Macquarie

Sydney Metro Martin Place integrated station development

North Tower, SSD DA Stage 2: Transport, Traffic, Pedestrian and Parking Report

CSWSMP-MAC-SMN-TF-REP-999901

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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 **North 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 northern entrance to Metro Martin Place station will front Hunter Street, Elizabeth Street and Castlereagh Street, with the North Site OSD situated above.

This application follows the approval granted by the Minister for a Concept Proposal (otherwise known as a Stage 1 SSD DA) for two OSD commercial towers above the northern and southern 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 SSD DA) must be consistent. This application does not seek approval for elements of the Metro Martin Place Precinct (the 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 North 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 describes the transport, traffic, parking and access features of the North Site OSD and the associated impacts. The report includes background information, the existing and likely estimated future traffic and transport conditions, a description of the proposed OSD development and an assessment of the transport and traffic impact. The report also includes mitigation measures

where required. Appended to this report is a 'Loading Dock Management Plan' for the development, as well as a Green Travel Plan and Framework Construction Traffic Management Plan.

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 North Site – this application – and one for the South Site via a separate application.

Site Description

The Metro Martin Place Precinct 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 North Site**, being the city block bounded by Hunter Street, Castlereagh Street, Elizabeth Street, and Martin Place (refer to Figure 1).

The South Site (39 – 49 Martin Place) is the subject of a separate Stage 2 SSD DA.

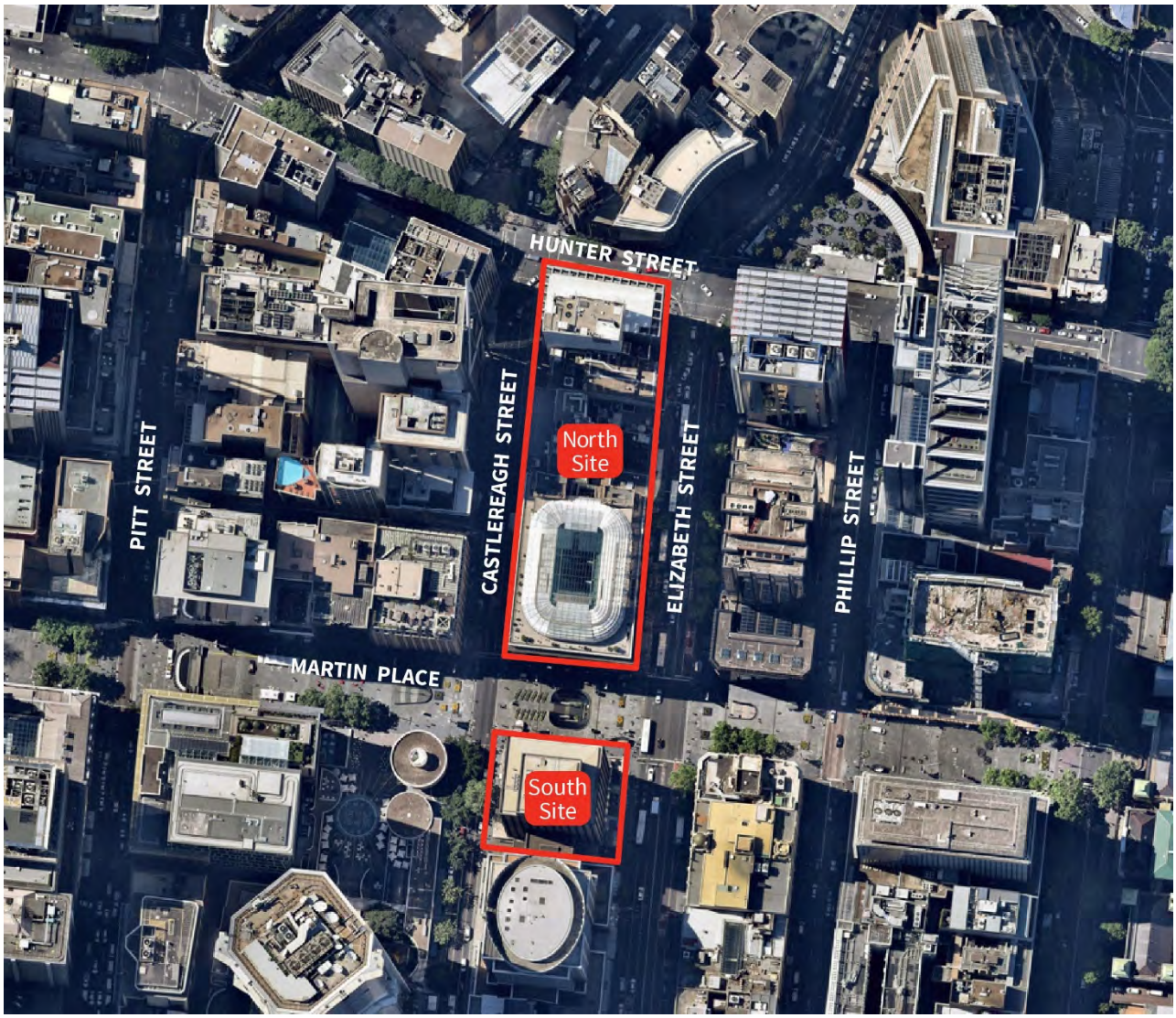

Figure 1: Aerial Photo of the North and South Site of the Metro Martin Place Precinct

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 (see Figure 2)
    - 28+ storey building on the South Site
    - 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 125,437m^2 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 level[1]

[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.*

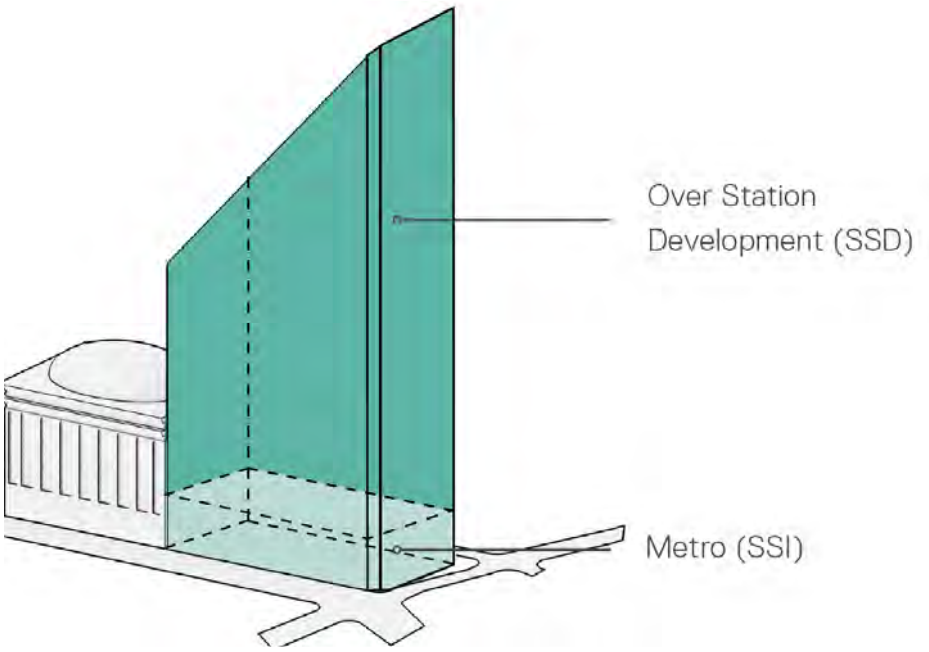

Figure 2: North Site Approved OSD Building Envelope

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 Local Environmental Plan (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.

Overview of the Proposed Development

The subject application seeks approval for the detailed design, construction and operation of the North 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. This application seeks consent for the following:

- The design, construction and operation of a new 39 storey commercial OSD tower (plus rooftop plant) within the approved building envelope for the North Site, including office space and retail tenancies.
- Physical connections between the OSD podium and the existing 50 Martin Place building, to enable the use of the North Site as one integrated building.
- Vehicle loading areas 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 end of trip facilities, 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.

Submitted separately to this SSD DA is a SSD DA for the South Site (Stage 2 South Site SSD DA). A Stage 1 Amending SSD DA to the Concept Proposal (Stage 1 Amending DA) has also been submitted that has the effect of aligning the approved South Site envelope with the new planning controls established for the South Site (achieved through the site specific amendment to the Sydney LEP 2012).

Figure 3 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).

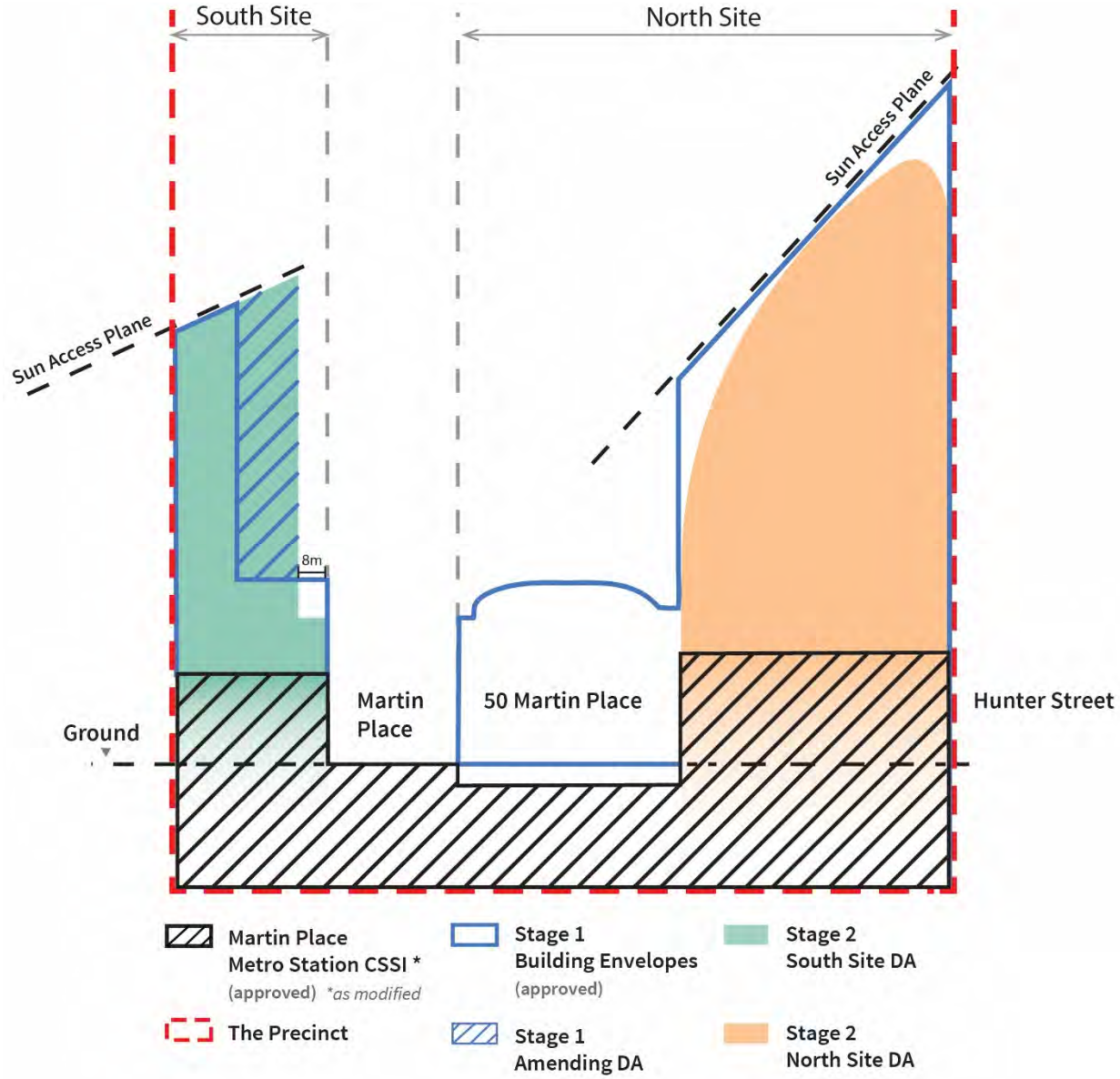

Figure 3: Relationship of key planning applications to the Stage 2 North Site DA (this application)

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 include a traffic, parking and access assessment that includes:

- details of the current and likely estimated future mode share resulting from the proposed development, including a comparison against the mode share assessed in the stage 1 SSD - (see Section 4.2)
- details of the current and likely estimated future daily and peak hour vehicle, public transport, pedestrian and bicycle movements from the site, including an indication of whether related to the station or OSD, and any associated impacts and/or mitigation measures required - (see Section 4.3)

- measures to encourage users of the development to make sustainable travel choices, including a green travel plan, walking, cycling, public transport and car sharing, adequate provision of bicycle parking and end of trip facilities and minimum car parking provision – (see Section 4.4, 4.5 and the Green Travel Plan)
- modelling and analysis of pedestrian and cyclist access to the proposed development in consultation with TfNSW, together with an assessment of pedestrian and cyclist safety and consideration of the relationship with design and operation of the station - (see Section 4.4, 4.5 for description of access and Section 5.3 and 5.4 for analysis).
- details of existing and proposed vehicle access arrangements, including parking and loading dock access, with consideration given to combing vehicle entrances with any required for the station, and include an assessment of any potential impacts, such as potential pedestrian, cyclist and transport conflicts - (see Section 3.2 for existing and Section 4.6 for future access arrangements).
- loading dock servicing and management arrangements, including consideration of precinct wide shared loading docks and/or remote or off-site loading zone hub facilities – (see Section 4.6 and Loading Dock Management Plan).

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:

- Transport, traffic and parking assessment, with public transport accessibility level assessment and draft green travel plan.

Table 1 Relevant Conditions of the Stage 1 Concept Proposal (SSD 8351) to be met as part of future development applications for Stage 2

No.	Condition	See Section
B7	Future Development Application(s) for the construction of new buildings shall be accompanied by an assessment of the traffic and transport impacts on the surrounding road network and intersection capacity, and demonstrate sufficient loading / unloading and access provision. The traffic and transport assessment shall have specific regard for the scope and timing of public transport upgrade infrastructure works in the surrounding road network.	See Section 3, 4, 5 and Loading Dock Management Plan
B8	Future Development Application(s) shall identify, through green travel plans, opportunities to maximise the use of sustainable transport choices, such as incentives and provision of cycle parking and end of trip facilities in the detailed design.	See Section 4, 5 and Green Travel Plan
B9	The Applicant shall provide a loading dock management plan, prepared in consultation with the Council and Sydney Coordination Office of TfNSW, with any Future Development Application(s). The loading dock management plan shall include, but not limited to, the following: a) Detailed swept path analysis of service vehicles accessing the loading docks b) Confirmation that vehicular access is located as far as reasonably practical away from the traffic control signals on Castlereagh Street and will not result in queuing on Castlereagh Street c) Sufficient capacity exists for the service vehicle demands of the development and Sydney Metro d) Management of incidents at the access to the loading docks e) Loading bay management details, including service vehicle movements during peak periods f) Management of conflicts between pedestrians and the service vehicles using the loading bays g) Arrangements to accommodate the development's servicing requirements, including consideration of off-site consolidation h) Identification of the precinct logistics infrastructure and activities that form part of the development i) Details of pre-booking system j) Details of certification with relevant standards, including relevant Australian Standards.	See Loading Dock Management Plan appended to report
B13	The Applicant shall provide a Construction Pedestrian and Traffic Management Plan (CPTMP), prepared in consultation with the Sydney Coordination Office of TfNSW, with any Future Development Application. The CPTMP shall be consistent with the Construction Traffic Management Framework prepared as part of the Sydney Metro City and Southwest and include, but not be limited to, the following: a) Loading and unloading, including the locations of all proposed work zones b) Haulage routes c) Construction vehicle access arrangements d) Proposed construction hours e) Estimated number and type of construction vehicle movements, including morning and afternoon peak and off peak movements, distinguishing concrete pours from other construction activity, and noting that construction vehicles would be restricted from using	See Draft CPTMP appended to report

	work zones on Castlereagh Street and Elizabeth Street during certain times of the day f) Construction program, highlighting details of peak construction activities and proposed construction staging g) Details of specific measures to ensure the arrival of construction vehicles to the site does not cause additional queuing on Elizabeth Street, Hunter Street, Castlereagh Street and King Street h) Details of any construction vehicle marshalling areas i) The staging of works and simultaneous construction with other projects in the area, including the Sydney Light Rail Project, Sydney Metro and other developments nearby, and identify mitigation measures to ensure the proposal can be constructed while the impacts to rail users (and their connections) are appropriately managed j) Any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works k) Measures proposed to mitigate any associated impacts of traffic, public transport, pedestrians and cyclists should be clearly identified and included in the draft CPTMP.	

2 Regulatory Transport Context

The following is a brief description of the transport planning provisions, goals and strategic planning objectives which are relevant to this Stage 2 application.

2.1 Sydney Local Environmental Plan 2012

The Sydney LEP 2012 applies to most of the City's local area and is made up of a written instrument and maps. It identifies the maximum number of on-site car parking spaces that can be provided for new developments based on their location and level of transport accessibility. The objective of the car parking rates is to minimise the amount of vehicular traffic generated because of the proposed development.

Clause 7.6 of Sydney LEP 2012 provides that the maximum number of car parking spaces for office and business premises.

No additional car parking spaces are proposed to be provided as part of the proposed development.

2.2 State Environmental Planning Policy (Infrastructure) 2007

The aim of this policy document is to facilitate the effective delivery of infrastructure across NSW. Clauses relevant to the development include:

Clause 88B: Development near proposed metro stations; and

Clause 104: Traffic generating development

The proposed development is aligned with these clauses.

2.3 Greater Sydney Region Plan

The Greater Sydney Region Plan, *A Metropolis of Three Cities* aims to align infrastructure and growth to restructure economic activity and access across the three cities:

- The established Eastern Harbour City – building on its recognised economic strength and addressing liveability and sustainability.
- The developing Central River City – investing in a wide variety of infrastructure and services and improving amenity.
- The emerging Western Parkland City – establishing the framework for the development and success of an emerging new city

In terms of connectivity, a key concept in the Plan is that of a 30-minute city that connects people to jobs, businesses, schools and services and supports the economic efficiency of trade gateways.

This proposal is consistent with the objectives of this Plan, improving the connectivity of the CBD and catering for additional employment needs.

2.4 Future Transport Strategy 2056

The Future Transport Strategy is an update of the 2012 Long Term Transport Master Plan for NSW. It is a 40-year strategy, supported by plans for regional NSW and for Greater Sydney.

The strategy outlines that transport is an enabler of economic and social activity and contributes to long term economic, social and environmental outcome.

The vision for the strategy is built on six outcomes which are

- Customer Focused
- Successful Places
- Growing the Economy
- Safety and Performance
- Accessible Services
- Sustainability

The proposed development is consistent with and helps to achieve these outcomes.

2.5 Sustainable Sydney 2030

The Vision for The City of Sydney is to be a green, global and connected city, leading the world in all three of these fields. Among the ten strategic directions for Sustainable Sydney are ‘integrated transport for a connected city’ and ‘a city for walking and cycling’. The proposed development is aligned with this vision, through its central location above a Metro and Train station as well as its provision of high quality end of trip facilities for pedestrians and cyclists.

2.6 Sydney’s Bus Future

Sydney’s Bus Future (Transport for NSW, 2013) provides the framework for improving and delivering more frequent and reliable bus services throughout Sydney. The core aim of the strategy is to provide an integrated bus network with seamless connections to other transport services.

The strategy also aims to tailor bus services to customer needs. In this vein, bus services will be focused into three key types, with associated priority and infrastructure investment:

- Rapid routes, which will use priority infrastructure, connect regionally throughout the city and have stops every 800m-1km
- Suburban routes, which will have stops every 400m and have mix of frequent ‘turn up and go’ and timetabled services

- Local routes, which will complete the network using local streets.

Employees of the proposed development will take advantage of these improved connections.

2.7 Sydney's Walking Future

Sydney's Walking Future (Transport for NSW, 2013) sets out a strategy to encourage people in Sydney to walk more through actions that make it a more convenient, better connected and safer mode of transport.

Key points to emerge from the strategy that are relevant to the proposed development include:

- NSW Government commitment to invest in new walking links that connect people to public transport.
- Prioritisation of investment in walking infrastructure to be prioritised within 2km of centres and public transport interchanges.
- Commitment to invest in walking facilities as part of the Transport Access Program, including improved circulation spaces around station precincts and safer walking links.

2.8 Sydney's Cycling Future

Sydney's Cycling Future (Transport for NSW, 2013) provides a framework for the way cycling is planned and prioritised in Sydney. It aims to grow the number of people cycling for transport by investing in safe, connected networks, making better use of existing infrastructure and fostering the formation of partnerships to develop cycling infrastructure. Key points to emerge from the strategy that are relevant to the proposed development include:

- A safe and connected bicycle network benefits the wider transport network by improving access to towns and centres, reducing congestion and increasing capacity on the public transport system.
- The promotion of safe separation of cyclists from motor vehicles and pedestrians where possible.
- Investment in bicycle infrastructure should be prioritised within 5km of public transport interchanges to provide improved connections.
- Promoting 'bike-and-ride' at major public transport interchanges including secure parking facilities integrated with public transport access.

The City of Sydney is moving towards a well-connected cycle network to improve accessibility for workers and visitors to the CBD. The development will encourage people to cycle by providing high quality End of Trip Facilities (EoTF) for employees and visitors.

2.9 Sydney's Light Rail Future

Sydney's Light Rail Future (Transport for NSW, 2012) provides a framework for the way light rail is planned and prioritised in Sydney. The plan identifies four stages for the future of light rail, including the provision of the CBD and South East Light Rail.

This line will be an attractive option to employees and visitors of the development, with Wynyard being the nearest stop.

2.10 Relevant Policies and Guidelines

The following documents have been considered in the development of this report:

- Sydney Streets Design Code and Sydney Streets Technical Specification used to inform any modifications to the street network.
- Roads and Maritime Services (RMS) Guide to Traffic Generating Developments used to inform the traffic assessment undertaken for the project.
- EIS Guidelines – Road and Related Facilities used to inform the preparation of the transport strategy, in particular the assessment of transport impacts.
- NSW Planning Guidelines for Walking and Cycling and NSW Bicycle Guidelines. These documents have been used to inform the development of the walking and cycling measures proposed in this strategy.
- Guide to Traffic Management – Part 12: Traffic Impacts of Developments (AUSTROADS). This guide has been referenced for the appropriate methodology to be used for traffic impact assessment of the development.

3 Existing Transport Conditions

This section of the report provides the transport context in which the development exists, describing the existing travel patterns of employees in the vicinity of the development site, the accessibility of the development site by various travel modes, the availability of on-street and off-street parking and the kerbside lane controls in place surrounding the North Site.

The North Site OSD site is located in the Sydney CBD and is predominantly surrounded by other commercial developments as shown in Figure 4. To the north is 66 Hunter Street and 1 Chifley Square (both commercial buildings). To the west are commercial buildings 1, 9 and 15 Castlereagh Street which have a small amount of ground floor retail. To the east is 8-12 Chifley Square while to the south is 50 Martin Place (the existing Macquarie Building).

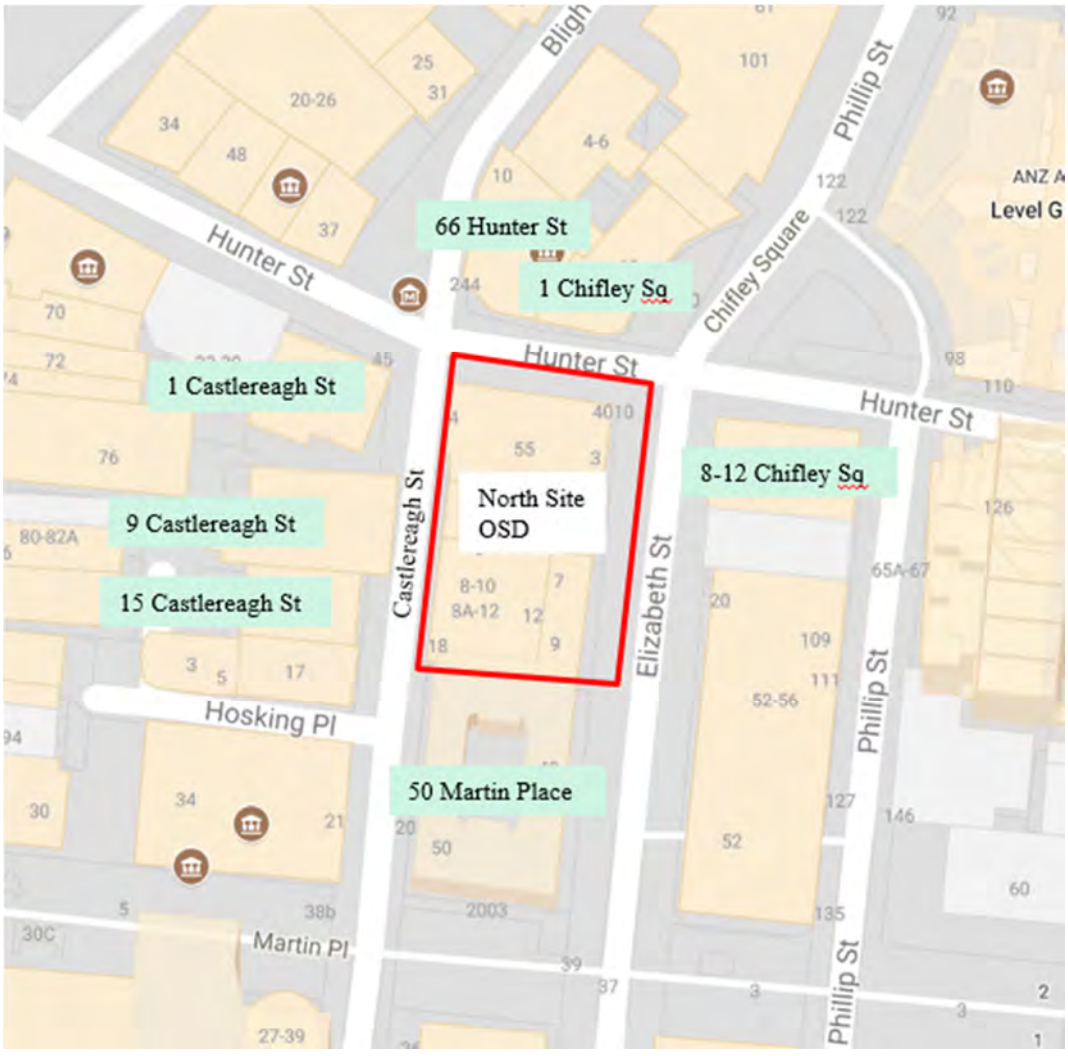

Figure 4: Site location and surrounding development

3.1 Existing Travel Patterns / Mode Share

Census Journey to Work (2016) data has been used to analyse the existing commuter travel behaviour in the area and characterise the public transport conditions in the vicinity of the proposed development site.

The 'Destination Zone' (DZN[3]) to which these statistics apply is the block bounded by Hunter Street, Elizabeth Street, Castlereagh Street and Martin Place, allowing for high quality data in relation to travel patterns (see Figure 5). This is the same area defined as the North Site.

At the time of the Census (and prior to demolition works), this zone had an employment population of approximately 3,000 people. Their main mode of travel is summarised in Figure 6. Over half of all commuters working in the area travel by train (51%) and a further 24% travel by bus. Travel by private car accounts for 11% of all trips (9% as car driver and 2% as car passenger). This indicates that the vast majority of employees in the area are using public transport for their commute. Walking trips account for 6% of the commuting trips with 2% of trips made by bicycle.

Figure 5: DZN utilised for analysis

[3] DZN 113371056 utilised for the analysis

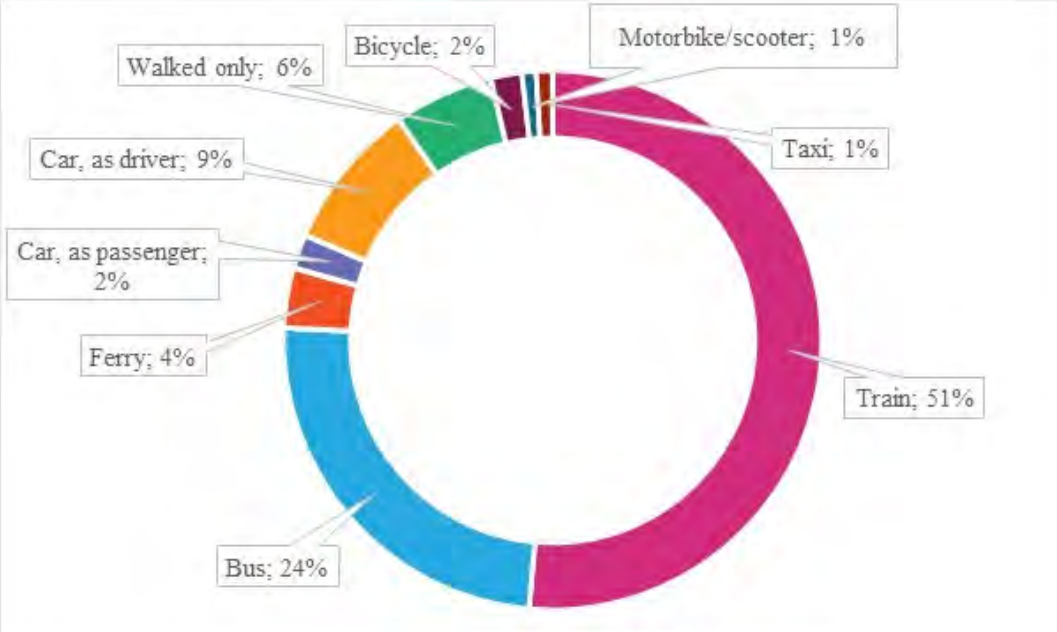

Figure 6: Mode Share

The largest proportion of employees commute from North Sydney (19%) followed by Inner City (15%), and Sydney Eastern Suburbs (14%).

3.2 Existing Vehicular Access and Kerbside Uses

The North Site has three trafficable street frontages. A brief description of these streets in the vicinity of the North Site is described below:

1) Castlereagh Street – (between Hunter Street and Martin Place)

- Castlereagh Street is a one-way street southbound and consists of one bus lane and one traffic lane. On the both sides of the road, there are parking lanes which are mainly designated as loading bays or bus zones on weekdays, with on-street parking permitted at weekends.
- The street forms a signalised intersection with Hunter Street with pedestrian crossings on all arms of the intersection while there is also a wide pedestrian crossing at the intersection with Martin Place.
- Prior to the demolition works for the Sydney Metro Martin Place Station Integrated Station Development there were three vehicular access points to the North Site from Castlereagh Street as shown in Figure 7. Since demolition and construction works related to Sydney Metro have taken place, only the vehicular access to 50 Martin Place remains in operation.

2) Elizabeth Street – (between Hunter Street and Martin Place)

- Elizabeth Street is a two-way street and generally consists of one bus lane and one traffic lane in each direction. Northbound, north of Martin Place, there are three traffic lanes and no bus lanes.
- On both sides of the road, the kerbside lanes are mainly designated as loading bays or bus zones on weekdays, with on-street parking permitted at weekends.

Northbound for 50m on approach to the intersection with Hunter Street, the kerbside lane is a left-turn traffic lane during the day (i.e. 'no stopping').

- Elizabeth Street forms a signalised intersection with pedestrian crossings on all arms at its intersection with Hunter Street while there is also a wide pedestrian crossing at the intersection with Martin Place. There are no existing vehicle access points to the North Site from Elizabeth Street.

3) Hunter Street – (between Castlereagh Street and Elizabeth Street)

- Hunter Street is a two-way road with two general traffic lanes in both directions. Adjacent to the development, there is a no-stopping zone during the day on weekdays with parking permitted at weekends and at night. The opposite side of the road is also a no-stopping zone.
- Hunter Street forms a signalised intersection with Elizabeth Street and Castlereagh Street, with pedestrians crossing facilities on all arms of both intersections. There is no existing vehicle access to the North Site from Hunter Street.

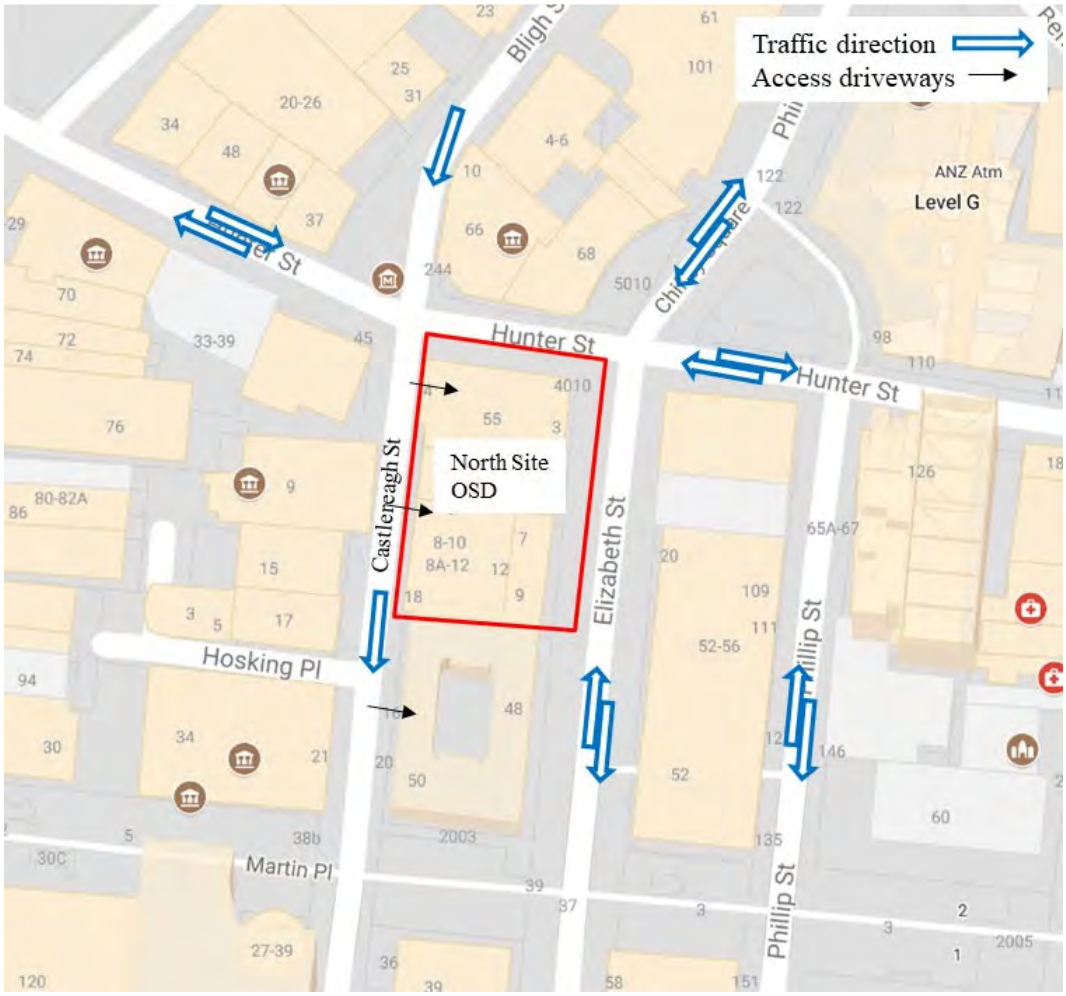

Figure 7: North Site existing vehicle access points

The on-street kerbside parking controls along Castlereagh Street and Elizabeth Street in the vicinity of Metro Martin Place station are heavily focused on bus and loading zones. On-street vehicle parking in the vicinity of Metro Martin Place

Precinct is heavily restricted and is generally only permitted overnight and on weekends. Hunter Street has parking controls that permit 4P parking in the evening time on weekdays and all day at weekends. The weekday, daytime kerbside uses of the streets surrounding the North Site are shown in Figure 8.

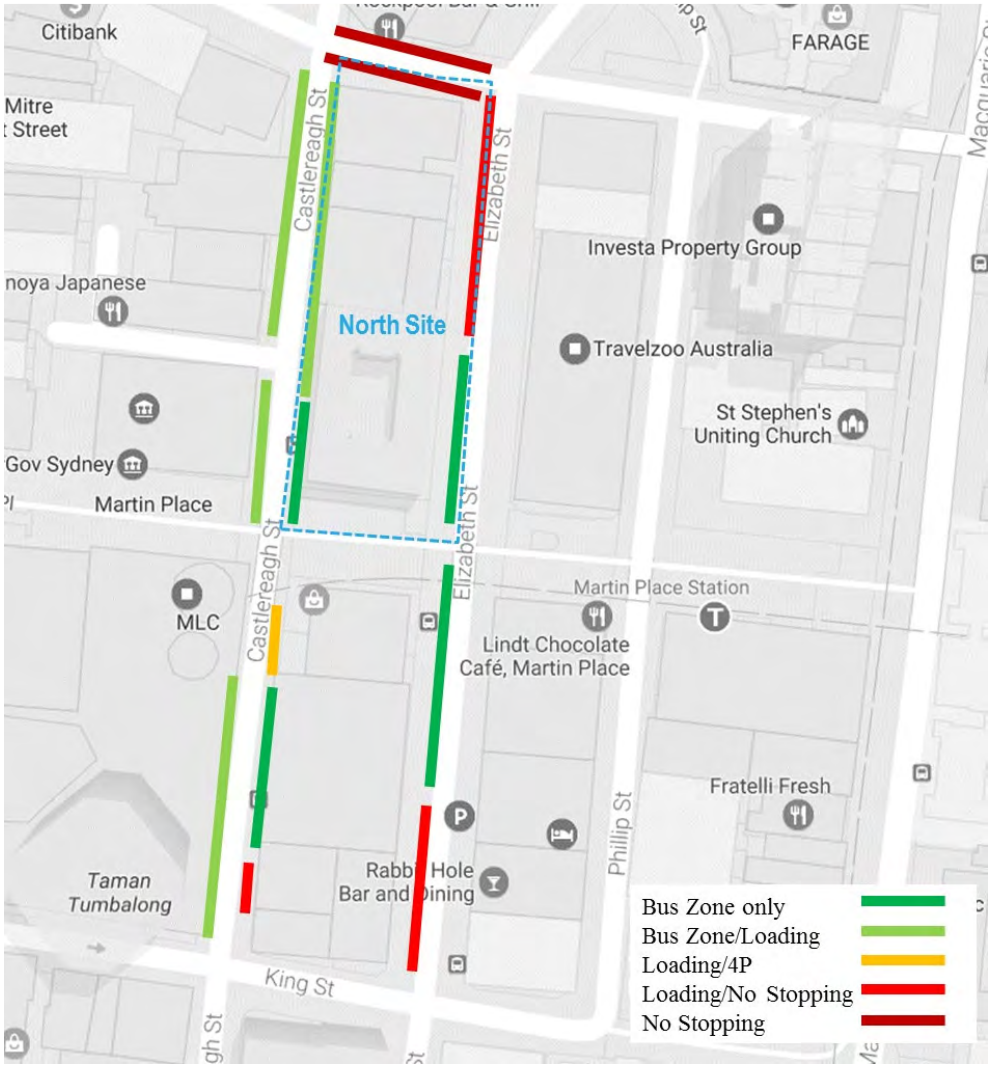

Figure 8: Weekday daytime kerbside uses

3.3 Traffic Volumes

The existing traffic volumes on the surrounding road network in the vicinity of the precinct have been extracted from the Sydney Metro (Chatswood to Sydenham) Critical State Significant Infrastructure (CSSI) EIS ('CSSI EIS') and are presented in Table 2. The following commentary was made in the CSSI EIS in relation to traffic in the local area.

"*Elizabeth Street northbound experiences heavy traffic volumes during both peak periods. There is a strong movement from Macquarie Street (southbound) in the east to Castlereagh Street (southbound) via Hunter Street, which contributes to relatively heavy westbound traffic on Hunter Street.*

Currently, the Macquarie Street / Bent Street / Eastern Distributor ramps intersection is extremely congested during the AM and PM peaks with the intersection performing above its theoretical capacity at level of service F. Long delays are caused by conflict between high volumes of traffic on the Eastern Distributor ramps (westbound) and Macquarie Street (southbound).

All other intersections near the Martin Place Station construction sites currently operate at level of service B or better. However, at the Elizabeth Street / Phillip Street / Hunter Street intersection, signal coordination along Elizabeth Street causes delays for conflicting right turn movements and vehicles on side-streets.[4]*"*

Table 2 Martin Place Station existing traffic volumes

Road	Direction	AM peak hour (vehicles per hour)	PM peak hour (vehicles per hour)
Castlereagh St (between King St and Hunter St)	Southbound	380	510
Elizabeth Street (between King St and Hunter St)	Northbound	1,130	1,110
	Southbound	410	590
Hunter Street (between Castlereagh St and Elizabeth St)	Eastbound	190	190
	Westbound	790	630

(Source: Sydney Metro (Chatswood to Sydenham) EIS, Chapter 8)

3.4 On-site Parking

The North Site has a small number of underground car parks (approximately 48 spaces) which are accessible off Castlereagh Street, including:

- 55 Hunter Street (44 spaces) – (removed during of the Metro demolition works); and
- 50 Martin Place (4 spaces) – (still operational)

3.5 Public Transport Access

The area is highly accessible by public transport as reflected by the high usage of trains, buses and ferries as a travel mode to work (approx. 75%). The North Site has some of the highest public transport accessibility in Sydney, with the location of the main rail and ferry transport nodes within 800m walking catchment of the North Site as shown in Figure 9. The future 'Wynyard' light rail stop on George Street will also be within walking distance. A summary of the existing and planned future public transport options are summarised below.

[4] Sydney Metro (Chatswood to Sydenham) EIS, Chapter 8

Figure 9: Main public transport nodes surrounding the precinct

3.5.1 Trains & Metro

Metro Martin Place station has a direct pedestrian access to Martin Place, with the station having seven operational pedestrian access points at present. Train services operating at this station include the T4 Eastern Suburbs and Illawarra Lines, offering high frequency services between Bondi Junction and areas in southern Sydney, including Hurstville, Sutherland, Cronulla, Waterfall and Wollongong.

These trains stop at Town Hall (next stop west of Martin Place) which offers direct interchange to most destinations on the Sydney Trains network. At peak times trains are operating at 3-4-minute frequencies in both directions increasing to 10-minute frequencies in the evening time.

St James Station's entrance on the north side of St James Road is approximately 200m from Martin Place. This station is on the City Circle line offering services to the T3 Airport and East Hills Line, as well as to the Inner West via Circular Quay, Wynyard and Town Hall.

Wynyard Station's George Street entrance is approximately 500m from Martin Place. There are a number of rail services operating from this station including the T1 North Shore & Northern line and the T8 Airport & South Line

The Sydney Metro City and Southwest line, when operational, will have a station at Martin Place with trains every 4-minutes at peak times operating between Epping and Sydenham and in the future to Bankstown. Furthermore, at full capacity, the City and Southwest line is capable of accommodating trains every two minutes during peak periods.

3.5.2 Buses

The CBD is supported by extensive bus networks, which cover most of the area within approximately 10km of the CBD, as well as some longer distance services from the Northern Beaches, Upper North Shore and the Northwest. This network comprises primarily direct services which serve particular suburbs at their outer extent and then converge on corridors as they approach the CBD. The combined service frequencies on a number of these corridors, such as Oxford Street, Broadway and Victoria Road are in the range of 50 to 120 buses per hour.

Sydney Buses

A number of buses stop on Castlereagh and Elizabeth Street in the vicinity of the site (see Figure 10). Services originate from

- Inner West including Ashfield, Burwood, Lilyfield, Abbottsford and Chiswick via Broadway and George Street;
- North West via Victoria Road corridor including areas such as Ryde and Eastwood; and
- South West (Tempe, Kingsgrove, Canterbury, Dulwich Hill).

When leaving the City most services use Castlereagh Street. Services from the Eastern Suburbs generally run along Elizabeth Street.

Another major transport interchange is Wynyard, which has services from the Northern Beaches (B-Line) and Lower North Shore, and the Victoria Road Corridor. The B-line is a 'turn up and go' service while other bus services vary in frequency throughout the day.

Private Bus Operators

In addition to the above Sydney Buses services, a number of private operators offer services to the City. These include services from:

- Sydney's North West (Hillsbus) which generally use the M2 Motorway alignment and Gore Hill Freeway, connecting at Wynyard and then Town Hall and Railway Square; and
- Sydney's Upper North Shore (Forest Coach Lines and Shorelink) connecting Belrose, North Turramurra, East Wahroonga and Terry Hills stopping at Wynyard and Town Hall.

Convenient bus stops are in the Wynyard area and some inbound services stop at York Street, which is marginally closer to Metro Martin Place Precinct.

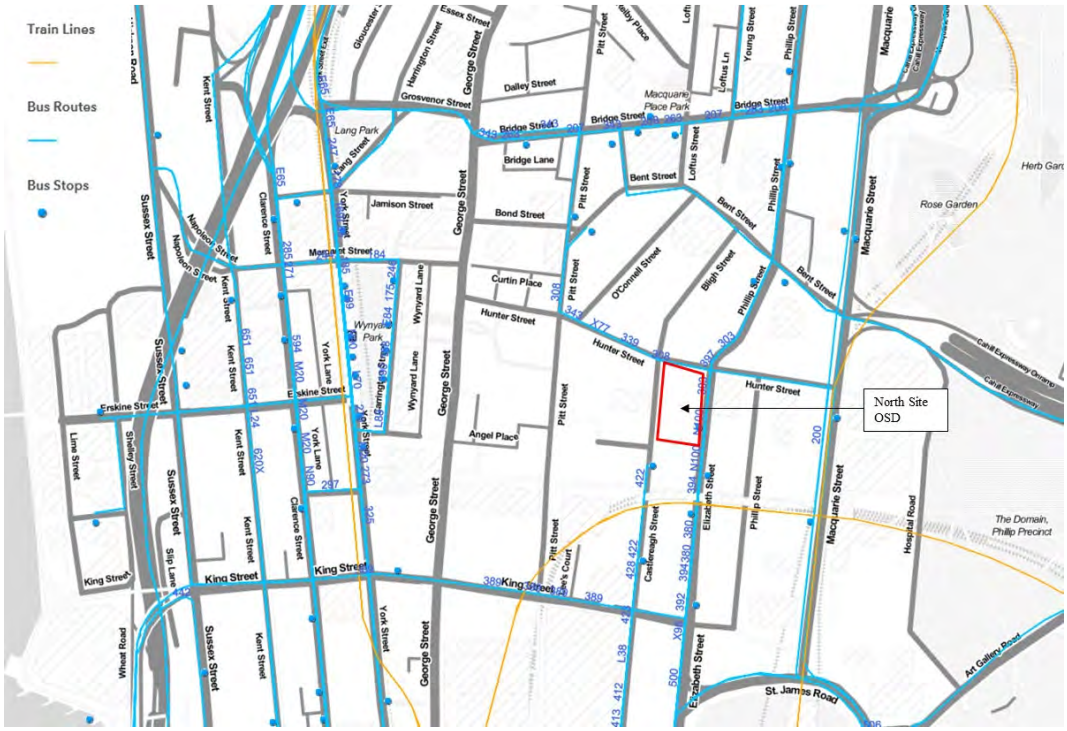

Figure 10: Bus routes and stops in the vicinity of the North Site OSD

3.5.3 Ferry

Circular Quay Ferry Wharves are approximately 700m from the northern boundary of the North Site, walking via Bligh Street and Young Street. From Circular Quay, there are regular ferry connections to Manly, Taronga Zoo, Parramatta, Darling Harbour, Neutral Bay, Mosman Bay and Eastern Suburbs. The Sydney Ferry Network is presented in Figure 11.

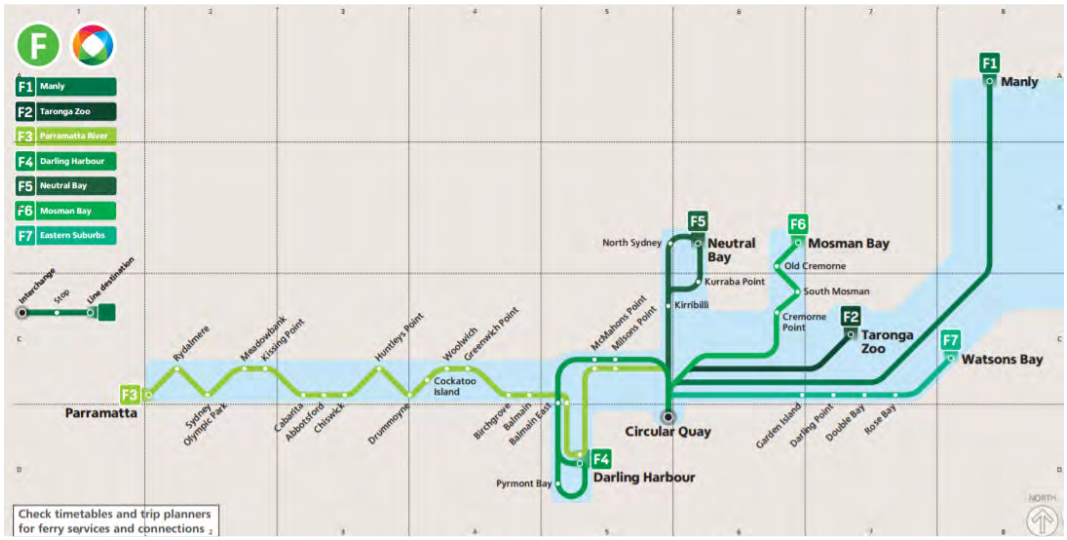

Figure 11: Sydney Ferry Network

3.5.4 Light Rail

The CBD and South East Light Rail is a 12km light rail network currently under construction. When completed, it will operate between Circular Quay and Kingsford/Randwick with 19 stops (including Central Station). The nearest stop to the precinct will be the Wynyard stop on Georges Street, approximately a 5-minute walk.

Construction is expected to be completed with services operational in 2020.

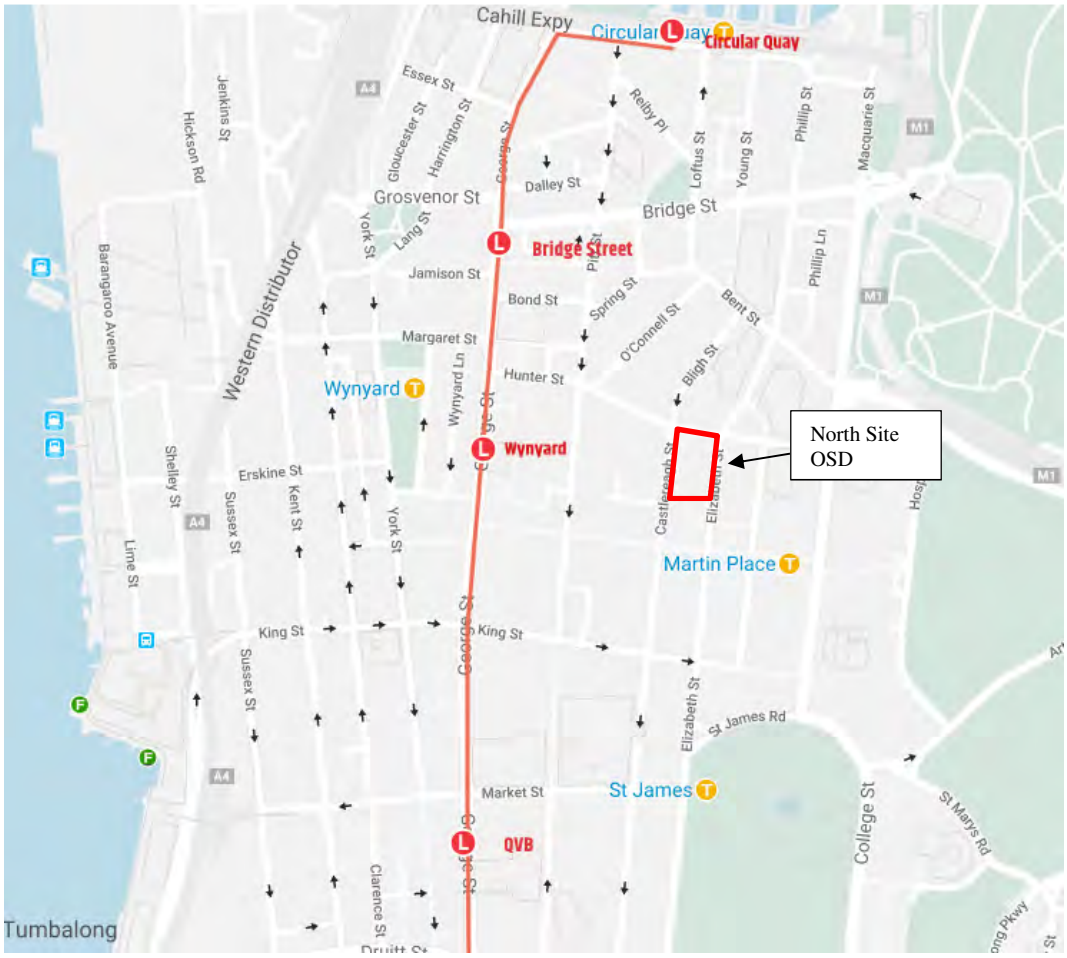

Figure 12: Light rail in vicinity of the OSD

3.6 Pedestrian Access

Prior to the demolition and construction works associated with Sydney Metro, the main pedestrian access points to the existing North Site buildings were as presented in Table 3.

Much of the ground floor space on Castlereagh Street and Elizabeth Street is occupied by retail units, each with individual entrances from street level for pedestrians.

Table 3 Pedestrian Access Points

Building Address	Primary access points	Status
55 Hunter Street	Hunter Street, Castlereagh Street and Elizabeth Street	Demolished/to be demolished as part of Metro
5 Elizabeth Street	Castlereagh Street and Elizabeth Street	
7 Elizabeth Street	Elizabeth Street	
9-19 Elizabeth Street	Elizabeth Street	Operational
8-12 Castlereagh Street	Castlereagh Street	Demolished as part of Metro
50 Martin Place	Martin Place and Elizabeth Street	Operational

3.7 Pedestrian Volumes

As part of the CSSI EIS, pedestrian surveys were undertaken in December 2015 at the Martin Place, Castlereagh Street and Elizabeth Street pedestrian crossings.

The surveys showed:

- Around 44,300 pedestrians crossed at Castlereagh Street throughout the day, with around 20,950 travelling eastbound and 23,350 travelling westbound. In the AM period the dominant pedestrian movement was westbound towards commercial buildings and George Street, whilst in the PM period the dominant movement was eastbound towards the Sydney Trains Martin Place station.
- Around 33,900 pedestrians crossed at Elizabeth Street throughout the day, with around 13,700 travelling eastbound and 17,200 travelling westbound. As with Castlereagh Street, the majority of pedestrians travel westbound in the AM period and eastbound in the PM period.[5]

It is noted that these counts were undertaken prior to the recent demolition of buildings in this precinct as part of Sydney Metro works.

3.8 Cycling Network

There are a number of key cross-city cycle routes in the CBD which form part of City of Sydney cycling network. These routes are as follows:

- Kent Street (separated, bi-directional cycleway to Liverpool Street)
- Liverpool Street (separated, bi-directional cycleway between Sussex Street and Castlereagh Street)
- Castlereagh Street (separated, bi-directional cycleway between Liverpool Street and Belmore Park)
- King Street (separated, bi-directional cycleway between Pyrmont Bridge and Clarence Street)

[5] Extract from Sydney Metro, Chatswood to Sydenham EIS, Chapter 8

- Pyrmont Bridge (shared cycle path)

The draft City of Sydney Cycle Strategy and Action Plan (2018-2030) identifies the completed and planned bike network for the CBD, including regional, local and recreational routes (see Figure 13). In the vicinity of the site, a local bike network on Bent Street and Macquarie Street is planned, connecting to planned regional networks on Pitt Street and Park Street.

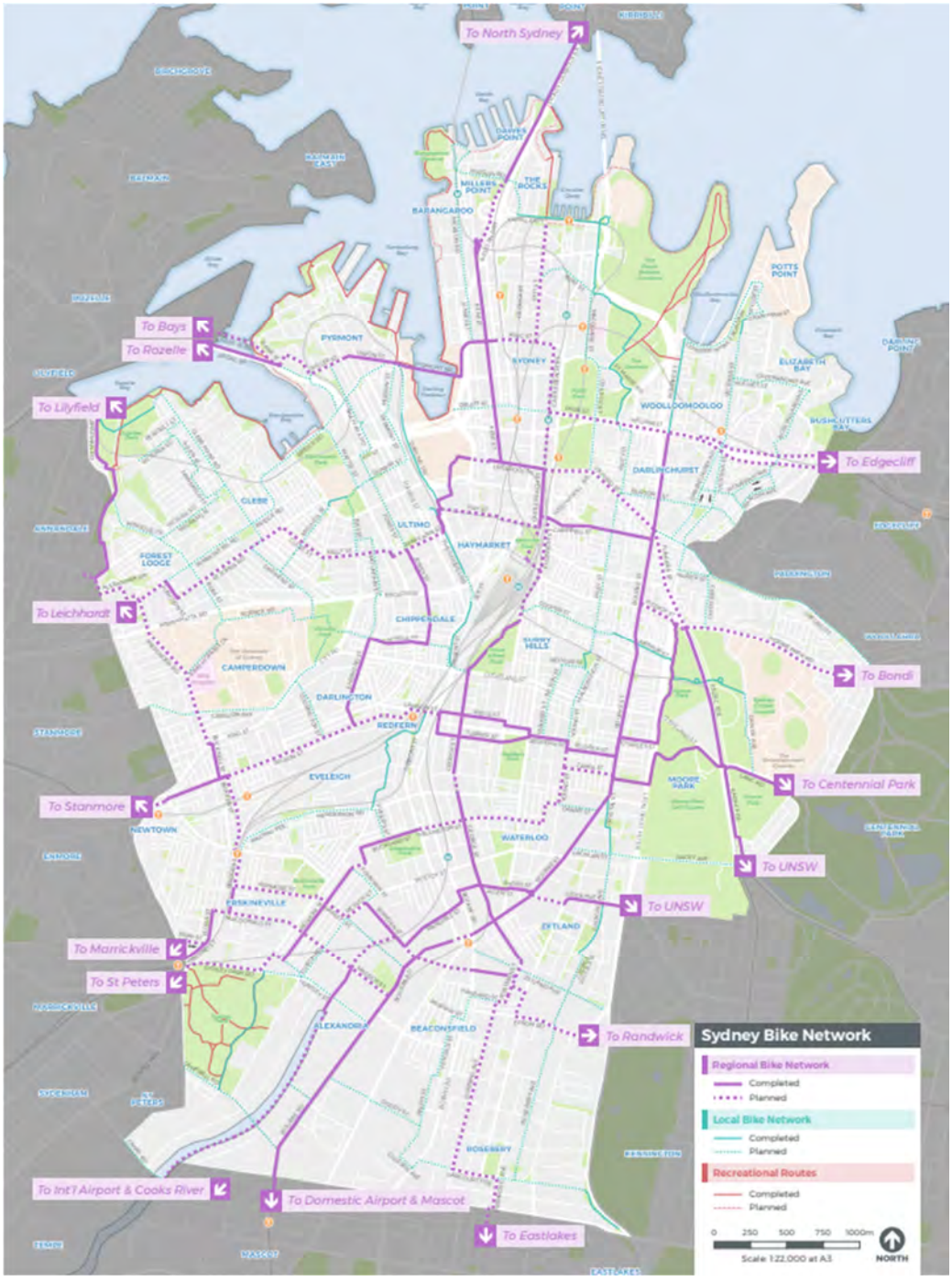

Figure 13 Sydney Future Bike Network

Source: City of Sydney Cycle Strategy and Action Plan (2018-2030)

4 Development Proposal

4.1 Description

An overview of the proposed OSD development is outlined earlier in this report in Section 1. The North Site OSD commercial tower is proposed to have a GFA of 75,498m^2. On the basis of a 1/8m^2 NLA employee density, the commercial tower is expected to have an employment population of approximately 7,800.

This will be in addition to the approximate 2,000 employee population at 50 Martin Place, increasing the overall employment population of the North Site in the future to approximately 9,800. The employment population of the North Site was estimated to be 3,000, prior to the demolition of buildings as part of the Metro works.

4.2 Future Mode Share – North Site

A future mode share for the North Site has been estimated based on existing and predicted travel patterns to the development site and is presented in Figure 14.

The removal of the majority of on-site car parking is anticipated to reduce the car driver mode share to just 3% with subsequent increases in the public transport and active travel mode shares as a result (it has been assumed a very small number of employees will continue to drive, parking in neighbouring parking lots or rented spaces, arriving by taxi etc).

Given the North Site will be accessible directly from Metro Martin Place station, more than half of employment trips to the development site will be by Train/Metro (53%, a slight increase from existing), with travel by bus having the second highest mode share (25%, a slight increase from existing).

Walking and cycling are anticipated to have a mode share of 6% and 5% respectively, with the quality of end of trip facilities encouraging travel by these active modes. The End of Trip Facilities (EoTF) have been designed to accommodate a 7.5% cycle mode share.

The nearest light rail stop to the development site will be the Wynyard stop on George Street, just a 5-minute walk to Martin Place and will be attractive travel option, in particular for those commuting from the Eastern Suburbs.

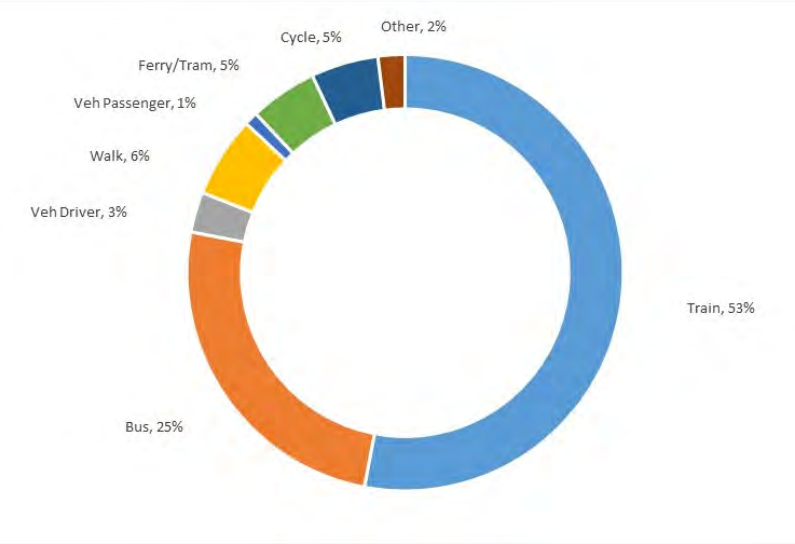

Figure 14: North Site OSD Target Mode Split

The mode split targets for the North Site OSD have changed slightly from that estimated as part of the Stage 1 SSD DA given the availability of 2016 Census data. The 2016 census data showed that travel by train had increased and travel by car had reduced since 2011 at this location. This trend is reflected in the mode split targets for the North Site, with the changes presented in Table 4.

Table 4 Comparison of estimated mode share in Stage 1 and Stage 2 SSD

Mode	Stage 1 SSD	Stage 2 SSD	Change
Train / Metro	51%	53%	+2%
Bus	25%	25%	0%
Car Driver	5%	3%	-2%
Walk	5%	6%	+1%
Car Passenger	1%	1%	0%
Ferry/Tram	5%	5%	0%
Cycle	6%	5%	-1%
Other	2%	2%	0%

4.3 Future Daily and Peak Hour Movements

The daily person trip profile for a typical office development in the CBD is presented in Figure 15. It is based on survey data obtained for two office developments in Sydney CBD (on Kent Street and Alfred Street). The profile is based as percentage of the busiest movement in a one-hour period.

The busiest movement occurs during the AM Peak hour (8am-9am), with people entering the development. The PM peak hour ‘exit’ movement is approximately 80% of that which occurs in the AM peak hour ‘entry’ movement.

The mid-day peak of 12:30-13:30 typically consists of local pedestrian trips (e.g. to shops, cafes etc.). In terms of volumes, it is approximately 65% of the AM peak

hour 'entry' movement and occurs in both directions. While these trips are generally people leaving and returning during their lunch break, the AM and PM peak hour person trips are closely associated with commuting and the use of public transport. The AM peak hour has therefore considered to be most critical and been used to assess the impact to the transport network as a result of the North Site OSD.

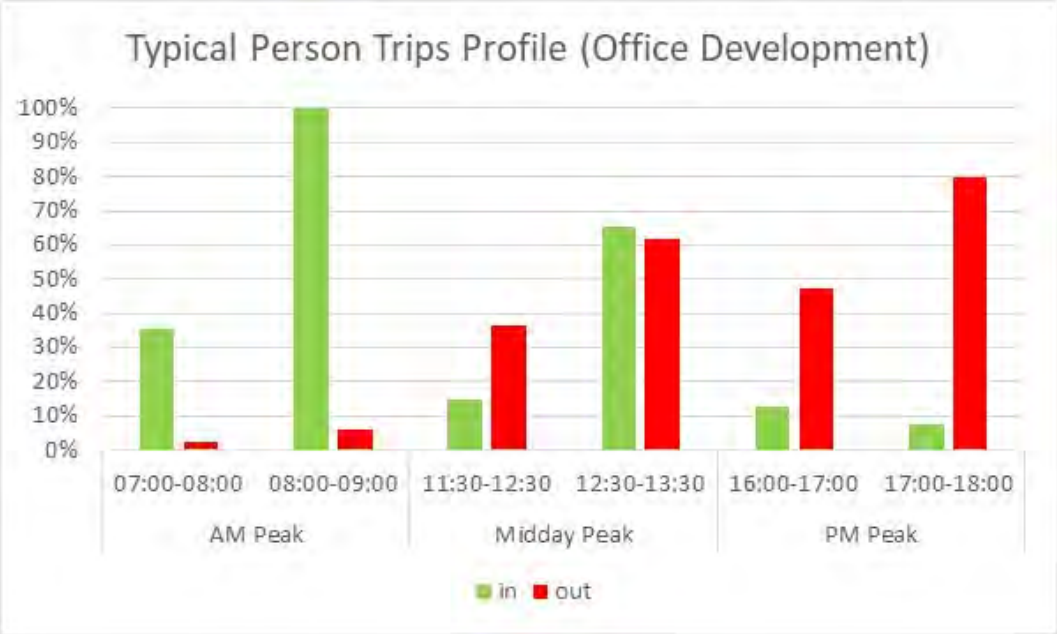

Figure 15: Person trips (as a percentage of the peak hourly movement)

The North Site OSD is anticipated to generate the number of employment arrival trips shown in Table 5 based on a typical working day (i.e. assumed 85% office occupancy). These trips would take place over a 3-hour morning peak period, with approximately 50% of trips taking place during the morning peak hour (8am-9am).

Table 5 North Site OSD generated person trips (AM peak hour)

Mode	Existing Mode Share (pre-demolition)	Existing peak hour trips (3,000 staff)	Future Mode Share	Future peak hour trips (9,800 staff)	Increase in peak hour trips
Train/Metro	51%	650	53%	2,210	1,559
Bus	24%	306	25%	1,042	736
Vehicle Driver	9%	115	3%	125	10
Walk	6%	77	6%	250	174
Vehicle Passenger	2%	26	1%	42	16
Tram/Ferry	4%	51	5%	208	157
Cycle	2%	26	5%	208	183
Other	2%	26	2%	83	58
Total	**100%**	**1,275**	**100%**	**4,169**	**2,894**

As shown in Table 5, the increase in the AM peak hour person trips generated by the OSD (in comparison to the 'existing scenario', i.e. before buildings were demolished for Sydney Metro) will be accommodated using sustainable modes with little change in the total number of trips by private car. As a result, the impact to the road network is considered negligible.

The estimated future daily trips generated by the OSD is presented in Table 6. It is based on office block surveys[6] which indicates that trips generated during the AM peak hour account for approximately 15% of the daily number of person trips. Similar to the AM peak hour findings, trips over the course of the day will generally be accommodated using sustainable modes with negligible impact to the road network as a result of trips taken by private car.

Table 6 North Site OSD generated person trips (Daily)

Mode	Existing daily trips (pre-demolition) (3,000 staff)	Future daily trips (9,800 staff)	Increase in daily trips
Train/Metro	4,335	14,731	10,396
Bus	2,040	6,949	4,909
Vehicle Driver	765	834	69
Walk	510	1,668	1,158
Vehicle Passenger	170	278	108
Tram/Ferry	340	1,390	1,050
Cycle	170	1,390	1,220
Other	170	556	386
Total	**8,500**	**27,795**	**19,295**

4.4 Pedestrian Access

There are three main access points to the North Tower OSD, with one main access from Castlereagh Street, Hunter Street and Elizabeth Street as shown in Figure 16. The access points off Castlereagh and Elizabeth Streets also connect to provide a through site connection. The main station access via the North Tower is from Hunter Street where escalators and station lifts are located.

An additional access point from off Castlereagh Street provides access to end of trip facilities as well as accommodating DDA access from Castlereagh Street (see Figure 17).

In addition to the access points, a significant amount of additional space is created at the corner of Hunter Street and Castlereagh Street which will accommodate pedestrians queuing and waiting to cross the road. A Station Pedestrian Planning Report has been prepared which considers the cumulative impacts of pedestrian movements generated by the North Site OSD and the station.

[6] Source: RMS Guide to Traffic Generating Developments (td13-04a)

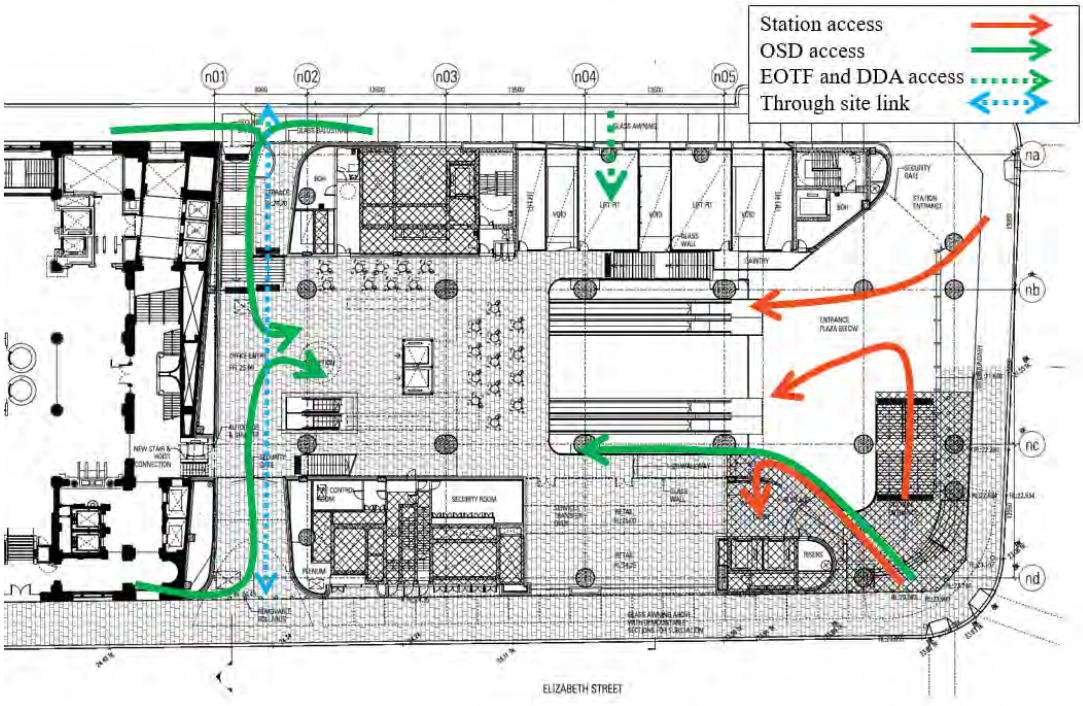

Figure 16: North Tower pedestrian access points

4.5 Bicycle Parking and Access

The main access to the end of trip facilities for the North Site OSD will be from Castlereagh Street via a set of lifts and stairs. The main bike parking facilities are located on Level B2 for the North Site (including 50 Martin Place). The end of trip facilities for the South Site and retail employees will also be located on Level B2 of the North Site. Shower and locker facilities are also located at this level.

The bicycle spaces required to be provided as part of the Metro will be located at Lower Ground level (accessed directly from Castlereagh Street, see Figure 18).

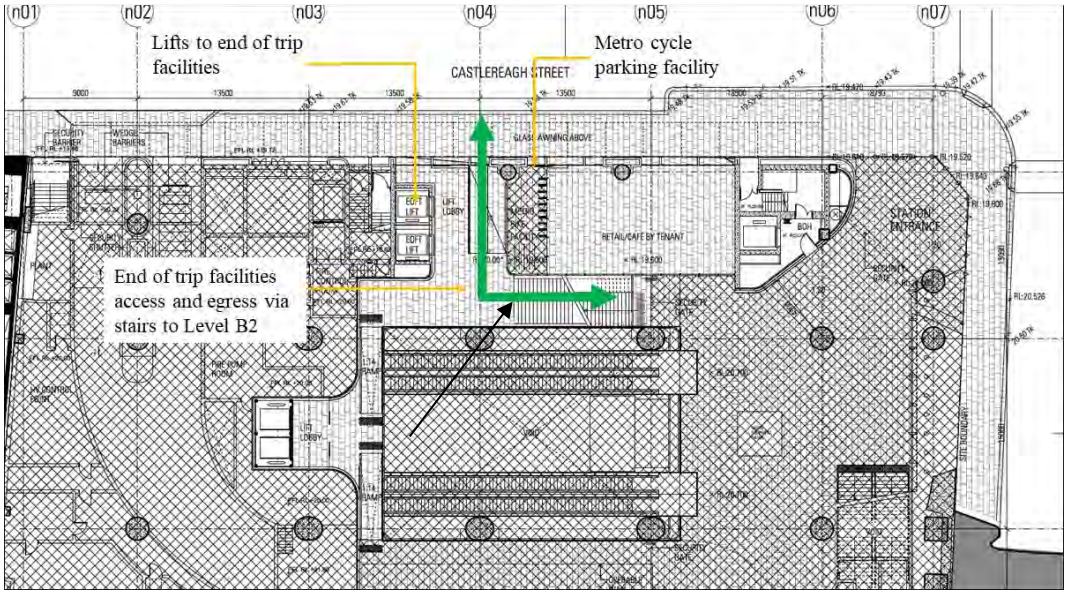

Figure 17: End of trip facilities access route and Metro bike parking

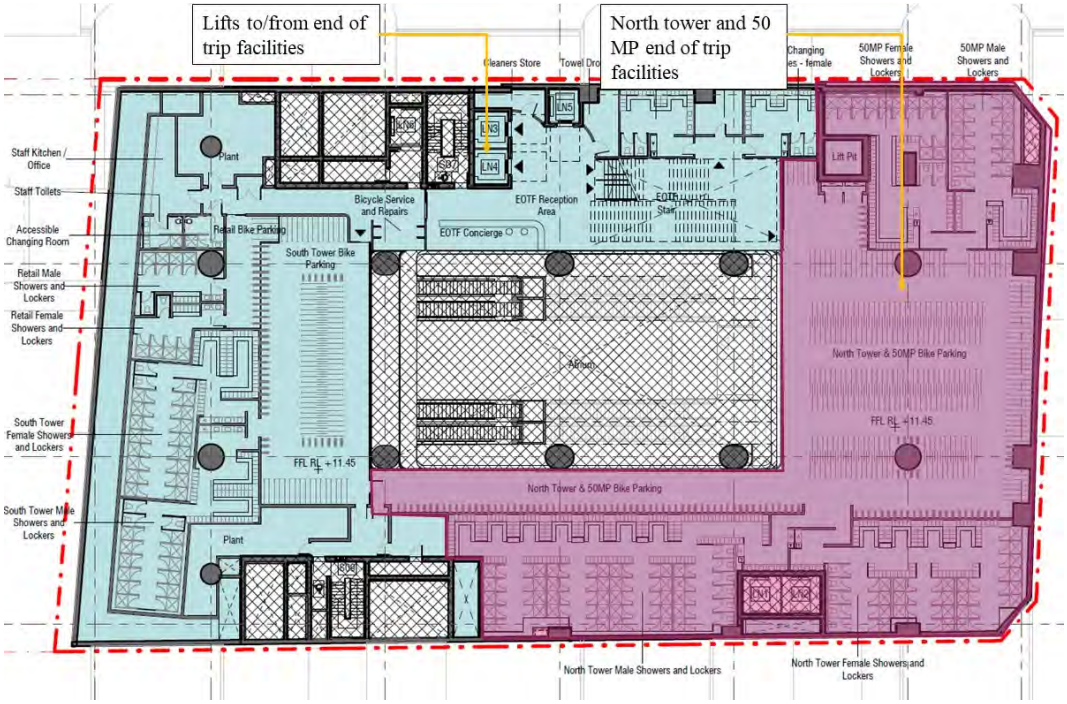

Figure 18: Basement level 2 end of trip facilities

End of trip facilities and bicycle parking will be provided for employees and visitors of the new development in accordance with GBCA 6 Star Green Star requirements. The overall number of staff bike parking spaces are relatively similar to the DCP requirements, however, given its central location in the CBD and high levels of accessibility by public transport, it is considered appropriate for this development to provide less visitor bike parking.

A comparison of the required amount of bike parking based on Green Star and City of Sydney DCP requirements are presented in Table 7. It is proposed to apply the GBCA 6 Star Green Star requirements.

Table 7 North Tower bike parking requirements

	Staff Bike Parking Requirement	Visitor Bike Parking Requirement	North Tower Occupants /GFA	Staff bike parking required	Visitor bike parking required	Total
Green Star	7.5% of total regular occupants	5% of peak visitors[7]	7,800 regular occupants	586	29	615
2012 DCP	1 per 150sqm GFA	1 per 400sqm GFA	75,498m^2 GFA	503	189	692

A breakdown of the number of end of trip facilities proposed for the North Site is listed in Table 8. Of the total spaces provided, 615 are proposed for the North Tower with 162 provided for 50 Martin Place. The 50 Metro cycle parking spaces is a requirement of the consent for that project. 29 visitor cycle parking spaces will be provided as set out in Table 7.

Class 2 secure bicycle parking spaces will be provided for the employees of the building while Class 3 bicycle racks for visitors and Metro users will be provided (i.e. easily accessible and clearly signposted).

Table 8 End of Trip Facilities

Location	No. Bikes	No. Lockers	No. Showers
North Tower	615	713	66
South Tower	235	276	28
50 Martin Place	162	182	18
Station Retail	40	40	14
Metro	50	0	0
Total	1102	1211	126

4.6 Vehicular Site Access and Loading Dock

Vehicular access to the North Site will be limited to service vehicles accessing the loading dock along with the existing vehicular access to 50 Martin Place. No new on-site car parking spaces are proposed, with 44 parking spaces removed from 55 Hunter Street as part of the Metro demolition works.

The loading dock access point for the North Tower is presented in Figure 19 (on Castlereagh Street). It is adjacent to the boundary of 50 Martin Place and approximately 60m from the intersection of Castlereagh Street and Hunter Street and is not expected to cause any queuing on Castlereagh Street.

[7] Peak visitors assumed to be 5% of staff

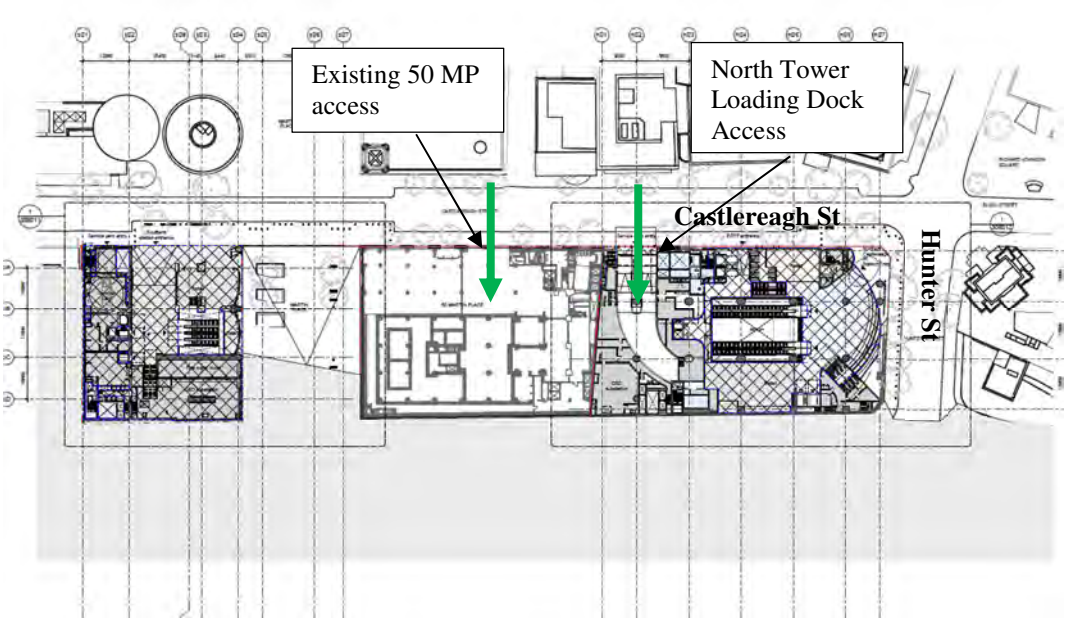

Figure 19: Access points to North Tower Loading Dock and 50 Martin Place

The North Tower will be serviced using the North Tower Loading dock located at Level B1 in the North Tower (3 MRV bays and 4 SRV bays). One of these bays is dedicated for use by Sydney Metro. 50 Martin Place will continue to be serviced as per existing arrangements.

The North Tower loading dock has been designed in accordance with Australian Standard AS2890.2 -2002 Off-street commercial parking facilities, apart from the ramp width. The facilities have been designed for use by 8.8m long MRV delivery vehicles with a travel and operational height clearance of 3.6m.

A separate Loading Dock Management Plan has been prepared which discusses the internal layout, capacity and day to day operations of the loading dock for the North and South Site. This is appended to this report as **Appendix A**.

4.6.1 Loading Dock Driveway and Layout

As noted above, the loading dock ramp width is not sufficient to accommodate two-way movements along its entire length due to the spatial constraints of the site and the need to fit within the constraints of the tower structure. Therefore, a traffic control system is proposed to ensure only one vehicle at a time passes the narrowest section of the ramp. This will take the form of a combined boom gate/traffic light system for vehicles entering and a traffic light for vehicles exiting.

The gradient of the main ramp is 1 in 6.5 which is in accordance with AS2890.2, with 1 in 9 transitions for 5m at both ends of the ramp. This will ensure that the clearance for the design vehicle (3.6m) is achieved.

The driveway is approximately 10m in width (12.5m at the edge of roadway) with the footpath gradient 1 in 40 up to the property line. The first 2.3m of the driveway has a 1 in 9 gradient before levelling for 3m. The vehicle swept paths and vertical clearance are attached in **Appendix B**.

The loading dock ramp and layout is presented in Figure 20 and Figure 21.

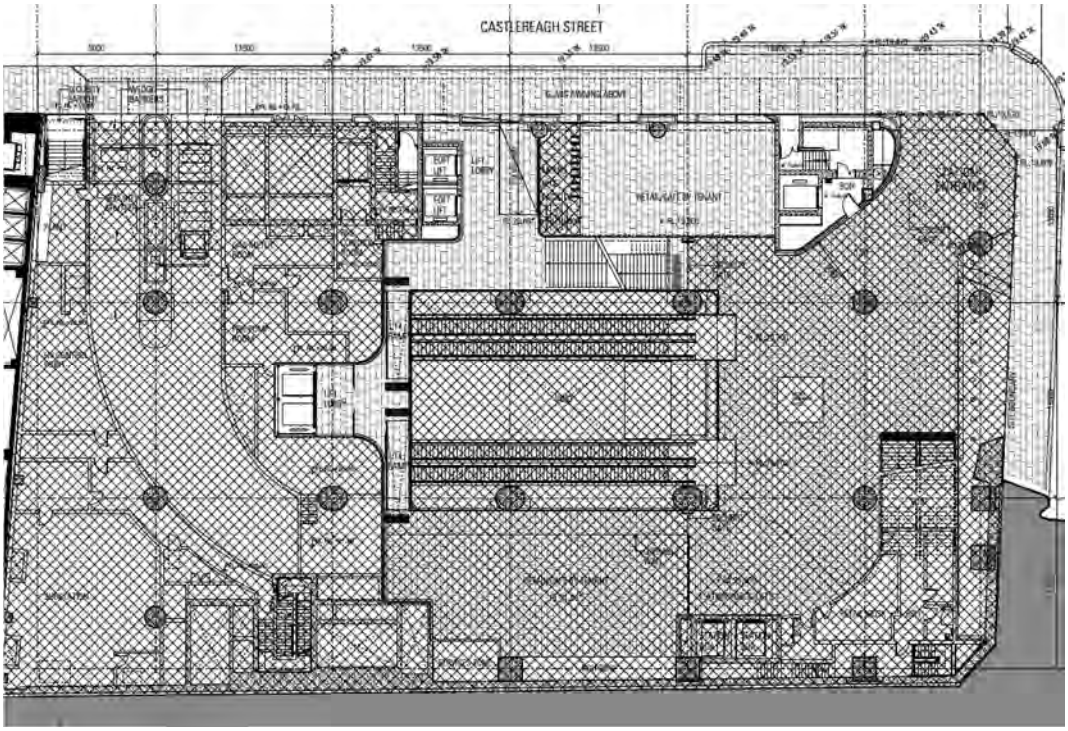

Figure 20: North Tower loading dock ramp from lower ground level

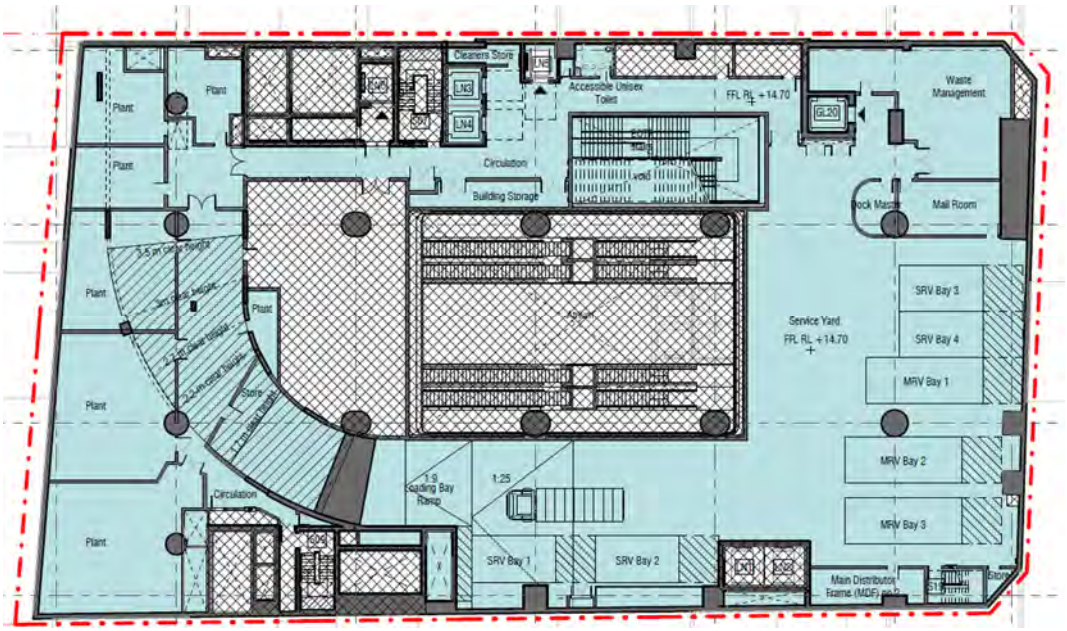

Figure 21: North Tower loading dock layout at Level B1

4.7 Emergency Vehicle Access

In the case of emergency, ambulances and fire tenders will be able to use the kerbside lanes along both Castlereagh Street and Elizabeth Street which are designated as bus lane/loading bays depending on the time of the day.

5 Transport Assessment

5.1 Traffic Generation and Road Network Impact

As no new car parking spaces are proposed to be provided, traffic generation will be mainly related to servicing and delivery trips. It is estimated that 3% of staff will commute by car, resulting in a similar number of car trips during peak times compared to the existing situation. The impact is therefore considered to be negligible.

The North Tower OSD is expected to generate 154 deliveries per day. The total capacity of the loading dock will be 10-15 vehicles per hour.

Delivery vehicle movements will however need to be managed throughout the day due to the limited number of bays available. A pre-booking system is proposed to be utilised to assist in managing delivery arrival times and ensuring efficient use of the loading dock in the North Tower. Refer to the Loading Dock Management Plan for further details.

In consideration of the estimated number of servicing and delivery trips, the provision of a pre-booking system and the timing of deliveries throughout the day, the impact to the road network is considered to be negligible.

5.2 Public Transport

The Sydney Metro and the Eastern Suburbs railway at Martin Place will provide a very high level of accessibility by train. Bus stops and taxi ranks in Castlereagh Street and Elizabeth Street will provide good opportunities for other modes of access. The location also takes advantage of being 350m from George Street for LRT access and 700m from Circular Quay for ferry access. The station and supporting intermodal facilities will create a highly accessible public transport precinct.

As outlined in Section 4.2, the North Site will generate approximately 1,550 additional Train/Metro trips, 750 additional bus trips and 150 additional Tram/Ferry trips during the morning peak hour (when compared to the office developments that were in place prior to the demolition works for Sydney Metro, including 50 Martin Place). This increases to approximately 2,000 additional Train/Metro trips, 950 additional bus trips and 200 additional Tram/Ferry trips during the morning peak hour when considering the cumulative impact with the South Site OSD.

The Sydney Metro, along with signalling and infrastructure upgrades across the existing Sydney rail network is anticipated to increase the capacity of train services entering the CBD – from about 120/hr today to 200 services beyond 2024. Considering the significant increase in capacity, the impact of the development on Train/Metro capacity is considered acceptable.

Similarly, the existing extensive bus network and the proposals set out in Sydney's Bus Future to increase services, capacity and journey times across the network, the impact on bus capacities is considered to be acceptable.

5.3 Walking

The footpath network provides a range of routes for access to Martin Place which acts as an important spine for pedestrian movement in this part of the CBD. As outlined in Table 5, the North Site OSD is expected to generate an approximately 2,900 additional trips during the AM peak hour (when compared to the office developments that were in place prior to the demolition works for Metro, including 50 Martin Place).

Of these additional trips, approximately 1,550 would be by train/metro and 180 by bike, and therefore not likely to impact the surrounding footpaths.

It is therefore expected that there will be approximately 1,170 additional trips by foot on the surrounding footpaths (including those walking from buses etc.) that are generated by the North Tower OSD. This increases to approximately 1,500 when considering the cumulative impact with the South Tower OSD.

Based on the 2026 AM peak hour flows pedestrian volumes using in the CSSI EIS, seven footpath locations surrounding the site have been assessed and compared with a 'with OSD' scenario to understand the impact. The assessment is based on the Fruin Level of Service (LoS) for walkways. The locations are assessed are shown in Figure 22.

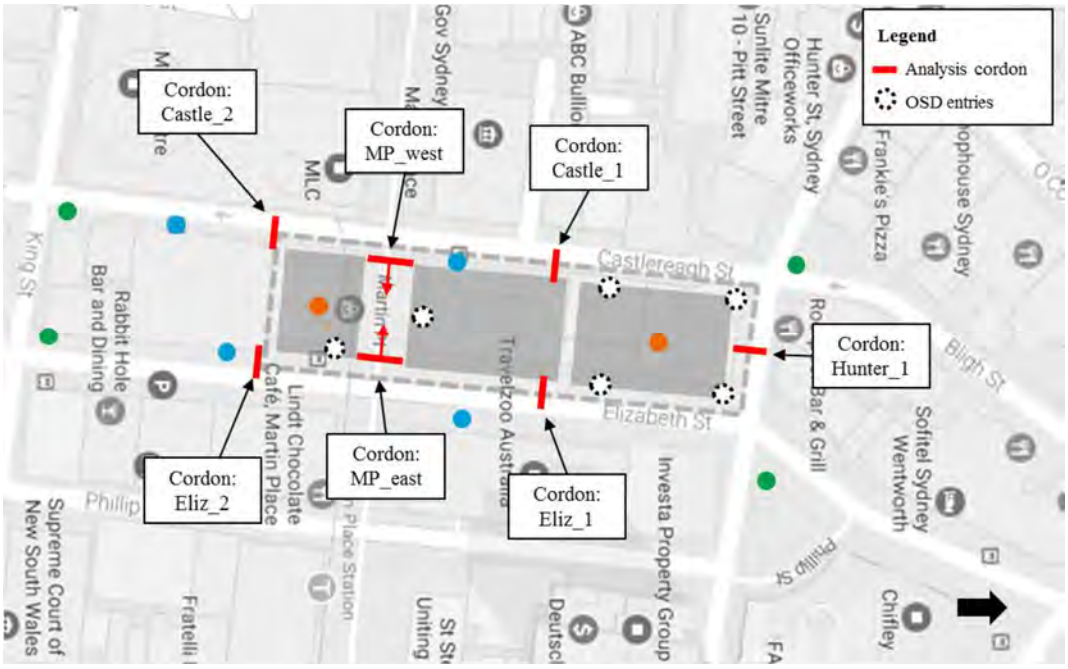

Figure 22: AM precinct distribution for OSD for arrival demand

Key assumptions made as part of the analysis are:

- Nominal footpath width of 2m is adopted throughout the precinct. This is considered a conservative assumption and a minimum expected across the pedestrian network.
- Width of 16m is adopted for the Martin Place entrances from Castlereagh Street and Elizabeth Street.
- Cumulative OSD population of 14,400 (this is higher than the expected OSD population).

The Fruin LoS at these seven locations is presented in Table 9 and Table 10 for the 'CSSI EIS base' and the 'CSSI EIS base + total OSD population' respectively.

Table 9 CSSI EIS pedestrian flows and level of service at cordon locations

Cordon	Castle_1	Castle_2	Eliz_1	Eliz_2	Hunter_1	MP_east	MP_west
People per metre/min	10.3	19.7	11.6	9.7	18.4	2.5	5
LoS (walkways)	A	A	A	A	A	A	A

Table 10 Pedestrian flows and level of service for OSD (proposed population) + CSSI EIS base demand

Cordon	Castle_1	Castle_2	Eliz_1	Eliz_2	Hunter_1	MP_east	MP_west
OSD	11	7.6	30.7	9.2	0	0.9	1.6
CSSI EIS (base)	10.3	19.7	11.6	9.7	18.4	2.5	5
Sum (people per metre/min)	21.3	27.3	42.3	18.9	18.4	3.4	6.7
LoS (walkways)	A	B	C[8]	A	A	A	A

When comparing the LoS results, Elizabeth Street west (Eliz_1) is subjected to increased flows that is likely to perform at LoS C (for a given width of 2m) but LoS B for a given width of 3m (which is more accurate). All other locations are expected to perform with a LoS A or B.

Based on the findings of the Fruin LoS analysis (indicating LoS A or B), the impact of the increase in pedestrian flows on Elizabeth Street and Castlereagh Street as a result of the OSD is considered acceptable.

[8] further analysis shows that the pavement width in this location is greater than the 2m assumed, which results in an estimated performance of LoS B (walkways).

5.4 Cycling

The location of the EoTF access on Castlereagh Street is away from the main station access points and mid-way between Martin Place and Hunter Street along Castlereagh Street, reducing potential conflicts between cyclists and the pedestrians.

As the North and South Site share the same bicycle access point, cumulatively 240 additional trips by bicycle are expected in the AM peak hour period (when compared to the office developments that were in place prior to the demolition works for Metro, including 50 Martin Place).

From the north, cyclists will be able to access the end of trip via Castlereagh Street, dismounting before entering the building. From the south, cyclists will either route, such that they approach via Hunter Street and Castlereagh Street or will need to dismount and walk with their bike from Martin Place. Some cyclists may dismount on Elizabeth Street and walk via the through site connection to the facility also, however the presence of a stairs is likely to discourage this.

The provision of a kerb build-out, outside of the access to the facility on Castlereagh Street, is a potential measure which would assist cyclists to safely dismount and access and egress the building without conflicting with traffic or pedestrians.

This access point on Castlereagh Street is expected to be busy for a short period of time in the peak periods, however it is considered to be manageable.

This development will provide bicycle parking for commercial employees, in line with GBCA 6 Star Green Star requirements as well as providing for Station staff, Metro passengers and visitors. In total, approximately 1,100 bicycle parking spaces will be provided.

5.5 Green Travel Plan

A Green travel plan has been prepared for the North Tower and is appended to this report as **Appendix C**. The plan details specific measures to encourage workers to use more sustainable modes to and from the development.

Given the lack of staff parking, central location, high levels of public transport accessibility and quality of proposed end of trip facilities, the development is ideally placed to achieve the future travel mode share targets set out in this document.

6 Construction Pedestrian Traffic Management Plan

A framework CPTMP has been prepared for the North Site and is appended to this report as **Appendix D**. The framework CPTMP is consistent with the Construction Traffic Management Framework prepared as part of the Sydney Metro City and Southwest and includes the following:

- Loading and unloading, including the locations of all proposed work zones
- Haulage routes
- Construction vehicle access arrangements
- Proposed construction hours
- Estimated number and type of construction vehicle movements, including morning and afternoon peak and off-peak movements, distinguishing concrete pours from other construction activity, and noting that construction vehicles would be restricted from using work zones on Castlereagh Street and Elizabeth Street during certain times of the day
- Construction program, highlighting details of peak construction activities and proposed construction staging
- Details of specific measures to ensure the arrival of construction vehicles to the site does not cause additional queuing on Elizabeth Street, Hunter Street, Castlereagh Street and King Street
- Details of any construction vehicle marshalling areas
- The staging of works and simultaneous construction with other projects in the area, including the Sydney Light Rail Project, Sydney Metro and other developments nearby, and identify mitigation measures to ensure the proposal can be constructed while the impacts to rail users (and their connections) are appropriately managed
- Any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works
- Measures proposed to mitigate any associated impacts of traffic, public transport, pedestrians and cyclists should be clearly identified and included in the draft CPTMP.

The Sydney Coordination Office (SCO) have been consulted with in the development of this plan. The final CPTMP plan will be developed by the appointed Contractor for the project.

7 Agency Consultations

A brief on the upcoming SSDA stage 2 submission was given to the agencies listed below, and the contents of this report were discussed, as well as the Loading Dock Management Plan (LDMP). All designs presented were agreed to in principle.

The Metro Martin Place team met with the following agencies on the following dates:

1. Roads and Maritime Services (RMS), Sydney Coordination Office (SCO), Sydney Buses, and Sydney Metro on 18 April 2018, to discuss this report
2. SCO on 30 April 2018 to discuss the LDMP in further detail
3. SCO on 08 May 2018 to discuss the Construction Traffic Management Plan in further detail
4. SCO on 17 May 2018 to discuss the LDMP in further detail and close out comments
5. Sydney Trains and Sydney Metro on 04 June 2018 to discuss this report
6. City of Sydney on 30 July 2018 to discuss the LDMP

8 Conclusions

This transport traffic pedestrian and parking report supports the Stage 2 SSD DA for the North Tower. It confirms the SEARs and Stage 1 conditions of consent have been met through the design.

The North Site OSD commercial tower is proposed to have an employment population of approximately 7,800. This will be in addition to the approximate 2,000 employee population at 50 Martin Place, increasing the overall employment population of the North Site in the future to approximately 9,800. The employment population of the North Site was estimated to be 3,000, prior to the demolition of buildings as part of the Sydney Metro works.

A basement loading dock is proposed which will be accessible from Castlereagh Street. It will have 3 MRV bays and 4 SRV bays, one of which will be dedicated for use by Sydney Metro. The dock will be managed with a pre-booking system in place. A loading dock management plan has been prepared for the North and South site.

High quality end of trip facilities, providing bicycle parking, showers and lockers will located on Level B2 and be accessible from Castlereagh Street via stairs and lifts. On the same level, facilities for the South Tower and Station retail employees will also be provided. Metro cycle parking spaces will be accessible from street level. In total, over 1,100 cycle parking spaces will be provided, with 615 of these allocated for the North Tower tenant.

No car parking is being provided as part of the development and therefore the traffic impact will be negligible, with the main traffic generation related to servicing and deliveries.

A framework Construction Traffic Management Plan has also been prepared, describing how it is proposed to manage the impacts to traffic, pedestrians, cyclists and public transport users during the construction stage.

The analysis undertaken shows the impact of increased North Tower Site population due to the development can be accommodated without negatively impacting existing transport or pedestrian infrastructure and systems.

Further, whilst not subject to approval under this SSD DA, the design of the Sydney Metro station has been designed to specifically incorporate the increased OSD pedestrian demand.

Appendix A

Loading Dock Management Plan

Macquarie

Sydney Metro Martin Place integrated station development

North Tower, SSD DA Stage 2: Loading Dock Management Plan

CSWSMP-MAC-SMA-OM-REP-999901

Revision 01 | 23 August 2018

Job number 247838-72247838-72

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Contents

Appendices

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 **North 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 northern entrance to Metro Martin Place station will front Hunter Street, Elizabeth Street and Castlereagh Street, with the North Site OSD situated above.

This application follows the approval granted by the Minister for a Concept Proposal (otherwise known as a Stage 1 SSD DA) for two OSD commercial towers above the northern and southern 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 SSD DA) must be consistent.

This application does not seek approval for elements of the Metro Martin Place Precinct (the 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 North 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 defines the demand, requirements and operation of the loading dock so that it may be operated safely, efficiently and effectively. It will:

- Determine the vehicle demand that the tower and associated retail areas above and below ground, are likely to generate and use the information to set out the loading dock requirements and specifications;

- Define the overall logistics strategy to be employed for the movement of goods into, and waste and goods out of, the development; and
- Define how the loading dock will operate and the facilities be managed as a basis for the design.

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 North Site – this application – and one for the South Site via a separate application.

Site Description

The Metro Martin Place Precinct 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 North Site**, being the city block bounded by Hunter Street, Castlereagh Street, Elizabeth Street, and Martin Place (refer to Figure 1).

The South Site (39 – 49 Martin Place) is the subject of a separate Stage 2 SSD DA.

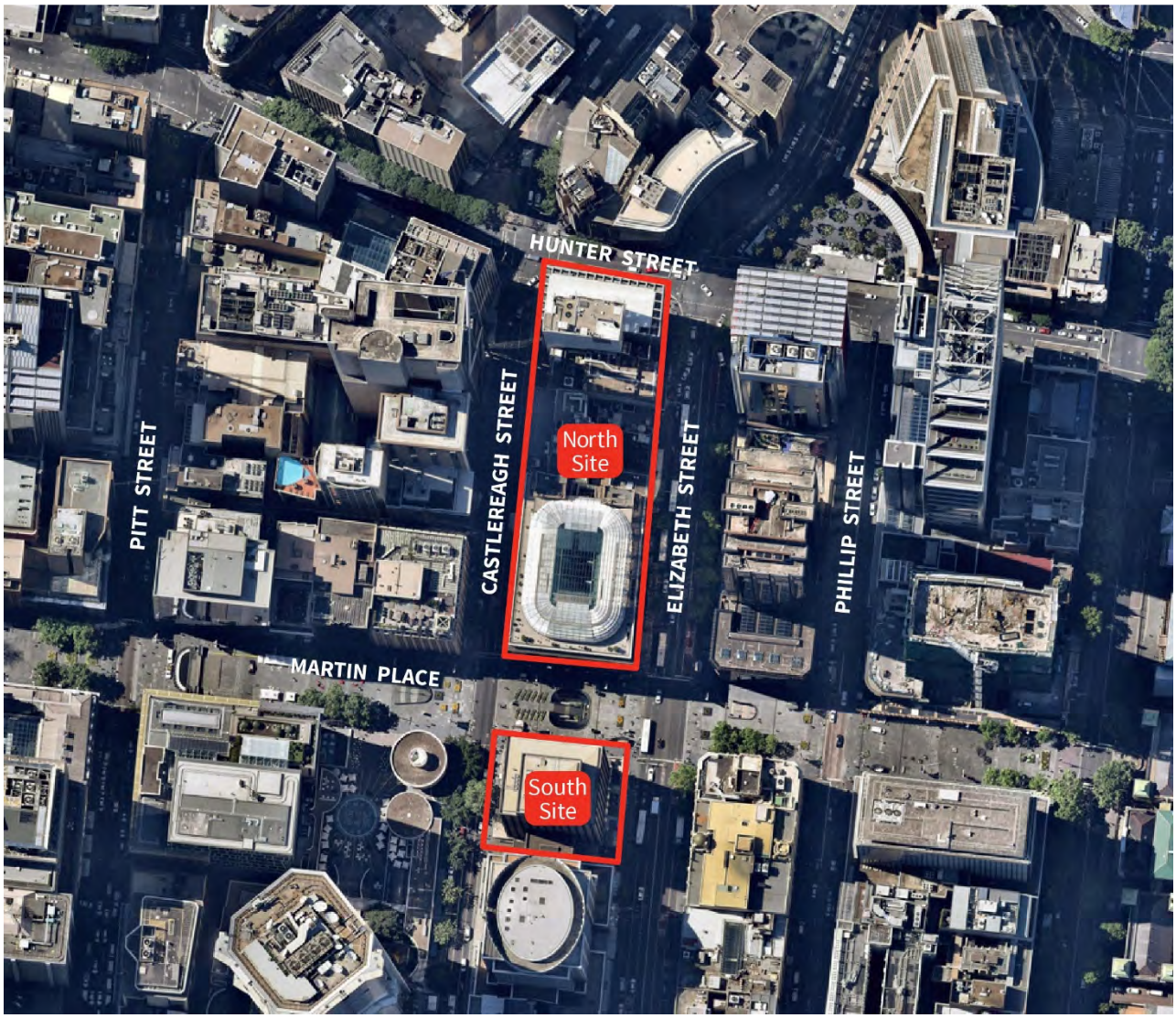


Figure 1: Aerial Photo of the North and South Site of the Metro Martin Place Precinct

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 (see Figure 2)
  - 28+ storey building on the South Site
  - 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 125,437m^2 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 level[1]

[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.*

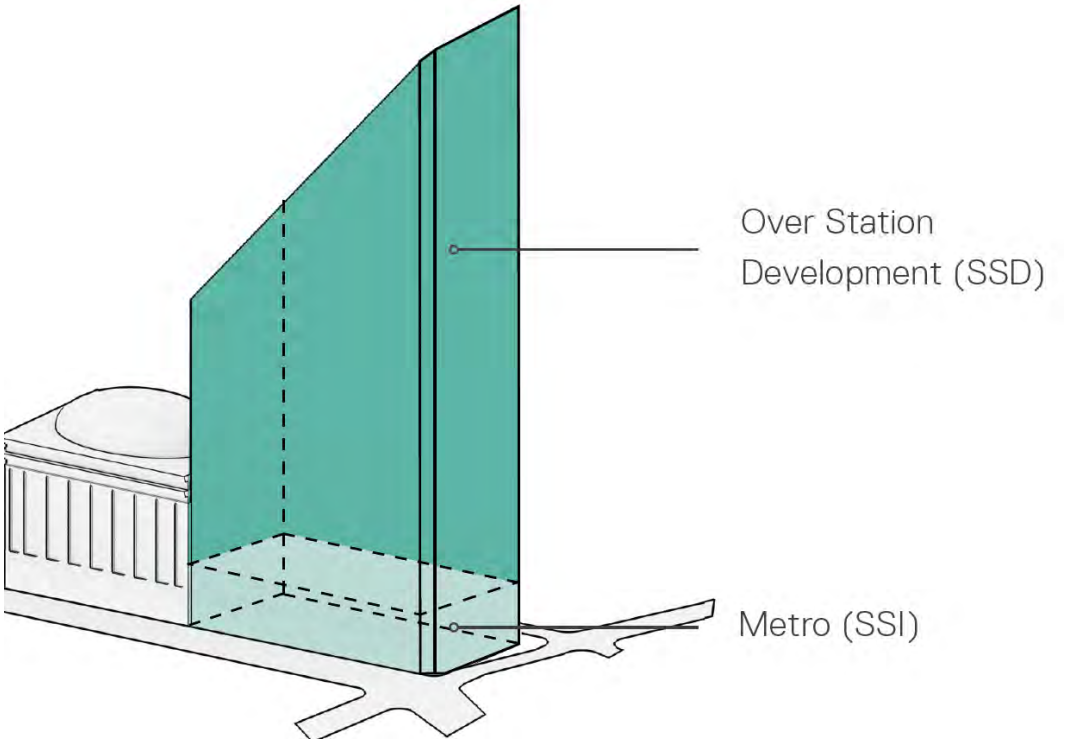


Figure 2: North Site Approved OSD Building Envelope

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 Local Environmental Plan (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.

Overview of the Proposed Development

The subject application seeks approval for the detailed design, construction and operation of the North 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. This application seeks consent for the following:

- The design, construction and operation of a new 39 storey commercial OSD tower (plus rooftop plant) within the approved building envelope for the North Site, including office space and retail tenancies.
- Physical connections between the OSD podium and the existing 50 Martin Place building, to enable the use of the North Site as one integrated building.

- Vehicle loading areas 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 end of trip facilities, 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.

Submitted separately to this SSD DA is a SSD DA for the South Site (Stage 2 South Site SSD DA). A Stage 1 Amending SSD DA to the Concept Proposal (Stage 1 Amending DA) has also been submitted that has the effect of aligning the approved South Site envelope with the new planning controls established for the South Site (achieved through the site specific amendment to the Sydney LEP 2012).

Figure 3 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).

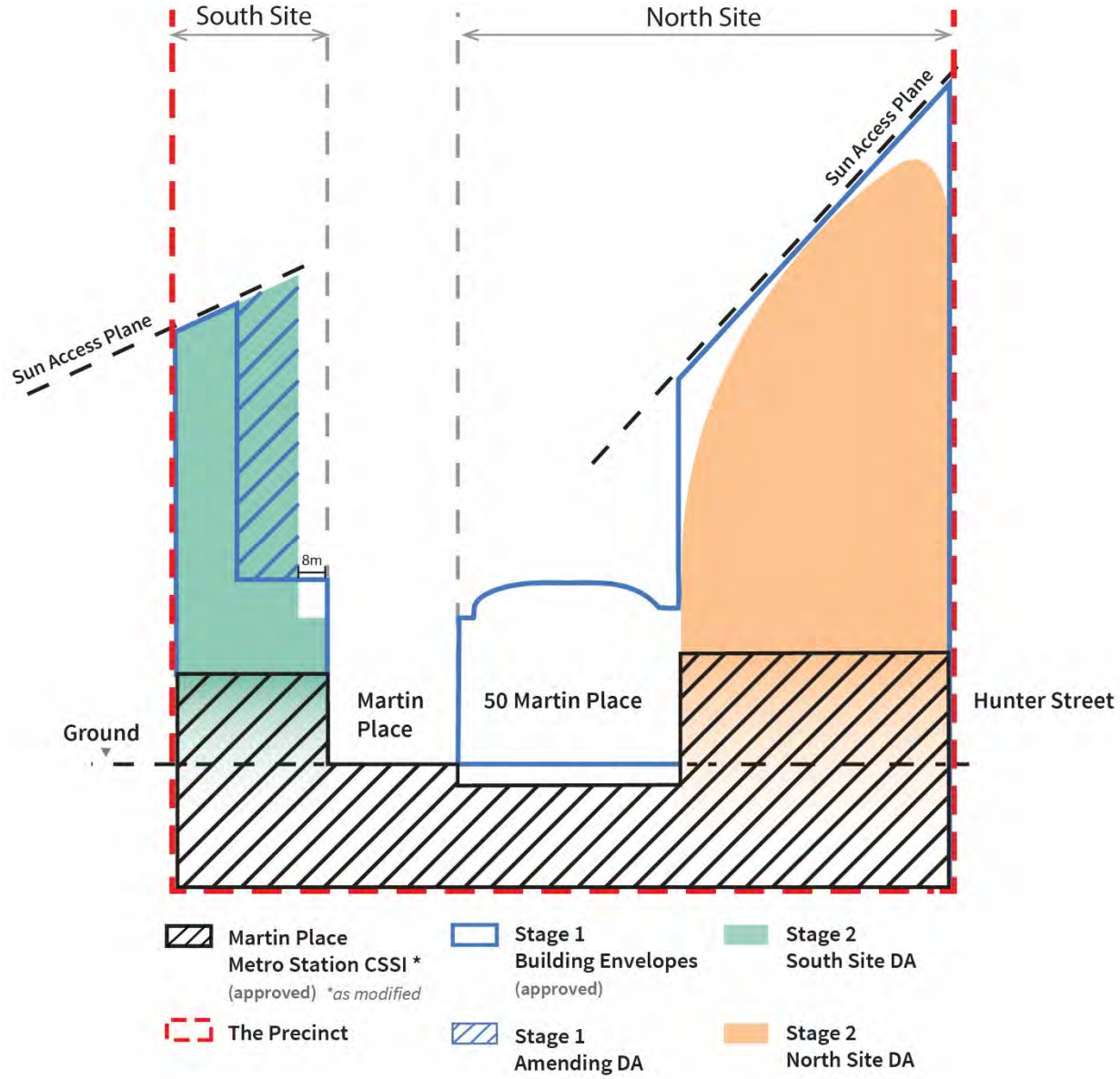


Figure 3: Relationship of key planning applications to the Stage 2 North Site DA (this application)

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 include a traffic, parking and access assessment providing:

- details of existing and proposed vehicle access arrangements, including parking, loading dock and servicing management with consideration of precinct wide shared loading docks and/or remote or off-site loading zone hub facilities, ensuring all servicing and loading occurs on-site and does not rely on kerbside controls.

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:

- Draft loading dock management plan.

Furthermore, Condition B9 of the Development consent, Section 4.38 of the Environmental Planning and Assessment Act 1979, states:

The Applicant shall provide a loading dock management plan, prepared in consultation with Council and the Sydney Coordination Office of TfNSW, with any Future Development Application(s). The loading dock management plan shall include, but not limited to, the following:

a) detailed swept path analysis of service vehicles accessing the loading docks

b) confirmation that vehicular access is located as far as reasonably practical away from the traffic control signals on Castlereagh Street and will not result in queuing on Castlereagh Street

c) sufficient capacity exists for the service vehicle demands of the development and Sydney Metro

d) management of incidents at the access to the loading docks

e) loading bay management details, including service vehicle movements during peak periods

f) management of conflicts between pedestrians and the service vehicles using the loading bays

g) arrangements to accommodate the development's servicing requirements, including consideration of off-site consolidation

h) identification of the site logistics infrastructure and activities that form part of the development

i) details of a pre-booking system

j) details of certification with relevant standards, including relevant Australian Standards.

2 Scope

This plan specifically considers the servicing requirements for the majority of the site elements; however, some areas have been excluded or partially included as shown in Table 1.

Table 1 Consideration of site elements

Consideration of site elements	
Site Element	**Consideration**
Metro Martin Place station.	Partially included. 1 x SRV loading bay is required to be provided for the exclusive use of Sydney Metro in the North Site.
Retail and public concourses below street level, excluding a pedestrian link beneath 50 Martin Place.	Included. Retail and public concourses included.
Facilities and technical rooms below street level that supports the operations of the North Tower.	Included.
Existing Macquarie headquarters at 50 Martin Place.	Not included. 50 Martin Place maintains its own loading dock and is expected to continue operating independently.
North Tower Over Station Development (OSD).	Included.
North Tower and Station entrances, retail and public concourses at street level.	Included.
Technical rooms and risers within the North Tower which support the operation of the Station.	Included.

2.1 Applicable Standards

Designed with reference to:

- Australian Standard AS2890.2-2002 Off-street Commercial Vehicle Facilities
- Sydney Development Control Plan 2012

2.2 Referenced Documents

- CSWSMP-MAC-SMP-AT-DRG-308012: North Tower Level LG General Arrangement
- CSWSMP-MAC-SMP-AT-DRG-308112: North Tower Level B1 General Arrangement
- DD-A-9000 02.02.18 Rev 01: North Tower area schedule (NLA)
- SK-A-3050: LONG SECTION (Grimshaw)

- CSWSMP-MAC-SMO-WS-REP-999901: OSD Waste Management Plan
- CSWSMP-MAC-SMA-TF-PLN-999901: Traffic and Transport Design Report
- CSWSMP-MAC-SMP-SC-SMP-999901: Security Management Plan
- CSWSMP-MAC-SMA-SC-IMP-999901: Precinct Wide Incident Management Plan

3 Site Details

3.1 Area Use

The relevant elements of the development for the purposes of this report are the North Tower, above and below ground retail, restaurant/café areas, lobby areas and the Metro Martin Place station (through the North Tower loading dock).

Current estimated Gross Floor Area (GFA) and area use information for the North Tower is provided in Table 2. These have been used as the basis for vehicle demand calculations.

Table 2 Tower area use and estimated GFA

Tower area use and GFA	
Area Use	**North Tower**
	GFA (m2)
Office	70,224
Retail	1,251.5
Restaurant/Café	1,251.5
Lobby	-
Total	**72,727**

3.1.1 Tenancy

No assumptions have been made on whether the development will be single or multiple tenancy. This plan has been developed to take into account both possibilities.

3.1.2 Tower Concourse Link

A key consideration in the development of this strategy has been the pedestrian link under 50 Martin Place connecting the North Tower to the South Tower (shown in Figure 4). It is understood that this link will be public-facing and in constant use. As such, it has been deemed unsuitable for the movement of any significant quantity of goods and waste. Only in exceptional circumstances will small quantities of goods be moved from the North Tower loading dock to South Tower tenants.

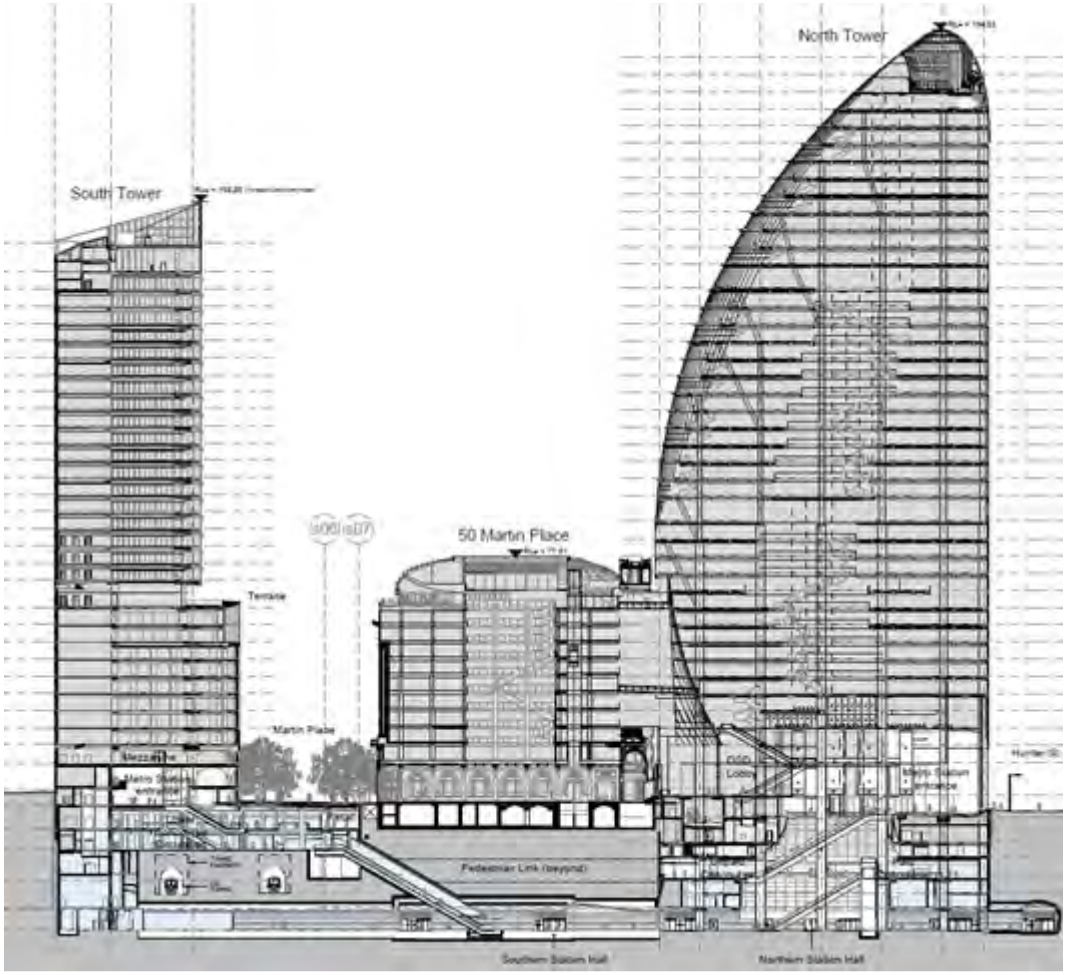


Figure 4: Major site elements (section)

3.2 Loading Dock Provision & Layout

The basement area of the tower is constrained due the spatial requirements of the Metro Martin place station and the OSD. This has necessitated a more compact loading dock layout than would be ideal for a development of this size. The site will be serviced using:

- The North Tower loading dock, located at Level B1 in the North Tower, consisting of 6 loading bays; 3 x Medium Rigid Vehicle (MRV) and 3 x Small Rigid Vehicle (SRV). Note that 1 x SRV loading bay in the North Tower has been provisioned on a transition ramp. This complies with AS2890.2-2002 as the ramp does not exceed 1:25.
- The station loading bay, located at Level B1 in the North Tower loading dock, consisting of 1 loading bay (1 x SRV) for the exclusive use of Sydney Metro.

The layout of the loading bays is shown in Figure 5.

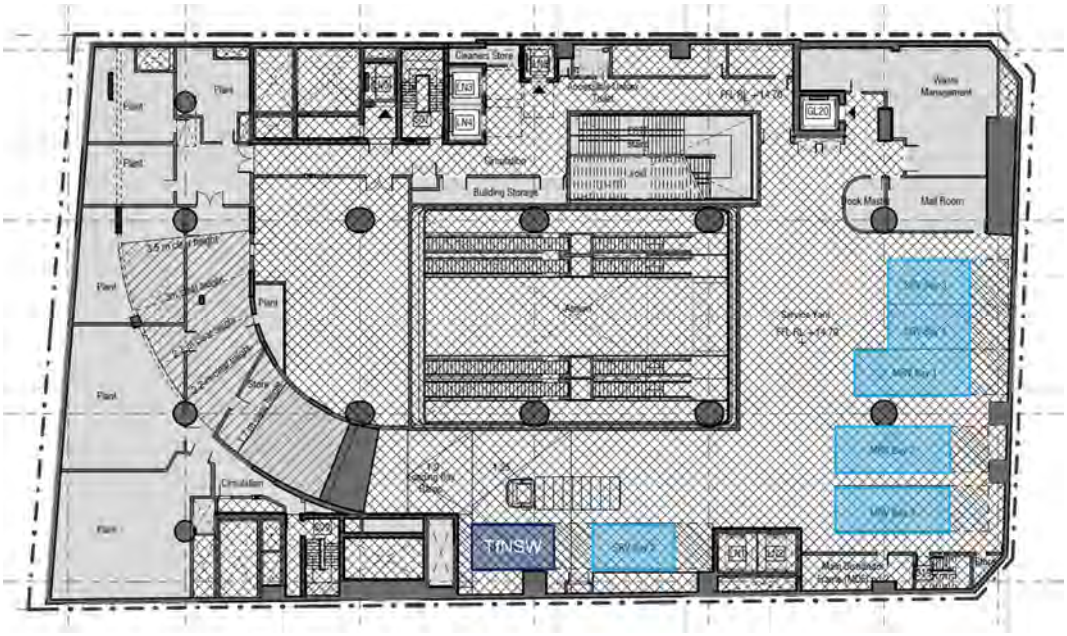


Figure 5: North Tower loading bay layout (B1 level)

4 Logistics Strategy

This section presents the over-arching logistics concept that defines the management of the loading docks and sets out the key principles.

4.1 Key Principles

An independent logistics approach to managing the North and South Tower loading docks has been adopted. The approach assumes that the loading docks will operate independently with the North Tower providing contingency for the South Tower should an incident occur and the dock be closed. The logistics concept showing the movements of goods and vehicles is described in Figure 6.

The key operating principles of the approach are:

k) No long-dwell vehicles (e.g. maintenance and trade vehicles) will be permitted into either loading dock. These will be re-directed to a nominated public carpark suitable for the relevant service vehicles.

l) A loading dock booking system will be employed to control access to dock and spread the demand profile over the day. Deliveries will be required to be pre-booked to an allocated time slot.

m) Loading dock operating hours will be 14 hours per day seven days per week, though be available for exceptional out-of-hours deliveries 24 hours per day.

n) A dock master and a concierge service will be present during the loading dock operating hours. The concierge will move goods away from the loading dock once off-loaded and delivered to the target user.

o) No goods will be moved via the pedestrian link under 50 Martin Place between the South and North Towers. It is understood that his link will be public-facing and in constant use. As such, it has been deemed unsuitable for the movement of any significant quantity of goods and/or waste.

p) Supply chain consolidation of goods should be considered though is not necessary for the loading dock to operate.

Further detail is provided in subsequent sections of this plan.

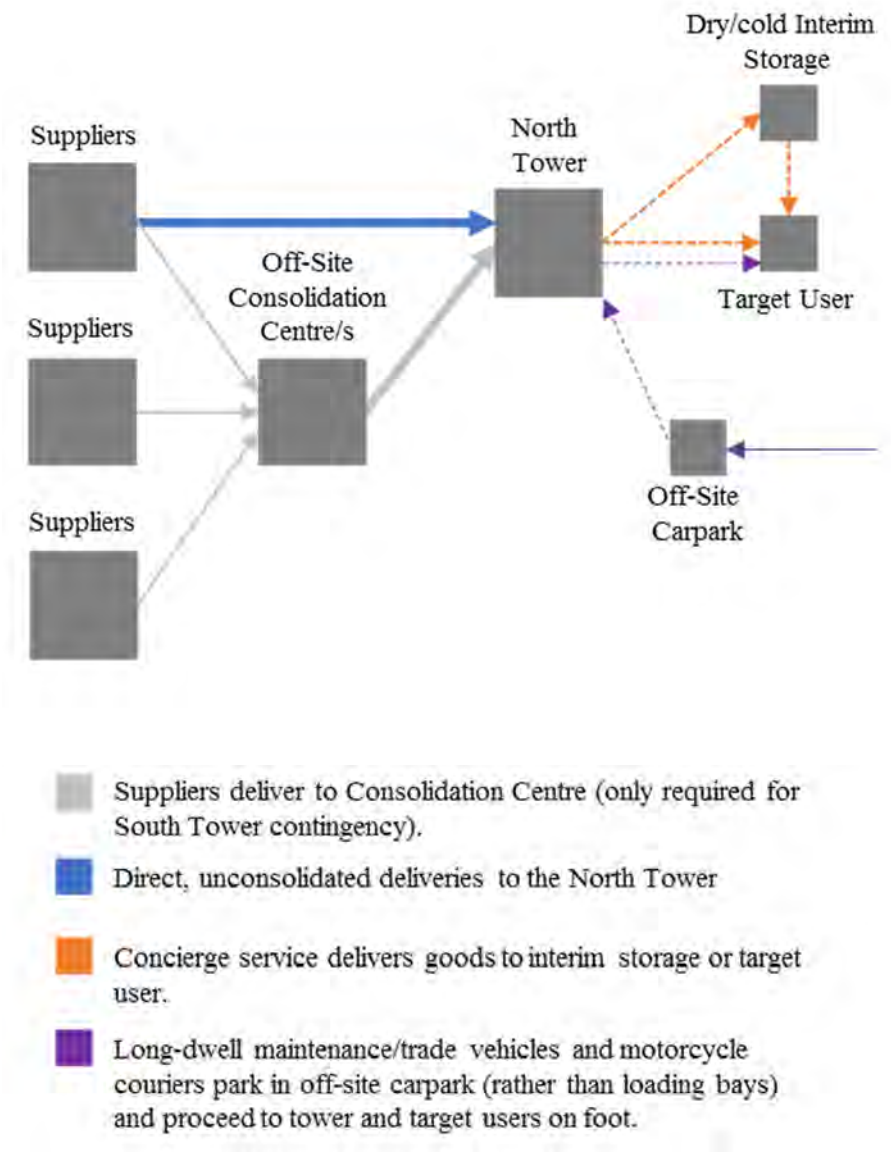


Figure 6: Logistics model

5 Vehicle Demand

This section sets out the estimated number of daily deliveries and loading bay requirements for each area use within the development.

Trip generation rates are derived from survey information of similar mix-use developments to determine the number of delivery and servicing trips expected to be made to the development.

5.1 Typical Vehicle Types

Typical vehicles delivering goods to the development, including their estimated turnaround time, are shown in Table 3.

It would be expected that a development the size of the North Tower would also be serviced by larger HRV (12.5m). However, due to the constrained manoeuvring area available this is not possible and an MRV is the maximum size design vehicle provisioned for; as in common in CBD loading docks.

Table 3 Servicing and delivery vehicle types and turnaround times

Servicing and delivery vehicle types and turnaround times			
Vehicle Type	**Vehicle**	**Characteristics**	**Typical Turnaround Time (minutes)**
Bicycle		Bicycle couriers	-
Motorcycle		Motorcycle couriers.	-
Long-stay service vehicle		Typically, does not exceed SRV specifications.	45
Small Rigid Vehicle (SRV)		Typically, 6.4m length, 4 Tonne load capacity, single rear axle and either single or dual tyres.	10 – 15
Medium Rigid Vehicle (MRV)		Typically, 8.8m length, 8 Tonne load capacity, single rear axle and dual tyres.	15 – 20

Note that while the above turnaround times are typical for the vehicle types described, a booking slot of 30 minutes has been assumed to allow for arrival time variations. The booking system is described in further detail late in this document.

5.2 Daily Delivery Trips

This section presents the number of daily delivery trips for the development and the loading bay requirements to manage the daily demand.

The estimated daily trips to the site were calculated using an in-house vehicle generation tool developed to utilise Arup research and other survey information from similar mixed-use developments. The generation tool applies a delivery vehicle trip rate for each of the proposed area uses to the relevant GFA for that area use.

The trip rates, which are expressed as vehicles per 100m^2 GFA per day, have been derived from survey data from office, retail and other facilities, as well as relevant design guidelines and local authority regulations. The surveys recorded vehicle arrival and departure times, vehicle type and size of goods vehicle use to make the delivery.

The following assumptions have been used to determine daily number of delivery trips:

- 0.18 vehicles/100m²/day for office/commercial deliveries;
- 0.53 vehicles/100m²/day for retail deliveries;
- 2.20 vehicles/100m²/day for restaurant/café deliveries;
- 50 Martin Place loading dock (within the North Tower) are not included;
- Station loading dock provided within North Tower;
- NLA figures assumed to be 85% of GFA for all areas; and
- Floor area allocated for retail is assumed to be 50% retail and 50% restaurant/café until otherwise confirmed.

The number of daily deliveries to the loading dock, based on the area schedule, have been calculated and are shown in Table 4.

Table 4: Daily deliveries

Daily deliveries		
Area Use	**North Tower GFA (m2)**	**Daily Trips (unconsolidated)**
Office	70,224	129
Retail	1,251.5	7
Restaurant/Café	1,251.5	28
Total	**72,727**	**162**[1]

[1] Bicycle and motorcycle couriers are excluded from trip calculations

From the daily trips rates, the minimum loading bay requirement has been calculated, and is presented in Table 5.

Table 5: Loading bay requirement

Loading bay requirement				
Vehicle	**Min. Loading Bay Size (m)**	**Min. Quantity Required**	**No. Provisioned**	**Gap**
MRV	W3.5 x L8.8	2	3	+1
SRV	W3.5 x L6.4	2	3	+1
Total		**4**	**6**[1]	+2

[1] 3 SRV, 3 MRV bays in North Tower loading dock. Excludes loading bay designated for exclusive use of Sydney Metro

Assuming a 30 minute booking slot provided for each vehicle (regardless of size) and a 14 hour operating window, the capacity of the dock would be 168 trips (or booking slots) per day, or 12 per hour. This slightly exceeds the calculated demand of 162 trips/booking slots per day (11.5 trips per hour) providing a limited level of resilience and operational flexibility.

6 Loading Dock Access

6.1 Street Entry

Entry to the North Tower loading dock is via Castlereagh Street. This is a one-way street southbound and consists of one bus lane and one traffic lane. On the both sides of the road, there are parking lanes which are mainly designated as loading bays or bus zones on weekdays. This loading dock strategy specifically excludes the requirement to utilise any on-street loading facilities.

Traffic control signals are located on the intersections of Castlereagh Street with Martin Place and Hunter Street. The entrances to the loading docks have been located as far as possible from the signals as shown in Figure 7.

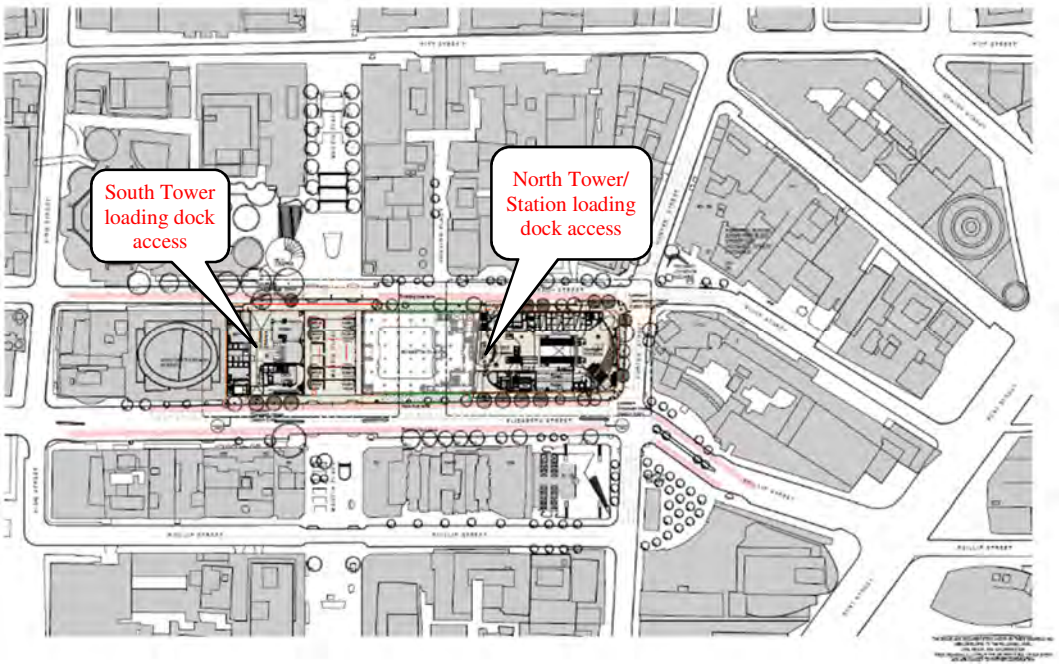


Figure 7: Loading dock entrances

6.2 Driveway

The North Tower dock driveway is approximately 10m in width (12.5m at the edge of roadway) with the footpath gradient 1:40 up to the property line. The first 2.3m of the driveway has a 1:9 gradient before levelling for 3m. A height clearance of 3.6m is provided on entry to the property and throughout the service area.

The driveway traverses a footpath, bringing vehicular and pedestrian movement paths into conflict. Safety measures to be implemented at the driveway to provide a safe environment for pedestrian and vehicle movements include the following:

- Warning signage on each side of the crossover for pedestrians and signage for drivers leaving the driveway;

- Yellow flashing warning lights at the site boundary for pedestrians as vehicles depart the site;
- CCTV surveillance of the access with connection to the security office;
- An intercom at the entry with an audible device to talk to security; and
- Mirrors to assist exiting drivers to view pedestrians on the footpath.

6.3 Ramp

The North Tower dock ramp width is not sufficient to accommodate two-way movements along its entire length. Therefore, a traffic control system is proposed to ensure only one vehicle at a time passes the narrowest section of the ramp. This will take the form of a combined boom gate/traffic light system for vehicles entering and a traffic light for vehicles exiting.

Insofar as operationally possible, priority will be given to vehicles entering the site in order to reduce the risk of vehicle queuing occurring on entry. The potential for queuing, however, is further mitigated by the operation of a booking system.

The gradient of the main ramp is 1:6.5 which is the maximum recommended under AS2890.2, with 1:9 transitions for 5m at both ends of the ramp, and a further 1:25 transition at the bottom end of the ramp. This will ensure that the required clearance of 3.6m is met.

7 Loading Dock Operation

7.1 Operations Management

The loading dock will be managed by the Facilities Manager in accordance with the requirements outlined in this document. The loading dock will have a dock master on-site during the hours of operation to coordinate the safe movement of goods, vehicles and personnel within the loading dock area.

A concierge service will operate with personnel tasked with the onward movement of goods from loading dock areas to interim storage or target users.

The principal facilities and areas for the operation of the loading dock are presented in Figure 8 and Figure 9.

Further detail on the distribution routes for goods from the loading dock throughout the tower are presented in Appendix B.

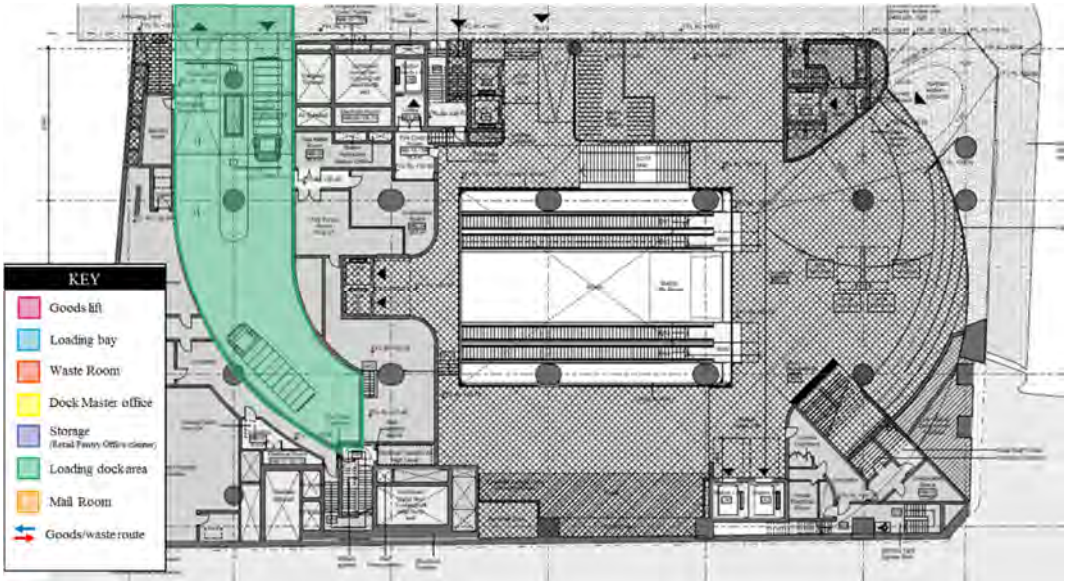


Figure 8: LG level loading dock facilities

Figure 9: B1 level loading dock facilities

7.2 Delivery and Servicing Arrangements

A range of items will be demanded by tenants in the development. Table 6 describes how deliveries and servicing arrangements will be managed by the type of goods demanded.

Table 6: Delivery arrangements by goods type

Goods Type	Arrangement
Retail goods	50% of retail deliveries will be consolidated and received to the loading dock.
Food and beverage (cold/fresh)	50% of cold/fresh goods are consolidated through supply chain. Deliveries are received to the loading dock.
Food and beverage (dry)	50% of food and beverage deliveries (dry) will be consolidated and deliveries are received to the North Tower dock then driven to South Tower loading dock by same vehicle ('milk run').
Office goods	70% of daily consumables will be consolidated and deliveries are received to the loading dock.
Exhibition/auditorium goods/equipment	Deliveries received out of hours. Booking required.
Bulky/exceptional goods	Outside of operating hours by prior arrangement and booking.

Sydney Metro deliveries/collections	Exclusive-use loading bay provided. Booking required.
Motorcycle courier deliveries/collections	Redirected off-site to nominated local carpark.
Bicycle courier deliveries/collections	End of Trip Facilities (EOTF) will be used for access by bicycle courier deliveries to the tower.
Mail	Received by the North Tower loading dock for target users in the North Tower. Booking required.
Personal goods (e.g. flowers or online packages)	Redirected off-site (e.g. to preferred carrier, consolidation centre, or package lockers)
Long-dwell vehicles (e.g. servicing, trades and maintenance)	Long term deliveries will be re-directed to a nominated local carpark (suitable for the relevant vehicle) unless there is an emergency maintenance or repair requiring an onsite vehicle.

7.3 Hours of Operation

The loading dock will be available 24 hrs per day, with an operational window of 14 hours per day – 6am to 8pm – 7 days per week. This period has been selected to allow for operational flexibility in the timing of deliveries with non-priority deliveries retimed to lower demand periods.

On occasion, it will be necessary to receive deliveries (e.g. for exhibitions, building materials, plant and other equipment) and removal of builders' waste. The provision of access outside of operational hours will be at the discretion of, and special arrangement by, the Facilities Manager who may grant access as required. Booking via the booking system will be required.

7.4 Booking System

In order for the tower to be adequately serviced, a delivery booking system will be utilised. The major benefit of the implementation of such a system is demand levelling and reducing loading bay requirement. The allocation of deliveries to timeslots prevents a 'peak hour' for delivery vehicles occurring at the loading dock, which can lead to congestion, delays and incidents. It also largely mitigates the risk of vehicle queues forming to enter the site, blocking the flow of traffic on Castlereagh Street. It has been assumed that 30 minute booking slots will operate for the docks and that the Station loading bay, within the North Tower, will also be subject to pre-booking.

The implementation of this system also aims to streamline internal logistics (the onward goods distribution from the loading dock to target users), as the input of

goods to the dock is known in advance and sufficient manual handling equipment and resources can be planned to meet demand.

7.4.1 Typical Operation

There are a number of commercial delivery booking systems available. The functionality of a typical system is outlined below:

- A delivery or service vehicle operator logs a delivery or service requirement with the loading dock through an online/mobile app and selects from a list of available timeslots. The delivery or service vehicle operator is provided with:
  - The loading dock entry address and allocated a loading bay for delivery;
  - A security code to be used at the entrance to the dock for access;
  - Contact information for the dock operator and instructions if a timeslot is unable to be met;
  - The vehicle operator is sent a reminder notification or text message to alert them that their timeslot is upcoming; and
  - Upon arrival at the correct dock, the vehicle operator uses the security code provided to gain access to the site, unload goods or provide service, and uses the code to leave the dock area.

7.4.2 Examples

There are numerous examples of managed loading docks in the Sydney CBD. Two examples are as follows:

Barangaroo

- Precinct style dock serving entire Barangaroo development.
- Bookings made in advance through Bestrane.
- No booking = no entry!
- Vehicles are pre-allocated a space within the loading dock based on the building they are servicing and the size of the vehicle.
- Dock master on site between 6am and 6pm, however 24-hour access to the dock is provided.
- Centralised precinct courier / mail room located within the dock.

200 George Street

- Concierge directs all deliveries through to loading dock.
- Bookings for deliveries made in advance through ‘Scatter’ system. This is associated with availability of the goods lift rather than the spaces within the dock.
- No booking required for couriers. Most of them are known to the dock master who simply directs them to their space.

- Separate contractor parking on B1 (bookings required).
- Dock master on site between 6.30am and 6.30pm.
- Bookings only from 7pm.

7.5 Access Control

The North Tower will maintain a consistent procedure for controlling access to the loading docks.

Outside of operating hours, vehicular and personnel access to the loading dock will be controlled by a roller shutter door.

During operating hours (when security and dock master are present), the roller door will remain open and boom gates will control vehicular access into and out of the loading dock.

Access will be granted only to those vehicles that are booked via the loading dock booking system. Signage to this effect will be displayed prominently at the loading dock entrance to deter entry attempts by unbooked vehicles.

Depending on the software used, drivers will either receive a code which they will be able to use at the boom gate to access the site and will be directed to their pre-booked space by the dock master. Alternatively, they will communicate with the dock master via intercom before being granted access and being directed to their pre-booked space.

The North Tower will include a traffic control system to ensure only one vehicle at a time passes the narrowest section of the ramp.

Vehicles may be refused entry for reasons such as arriving before or after their allocated time slot, not having a booking or entering the driveway by mistake. Rejected vehicles will not be granted entry into the loading dock. Should a vehicle be refused entry at the boom gate (via intercom communication with the dock master), they will be required to wait until met by the dock master or security personnel. The dock master/security personnel will stop the passage of pedestrians on the footpath and instruct the driver of the vehicle to reverse safety on to Castlereagh Street and move away.

7.6 Waste Collection

Waste and recycling will be collected outside of operational hours to ensure minimal impact on the operation of loading dock. Waste bins will be provided, moved to the loading dock area after hours by the facilities management team and stored in one loading bay ready for collection. The waste contractor will collect the bins before commencement of the dock operations. The facilities management team will return the bins to the waste room.

7.7 Loading Dock Management

The loading dock makes provision for a dock master office. This typically houses a desk and chair, computer equipment, small amount of interim storage and other facilities required for the dock master to perform their duties.

The dock master will ensure the loading dock (including designated safe walking routes) are kept clear of goods at all times and ensure delivery vehicles strictly adhere to their allotted booking slot. Any vehicles overstaying their booking will be moved on to ensure later bookings are not affected.

The current layout for the North Tower loading dock provides 3m of clear space behind each loading bay to allow for tail lifts and for the offloading of goods. Safe routes for the movement of people and goods between the loading bays and goods lifts that avoid vehicle manoeuvring areas have also been designated. Pavement markings will be required to indicate safe access for people and delivery movement through the loading dock area.

Incidents occurring within the loading dock area, or at the loading dock entrance, will be managed in accordance with the Precinct Wide Incident Management Plan.

7.8 Associated Infrastructure

This section describes the associated infrastructure required for the loading dock to operate effectively.

7.8.1 Interim Goods Storage

Space has been provided in the loading docks area for the temporary storage of dry and cold goods that have been delivered and are waiting to be moved to their final destination. The concierge will manage the interim storage room.

7.8.2 Mail Room

The tower includes a mail room (located at B1 level) for the receipt and sortation of mail.

7.8.3 Goods Lifts

Direct access has been provided for the movement of goods from the loading docks to the goods lifts. From the lifts, goods will be distributed to target users.

The North Tower loading dock will utilise three (3) goods lifts for vertical circulation with selection depending on the final destination of the goods (identified in Figure 9). The lifts are the:

- Tower Goods Lift (GL20);
- Retail Goods Lift (LN5); and

- Station Goods Lift (LN6). For use by Sydney Metro operations and OSD by arrangement.

7.9 Contingency & Resilience

7.9.1 Resilience

A degree of resilience has been built in to the assumptions used in this plan. For example, 30mins booking slots have been assumed to allow for variations in arrival times of vehicles even though turn-around times are typically 15-20mins. A 14 hour operating window has been designated to provide the flexibility to retime lower priority deliveries to quieter parts of the day.

For the single loading bay in the South Tower, resilience will be provided through North Tower loading dock handling deliveries for the South Tower.

7.9.2 Contingency Plans

To test the logistics and loading dock management strategy, a number of incidents have been considered for the loading dock. In each case, operational procedures are proposed to maintain the flow of deliveries into the docks. Contingency responses have been prepared to address potential scenarios:

Table 7: Contingency responses for potential incidents

Incident and Impact	Response
Blocked access - A vehicle has broken down at the entrance driveway to the loading dock and cannot be moved. This has prevented other service vehicles accessing the loading docks.	A towing service will be called immediately to remove the vehicle. Deliveries will be re-timed through the dock management system. Carriers will be advised by text message of the changed time slot.
Delivery outside of booking slot - A vehicle has arrived at the entrance to the loading dock without a booking. This has temporarily blocked access for booked vehicles.	The driver will communicate via intercom with dock master. **Option 1** - The Dock Master will have discretion to allow entry if there is available capacity either during peak hours or non-peak hours. **Option 2 -** If there is no available capacity within the dock the driver will be asked to turn vehicle away, assisted by the dock master to move away safely. The dock master will be appropriately trained and equipped to do this task.

Incident and Impact	Response
Driver taking too long to deliver - A driver has had an issue making a delivery and has exceeded the delivery slot allocated. This will impact other vehicles arriving for their booked timeslot and delay the daily operation.	The dock master will be responsible for monitoring delivery timeslots and moving on slow drivers. This will be further mitigated by drivers not leaving the loading dock area, with a concierge service responsible for the onward movement of goods from loading dock/interim storage to target user.
Emergency access - A burst water pipe has occurred within the South Tower loading dock requiring emergency access for responders. The plumbing contractor vehicle requires exclusive use of the loading dock for some time in order to resolve the issue. This has prevented other service vehicles accessing the South Tower loading dock.	A plumbing contractor will be called immediately to respond to the issue. Critical deliveries (e.g. fresh produce) will be directed to the North Tower loading dock, non-critical deliveries will be re-timed through the dock management system. Non-critical North Tower deliveries will be retimed to free capacity if required. Carriers will be advised by text message of the changed location and time for delivery. Goods will be moved from the North Tower dock to South Tower users through the pedestrian link under 50 Martin Place, public street level thoroughfares or via the consolidation centre vehicle.

7.10 Swept Path Analysis

Swept path analysis has been conducted to ascertain whether the arrangement of the loading dock is able to accommodate the manoeuvring and parking of service vehicles requiring access.

The swept path analysis was conducted for the following vehicle sizes:

- Medium Rigid Vehicle (MRV); and
- Small Rigid Vehicle (SRV)

The vehicles used for the tracking were Austroads 2013 design vehicles, provided in the vehicle library of the vehicle tracking software. The swept path analysis drawings are appended to this report.

8 Agency consultations

The Metro Martin Place project team met with the RMS Sydney Coordination Office (SCO) on 18 April 2018 to provide a brief on the upcoming SSDA Stage 2 submission. The contents of this report were discussed and another meeting was requested regarding the Loading Dock Management Plan; this meeting was conducted on 25 May 2018 and all designs presented were agreed to in principle.

The Metro Martin Place team met with the City of Sydney 30 July 2018 to provide a brief on the upcoming SSDA Stage 2 submission. The contents of this report were discussed and all designs presented were agreed to in principle, and a draft of this report was provided to City of Sydney for comment.

9 Conclusion

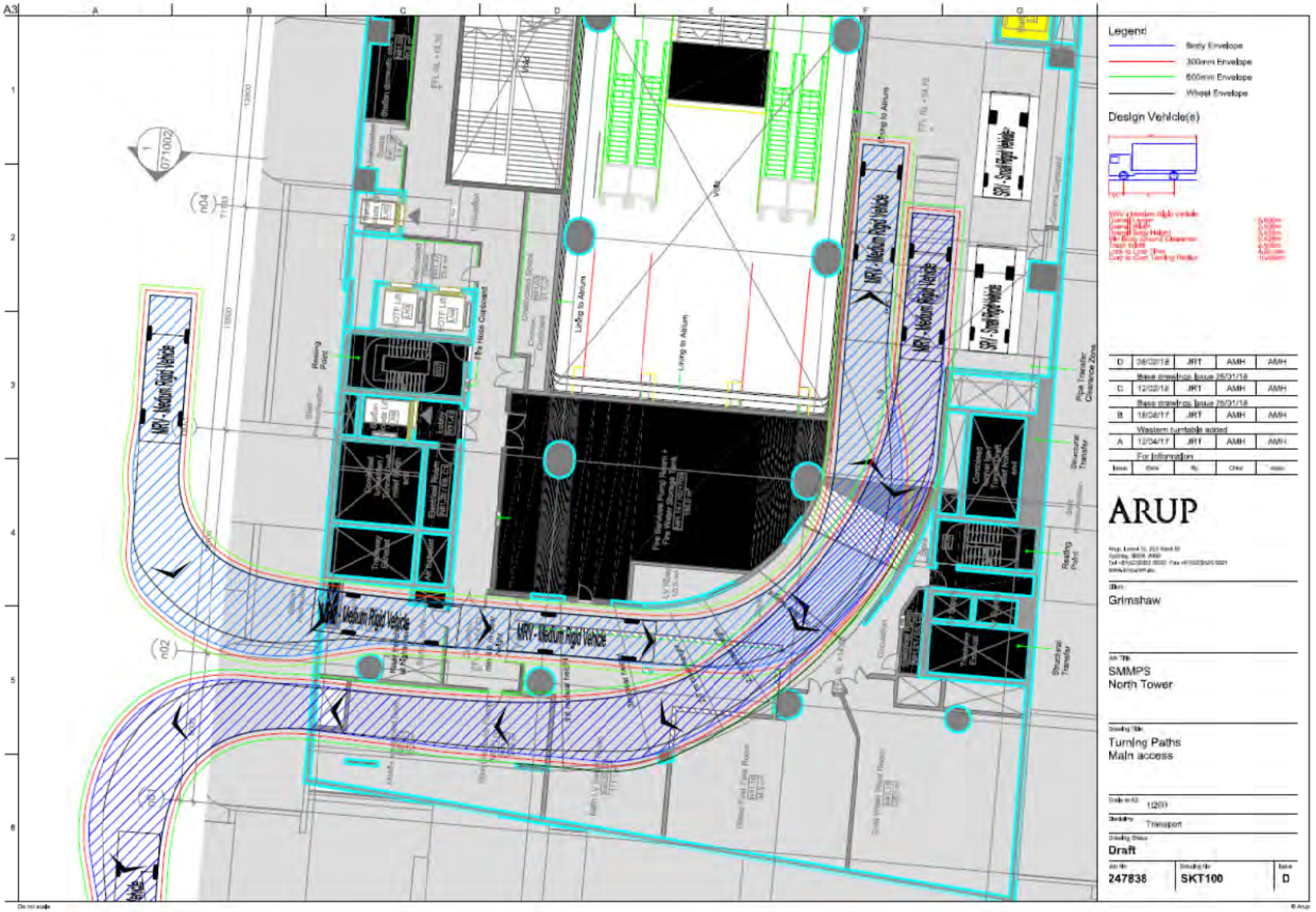
As has been demonstrated in this LDMP, the North Site loading dock has been designed to deliver an efficient operation while minimising its impact on city infrastructure.

Operationally, it demonstrates that sufficient vehicle manoeuvring envelopes and capacity exists for the level of demand that the development is expected to generate. The proposed operation of the dock is highly managed, employing a pre-booking system, on-site dock master and concierge service to ensure goods are received and moved to target users in a safe and efficient manner.

The plan requires no use of on-street loading bays, minimises the risks of vehicles queuing onto Castlereagh Street and disrupting traffic flows, proposes measures to minimise the risk of vehicle-pedestrian collisions at the driveway-footpath interface and outlines contingency measures to be employed should disruption to operations occur. As such, risks of impacts to the city have been mitigated insofar as possible. For these reasons, the LDMP meets the requirements of SEARS and conditions of SSDA Stage 1.

Appendix A

Swept Path Analysis



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Base drawings issue 26/01/18				
B	18/08/17	JRT	AMH	AMH
Western turntable added				
A	12/04/17	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

Legend

Body Envelope

300mm Envelope

600mm Envelope

Wheel Envelope

Design Vehicle(s)

Issue	Date	By	Chkd	Appd
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G	12/02/18	JRT	AMH	AMH
F	23/11/17	JRT	AMH	AMH
E	17/11/17	JRT	AMH	AMH
D	06/11/17	JRT	AMH	AMH
C	31/10/17	JRT	AMH	AMH
B	18/08/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

ARUP

Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
North-western bay

Scale at A3: 1:200

Discipline: Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	SKT102	H

Do not scale

© Arup

Legend
Body Envelope
300mm Envelope
600mm Envelope
Wheel Envelope
Design Vehicle(s)
SRV - Small Rigid Vehicle
MRV - Medium Rigid Vehicle
Structural Transfer
Fire Hose Cupboard
Living to Atrium
Void
Loading Bay Ramp
Pipe Transfer Clearance Zone
Resting Point
1:25
1:8
G 28/02/18 JRT AMH AMH
F 12/02/18 JRT AMH AMH
E 20/11/17 JRT AMH AMH
D 17/11/17 JRT AMH AMH
C 31/10/17 JRT AMH AMH
B 16/08/17 JRT AMH AMH
A 31/05/17 JRT AMH AMH
ARUP
Client
Grimshaw
Job Title
SMMPS
North Tower
Drawing Title
Turning Paths
Loading dock
Northern bay
Scale at A3 1:200
Discipline Transport
Drawing Status
Draft
Job No
247838
Drawing No
SKT103
Issue
G
Do not scale
© Arup
A3


A3
Legend
Story Envelope
850mm Envelope
600mm Envelope
Wheel Envelope
Design Vehicle(s)
SRV - Small Rigid Vehicle
MRV - Medium Rigid Vehicle
Living to Atrium
Void
Fire Hose Cupboard
Resting Point
Structural Transfer
Fire Transfer Clearance Zone
ARUP
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SMMPS
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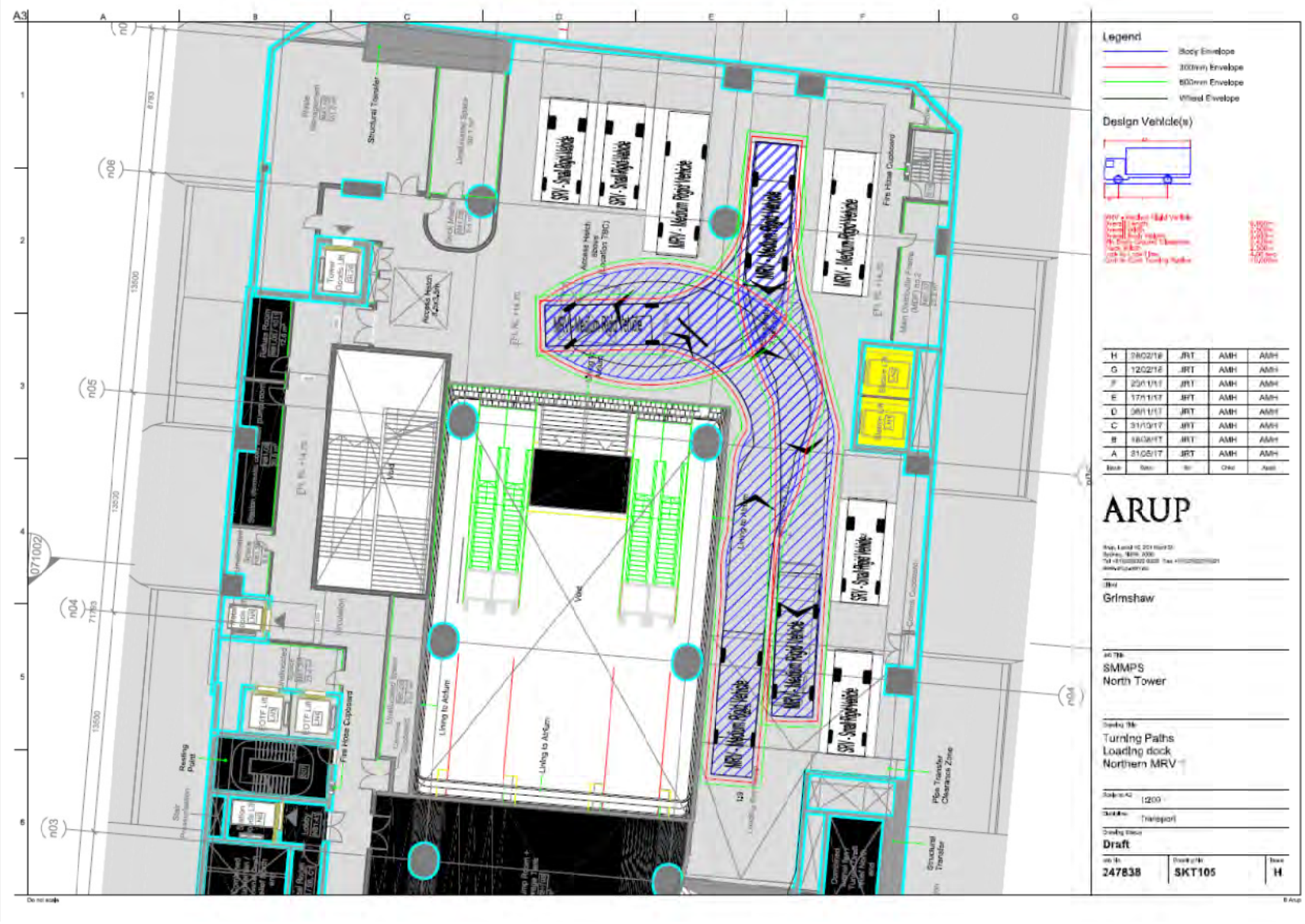
Turning Paths
Loading dock
Eastern bays
1:200
Transport
Draft
247838
SKT104
H



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A	31/05/17	JRT	AMH	AMH
Issue	Date	By	Chkd	Appd

ARUP

Client
Grimshaw

Job Title
SMMPS
North Tower

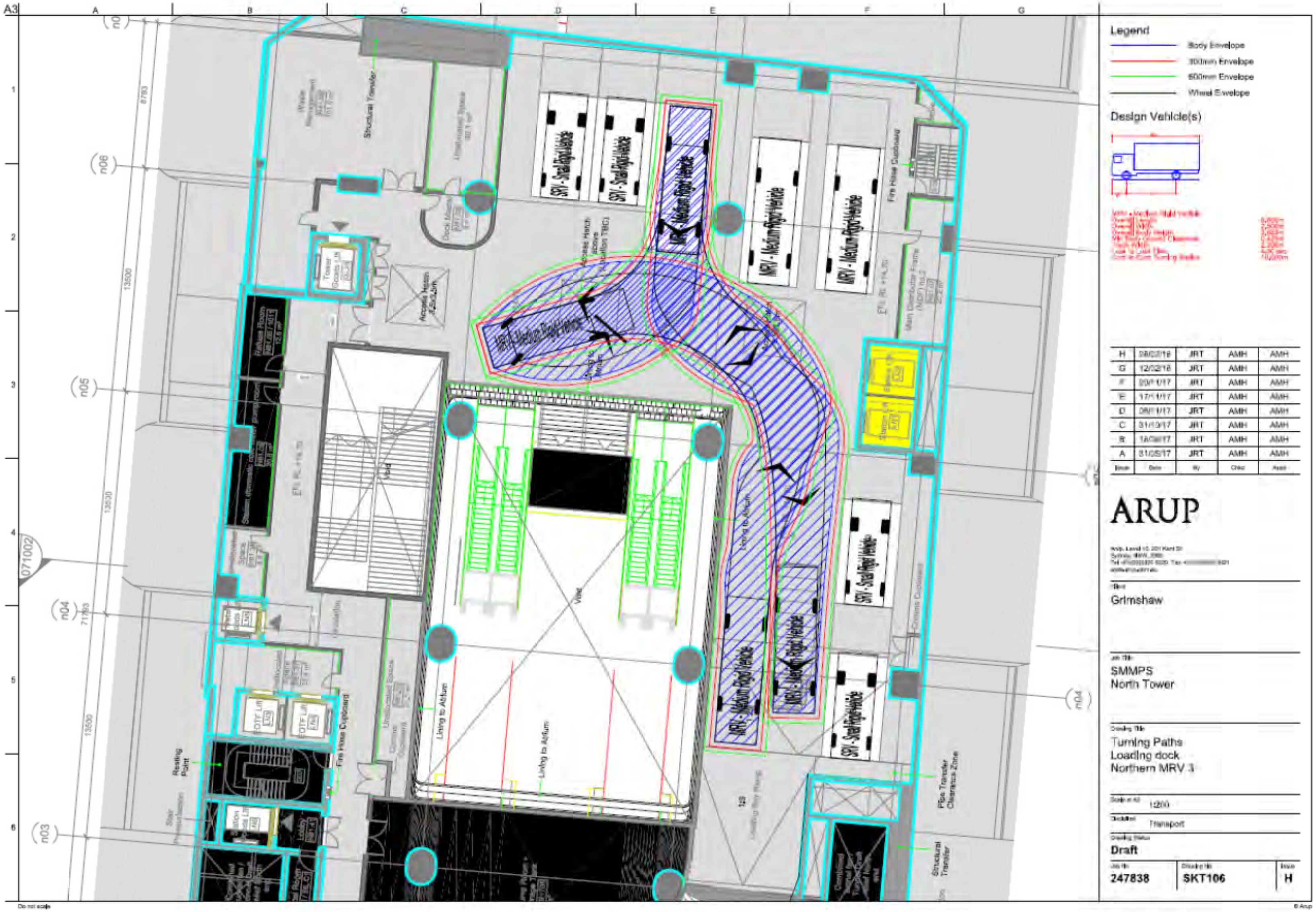
Drawing Title
Turning Paths
Loading dock
Northern MRV

Scale @ A3 1:200

Distribution Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	SKT105	H



Legend
Body Envelope
300mm Envelope
600mm Envelope
Wheel Envelope
Design Vehicle(s)
MRV - Medium Rigid Vehicle
SRV - Small Rigid Vehicle
Structural Transfer
Fire Hose Cupboard
Access Hatch
Void
Living to Atrium
Pipe Transfer Clearance Zone
Resting Point
Do not scale
H 28/02/18 JRT AMH AMH
G 12/02/18 JRT AMH AMH
F 20/11/17 JRT AMH AMH
E 17/11/17 JRT AMH AMH
D 09/11/17 JRT AMH AMH
C 31/10/17 JRT AMH AMH
B 18/08/17 JRT AMH AMH
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ARUP
Grimshaw
SMMPS
North Tower
Turning Paths
Loading dock
Northern MRV 3
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Transport
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247838
SKT106
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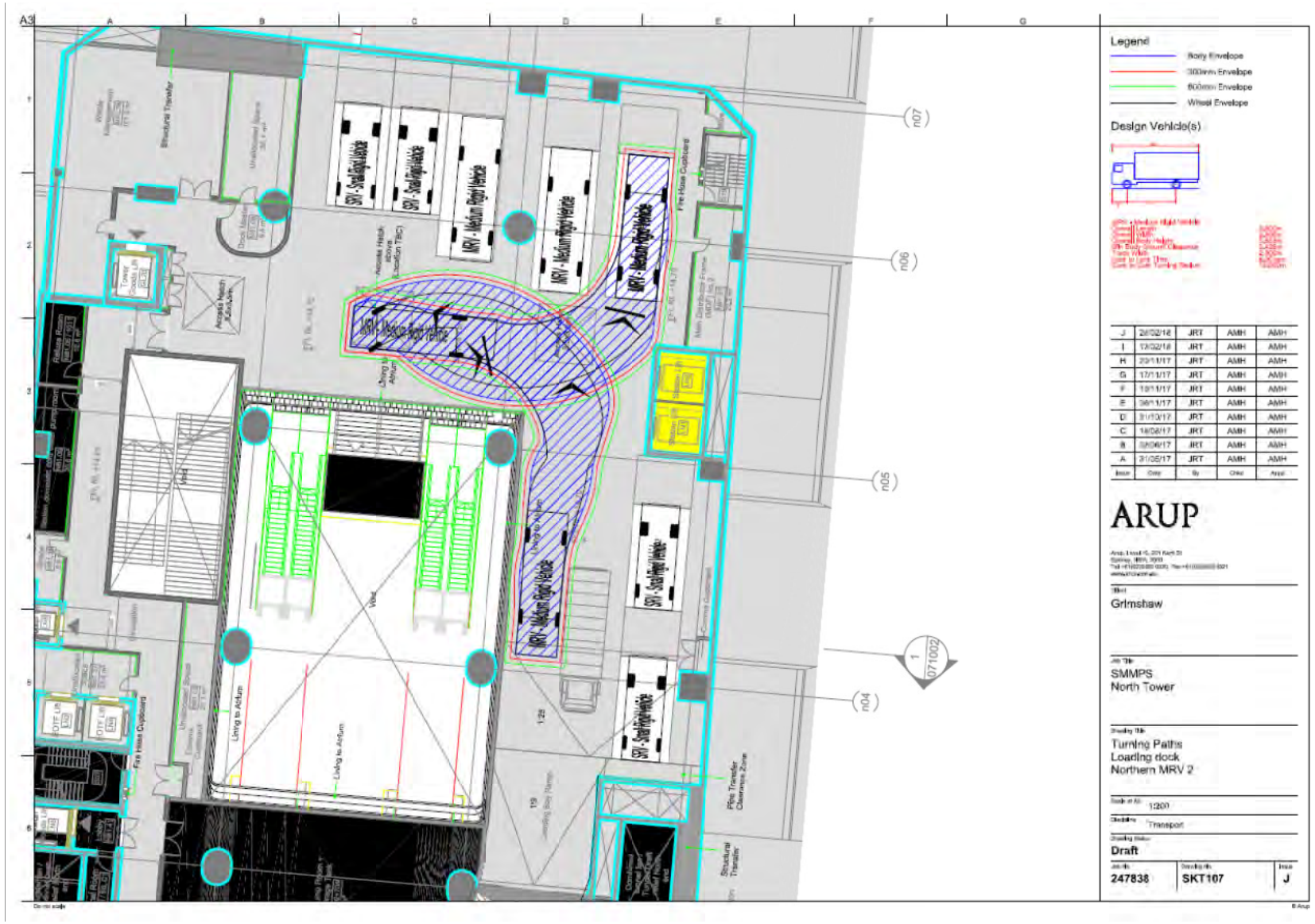
© Arup


A3
MRV - Medium Rigid Vehicle
SRV - Small Rigid Vehicle
Structural Transfer
Fire Hose Cupboard
Fire Hose Cupboard
Fire Transfer Clearance Zone
Living to Atrium
Void
Legend
Body Envelope
300mm Envelope
600mm Envelope
Wheel Envelope
Design Vehicle(s)
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I 13/02/18 JRT AMH AMH
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SMMPS
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Turning Paths
Loading dock
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1:200
Transport
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247838
SKT107
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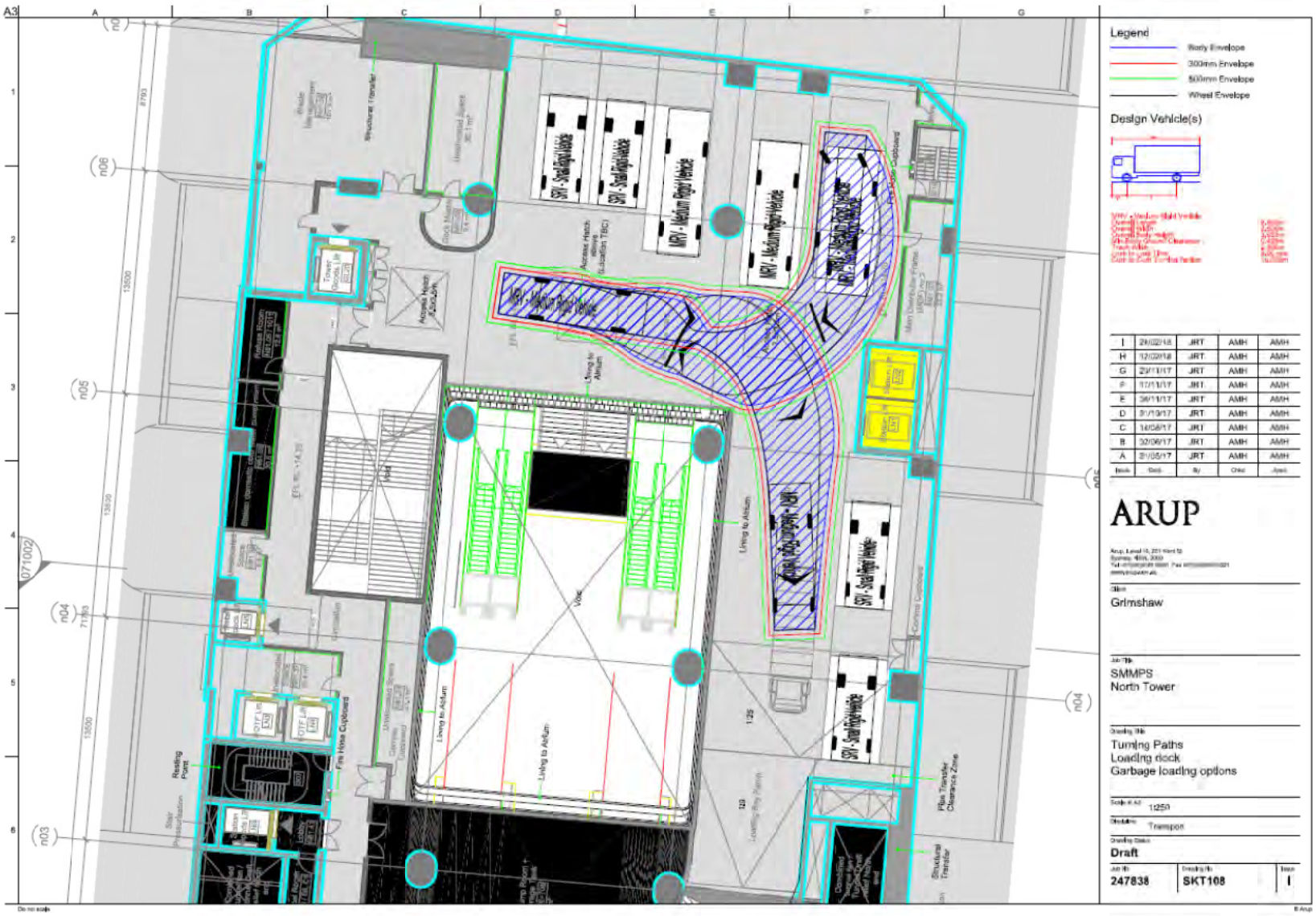

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Issue	Date	By	Chkd	Appd

ARUP

Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Garbage loading options

Scale @ A3 1:250

Checked Thompson

Drawing Status
Draft

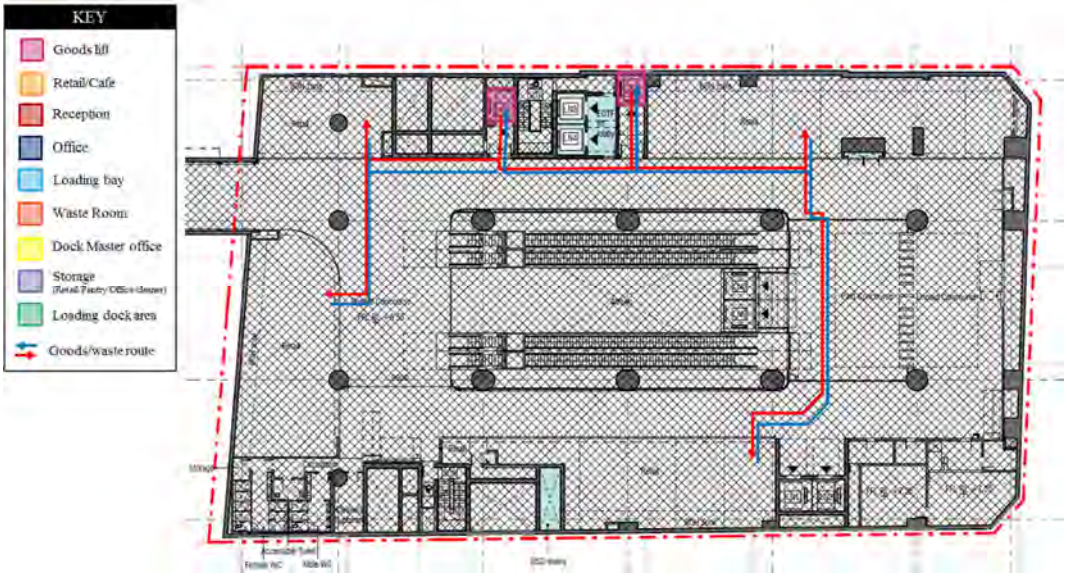
Job No	Drawing No	Issue
247838	SKT108	I

Appendix B

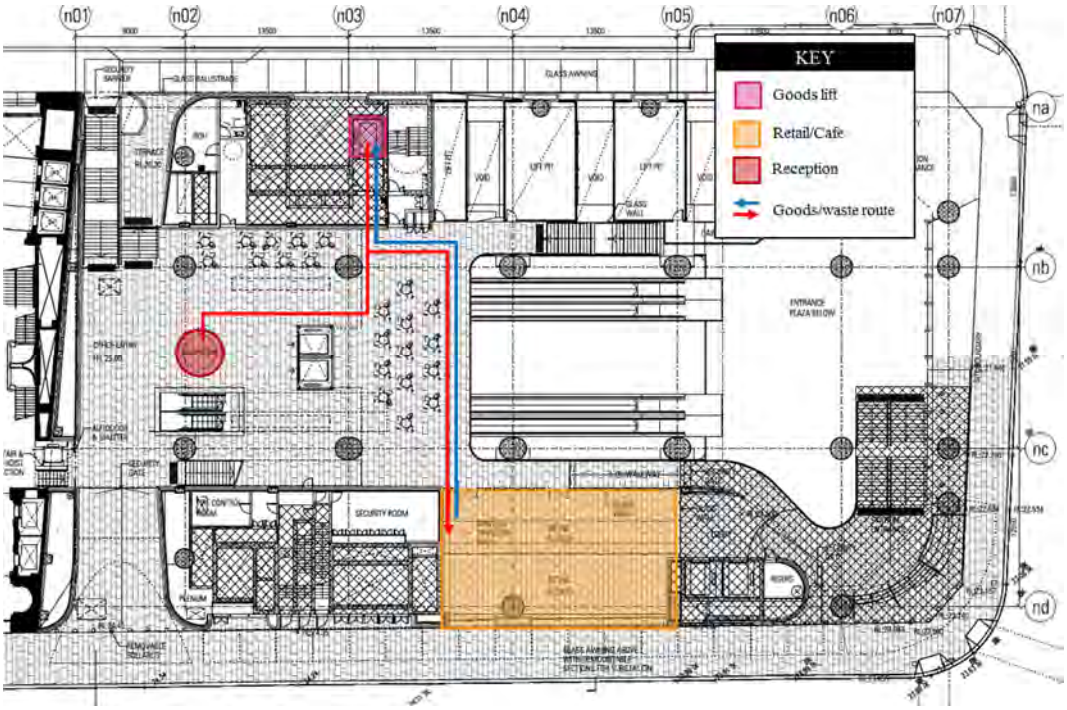
Goods Distribution Routes

B1.1 North Tower

LEVEL B3 PLAN – CONCOURSE



LEVEL 00 GROUND FLOOR PLAN



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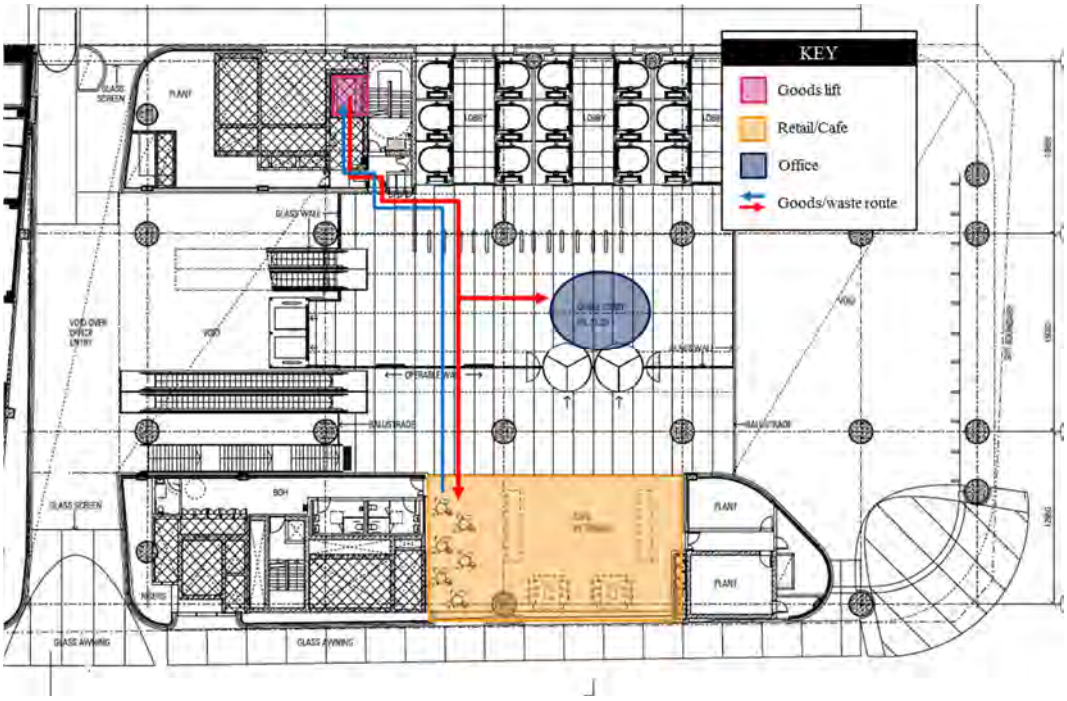

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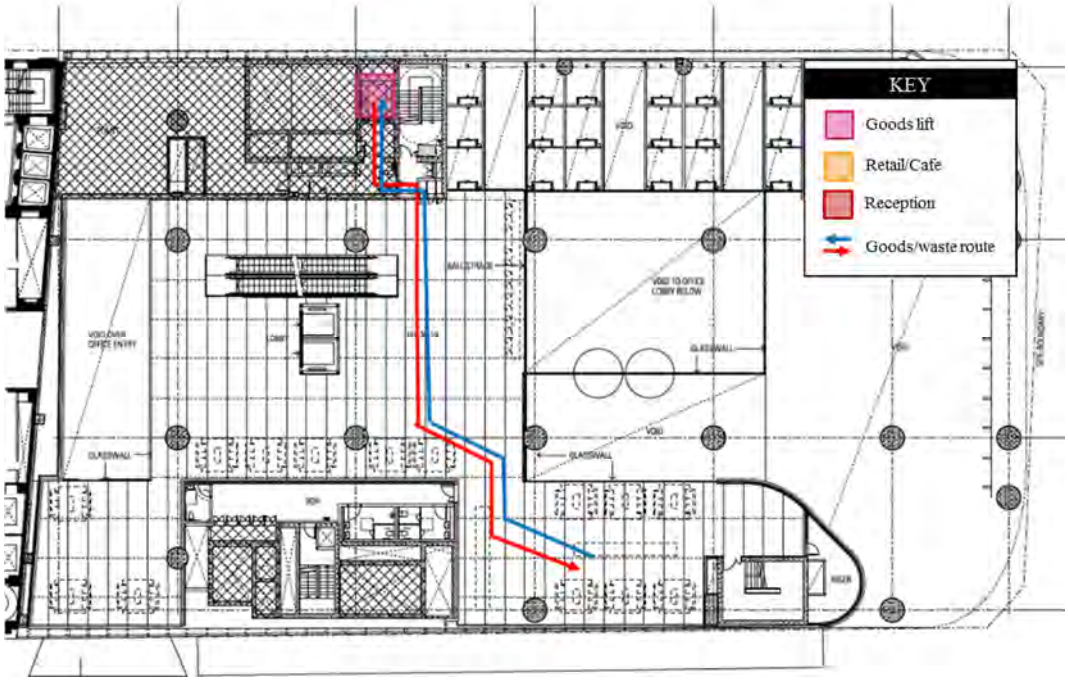

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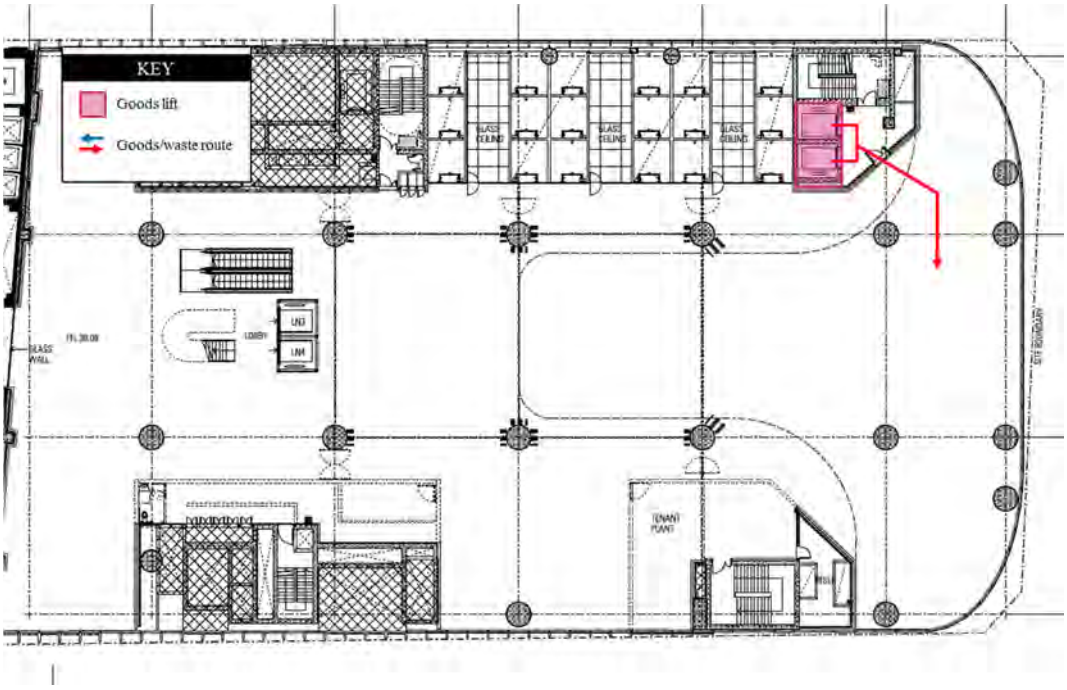

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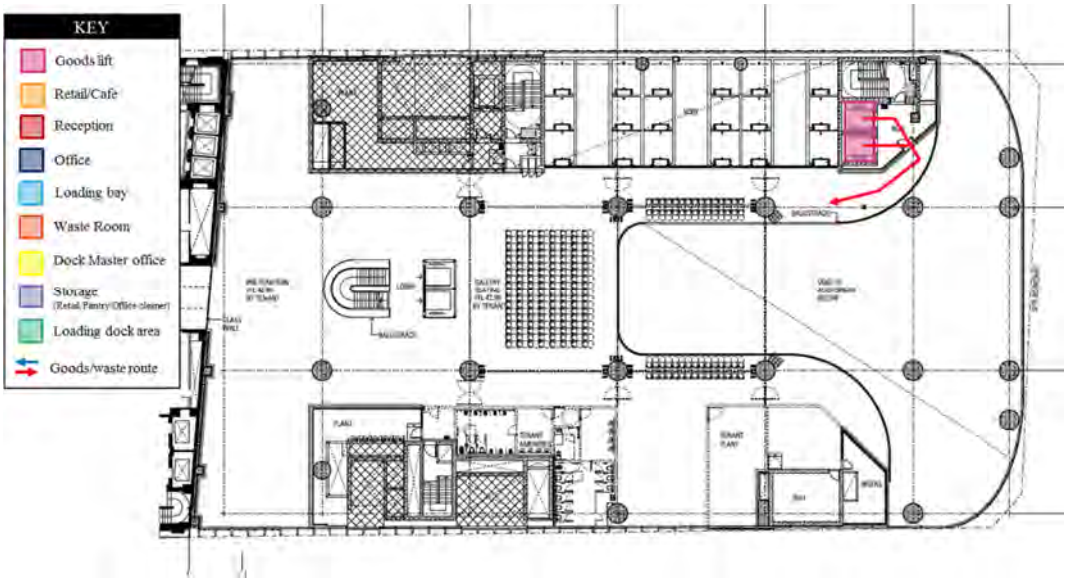
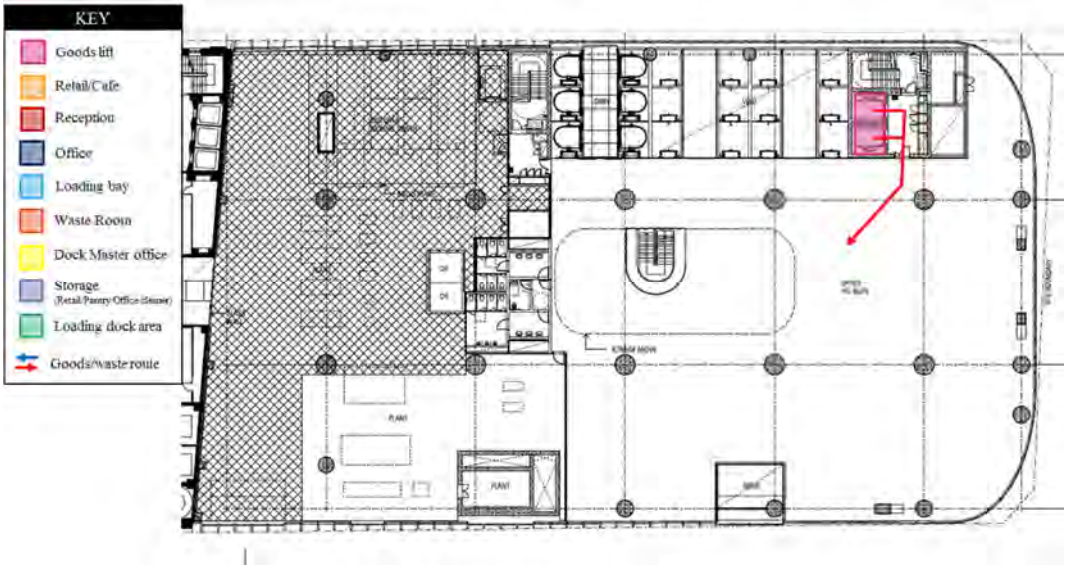


INDICATIVE OFFICE PLAN



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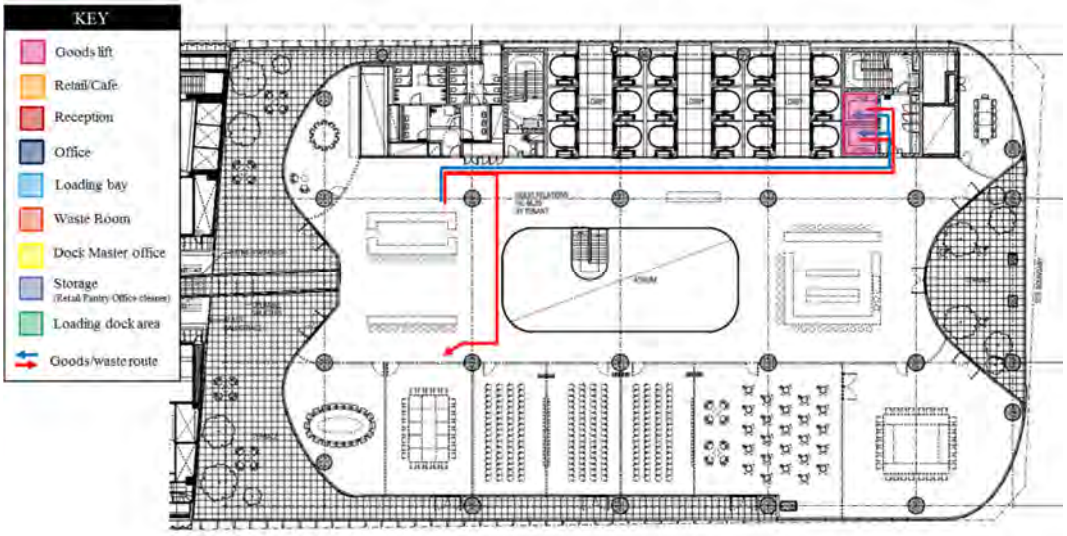


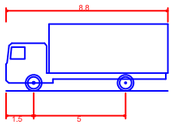
Appendix B

Swept Path Analysis

Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

D	28/02/18	JRT	AMH	AMH
Base drawings issue 25/01/18				
C	12/02/18	JRT	AMH	AMH
Base drawings issue 25/01/18				
B	18/08/17	JRT	AMH	AMH
Western turntable added				
A	12/04/17	JRT	AMH	AMH
For Information				

Issue	Date	By	Chkd	Appd

ARUP

Arup, Level 10, 201 Kent St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Main access

Scale at A3
1:200

Discipline
Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT100**	**D**

Do not scale

A3

Legend

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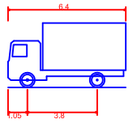
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



SRV - Small Rigid Vehicle	
Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

Issue	Date	By	Chkd	Appd
H	28/02/18	JRT	AMH	AMH
G	12/02/18	JRT	AMH	AMH
F	20/11/17	JRT	AMH	AMH
E	17/11/17	JRT	AMH	AMH
D	06/11/17	JRT	AMH	AMH
C	31/10/17	JRT	AMH	AMH
B	18/08/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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www.arup.com.au

Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
North-western bay

Scale at A3
1:200

Discipline
Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT102**	**H**

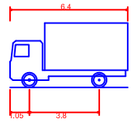
Do not scale

A3

Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



SRV - Small Rigid Vehicle

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Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

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F	12/02/18	JRT	AMH	AMH
E	20/11/17	JRT	AMH	AMH
D	17/11/17	JRT	AMH	AMH
C	31/10/17	JRT	AMH	AMH
B	18/08/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Northern bay

Scale at A3 1:200

Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT103**	**G**

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A3

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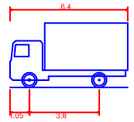
Design Vehicle(s)



SRV - Small Rigid Vehicle	
Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

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D	06/11/17	JRT	AMH	AMH
C	31/10/17	JRT	AMH	AMH
B	18/08/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Eastern bays

Scale at A3 1:200

Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
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Do not scale

A3

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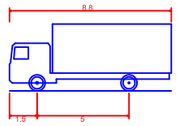
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

Issue	Date	By	Chkd	Appd
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B	18/08/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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www.arup.com.au

Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Northern MRV 1

Scale at A3 1:200

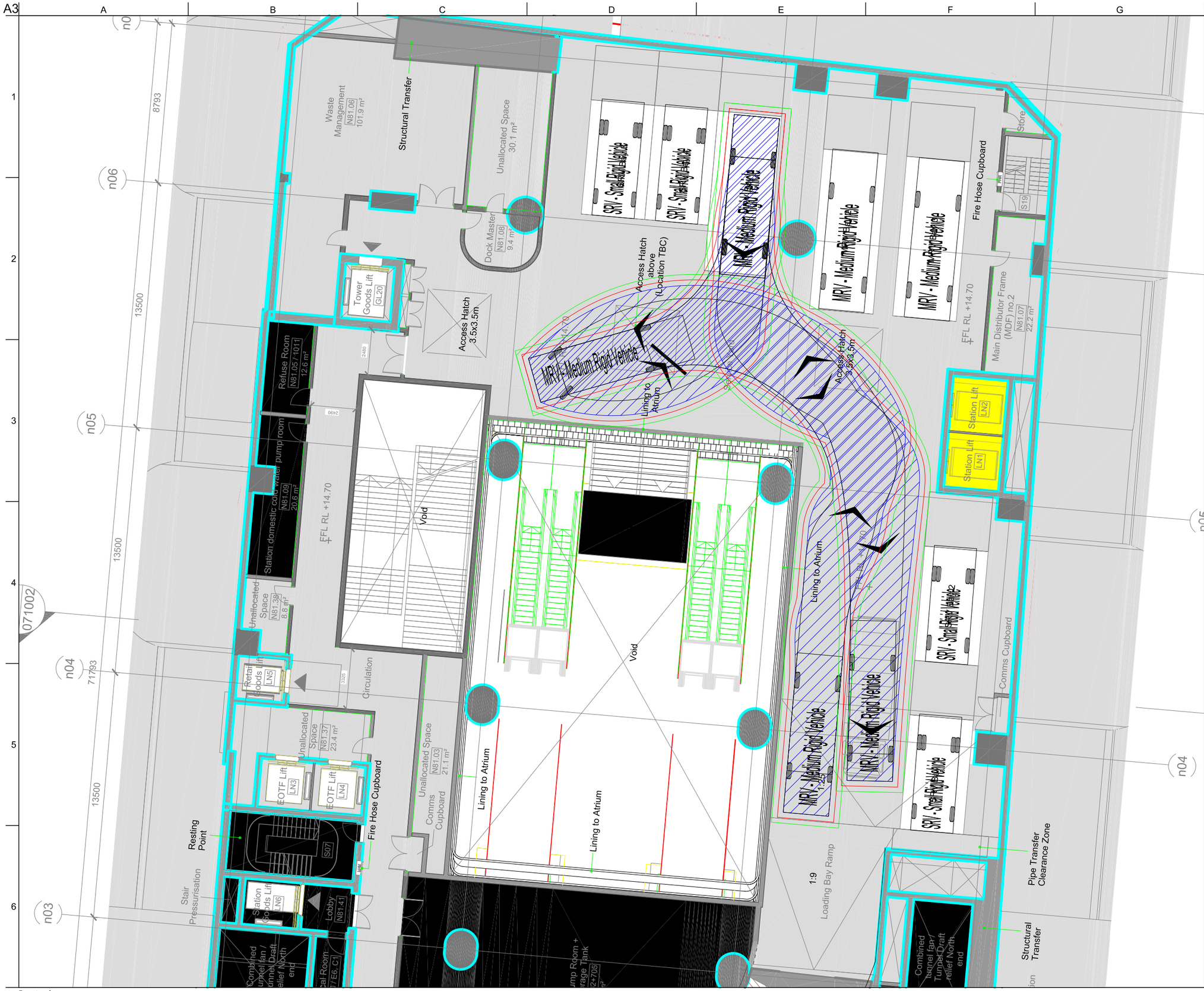
Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT105**	**H**

Do not scale

A3



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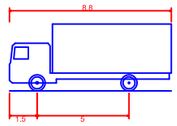

MRV - Medium Rigid Vehicle	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

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A	31/05/17	JRT	AMH	AMH

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Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Northern MRV 3

Scale at A3 1:200

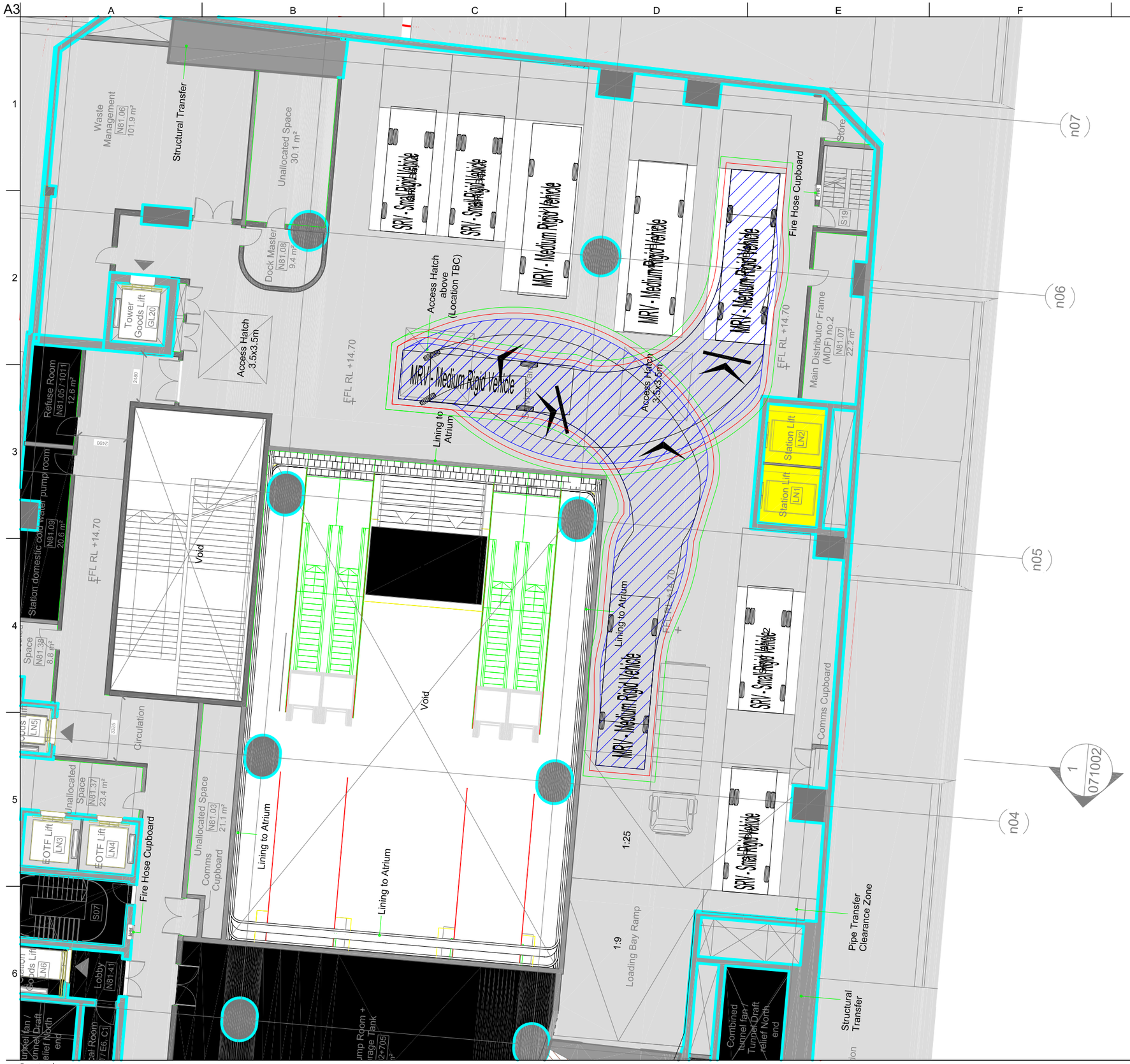
Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT106**	**H**

Do not scale

A3



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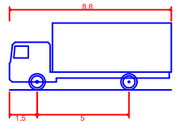
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

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D	31/10/17	JRT	AMH	AMH
C	18/08/17	JRT	AMH	AMH
B	02/06/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Northern MRV 2

Scale at A3 1:200

Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT107**	**J**

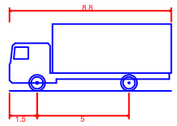
Do not scale

A3

Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
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C	18/08/17	JRT	AMH	AMH
B	02/06/17	JRT	AMH	AMH
A	31/05/17	JRT	AMH	AMH

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Client
Grimshaw

Job Title
SMMPS
North Tower

Drawing Title
Turning Paths
Loading dock
Garbage loading options

Scale at A3 1:250

Discipline Transport

Drawing Status
Draft

Job No	Drawing No	Issue
247838	**SKT108**	**I**

Do not scale

A	31/05/17	JRT	AMH	AMH

For Information

Appendix C

Green Travel Plan

Macquarie

Sydney Metro Martin Place integrated station development

North Tower, SSD DA Stage 2: Green Travel Plan

CSWSMP-MAC-SMN-TF-REP-999903

Revision 01 | 23 August 2018

Job number

Arup
Arup Pty Ltd ABN 18 000 966 165

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ARUP

Contents

1 Introduction

This report supports a State Significant Development (SSD) Development Application (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 **North Site** Over Station Development (OSD), located above and integrated with the Martin Place Metro Station (part of the NSW Government's approved Sydney Metro project). The northern entrance to Martin Place Metro Station will front Hunter Street, Elizabeth Street and Castlereagh Street, with the North Site OSD situated above.

This application follows the approval granted by the Minister for a Concept Proposal (otherwise known as a Stage 1 DA) for two OSD commercial towers above the northern and southern entrances of Martin Place Metro 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 DA) must be consistent.

This report describes the Green Travel Plan for the North Tower which will have employment population of approximately 7,650.

1.1 Purpose of this Report

This report addresses the relevant SEARs for the project and provides the framework to develop a Green Travel Plan addressing travel demand and sustainable travel initiatives for the commercial building.

Condition B8 of the Stage 1 Concept Proposal (SSD 8351) stated that

Future Development Application(s) shall identify, through green travel plans, opportunities to maximise the use of sustainable transport choices, such as incentives and provision of cycle parking and end of trip facilities in the detailed design.

1.2 Site Location

The Sydney Metro Martin Place Station Precinct (the 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 Green Travel Plan relates **only to the North Site**, which refers to the city block bounded by Hunter Street, Castlereagh Street, Elizabeth Street, and Martin Place (refer to Figure 2).

The South Site (39 – 49 Martin Place) is the subject of a separate Stage 2 SSD DA and as such, a separate Green Travel Plan has been prepared for it.

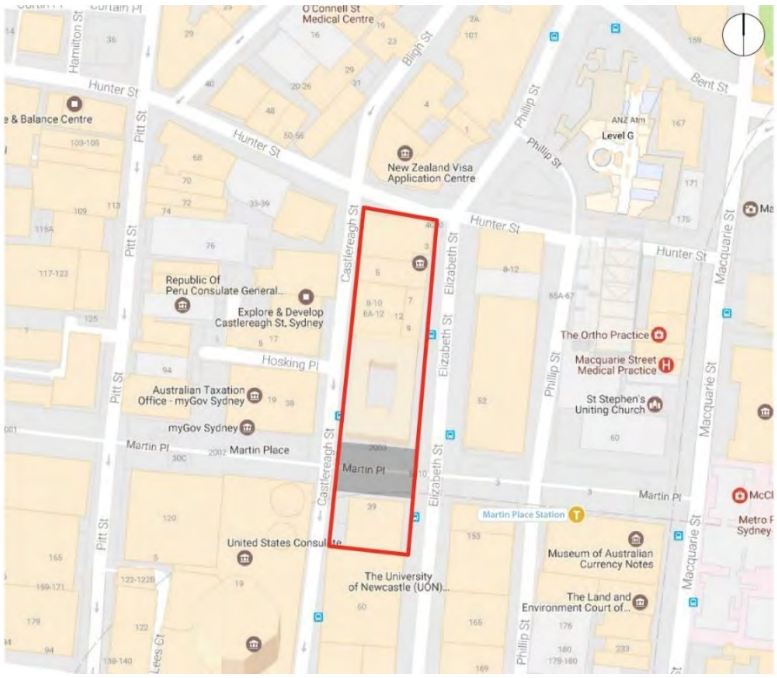

Figure 1 Location map of the Precinct

Figure 2 Aerial Photo of the North and South Site of the Martin Place Metro Station Precinct

1.3 What is a Green Travel Plan?

A Green Travel Plan (GTP) is generally a tool to minimise the negative impact of private vehicle travel on the environment. It is a package of measures put in place to encourage more sustainable travel. GTP describes ways in which the use of sustainable transport may be encouraged. Using public transport, cycling, walking, working from home, carpooling, etc are all more sustainable means of transport than single occupant driving.

More generally, the principles of a GTP are applied to all people travelling to and from a site. Government authorities around the nation are placing increasing emphasis on the need to reduce the number and length of motorised journeys and in doing so encourage greater use of alternative means of travel which have less environmental impact than cars.

1.4 Benefits of a Green Travel Plan

The GTP can bring a number of benefits to the occupants of the North Tower and visitors, including:

- Employees can enjoy improved health, less stress, a better quality of life, cost and time savings, and greater travel choice;
- Reduced traffic congestion;
- Benefit from improved air quality, less noise and pollutants; and
- Deliver health benefits, tackle obesity and improve quality of life

1.5 Green Travel Plan Framework

A GTP for the North Tower will need to address the following issues:

- What are the objectives in terms of commuting and business travel journeys;
- How are the set objectives going to be met? What measures are going to be implemented and encouraged?
- Who is going to be responsible for the management, implementation and administration of the measures?

The key element to reducing the reliance on private vehicle for the North Tower will be maximising the use of public transport, walking and cycling for commuting and business trips.

1.6 Green Travel Plan Objectives

The main objectives of the GTP are to reduce the need to travel and promotion of sustainable means of transport. The more specific objectives for staff and visitors include:

- To achieve high modal share targets set for public transport, cycling and walking to work;
- To ensure adequate facilities are provided at the site to enable staff and visitors to commute by sustainable transport modes;
- To reduce the number of car journeys associated with business travel by staff and visitors;
- To facilitate the sustainable and safe travel of new employees;
- To reduce the need to travel for work-related activities; and
- To raise awareness of sustainable transport amongst staff.
- To work in partnership with neighbouring organisations/developments, local authorities, retailers and other relevant bodies in achieving the maximum mode shift away from the private car.
- To continually develop, implement, monitor, evaluate and review the progress of the travel plan strategy.

2 Transport and Access Service Strategy

2.1 Existing Mode Split and Future Target

Census Journey to Work (2016) data has been used to analyse the existing commuter travel behaviour in the area and characterise the public transport conditions in the vicinity of the proposed development site.

The 'Destination Zone' (DZN[1]) to which these statistics apply is the block bounded by Hunter Street, Elizabeth Street, Castlereagh Street and Martin Place, allowing for high quality data in relation to travel patterns (see Figure 3). This is the same area defined as the North Site.

At the time of the Census (and prior to demolition works), this zone had an employment population of approximately 3,000 people. Their main mode of travel is summarised in Figure 4. Over half of all commuters working in the area travel by train (51%) and a further 24% travel by bus. Travel by private car accounts for 11% of all trips (9% as car driver and 2% as car passenger). This indicates that the vast majority of employees in the area are using public transport for their commute. Walking trips account for 6% of the commuting trips with 2% of trips made by bicycle.

Figure 3: DZN utilised for analysis

[1] DZN 113371056 utilised for the analysis

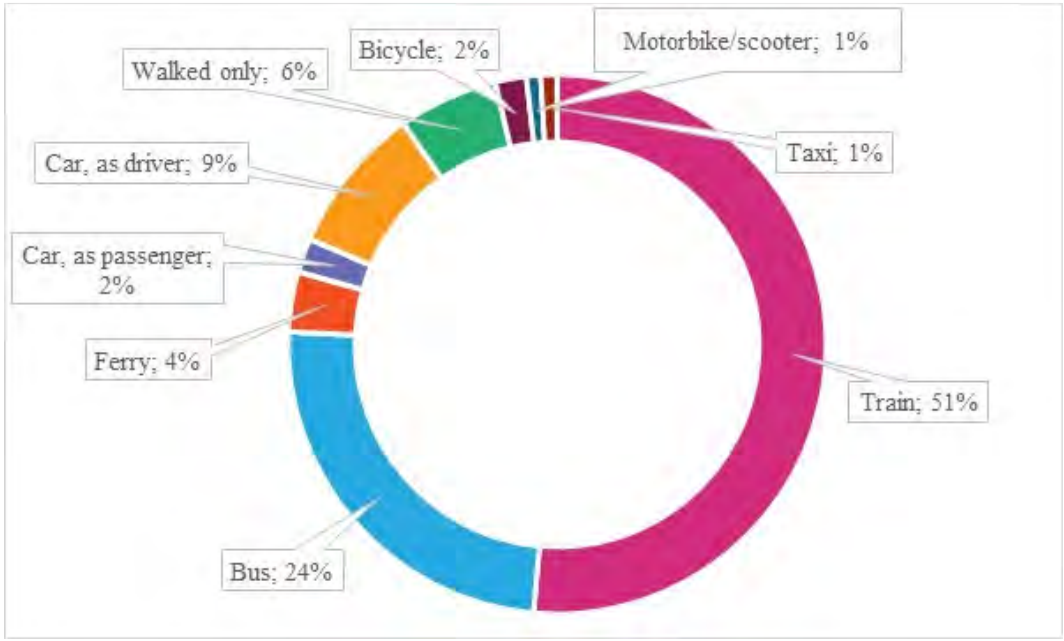

Figure 4: Mode Share

The largest proportion of employees commute from North Sydney (19%) followed by Inner City (15%), and Sydney Eastern Suburbs (14%).

A future mode share for the North Site has been estimated based on existing and predicted travel patterns to the development site and is presented in Figure 5.

The removal of the majority of on-site car parking is anticipated to reduce the car driver mode share to just 3% with subsequent increases in the public transport and active travel mode shares as a result.

Given the North Site will be accessible directly from Metro Martin Place station, more than half of employment trips to the development site will be by Train/Metro (53%, a slight increase from existing), with travel by bus having the second highest mode share (25%, a slight increase from existing).

Walking and cycling are anticipated to have a mode share of 6% and 5% respectively, with the quality of end of trip facilities encouraging travel by these active modes. The End of Trip Facilities (EOTF) are designed to accommodate a 7.5% cycle mode share.

The nearest light rail stop to the development site will be the Wynyard stop on George Street, just a 5-minute walk to Martin Place and will be attractive travel option, in particular for those commuting from the Eastern Suburbs.

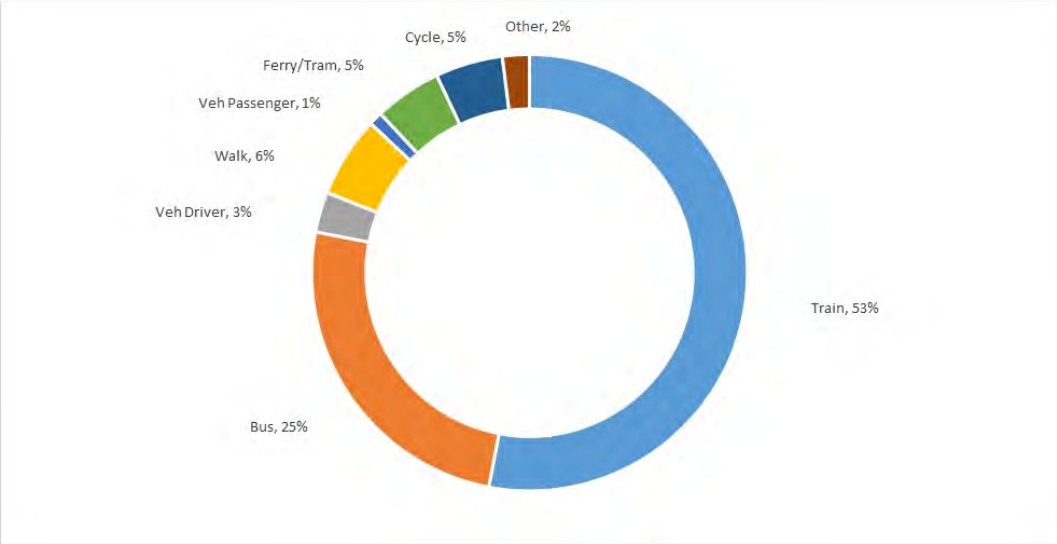

Figure 5: North Site OSD Target Mode Split

2.2 Bicycle Network

There are a number of key cross-city cycle routes in the CBD which form part of City of Sydney's cycling network. These routes are as follows:

- Kent Street (separated, bi-directional cycleway)
- King Street (separated, bi-directional cycleway)
- Pyrmont Bridge (shared cycle path)
- Macquarie Street (mixed street environment)
- Alfred Street north (shared cycle path)
- College Street (separated, bi-directional cycleway)

The Sydney City Centre Access Strategy was released by the NSW Government in December 2013. The strategy outlines the future city centre cycleway network to encourage growth in cycling and reduce pressure on the public transport system. The future city centre cycle network is shown in Figure 6, and includes:

- Extending the Kent Street cycleway south to Liverpool Street
- Construction of a bi-directional cycleway on Liverpool Street
- Construction of a bi-directional cycleway on Castlereagh Street and Pitt Street, providing a new north-south connection through the CBD – (noted that the construction of Castlereagh Street north cycle has been deferred by Roads and Maritime Services)
- Extending the existing King Street cycleway to Castlereagh Street
- Extending the east-west cycleway along Park Street to Castlereagh Street

There is a small amount of on-street bicycle parking (c.15 stands) located along the streets surrounding the precinct. Most of the stands are attached to street

furniture (see Figure 7) with three dedicated stands located at the corner of Castlereagh Street and Martin Place.

Figure 6: Strategic Cycleway Network Map

(Source: Sydney City Centre Access Strategy)

Figure 7: Local cycle parking facilities

2.3 Public Transport Access

The area is highly accessible by public transport as reflected by the high usage of trains, buses and ferries as a travel mode to work (approx. 75%). The North Site has some of the highest public transport accessibility in Sydney, with the location of the main rail and ferry transport nodes within 800m walking catchment of the North Site as shown in Figure 8. The future 'Wynyard' light rail stop on George Street will also be within walking distance. A summary of the existing and planned future public transport options are summarised below.

Figure 8: Main public transport nodes surrounding the precinct

2.3.1 Trains & Metro

Metro Martin Place station has a direct pedestrian access to Martin Place, with the station having seven operational pedestrian access points at present. Train services operating at this station include the T4 Eastern Suburbs and Illawarra Lines, offering high frequency services between Bondi Junction and areas in southern Sydney, including Hurstville, Sutherland, Cronulla, Waterfall and Wollongong.

These trains stop at Town Hall (next stop west of Martin Place) which offers direct interchange to most destinations on the Sydney Trains network. At peak times trains are operating at 3-4-minute frequencies in both directions increasing to 10-minute frequencies in the evening time.

St James Station's entrance on the north side of St James Road is approximately 200m from Martin Place. This station is on the City Circle line offering services to the T3 Airport and East Hills Line, as well as to the Inner West via Circular Quay, Wynyard and Town Hall.

Wynyard Station's George Street entrance is approximately 500m from Martin Place. There are a number of rail services operating from this station including the T1 North Shore & Northern line and the T8 Airport & South Line

The Sydney Metro City and Southwest line, when operational, will have a station at Martin Place with trains every four 4-minutes at peak times operating between Epping and Sydenham and in the future to Bankstown.

2.3.2 Buses

The CBD is supported by extensive bus networks, which cover most of the area within approximately 10km of the CBD, as well as some longer distance services

from the Northern Beaches, Upper North Shore and the Northwest. This network comprises primarily direct services which serve particular suburbs at their outer extent and then converge on corridors as they approach the CBD. The combined service frequencies on a number of these corridors, such as Oxford Street, Broadway and Victoria Road are in the range of 50 to 120 buses per hour.

Sydney Buses

A number of buses stop on Castlereagh Street and Elizabeth Street in the vicinity of the site. Services originate from

- Inner West including Ashfield, Burwood, Lilyfield, Abbottsford and Chiswick via Broadway and George Street;
- North West via Victoria Road corridor including areas such as Ryde and Eastwood; and
- South West (Tempe, Kingsgrove, Canterbury, Dulwich Hill).

When leaving the City most services use Castlereagh Street. Services from the Eastern Suburbs generally run along Elizabeth Street.

Another major transport interchange is Wynyard, which has services from the Northern Beaches (B-Line) and Lower North Shore, and the Victoria Road Corridor. The B-line is a 'turn up and go' service while other bus services vary in frequency throughout the day.

Private Bus Operators

In addition to the above Sydney Buses services, a number of private operators offer services to the City. These include services from:

- Sydney's North West (Hillsbus) which generally use the M2 Motorway alignment and Gore Hill Freeway, connecting at Wynyard and then Town Hall and Railway Square; and
- Sydney's Upper North Shore (Forest Coach Lines and Shorelink) connecting Belrose, North Turramurra, East Wahroonga and Terry Hills stopping at Wynyard and Town Hall.

Convenient bus stops are in the Wynyard area and some inbound services stop at York Street, which is marginally closer to the precinct.

2.3.3 Ferry

Circular Quay Ferry Wharves are approximately 700m from the northern boundary of the North Site, walking via Bligh Street and Young Street. From Circular Quay, there are regular ferry connections to Manly, Taronga Zoo, Parramatta, Darling Harbour, Neutral Bay, Mosman Bay and Eastern Suburbs. The Sydney Ferry Network is presented in Figure 9.

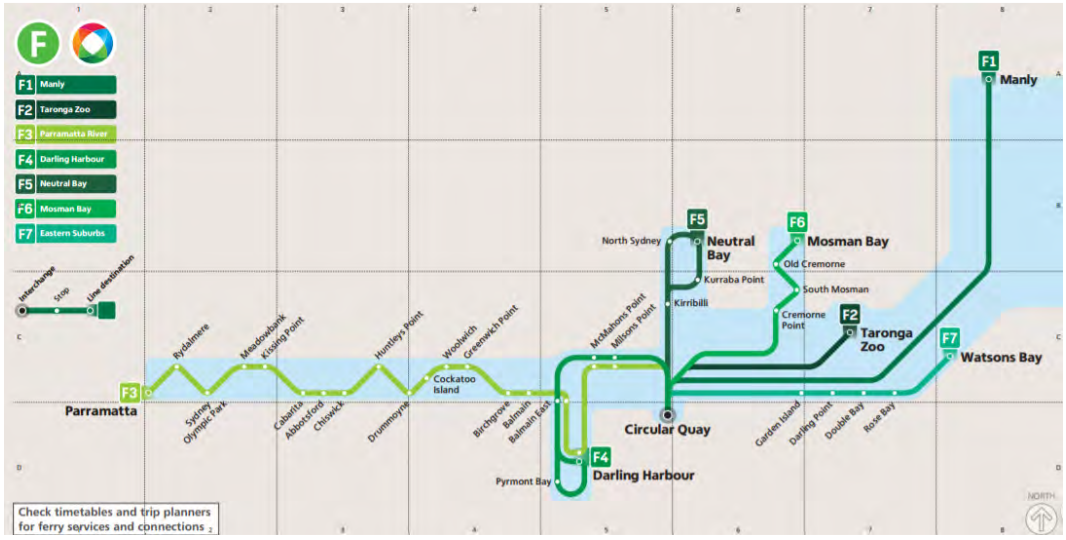

Figure 9: Sydney Ferry Network

2.3.4 Light rail

The CBD and South East Light Rail is a 12km light rail network currently under construction. When completed, it will operate between Circular Quay and Kingsford/Randwick with 19 stops (including Central Station). The nearest stop to the precinct will be the Wynyard stop on Georges Street, approximately a 5-minute walk.

Construction is expected to be completed with services operational in 2020.

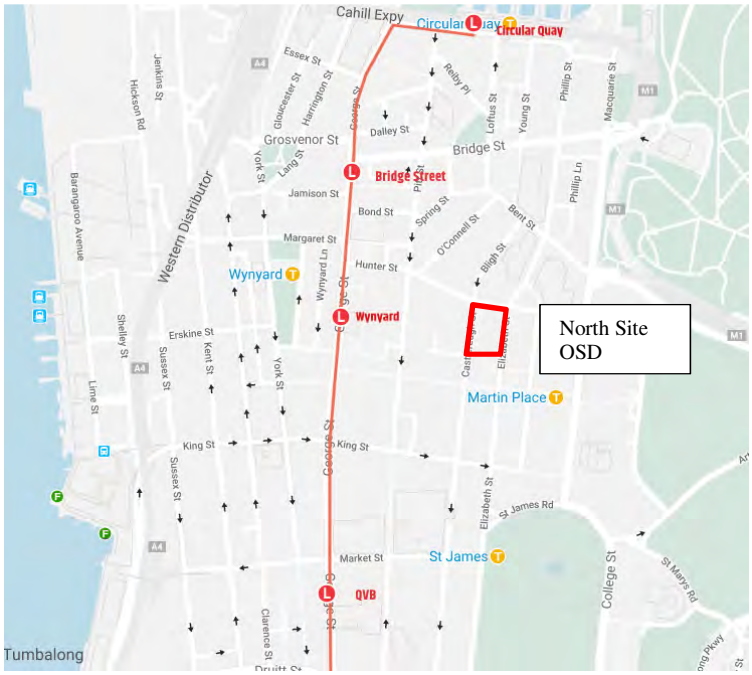

Figure 10: Light rail in vicinity of the OSD

3 Green Travel Plan Measures

In order to meet the objectives and targets of the GTP, the following physical and management measures should be implemented.

3.1.1 General Marketing and Promotion

Marketing the benefits and promoting the sustainable alternatives available are crucial in encouraging staff to adopt the GTP measures. It is important that at an early stage, staff are made aware of the need for the GTP, and that it is emphasised that the measures are being introduced to support and encourage people to travel more sustainably. In addition to raising general awareness, any successes achieved will be fully publicised to staff in order to motivate them to use sustainable modes of transport.

- A dedicated webpage for employees of the North Tower will be created to include travel information, including information on bicycle parking and useful links to public transport websites specific to the office location.
- Support and promote events such as National Bike Week, Bike2Work Days, walk to work day to staff through, broadcast messages and intranet.

3.1.2 Reducing the need to travel

To ensure that sustainable transport options are promoted to staff when making journeys for work purposes, and to reduce the need to travel, the following measures are recommended to be implemented.

- Provision of travel information screens at lift lobbies;
- Active promotion of the office teleconferencing facilities as an alternative to face to face meetings;
- Consider a more formal approach to working from home and actively encourage staff to consider this option.

3.1.3 Spreading Travel Demand

Currently the highest travel demand occurs in the peak periods between 7am and 9am and 4pm to 6pm. Public Transport services are in lower demand during the inter-peak and off-peak. The future occupants of the North Tower building could be encouraged to implement flexible working hours allowing the employees to arrive at work and leave work during the shoulders of the peak e.g. start work at 10am and finish at 6.30pm or start at 7am and finish at 3.30pm.

3.1.4 Travel During the Working Day

To provide North Tower staff with a choice of convenient sustainable transport options for work – related travel during the working day, the following initiatives should be promoted:

- Use of the public transport network to travel to places that are on or near public transport stops; and
- Walk to places that are close by rather than taking the taxi.

3.1.5 Cycling

The North Tower will have good access to the cycling network and provide high quality end of trip facilities for cyclists. In order to activate and promote cycling the following is recommended:

- Consider providing interest-free loans for staff to buy a bicycle
- Partner with a local bicycle store to provide bicycle maintenance classes and discounted prices;
- Provide secure bicycle parking and end of trip facilities;
- Provide Sydney cycle maps to staff;
- Participate in annual events such as 'Ride to Work Day';
- Staff who cycle to work should be encouraged to form a Bicycle User Group; and
- Set up ‘Bike Buddies’ scheme for less confident staff interested in cycling.

3.1.6 Public Transport

To promote the use of public transport work-related trips and journeys to/from the North Tower, the following is recommended:

- Create and maintain an intranet ‘Public Transport links page’ containing useful links to journey planning websites in Sydney;
- Provide useful public transport maps and promotional items to potential and current public transport users; and
- Investigate the possibility of purchasing an Opal Card for general use of staff for business journeys, in lieu of cars and taxis.

3.1.7 Walking

Specific measures designed to encourage more walking trips to and from work and for business trips include:

- Produce walking related articles for inclusion in the office newsletter, focussing on ‘walking champions’ to highlight best practise in walking to business meetings;
- Create and maintain an intranet ‘useful walking routes’ containing useful information on ‘shaded routes’, shortcuts and distances to key parts of the Sydney CBD; and
- Participate in Walk to Work day.

3.1.8 Staff Induction

To ensure new members of staff are aware of the GTP, all new staff members should be made aware of the Plan as part of their induction process. The GTP section of the induction should provide new starters with the following:

- A brief introduction to the GTP and its purpose;
- Tour of the office to include a visit to cycle parking areas and shower and changing facilities; and
- Information on incentives to use sustainable means of transport e.g. how to apply for interest-free bike loans etc.

3.2 Scheme Administration

3.2.1 Administration

A GTP co-ordinator should be appointed for the North Tower. This person would be a member of the tenant organisation and form a GTP management team, enabling a consistent and organised approach.

The role should be undertaken by an enthusiastic and high quality communicator in order to promote measures that will encourage employees to think about travel other than as a single occupancy car user. They will need to be an enthusiastic and respected member of staff who is keen to champion the cause of the GTP.

Senior management support is critical to ensuring the success of any travel plan for a number of reasons such as to:

- Lead by example;
- Allow budget allocations for the implementation of measures; and
- Give support to changes or development of policy documentation.

3.2.2 Consultation

The success of the GTP will rely on the support of the employees which will be overseen by the GTP co-ordinator. The GTP co-ordinator will be responsible for all liaisons with outside bodies, including local transport operators, planning and highway authorities.

Liaison with officers of the City of Sydney, e.g. those responsible for cycling and public transport will be undertaken as required. The GTP co-ordinator should also seek to join and attend meetings with any local travel forums as appropriate in order to exchange ideas with other like-minded organisations.

3.2.3 Promotion

All employees will be made aware of the details of the GTP, its objectives in enhancing the environment and the role of individuals in achieving its objectives at its launch.

The promotional material will advise employees wishing to raise specific transport-related matters to discuss them with the appropriate nominated GTP co-ordinator who in turn would liaise with the GTP management team, transport operators and the local authority as required.

3.2.4 Updating, reviewing and monitoring

The GTP is a strategy that will evolve over time. Although the objectives of the plan to 'educate' employees and to facilitate travel by sustainable modes will not change, it may be possible over time to define or re-define specific targets.

Target setting should reflect an ambition for continued progress year on year and there should be a mechanism to review targets in the light of annual monitoring surveys. The monitoring measures could include collecting data on employee travel patterns for journeys to work and also during the working day. The recorded data would provide information on modes of transport used and distance travelled, from which energy consumption and emissions could be estimated.

Following the implementation to the GTP, the GTP Management team should meet annually to undertake a review of the travel demand measures. The objective will be to measure their success and to identify the potential for refinements.

The GTP Management team will then compile a review report outlining the results of the review. The report will also incorporate the results of on-going monitoring processes throughout each of the preceding periods.

4 Conclusion

The implementation of a GTP is essential part of ensuring that commuting and business trips generated by the future development are sustainable.

The Metro Martin Place Precinct is centrally located within the Sydney CBD with prime access to public transport, and will include high quality end of trip facilities to serve the North Tower. As a result, the North Tower does not require on-site parking and is ideally placed to achieve the future travel mode share targets set out in this document.

The GTP will contribute to a healthier and better quality of life for staff. The work place will benefit from more productive staff, cost savings and reduced demand for car parking.

Appendix D

Framework CPTMP

Macquarie

Sydney Metro Martin Place integrated station development

North Tower, SSD DA Stage 2: Framework Construction Pedestrian and Traffic Management Plan

CSWSMP-MAC-SMN-TF-REP-999902

Revision 01 | 23 August 2018

Job number 247838

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Contents

1 Description of construction works

1.1 Site Description

The Metro Martin Place precinct development consists of the Martin Place Metro station, Over Station Development (OSD) and the associated integrated civic, retail and commercial areas. This proposed redevelopment is to create a transportation metro precinct that offers mixed use space including commercial office space, modern retail outlets and civic space. The North Tower OSD consists of 39 story's of office space.

The precinct is located between Hunter Street to the north, 39 Martin Place to the south, Elizabeth Street to the east and Castlereagh Street to the west.

The buildings located at 39 Martin Place, 55 Hunter Street, 5 Elizabeth Street, 7 Elizabeth Street, 8-12 Castlereagh Street and 9-19 Elizabeth Street will be demolished, and the site excavated by the Tunnel and Station Excavation Works (TSE) Contractor prior to Lendlease commencing site establishment.

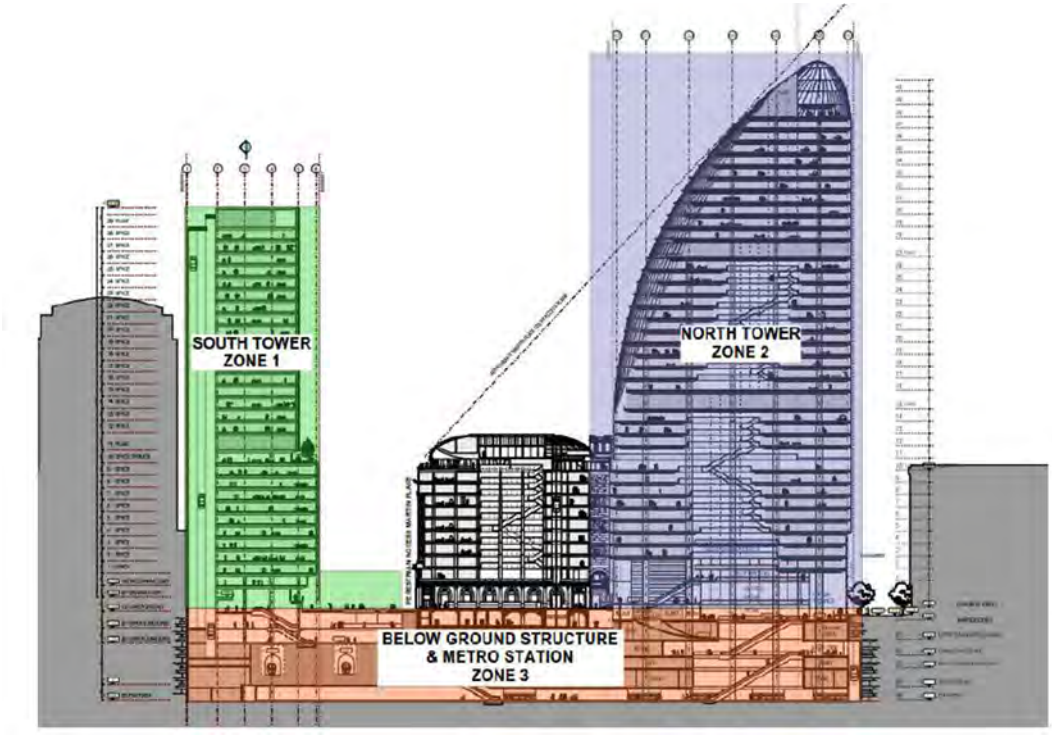

Figure 1: Construction zone break up

This Framework Construction Pedestrian Traffic Management Plan (CPTMP) provides an assessment of the impact to road users during the North Tower OSD construction and describes the mitigation measures proposed. Where relevant, reference is made to Sydney Metro (Chatswood to Sydenham) Critical State Significant Infrastructure (CSSI) EIS ('CSSI EIS') given the integration of projects, location of the site and representative nature of the construction traffic volumes and impacts for the North and South Tower OSD.

1.2 Description of the Works

The North Site OSD proposal indicated in Figure 1: above (Zone 2), involves the redevelopment of the site, as well as the following:

- Integration of an underground pedestrian link under 50 Martin Place, new metro train station and associated tunnel fit-out;
- Construction of the 39 storey North Tower, comprising a reinforced concrete structure with a glass lift core on Castlereagh Street; and
- Integration of the North Tower and 50 Martin Place with interconnecting bridges at nominated levels, and a link to the ground floor.

1.3 Construction programme

The indicative construction timeframe for the integrated project is from Q3 2020 until Q1 2024. Specifically:

- Site establishment and erection of hoarding Q4 2018
- Basement Structure Q3 2020 – Q4 2021
- Cores Construction Q2 2021 – Q1 2022
- Construction to Podium Level Q2 2021 – Q1 2022
- Construction of Floor Plates Q4 2021 – Q1 2023
- Façade installation Q4 2021 – Q2 2023
- Public Domain Works Q2 2023 – Q4 2023
- Commissioning and Fit Out Q1 2023 – Q4 2023

During the Sydney Metro works already approved under the CSSI, the main heavy traffic movements are expected to occur during the demolition and bulk excavation stages which will be carried out by the TSE contractor.

During the North Site OSD construction works to which this CPTMP applies, the main traffic movements are expected to coincide with large concrete pours which will take place during the basement structure and core construction stages.

1.4 Hours of construction

Main site working hours will be governed by the final State Significant Development Application (DA) consent conditions, however the following is proposed for this framework CPTMP.

- Mondays to Fridays inclusive: 7am ‑ 7pm
- Saturdays: 7am ‑ 5pm
- Sundays and public holidays: No work
- Works may be undertaken outside these hours where:

- It is required by a major works authorization deed executed with Roads and Maritime Services (RMS); or
- The delivery of materials is required outside these hours by the Police or other authorities; or
- It is required in an emergency to avoid the loss of life, damage to property and/or environmental harm; and
- Variation is approved in advance in writing by the Director General

1.5 Hoardings and Work Zones

It is understood that the demolition / excavation contractor (TSE package) will establish the site with various hoarding and gantries to carry out the work in accordance with the WHS Act and associated industry codes of practice.

The Contractor will generally install new hoardings, or where possible, modify the existing TSE Contractor hoardings if suitable.

For the North Site OSD, B Class hoardings will be erected to the Elizabeth, Hunter and Castlereagh Street frontages in accordance with the Site Establishment Plans (see Figure 2).

Two construction zones are proposed for the North Tower; on Castlereagh Street to the west and Elizabeth street to the east. It is proposed to reduce the Elizabeth Street construction zone to 20m once the ground level structure is completed and stripped. This will facilitate concrete to be delivered and pumped from within the site footprint.

The final extent of works zones, including the times of day in which they are in operation, will be agreed with the Sydney Coordination Office (SCO) and City of Sydney.

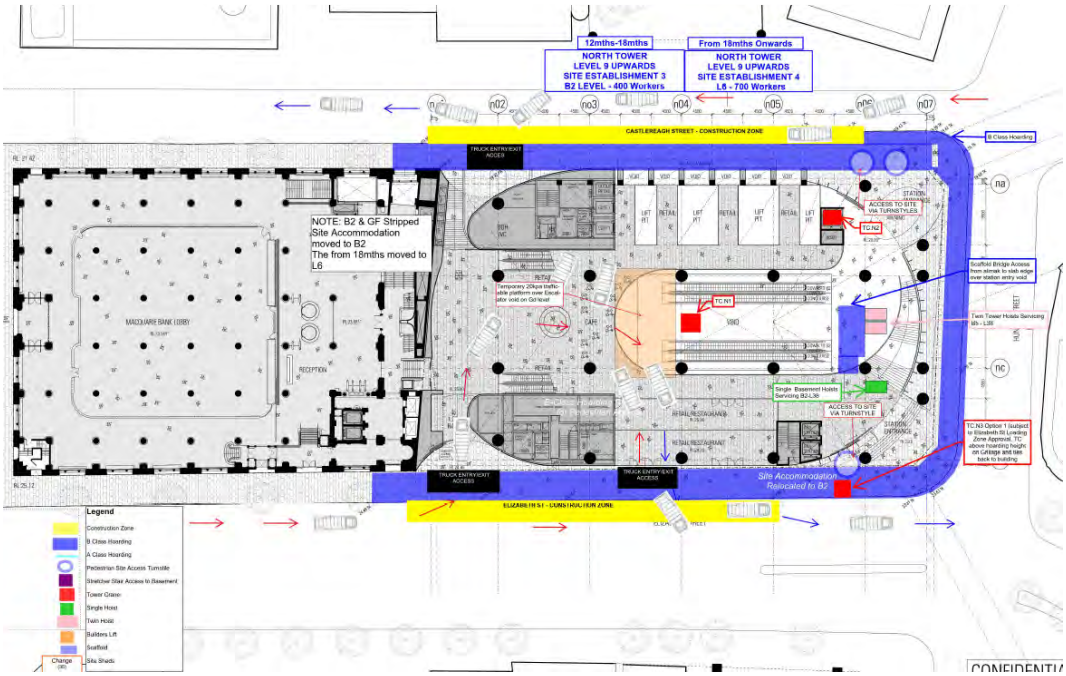

Figure 2: Site establishment plan mid-rise tower structure (12months +)

1.6 Site Access Points

In total three site access points are proposed:

- Entry and exit off Castlereagh Street at the location of the proposed basement access. As Castlereagh Street is one-way southbound, access will be left-in, left-out;
- Entry off Elizabeth Street at the southern end of the site. Access will be restricted to left-in; and
- Entry and exit off Elizabeth Street at the mid-point of the site. Access will be restricted to left-in, left-out.

Traffic controllers will be in place at each of the site access points.

1.7 Vehicle types expected

The following types of 2890.2 Australian Standard trucks are proposed and have been used for design purposes during the project:

- Medium Rigid Vehicles (MRVs) – includes 8-wheeler concrete agitators; and
- Heavy Rigid Vehicles (HRVs).

Most of the large construction materials are proposed to be transported by a 12.5m HRV (the maximum sized truck). SRVs and small utes/vans (and occasional MRVs) will also be required to access the site.

All heavy goods such as machinery plant, excavators, piling rigs and tower cranes will need to be delivered during night hours on weekends. These operations would be subject to a separate application for partial road closures with the Roads and Maritime Services and City of Sydney Council as required.

2 Impact of proposed measures

2.1 Truck routes and controls

To keep the construction related traffic to a minimum on the surrounding roads, vehicles are proposed to be held in holding areas located in areas outside the Sydney CBD, and called via a number of defined construction routes to the site. All holding areas will need to be negotiated with landowners. This will be undertaken by the D&C Contractor, and this plan will be updated accordingly.

The construction routes will be clearly communicated by traffic control to ensure construction vehicles are following the correct route. Figure 3 presents the inbound and outbound routes to the construction site.

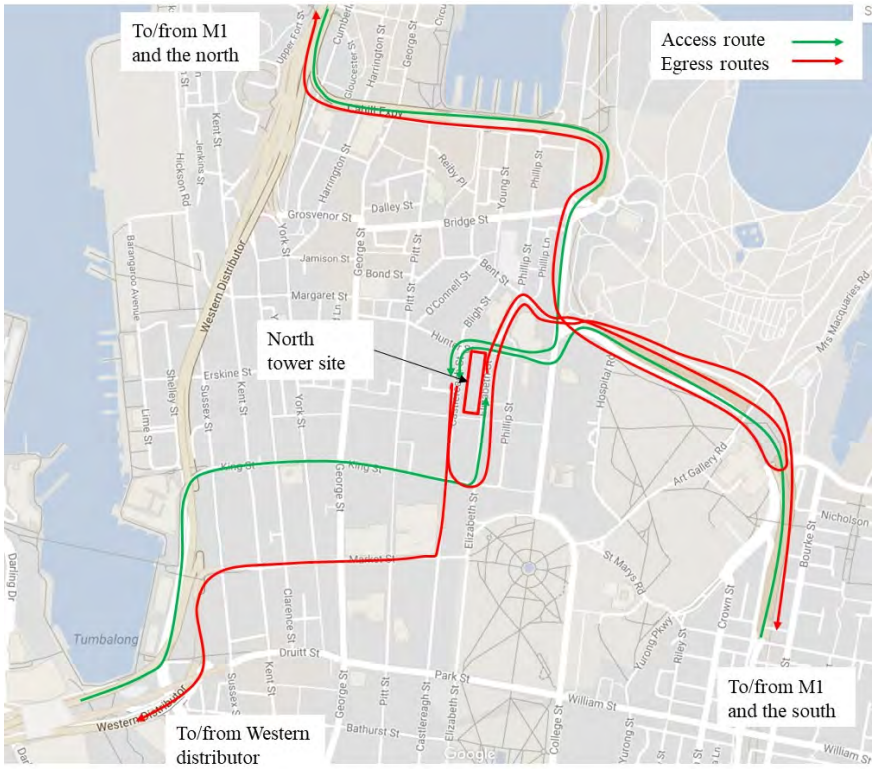

Figure 3: Construction vehicle routes to and from the site

All vehicles accessing the site and surrounding work zones will use the state road network from the surrounding areas prior to entering the Sydney CBD.

Vehicles from the north will enter the CBD via the Sydney Harbour Bridge and Cahill Expressway, and then use the Bridge Street off-ramps to access Macquarie Street and then Bent Street. Vehicles from the south and east will use Hunter Street from the Eastern Distributor. Vehicles from the west are proposed to enter the CBD via the Western Distributor and then use the King Street off-ramp to proceed up to Elizabeth Street (and onto Hunter Street if accessing Castlereagh Street).

Vehicles exiting to the north will exit the CBD via the Sydney Harbour Bridge using Macquarie Street. Vehicles heading west and south will exit the CBD via

the Western Distributor by proceeding down Castlereagh Street and Market Street. Phillip Street and Bent Street provide eastbound access to the eastern Distributor.

The deliveries of larger vehicles such as mobile cranes will need to be considered when accessing the site. These large vehicles will access the site according to a set programme, outside of road network peak periods. This will be coordinated with TfNSW and City of Sydney as required, through a separate approvals processes.

2.2 Construction deliveries

The D&C Contractor will consider adopting a material booking system called “the virtual superintendent”. This system allows the external supply chain to book a delivery to the project through an online portal which can be live streamed to the Crane Co-ordinator, Materials Handling Foremen and Site Managers via computer or field device.

Booking delivery times can be allocated to each on-site construction / loading zone and each mode of materials handling; Tower Crane, Man & Materials Hoist, Builders Lifts, Gantry Crane. This online system will provide a means of:

- Booking and reallocating deliveries in real time;
- Controlling and prioritising deliveries to site based on critical path activities;
- Ensuring materials are delivered to work areas as they are needed – minimising materials stored on-site;
- Ensuring cranes, hoists and builders lifts are fully utilised; and
- Formal allocation of construction and loading zones for Sydney Metro deliveries.

This daily information can be distributed to ensure that effective just in time deliveries occur on-site and traffic congestion around construction loading zones is avoided.

2.3 Construction traffic

It is estimated that the cumulative construction traffic generation across the two sites may be up to 36 vehicles per hour (26 heavy and 10 light). This is commensurate to the volumes which were approved outside of peak times as part of the CSSI approval.

During peak periods the Contractor will seek to minimise traffic volumes, however, it is noted that at times, time sensitive construction activities may result in moderate levels of construction traffic during the peaks. This would be associated with activities such as large concrete pours which are required to start early in the day (when temperatures are lower) and continue throughout the day.

There is no on-site car parking being made available for construction workers, subcontractors and personnel. They will be encouraged to travel to the site by public transport.

2.4 Road network impacts

Traffic management and control will be established on 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 points and construction zones to ensure:

- Segregation of the general public from truck movements in and out of the site;
- Segregation of construction worker access from construction vehicular access in and out of the project;
- Materials and deliveries will not impede public roadways or footpaths; and
- Streamlining of time taken for truck movements in and out of the project.

2.4.1 Construction impacts

The CSSI EIS carried out analysis of existing traffic conditions in the vicinity of Metro Martin Place station during peak periods (see

Table 1 and Figure 4). There is a strong movement from Macquarie Street (southbound) in the east to Castlereagh Street (southbound) via Hunter Street, which contributes to relatively heavy westbound traffic on Hunter Street. Hunter Street will be used by construction vehicles when accessing the site on Castlereagh Street.

Currently, the Macquarie Street, Bent Street and Eastern Distributor ramps intersection is congested during the AM and PM peaks with the intersection performing above its theoretical capacity at level of service F. This intersection will be used by construction vehicles travelling to and from the M1.

All other intersections near the Martin Place Station construction sites currently operate at level of service B or better.

Considering the anticipated construction volumes during peak times, including when high traffic generating activities such as the large concrete pours are taking place, the overall impact on the performance of surrounding intersections is expected to be low.

Table 1: Metro Martin Place station construction site intersection performance

Peak period	Without construction			With construction		
	Average delay (second per vehicle)	Level of Service	Degree of saturation	Average delay (second per vehicle)	Level of Service	Degree of saturation
Elizabeth Street / Phillip Street / Hunter Street						
AM	23	B	0.84	23	B	0.83
PM	26	B	0.79	23	B	0.81
Elizabeth Street / Martin Place						
AM	5	A	0.42	7	A	0.42
PM	4	A	0.40	7	A	0.41
Elizabeth Street / King Street						
AM	26	B	0.73	26	B	0.73
PM	24	B	0.73	25	B	0.71
Hunter Street / Macquarie Street						
AM	20	B	0.83	21	B	0.86
PM	20	B	0.82	20	B	0.83
Macquarie Street / Bent Street / Eastern Distributor ramps						
AM	155	F	1.27	156	F	1.27
PM	161	F	1.19	167	F	1.29
Castlereagh Street / Hunter Street / Bligh Street						
AM	15	A	0.45	15	B	0.45
PM	16	B	0.52	16	B	0.50
Castlereagh Street / Martin Place						
AM	6	A	0.23	6	A	0.24
PM	6	A	0.28	6	A	0.28
Castlereagh Street / King Street						
AM	21	B	0.50	21	B	0.50
PM	22	B	0.61	21	B	0.64
Bent Street / Phillip Street						
AM	17	B	0.74	17	B	0.74
PM	18	B	0.63	25	B	0.71

(Source: Sydney Metro City & Southwest EIS)

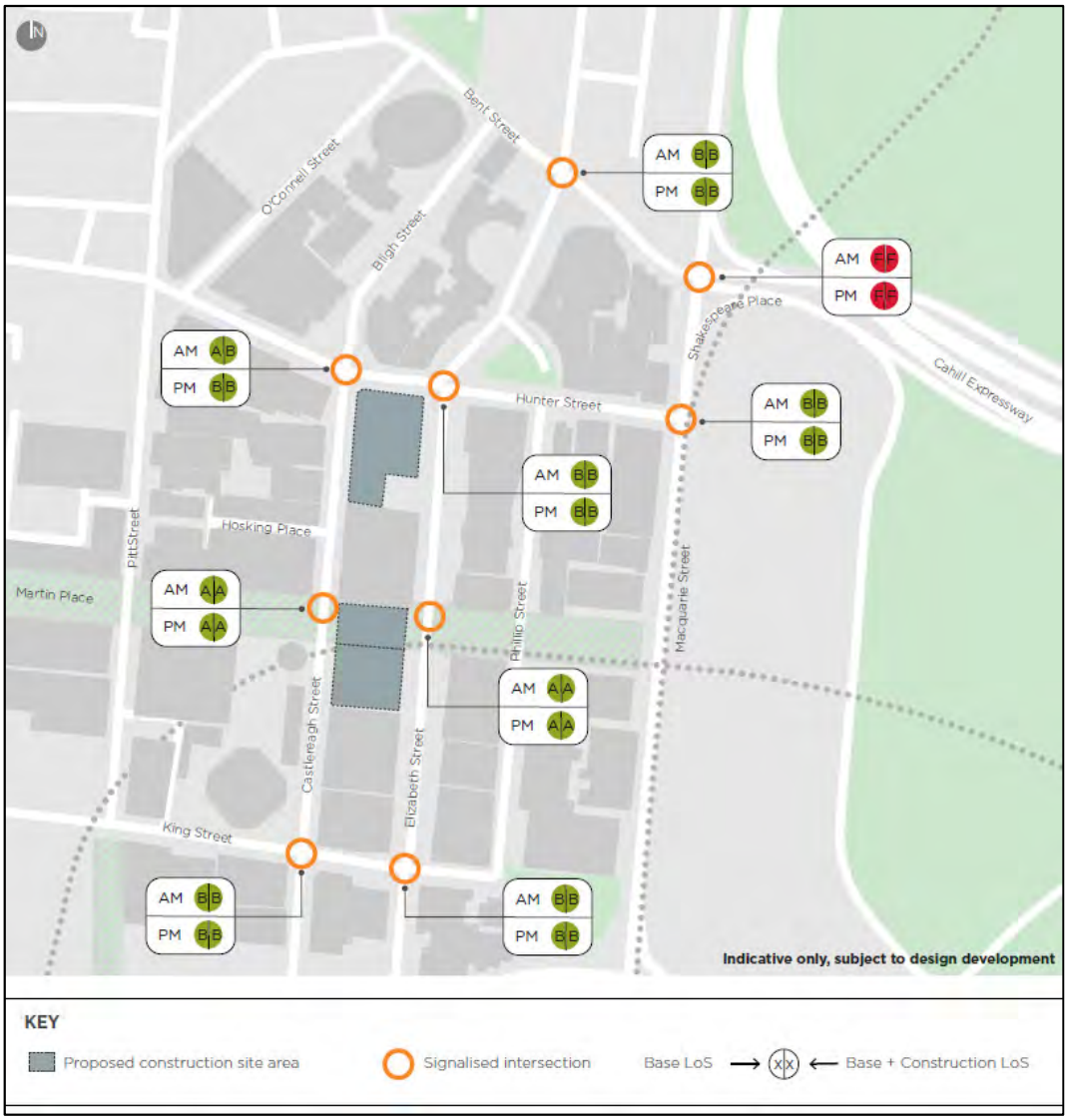

Figure 4: Metro Martin Place station intersection performance

(Source: Sydney Metro City & Southwest EIS)

2.5 Pedestrians impacts

Footpath space along all frontages will be maintained with only minor reductions possibly needed to facilitate the B Class hoarding and work zones.

Pedestrians will be managed by qualified traffic controllers so that they will not conflict with heavy vehicles accessing the Works zones or the site access points to maximise pedestrian safety. As a result, additional delays to pedestrians will be minimal. When vehicles require access, pedestrians may be held for very short periods of time as trucks enter and exit the site.

2.6 Pedestrian Management and Control

As part of the Sydney Metro project, the Tunnel and Station Excavation (TSE) Contractors planning for pedestrian management and access across Martin Place

is not yet known. It is appreciated that the TSE Contractors approach to pedestrian management over the preceding 3years, prior to OSD works commencing, will largely dictate future pedestrian patterns and influence the approach to pedestrian management in and around Martin Place.

During the detailed design phase, the TSE Contractors approach will be reviewed and a Pedestrian Management Plan developed to best accommodate the changing pedestrian flows and patterns to Martin Place in conjunction with the construction staging for the precinct.

2.7 Public transport services

Metro Martin Place Precinct experiences high volumes of bus traffic during peak and off-peak times, particularly along Elizabeth Street and Castlereagh Street which, since the closure of George Street, are the main north-south bus corridors through the Sydney CBD. Buses from all over Sydney converge and diverge at bus stops located adjacent to and near the proposed station.

Following the re-opening of George Street and the operation of light rail services, it is expected that the volume of buses on Elizabeth Street will be significantly reduced from the existing situation.

Changes to bus zones and bus stop locations along Castlereagh Street and Elizabeth Street will be agreed between the D&C Contractor and SCO as part of the detailed CPTMP.

2.8 Emergency vehicle provisions

The proposed construction of the North Site OSD will have no impact on the current provisions in place for emergency vehicles.

3 Effects on existing and future developments

There are a number of construction sites already established and proposed within the Sydney CBD which may overlap with works associated with the construction of the North Tower OSD. Surrounding construction activities include (but are not limited to):

- Sydney Metro
- 1 Carrington Street (Wynyard Place)
- 280 George Street
- Wanda One
- AMP Quay Quarter
- Intercontinental Hotel
- Barangaroo Precinct
- Sydney Light Rail

Construction vehicle activity may increase along Hunter Street and Bent Street because of the rise in cumulative traffic from surrounding sites.

4 Measures to ameliorate impacts

The measures proposed to ameliorate the impacts of the construction work could be considered as follows:

- Work zones along Castlereagh Street and Elizabeth Street
- B Class hoarding surrounding the site
- Online booking system
- Traffic controllers
- No on-site car parking
- Ongoing consultation with authorities

These measures are discussed in earlier sections of the report.

Additionally, drivers wishing to access the site for any reason will need to report to the traffic controllers and receive instructions and guidance. Scheduling will be the main management method in ensuring no multi-vehicle arrivals. A radio set-up will manage multiple vehicle arrivals from nominated holding points surrounding the CBD. The D&C Contractor will need to nominate preferred sites for the north, south and west directions.

Traffic control plans will be developed by the D&C Contractor and submitted with a finalised version of this plan. Traffic will not be impacted on entry or exit unless a temporary partial road closure is in place during the few occasions on weekends that a mobile crane may be required. These temporary road closures would be obtained through the normal approvals process.

4.1 Vehicle movements

Mitigation measures will be adopted during the construction phase to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and would include the following:

- Truck loads would be covered during transportation off-site;
- Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities;
- All activities, including the delivery of materials would not impede traffic flow along local roads and highways;
- Materials would be delivered and spoil removed during standard construction hours;
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at site at any one time; and
- SCO and City of Sydney will be notified of any future disruption to roadways and footpaths.

4.2 Driver code of conduct

No queuing or marshalling of trucks is permitted on a public road. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction zone – the vehicles already on the road have right-of-way.

4.3 Sydney Coordination Office discussions

A meeting was held on 18 April 2018 with the SCO of TfNSW which discussed the CPTMP for the project. These discussions are reflected in this document.

4.4 Traffic Control Group

As outlined in the Construction Traffic Management Framework, for each Sydney Metro City & Southwest contract, a Traffic Control Group (TCG) will be convened to provide a technical forum for the discussion of proposed works that will impact on the surrounding road network and feedback on proposed TCP's prior to formal submission. This group would meet on regular occasions (weekly or fortnightly) to provide an assessment of the forthcoming program and to ensure that any identified or potential issues are raised and addressed to ensure that works proceed in accordance with the agreed programme. Representation would be expected to include:

- The Contractor
- Macquarie Capital
- Sydney Metro Delivery Office
- Transport for NSW/Sydney Coordination Office
- Roads and Maritime Services
- City of Sydney

The TCG would primarily provide a forum for discussion on proposed traffic management measures during the various stages of the works and to discuss potential impacts on the road network operations around the sites, and how to address or minimise those impacts.

5 Conclusion

This framework CPTMP has been prepared for the North Tower OSD and outlines:

- a description of the construction works
- the construction programme including working hours
- proposed hoarding, work zones and site access points
- proposed haulage routes;
- pedestrian and traffic management measures;
- mitigation measures; and
- plans to establish a traffic control group

Construction of the North Tower OSD will be part of an integrated project which includes the station and South Tower OSD. The traffic impact during peak times is expected to be low and not impact on the performance of surrounding intersections.

The D&C Contractor will prepare a final CPTMP which will be approved before construction commences. It is also proposed to establish a traffic control group with all key stakeholders which will meet regularly to discuss proposed traffic management measures during the various stages of the works and to discuss potential impacts and how to address or minimise those impacts.