be design, installed and maintained to ensure segregation of pedestrians, workforce and vehicles.

Hoarding will be designed for overhead impact load, and will be well lit during after hours.



Site Security and Gates

The site perimeter will be secure at all times with no unauthorised access permitted. The site perimeter will be secured as a minimum with full height plywood to the inside face of all B Class hoardings.

Out of hours security patrols will be utilised strategically during the project (for detail refer to the Security Management Plan). 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 Principal's Representative personnel, Rail Contractors personnel and any other person nominated by the Principal's Representative will be provided access after completing the necessary form of induction. Due to the changing nature of the works on the construction site and a level of unfamiliarity with the progress of the works, the induction provided in these cases will require that these visitors to site are escorted at all times whilst on site, except for Rail Contractors who will be escorted to and from their work areas only.

Site Accommodation / Amenities and Project Office

Project Office

The Project Site Office will be located at 194 Miller Street North Sydney and will include the accommodation for the project management staff as well as the Principal as described in Schedule C1 to the SWTC.

Workforce Accommodation

Accommodation and amenities for the construction workforce will be provided in stages. Initial site accommodation sheds will be erected on top of the North & South Sites B Class, with 10kPa overhead protection to the sheds.

As construction progresses and back-propping is stripped, the capacity of the on-site accommodation and amenities will be further expanded by constructing purpose built undercover accommodation. This will cater for the increase in workforce numbers and facilitate dry access to various workfaces. This will be inclusive of Line Wide contractors who will be housed in accommodation situated on basement levels.

Hours of Construction

The site working hours have been defined in the CSSI consent conditions, which are;

Monday to Friday:	7am – 6pm
Saturday:	8am – 1pm
Sunday:	No work

Lendlease will be making an application to extend these hours to be consistent with TSE Metro works and other Central Business District (CBD) construction projects.

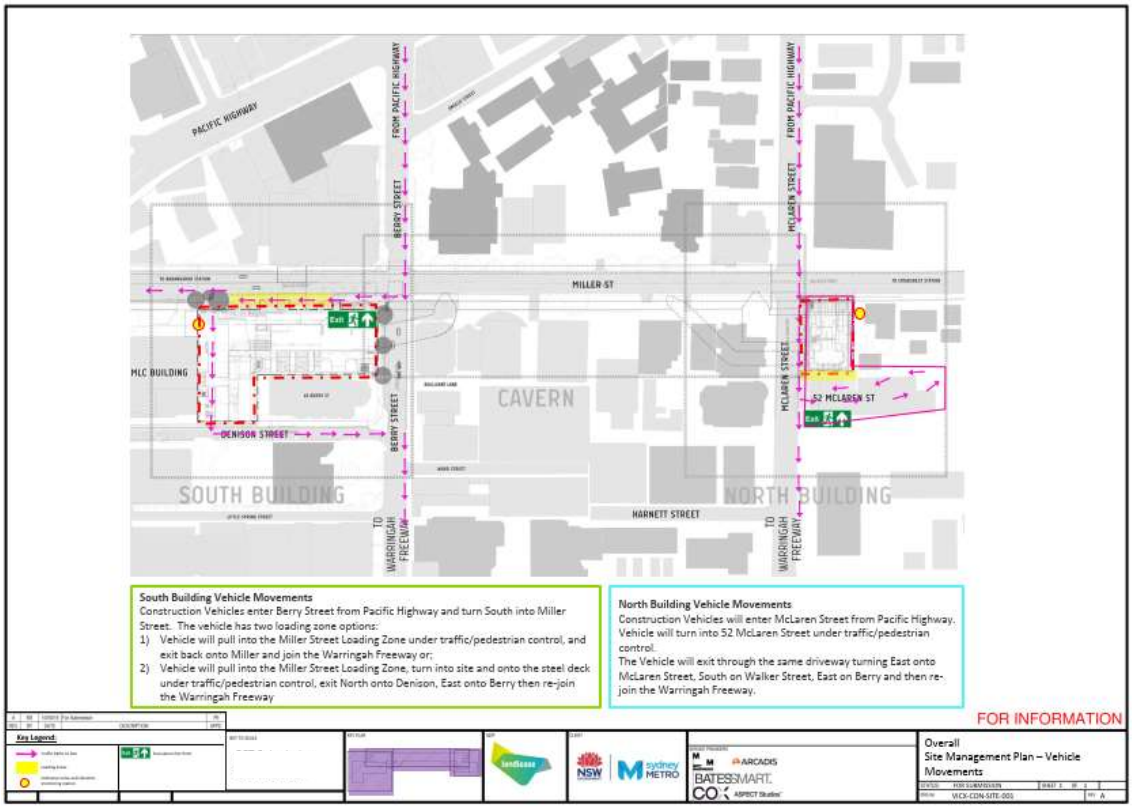
There will also be times when out of hours works are required. An Out Of Hours (OOH) Protocol for the assessment, management and approval of work outside of standard construction hours will be prepared and submitted for approval for works not subject to an EPL. Out of hours works subject to an EPL will be approved in accordance with the conditions of the EPL.

Accommodation for OSD related workforce will be located on Level 4 and 5 of the podium as detailed subsequently in this report.

TRAFFIC AND PEDESTRIAN MANAGEMENT

Traffic Management Overview

One of the keys to the successful delivery of Victoria Cross Project will be managing the flow of materials and equipment into and out of the construction site whilst maintaining a continuity of business for the North Sydney CBD. Planning will consider and successfully manage the maintenance of pedestrian and vehicular traffic flow to the surrounding buildings and roads.



Several key traffic management strategies to minimise and mitigate Victoria Cross Project effects on the surrounding North Sydney CBD will be adopted, including:

- Engagement of Traffic Management Consultant to compile an overall Construction Traffic Management Plan (CTMP), 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 and approved by the TCG.
- Encouraging staff, consultants and subcontractors to adopt a Green Travel Plan for this project with use of public transport to and from site.

Existing Traffic Management and Control

The existing site has several trafficable street frontages as is shown in the above diagram.

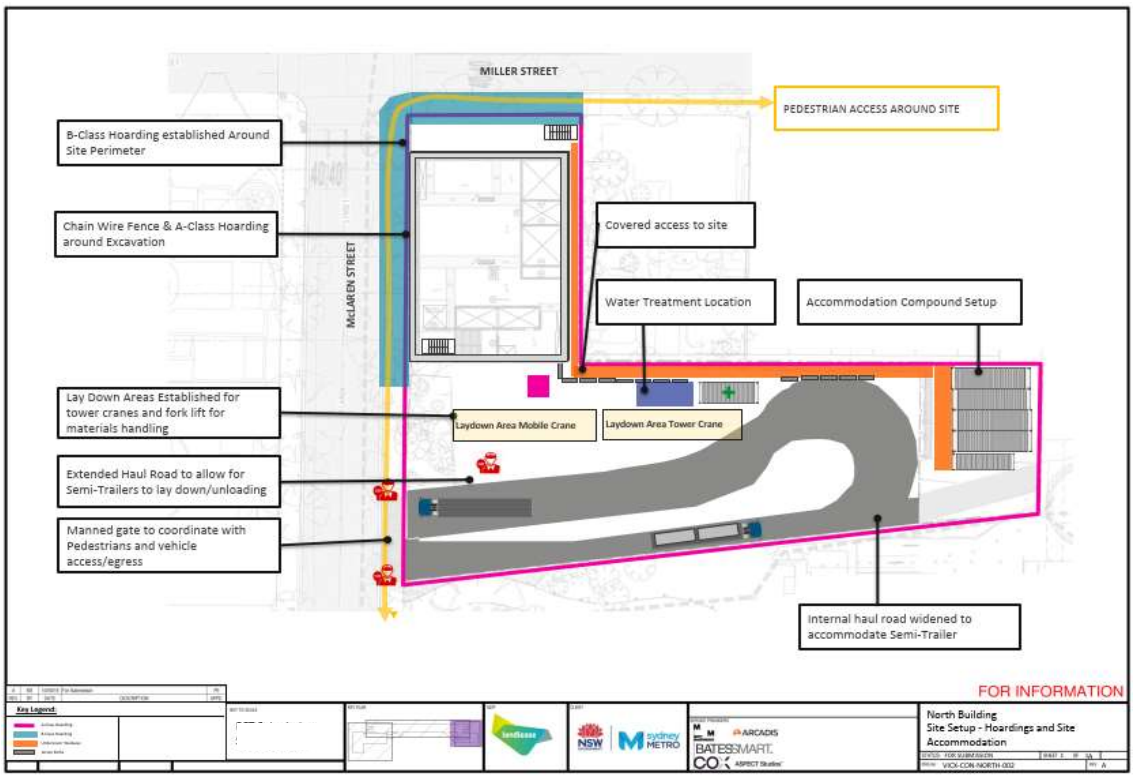
Further details of the management of traffic and pedestrians can be found in CTMP (currently under development). The CTMP will also address the cumulative construction impact assessment (i.e.. arising from concurrent construction activity).

Pedestrian Management and Control

Lendlease will ensure that nearby stakeholders, commuters and visitors to the North Sydney CBD are properly informed of any required footpath closures, and work with the North Sydney Council to provide alternate travel paths to major destinations.

Proposed Construction Zones

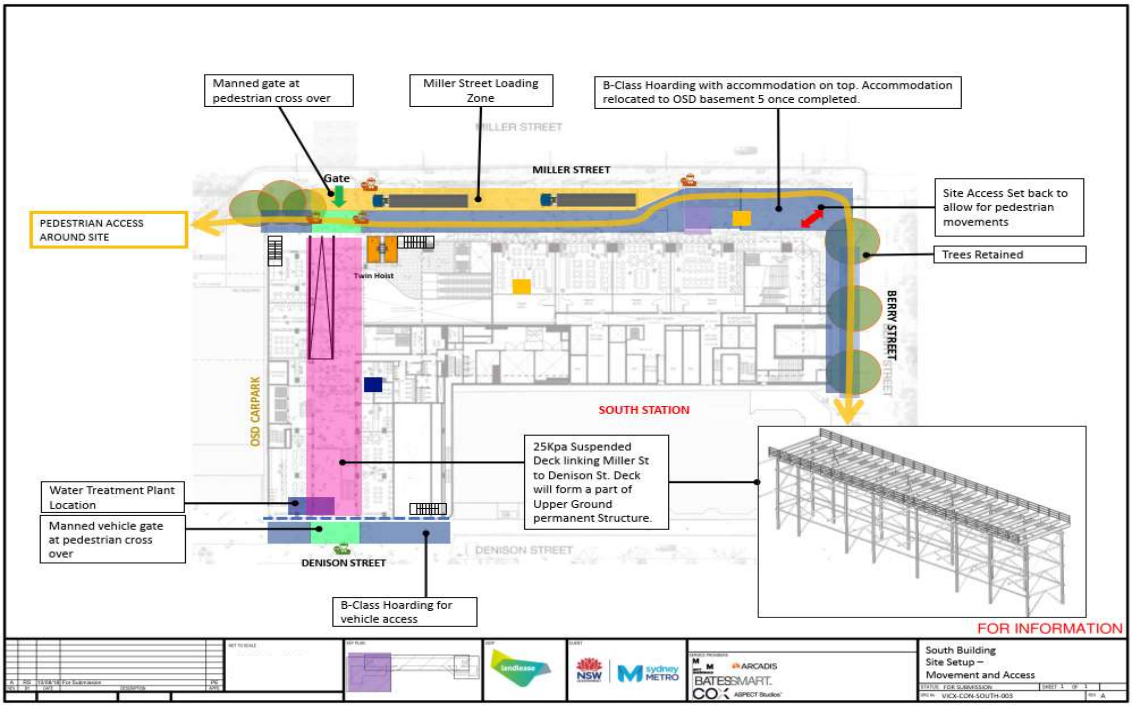
See below which shows the proposed construction zones for the North Site:



As indicated the above the primary construction zone is internal to the northern site minimising traffic impact to Berry and Mclaren streets.

With respect to the Southern Site construction zones will be established on Miler street with through vehicular access available to Denison street via an accelerated steel structure.

Facility for an additional construction zone in Berry St zone is contemplated during OSD construction.



Approval of the construction zones as detailed above are pending with Sydney Co-ordination Office.

These construction zones are a key logistical unloading and lifting zones, allowing the tower cranes to feed materials onto the tower floors progressing the completion of the respective station sites and tower.

Proposed Construction Traffic Management and Control

A Traffic Management plan and a CTMP are currently under development to identify, document and implement the strategy for managing pedestrian and vehicular traffic construction movements for the precinct. This document will be updated as required. This CTMP will also include a Traffic Control Plan for each stage of construction works, across all key work areas - in particular the services infrastructure and public domain works outside of site footprint.

Traffic management and control will be established across all major roads and interfaces across the project. Traffic control in the form of traffic controllers, warning lights and pedestrian boom gates will be in place at all site access/egress and construction zones to ensure:

- Segregation of the public from truck movements in and out of the project.
- Segregation of construction worker access from construction vehicular access in and out of the project.
- Materials and deliveries do not impede public roadways or footpaths.
- Streamlining of time taken for truck movements in and out of the project.
- Coordination with adjoining constructions sites (noting that primary construction feed and work zone is via Miller Street which will be not impacted by the concurrent developments occurring at 1 Denison Street and 88 Walker Street).

- Coordination with adjoining landowners and stakeholders (incl. MLC regarding basement vehicle access)

Further details of the management of traffic and pedestrians can be found in the CTMP (under development).

This CTMP will include and reference a Transport and Traffic Impact Assessment which will provide the following:

- Current daily and peak hour vehicle, public transport, point to point transport services, pedestrian and bicycle movements on the sites adjacent and surrounding road network.
- Forecast daily and pea hour trips likely to be generated by the proposed development together with cumulative impacts of existing and proposed and approved developments in the areas.
- An assessment of impacts of the development on the operation of existing and future transport networks.
- Detailed assessment of the existing and future performance of key intersections providing access to the site.
- Measures to mitigate impacts of the proposed development on the operation of existing and future traffic.
- Green Travel Plan implementation strategy.
- Proposed car and bicycle paring provisions.
- Modelling and analysis of pedestrian and cyclist access to the development.
- Proposed vehicle access arrangements for services vehicles including loading activities and adequacy of loading dock servicing and management.

Construction Worker Access to Site

As there is no parking available on-site, all subcontractors and construction workers will be encouraged to use public transport via nearby train, bus and ferry networks.

Further details of the management of traffic and pedestrians can be found in the CTMP (under development).

NORTH STATION AND CAVERN CONSTRUCTION STAGING

Detailed Excavation

At the completion of bulk excavation and handover by TSE, the detailed excavation of the pad and strip footings in the North Station will be completed by large excavators with rock saw and rock hammer attachments. The spoil will be removed from the excavation level to the street level using direct-on-truck spoil skips lifted by the site tower crane.

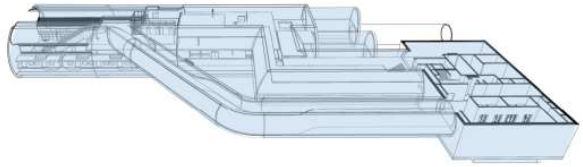
Construction Sequence and Methodology

The fundamental strategy for the basement structure construction will be to maintain a consistent pour sequence, using a combination of precast and insitu elements and thereby achieving continuity for both subcontractor and materials handling resources.

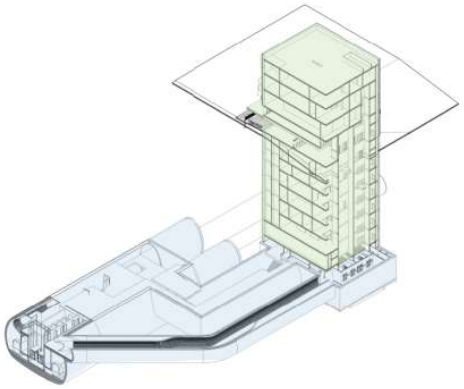
The following diagrams show the proposed structure methodology, overall sequence, core delineation, temporary services and materials handling / personnel movement strategy for the basement floors.

North Building Build Methodology

- The North Building will be built in two stages.
  - Stage 1 will be the main building.
  - Stage 2 will be the infill that feeds the cavern
- Core construction will be a jumpform system
- The slabs and perimeter walls have been designed to use precast & Insitu topping slabs
- Façade will be constructed off scaffolding once the building reaches the ground level.
- Services/Finishes will be installed levels below the leading deck as precast solution requires minimal back propping.



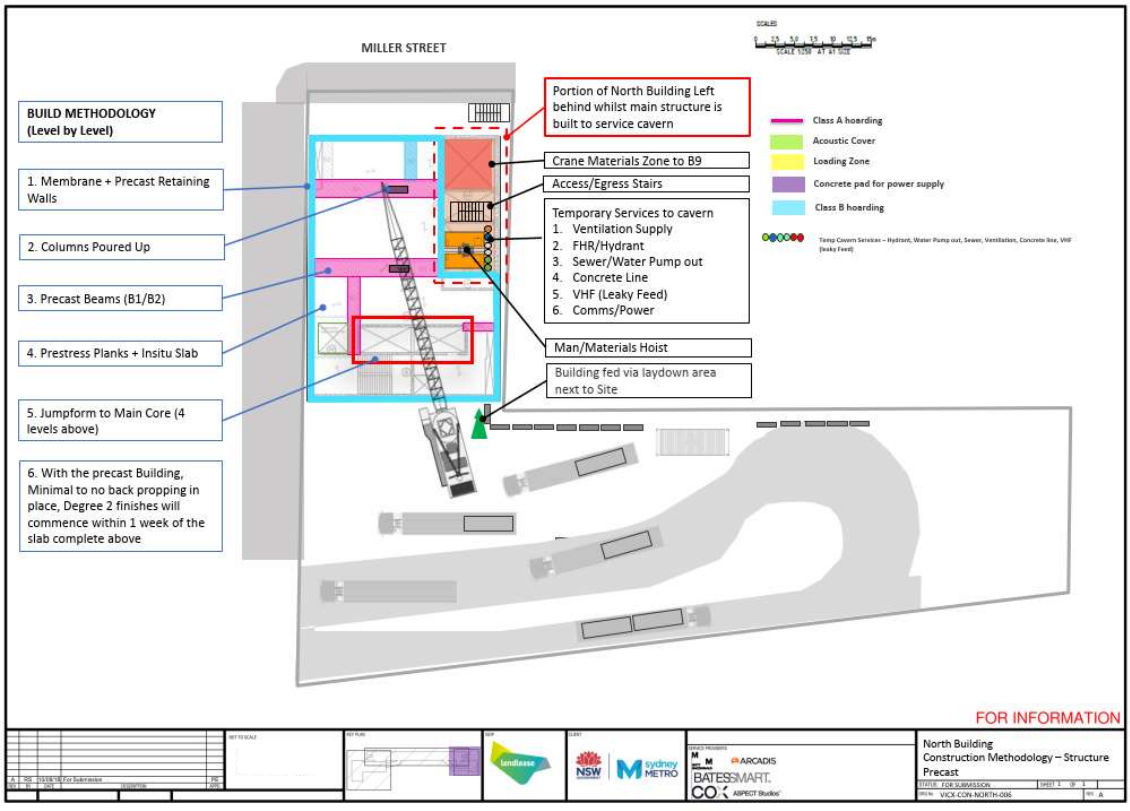
2 MILLER STREET NORTH ENTRY LOCATION DIAGRAM SECTIONAL PERSPECTIVE 1



1 MILLER STREET NORTH ENTRY LOCATION DIAGRAM AXO

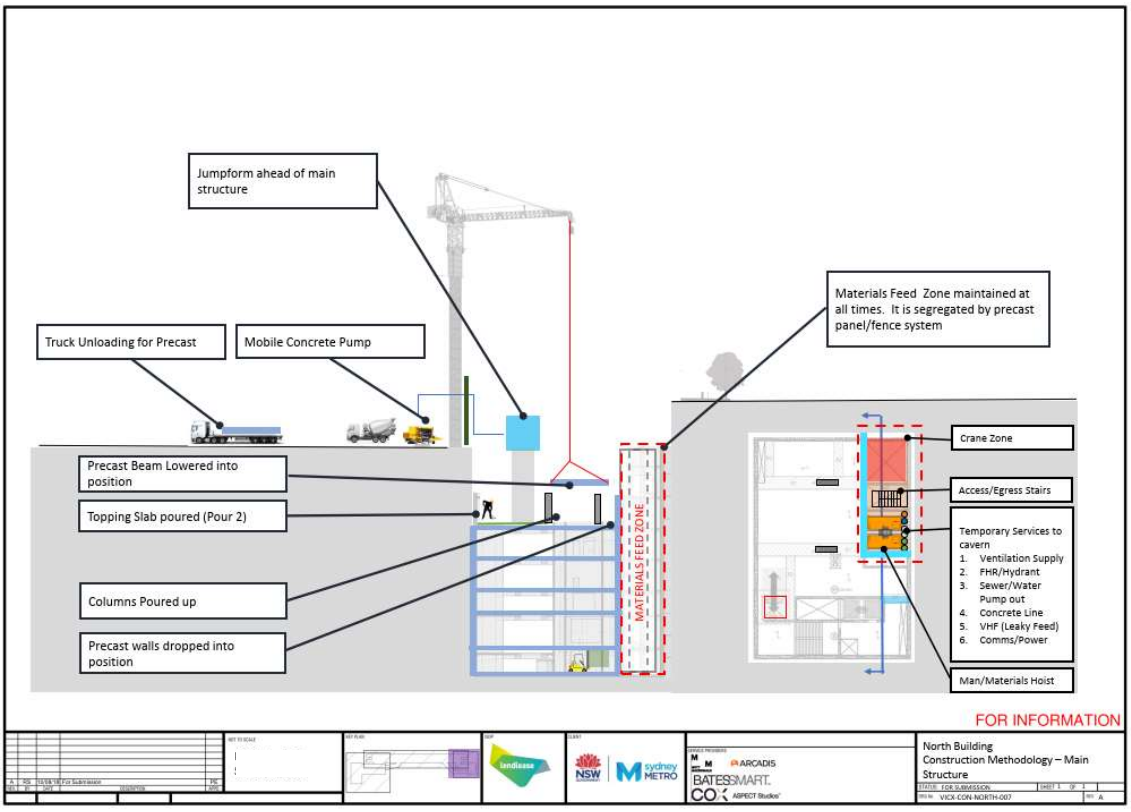
FOR INFORMATION

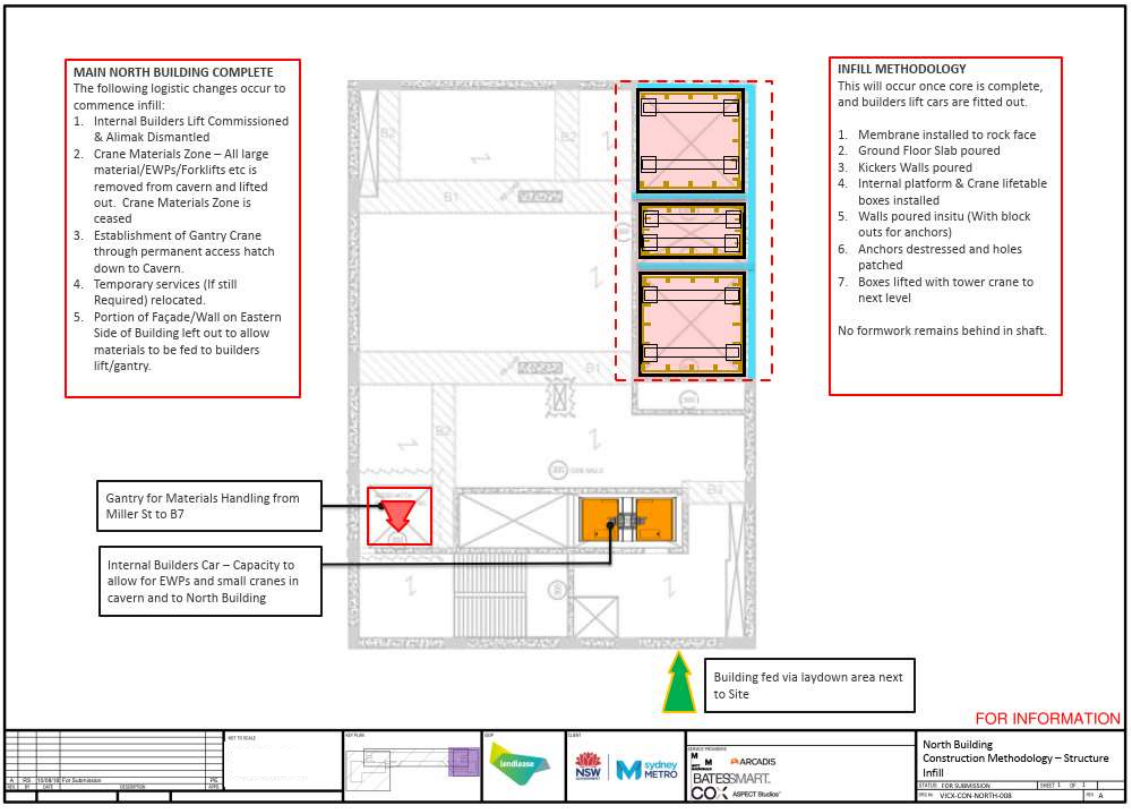
North Building
Construction Methodology

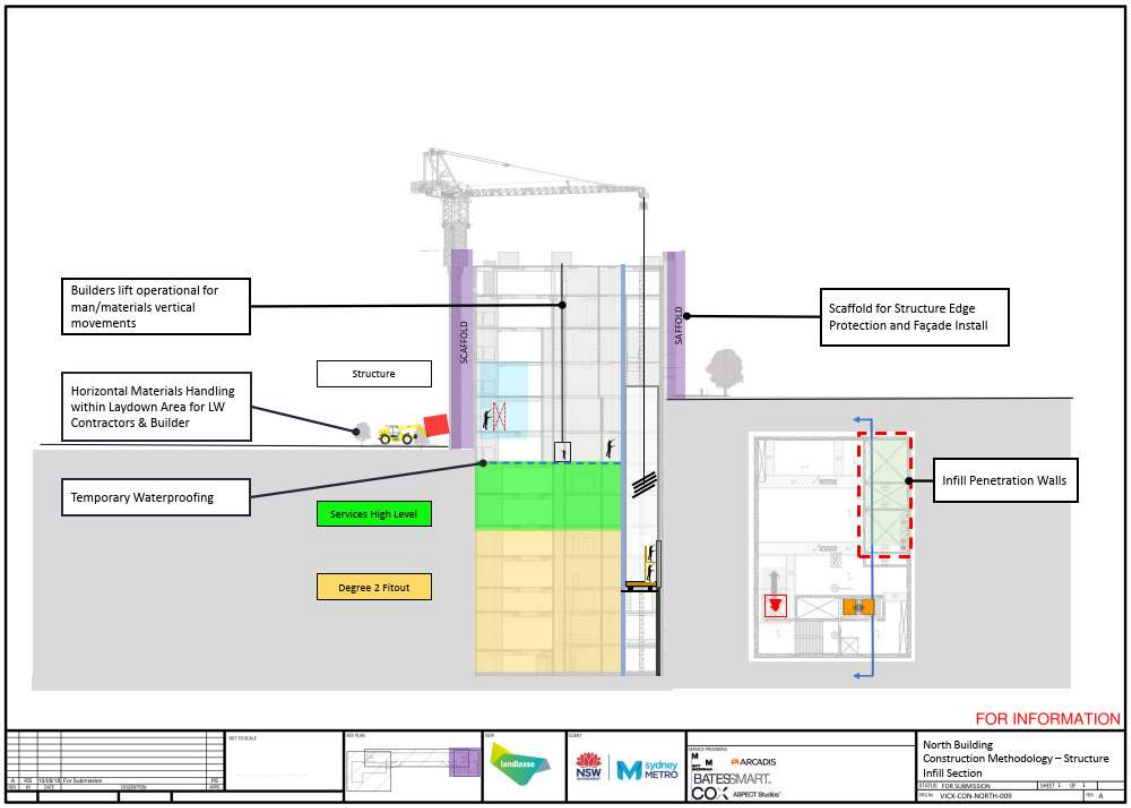


FOR INFORMATION

North Building
Construction Methodology – Structure Precast

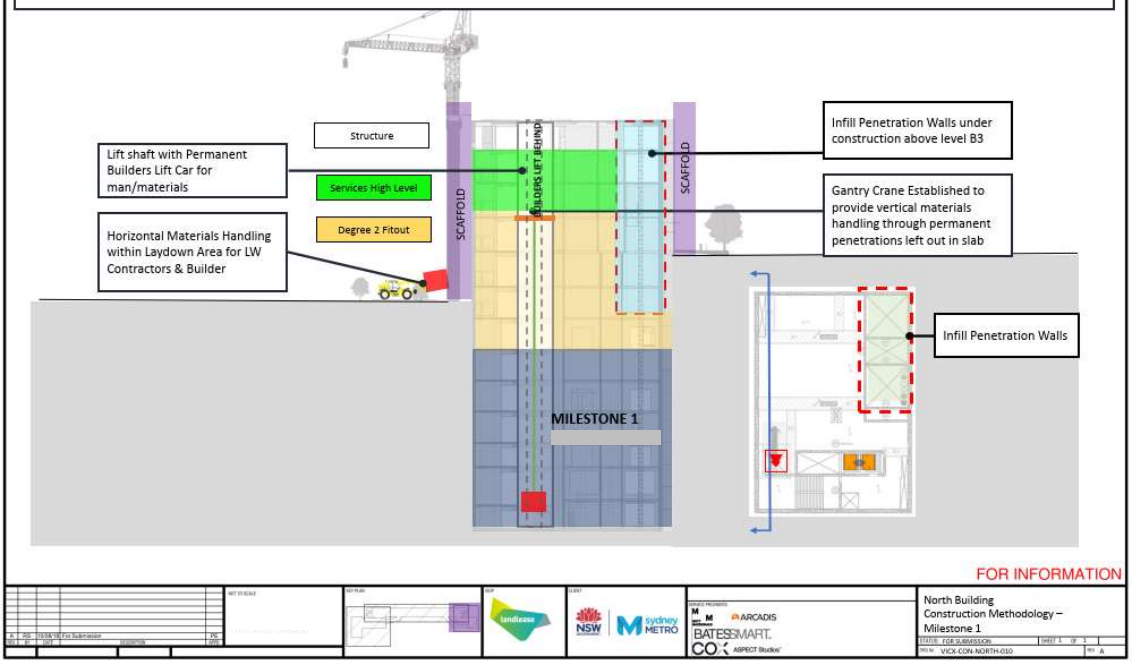

Jumpform ahead of main structure
Truck Unloading for Precast
Mobile Concrete Pump
Materials Feed Zone maintained at all times. It is segregated by precast panel/fence system
Precast Beam Lowered into position
Topping Slab poured (Pour 2)
Columns Poured up
Precast walls dropped into position
MATERIALS FEED ZONE
Crane Zone
Access/Egress Stairs
Temporary Services to cavern
1. Ventilation Supply
2. FHR/Hydrant
3. Sewer/Water Pump out
4. Concrete Line
5. VHF (Leaky Feed)
6. Comms/Power
Man/Materials Hoist
FOR INFORMATION
North Building Construction Methodology – Main Structure


MAIN NORTH BUILDING COMPLETE
The following logistic changes occur to commence infill:
1. Internal Builders Lift Commissioned & Alimak Dismantled
2. Crane Materials Zone – All large material/EWPs/Forklifts etc is removed from cavern and lifted out. Crane Materials Zone is ceased
3. Establishment of Gantry Crane through permanent access hatch down to Cavern.
4. Temporary services (If still Required) relocated.
5. Portion of Façade/Wall on Eastern Side of Building left out to allow materials to be fed to builders lift/gantry.
INFILL METHODOLOGY
This will occur once core is complete, and builders lift cars are fitted out.
1. Membrane installed to rock face
2. Ground Floor Slab poured
3. Kickers Walls poured
4. Internal platform & Crane lifetable boxes installed
5. Walls poured insitu (With block outs for anchors)
6. Anchors destressed and holes patched
7. Boxes lifted with tower crane to next level
No formwork remains behind in shaft.
Gantry for Materials Handling from Miller St to B7
Internal Builders Car – Capacity to allow for EWPs and small cranes in cavern and to North Building
Building fed via laydown area next to Site
FOR INFORMATION
North Building Construction Methodology – Structure Infill



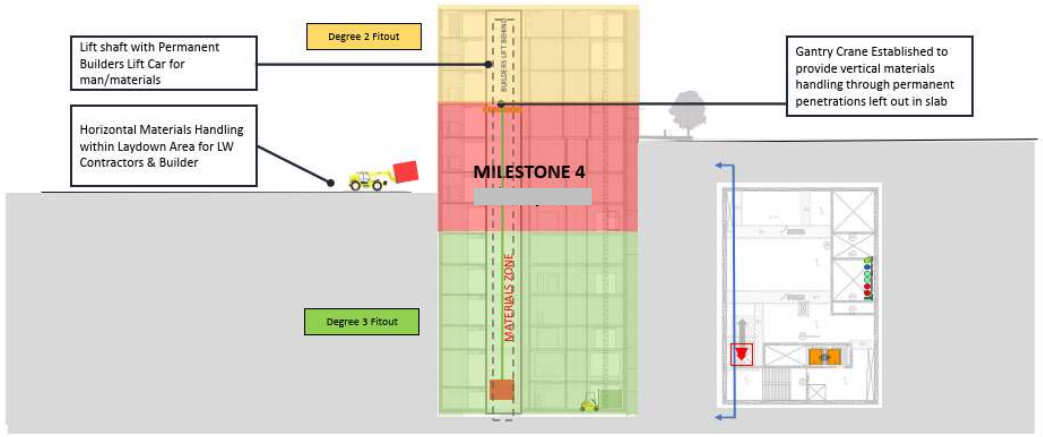
Milestone 1

- LW Contractors will enter/access site as per all other contractors onsite. They will be inducted which provides them access for all areas. Deliveries will be scheduled as per the site protocols for North/South buildings.
- Vertical movements for materials handling will be provided either via a man/,materials hoist or builders lift, crane or gantry crane. Personnel will either use man/materials hoist or builders lift.
- For major plant equipment within this building, coordination will be carried out with LW contractors at an early stage to allow for this equipment to be dropped into position prior to Milestone handover. The Precast design solution allows minimal back propping for clear access.
- Building watertight below B2



Milestone 4

- LW Contractors will enter/access site as per all other contractors onsite. They will be inducted which provides them access for all areas. Deliveries will be scheduled as per the site protocols for North/South buildings.
- Vertical movements for materials handling will be provided via the builders lift and gantry crane. Personnel will traverse vertically in the builders lift/stairs.
- Building Structure Complete and Watertight

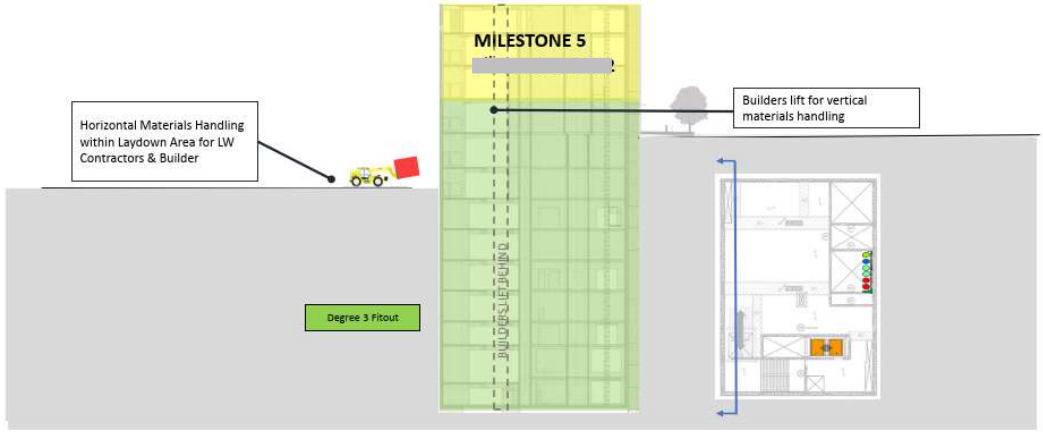


FOR INFORMATION

North Building Construction Methodology – Milestone 4

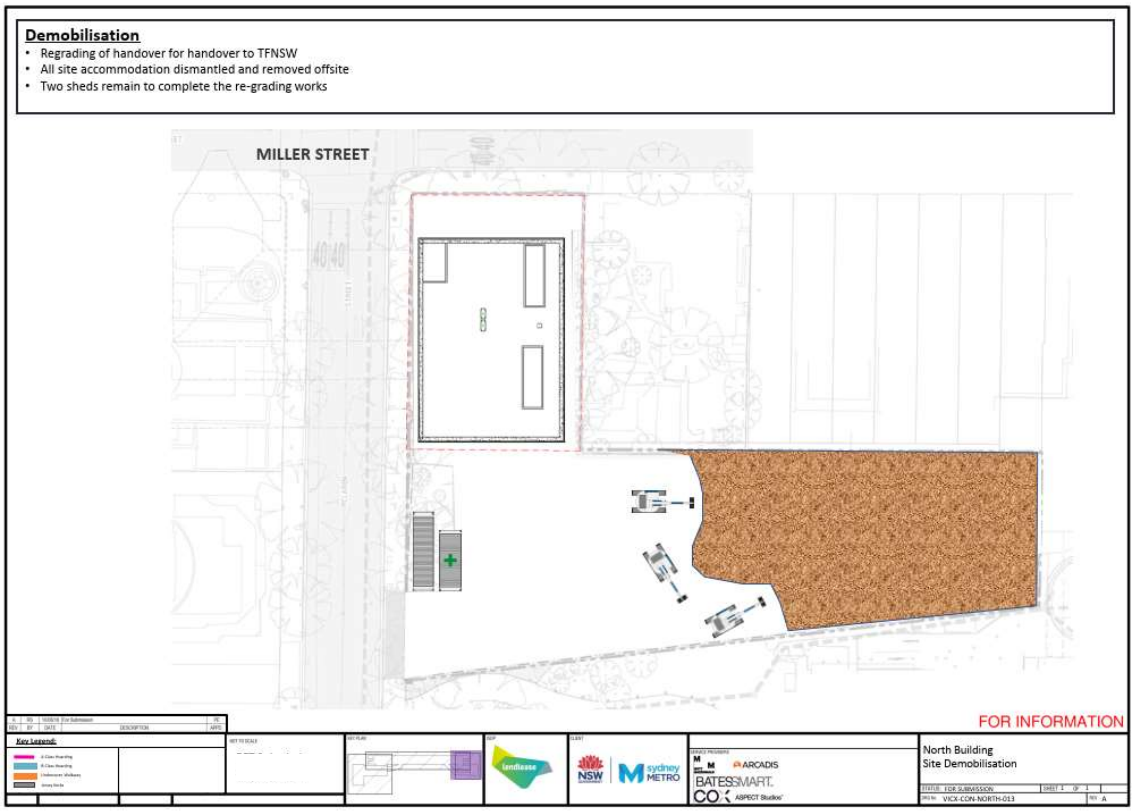
Milestone 5

- LW Contractors will enter/access site as per all other contractors onsite. They will be inducted which provides them access for all areas. Deliveries will be scheduled as per the site protocols for North/South buildings.
- Vertical movements for materials handling will be provided either via the builders lift and gantry crane. Personnel will traverse vertically in the builders lift/stairs
- Building Complete and Watertight



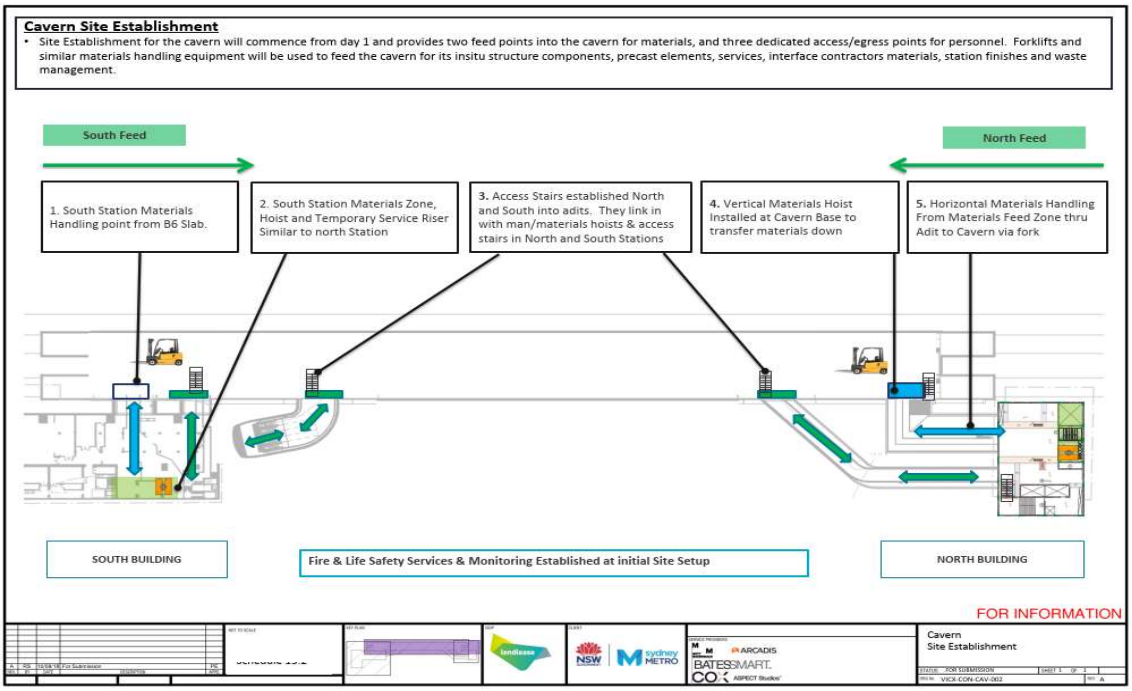
FOR INFORMATION

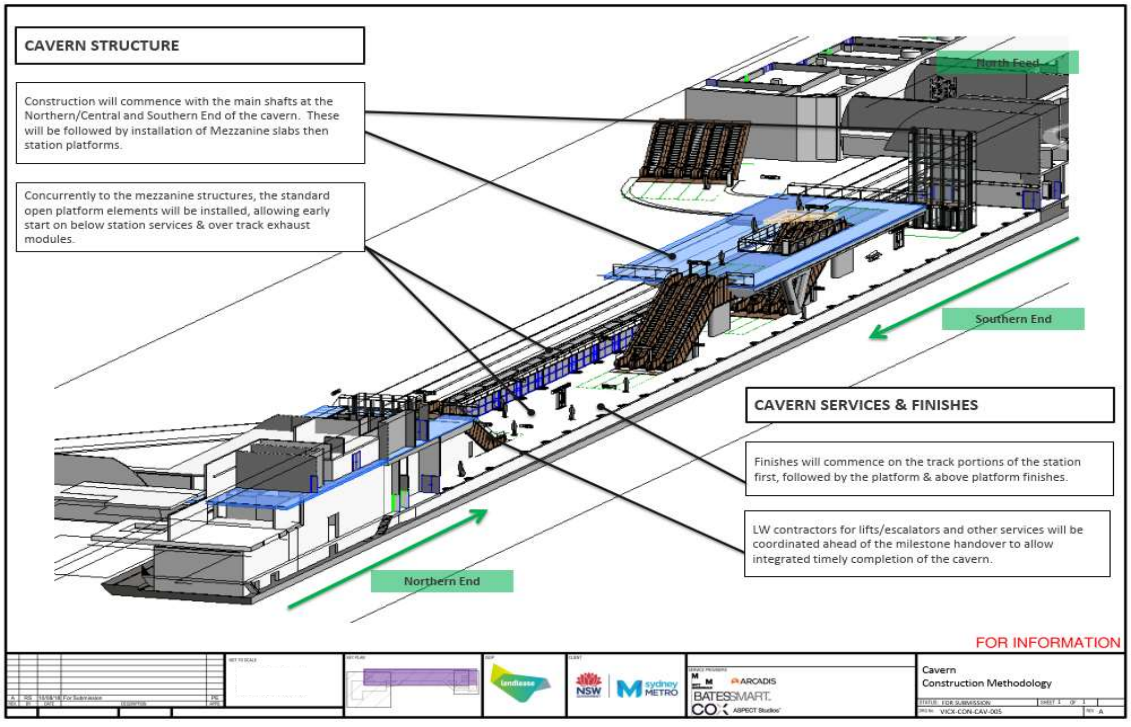
North Building Construction Methodology – Milestone 5



Cavern Staging

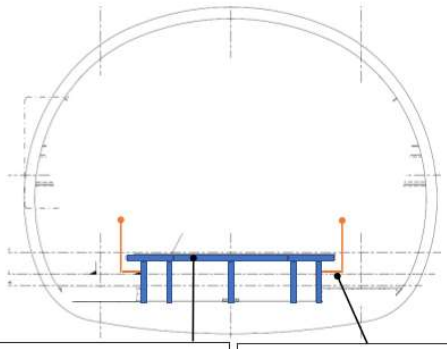
With respect to Cavern construction the following diagrams illustrate the planned site establishment methodology, structure and finishes sequence, and Line Wide delineation measures during the Milestone handovers.


Cavern Site Establishment
• Site Establishment for the cavern will commence from day 1 and provides two feed points into the cavern for materials, and three dedicated access/egress points for personnel. Forklifts and similar materials handling equipment will be used to feed the cavern for its insitu structure components, precast elements, services, interface contractors materials, station finishes and waste management.
South Feed
North Feed
1. South Station Materials Handling point from B6 Slab.
2. South Station Materials Zone, Hoist and Temporary Service Riser Similar to north Station
3. Access Stairs established North and South into adits. They link in with man/materials hoists & access stairs in North and South Stations
4. Vertical Materials Hoist Installed at Cavern Base to transfer materials down
5. Horizontal Materials Handling From Materials Feed Zone thru Adit to Cavern via fork
SOUTH BUILDING
Fire & Life Safety Services & Monitoring Established at initial Site Setup
NORTH BUILDING
FOR INFORMATION
Cavern
Site Establishment


CAVERN STRUCTURE
Construction will commence with the main shafts at the Northern/Central and Southern End of the cavern. These will be followed by installation of Mezzanine slabs then station platforms.
Concurrently to the mezzanine structures, the standard open platform elements will be installed, allowing early start on below station services & over track exhaust modules.
North Feed
Southern End
Northern End
CAVERN SERVICES & FINISHES
Finishes will commence on the track portions of the station first, followed by the platform & above platform finishes.
LW contractors for lifts/escalators and other services will be coordinated ahead of the milestone handover to allow integrated timely completion of the cavern.
FOR INFORMATION
Cavern
Construction Methodology

Cavern Structure Methodology

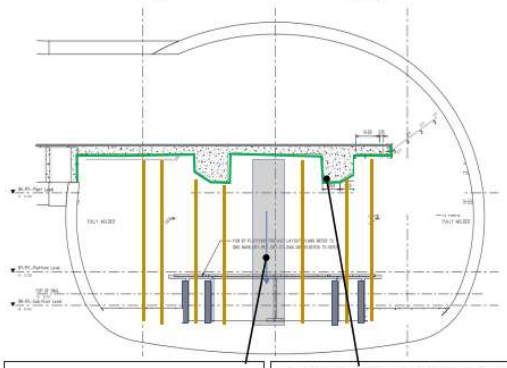
Precast Portion of Platform with No Mezzanine's



Precast station elements are placed in position, with the centre precast element installed after the two end pieces.

A handrail is installed prior to accessing onto the platform

Platform with Mezzanine's above



Insitu core walls/columns are poured up first to either platform or mezzanine height.

The mezzanine structure is formed up with scaffold as edge protection. The slab is poured with the walls/columns poured down.

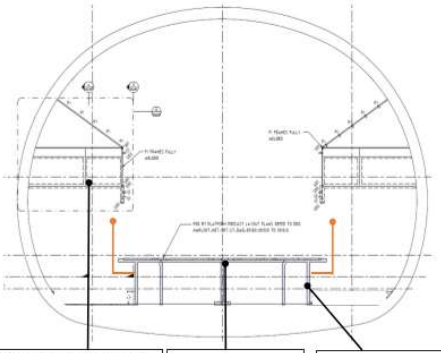
FOR INFORMATION

Cavern
Structure Methodology
Sheet 1

VICX-CON-CAV-005

Cavern Structure Methodology

Precast Portion of Platform with No Mezzanine's

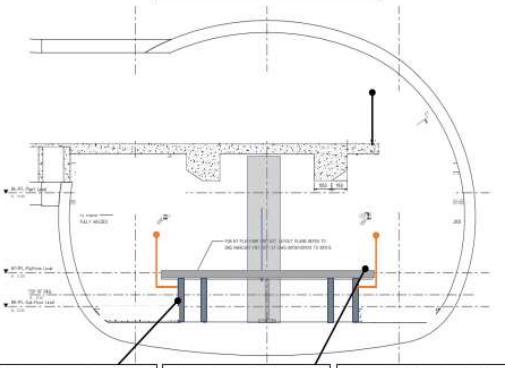


Prefabricated Overtrack exhaust is installed in its prefabricated sections with services following behind.

Platform topping slab is poured

Under Track exhaust and under platform services are installed

Platform with Mezzanine's above



Formwork & Scaffold is stripped down and platform is built. This is constructed using precast modules.

Handrail is installed to the platform edges before access on top. Topping slab is poured.

Escalators & Lifts to are lowered in through the adits onto the mezzanine structures and installation commenced.

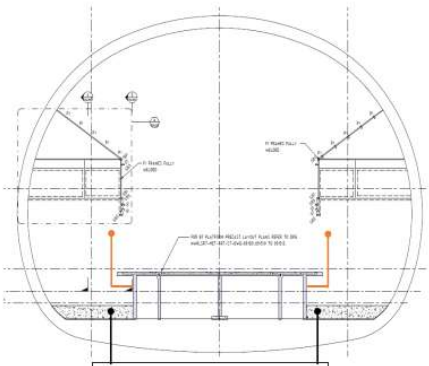
FOR INFORMATION

Cavern
Structure Methodology
Sheet 2

VICX-CON-CAV-007

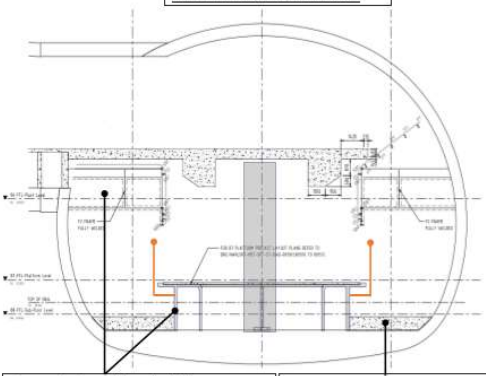
Cavern Structure Methodology

Precast Portion of Platform with No Mezzanine's



Trackway slab installed
Station finishes degree 2 underway

Platform with Mezzanine's above



Overtrack exhaust is installed in its prefabricated sections with services following behind & Under Track exhaust and under platform services are installed.

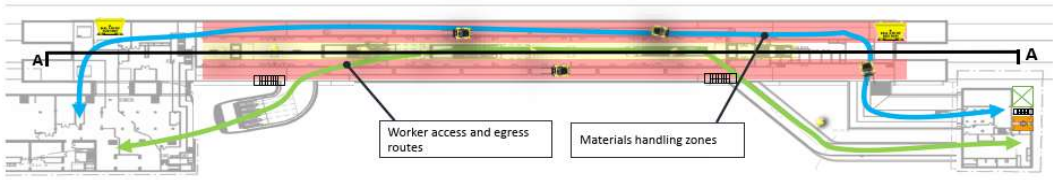
Trackway slab installed
Station finishes degree 2 underway

FOR INFORMATION

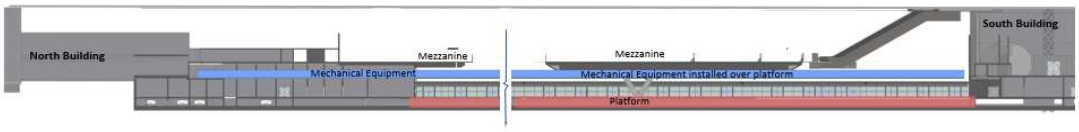
Cavern
Structure Methodology
Sheet 3

Cavern Construction – Fitout Degree 2 and 3 Finishes

- Access, egress and materials handling will rely on the below routes highlighted in green and blue in the cavern plan.
- Once access is provided to the mezzanines, routes will be modified to allow for movements of material and personnel from the South and North Buildings, down through the adits, onto the Cavern Mezzanines and then onto platforms.
- LW Contractor coordination is critical to providing vertical access from mezzanines to the platforms, whilst the escalator installation is important for the degree 2 and 3 finishes to occur.



Cavern Plan



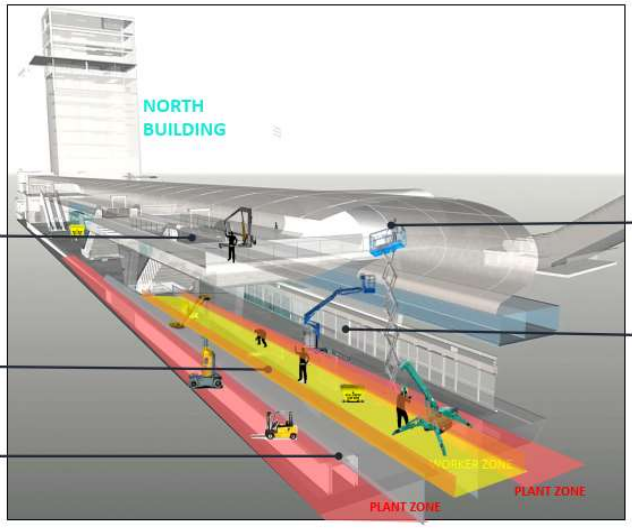
Cavern Section A

FOR INFORMATION

Cavern Construction -Fitout

Cavern Construction Fitout - Degree 2 and 3 Finishes

- A series of different access equipment and small cranes will be used to install the over track exhaust, services, and finishes to the cavern.



All works will follow a sequence South to north. Ceiling above platform will be the last element installed

Personnel will be restricted to the platform separating them from plant by handrail. After Portion 1 Handover a hoarding is installed in place.

Prior to Portion 1 – The trackway area will be used for plant/equipment.

Linewide Escalator plant and equipment will be dropped in as soon as the mezzanine is linked with the Adit in the south.

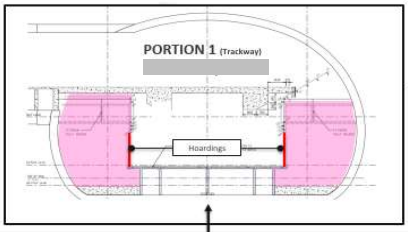
Linewide Lift Contractor equipment will be pre-loaded and installation commenced as soon as mezzanine structures are poured. Lift operation will allow access for workers and materials to the platforms.

FOR INFORMATION

Cavern
Construction -Fitout Logistics

Portion 1 Handover

- Linewide Contractors will enter/access site as per all other station contractors. They will be inducted for access for all station areas. Deliveries will be scheduled as per the site protocols and made to the North/South buildings as required.
- Vertical movements for materials handling will be provided either via the builders lift or tower crane. Personnel will traverse vertically in the builders lift/stairs. Forklifts will be used for horizontal materials handling into the cavern.



Access strategy for Trackway

- Induction will be carried out for Overall Site.
- Additional Security Access Gates installed on platform

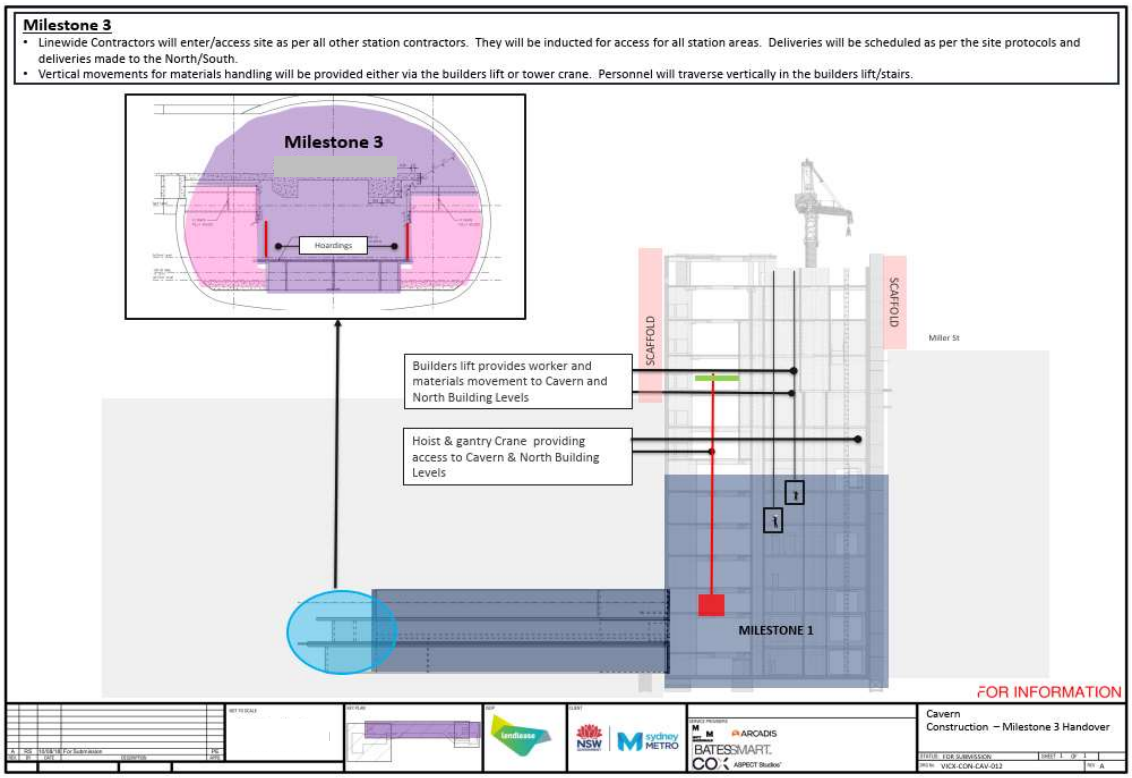
Hoist provides worker and materials movement to Cavern and North Building Levels

Crane provides vertical lifting to Cavern & North Building Levels

Plant Used in cavern to transport building items back and forth on Platform Mezz

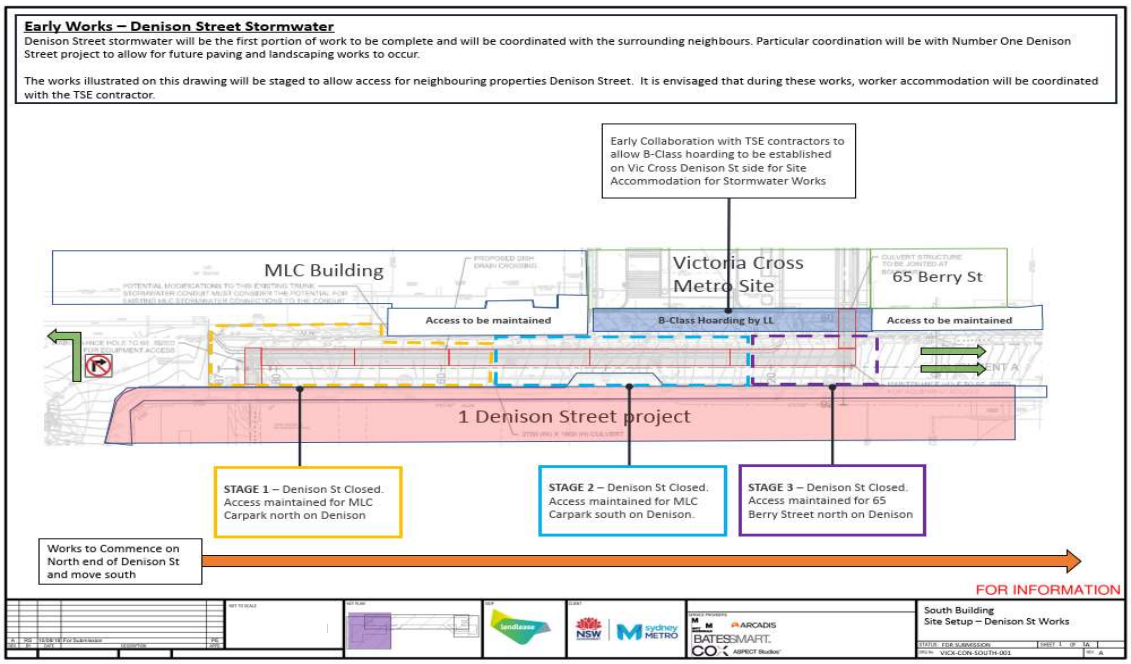
FOR INFORMATION

Cavern
Construction - Portion 1 Handover



Denison Street Stormwater

The following diagram illustrates the extent of the Denison Street stormwater scope inclusive of staging to minimise impact to adjoining stakeholders.



SOUTH STATION CONSTRUCTION STAGING

The South Station and associated basement levels will form a key operational area of the Metro Station works. Completion of these areas is critical to handover to the Line-Wide Contractors. Handout to Line-Wide will occur in a staged manner in accordance with the pre-agreed contract milestone handover sequence.

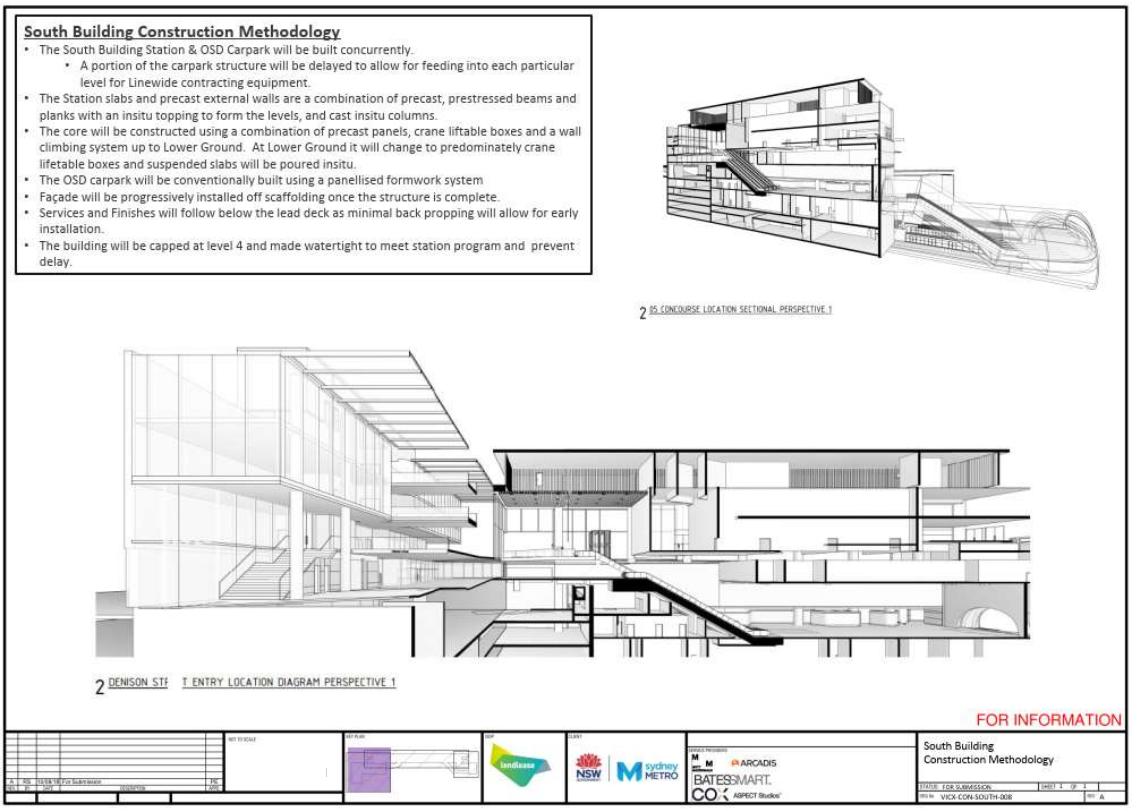
Detailed Excavation

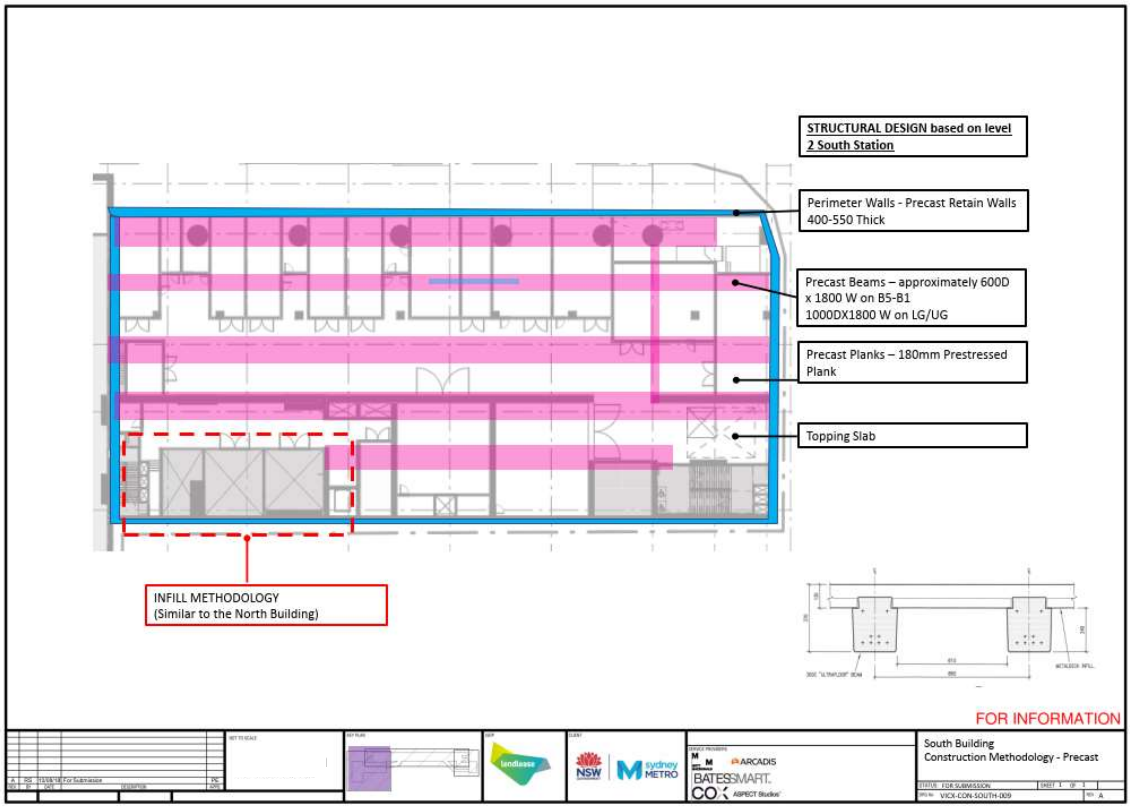
At the completion of bulk excavation and handover by TSE, the detailed excavation of the pad and strip footings in the North Station will be completed by large excavators with rock saw and rock hammer attachments. The spoil will be removed from the excavation level to the street level using direct-on-truck spoil skips lifted by the site tower crane.

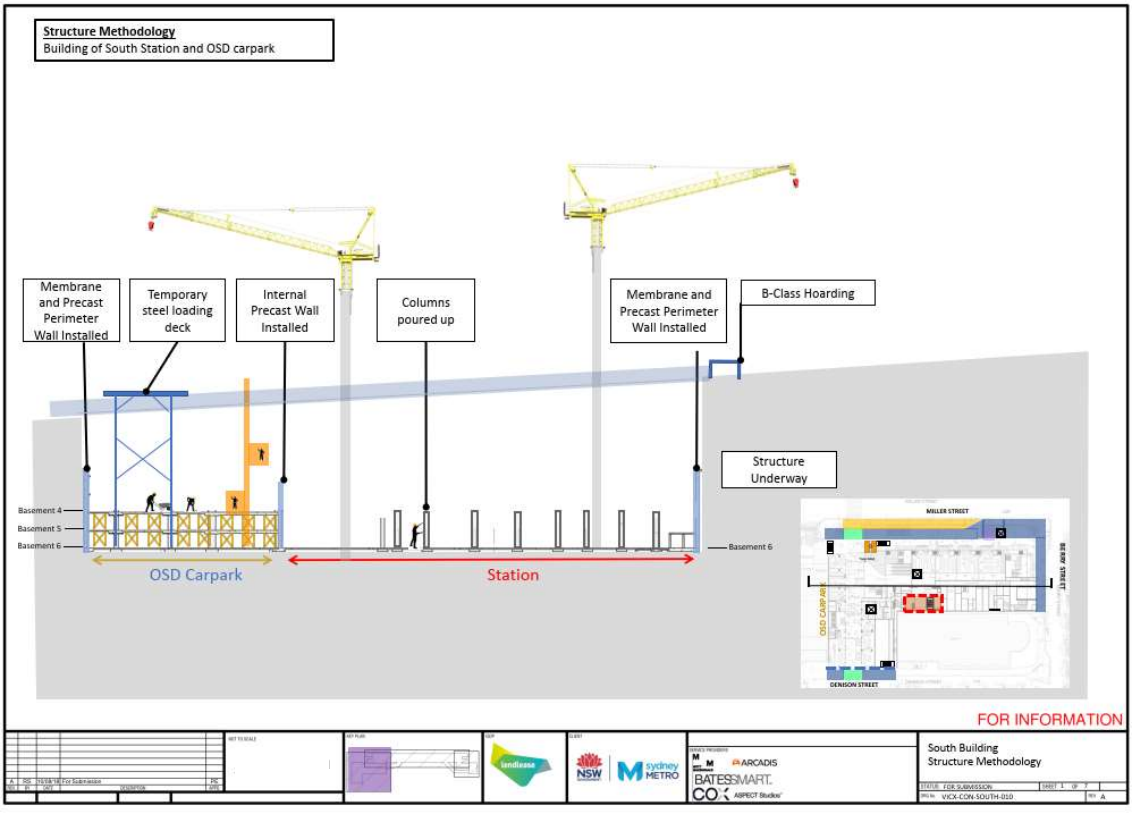
Construction Sequence and Methodology

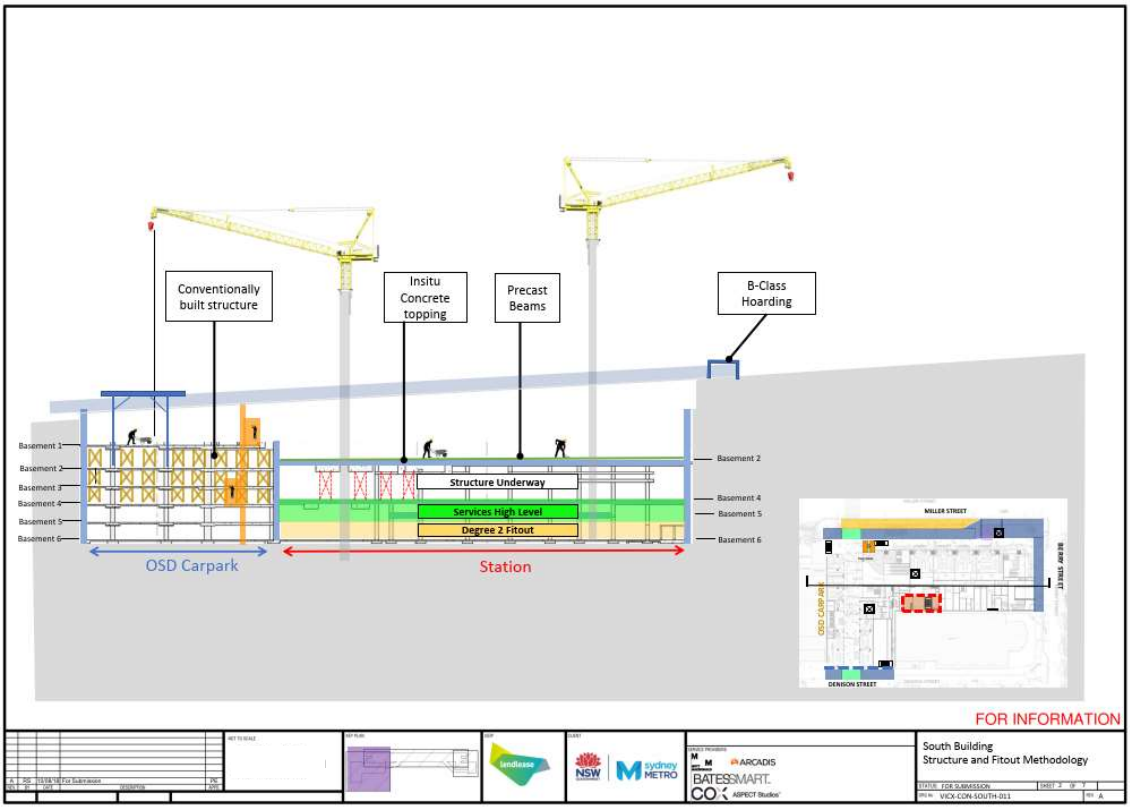
The fundamental strategy for the basement structure construction will be to maintain a consistent pour sequence, using a combination of precast and insitu elements and thereby achieving continuity for both subcontractor and materials handling resources.

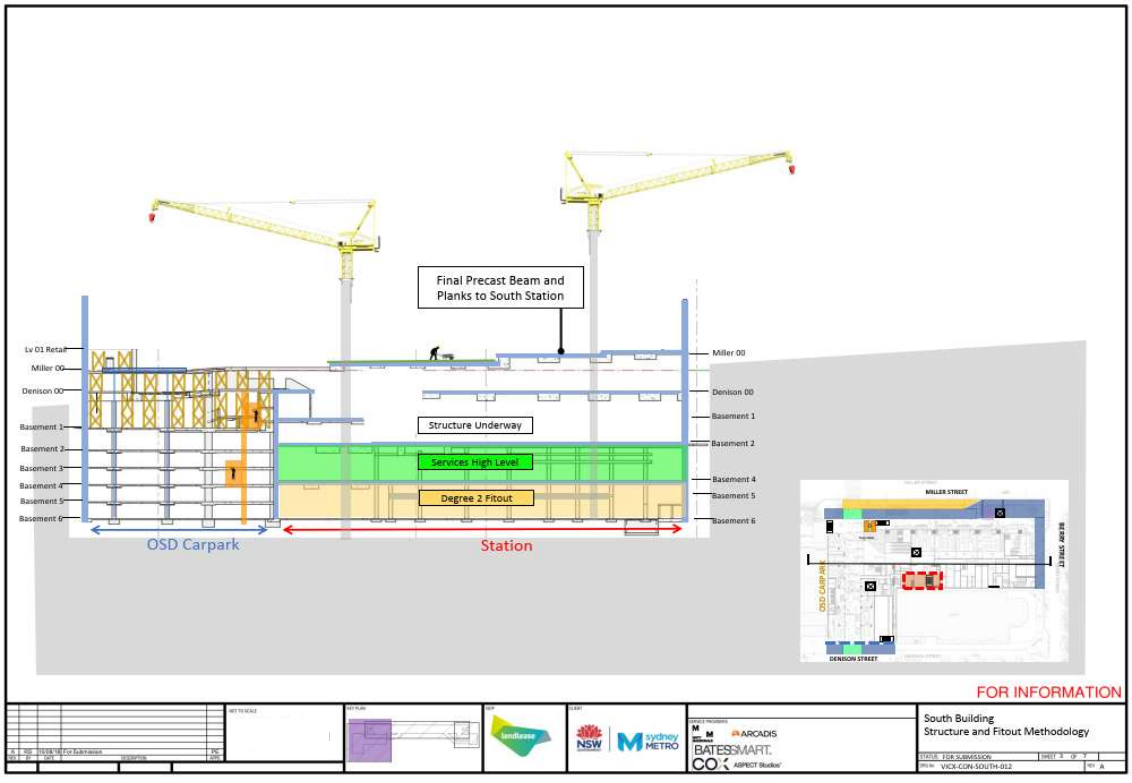
The following diagrams show the proposed structure methodology, overall sequence, core delineation, temporary services and materials handling / personnel movement strategy for the basement and podium floors.

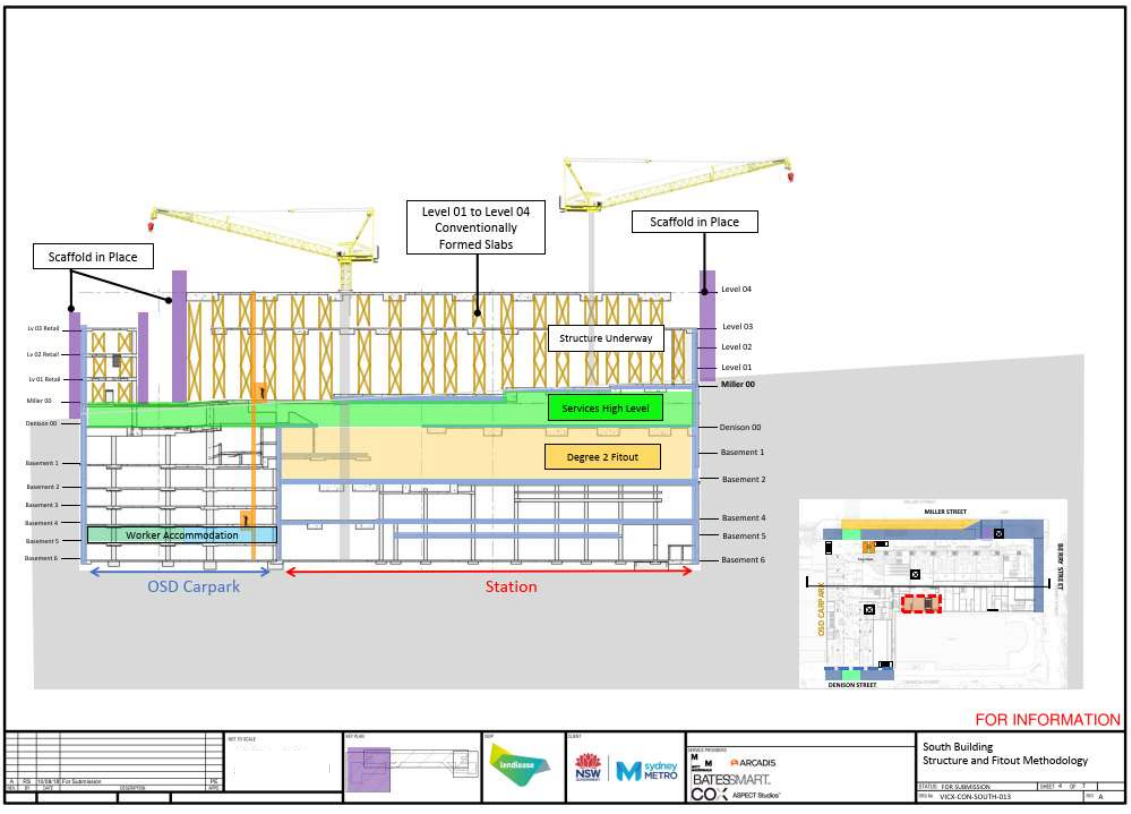



STRUCTURAL DESIGN based on level 2 South Station
Perimeter Walls - Precast Retain Walls 400-550 Thick
Precast Beams – approximately 600D x 1800 W on B5-B1
1000DX1800 W on LG/UG
Precast Planks – 180mm Prestressed Plank
Topping Slab
INFILL METHODOLOGY
(Similar to the North Building)
FOR INFORMATION
South Building
Construction Methodology - Precast


Structure Methodology
Building of South Station and OSD carpark
Membrane and Precast Perimeter Wall Installed
Temporary steel loading deck
Internal Precast Wall Installed
Columns poured up
Membrane and Precast Perimeter Wall Installed
B-Class Hoarding
Structure Underway
Basement 4
Basement 5
Basement 6
OSD Carpark
Station
FOR INFORMATION
South Building
Structure Methodology

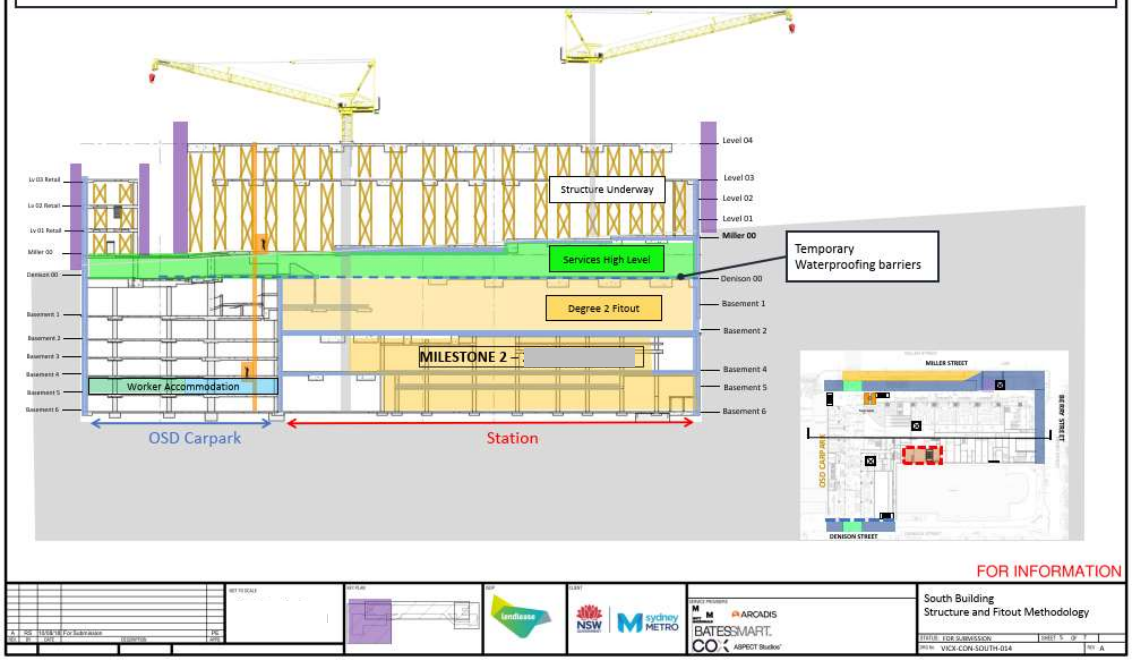

Conventionally built structure
Insitu Concrete topping
Precast Beams
B-Class Hoarding
Basement 1
Basement 2
Basement 3
Basement 4
Basement 5
Basement 6
Structure Underway
Services High Level
Degree 2 Fitout
OSD Carpark
Station
FOR INFORMATION
South Building
Structure and Fitout Methodology


Final Precast Beam and Planks to South Station
Lv 01 Retail
Miller 00
Denison 00
Basement 1
Basement 2
Basement 3
Basement 4
Basement 5
Basement 6
Structure Underway
Services High Level
Degree 2 Fitout
OSD Carpark
Station
FOR INFORMATION
South Building
Structure and Fitout Methodology



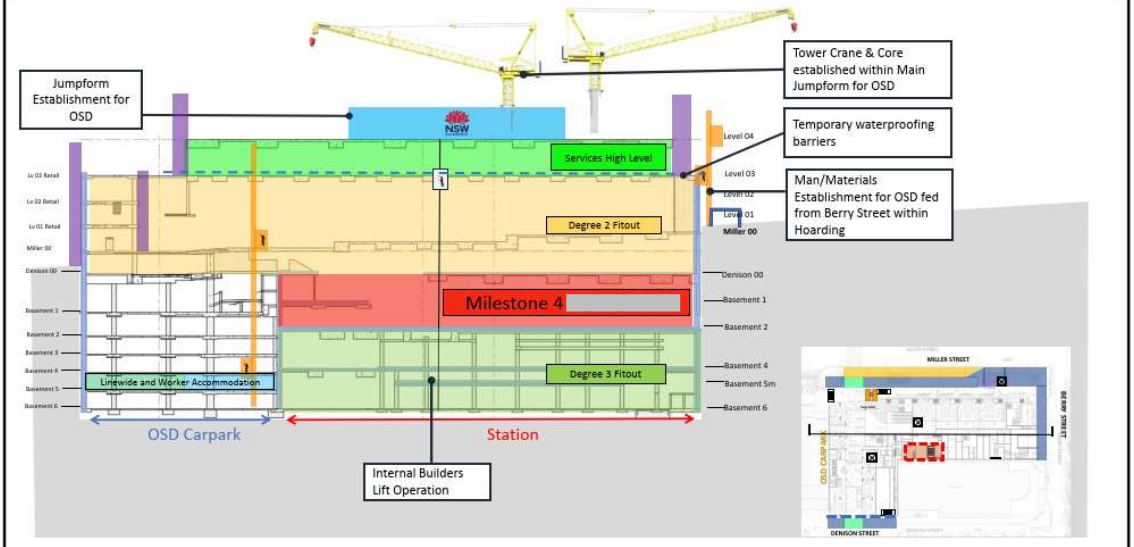
Milestone 2

- LW Contractors will enter/access station site as per all other contractors onsite. They will be inducted which provides them access for all station areas. Deliveries will be scheduled as per the site protocols of the North/South.
- Vertical movements for materials handling will be provided either via a man/materials hoist or builders lift, crane or gantry crane. Personnel will either use man/materials hoist or builders lift
- For major plant equipment within this building, equipment to be lowered into position prior to Milestone handover.
- LW contractor transformers will be dropped into position during the structure phase.
- LW Accommodation is located in B5 OSD Carpark.



Milestone 4 (Includes Adit)

- Interface Contractors will enter/access site as per all other station contractors onsite. They will be inducted for access to all station areas. Deliveries will be scheduled as per the site protocols and deliveries made to the North/South.
- Vertical movements for materials handling will be provided either via a man/materials hoist or builders lift, crane or gantry crane. Personnel will either use man/materials hoist or builders lift
- For major plant equipment within this building, equipment to be dropped into position prior to Milestone handover.
- Interface Contractor accommodation is located in B5 OSD Carpark.

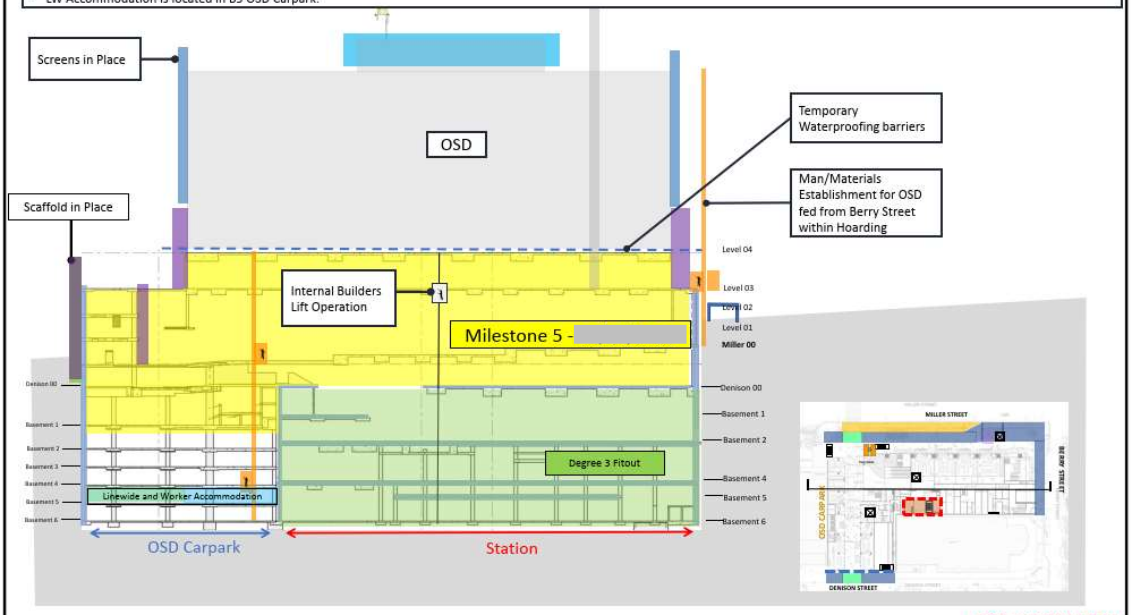


FOR INFORMATION

South Building
Structure and Fitout Methodology

Milestone 5

- LW Contractors will enter/access site as per all other contractors onsite. They will be inducted which provides them access for all areas. Deliveries will be scheduled as per the site protocols and deliveries made to the North/South as required. Vertical movements for materials handling will be provided either via a man/materials hoist or builders lift, crane or gantry crane. Personnel will either use man/materials hoist or builders lift
- LW Accommodation is located in B5 OSD Carpark.



FOR INFORMATION

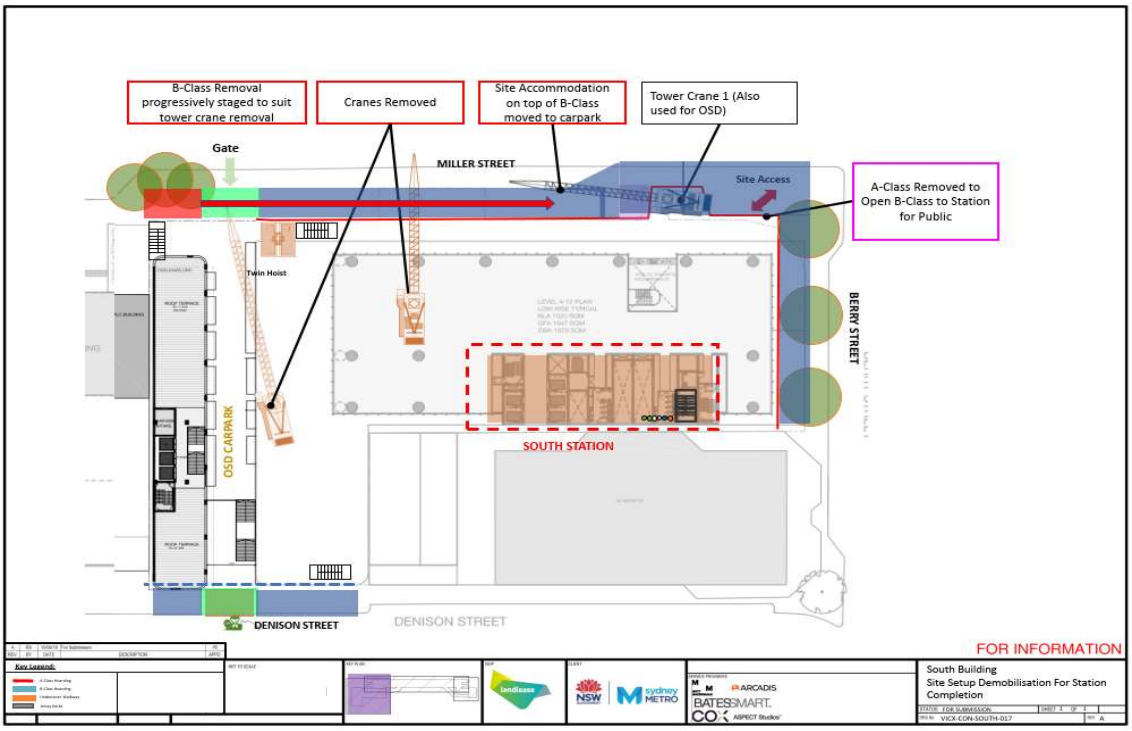
South Building
Structure and Fitout Methodology

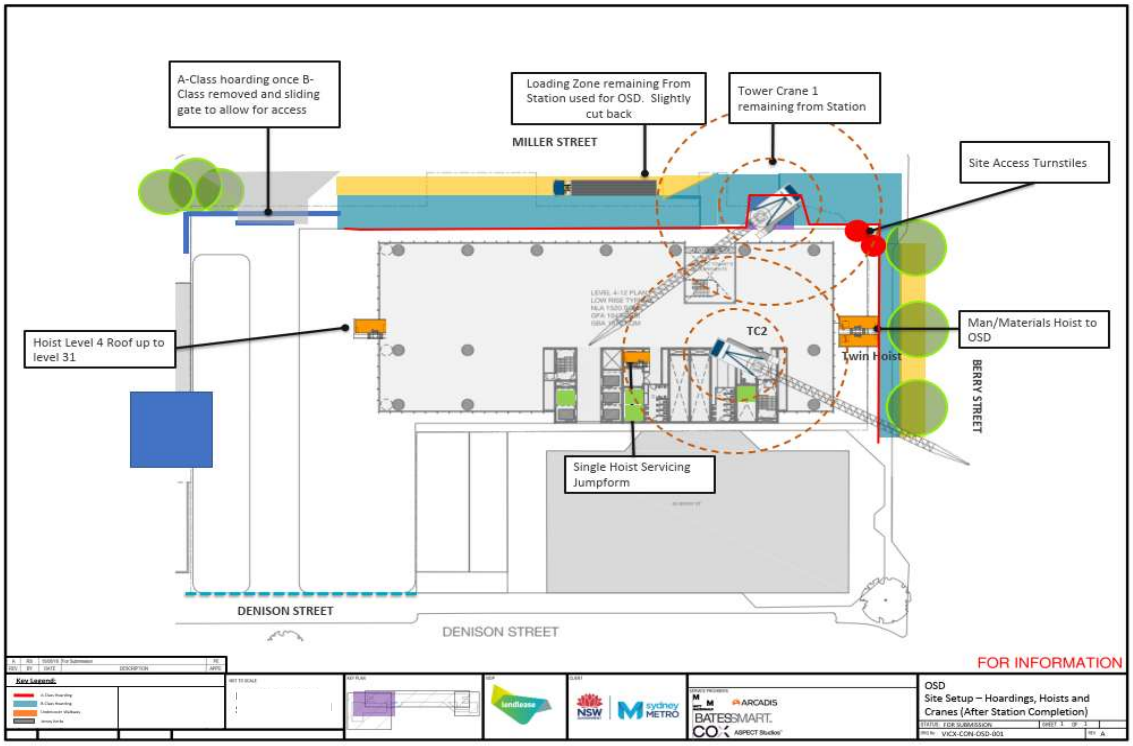
OVER STATION DEVELOPMENT

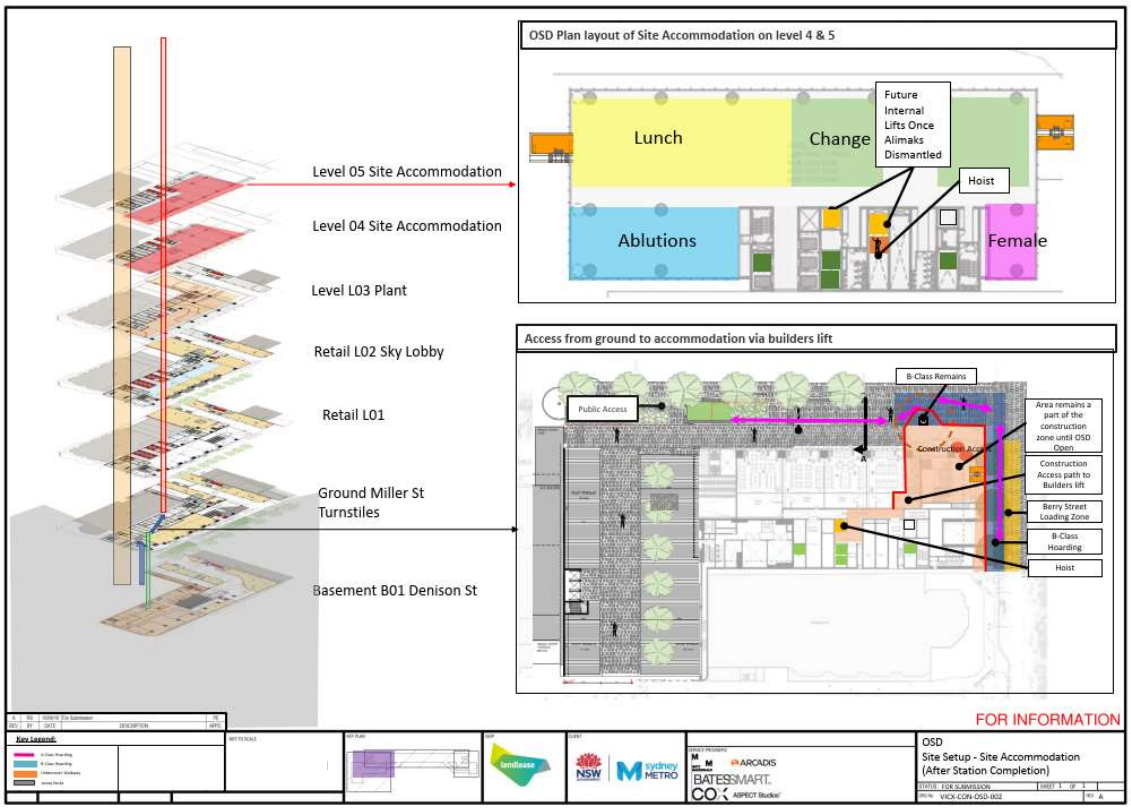
Site establishment and materials handling to the OSD as applicable to the interfaces with the Station development are detailed in the following diagrams and have been developed to accommodate the pre agreed Metro impacts (as identified in Schedule A25 & A26).

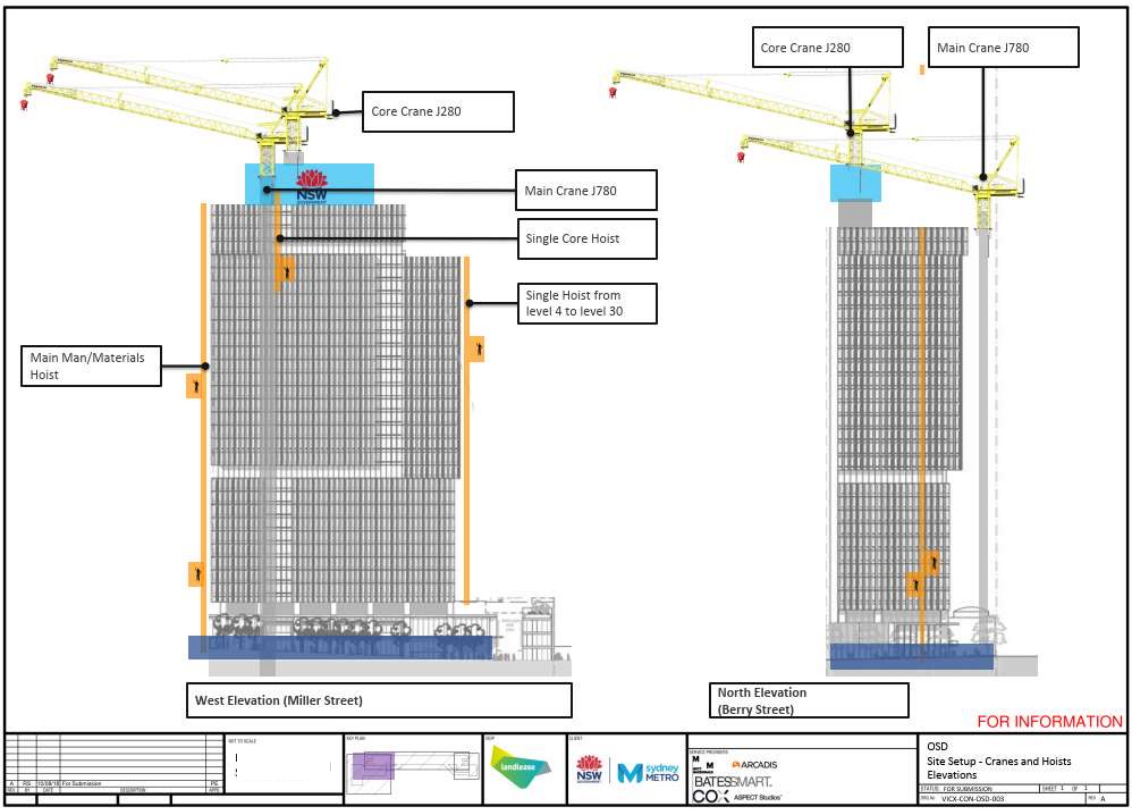
The diagrams are also inclusive of positioning of construction zones, craneage, hoarding type and locations, personnel hoists, site accommodation and site entry locations.

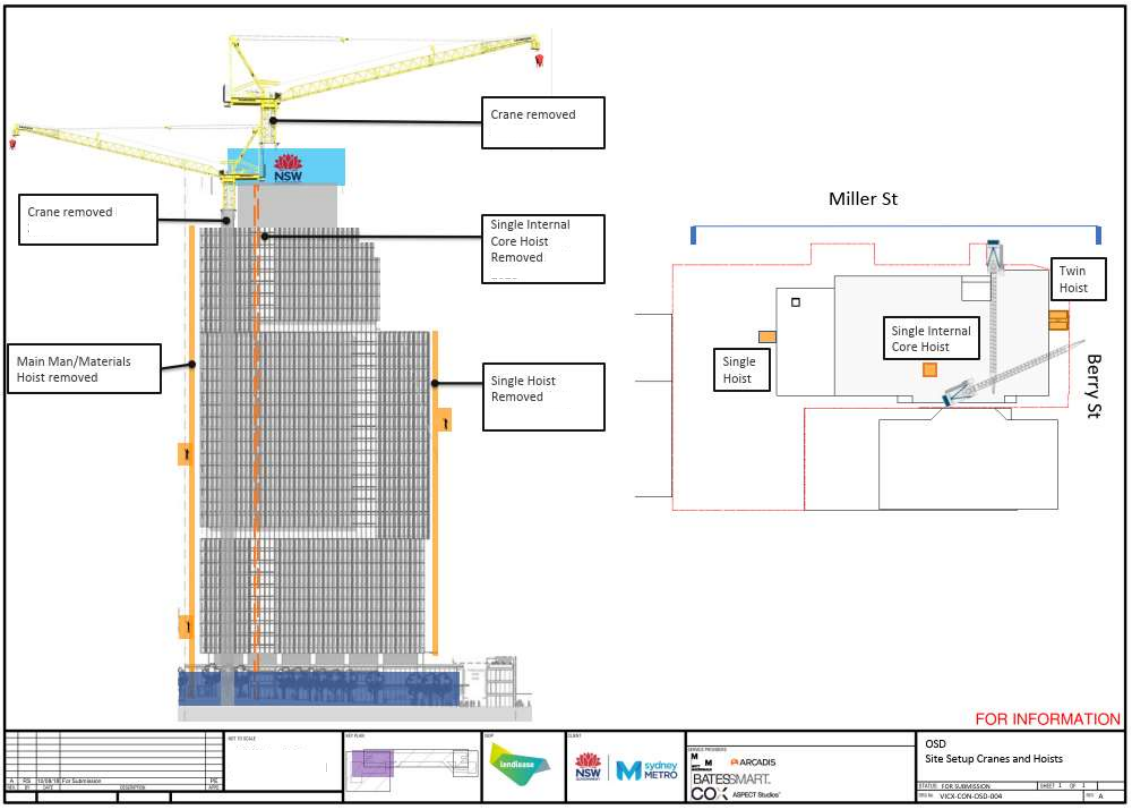
In addition the diagrams detail the planned status of the Over Station Development construction works at time of Station completion and how post Station opening OSD construction works will be segregated until OSD completion without impacting the operational functionality of the Station.

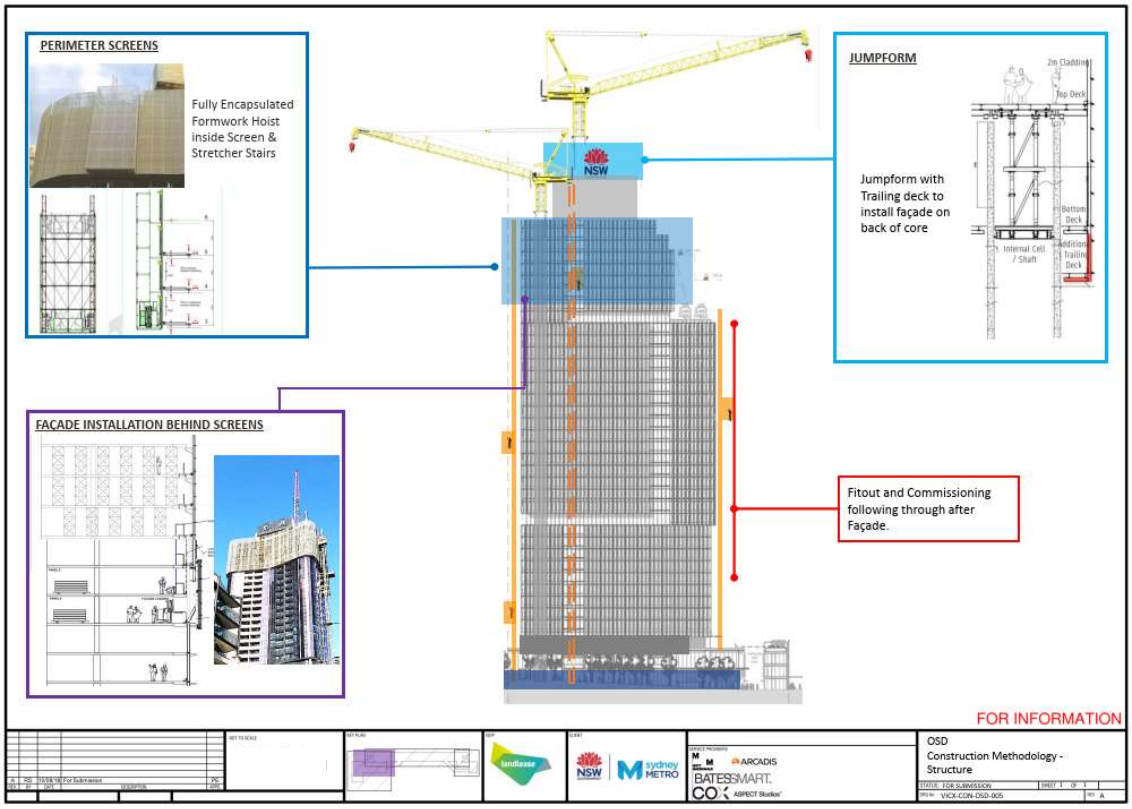


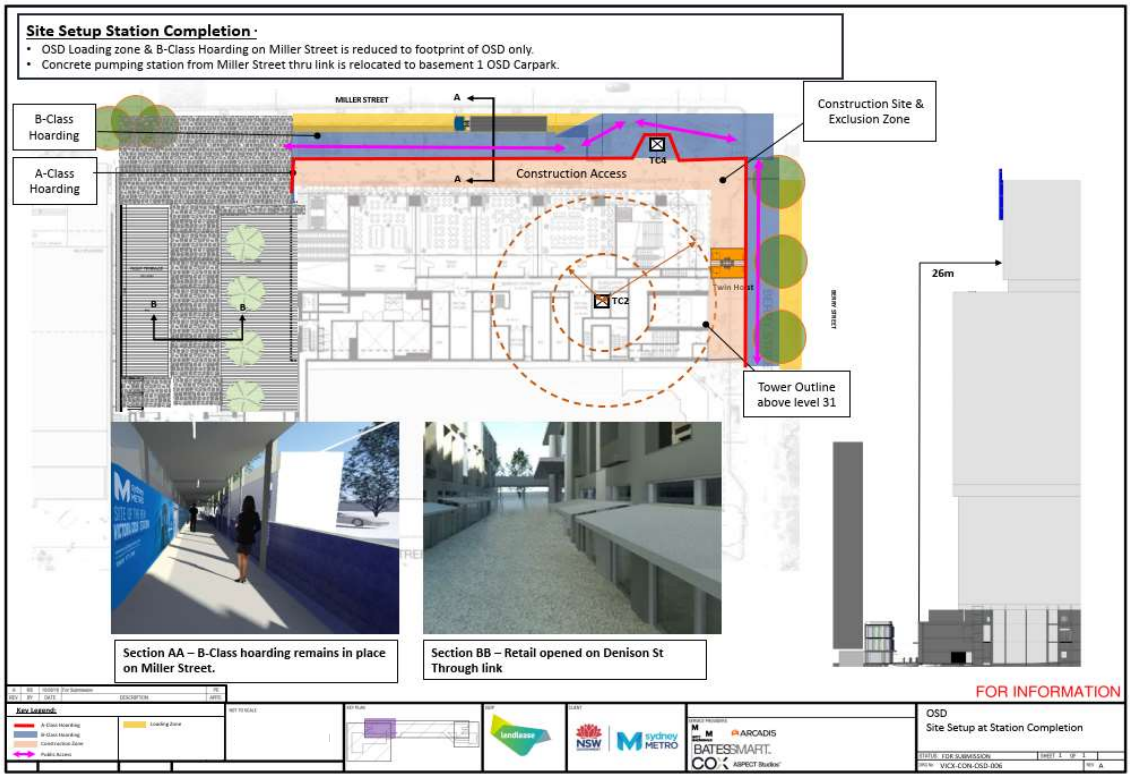

A-Class hoarding once B-Class removed and sliding gate to allow for access
Loading Zone remaining From Station used for OSD. Slightly cut back
Tower Crane 1 remaining from Station
MILLER STREET
Site Access Turnstiles
Hoist Level 4 Roof up to level 31
TC2
Twin Hoist
Man/Materials Hoist to OSD
BERRY STREET
Single Hoist Servicing Jumpform
DENISON STREET
DENISON STREET
FOR INFORMATION
OSD
Site Setup – Hoardings, Hoists and Cranes (After Station Completion)


Level 05 Site Accommodation
Level 04 Site Accommodation
Level L03 Plant
Retail L02 Sky Lobby
Retail L01
Ground Miller St Turnstiles
Basement B01 Denison St
OSD Plan layout of Site Accommodation on level 4 & 5
Lunch
Change
Future Internal Lifts Once Alimaks Dismantled
Hoist
Ablutions
Female
Access from ground to accommodation via builders lift
B-Class Remains
Public Access
Area remains a part of the construction zone until OSD Open
Construction Access path to Builders lift
Berry Street Loading Zone
B-Class Hoarding
Hoist
FOR INFORMATION
OSD
Site Setup - Site Accommodation (After Station Completion)


Core Crane J280
Main Crane J780
Single Core Hoist
Single Hoist from level 4 to level 30
Main Man/Materials Hoist
West Elevation (Miller Street)
Core Crane J280
Main Crane J780
North Elevation (Berry Street)
FOR INFORMATION
OSD
Site Setup - Cranes and Hoists Elevations

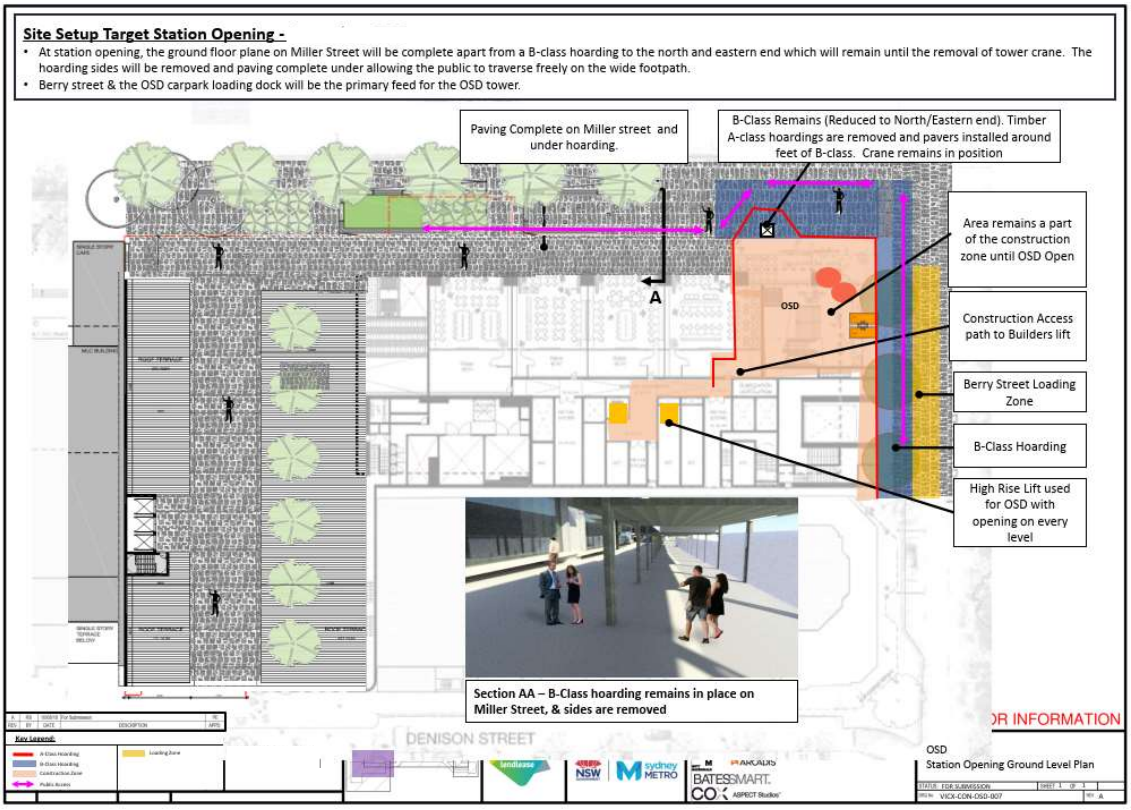

Crane removed
Crane removed
Single Internal Core Hoist Removed
Main Man/Materials Hoist removed
Single Hoist Removed
Miller St
Twin Hoist
Single Internal Core Hoist
Single Hoist
Berry St
FOR INFORMATION
OSD
Site Setup Cranes and Hoists


PERIMETER SCREENS
Fully Encapsulated Formwork Hoist inside Screen & Stretcher Stairs
JUMPFORM
Jumpform with Trailing deck to install façade on back of core
FAÇADE INSTALLATION BEHIND SCREENS
Fitout and Commissioning following through after Façade.
FOR INFORMATION
OSD
Construction Methodology - Structure


Site Setup Station Completion
OSD Loading zone & B-Class Hoarding on Miller Street is reduced to footprint of OSD only.
Concrete pumping station from Miller Street thru link is relocated to basement 1 OSD Carpark.
B-Class Hoarding
A-Class Hoarding
MILLER STREET
Construction Access
Construction Site & Exclusion Zone
TC4
TC2
Tower Outline above level 31
26m
Section AA – B-Class hoarding remains in place on Miller Street.
Section BB – Retail opened on Denison St Through link
FOR INFORMATION
OSD
Site Setup at Station Completion

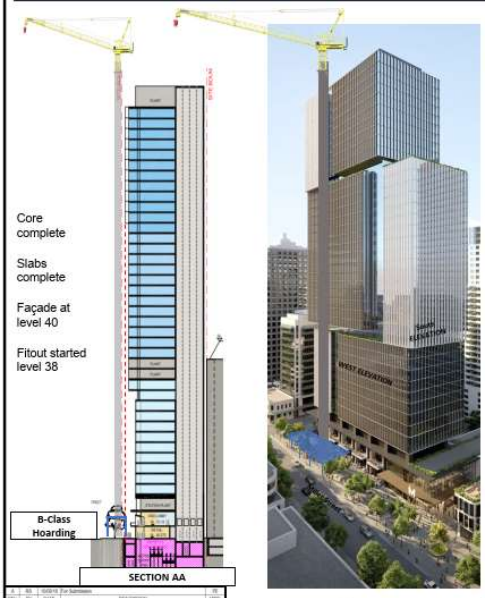
Site Setup Target Station Opening -

- At station opening, the ground floor plane on Miller Street will be complete apart from a B-class hoarding to the north and eastern end which will remain until the removal of tower crane. The hoarding sides will be removed and paving complete under allowing the public to traverse freely on the wide footpath.
- Berry street & the OSD carpark loading dock will be the primary feed for the OSD tower.



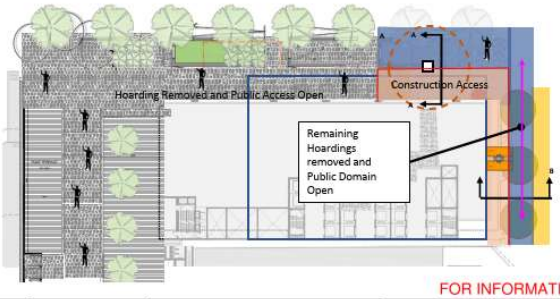
Site Setup Target Station Opening

- External works remaining to North East Public Domain
- The OSD East, South & Western facades will be complete presenting a completed building.
- The Northern Elevation will be mostly complete apart for the builders hoist servicing the floors.
- The Tower crane will remain on Miller street, and hoarding footprint reduced as indicated on plan view
- Ground Floor North East and B1 Loading Zone in use for Materials Handling and worker movement.



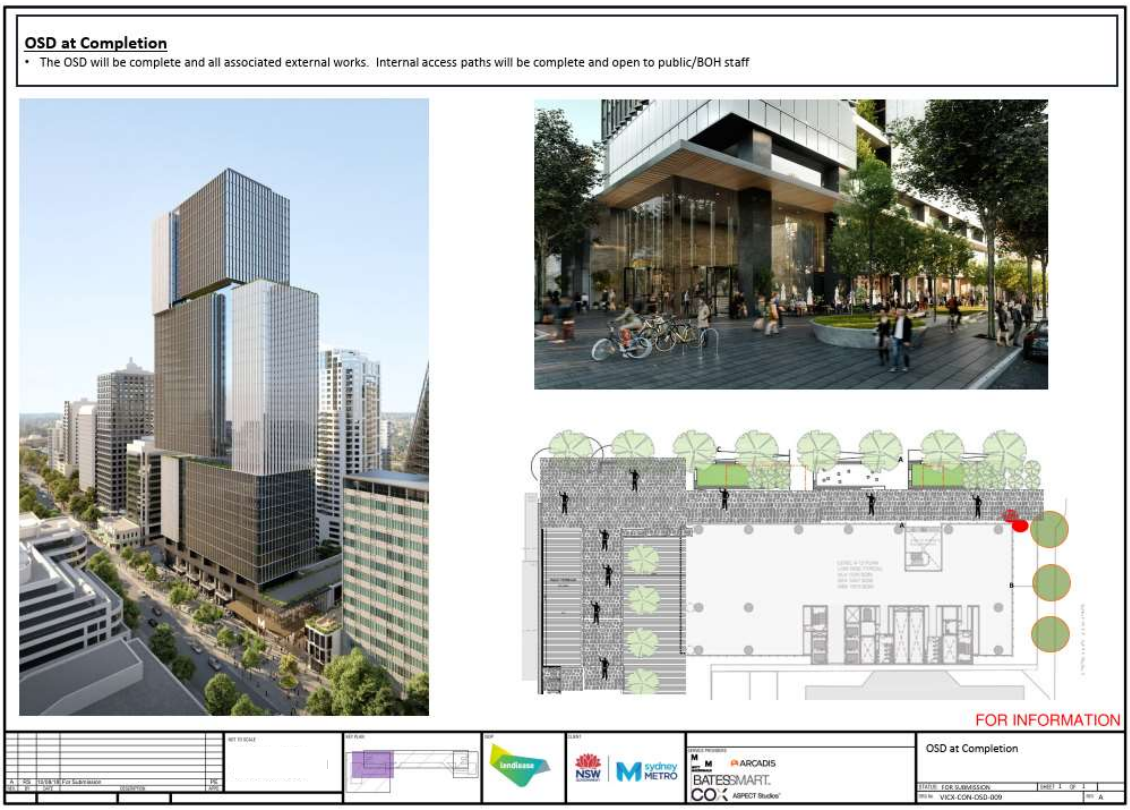
Section BB – Berry Street B-Class

Example of completed pavement under hoarding used on current Lendlease Project at Darling Square, Haymarket.



FOR INFORMATION

OSD Site Setup at Station Target Opening Date



STATION SERVICES

The services scope provided within the Victoria Cross station include both services required for the station operation as well as the integration of systems provided by Line-Wide Contractor's (LWC), required for the overall Metro line. The Line-Wide services which are supported in the Victoria Cross Station include:

- Electronic Ticketing;
- Station Control Systems Equipment and Cabling;
- BMCS;
- Overhead Wiring and Traction Supply;
- Bulk Supply of HV Equipment and Cabling;
- Tunnel Ventilation and Track Equipment;
- Platform Screen Doors;
- Radio Equipment and Cabling; and
- Signalling System.

Lendlease acknowledges that there will be extensive interface with contractors appointed by Sydney Metro, to undertake the line wide rail works. This will provide the resources needed to integrate the station systems with the line wide systems.

Integrated Services Overview

Lendlease proposes that a Sydney Metro Interface Integration Team (IIT) be formed early in the Project's lifecycle, led by Sydney Metro representatives, to ensure that all interfaces for the overall Metro Project delivery are coordinated with their various contractors.

Their primary focus is to ensure management of each interface is agreed and delegated to the most appropriate entity. It will consist of key stakeholders that have the ability and authority to make decisions, assign and delegate actions, and drive accountability. Lendlease will be a member of this team, represented by the Interface Manager, calling upon other members of the project team, as required, to manage tasks.

This team will principally ensure that identification, analysis, resolution and incorporation of interfaces occur throughout the project. These are internal and external, functional and physical orientated interfaces particularly with key parties where considerations include, but not limited to, the following:

- Concept and reference designs outcomes, where significant interface definition should have already occurred;
- Detailed requirements for specifications, scopes of work, and overall documentation;
- Identification of roles and responsibility associated with the scope and documentation;
- Environment within which the product or service will function;
- Internal project interfaces around program, area handover and delivery; and
- Accreditation responsibilities for undertaking and assuring the works.

Ownership of each interface item will be assigned to the most appropriate discipline, usually the one that requires information or incoming data to achieve a function or design element by interface with another party. Additionally, the identified interfaces and associated interface requirements will be captured and managed in the relevant design documentation.

To address project specific interfaces, a separate Victoria Cross Interface Team will similarly be formed. They will coordinate separate stakeholder engagement activities with the Lendlease team and ensure the design and or construction teams' responsibilities for addressing the various interfaces remain on track. They will also be responsible for coordinating the access for Line-Wide Contractor into the site as the Milestones area is achieved.

Station Services

Station Box Services Mechanical and Electrical Services Fit-out

Given the complexity and number of interfaces that exist within the station boxes, Lendlease will expedite the station services teams' presence soon after site establishment to support and coordinate with the civil and structures teams to ensure penetrations, fire collars, pipes and conduits in the base slabs and walls are positioned in the correct locations prior to pouring.

Lendlease understands that several interfaces exist within the Victoria Cross Station and will develop a robust process to manage these at a construction level to ensure all stakeholders' requirements are taken into consideration for access and area handover.

Lendlease acknowledge the Metro Handover schedule and degree of completion requirements, for interim handover of areas to the Line-Wide Contractor for installation of associated M&E.

Methodology

After the Metro Station structure is substantially complete, plant rooms and corridor walls are constructed, the commencement of the first fix M&E activities can commence. Rooms within the Metro Station are either required for Line-Wide services or for station services.

The intention is to expedite the fit-out of certain lift shafts to bring the permanent lifts into service (builder's lifts) as quickly as possible. This reduces the requirement to maintain man and materials hoists within the station footprint and allow the fit-out to progress more efficiently. It will also allow construction penetrations to be closed-up to make the station watertight. Prior to the lifts coming online, our team will utilise the permanent access hatches and permanent voids left in the slabs to get materials and equipment to the various work faces.

Lendlease's M&E construction methodology will be split between the back-of-house (BOH) and front-of-house (FOH) areas. BOH areas are predominantly plant room areas and the associated reticulation paths between them. FOH areas are the platforms and concourse areas. Delineating the two areas, highlights the importance of prioritising the construction of the BOH areas as opposed to the FOH areas as the construction and commissioning program will ultimately be driven by the completion of the BOH areas. The M&E construction sequence can be broadly summarised as follows:

- Main Switch rooms and Plant rooms.
- High-level services such as drainage and large ductwork and cable ladder.
- Chilled water and hydraulic water services brackets and pipework.
- Hauling main electrical supplies.
- Electrical brackets and cable trays, riser fit-out.
- Sprinkler first fix.
- Equipment room installation and fit-out.
- Cable hauling.
- Field device installation and cable terminations.
- Lift and escalator installation and fit-out.
- Construction verification and testing – mechanical and electrical (hydrostatic and cable testing, quality assurance handover).

Once the rooms have been completed, the installation of high-level equipment such as ductwork, brackets, the cable containment and luminaires will begin. After this, large and heavy equipment such as air handling units, fans and LV switchboards will be loaded into the structure through permanent access hatches in the floor slabs and positioned in the rooms. Cable pulling will start as soon as there is a complete cable containment route. It is therefore important that the cable risers and reticulation between plant rooms are completed to enable cable pulling to be efficient and negate the need to leave partially pulled cables on drums. Large sub-mains will be pulled first and then according to size or position on the cable containment.

The following rooms have been identified as critical areas for completion:

- The high-voltage (HV) transformer and switchboard rooms;
- Low-voltage (LV) rooms;
- Communications/signalling rooms;
- Tunnel ventilation fan rooms; and

- Completion of these rooms enables the stations M&E teams as well as the Line-Wide Contractors' access to commence their fit-out.

High voltage switch rooms, transformer enclosures, communications and signal rooms

The Line-Wide Contractors will carry out all the services fit-out works associated with the HV switch rooms, transformer rooms, communication and signalling rooms.

Room cleanliness and early completion of the degree 2 activities will be undertaken by Lendlease, to enable room handover to Line-Wide Contractors for equipment installation.

Mechanical rooms

Mechanical rooms consist of the chiller plant room and air handling and exhaust fan rooms.

High-level services will be installed first before the equipment is positioned in the room. Access will be through the same permanent access hatches in the floor slabs. Once all ductwork and pipework is completed, installation of lighting and power to the equipment will commence. Mechanical plant room completion will be driven by the completion of the electrical rooms and the power-on dates.

Other Back-of- House areas

The team will work closely together to ensure areas such as the Station Control Room, staff and public amenity areas are roughed in and tested prior to walls and ceilings being sheeted. All services through the corridors will be completed and tested before the ceilings are closed-up.

To allow flexibility for the respective M&E disciplines to work across multiple work fronts and in parallel with the station finishes works, elevated work platforms will be utilised instead of fixed scaffolding where possible.

Front-of-House areas

Front-of-house areas consist of the station platform and concourse areas, including public circulation spaces. Completion of these areas is not as critical as the BOH areas and will be sequenced with the installation and completion of station finishes, with the same general installation methodology being followed as described earlier. Given the large ceiling spaces in these areas, construction will utilise elevated work platforms instead of fixed scaffolding. This allows flexibility for the respective M&E disciplines to work across multiple work fronts and in parallel with the station finishes works.

Vertical transport

Vertical transport equipment for the Station will be Designed, Supplied and Installed (DSI) by a contractor selected by The Principal. Lendlease will be responsible for providing access, a work area and cranage to enable the DSI Contractor to carry out their works.

Line-Wide Services

Line-Wide Contractors will have access to the site on the nominated Milestone dates to commence the installation of their plant and equipment. Co-ordination of the Line-Wide Contractors access to site, will be developed and agreed prior to the handover dates. Processes and procedures for access, as well as delivery and handling of materials, will be established through the Lendlease Interface Team.

Integration of Station and Line-Wide Services

The integration of the STME works with the Line-Wide services will commence during Stage 2 Design, to ensure that all the physical interfaces defined in the IRS's are incorporated into the design.

This will ensure that all the provisions have been allowed for prior to construction commencement, facilitating a co-ordinated delivery, commissioning and testing of this services scope.

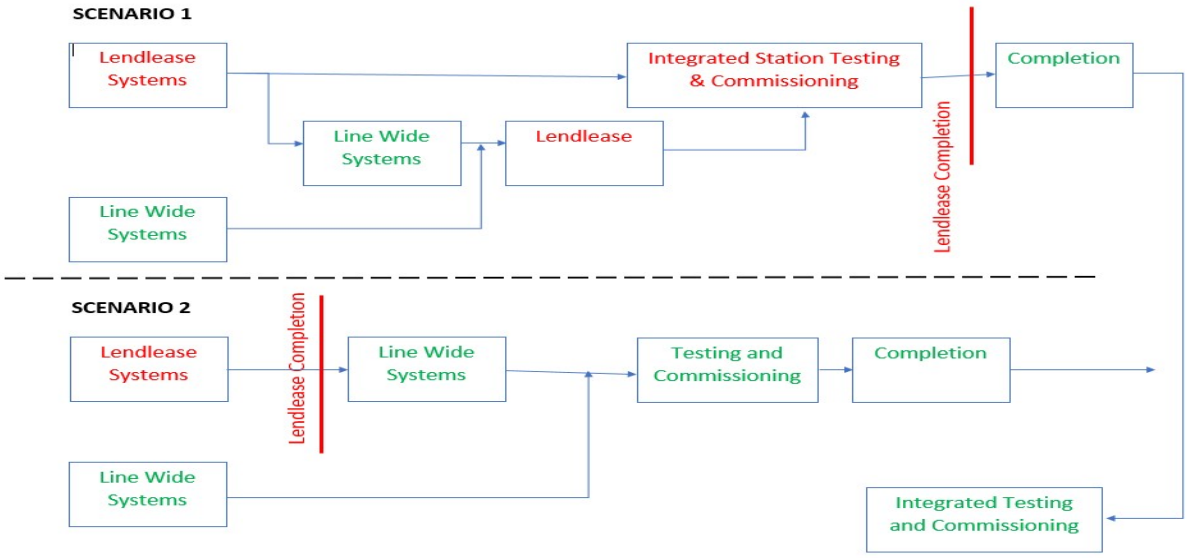
STATION COMMISSIONING AND TESTING

Commissioning and Testing Procedures

Lendlease will adopt a systems completion approach in preparation for STME commissioning for its works. The commissioning process will progress through a set of gates to ensure all necessary process and documentation is completed in a timely manner.

A Commissioning and Testing Plan will be developed for the project to comply with the SWTC Appendix F7 requirements. Co-ordination of the interfaces across the packages and various Line-Wide Contractors will be coordinated through the testing and commissioning process.

The diagram below outlines two typical scenarios of how the integration of the cross-packages is to be developed and the limits to the scope testing and commission performed by Lendlease.



Systems Testing

For the components of the Project Works which are supplied and installed by Lendlease, once a system has been physically completed and all quality assurance, as-built drawings and testing documentation has been undertaken by the construction teams, the commissioning team will review the documentation and perform site inspections to verify works are complete and commissioning can begin.

After the main electrical equipment, has been commissioned and energised, local electrical, mechanical, hydraulic and fire equipment can be energised. At this point, other trades will begin to commission their respective systems such as water and air distribution systems, fire systems, vertical transport system etc.

Each trade will commission their respective systems as a standalone system, with no external interfaces. Upon successful standalone testing, cross-discipline system interfaces will be tested to ensure functionality i.e. fire interface with smoke fans, plant control.

Line-Wide Testing

For the component of the Project Works which are supplied and installed by Line-Wide Contractors, these contractors will be responsible for the testing and commissioning of their systems, independent of other systems. Lendlease will work in collaboration with the Line-Wide Contractors to support the testing and commissioning of their systems, as defined in the IRS's.

HV substation scope including all the interconnecting and incoming HV cables which will be completed by the Line-Wide Contractors are of critical importance. These HV sub-stations provide the HV power for the Metro Station and all the stations systems. As such, Lendlease will be dependent on Line-Wide Contractor's completion, commissioning and energisation of their HV sub-stations, to enable the commencement of commissioning of STME Metro Station Systems. Once HV sub-stations are complete, LV power will be available for downstream commissioning of SMTE services to commence.

Integration Systems Testing

Upon successful interface testing of both the Line-Wide Contractor and local STME systems, the respective systems will be integrated to confirm successful operations of both STME's and Line-Wide systems together. i.e. fire interface with smoke fans, plant control.

We note, further witness and performance testing will take place post completion of Integration Testing above, prior to placing all Metro Systems into operation service.

The interface with the Line-Wide Contractors will be managed by the Interface Manager and the projects commissioning team.

STATION MILESTONES AND PORTIONS

Overview

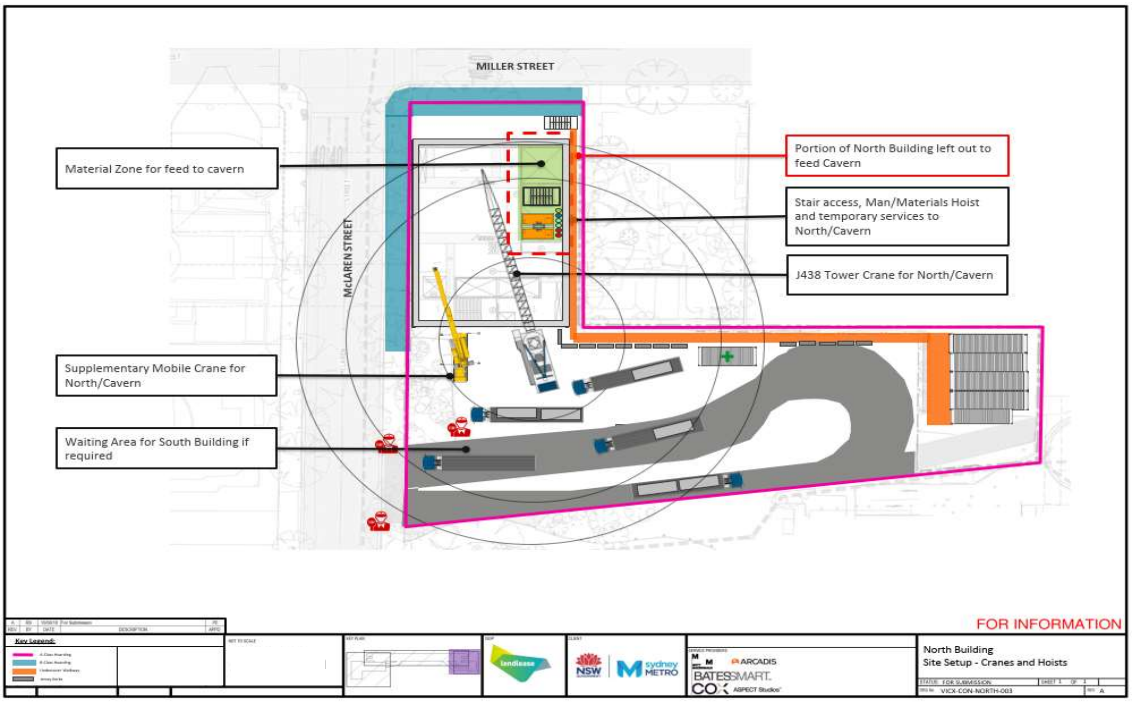
Lendlease acknowledge the Metro Handover schedule and degree of completion requirements for the Milestone handover of areas to the Line-Wide Contractor for installation of Line-Wide services. The Lendlease delivery programme for Victoria Cross Station, has incorporated the multiple Milestone and Portion dates required to be met for the integration of other systems and the ultimate handover of the station.

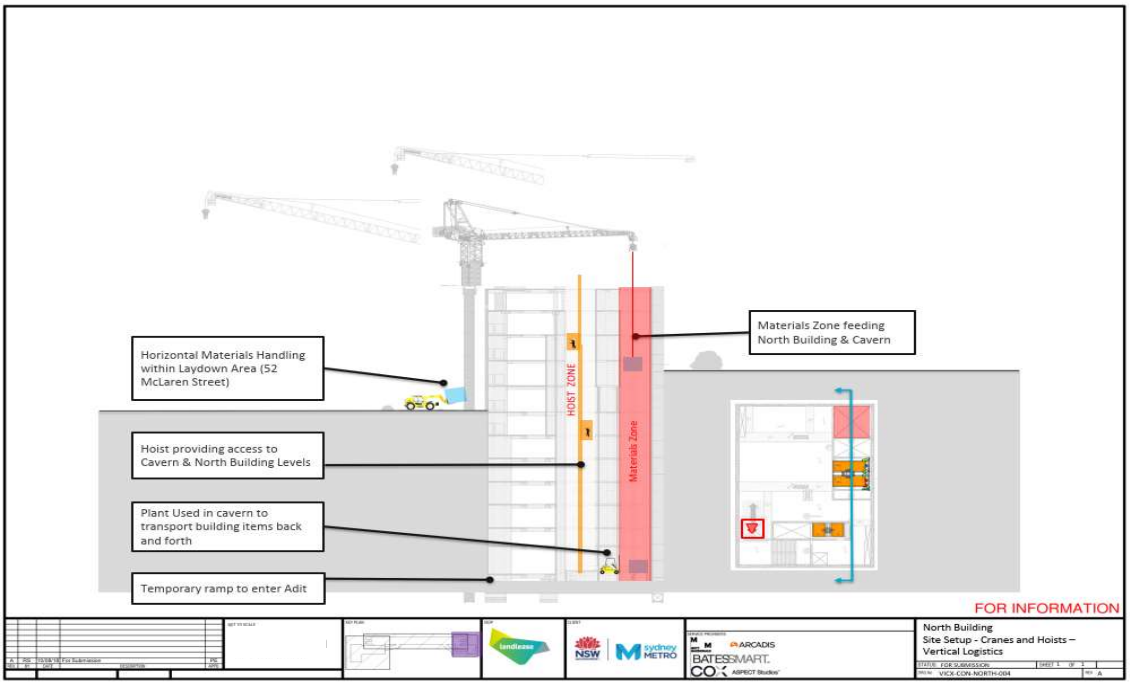
Milestones have been established based on the areas required, to provide Line-Wide Contractor's access to rooms for the commencement of installation of their plant and equipment. Certainty of handover to Line-Wide Contractor's is imperative to ensure Sydney Metro can deliver on the State's promise of Metro completion by 2024.

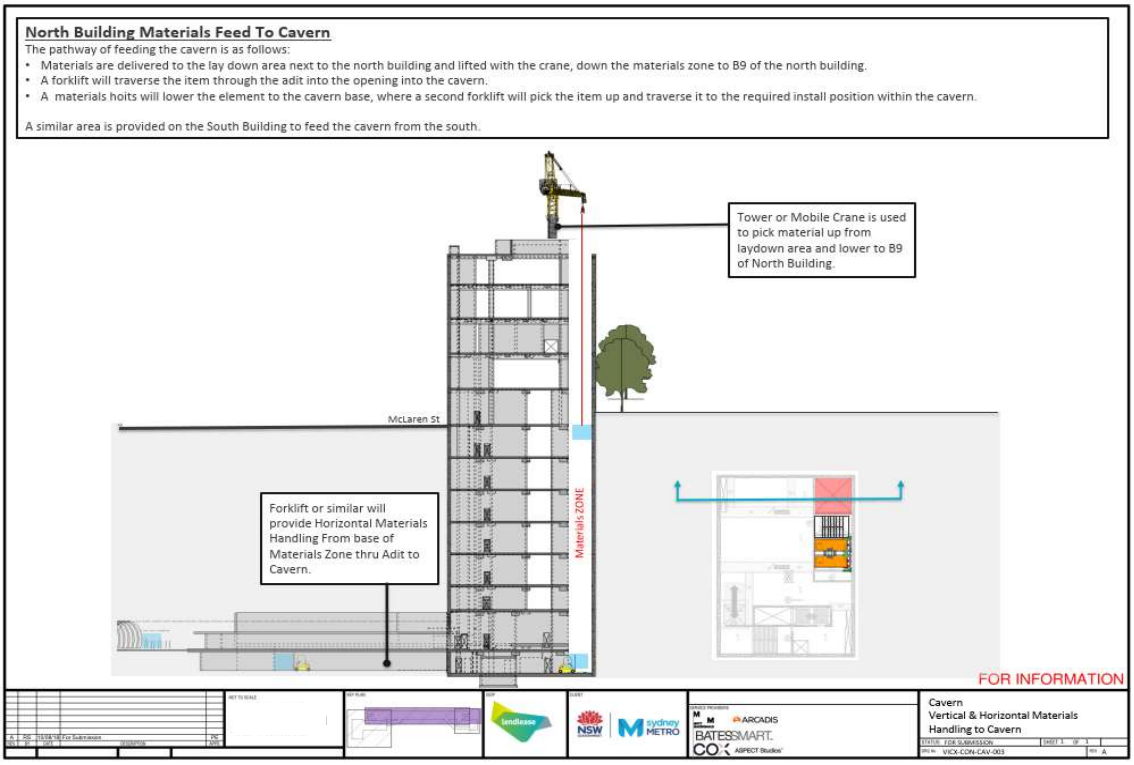
MATERIALS HANDLING AND CRANAGE

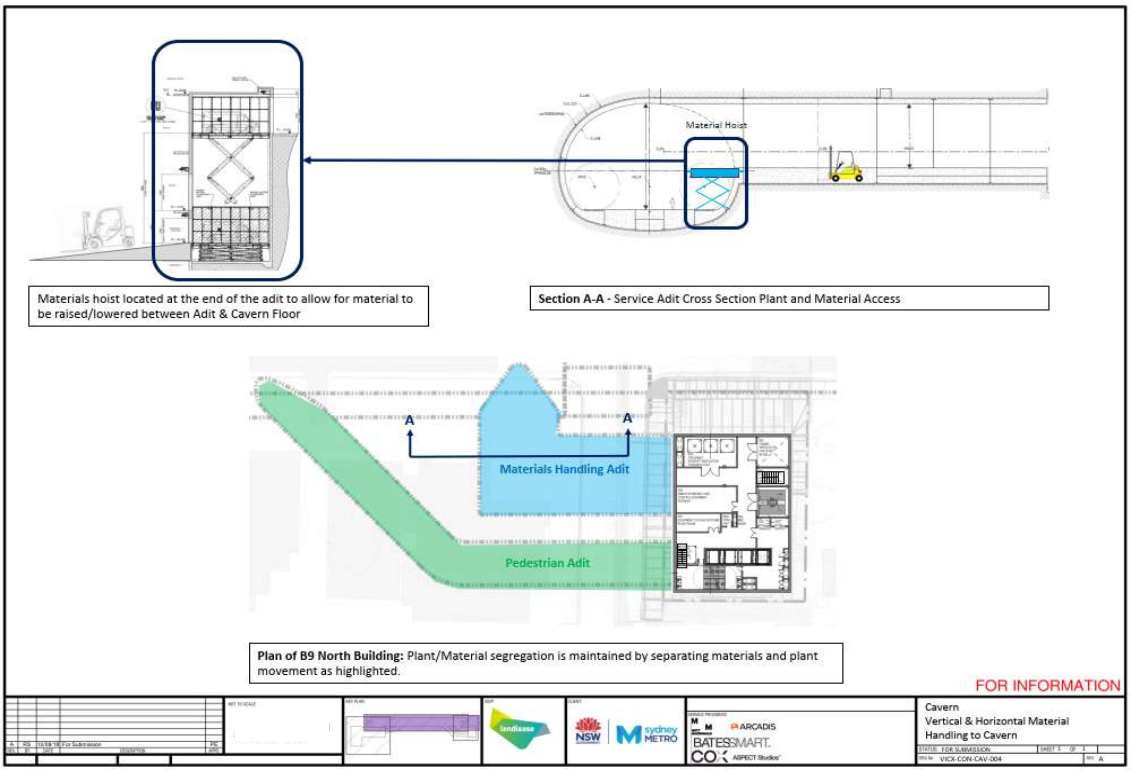
North Entrance Materials Handling and Hoist Strategy

To determine the type, size, position and quantity of cranes and hoists required for the most efficient material handling solution for the Northern Site, a detailed cranage and hoist analysis has been undertaken. The selected strategy is documented on the following diagrams.



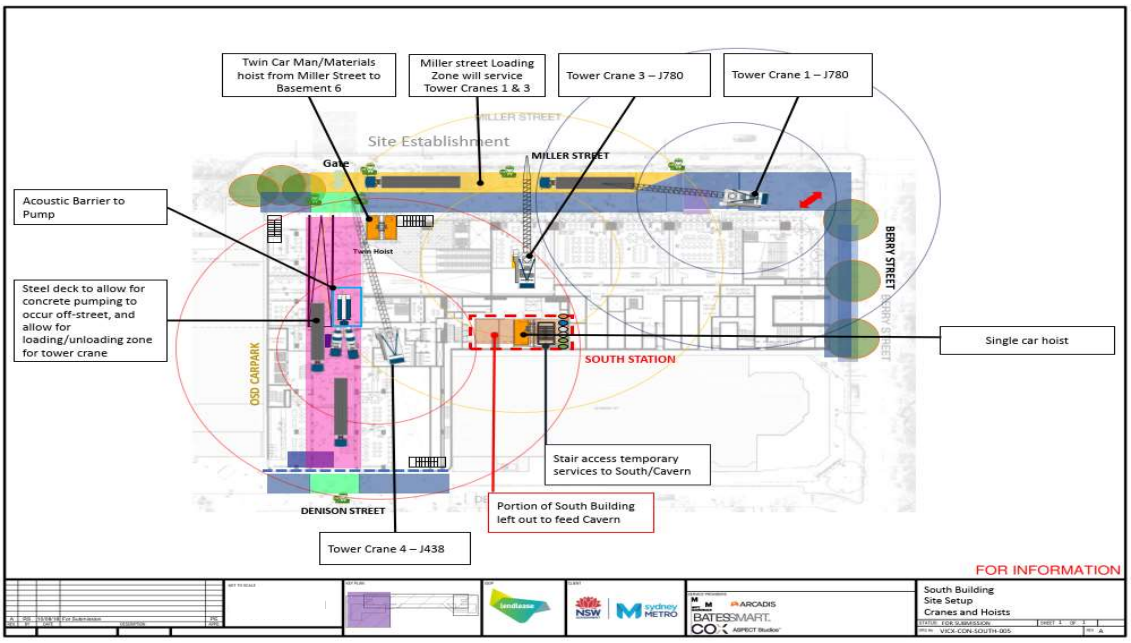


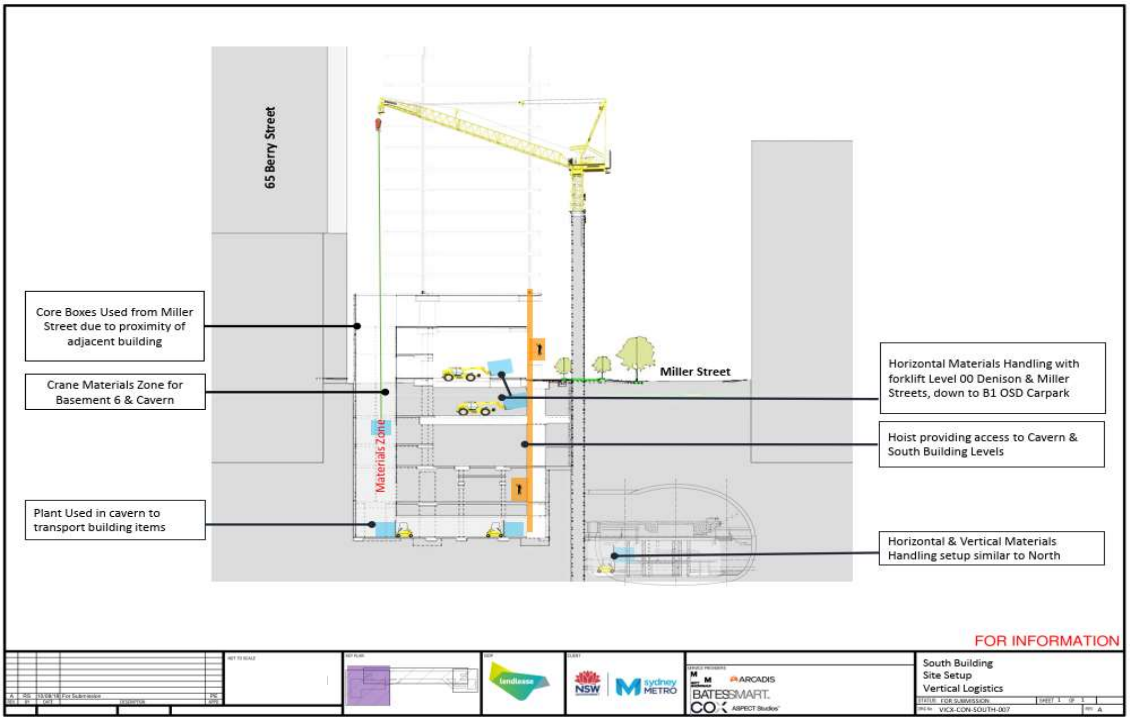

North Building Materials Feed To Cavern
The pathway of feeding the cavern is as follows:
• Materials are delivered to the lay down area next to the north building and lifted with the crane, down the materials zone to B9 of the north building.
• A forklift will traverse the item through the adit into the opening into the cavern.
• A materials hoits will lower the element to the cavern base, where a second forklift will pick the item up and traverse it to the required install position within the cavern.
A similar area is provided on the South Building to feed the cavern from the south.
Tower or Mobile Crane is used to pick material up from laydown area and lower to B9 of North Building.
McLaren St
Forklift or similar will provide Horizontal Materials Handling From base of Materials Zone thru Adit to Cavern.
Materials ZONE
FOR INFORMATION
Cavern
Vertical & Horizontal Materials Handling to Cavern



South Entrance Materials Handling and Hoist Strategy

To determine the type, size, position and quantity of cranes and hoists required for the most efficient material handling solution for the Southern Site, a detailed cranage and hoist analysis has been undertaken. The selected strategy is documented on the following diagrams.





WASTE MANAGEMENT

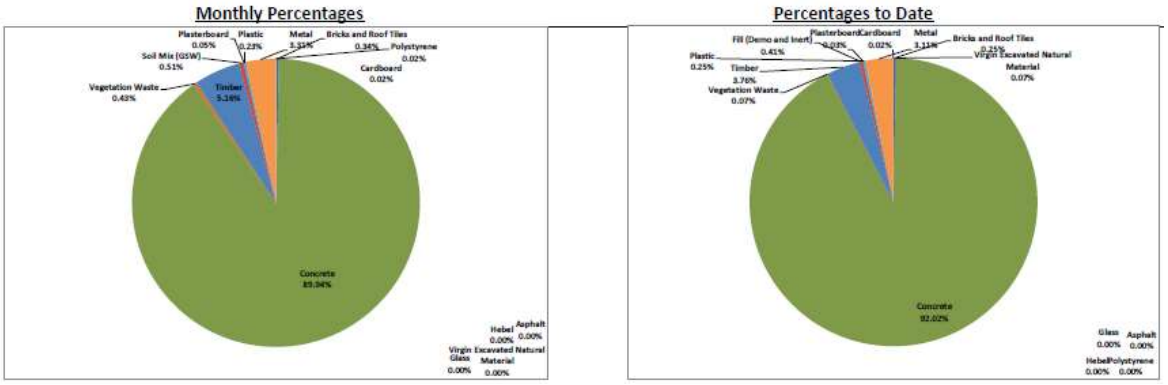
Lendlease will ensure our supply chain is responsible and accountable for maintaining a clean, clear and safe working environment. This will be documented in further detail in the construction waste management plan (under development). Rubbish bins will be provided to all work areas and will be regularly removed to the central skip bin location by the subcontractors for collection and transport from the site to the waste recycle facility.

Bins will be moved via the man and materials hoists or by the crane, dependant on the where they are being 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 are working, and large Otto bins will service the lower levels where fit-out and service trades are working. The site skips will be centrally located at loading dock zones to ensure an easier pick up by our bin contractor.

Rubbish will be separated at an approved waste management centre. Auditable records will be kept of quantities of all materials both recycled and disposed to landfill. Records will be monitored to ensure Lendlease internal recycling targets are achieved. This information will be collected and reported in compliance with our Environmental Management Plan and its Waste Management and Recycling Sub-Plan over the duration of the project. A sample summary is shown on the following page.

Percentage Waste Recycled to date =	2686.03 Tonnes / 2707.35 Tonnes	99.21%

Waste Fraction	Total Quantity Generated		Total Recycled		Total Disposed off		Recovery Rate
Heavy	411.11	Tonnes	411.11	Tonnes	0.00	Tonnes	100.00%
Light	29.67	Tonnes	28.19	Tonnes	1.49	Tonnes	94.99%
TOTAL	440.78	Tonnes	439.29	Tonnes	1.49	Tonnes	99.66%



To ensure the Victoria Cross Station meets its sustainability targets, waste management reports will show monthly and cumulative performance.

NOISE & VIBRATION MANAGEMENT

The generation of noise and vibration from construction activities occurring on site and its impact on site operations and workers will be managed to minimise the impact on neighbouring residents, businesses and associated building structures.

Noise generated during the construction works will be primarily associated with vehicle movements, generators, heavy machinery and hand held machinery and tools. Some additional vehicle noise may be generated by the thoroughfare of vehicles using transport corridors to and from the site.

As no blasting is proposed for the duration of the works the potential noise impacts are predicted to be negligible and expected to pose a minor impact (if any) to the nearest adjoining stakeholders.

All noise generating activities are proposed to occur only during the approved site operating hours. 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 are to meet the maximum allowable noise contribution.

During construction, Lendlease 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 and 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 will include vibration, all practical efforts to protect vibration sensitive buildings and the amenity of adjoining stakeholders shall be considered and apply a practical and economical combination of vibration control measures to manage vibration impacts such as: substitution by an alternative process; restricting times when work is carried out; screening or enclosures; and consultation with affected residents.

AIR QUALITY MANAGEMENT

The major sources of air emissions from the proposed construction works at the site are primarily associated with traffic movements, minor excavation / stockpiling and handling of soils on site.

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 a key component for this environment management plan for the site. Construction phase air quality impacts shall be minimised or avoided by incorporation of appropriate dust suppression and air quality control measures at various stages of the project.

An air quality monitoring equipment diagram will be prepared prior to commencement on site, detailing the locations and type of equipment to be installed and monitored.

All equipment used on the site and facilities erected on site shall be designed and operated to control the emission of smoke, dust, fumes and any other air impurity into the atmosphere.

Air monitoring will be conducted at regular intervals to determine that the acceptable air quality thresholds are being met for each of the nominated monitoring parameters. This information will be used to determine the effectiveness of the implemented air quality mitigation measures and provide for any remedial actions if required.

TEMPORARY WORKS

A comprehensive procedure will be followed for all temporary works (TW) required for the VICX-ISD project. Items of TW will include:

- B Class Hoardings along site perimeter;
- Class B Hoarding Site Access Steel Gantries;
- Trafficable steel access platform to South Shaft excavation;
- Temporary cavern services (incl. ventilation);
- Crane footings, climbing pockets in core, offset grillages and ties; and
- Man and materials hoists.

These items will be carefully planned, fully engineered, certified and EH&S compliant.

Lendlease follows a rigorous TW procedure that encompasses

1. Identification and risk analysis – responsible engineers identify TW items, assess the relevant risks and record on appropriate registers
2. Documentation and records – responsible engineers will maintain all pertinent records for TW items including the TW design, drawings and design certification, risk assessments covering construction processes, Proof Engineer design check certificates where required, designer inspection and compliance certificate and records releasing TW Hold Points (Permit to Load, Proceed, Unload, etc.)
3. Temporary works design – as the level of risk assigned to each piece of identified TW increases, so too does the level independence required of the engineer providing certification

4. Safety in design – regardless of the complexity of the TW, the TW designer is responsible for developing a safe design in accordance with SID legislation
5. Temporary works design brief – The responsible engineer must ensure that TW design briefs, detailing the specific requirements of each item of TW are written in sufficient time to allow design, procurement of materials and erection of the TW. For TW involving a number of elements designed by different parties the engineer must ensure the designs are coordinated. The engineer must work closely with the permanent works designer where the TW may affect the permanent works.

   Type of information that might be required for the design brief includes:

   - Appropriate drawings of the permanent works and clauses from the specification for the permanent works
   - Statement of any requirement to design the temporary works in accordance with a particular standard or guidance document
   - Information on all residual risk associated with the design of the permanent works
   - Program for the construction of the permanent works
   - Program for the various phases of the design, design check, any external approvals, and procurement and erection of the temporary works
   - The timing for the removal of the temporary works in relation to the ability of the permanent works to be self-supporting
   - Any requirements for access on to, under, or around the permanent works
   - Requirements for access for erection, maintenance, use and dismantling of the temporary works and for other site activities
   - Environmental and site investigation data and reports
   - Loads that may be induced in the temporary works by permanent works that have been completed
   - Any limitations on the position of loads from temporary works over underground services or adjacent to excavations or retaining walls forming part of the permanent works
   - Proposals for the protection of the temporary works, including its foundations, against disturbance or impact
   - Details of obstructions that might preclude or influence the position of the temporary works.
   - Preferred solution / materials available.

The Design Brief will also detail what deliverables are required.

1. Selection of temporary works designer – Lendlease maintains a list of approved temporary works designers. The selection of a suitable designer is directly related to the risks associated with the TW. A check will also be done to ensure that the proposed designer has the resources available to complete the work in accordance with the program before they are appointed.

   Level of temporary works design check required – the level of checking the independence is as follows:

   - Non-Proof Engineered Temporary Works

- Proof Engineered Temporary Works
- Medium risk – checker may be from the design team. The checker must be a different person to the designer but may be another engineer in the same design team supervised by the same manager or it may be the design team leader.
- High Risk – checker from a different design team. The checker may be from the same organisation but not from the same design team i.e. not managed by the same person as the designer or the designer's direct manager
- Very High Risk – Proof Engineer. These are works that The Proof Engineering check if deemed necessary must be carried out by a separate independent organisation.

This standard Lendlease criteria will be compatible with the Contract requirements, whereby the Project Deed distinguishes between Proof Engineered and Non-Proof Engineered Temporary Works, that is, all Proof Engineered Temporary Works will be classified as very High Risk.

6. Loading of temporary works – prior to loading all Hold Points will be signed off, all method statements communicated and understood, all ground and site conditions confirmed as being within the design assumptions and all inspections and certifications done.
7. Inspection and maintenance of temporary works – these will be carried in accordance with Statutory requirements, service life, risk assessment classification, adverse weather conditions and any other conditions specified by the TW designer.
8. Dismantling of temporary works – the responsible engineer will ensure that prior to dismantling all Hold Points have been released, all method statements have been communicated and understood, that the permanent works will not be impacted and that any changes from the design have been communicated to the designer for agreement.

PROGRAM MANAGEMENT

Construction Program Requirements

Lendlease has standardised processes and procedures to ensure that project planning and scheduling is consistent, transparent, efficient, and integrated across the delivery cycle of a 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 basis of the project planning will be:

- Contract documents, including contract conditions, drawings, specifications
- Pre-contract program, planning analysis and planning report
- Pre-contract Construction Plan including general construction staging and sequencing, including the Traffic Management Plan, work method statements, materials management plans, access dates, resources, quantities and productivity rates.

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.

All major activities will have short term programs on a rolling 2-3 week basis showing daily activities, updated and extended weekly by Engineers and Supervisors managing the activities. These

programs will be agreed with Project and Construction Managers, and reviewed by planners on a weekly basis.

A Procurement Schedule will also be prepared which will include the program of activities to engage subcontractors and suppliers such as preparations of tender documents, assessment of tenders, internal and external approvals, and contract execution. It includes the realistic durations those subcontractors and suppliers provide their services in time to meet the Target Program required on site dates.

Progress updates will be done once per month for the official program submission to the Client. These updates will be done by the Project Planner and respective project team members in charge of the works-activities. Deliverables from the progress updates will include monthly progress reports, statused works programs, milestone status reports, resource utilisation reports and 4-week look-ahead programs.

Changes to the Contract Program will be recorded by the Project Team. It will capture all contractual changes as well as changes to construction staging sequencing, construction methods, or changes caused by the delays that have a negative impact on the project completion date. Once approved the Contract Program shall be revised to address the changes and officially submitted to the Client.

Reporting to the Client (as applicable to the Station component) will be in accordance with the Sydney Metro Programming Protocol.

STAKEHOLDER MANAGEMENT AND COMMUNICATION

A stakeholder management plan will be developed 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