

OSD Detailed SSD DA: Rail Corridor Impact Assessment

Victoria Cross Integrated Station Development



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Victoria Cross Integrated Station Development

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Glossary

Abbreviation	Description
AEO	Authorised Engineering Organisation
AFC	As For Construction
AFT	As For Tender
ASA	Asset Standard Authority
BCA	Building Code of Australia
BIM	Building Information Modelling
CAD	Computer- aided Design
D&C	Design and Construction
DJV	Design Joint Venture
DRP	Design Review Panel
DMP	Design Management Plan
ESD	Environmentally Sustainable Design
FMECA	Failure Modes Effects Criticality Analysis
IDR	Interdisciplinary Review
LCA	Life Cycle Analysis
LWC	Line Wide Contract works
MEP	Mechanical, Electrical and Piping
OH&S	Occupational Health and Safety
OSD	Over Station Development
PCN	Project Change Notice
PMO	Project Management Office
PSD	Professional Services Deed
QA	Quality Assurance
QC	Quality Control
RAM	Reliability, Accessibility and Maintenance
RFI	Request for Information
SMP	Services Management Plan
SESA	System Engineering and System Assurance
SiD	Safety in Design
SRS	Systems Requirements Specifications
SSDA	State Significant Development Application
SWMS	Safe Work Method Statement

Abbreviation	Description
SWTC	Scope of Works and Technical Criteria
TfNSW	Transport for NSW
TSE	Tunnel & Station Excavation Contract works
TSOM	Trains Systems Operation & Maintenance Contract Works
ISD	Integrated Station Development
VC	Victoria Cross
VE	Value Engineering
WBS	Work Breakdown Structure

1. 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.

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 the following SEARs:

'Address the relevant planning provisions, goals and strategic planning objectives in the following:

- Development Near Rail Corridors and Busy Roads'

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 not 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).

1.1 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)

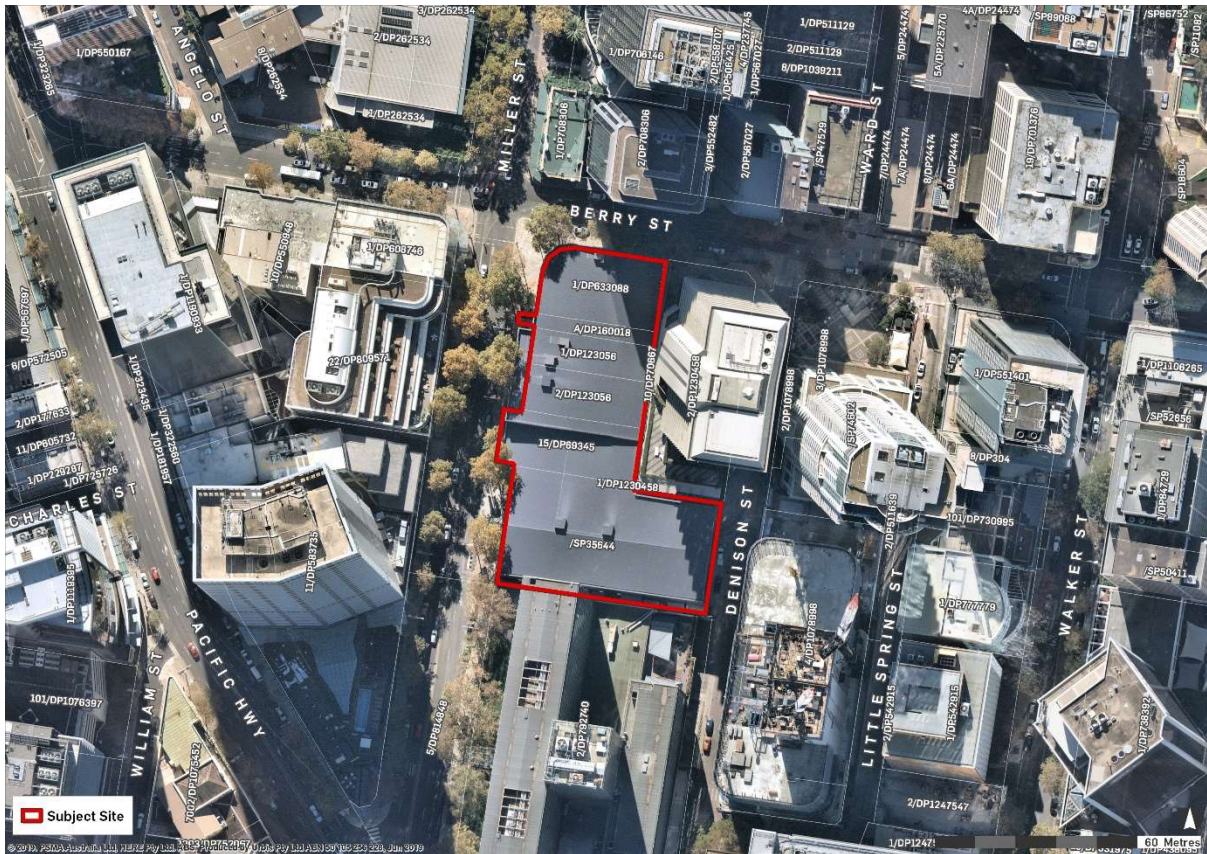


Figure 1 – Site Aerial

1.2 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 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.

[illegible]

Source: Sydney Metro

2. Rail Impact Assessment

2.1 General

ARCMAC, a joint venture between Arcadis Australia Pty Ltd and Mott MacDonald Australia Pty Ltd, is the Authorised Engineering Organisation (AEO) for Sydney Metro Victoria Cross Integrated Station Development.

By its very nature as an Integrated Station Development (ISD), the Metro Victoria Cross OSD Tower design is fully integrated with the Metro Victoria Cross station design and therefore impacts on Sydney Metro corridor have been fundamental considerations in the Proposed Design of the envelope. It should be noted that the proposed Sydney Metro running tunnels sit outside the footprint of the OSD envelope and Station.

All relevant aspects of the Metro Victoria Cross station design works completed by ARCMAC to date have been undertaken in accordance with Transport for New South Wales (TfNSW) Asset Standards Authority (ASA) standards, and the TfNSW standard T HR CI 12051 ST Revision 133 'Development Near Rail Tunnels'.

The key impacts on the existing and future Sydney Metro corridors considered herein are earthing and bonding and electrolysis impacts, and structural impacts. A summary of relevant stakeholder engagement is also included in the sections below.

2.2 Structural Impacts of the Proposed Design

Structurally, the Victoria Cross South station shaft forms the base of the OSD Tower itself as shown in Figure 3 below. The two are designed, and are to be constructed, as one integrated structure from foundation to rooftop.

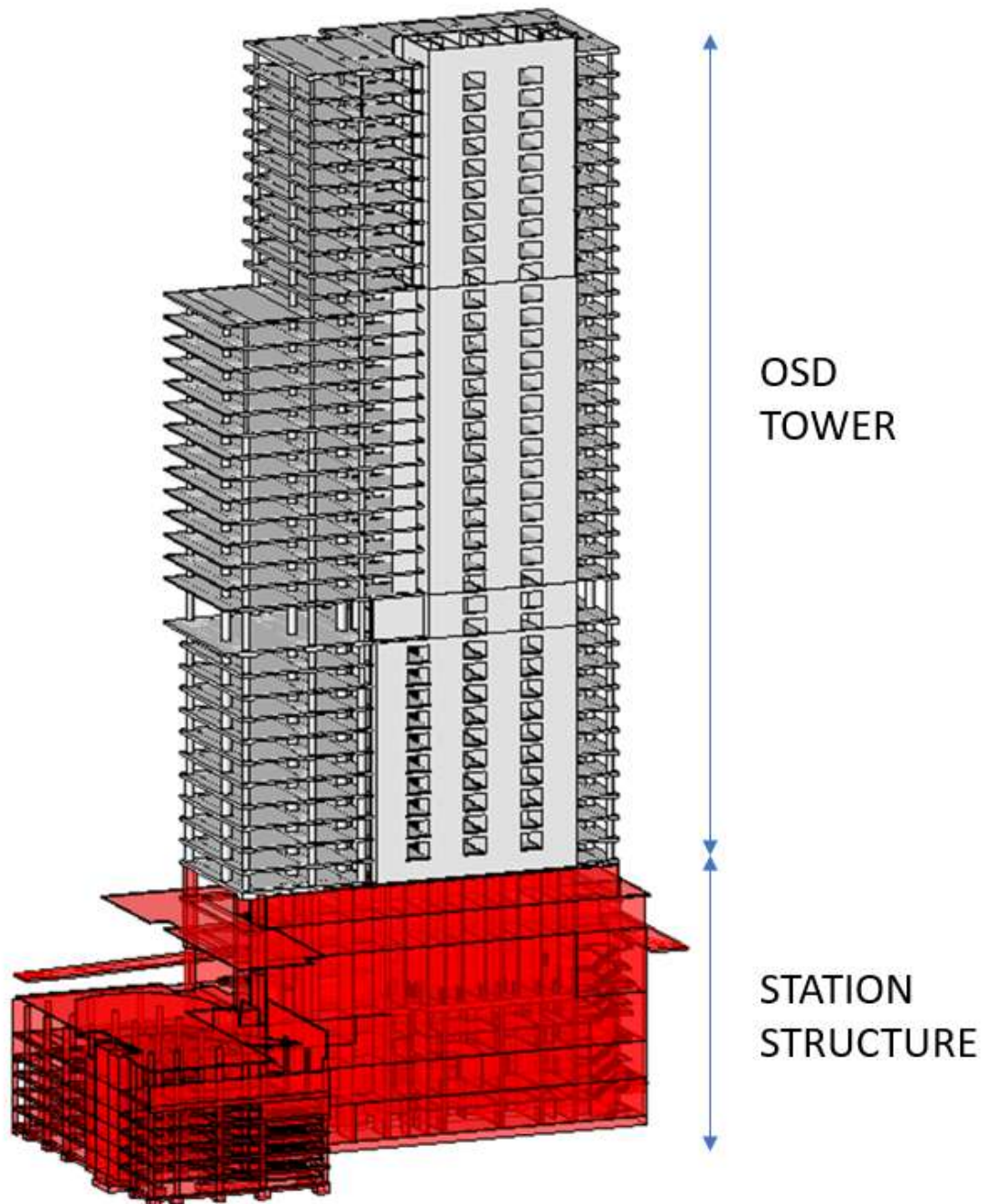


Figure 3 – OSD Tower and Station Structure perspective

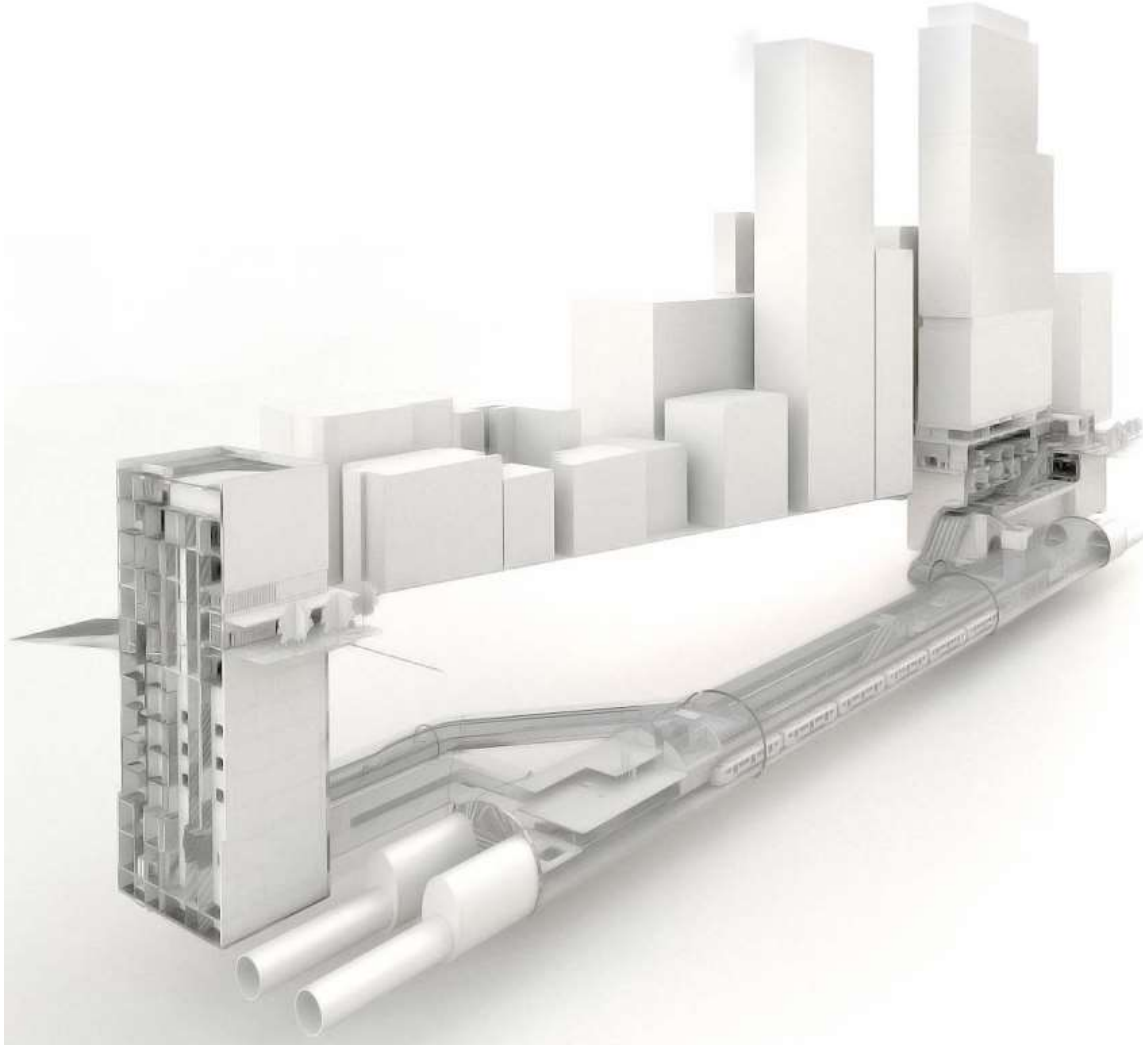


Figure 4 – Victoria Cross Tunnel and Station structure perspectives describing an integrated design from foundation level to rooftop including a view of the new tunnels adjacent the shaft and the foundation soffits

2.3 Earthing & Bonding and Electrolysis Impacts

It is proposed that a combined station and OSD tower earthing arrangement be utilised for the Metro Victoria Cross Precinct. The preliminary earthing design has been done according to TfNSW Technical Note ETN 11/02 to mitigate step, touch and transfer potential hazards to the public, personnel and equipment during a fault on the AC high voltage (HV) reticulation network.

In order to limit stray current paths and electrolysis issues, the Metro Victoria Cross earthing system and station related structures will need specific treatments.

Sydney Metro's line-wide earthing, bonding and electrolysis strategy is expected to provide details of mitigation requirements. To limit stray current hazards the following methods will be implemented during the construction and installation of equipment at Victoria Cross station:

- Insulated reinforcement or Epoxy coated steel bars
- Use of non-metallic ferrules
- Epoxy coated ferrules
- Insulated Chemical Anchor Systems
- Insulated Mounting Materials, washers, bushes and top hats

2.4 Fire and Life Safety Impacts

Any potential impact associated with fire and life safety of the OSD tower on the Sydney Metro are addressed through the design. In general, from a fire and life safety perspective, the OSD Tower is a separate fire compartment to the station below, allowing the station to continue operations in the event of a tower fire, and vice-versa.

2.5 Building Services Impacts

Any potential impact associated with the OSD tower building services on the Sydney Metro rail corridor are addressed through the design. In general, the OSD tower building services are designed to be independent of the station building services, with the interfaces to be managed via building management control systems interfaces and the Building Management Statement, developed concurrently with the design.

2.6 Agency Consultations

2.6.1 Engagement With Sydney Metro

Lendlease continues to engage with Sydney Metro throughout the Metro Victoria Cross ISD design phase including OSD Concept Design and Station Design Stage 2. The approved station Stage 1 design provided by Sydney Metro has been submitted and approved by the Sydney Metro Configuration Control Board Gate 2 (CCB 2). The purpose of CCB 2 is for the designer to assure Sydney Metro that the proposed development is a safe design solution, which is compatible with existing and future proposed railway infrastructure and has satisfies requirements established by Sydney Metro.

CCB 2 was conducted on 18 October 2017, where the scheme was passed by the CCB. The next CCB gateway, CCB Gate 3, must be passed prior to issuing “for-construction” documentation. This will be conducted prior to commencement of construction.

2.6.2 Engagement With TSOM and Line Wide

Engagement with TSOM and Line Wide is ongoing. The Stage 1 designers provided technical input to Sydney Metro throughout the CCB2 phase, which was used by Sydney Metro to inform engagement with TSOM and Line wide. TSOM and Linewide are a key stakeholder at CCB3.

2.6.3 Engagement With Tunnels and Stations Excavation Contractor

Excavation, piling, and foundation works will be undertaken by the Sydney Metro Tunnel and Station Excavation (TSE) Contractor and as such will be fully assured and procured by the TSE Contractor as an AEO. ARCMAC has interfaced with the TSE Contractor via Sydney Metro. As the design develops coordination and collaboration between the Metro Victoria Cross team and the TSE Contractor will continue.

3. Conclusion

The primary potential impacts of the proposed OSD tower design and construction on the future Sydney Metro City and Southwest rail corridor relate to structures, earthing and bonding, fire and life safety and building services. There are no existing rail corridors or live rail environments in the immediate vicinity of the proposed Victoria Cross Development that need to be considered due to the proposed development.

These potential impacts have been considered and addressed through a design solution developed on a basis of separation or integration, depending on the potential impact, to provide the best design solution for both the tower above and the Sydney Metro station below. In conclusion, the regulatory requirements including 'Development Near Rail Tunnels' and 'Development Near Rail Corridors and Busy Roads – Interim Guidelines' have been considered in the detailed design.