

# **WASTE MANAGEMENT PLAN**

APPENDIX Y





# Sydney Metro City & Southwest

## Pitt Street North Over Station

### Development:

#### Waste Management Report

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# 1. Purpose of this report

## 1.1. Background

This report supports a concept State Significant Development Application (concept SSD Application) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The concept SSD Application is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking to secure concept approval for a mixed use tower above the northern portal of Pitt Street Station, otherwise known as the over station development (OSD). The concept SSD Application seeks consent for a building envelope and its use for residential accommodation, visitor accommodation and commercial premises, maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking as well as the strategies and design parameters for the future detailed design of development.

Sydney Metro proposes to construct the OSD as part of an integrated station development package, which would result in the combined delivery of the station, OSD and public domain improvements. The station and public domain elements form part of a separate planning approval for Critical State Significant Infrastructure (CSSI) approved by the Minister for Planning on 9 January 2017.

As the development is within a rail corridor, is associated with railway infrastructure and is for the purposes of residential or commercial premises with a Capital Investment Value of more than \$30 million, the project is State Significant Development (SSD) pursuant to Schedule 1, clause 19(2)(a) of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). The full extent of the proposed development is also State Significant Development by virtue of clause 8(2) of the SRD SEPP.

This report has been prepared to respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the concept SSD Application for Pitt Street North on 30<sup>th</sup> November 2017 which state that the Environmental Impact Statement (EIS) is to address the following requirement:

*Waste Strategy*

## 1.2. Overview of the Sydney Metro in its context

The New South Wales (NSW) Government is implementing *Sydney's Rail Future*, 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 (Transport for NSW, 2012). Sydney Metro is a new standalone rail network identified in *Sydney's Rail Future*.

Sydney Metro is Australia's biggest public transport project, consisting of Sydney Metro Northwest, which is scheduled for completion in 2019 and Sydney Metro City & Southwest, which is scheduled for completion in 2024.

Sydney Metro West is expected to be operational in the late 2020s. (Refer to **Figure 1**).



Figure 1: Sydney Metro alignment map

Sydney Metro City & Southwest includes the construction and operation of a new metro rail line from Chatswood, under Sydney Harbour through Sydney’s CBD to Sydenham and on to Bankstown through the conversion of the existing line to metro standards.

The project also involves the delivery of seven new metro stations, including at Pitt Street. Once completed, Sydney Metro will have the ultimate capacity for 30 trains an hour (one every two minutes) through the CBD in each direction - a level of service never seen before in Sydney.

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham application as a Critical State Significant Infrastructure project (reference SSI 15\_7400), hereafter referred to as the CSSI Approval.

The CSSI Approval includes all physical work required to construct the CSSI, including the demolition of existing buildings and structures on each site. Importantly, the CSSI Approval also includes provision for the construction of below and above-ground structures and other components of the future ISD (including building infrastructure and space for future lift cores, plant rooms, access, parking and building services, as relevant to each site). The rationale

for this delivery approach, as identified within the CSSI Application, is to enable the ISD to be more efficiently built and appropriately integrated into the metro station structure.

The EIS for the Chatswood to Sydenham component of the Sydney Metro City & Southwest project identified that the OSD would be subject to a separate assessment process.

Since the CSSI Approval was issued, Sydney Metro has lodged four modification applications to amend the CSSI Approval as outlined below:

- Modification 1- Victoria Cross and Artarmon Substation which involves relocation of the Victoria Cross northern services building from 194-196A Miller Street to 50 McLaren Street together with inclusion of a new station entrance at this location referred to as Victoria Cross North. 52 McLaren Street would also be used to support construction of these works. The modification also involves the relocation of the substation at Artarmon from Butchers Lane to 98 – 104 Reserve Road. This modification application was approved on 18 October 2017.
- Modification 2- Central Walk which involves additional works at Central Railway Station including construction of a new eastern concourse, a new eastern entry, and upgrades to suburban platforms. This modification application was approved on 21 December 2017.
- Modification 3 - Martin Place Station which involves changes to the Sydney Metro Martin Place Station to align with the Unsolicited Proposal by Macquarie Group Limited (Macquarie) for the development of the station precinct. The proposed modification involves a larger reconfigured station layout, provision of a new unpaid concourse link and retention of the existing MLC pedestrian link and works to connect into the Sydney Metro Martin Place Station. It is noted that if the Macquarie proposal does not proceed, the modification (if approved) would be surrendered. This modification application was approved on 22 March 2018.
- Modification 4 - Sydenham Station and Sydney Metro Trains Facility South which incorporated Sydenham Station and precinct works, the Sydney Metro Trains Facility South, works to Sydney Water's Sydenham Pit and Drainage Pumping Station and ancillary infrastructure and track and signalling works into the approved project. This modification application was approved on 13 December 2017.

Given the modifications, the CSSI Approval is now approved to operate to Sydenham Station and also includes the upgrade of Sydenham Station.

The remainder of the City & Southwest project (Sydenham to Bankstown) proposes the conversion of the existing heavy rail line and the upgrade of the existing railway stations along this alignment to metro standards. This portion of the project, referred to as the Sydenham to Bankstown Upgrade, is the subject of a separate CSSI Application (No. SSI 17\_8256) for which an Environmental Impact Statement was exhibited between September and November 2017 and a Response to Submissions and Preferred Infrastructure Report was submitted to the NSW Department of Planning & Environment (DPE) in June 2018 for further exhibition and assessment.

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### 1.3. Planning relationship between Pitt Street Station and the OSD

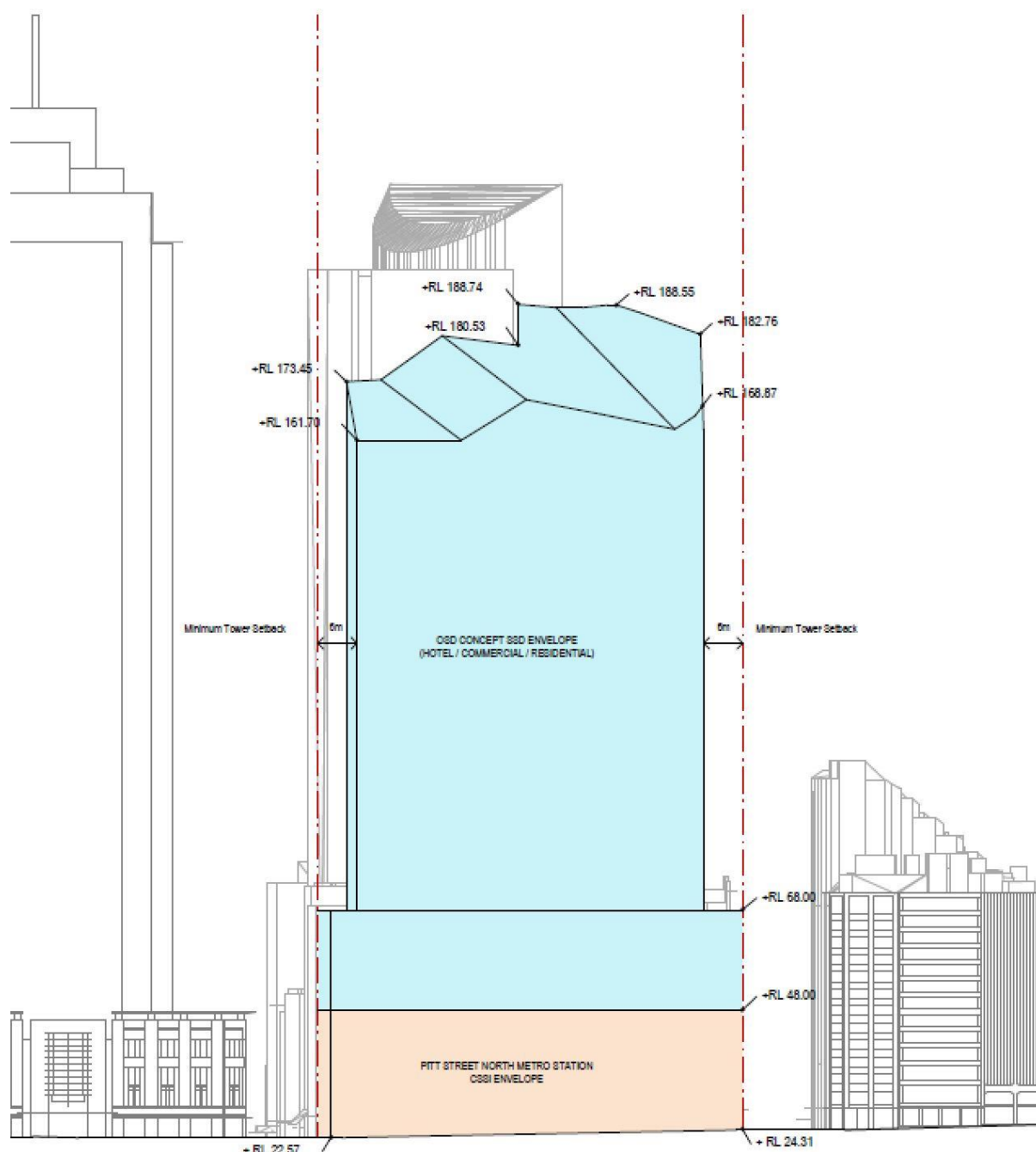
While the northern portal of Pitt Street Station and the OSD will form an integrated station development, the planning pathways defined under the *Environmental Planning and Assessment Act 1979* require separate approval for each component of the development. In this regard, the approved station works (CSSI Approval) are subject to the provisions of Part 5.1 of the EP&A Act (now referred to as Division 5.2) and the OSD component is subject to the provisions of Part 4 of the EP&A Act.

For clarity, the approved station works under the CSSI Approval included the construction of below and above ground structures necessary for delivering the station and also enabling construction of the integrated OSD. This included but is not limited to:

- demolition of existing development
- excavation
- station structure including concourse and platforms
- lobbies
- retail spaces within the station building
- public domain improvements
- station portal link (between the northern and southern portals of Pitt Street Station)
- access arrangements including vertical transport such as escalators and lifts
- structural and service elements and the relevant space provisioning necessary for constructing OSD, such as columns and beams, space for lift cores, plant rooms, access, parking, retail and building services.

The vertical extent of the approved station works above ground level is defined by the 'transfer slab' level (which for Pitt Street North is defined by RL 48.00), above which would sit the OSD. This delineation is illustrated in **Figure 2** below.





**Figure 2:** Delineation between station and OSD

The CSSI Approval also establishes the general concept for the ground plane of Pitt Street Station including access strategies for commuters, pedestrians and workers. In this regard, pedestrian access to the station would be from Park Street and the OSD lobbies would be accessed from Pitt Street, Park Street and Castlereagh Street.

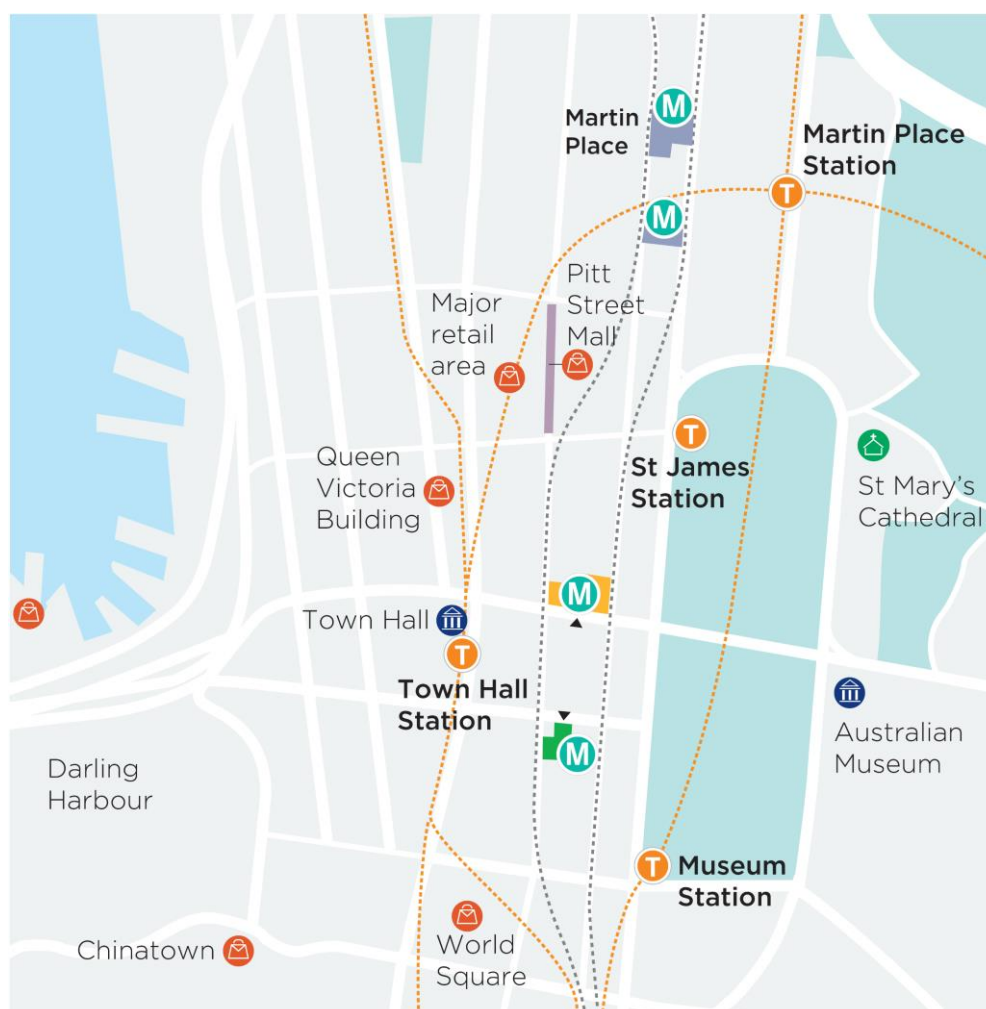
Since the issue of the CSSI Approval, Sydney Metro has undertaken sufficient design work to determine the space planning and general layout for the station and identification of those

spaces within the station area that would be available for the OSD. In addition, design work has been undertaken to determine the technical requirements for the structural integration of the OSD with the station. This level of design work has informed the concept proposal for the OSD. It is noted that ongoing design development of the works to be delivered under the CSSI Approval would continue with a view to developing an Interchange Access Plan (IAP) and Station Design Precinct Plan (SDPP) for Pitt Street Station to satisfy Conditions E92 and E101 of the CSSI Approval.

The public domain improvement works around the site would be delivered as part of the CSSI Approval.

### 1.4. The Site

The Pitt Street North OSD site is located at the southern portion of the Sydney CBD block bounded by Pitt Street, Park Street and Castlereagh Street, above the northern portal of the future Pitt Street Station (refer to **Figure 3** below).

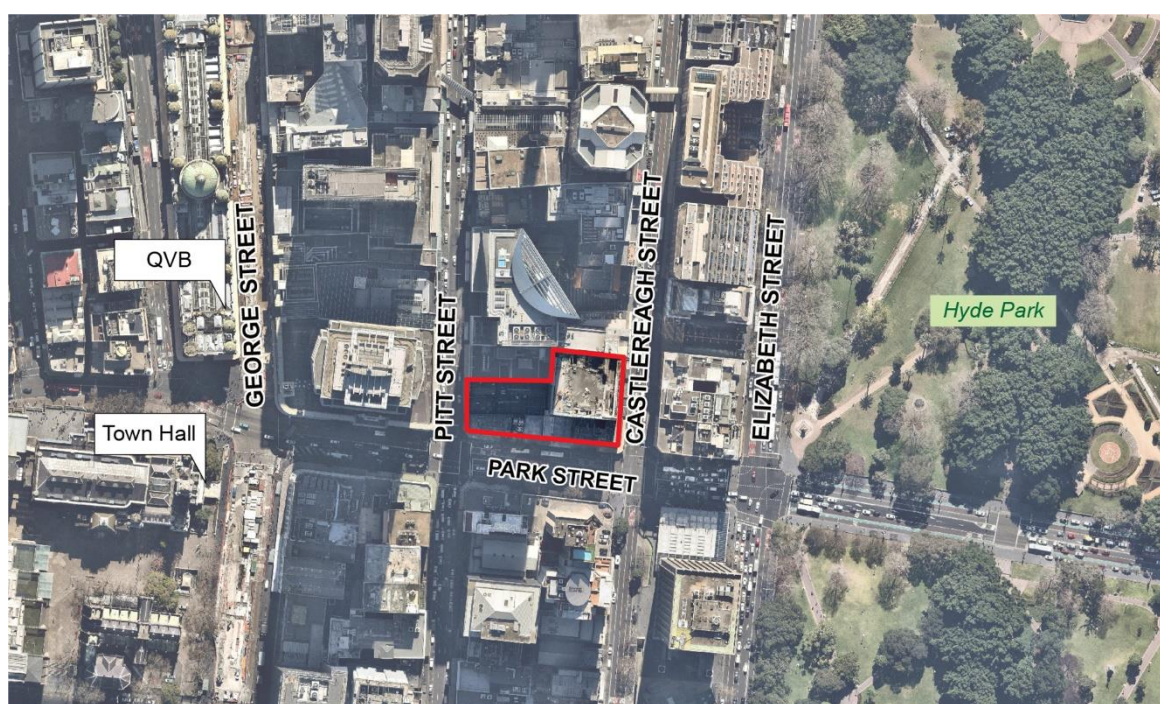


**Figure 3:** Pitt Street Station location plan

The site is located in the City of Sydney Local Government Area. The site (refer to **Figure 4** below) is irregular in shape, has a total area of approximately 3,150 square metres and has street frontages of approximately 28 metres to Pitt Street, 81 metres to Park Street and 48 metres to Castlereagh Street.

The site address is 175-183 Castlereagh Street, Sydney and comprises the following properties:

- Lot 3 in DP 74952
- Lot 1 in DP 229365
- Lot 2 in DP 900055
- Lot 1 in DP 596474
- Lot 17 in DP 1095869
- Lot 2 in DP 509677
- Lot 1 in DP 982663
- Lot 2 in DP 982663
- Lot 3 in DP 61187
- Lot 1 in DP 74367



 The Site

 NOT TO SCALE

**Figure 4:** Aerial photo of Pitt Street North

## 1.5. Overview of the proposed development

The concept SSD Application seeks concept approval in accordance with section 4.22 of the EP&A Act for the OSD above the approved Pitt Street Station (northern portal). This Application establishes the planning framework and strategies to inform the detailed design of the future OSD and specifically seeks planning approval for:

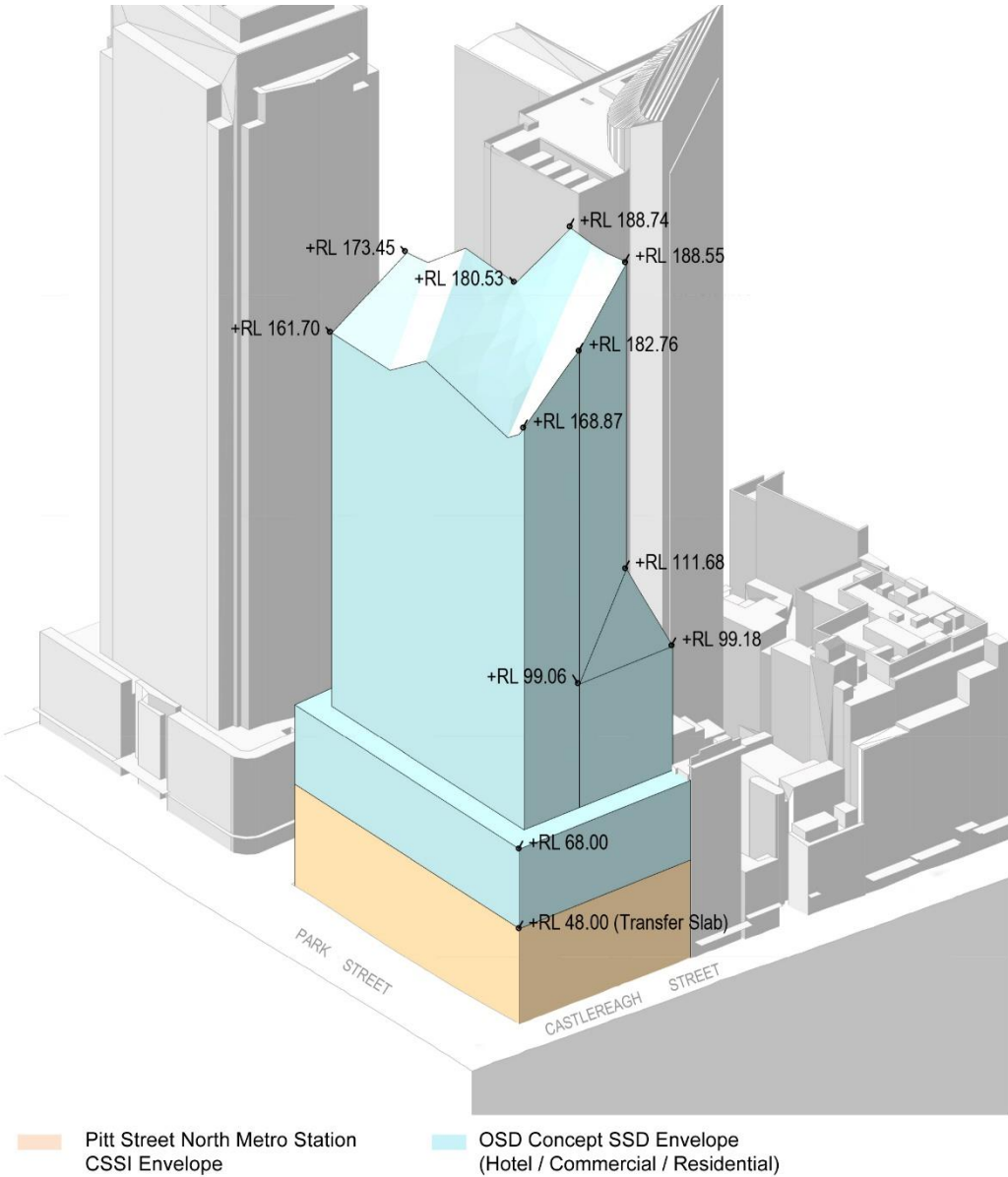
- a building envelope as illustrated at Figure 5
- a maximum building height of approximately Relative Level (RL) 189 which equates to approximately 43 storeys including a podium height of RL68 (approximately 45m), which equates to approximately 12 storeys above ground
- a maximum GFA of 49,120 square metres for the OSD component, which equates to a Floor Space Ratio (FSR) of 15.59:1, resulting in a total maximum GFA at the site (including station floorspace) of 50,309 square metres and a total maximum FSR of 15.97:1, including flexibility to enable a change in the composition of land uses within the maximum FSR sought
- conceptual use of the building envelope for a range of uses including commercial office space, visitor accommodation and residential accommodation
- use of the conceptual OSD space provisioning within the footprint of the CSSI Approval (both above and below ground), including the OSD lobby areas, podium car parking, storage facilities, services and back-of-house facilities
- car parking for approximately 50 spaces located across five levels of the podium
- loading and vehicular access arrangements from Pitt Street
- pedestrian access from Pitt Street, Park Street and Castlereagh Street
- strategies for utilities and service provision
- strategies for the management of stormwater and drainage
- a strategy for the achievement of ecologically sustainable development
- indicative signage zones
- a strategy for public art
- a design excellence framework
- the future subdivision of parts of the OSD footprint (if required)

As this concept SSD Application is a staged development pursuant to section 4.22 of the EP&A Act, future approval would be sought for detailed design and construction of the OSD. A concept indicative design, showing a potential building form outcome at the site, has been provided as part of this concept SSD Application at Appendix E.

Pitt Street Station is to be a key station on the future Sydney Metro network, providing access to the Sydney Central Business District (CBD). The proposal combines the metro station with a significant mixed use tower, contributing to the Sydney skyline. The OSD would assist in strengthening the role of Central Sydney as the key centre of business in Australia and would contribute to the diversity, amenity and sustainability of the CBD.

It is noted that Pitt Street Station southern portal OSD has been subject to a separate application, and does not form part of this concept SSD Application.





**Figure 5:** Pitt Street North OSD building, including OSD components (orange) and station box (grey)



Figure 6: Pitt Street North OSD indicative design, as seen from eastern, southern and western elevations

## 1.6. Staging and framework for managing environmental impacts

Sydney Metro proposes to procure the delivery of the Pitt Street North integrated station development in one single package, which would entail the following works:

- station structure
- station fit-out, including mechanical and electrical
- OSD structure
- OSD fit-out, including mechanical and electrical.

Separate delivery packages are also proposed by Sydney Metro to deliver the excavation of the station boxes/shafts ahead of the ISD delivery package, and line-wide systems (e.g. track, power, ventilation) and operational readiness works prior to the Sydney Metro City & Southwest metro system being able to operate.

Three possible staging scenarios have been identified for delivery of the integrated station development:

1. Scenario 1 – the station and OSD are constructed concurrently by constructing the transfer slab first and then building in both directions. Both the station and OSD would be completed in 2024.
2. Scenario 2 – the station is constructed first and ready for operation in 2024. OSD construction may still be incomplete or soon ready to commence after station

construction is completed. This means that some or all OSD construction is likely to still be underway upon opening of the station in 2024.

3. Scenario 3 – the station is constructed first and ready for operation in 2024. The OSD is built at a later stage, with timing yet to be determined. This creates two distinct construction periods for the station and OSD.

Scenario 1 represents Sydney Metro's preferred option as it would provide for completion of the full integrated station development and therefore the optimum public benefit at the site at the earliest date possible (i.e. on or near 2024 when the station is operational). However, given the delivery of the OSD could be influenced by property market forces, Scenarios 2 or 3 could also occur, where there is a lag between completion of the station component of the ISD (station open and operational), and a subsequent development.

The final staging for the delivery of the OSD would be resolved as part of the detailed SSD Application(s).

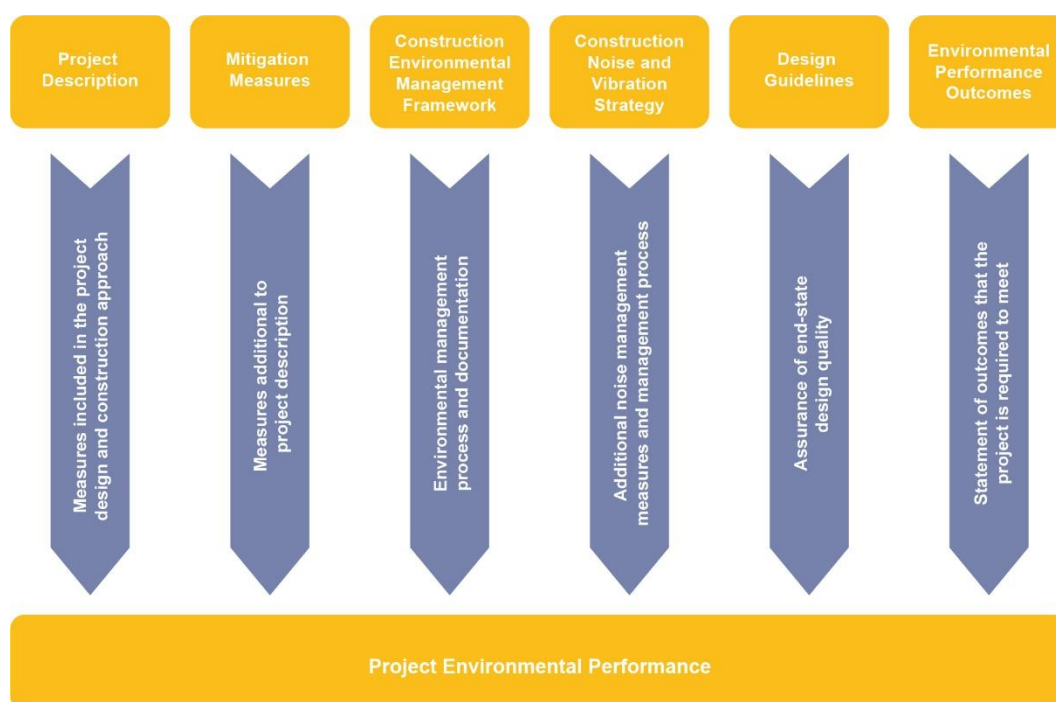
For the purposes of providing a high level assessment of the potential environmental impacts associated with construction, the following have been considered:

- Impacts directly associated with the OSD, the subject of this SSD Application
- Cumulative impacts of the construction of the OSD at the same time as the station works (subject of the CSSI Approval).

Given the integration of the delivery of the Sydney Metro City & Southwest metro station with an OSD development, Sydney Metro proposes the framework detailed in

**Figure 7** to manage the design and environmental impacts, consistent with the framework adopted for the CSSI Approval, which includes:

- project design – measures which are inherent in the design of the project to avoid and minimise impacts
- mitigation measures – additional to the project design which are identified through the environmental impact assessment
- construction environmental management framework – details the management processes and documentation for the project
- construction noise and vibration strategy – identifies measures to manage construction noise and vibration
- design guidelines – provides an assurance of end-state quality
- environmental performance outcomes – establishes intended outcomes which would be achieved by the project



**Figure 7: Project approach to environmental mitigation and management**

Sydney Metro proposes to implement a similar environmental management framework where the integrated delivery of the CSSI station works and the OSD occur concurrently. This would ensure a consistent approach to management of design interface and construction-related issues.

Sydney Metro proposes this environmental management framework would apply to the OSD until completion of the station and public domain components of the integrated station development delivery contract (i.e. those works under the CSSI Approval). Should the OSD be constructed beyond the practical completion and opening of the section, standard practices for managing construction related environmental impacts would apply in accordance with the relevant guidelines and Conditions of Approval for the detailed SSD Application(s).



## 2. Waste Analysis

### 2.1. Over station development (OSD) Pitt Street North area schedule

The built area schedule summarised in **Figure 8** below is based on the indicative scheme. This built area schedule has been used to assess the waste requirements of the site. However, it is noted that approval is only being sought for the envelope and the waste requirements of the proposal should be considered further during the detailed design phase once the precise mix of uses is known.

Site Area	<b>3150 m<sup>2</sup></b>	<b>Hotel</b>		<b>Support Requirements</b>		
Permissible FSR	<b>15.35 : 1</b>	Achieved GFA	<b>13453 m<sup>2</sup></b>		East Tower	West Tower
Permissible GFA	<b>48351 m<sup>2</sup></b>	Achieved NLA	<b>6900 m<sup>2</sup></b>	Garbage	151sqm	82sqm
		Number of Keys	<b>198</b>	Bulk Storage		12sqm
Achieved FSR	<b>15.35 : 1</b>	<b>Commercial Co-Working</b>		<b>Bicycle Parking</b>		
Achieved GFA	<b>48351 m<sup>2</sup></b>	Achieved GFA	<b>1482 m<sup>2</sup></b>	Street		51
Achieved Height	<b>148.1 m</b>	Achieved NLA	<b>1450 m<sup>2</sup></b>	Residential	197	107
<b>Residential Split</b>	West Tower	East Tower	General	Residential Storage (Cages)	197	107
Achieved GFA	9896	18462	847	Achieved Parking	<b>50</b>	spaces
Achieved NSA	7065	14845		<b>Residential Storage / Bicycle GFA</b>		<b>769</b>
Achieved Balc.	1600	2611				
Achieved 1 Bed	52	77				
Achieved 2 Bed	54	86				
Achieved 3 Bed	0	32				
Achieved PH	1	2				
<b>Total Units</b>	<b>107</b>	<b>197</b>				
		<b>Residential Total</b>				
		Achieved GFA	<b>29205 m<sup>2</sup></b>			
		Achieved NSA	<b>21910 m<sup>2</sup></b>			
		Achieved Balc.	<b>4211 m<sup>2</sup></b>			
		Achieved 1 Bed	129	42.4%		
		Achieved 2 Bed	140	46.1%		
		Achieved 3 Bed	32	10.5%		
		Achieved PH	3	1.0%		
		<b>Total Units</b>	<b>304</b>			

**Figure 8: Development summary**

The built area schedule shown in **Figure 8** above provides a breakdown of the residential, hotel, commercial and support areas in the building. These areas have been used to assess the waste requirements of the site. The main waste storage room for the hotel, station and commercial component is located on level 01, the main waste storage room for the east building residential component is located on level 11 and the main waste storage room for the west building residential component is located on level 12 mezzanine. Access by waste collection vehicles would be from Ground Level (with bins to be transferred via vehicle or service lifts from the three main waste storage rooms). The ground level loading dock will be accessed from Castlereagh Street.

### 2.2. Specific purpose and scope of this waste report

This waste management report describes the proposed construction and operational waste management of the OSD. Demolition works will be undertaken as part of the CSSI Approval and therefore construction waste associated with OSD will be minimised. Therefore, demolition waste is not considered in this waste management report.

The Department of Planning and Environment has provided the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as relevant.

### **2.3. Limitations**

This report: has been prepared by LCI Consultants for Sydney Metro and may only be used and relied on by Sydney Metro for the purpose agreed between LCI Consultants and the Sydney Metro.

The services undertaken by LCI Consultants in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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## 3. Policy and legislation

### 3.1. Protection of the environment operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) governs the requirements for waste generators in terms of storage and lawful disposal of waste. The POEO Act establishes the waste generator as having responsibility for the correct management of waste, including final disposal.

### 3.2. Waste avoidance and resource recovery Act 2001

The objects of the Waste Avoidance and Resource Recovery Act 2001 (WARR Act) are:

- a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development (ESD),
- b) to ensure that resource management options are considered against a hierarchy of the following order:
  - i. avoidance of unnecessary resource consumption,
  - ii. resource recovery (including reuse, reprocessing, recycling and energy recovery),
  - iii. disposal
- c) to provide for the continual reduction in waste generation
- d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,
- e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste,
- f) to ensure the efficient funding of waste and resource management planning, programs and service delivery,
- g) to achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis,
- h) to assist in the achievement of the objectives of the *Protection of the Environment Operations Act 1997*.

A waste management plan is a requirement for new developments in NSW and must be written with reference to the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*, made under the WARR Act.

### 3.3. City of Sydney policy for waste minimisation in new developments 2005

Council of the City of Sydney 'Policy for Waste Minimisation in New Developments' (the City of Sydney Waste Policy) provides guidance on waste minimisation and resource recovery and requirements for waste management for developments in the City. The objectives of the policy are:

- Waste minimisation and resource recovery:
  - To avoid waste through design and ordering correct material quantities.
  - To encourage improved environmental outcomes through increased source separation of materials.
  - To ensure more efficient management of waste and recyclable materials.
  - To maximise reuse and recycling of building construction materials, household generated waste and industrial commercial waste.
- Access – to ensure waste systems are easy to use and that collection vehicles are able to access buildings to remove waste safely and easily;
- Safety – to ensure safe practices for storage, handling and collection of waste and recycling;
- Pollution prevention – to prevent stormwater pollution that may occur as a result of poor waste storage and management practices;
- Ecologically Sustainable Development (ESD) – to promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;
- Hygiene – to ensure health and amenity for residents, visitors and workers in the City of Sydney; and
- Noise minimisation – to minimise noise during use by residents and collection of waste and recyclables.

Section A *All Developments*, Section B *Residential Developments* and Section C *Hotel and Commercial Developments* of the City of Sydney Waste Policy apply to the proposed development. These sections provide guidance on waste generation, storage and handling requirements. They also provide guidance on space, access, amenity and management, so that the various waste streams can be moved efficiently through the building to the point of collection. These sections have been used to calculate waste generation, storage and handling volumes for the proposed development. The waste storage, handling and collection points are discussed in section 4.0 of this report.

## 4. Operational waste

### 4.1. Residential waste generation and storage requirements

The City of Sydney Waste Policy provides guidance on waste minimisation and resource recovery and requirements for waste management for developments in the City including waste storage requirements. The City of Sydney Waste Policy requires provision of 80 L of waste capacity and 40 L of recycling capacity per dwelling per week.

Based on a total of 199 dwellings in the east building, the estimated waste and recycling generation is:

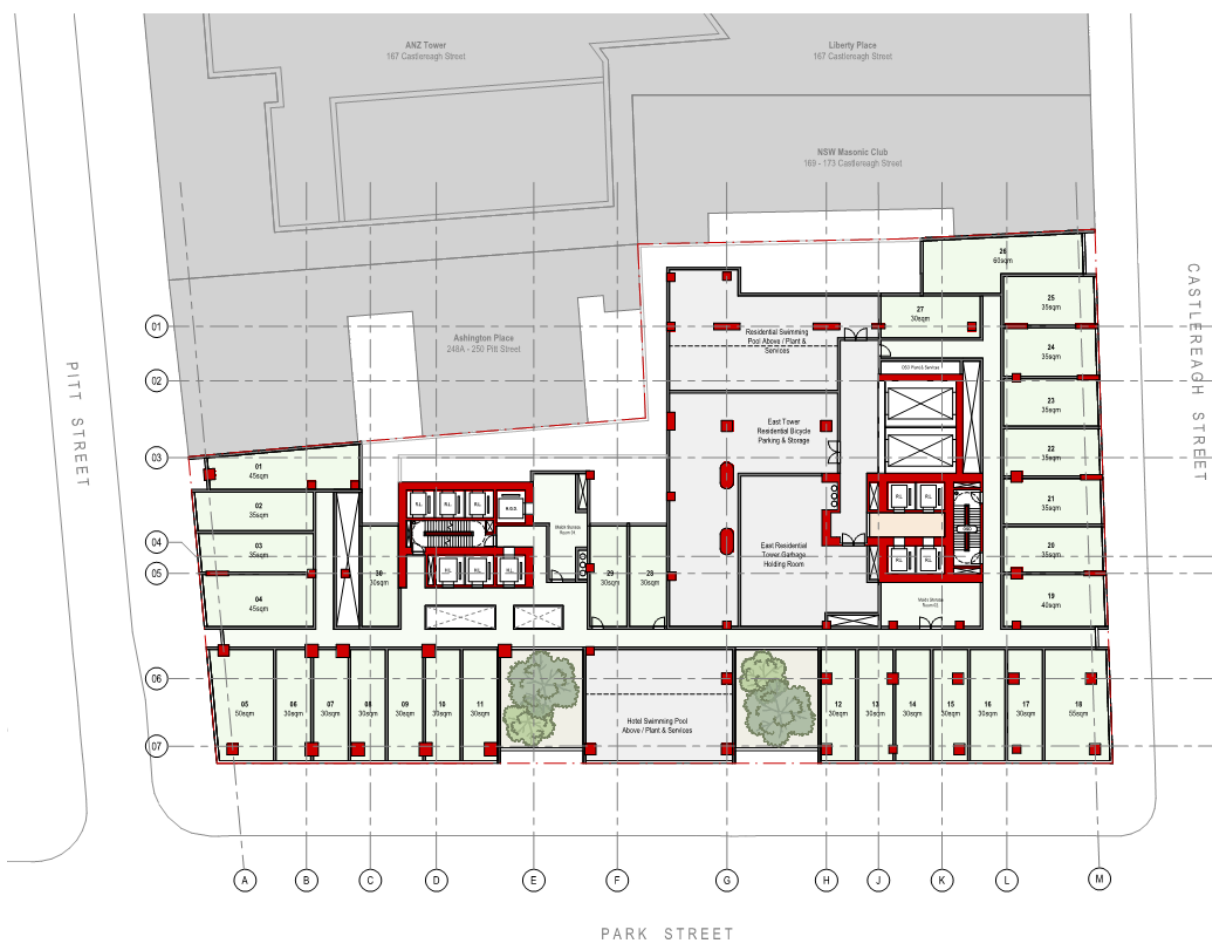
- Residential waste – 15,920 L/week
- Recyclables – 7,960 L/week

Based on a total of 110 dwellings in the west building, the estimated waste and recycling generation is:

- Residential waste – 8,800 L/week
- Recyclables – 4,400 L/week

Residents for both buildings will dispose of waste and recycle via waste and recycle chutes located on each floor. Access to the chutes will be from the waste room on each floor. The chutes will be designed in accordance with Appendix G of the Council of the City of Sydney Policy for Waste Minimisation in New Developments. The main waste storage room for the east building residential component is located on level 11 and the main waste storage room for the west building residential component is located on level 12 mezzanine. The images below show the locations of these main waste storage rooms.

It is noted that the design is indicative and will potentially change through the detailed design of the development.



**Figure 9: East building residential waste storage room – Level 11**

The east building waste storage rooms will contain six 1,100 L waste bins, which will be collected and removed three times per week. The east building waste storage rooms will contain three 1,100 L recycling bins, which will be collected and removed three times per week. This will require a minimum room area of 30m<sup>2</sup> for the waste bins and 15m<sup>2</sup> for the recycling bins (45 m<sup>2</sup> total). This includes allowances for manoeuvring and storage within the east building waste storage room. The bins will be manually cycled so that overflowing does not occur. The waste storage room and chutes will be mechanically ventilated. Vermin traps will be employed within all waste storage rooms.



**Figure 10: West building residential waste storage room - Level 12 mezzanine**

The west building waste storage rooms will contain three 1,100 L waste bins, which will be collected and removed three times per week. The west building waste storage rooms will contain two 1,100 L recycling bins, which will be collected and removed three times per week. This will require a minimum room area of 15m<sup>2</sup> for the waste bins and 10m<sup>2</sup> for the recycling bins (25 m<sup>2</sup> total). This includes allowances for manoeuvring and storage within the west building waste storage room. The bins will be manually cycled so that overflowing does not occur. The waste storage room and chutes will be mechanically ventilated. Vermin traps will be employed within all waste storage rooms.

The waste bins and recycling bins will be manually moved to the ground level loading dock via the goods lifts in each building. The ground level loading dock will be accessed from Castlereagh Street. This loading dock has space for two medium rigid vehicles and two small rigid vehicles. It is also fitted with a turning plate so that a commercial waste vehicle can enter and exit the loading dock. The clearance height into the loading dock is greater than 3.8m. The delivery of bins to / from the loading dock from the residential buildings will be coordinated with the private collection company responsible for the waste / recyclables.

## 4.2. Hotel Waste generation and storage requirements

The City of Sydney Waste Policy provides guidance on waste minimisation and resource recovery and requirements for waste management for developments in the City including waste storage requirements. The City of Sydney Waste Policy requires provision of the following for hotels.

Table 1 – Hotel waste estimates

Type of Premises	Units of Measurement (Waste)	Waste Generation	Units of Measurement (Recycling)	Recycling Generation
Hotel - bed	L / bed / day	5	L / bed / day	1
Hotel - bar	L / 100m <sup>2</sup> floor area / day	50	L / 100m <sup>2</sup> floor area / day	50
Hotel - dining	L / 1.5m <sup>2</sup> floor area / day	10	L / 100m <sup>2</sup> floor area / day	50

Based on a total of 204 rooms in the hotel and 847m<sup>2</sup> of bar area, the estimated waste and recycling generation is:

- Hotel waste – 3,983 L/week
- Recyclables – 3,167 L/week

Hotel cleaning staff will collect and dispose of waste and recycles in the hotel waste storage room located on level 01 mezzanine. The images below show the location of this waste storage room.





**Figure 11: Hotel / office waste storage room**

The hotel waste storage rooms will contain four 1,100 L waste bins, which will be collected and removed once per week. The hotel waste storage rooms will contain three 1,100 L recycling bins, which will be collected and removed once per week. This will require a minimum room area of 20m<sup>2</sup> for the waste bins and 15m<sup>2</sup> for the recycling bins (35 m<sup>2</sup> total). This includes allowances for manoeuvring and storage within the hotel waste storage room. The waste storage room will be mechanically ventilated. Vermin traps will be employed within all waste storage rooms.

The waste bins and recycling bins will be manually moved to the ground level loading dock via the goods lift. The ground level loading dock will be accessed from Castlereagh Street. This loading dock has space for two medium rigid vehicles and two small rigid vehicles. It is also fitted with a turning plate so that a commercial waste vehicle can enter and exit the loading dock. The clearance height into the loading dock is greater than 3.8m. The delivery of bins to / from the loading dock from the hotel storage room will be coordinated with the private collection company responsible for the waste / recyclables.

### 4.3. Office waste generation and storage requirements

The City of Sydney Waste Policy provides guidance on waste minimisation and resource recovery and requirements for waste management for developments in the City including waste storage requirements. The City of Sydney Waste Policy requires provision of the following for offices.

Table 2 – Office waste estimates

Type of Premises	Units of Measurement (Waste)	Waste Generation	Units of Measurement (Recycling)	Recycling Generation
Office	L / 100m <sup>2</sup> floor area / day	10	L / 100m <sup>2</sup> floor area / day	10

Based on a total of 1,515m<sup>2</sup> of office area, the estimated waste and recycling generation is:

- Office waste – 1,061 L/week
- Recyclables – 1,061 L/week

Office cleaning staff will collect and dispose of waste and recycles in the hotel waste storage room located on level 01 mezzanine, the office tenancy will share space with the hotel waste storage room. The images below show the location of this waste storage room.



**Figure 12: Hotel / office waste storage room**

The hotel waste storage room will contain one 1,100 L waste bin, which will be collected and removed once per week for the commercial space. The hotel waste storage rooms will contain one 1,100 L recycling bin, which will be collected and removed once per week for the commercial space. This will require a minimum room area of 5m<sup>2</sup> for the commercial space waste bins and 5m<sup>2</sup> for the commercial space recycling bins (10 m<sup>2</sup> total). This includes allowances for manoeuvring and storage within the hotel waste storage room. The waste storage room will be mechanically ventilated. Vermin traps will be employed within all waste storage rooms.

The waste bins and recycling bins will be manually moved to the ground level loading dock via the goods lift. The ground level loading dock will be accessed from Castlereagh Street. This loading dock has space for two medium rigid vehicles and two small rigid vehicles. It is also fitted with a turning plate so that a commercial waste vehicle can enter and exit the loading dock. The clearance height into the loading dock is greater than 3.8m. The delivery of bins to / from the loading dock from the hotel storage room will be coordinated with the private collection company responsible for the waste / recyclables.

#### **4.4. Station waste generation and storage requirements**

All station waste will be collected and managed by Sydney Metro. Station cleaning staff will collect and dispose of waste and recycles in the back off house station services room located on level 01 mezzanine.

It is worth noting that the station waste collection will share the use of the loading bays.

#### **4.5. Pneumatic waste system alternative**

As an alternative solution to the multiple waste storage rooms on level 01 mezzanine, level 11 and the level 12 mezzanine, it is possible to install a pneumatic waste collection system. Such a system would automatically transfer waste from each floor and divert in to a central collection and compaction facility on the level 01 mezzanine. Once sorted and compacted into the waste bins and the recycling bins, these bins would be manually moved to the ground level loading dock via the goods lift. From the loading dock the waste and recycling would be collected by the private collection company responsible for the waste / recyclables. The figure on the next page diagrammatically shows the pneumatic waste system.

As the building design develops, this alternative waste and recycling collection system will be further investigated and potentially integrated into the building design,

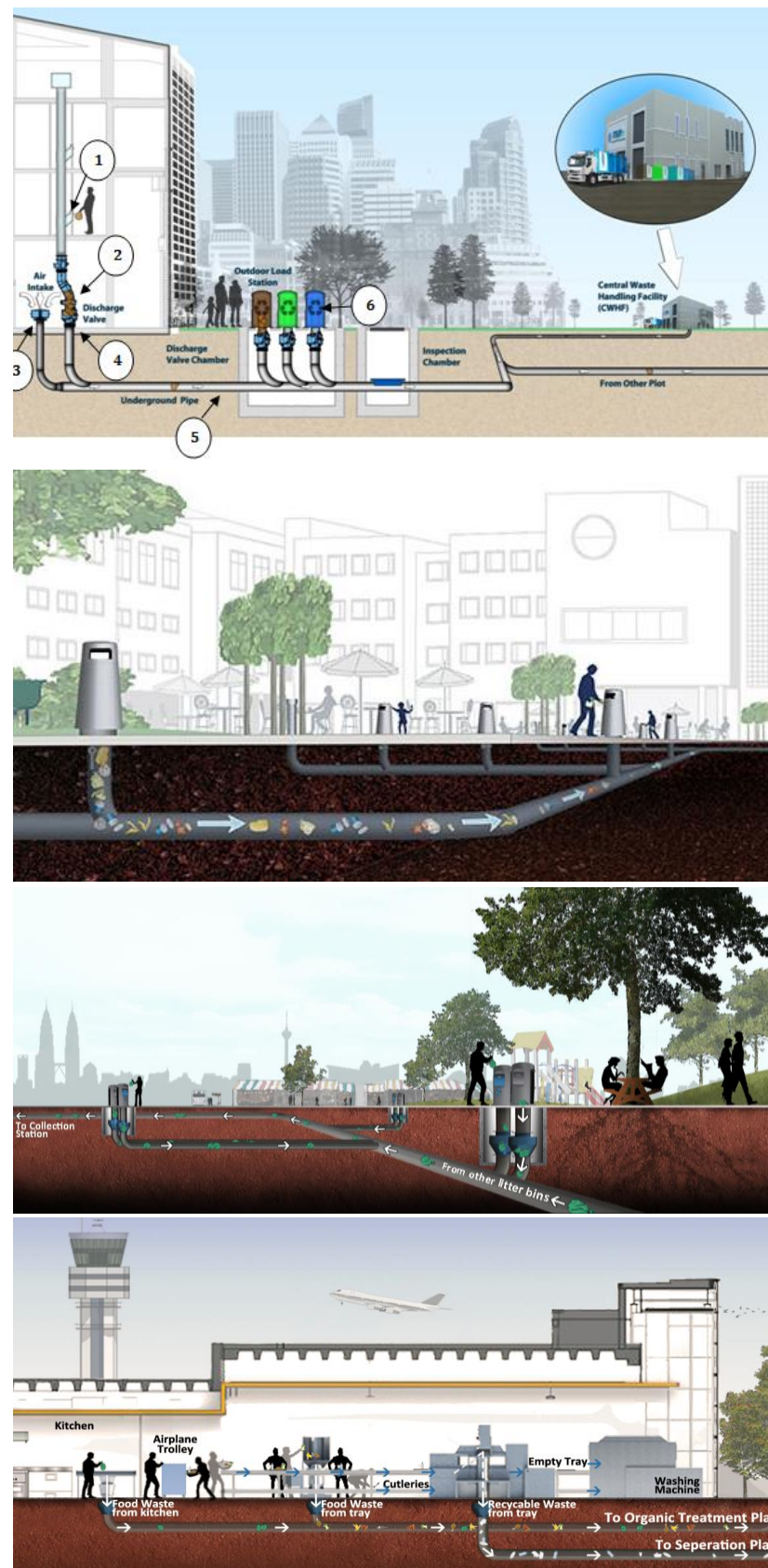


Figure 13: Pneumatic waste diagram

## HOW IT WORKS

1. Chutes that are used to feed waste into the system
2. Storage section that holds the waste between transport cycles
3. Primary air inlet that creates an active high-speed air path in the pipe network
4. Discharge valves that periodically open to allow movement of the waste into the active air path
5. Transport pipes that form the waste path between the storage chambers and the Central Waste Handling Facility (CWHF)
6. Outdoor load stations that may also feed smaller quantities of waste material into the system

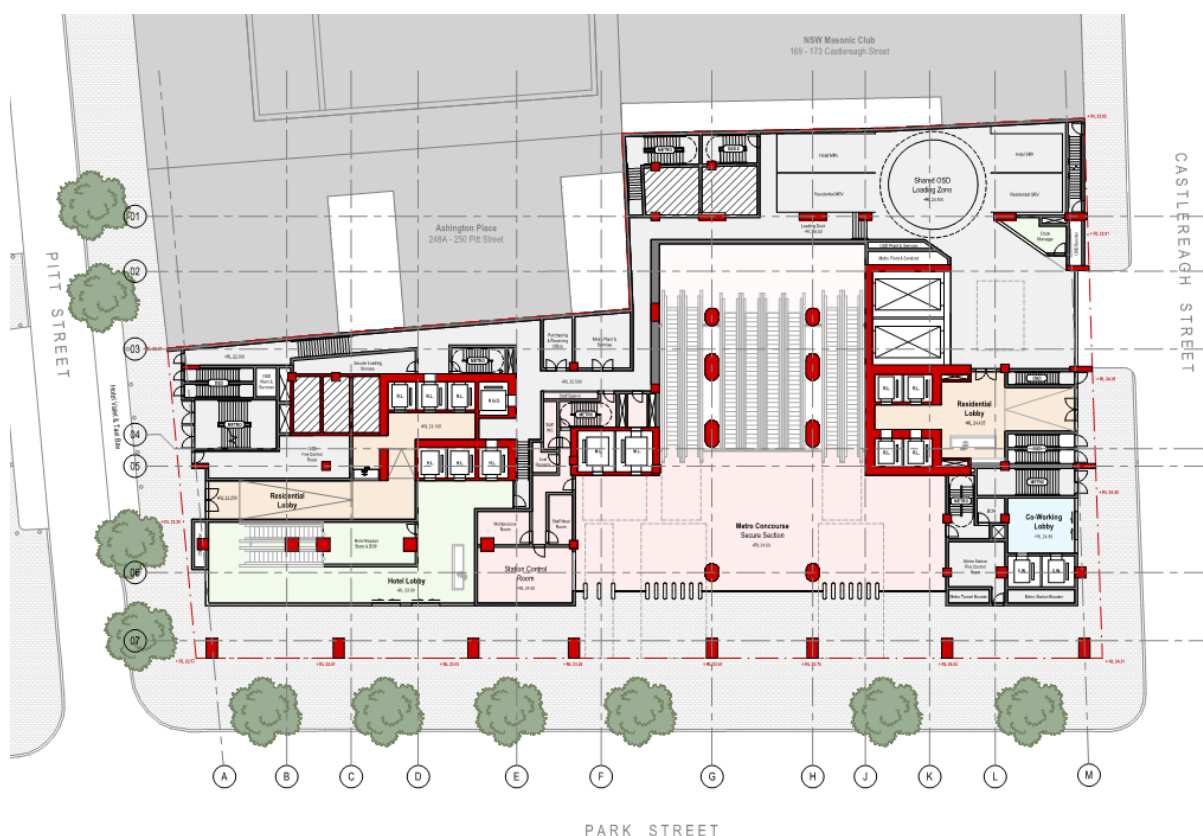
## KEY BENEFITS

- Single point of waste collection for Precinct type developments. Cost reduction in number of garbage rooms, compactors, personnel, collections, etc
- Eliminates unsightly Sulo bins outside developments
- Maintains recyclables
- Maintains a clean environment without overflowing bins, etc
- Facilitates waste to energy solutions
- Ease of installation with a 400mm diameter steel pipe
- Contains odour



## 4.6. Loading dock access and waste collection

The ground level loading dock will be accessed from Castlereagh Street. This loading dock has space for two medium rigid vehicles and two small rigid vehicles. It is also fitted with a turning plate so that a commercial waste vehicle can enter and exit the loading dock. The clearance height into the loading dock is greater than 3.8m. The delivery of bins to / from the loading dock from the various waste storage rooms in the building will be coordinated with the private collection company responsible for the waste / recyclables. The building manager will be integral to this coordination exercise. The loading dock will be ventilated. Vermin traps will be employed within the loading dock.



**Figure 14: Loading dock**

Collection vehicles required to service each waste stream are outlined in the table below with associated dimensions and clearance requirements. The loading dock will contain an 8 m turning plate with 10 m clearance. This clearance is suitable for the largest sized collection vehicles proposed.

Table 3 – Collection vehicles

Waste Stream	Bin Type	Collection Vehicle	Dimensions and Clearances
Waste	1,100 L	Rear loading compactor	Length – 9.6m Width – 2.6m Travel height – 3.8m Operating height – 4.0m Weight – 26t
Recyclables	1,100 L	Rear loading compactor	Length – 9.6m Width – 2.6m Travel height – 3.8m Operating height – 4.0m Weight – 26t

The collection frequencies are as follows:

- Residential buildings three times per week.
- Hotel and commercial space once per week.

## 4.7. Management

### 4.7.1. Responsibilities

Tenants and residents will be responsible for arranging the disposal of their own waste to the nearest residual waste or recycling chute as required.

Building management will be responsible for safe and efficient management of waste including:

- Cleaning and maintenance of bins, chutes, compaction equipment and the central waste storage room and e-waste and bulky waste storage room.
- Preventing ingress of pests and vermin.
- Providing signage.
- Ensuring the central waste storage rooms and equipment is protected from theft and vandalism.
- Transferring bins from the waste storage rooms to the loading dock on the ground level for collection via the service lifts or vehicle lift.

A bin wash area in or adjacent to the loading dock will be provided to enable cleaning of bins.

### 4.7.2. Signage

Clear and easy to read standard signage on how to use the waste management system and what materials are acceptable in the recycling will be posted in all waste rooms. Adequate signage identifying the central waste storage rooms are also to be prominently displayed. All waste and recycling chutes and receptacles are to be clearly and correctly labelled to identify which materials are to be placed in which chute



Figure 15: Standard waste signage

Safety signs will be provided in the central waste storage room and other waste rooms/enclosures including “NO STANDING” signs and “DANGER” warning signs for children to be fixed to the external face of the rooms where appropriate.



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## 5. Construction waste

### 5.1. Construction waste management

During construction, waste generated on site would be managed and minimised by a combination of waste planning and on-site controls.

#### 5.1.1. Waste planning

Waste planning activities would include:

- Designing the building to minimise on site cutting of components, and maximising on site assembly tasks
- Careful ordering of materials such as sand and building products to match quantities with amounts required, and on time ordering rather than having materials stored on site for months before being used
- Segregating materials and providing weather protection for stored materials on site, to maximise their fitness for use
- Encouraging bulk handling and use of reusable and returnable containers
- At the time of tendering, advise contractors and sub-contractors and suppliers of the requirements to minimise waste on site
- Include provision in the tender documentation for the client to monitor the use of waste and recycling bins on site
- Development of a Construction Waste Management Plan by the main site contractor, which includes all of the above elements

#### 5.1.2. Onsite controls

On site controls would include:

- Implementation by the main site contractor of the Construction Waste Management Plan
- Segregating wastes generated on site, using different skip bins for recycling and waste, with separate bins for different recyclable materials
- Discussion about the site's waste management and recycling policies and practices with employees and subcontractors during site inductions and tool box talks
- Ensuring all waste disposal bins are clearly marked
- Keeping records of quantities of waste and recycled materials disposed of, and the destinations of these materials
- Ensuring that wastes are only disposed to licenced facilities

## 6. Summary

This waste management report shows that the development envelope and its integration with the station can comply with relevant City of Sydney and legislative requirements for waste management. This waste management report forms the framework for the provision of waste management measures for the future detailed design and planning stages of the development. A full waste management plan shall be prepared in the detailed planning stage of the development.