

Macquarie

**Sydney Metro Martin Place
integrated station development**

**South Tower, SSD DA Stage 2:
Rail Corridor Impact Assessment**

CSWSMP-MAC-SMS-EN-REP-999901

Revision 01 | 23 August 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Contents

	Page
1 Introduction	1
2 Rail Impact Assessment	11
2.1 Structural Impacts	12
2.2 Earthing and Bonding and Electrolysis Impacts	13
2.3 Excavation, Earthworks and Other Construction Impacts on the ESL Corridor	14
2.4 Fire and Life Safety Impacts	14
2.5 Building Services Impacts:	14
2.6 Agency Consultations	15
3 Conclusion	16

1 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) (SSD DA) submitted to the Minister for Planning (Minister) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on behalf of Macquarie Corporate Holdings Pty Limited (Macquarie), who is seeking to create a world class transport and employment precinct at Martin Place, Sydney.

The SSD DA seeks approval for the detailed design and construction of the **South Site** Over Station Development (OSD), located above and integrated with Metro Martin Place station (part of the NSW Government's approved Sydney Metro project). The southern entrance to Metro Martin Place station and the South Site OSD above are located at 39-49 Martin Place.

This application follows:

- Approval granted by the Minister for a Concept Proposal (otherwise known as a Stage 1 SSDA) for two OSD commercial towers above the northern (North Site) and southern (South Site) entrances of Metro Martin Place station (SSD 17_8351). The approved Concept Proposal establishes building envelopes, land uses, Gross Floor Areas (GFA) and Design Guidelines with which the detailed design (otherwise known as a Stage 2 SSDA) must be consistent.
- Gazettal of site specific amendments to the Sydney Local Environmental Plan (LEP) 2012 (Planning Proposal reference: PP_2017_SYDNE_007_00) permitting greater building height (over a portion of the South Site) and additional floor space (over both the North and South Sites).

Lodged concurrently with this SSD DA, is a Stage 1 Amending SSD DA to the Concept Proposal (Stage 1 Amending DA), which seeks approval for an amended concept for the Metro Martin Place Precinct (the Precinct), aligning the approved South Site building envelope with the new planning controls secured for the Precinct.

To ensure consistency, the Stage 1 Amending DA must be determined prior to the determination of the subject Stage 2 SSD DA for the South Site.

This application does not seek approval for elements of the Metro Martin Place Precinct which relate to the Sydney Metro City and Southwest project, which is subject to a separate Critical State Significant Infrastructure (CSSI) approval. These include:

- Demolition of buildings on the North Site and South Site;
- Construction of rail infrastructure, including station platforms and concourse areas;

- Ground level public domain works; and
- Station related elements in the podium of the South Tower.

However, this application does seek approval for OSD areas in the approved Metro Martin Place station structure, above and below ground level, which are classified as SSD as they relate principally to the OSD. These components are within the Sydney Metro CSSI approved station building that will contain some OSD elements not already approved by the CSSI Approval. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure.

This report is provided to satisfy the requirement of the SEARs to provide a rail corridor impact report, and to address Conditions A15 and B6 in the Development consent, Section 4.38 of the Environmental Planning and Assessment Act 1979:

A15 – Prior to the lodgement of any Future Development Application(s) the Applicant is to consult with TfNSW and Sydney Trains in relation to any potential impacts of the detailed design of the development on existing and future rail corridors. Through this consultation, the Applicant is to confirm that all supporting design documentation, architectural plans and supporting expert consultant reports are prepared in accordance with relevant standards and guidelines, including Development Near Rail Tunnels T HR CI 12051 ST and in consultation with TfNSW, Sydney Trains and Sydney Metro.

B6 – The Applicant shall demonstrate in the Future Development Applications that the design and construction of the development accords with the ‘Development Near Rail Corridors and Busy Roads – Interim Guideline’ (2008) prepared by Department of Planning and Environment.

Context

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

Sydney Metro is a new standalone rail network identified in Sydney’s Rail Future. The Sydney Metro network consists of Sydney Metro Northwest (Stage 1) and Sydney Metro City and Southwest (Stage 2).

Stage 2 of Sydney Metro entails the construction and operation of a new metro rail line from Chatswood, under Sydney Harbour through Sydney’s CBD to Sydenham and onto Bankstown through the conversion of the existing line to metro standards. The project also involves the delivery of seven (7) new metro stations, including Martin Place.

This step-change piece of public transport infrastructure once complete will have the capacity for 30 trains an hour (one every two minutes) through the CBD in each direction catering for an extra 100,000 customers per hour across the Sydney CBD rail lines.

On 9 January 2017 the Minister approved the Stage 2 (Chatswood to Sydenham) Sydney Metro application lodged by Transport for NSW (TfNSW) as a Critical State Significant Infrastructure (CSSI) project (reference SSI 15_7400). Work is well underway under this approval, including demolition of buildings at Martin Place.

The OSD development is subject to separate applications to be lodged under the relevant provisions of the EP&A Act. One approval is being sought for the South Site – this application – and one for the North Site via a separate application.

Site Description

The Metro Martin Place Precinct project relates to the following properties (refer to Figure 1):

- 50 Martin Place, 9 – 19 Elizabeth Street, 8 – 12 Castlereagh Street, 5 Elizabeth Street, 7 Elizabeth Street, and 55 Hunter Street (North Site);
- 39 – 49 Martin Place (South Site); and
- Martin Place (that part bound by Elizabeth Street and Castlereagh Street).

This application relates **only to the South Site**, being the land at 39-49 Martin Place (refer to Figure 1).

The North Site is the subject of a Stage 2 SSD DA.



Figure 1: Aerial Photo of the North and South Site of the Metro Martin Place Precinct

Background

Sydney Metro Stage 2 Approval (SSI 15 7400)

The Sydney Metro CSSI Approval approves the demolition of existing buildings at Martin Place, excavation and construction of the new station (above and below ground) along with construction of below and above ground structural and other components of the future OSD, although the fit-out and use of such areas are the subject of separate development approval processes.

On 22 March 2018, the Minister approved Modification 3 to the Sydney Metro CSSI Approval. This enabled the inclusion of Macquarie-owned land at 50 Martin Place and 9-19 Elizabeth Street within Metro Martin Place station, and other associated changes (including retention of the opening to the existing MLC pedestrian link).

Concept Proposal (SSD 17 8351)

On 22 March 2018, the Minister approved a Concept Proposal (SSD 17_8351) relating to Metro Martin Place Precinct. The Concept Proposal establishes the planning and development framework through which to assess the detailed Stage 2 SSD DAs.

Specifically, the Concept Proposal encompassed:

- Building envelopes for OSD towers on the North Site and South Site comprising:
 - - 40+ storey building on the North Site
 - 28+ storey building on the South Site (see Figure 2)
 - Concept details to integrate the North Site with the existing and retained 50 Martin Place building (the former Government Savings Bank of NSW)
- Predominantly commercial land uses on both sites, comprising office, business and retail premises
- A maximum total GFA of 125,437m² across both sites
- Design Guidelines to guide the built form and design of the future development
- A framework for achieving design excellence
- Strategies for utilities and services provision, managing drainage and flooding, and achieving ecological sustainable development
- Conceptual OSD areas in the approved Metro Martin Place Metro station structure, above and below ground level¹

¹ Refers to those components within the Metro CSSI approved station envelope that will contain some OSD elements not approved in the CSSI consent. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure.



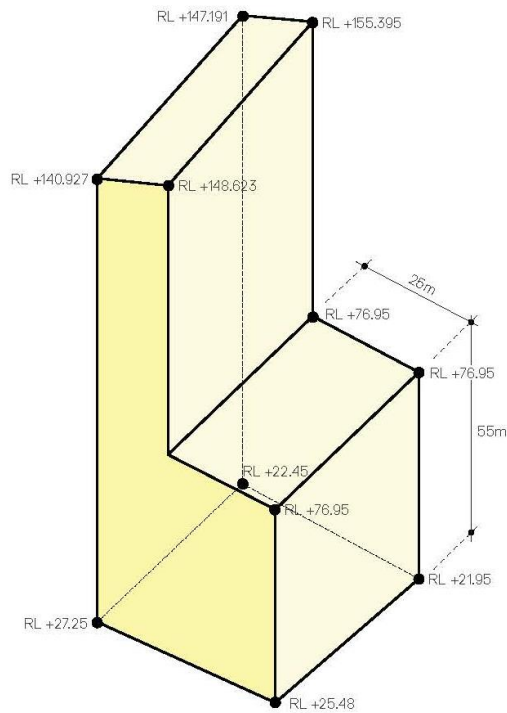
Figure 2: North Site and South Site Approved OSD Building Envelopes

Planning Proposal (PP_2017_SYDNE_007_00) - Amendment to Sydney LEP 2012

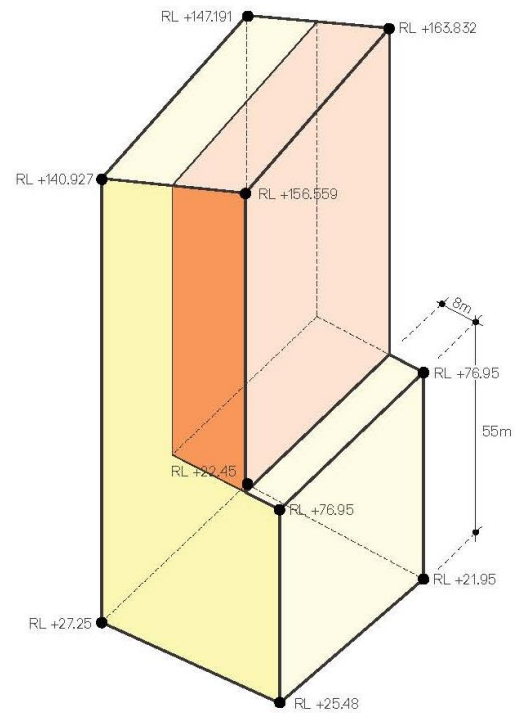
The Planning Proposal (PP_2017_SYDNE_007_00) sought to amend the development standards applying to the Metro Martin Place Precinct through the inclusion of a site-specific provision in the Sydney LEP 2012. This site-specific provision reduced the portion of the **South Site** that was subject to a 55 metre height limit from 25 metres from the boundary to Martin Place, to 8 metres, and applies the Hyde Park North Sun Access Plane to the remainder of the South Site, forming the height limit of the tower. It also permits a revised FSR of 22:1 on the South Site and 18.5:1 on the North Site. These amendments were gazetted within Sydney LEP 2012 (Amendment No. 46) on 8 June 2018 and reflect the new planning controls applying to the Precinct.

The Concept Proposal was prepared and determined prior to the site specific Sydney LEP 2012 amendment (PP_2017_SYDNE_007_00) being gazetted and was developed based on the height development standards that applied to the South Site at the time. As a result, the Concept Proposal allows for a tower on the South Site that is now inconsistent with the building envelope envisaged through the amendment to the Sydney LEP 2012. Accordingly, a Stage 1 Amending SSD DA to the Concept Proposal (Stage 1 Amending DA) has been lodged concurrently with this subject Stage 2 SSD DA, which seeks to align the approved Concept Proposal building envelope for the South Site with the revised site specific development standards applying under the Sydney LEP 2012, being increased FSR and building height. This Stage 1 Amending DA seeks to amend

the planning and development framework established under the approved Concept Proposal that is used to assess this Stage 2 SSD DA. The Stage 1 Amending DA is to be assessed concurrently with, and determined prior to the subject Stage 2 SSD DA, with the amended South Site building envelope setting the broad development parameters for the South Site (see Figure 3 below).



Approved South Site OSD Envelope



Proposed Amended South Site OSD Envelope (aligning with site specific amendment to Sydney LEP 2012)

Figure 3: Relationship between the approved and proposed amended South Site building envelope

Overview of the Proposed Development

The subject application seeks approval for the detailed design, construction and operation of the South Tower. The proposal has been designed as a fully integrated station and OSD project that intends to be built and delivered as one development, in-time for the opening of Sydney Metro City and Southwest in 2024. The application seeks consent for the following:

- The design, construction and operation of a new 28 storey commercial OSD tower (plus rooftop plant) within the approved building envelope for the South Site, including office space and retail tenancies.
- Vehicle loading within the basement levels.
- Extension and augmentation of physical infrastructure / utilities as required.
- Detailed design and delivery of 'interface areas' within both the approved station and Concept Proposal envelope that contain OSD-exclusive elements, such as office entries, office space and retail areas not associated with the rail infrastructure.

Planning Approvals Strategy

The *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD) identifies development which is declared to be State Significant. Under Schedule 1 and Clause 19(2) of SEPP SRD, development within a railway corridor or associated with railway infrastructure that has a capital investment value of more than \$30 million and involves commercial premises is declared to be State Significant Development (SSD) for the purposes of the EP&A Act.

The proposed development (involving commercial development that is both located within a rail corridor and associated with rail infrastructure) is therefore SSD.

Pursuant to Section 4.22 of the EP&A Act a Concept DA may be made setting out concept proposals for the development of a site (including setting out detailed proposals for the first stage of development), and for which detailed proposals for the site are to be the subject of subsequent DAs. This SSD DA represents a detailed proposal and follows the approval of a Concept Proposal on the site under Section 4.22 of the EP&A Act.

Figure 4 below is a diagrammatic representation of the suite of key planning applications undertaken or proposed by Macquarie and their relationship to the subject application (the subject of this report).

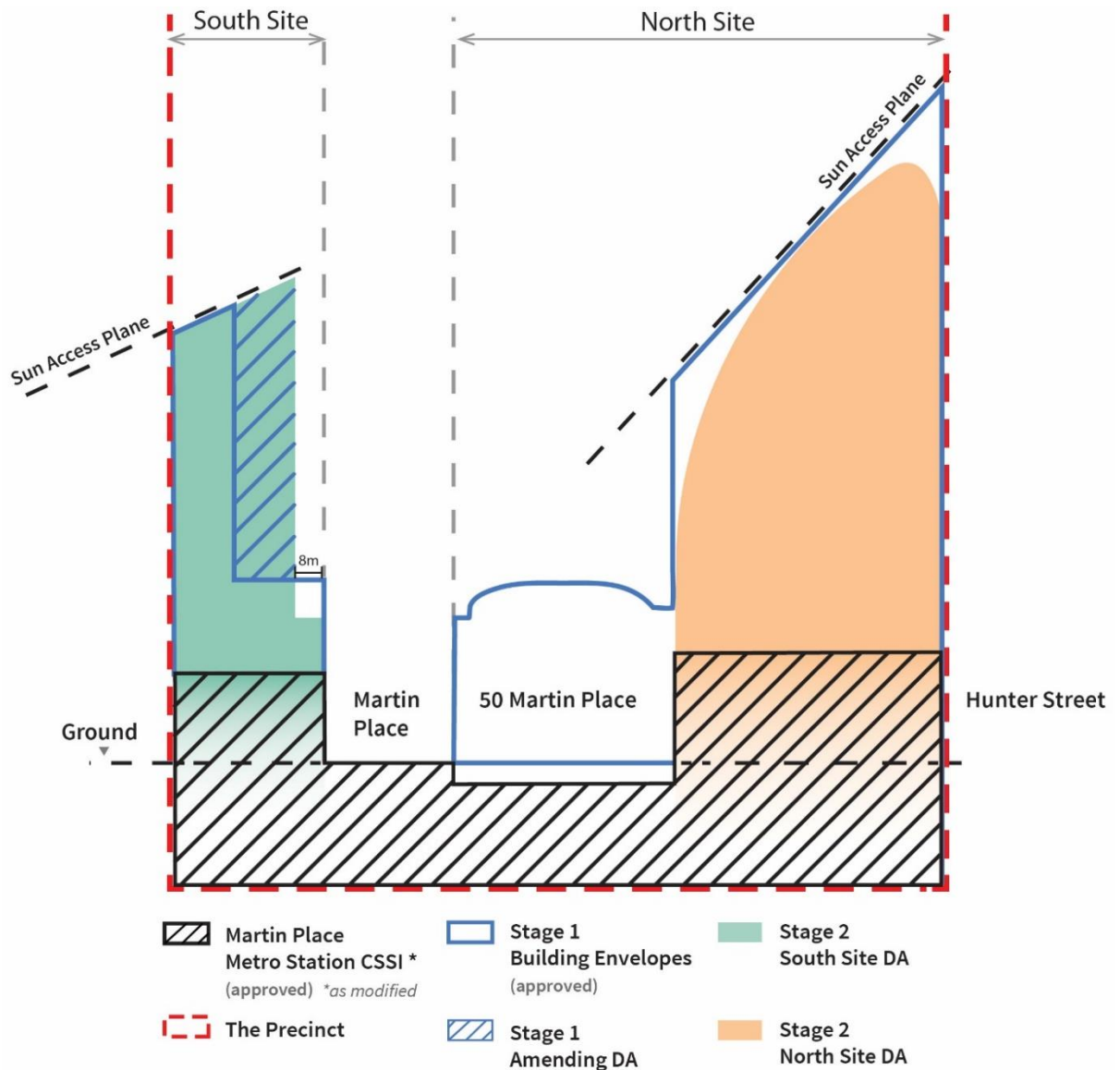


Figure 4: Relationship of key planning applications to the Stage 2 South Site DA (this application)

The Department of Planning and Environment have provided Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development.

This report has been prepared having regard to the SEARs as follows:

The EIS shall address the relevant planning provisions, goals and strategic planning objectives in the following:

- Development Near Rail Corridors and Busy Roads - Interim Guideline

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the EP&A Regulation 2000. Provide these as part of the EIS rather than as separate documents.

In addition, the EIS must include the following:

- Rail Corridor Impact report.

Furthermore, Conditions A15 and B6 of the Development consent, Section 4.38 of the Environmental Planning and Assessment Act 1979, state:

A15 – Prior to the lodgement of any Future Development Application(s) the Applicant is to consult with TfNSW and Sydney Trains in relation to any potential impacts of the detailed design of the development on existing and future rail corridors. Through this consultation, the Applicant is to confirm that all supporting design documentation, architectural plans and supporting expert consultant reports are prepared in accordance with relevant standards and guidelines, including Development Near Rail Tunnels T HR CI 12051 ST and in consultation with TfNSW, Sydney Trains and Sydney Metro.

B6 – The Applicant shall demonstrate in the Future Development Applications that the design and construction of the development accords with the ‘Development Near Rail Corridors and Busy Roads – Interim Guideline’ (2008) prepared by Department of Planning and Environment.

2 Rail Impact Assessment

Arup is the Authorised Engineering Organisation (AEO) for the Metro Martin Place Unsolicited Proposal (USP), including Metro Martin Place station and the OSD.

Condition B6 of the Stage 1 SSDA consent for the OSD states:

The Applicant shall demonstrate in the Future Development Applications that the design and construction of the development accords with the 'Development Near Rail Corridors and Busy Roads – Interim Guideline' (2008) prepared by Department of Planning and Environment

Part D of the above guideline, *Potential impacts of adjacent development*, is the relevant section in the guideline to this project. Part D consists of Safety and Design Issues, and Excavation, earthworks and other construction related issues. It notes the following:

Development near rail corridors and busy roads can impact on the structural integrity of the infrastructure and engineered structures. For electrified railways there are significant additional safety issues associated with electrocution and corrosive effects of electrolysis. This Part identifies these and other key safety and engineering issues.

By its very nature as an Integrated Station Development (ISD), the Metro Martin Place South Tower design is fully integrated with the Metro Martin Place station design and therefore impacts on the Sydney Metro corridor have been fundamental considerations in the design. It should be noted that the Sydney Metro running tunnels sit outside the footprint of the South Tower and station and are therefore not directly impacted by the South Tower.

The Sydney Trains Eastern Suburbs Line (ESL) corridor runs through the southern extent of the future Metro Martin Place station, and as such has been considered as fundamental to the South Tower design.

All relevant aspects of the Metro Martin Place station design works completed by Arup 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 Sydney Trains ESL and future Sydney Metro corridors considered herein are earthing and bonding and electrolysis impacts, structural impacts, and excavation and construction impacts. A summary of relevant stakeholder engagement is also included in the sections below.

2.1 Structural Impacts

Structurally the Metro Martin Place station South Tower shaft forms the base of the South Tower. The two are designed, and are to be constructed, as one integrated structure from foundation to rooftop (refer Figure 55). The existing ESL runs through the South Tower station structure, and has been a key driver in the structural design solution. The structure has been designed to mitigate potential impacts on the ESL (refer Figure 6). Any structural impacts on the Sydney Metro and ESL rail corridors are addressed through the design.

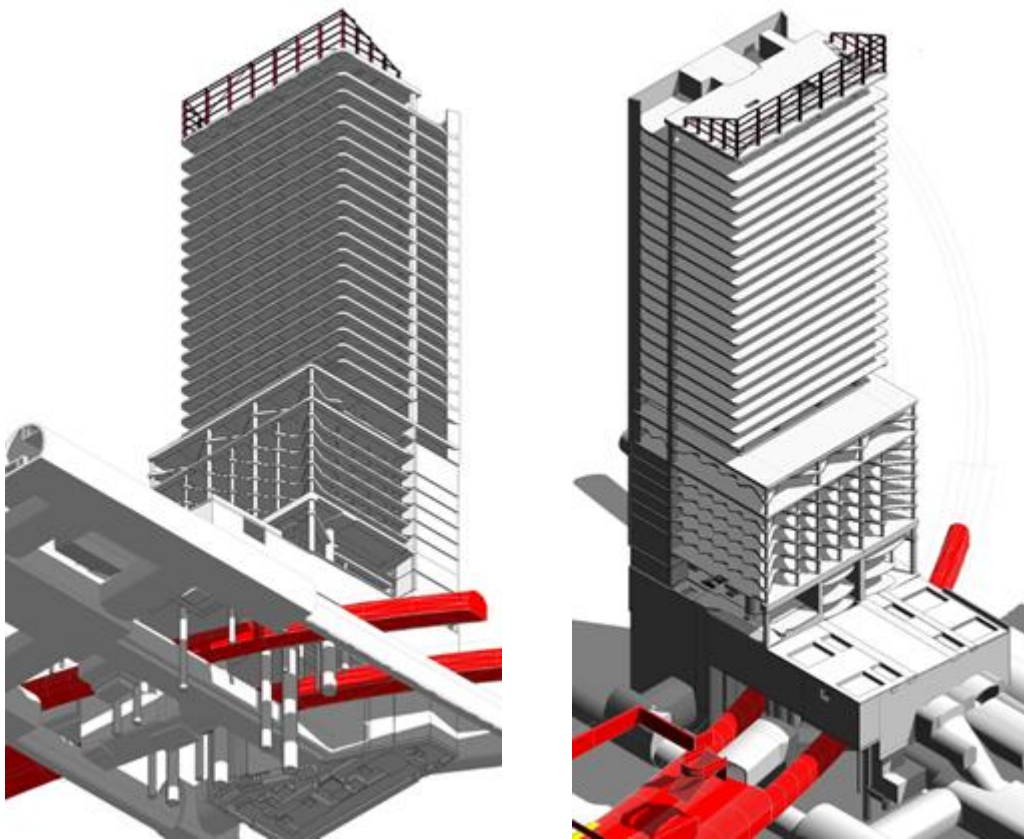


Figure 5: South Tower and station structure integrated and designed from foundation to roof top with new and existing tunnels beneath.

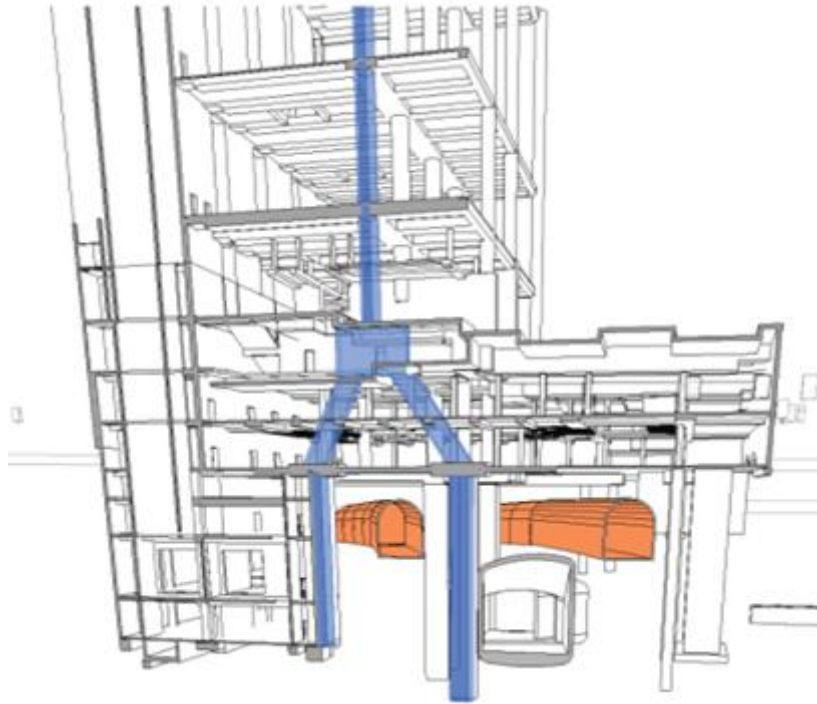


Figure 6: Indicative section through the structure showing South Tower column bifurcating through the station to straddle the ESL tunnel.

2.2 Earthing and Bonding and Electrolysis Impacts

It is proposed that a combined station and OSD earthing arrangement be utilised for the Metro Martin Place 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 alternating current (AC) high voltage (HV) reticulation network.

In order to limit stray current paths and electrolysis issues, the Metro Martin Place earthing system and station related structures will need specific treatments. The presence of the ESL as an interchange station will result in Metro Martin Place station specific treatments to limit stray current paths and electrolysis issues on this station. Specific treatment will be applied to limit the risk of corrosion.

Sydney Metro's line-wide earthing, bonding and electrolysis strategy is expected to provide details of mitigation requirements.

To limit Sydney Trains ESL stray current hazard the following methods will be implemented during the construction and installation of equipment at the inter-connection of Sydney Trains and Sydney Metro stations:

- 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

2.3 Excavation, Earthworks and Other Construction Impacts on the ESL Corridor

A key impact of the South Tower on adjacent rail corridors arises from the proximity of the station foundation structures, which form part of the integrated structural design, to the ESL first reserve as defined in TfNSW Standard T HR CI 12051 ST Revision 133 'Development Near Rail Tunnels'. Although this is outside of the direct scope of this SSDA, it is covered in the related CSSI for the Metro Martin Place station, and has been the subject of ongoing stakeholder engagement. It is outlined herein for reference.

A preliminary design impact assessment has been undertaken for the adjacent development relative to the ESL infrastructure with a risk based approach to impact.

A review of available documentation on the geometry, construction and geology of the ESL tunnels and site has informed design assumptions regarding interaction of the ESL tunnels with the surrounding rock-mass and the adjacent development.

The adjacent development is not expected to have direct physical interaction with the ESL tunnels. Only limited piling works, pitting and tunnelling excavation from the new paid link connecting Sydney Trains with Sydney Metro platforms are proposed within the assumed first reserve boundary (comparable with the reference tender design).

Preliminary estimation of ground movements and stress changes induced by the adjacent development have been analysed with estimated displacements and differential movements.

There are a range of mitigation measures that can be put in place through design, construction planning and management of the construction process to control risk to the ESL structures and operations.

2.4 Fire and Life Safety Impacts

Any impacts associated with fire and life safety of the South Tower on the Sydney Metro and ESL rail corridors are addressed through the design. From a fire and life safety perspective the South 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 impacts associated with building services of the South Tower on the Sydney Metro and ESL rail corridors are addressed through the design. The South 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

Whilst the Metro Martin Place station works are part of a concurrent CSSI approval, this section is provided for context. The following summary of the relevant stakeholder engagement completed to date is intended to provide clarity on the comprehensive process in progress.

2.6.1 Engagement with Sydney Metro

Macquarie has engaged with Sydney Metro throughout the Metro Martin Place USP. A key part of this engagement was the submission of the Metro Martin Place station scheme to the Sydney Metro Configuration Control Board Gate 2 (CCB 2)³. 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 Sydney Trains

Engagement with Sydney Trains has been managed by Sydney Metro and TfNSW. Arup provided technical input to Sydney Metro throughout the CCB2 phase, which was used by Sydney Metro to inform engagement with Sydney Trains. Sydney Trains was also included as a key stakeholder at CCB2.

Sydney Trains were briefed directly by the Metro Martin Place team on 4 June 2018 on this SSD DA submission.

2.6.3 Engagement with Tunnels and Stations Excavation Contractor:

Excavation, piling, and foundation works adjacent to the ESL 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 AEO. Arup has provided technical input to the TSE Contractor via Sydney Metro. Coordination and collaboration between the Metro Martin Place team and the TSE Contractor will continue as the design develops.

³ Configuration Control Boards set the configuration management requirements that must be met (in this case by the Metro Martin Place project) by parties seeking to make changes to rail network configurations. CCB Gateways are undertaken at key points in the asset lifecycle, where Sydney Metro must be assured through evidence that the established network requirements (in this case, the requirements of Sydney Metro and Sydney Trains) have been met.

3 Conclusion

The primary potential impacts of the South Tower design and construction on the future Sydney Metro City and Southwest rail corridor, and on the existing Sydney Trains Eastern Suburbs Line corridor, relate to structures, earthing and bonding, fire and life safety and building services.

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 South Tower above, the Sydney Metro station, and the Sydney Trains rail corridor below.