

Attachment A18

Waste Management Strategy



Sydney Metro West:

Planning Proposal Hunter Street Over Station
Development

Waste Management Strategy

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Glossary

Term	Definition
Comingled recycling	A mix of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (e.g. aluminium, steel, hard plastics, cartons) and paper/cardboard.
Council	City of Sydney
CSSI approval	Critical State Significant Infrastructure Approval
Chute	A ventilated, essentially vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the waste room
Chute discharge	The point at which waste or recycling exits from the chute
CWSR	Central Waste Storage Room
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
ESD	Ecologically Sustainable Design
FSR	Floor space ratio
GANSW	NSW Government Architect's Office
General waste/residual waste	The remaining portion of the waste stream that is not recovered for re-use, processing, or recycling. May include soft plastics, food scraps, polystyrene etc.
GFA	Gross Floor Area
Green Waste	Organic materials that are biodegradable and/or compostable (e.g. lawn clippings, plant trimmings)
LEP	Local Environmental Plan
LGA	Local Government Area
MRF	Material Recovery Facility
OSD	Over Station Development
Sanitary waste	Feminine hygiene waste generated from female bathrooms
SEARs	Secretary's Environmental Assessment Requirements
SSDA	State Significant Development Application
SSI	State Significant Infrastructure
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in Section 1.2
TfNSW	Transport for New South Wales
WMS	Waste Management Strategy
WSR	Waste Storage Room

Executive summary

This Waste Management Strategy forms part of the Sydney Metro West Hunter Street Station Planning Proposal Request. The report has been prepared to support an amendment to the *Sydney Local Environmental Plan (LEP) 2012*, consistent with the City of Sydney's Central Sydney Planning Strategy 2016-2036 and will facilitate a future over station development (OSD) integrated with the Hunter Street Station. The future Hunter Street OSD will comprise two buildings, one at the eastern site on the corner of O'Connell (Hunter Street East) and another at the western site on the corner of George and Hunter streets (Hunter Street West). The Planning Proposal includes:

- Development of a preliminary Waste Management Strategy (WMS) which addresses the waste management requirements relating to the operational phase of development and will demonstrate how the concept design satisfies the requirements
- Identification of the various waste streams which may be generated from the operational phase of development
- Provision of management strategies for effective storage, reuse/recovery, treatment and/or disposal of waste generated.

The assessment concluded that eliminating waste at the source is the best way to reduce the impact on the environment. This can be achieved through:

- Implementation of convenient and efficient waste management systems that promote responsible source separation to reduce the amount of waste going to landfill
- Introduction of robust and adequate waste provisions and procedures that can adapt to changes during the operational phase of development
- Compliance with relevant council codes, policies and guidelines.

The assessment has estimated the waste volumes that would be generated by the operational phase of the development and determined the waste infrastructure required to manage the general and recycling waste streams. The buildings associated with this Planning Proposal (Hunter Street East and Hunter Street West) includes the development of retail and commercial space across the two buildings. Individual premises will be allocated with bins for temporary holding of general and recycling waste. Staff and facilities management would transfer and dispose of these directly into the appropriate 660 litre bins provided within the central waste room, accessed via service lifts. General waste will need to be compacted prior to disposal using the compaction facility within the central waste room. It is assumed that retail waste and commercial waste would be collected five times a week.

In addition, the report satisfies the City of Sydney Guidelines for Waste Management in New Developments 2018 by providing the following information:

- Type and quantity of refuse materials that would be generated during the occupancy of the proposed development
- Refuse collection, storage, transfer and disposal arrangements during occupancy of the completed development
- Recommended operational requirements for the operational phase of the development, and design requirements for the building and refuse management facilities.

1 Introduction

1.1 Purpose

The Sydney Metro West Hunter Street Station Planning Proposal Request seeks to amend the maximum building height and maximum floor space ratio permitted for both the east and west sites under the *Sydney Local Environmental Plan 2012* (Sydney LEP 2012). The planning proposal will facilitate a future over station development (OSD) integrated with the Hunter Street Station. The future OSD would comprise two commercial office buildings positioned above the two main entrances to the Hunter Street Station (Eastern site and Western site).

The Waste Management Strategy (WMS) identifies waste sources during operation and proposes management and mitigation measures that are in line with state and local legislative guidelines, which are further discussed in Section 2 of this document. Key objectives of the WMS are to:

- Describe the legislative and policy requirements under current planning and environmental legislation for the proposed development
- Identify and describe waste management infrastructure required to service retail and commercial in the development
- Identify and quantify (where possible) the various waste streams which may be generated during operation of the proposed development
- Provide relevant management strategies for effective storage, re-use and/or disposal of waste generated.

1.2 Objectives and intended outcomes

The Planning Proposal Request has been prepared to address the following objectives for future development on the Eastern and Western sites:

- Be a catalyst for positive change by regenerating and invigorating the city with new development that engages with the precinct, raises the urban quality and enhances the overall experience of the city.
- Facilitate future development that promotes design excellence and is consistent with the objectives of the Central Sydney Planning Framework.
- Deliver high quality employment generating floorspace that aligns with the objectives for development within the tower cluster areas identified within the Central Sydney Planning Framework.
- Contribute towards the establishment of an integrated transport hub within the Sydney CBD which strengthens Sydney's rail network improving connectivity.
- Delivers employment density alongside the delivery of significant new public transport infrastructure servicing the site and surrounding precinct.

The intended outcomes of the requested amendments include:

- To amend the maximum building height and maximum floor space ratio (FSR) permitted for both the east and west sites under the Sydney LEP 2012 and allow an alternative approach to design excellence to deliver integrated station development that optimises the development potential of both sites

- To facilitate new development that demonstrates an appropriate distribution of built form and floor space as part of the delivery of the integrated station development.

1.3 Planning process

1.3.1 State significant infrastructure

Sydney Metro West was declared as State significant infrastructure (SSI) and critical State significant infrastructure (CSSI) under sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) respectively on 23 September 2020.

Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the EP&A Act. The approved Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process- application number SSI-10038) were approved on 11 March 2021.

Stage 2 of the planning approval process (application number SSI-19238057) includes all major civil construction work, including station excavation and tunnelling, between The Bays and Sydney CBD (An Environmental Impact Statement for this application was exhibited between 3 November and 15 December 2021. This application is relevant for this request for a Planning Proposal as it seeks approval for bulk excavation and tunnelling at the Hunter Street (Sydney CBD) Station sites.

Stage 3 of the planning approval process (application number SSI-22765520, being the application for the tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the Sydney Metro West line. This application is notably relevant for this request for a Planning Proposal, as it seeks approval for the construction of the Hunter Street Station, including above and below ground structures, public domain works, and spatial provisioning and works to facilitate the construction and operation of an OSD above the two station entries which are described further in this report.

1.3.2 Over station development

The OSD components of the Hunter Street integrated station development is not declared as SSI or CSSI under *State Environmental Planning Policy (Planning Systems) 2021*). As such, separate development consent is required to be granted for the construction and operation of development above the Hunter Street Station.

The primary land use of the OSD sites is anticipated to be 'commercial premises' which has a capital investment value of more than \$30 million, and which are located within a rail corridor and/or are associated with railway infrastructure. Consequently, the future OSD will be classified as State Significant Development. The Sydney LEP 2012 is a relevant environmental planning instrument for the future development, though the Sydney Development Control Plan 2012 (Sydney DCP 2012) will not apply to the OSD sites.

To inform the planning controls relevant for the Hunter Street OSD sites, amendments are proposed to the Sydney LEP 2012 to provide additional Maximum Height of Building and FSR controls. Further, as the Sydney DCP 2012 does not apply to the land, the Proponent will prepare a design and amenity guideline to support the Planning Proposal to inform the future built form on the site including details such as street frontage heights, setbacks, massing and tapering, development adjacent to heritage items, building exteriors, and managing wind impact.

The inter-relationship of the scope of Sydney Metro SSI EIS 3 (part of Critical State Significant Infrastructure CSSI) and this Planning Proposal is illustrated in Figure 1-1.

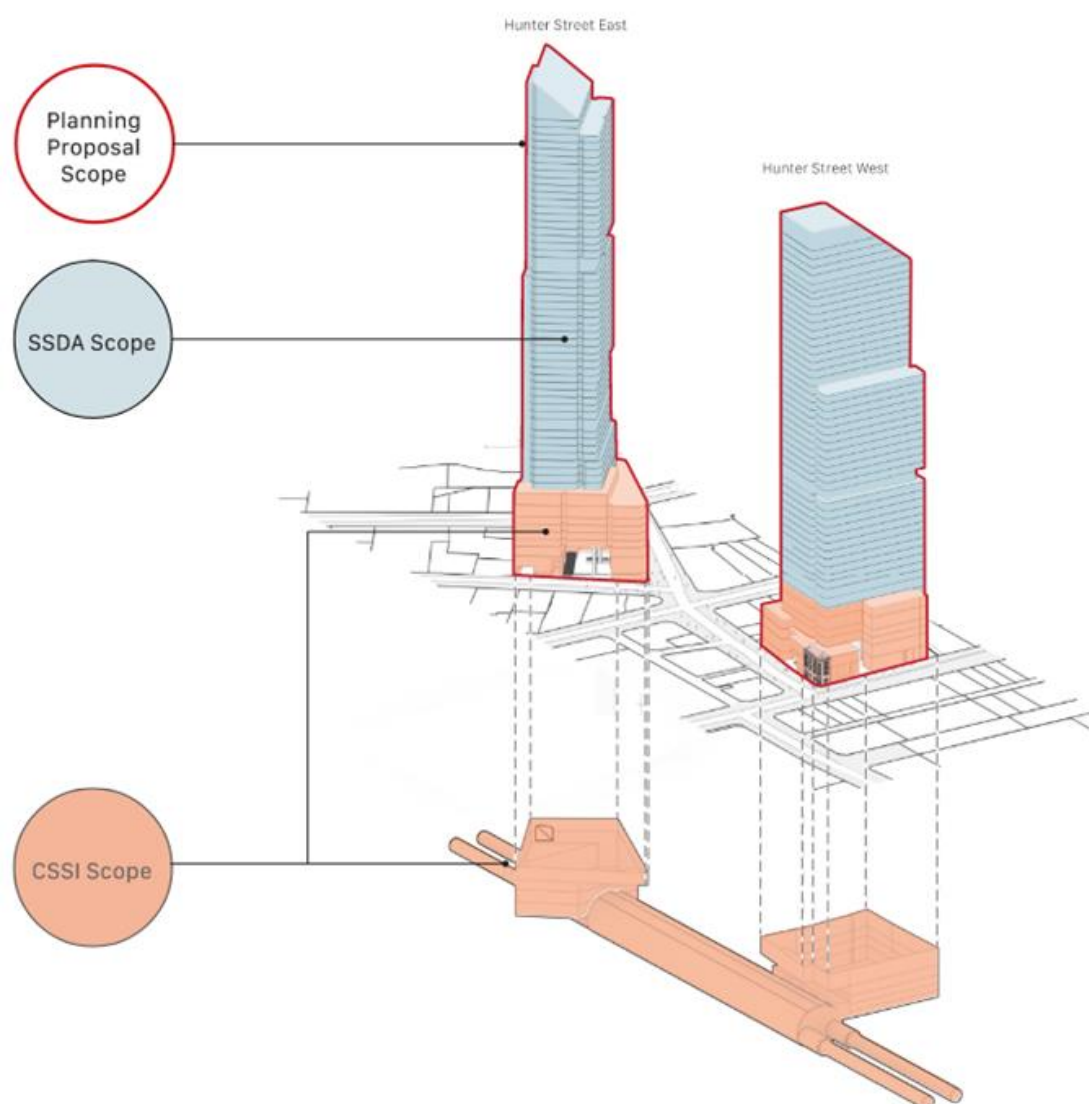


Figure 1-1 Hunter Street Station and proposed OSD

1.3.3 Planning proposal

The planning proposal seeks to amend the Sydney LEP 2012 to enable development on the site(s) as follows:

- Establish a maximum Height of Buildings control and maximum FSR control on the identified land, being the Hunter Street Station East and West sites.
- Enable the development of a commercial office building on the Hunter Street Station East and West sites
- Integration with the Hunter Street Station, the subject of a separate application process
- Adaptive reuse of the existing Former Skinners Family Hotel within the overall development on the West site

- Include site-specific controls which ensure the provision of employment and other non-residential land uses only on both the Hunter Street Station East and West sites.
- Include site-specific control allowing the provision of up to a maximum of 70 car parking spaces maximum total across both the Hunter Street Station East and West sites.
- Include a site-specific design guideline within the site-specific controls to guide future development sought under a State Significant Development Application process.
- Establish an alternative design excellence process for the Hunter Street Station East and West sites that responds to the integration of the development with the Sydney Metro West project and specifically the Hunter Street Station.

A summary of the key development outcomes resulting from the Planning Proposal is set out in Table 1-1 below.

Table 1-1: Proposed concept built form outcomes

Built form component	Proposed development outcome
East Site	Based on a site area of 3,666 sqm
Height	Building height of 257.7m (RL 269.10)
FSR	22.82:1
GFA	Up to 84,287 sqm of GFA
Land use(s)	Non-residential land uses only
West Site	Based on a site area of 3,735 sqm
Height	Building height of 213.0m (RL 220.00), including a setback interface from the heritage-listed Skinner Family Hotel
FSR	18.71:1
GFA	Up to 69,912 sqm of GFA
Land use(s)	Non-residential land uses only
CI 7.6 – Carparking for office and business premises	Up to 70 car parking spaces, maximum total across both the Eastern and Western sites

1.4 Site context

1.4.1 The site

The Hunter Street integrated station development is located in the northern part of the Sydney CBD, within the commercial core precinct of Central Sydney, within the Sydney Local Government Area.

The east site is located on the corner of O’Connell Street, Hunter Street and Bligh Street adjacent to the existing CBD and South East Light Rail that extends from Circular Quay to Moore Park, Kensington and Kingsford. The east site is adjacent to the new Martin Place Station which forms part of the Sydney Metro City and Southwest, Australia’s biggest public transport project connecting Chatswood to Sydenham and extending to Bankstown.

The west site is located on the corner of George and Hunter Street, including De Mestre Place and land predominantly occupied by the existing Hunter Connection retail plaza.

Refer to Figure 1-2 below which illustrates the location of the Hunter Street Station (Sydney CBD) within its regional context.

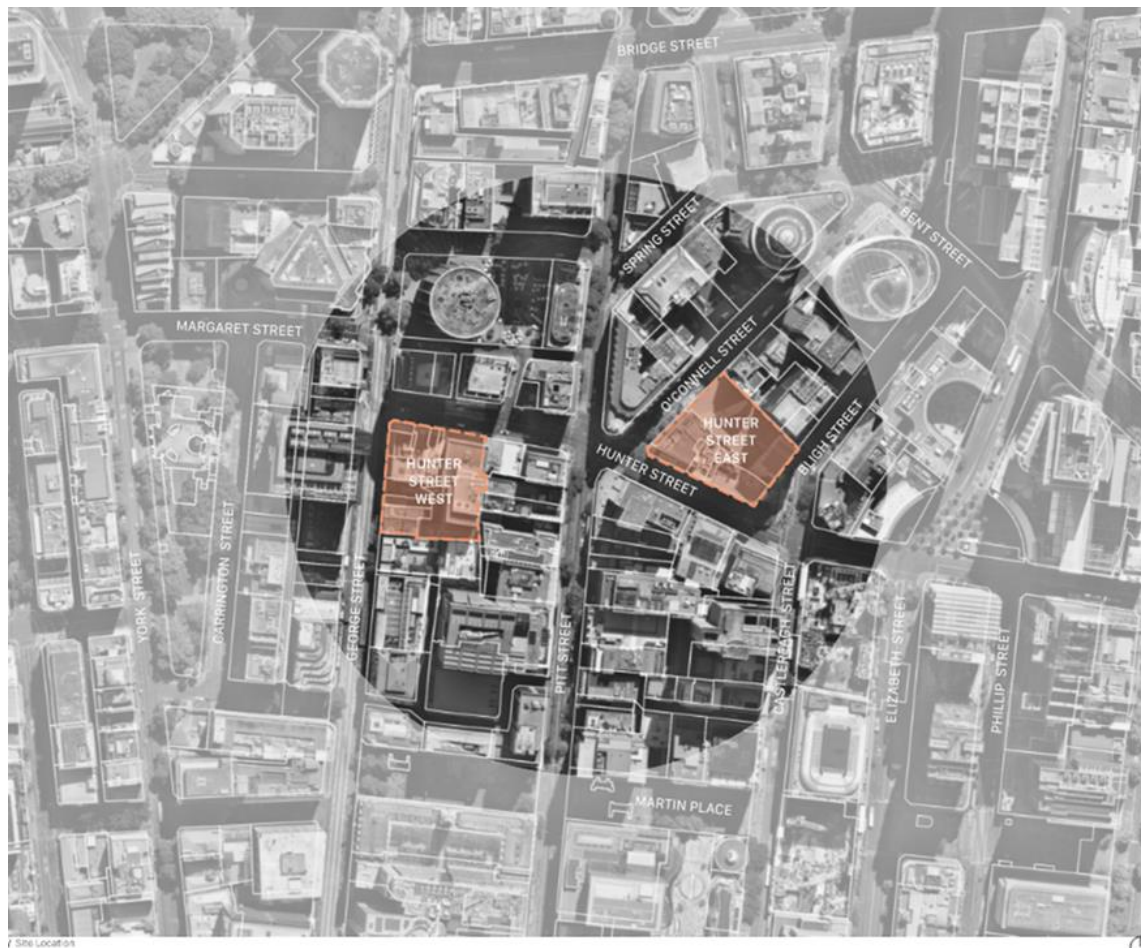


Figure 1-2 Location of new metro stations at Hunter Street (Sydney CBD)

1.4.2 Local context

The Sydney CBD is a highly developed commercial core with a wide range of commercial, retail, health, government and community-based uses, as well as high density residential developments.

A number of key commercial buildings are located in or around the Sydney CBD, including educational facilities, historic buildings and structures, law courts, public gathering spaces and places of worship. Significant areas of open space, such as the Botanical Gardens, the Domain and Hyde Park are also located within or near the Sydney CBD area, as well as the World Heritage Sydney Opera House and iconic Sydney Harbour Bridge.

Land uses surrounding the Hunter Street Station sites include:

- North of the sites is a major commercial area comprising high density commercial towers along George Street, Pitt Street, and Bridge Street, including the MetCentre and Australia Square buildings. The area also comprises tourism and entertainment related uses including hotels, shops, restaurants, cafes, nightclubs and bars, with the

area around Circular Quay and the Rocks a major tourism precinct and providing significant support for the night time economy.

- East of the sites are major commercial towers along Hunter Street, including Chifley Tower, 8 Chifley Square, Aurora Place and Deutsche Bank Place. Beyond Hunter Street, the State Library of NSW and the NSW Parliament House front onto Macquarie Street, and beyond that lies the public open space of The Domain.
- South of the sites, the land use remains predominantly multi-storey commercial offices but also includes cafes, bars and nightclubs, including the Ivy complex. Martin Place is a significant east–west pedestrian thoroughfare which contains many culturally significant buildings and structures including the Cenotaph memorial and the General Post Office building, as well as Martin Place Station. Beyond Martin Place the Sydney CBD continues towards Town Hall, Haymarket and the Central Station precinct.
- West of the sites, the land use remains predominantly high-density commercial offices, anchored by Wynyard Station. George Street contains the Sydney Light Rail (L2 Randwick Line and L3 Kingsford Line) and is a major north–south axis through the CBD, and along with Pitt Street connects Circular Quay, Wynyard, Town Hall and Central. East of Wynyard, the CBD continues towards the major commercial and entertainment areas around King Street Wharf and Barangaroo, which also contain significant high density residential apartment buildings.

1.4.3 Site description

The Hunter Street (Sydney CBD) integrated station development relates to the following properties:

- 28 O’Connell Street, 48 Hunter Street, and 37 Bligh Street, Sydney (East Site); and
- 296 George Street, 300 George Street, 312 George Street, 314-318 George Street, 5010 De Mestre Place (Over Pass), 5 Hunter Street, 7-13 Hunter Street, 9 Hunter Street and De Mestre Place, Sydney (West Site).

Table 1-2 and Table 1-3 below sets out the address, legal description and area of the parcels of land that comprise the Hunter Street Station land that is the subject of this Planning Proposal.

Table 1-2 Legal description of Hunter Street Station East site

Address	Lot and DP
28 O’Connell Street, Sydney	Lot 1, DP217112
28 O’Connell Street, Sydney	Lot 1, DP536538
28 O’Connell Street, Sydney	Lot 1, DP1107981
48 Hunter Street, Sydney	Lot 1, DP59871
48 Hunter Street, Sydney	Lot 2, DP217112
33 Bligh Street, Sydney	Lot 1, DP626651
37 Bligh Street, Sydney	CP and Lots 1-14, 21-31, 33-36, and 40, SP58859
37 Bligh Street, Sydney	CP and Lots 41-49, SP61852
37 Bligh Street, Sydney	CP and Lots 50-57, SP61922
37 Bligh Street, Sydney	CP and Lots 58-65, SP61923

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Address	Lot and DP
37 Bligh Street, Sydney	CP and Lots 66 and 67, SP63146
37 Bligh Street, Sydney	CP and Lots 67-70, SP63147
37 Bligh Street, Sydney	CP and Lot 72, SP74004
37 Bligh Street, Sydney	CP and Lots 75-82, SP87437
37 Bligh Street, Sydney	CP and Lots 73-74, SP87628
Total Area: 3,694 sqm	

Table 1-3 Legal description of Hunter Street Station West site

Address	Lot and DP
296 George Street, Sydney	Lot 1, DP438188
300 George Street, Sydney	CP and Lots 1-43, SP596
312 George Street, Sydney	Lot 1, DP211120
314-318 George Street, Sydney	Lot 13, DP622968
5010 De Mestre Place, Sydney (Over Pass)	Lot 1, DP1003818
9 Hunter Street, Sydney	Lot 2, DP850895
5 Hunter Street, Sydney (Leda House & Hunter Arcade)	CP and Lots 1-63, SP71068
5 Hunter Street, Sydney (Leda House & Hunter Arcade)	CP and Lots 1-14, SP65054
7-13 Hunter Street, Sydney (Hunter Connection)	CP and Lots 1-53, SP50276
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 57 and 58, SP61007
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 54, 55 and 56, SP60441
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 59, 60 and 61, SP62889
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 62, 63, 64 and 65, SP69300
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 66 and 67, SP77409
7-13 Hunter Street, Sydney (Hunter Connection)	Lot 2, SP50276
De Mestre Place, Sydney	N/A
Total Area: 3,735 sqm	

2 Methodology

This report reflects the proposal described in Section 1 and where relevant, references the indicative OSD design prepared by Sydney Metro. Based on the indicative OSD design, the built area schedule and development's commercial uses have been used to assess the waste requirements of the site, and is provided in Appendix A.

Relevant management strategies for effective storage, re-use/recovery, treatment and/or disposal of waste generated from the concept design have been proposed, in accordance with applicable guidelines and regulatory requirements. Specifically, this WMS will address the likely waste streams, estimated quantities, and management strategies for the storage, re-use/recovery, treatment and/or disposal of waste generated at each site. The WMS involved:

- Reviewing relevant legislation, policies and guidelines associated with waste management
- Identifying likely waste generating activities and likely waste types during the operation of the Hunter Street (East and West) OSD
- Estimating operation waste volumes generated during operation of the Hunter Street (East and West) OSD
- Assessing the operation waste disposal, storage and collection system
- Collection frequencies and specifications of collection vehicles (where possible)
- Description of how the waste streams would be managed, from point of generation to collection
- Design requirements for waste storage rooms and collection vehicle access.

2.1 Method of assessment

The following assessment method has been used to develop an understanding of the waste characteristics of the development proposed and to assess potential operational phase requirements and environmental impacts.

Key steps in the waste management assessment are shown in Figure 2-1.



Figure 2-1 Method of assessment

This WMS, including the estimation of waste generations, have been developed based on the concept design, the regulatory and legislative requirements outlined in Section 2.2 and NSW Environment Protection Authority (EPA) waste hierarchy. The principles of the EPA waste hierarchy are shown in Figure 2-2.

The hierarchy gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g., landfill). The higher up the waste hierarchy waste is managed, the greater the cost and resource savings would be.

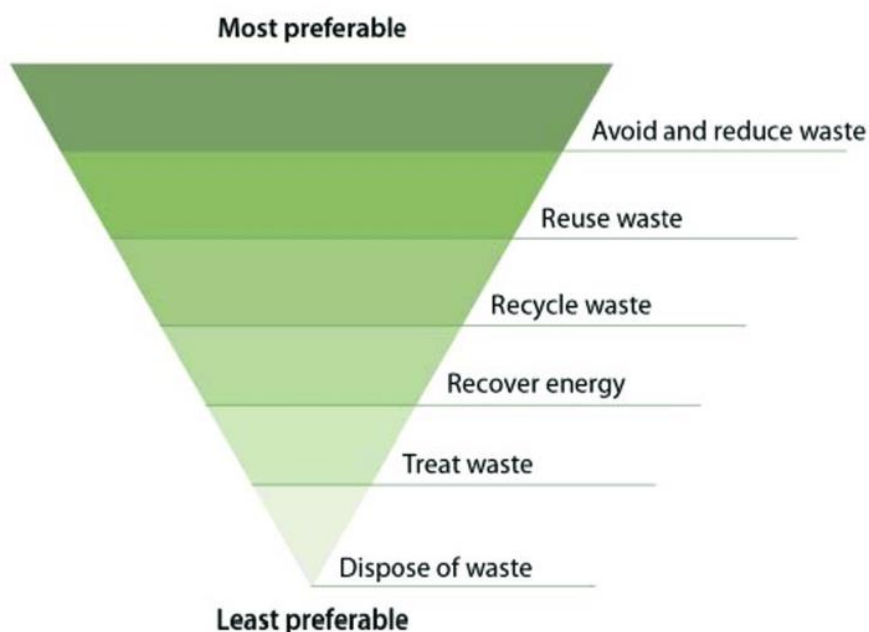


Figure 2-2 NSW EPA Waste Hierarchy

The operational waste management assumptions used for this WMS are based on the concept OSD designs. A summary of the built area and development mix proposed are provided in Table 1-1. Waste generation estimations have been made using the City of Sydney Guidelines for Waste Management in New Developments 2018.

2.2 Legislation, policy and guidelines

This section presents the relevant legislation, policies, and guidelines relevant to this stage of the Planning Proposal. These include:

- State Legislation
- Local Government Requirements
- Sydney Metro, Construction Environmental Management Framework
- Green Star Buildings Version 1.

2.2.1 State legislation

Key NSW regulatory and policy requirements which are of relevant to the operational phase of the Planning Proposal are outlined below.

Protection of the Environment Operations Act 1997

Section 88 of the *Protection of the Environment Operations Act 1997* sets a levy on waste disposed to landfill. The levy aims to reduce the amount of waste being disposed and promote resource recovery and varies between different areas of NSW. The landfill levy significantly increases over time and therefore presents a financial driver for minimising waste generation and increasing waste recovery.

The Act sets out requirements for the management for all waste material excavated and removed from the construction sites. The act places accountability on waste generators to correctly manage waste, including final disposal. These requirements include:

- Ensuring waste is classified appropriately and in accordance with relevant guidelines
- Waste is disposed at licensed landfill facilities
- Recoverable and other materials for recycling are sent to facilities lawfully able to accept and/or process such materials.

Protection of The Environment (Waste) Operations Regulation 2014

The *Protection of the Environment (Waste) Operations Regulation 2014* sets out the requirements relating to non-licensed waste activities and waste transporting. The proposed works on the site are not required to be licensed. However, Section 70 of the Regulation requires that wastes are stored in an environmentally safe manner. It also stipulates that vehicles used to transport waste must be covered when loaded.

This regulation exempts certain waste streams from full waste tracking and record keeping requirements as waste tracking is required only for industrial and hazardous waste.

Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* establishes the waste hierarchy to ensure that resource management options are considered against the following principles:

- Avoidance – actions to reduce unnecessary resource consumption

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- Resource Recovery – which includes reuse, reprocessing, recycling and energy recovery
- Disposal – to minimise any negative environmental outcomes.

Waste Avoidance and Resource Recovery Strategy 2014-2021

The NSW Environment Protection Authority Waste Avoidance and Resource Recovery Strategy (WARR Strategy) for 2014-21 provides the strategic direction for future waste management and resource recovery activities in NSW. Specifically, the WMS for this Planning Proposal would be written with reference to the WARR Strategy. It establishes the following targets:

- Avoiding and reducing the amount of waste generated per person in NSW
- Increasing recycling rates to 70 per cent for municipal solid waste, 70 per cent for commercial and industrial waste and 80 per cent for construction and demolition waste
- Increasing waste diverted from landfill to 75 per cent.

NSW Waste Classification Guidelines

The NSW Waste Classification Guidelines provides direction to organisations in appropriately classifying, recovering, treating or disposing the waste generated from the activities.

NSW Circular Economy Policy 2019

The NSW Circular Economy Policy Statement provides a framework for implementing initiatives throughout the product life cycle, from design, manufacturing, and retail to end-of-life-disposal. These initiatives will promote long-lasting design, maintenance, repair, re-use, sharing, transforming products into services, remanufacturing, and recycling. The NSW Government will be an early adopter, implementing those opportunities where the benefits are clear.

2.2.2 Local Government requirements

City of Sydney Local Environmental Plan and Development Control Plan 2012

The Planning Proposal is located within the City of Sydney, governed by the City of Sydney LEP 2012 and the Sydney DCP 2012.

City of Sydney's Guidelines for Waste Management in New Developments 2018

The City of Sydney DCP outlines the waste management guidelines in their Guidelines for Waste Management in New Developments 2018 (the Guidelines). The Guidelines provides the minimum waste management requirements for all new and 'change of use' developments requiring consent and are to be used in the design, management and operation of a building's waste and recycling systems. They include design and construction specifications for waste storage areas, the typical dimensions of collection vehicles, what streams need to be recovered in the design and operation and waste generation rates to help calculate the number, size and type of bins required.

The purpose of the Guidelines is to ensure all new buildings will provide for the efficient storage, separation, collection and handling of waste to maximise resource recovery and provide safe and healthy spaces for people to live and work in.

Waste and Recycling Management Plans are to be prepared in accordance with the Guidelines and the City's Waste Management Local Approvals Policy, which outlines how waste and recycling must be managed, stored and collected in public places.

2.2.3 Sydney Metro Construction Environmental Management Framework

Sydney Metro has prepared a Construction Environmental Management Framework that sets out environmental and sustainability management standards to help ensure Sydney Metro and its contractors comply with statutory and planning requirements. The framework addresses the management of environmental impacts including waste management.

2.2.4 Green Star Buildings

A sustainability rating strategy has been established for Sydney Metro West packages and station development. The Green Star Buildings tool rates buildings based on all relevant aspects of their environmental performance. A 6-Star rating from the Green Building Council of Australia is targeted. To achieve the desired rating, certain credits need to be met, each credit addresses an initiative that improves or has the potential to improve a design, project, or building's environmental performance.

The following credits have been identified as the minimum required to be obtained by all projects to achieve a Green Star Buildings rating:

- Credit 2.3 Construction and Demolition Waste
- Credit 4.1 Collection of Waste Streams
- Credit 4.2 Dedicated Waste Storage Area
- Credit 4.3 Sign-off by Waste Specialist and/or Contractor.

This WMS will provide the preliminary evidence required to meet the credits criteria listed above.

3 Operational waste assessment

This section outlines the waste management strategy for the operational phase of the Planning Proposal which aims to minimise the environmental impacts of waste management. This WMS aims to meet the legislative waste minimisation requirements and council objectives. The following section details the broader waste management strategy for the Planning Proposal, specifically it outlines:

- Waste types and quantities estimated to be generated
- Estimates of the waste storage space requirements and the measures to manage the storage and collection of waste
- Movement of waste from point of waste generation and storage / aggregation to collection
- Details of collection points and requirements.

3.1 Operational waste generation assumptions

Waste volumes for the Planning Proposal have been estimated to determine the waste infrastructure requirements. These requirements have informed the concept design of the Planning Proposal.

Waste generation estimates have been made using the *City of Sydney’s Guidelines for Waste Management in New Developments 2018* and where appropriate waste generation rates were adopted from the assumptions contained within Appendix A. The guidance requires that the waste generated be segregated into three streams - recycling, general waste and food waste. The waste storage area required was based on the proposed concept--built area and development mix.

A summary of the waste generation assumptions is presented in the tables below.

Table 3-1 Waste generation rates assumptions

Use	Units	General waste	Recycling	Food waste
Commercial	Litres / 100m ² / day	15	25	5
Retail (non-food sales)	Litres / 100m ² / day	50	250	10
Entertainment (Restaurant / eating)	Litres / 100m ² / day	100	500	100

Table 3-2 Bin dimensions

Bin Type and capacity (L)	Width (mm)	Depth (mm)	Height (mm)
120L MGB	485	560	940
240L MGB	580	735	1080
660L MGB	1370	850	1250
1100L MGB	1370	1245	1470

Table 3-3 Waste collection

Use	Waste stream	Collection per week
Commercial*	General Waste	5 x weekly
	Recycling	5 x weekly
	Food waste	5 x weekly
Retail *	General Waste	5 x weekly
	Recycling	5 x weekly
	Food waste	5 x weekly

**Bulky waste would be collected from the premises as required*

3.2 Commercial and retail waste management – Hunter Street West

This section outlines the waste assessment and infrastructure requirements for servicing 933m² of retail and 65,914m² of commercial space located in Hunter Street West. The indicative concept building design proposed for this building is shown in the Figure 3-1.

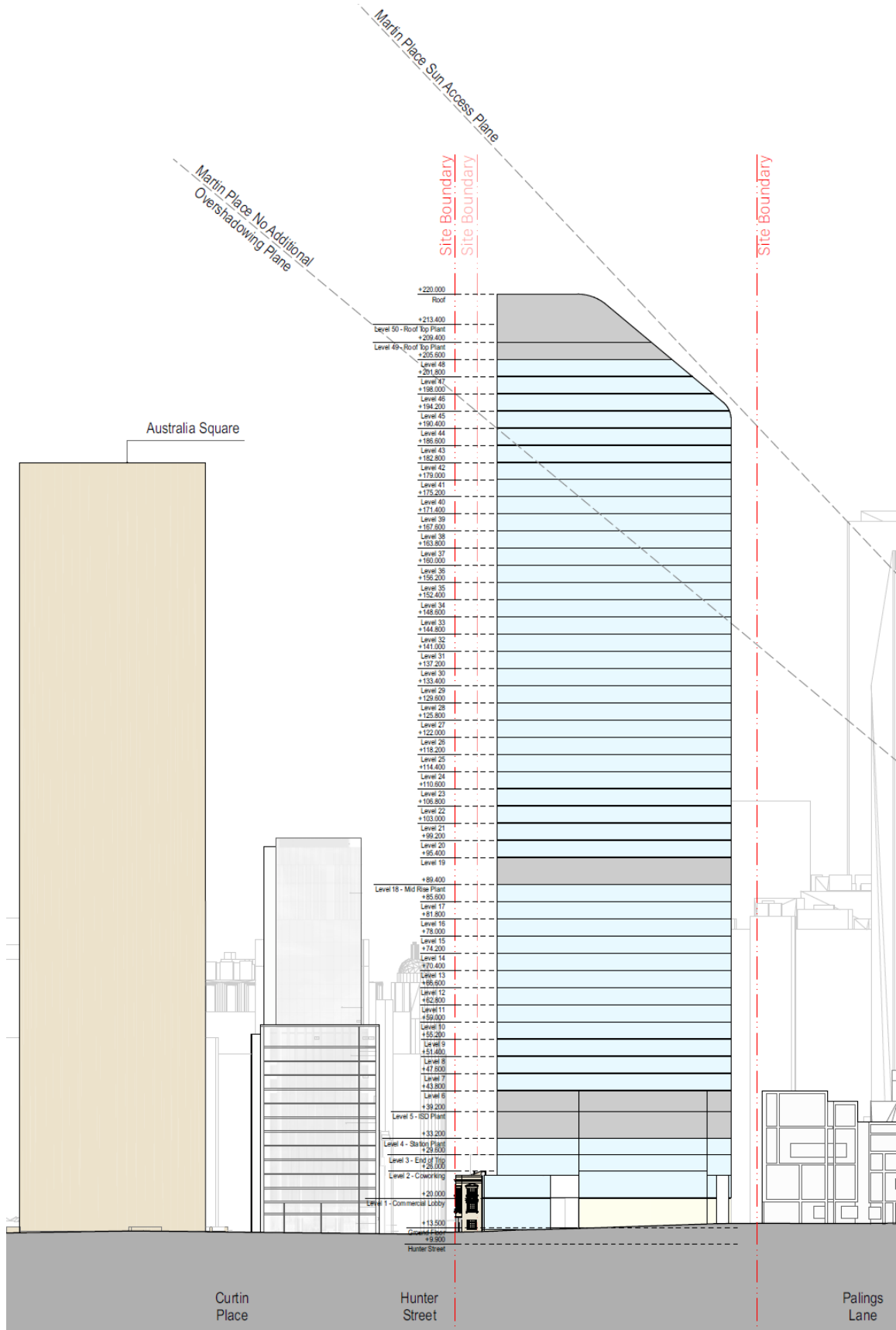


Figure 3-1 Proposed building design for Hunter Street West

3.2.1 Waste types and quantities

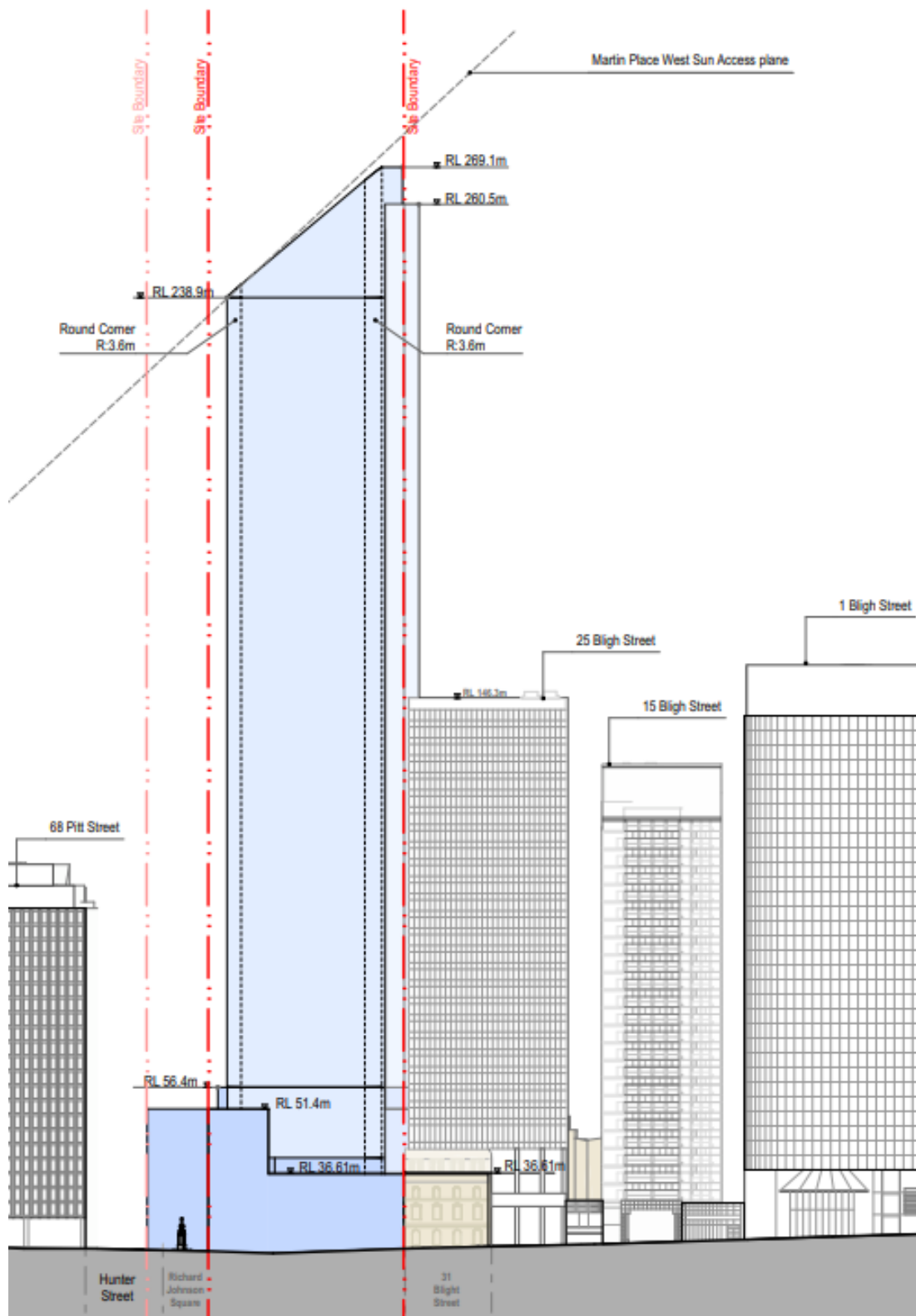
Sufficient storage is to be provided to manage general waste, recycling and food waste arising from the commercial and retail premises. Estimates of key waste streams generated are provided in Table 3-4 below.

Table 3-4 Hunter Street (West) OSD Waste types and generation rates

Use	GFA (m ²)	General waste (litres)		Recycling (litres)		Food waste	
		Day	Week	Day	Week	Day	Week
Retail – Convenience Store*	466.5	233	1,633	1,166	8,164	47	327
Entertainment – Restaurant / Eating*	466.5	467	3,266	2,233	16,328	467	3,266
Commercial*	65,914	9,887	49,436	16,479	82,393	3,296	16,479
<i>*7-day week operation for retail uses & 5-day week operation for commercial uses</i>							

3.3 Commercial and retail waste management – Hunter Street East

This section outlines the waste assessment and infrastructure requirements for servicing 1,454m² of retail and 81,769m² of commercial space located in Hunter Street East. The indicative concept building design proposed for this building is shown in the Figure 3-2.



3.3.1 Waste types and quantities

Sufficient storage is to be provided to manage general waste, recycling and food waste arising from the commercial and retail premises. Estimates of key waste streams generated are provided in Table 3-5 below.

Table 3-5 Hunter Street (East) OSD Waste Types and Generation Rates

Use	GFA (m ²)	General waste (litres)		Recycling (litres)		Food waste	
		Day	Week	Day	Week	Day	Week
Retail – Convenience Store*	727	364	2,545	1,818	12,723	73	509
Entertainment – Restaurant / Eating*	727	727	5,089	3,635	25,445	727	5,089
Commercial*	81,769	12,265	61,327	20,442	102,211	4,088	20,442

**7-day week operation for retail uses & 5-day week operation for commercial uses*

3.4 Waste storage

Waste storage requirements for each waste stream are shown Table 3-6 and Table 3-7.

Table 3-6 Waste storage and handling space requirements for Hunter Street West

Use	Waste stream	Bin Size (litres)	No. of bins after compaction	Area required m ² (excluding manoeuvring space)	Recommended area m ² (including manoeuvring space **)
Retail – Convenience Store	General waste*	660	1	1.16	31
	Recycling	660	3	3.48	
	Food waste	660	1	1.16	
Entertainment – Restaurant / Eating	General waste*	660	1	1.16	31
	Recycling	660	5	5.80	
	Food waste	660	1	1.16	
Retail and Entertainment	Bulky waste				4
Commercial	General waste*	660	8	9.28	99
	Recycling	660	25	29.00	
	Food waste	660	5	5.80	
Commercial	Bulky waste				21

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Use	Waste stream	Bin Size (litres)	No. of bins after compaction	Area required m ² (excluding manoeuvring space)	Recommended area m ² (including manoeuvring space **)
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Notes:

* General waste compaction ratio 2:1 assumed

** 0.15 m clearance in between bins has been included for manoeuvring and cleaning

** Minimum aisle space of 1.2m

** Bin wash area 4m²

** Stationary Compactor/ Bin press 4m²

** Cardboard Baler 2m²

** Additional equipment space (if required)

Table 3-7 Waste storage and handling space requirements for Hunter Street East

Use	Waste stream	Bin Size (litres)	No. of bins after compaction	Area required m ² (excluding manoeuvring space)	Recommended Area m ² (including manoeuvring space **)
Retail – Convenience Store	General waste*	660	1	1.16	44
	Recycling	660	4	4.64	
	Food waste	660	1	1.16	
Entertainment – Restaurant / Eating	General waste*	660	1	1.16	44
	Recycling	660	8	9.28	
	Food waste	660	2	2.32	
Retail and Entertainment	Bulky waste				4
Commercial	General waste*	660	10	11.60	125
	Recycling	660	31	35.96	
	Food waste	660	7	8.12	
Commercial	Bulky waste				24

Notes:

* General waste compaction ratio 2:1 assumed

** 0.15 m clearance in between bins has been included for manoeuvring and cleaning

** Minimum aisle space of 1.2m

** Bin wash area 4m²

** Stationary Compactor/ Bin press 4m²

** Cardboard Baler 2m²

** Additional equipment space (if required)

An indicative concept design layout of the central waste rooms located on the ground floor and basement floor levels of Hunter Street West and the ground mezzanine floor and ground floor of Hunter Street East and in the are shown in the figures below. The area allocated for waste storage and handling space requirements for the central waste room within both buildings is considered appropriate and meets the requirements outlined by the City of Sydney Council, as shown in Table 3-8.

Table 3-8 – Area allocated for waste storage

Building	Minimum area (m ²)	Recommended area (m ²)*	Available area (m ²)**
Hunter Street West	83	155	133
Hunter Street East	104	197	238

Notes:

* Recommended area: includes contingency space for additional equipment space (future space proofing)

** Available area: current area available at this stage of concept design, storage area will be further refined as design progresses.

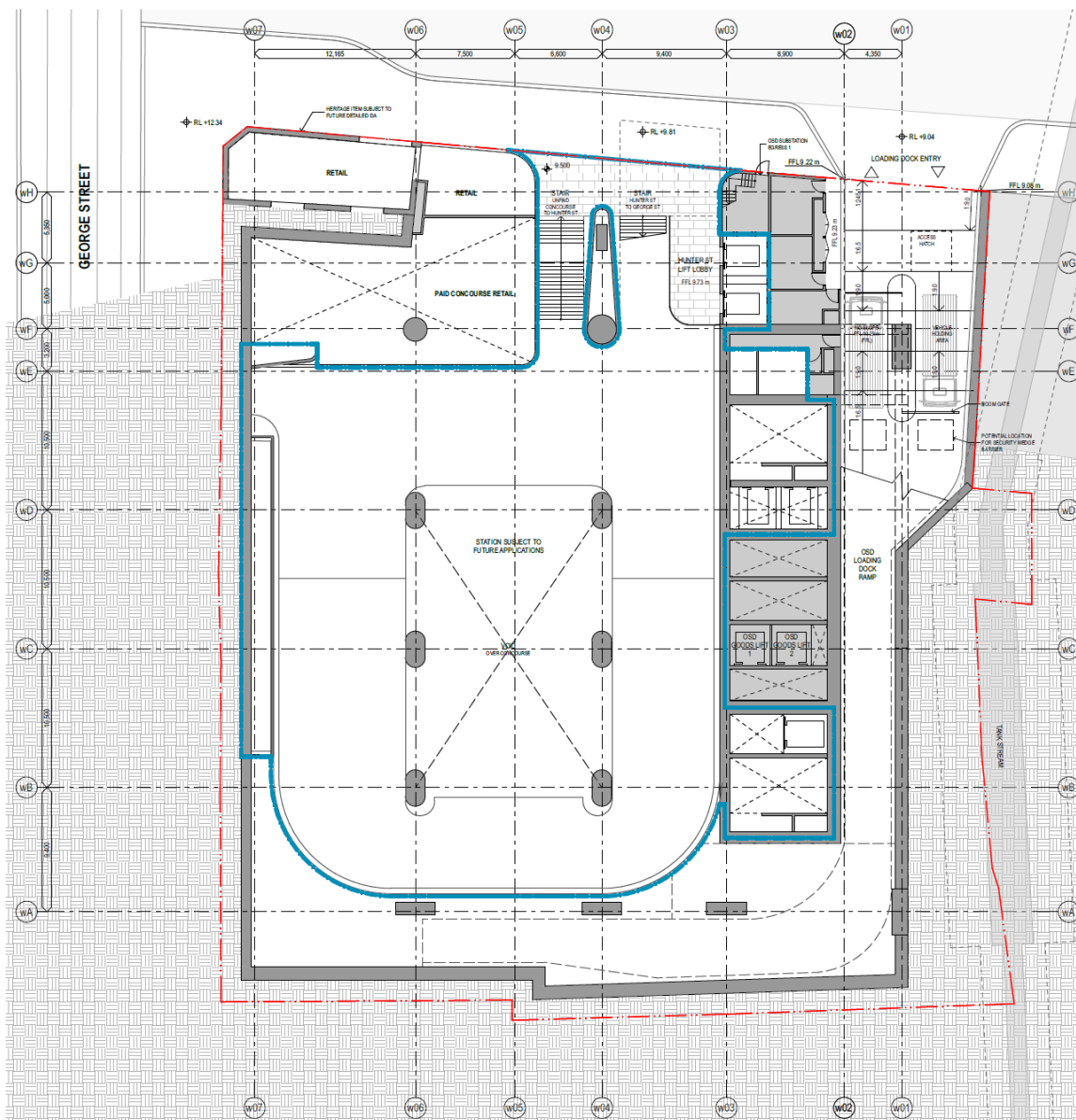


Figure 3-3 Hunter Street West building access point, ground floor design

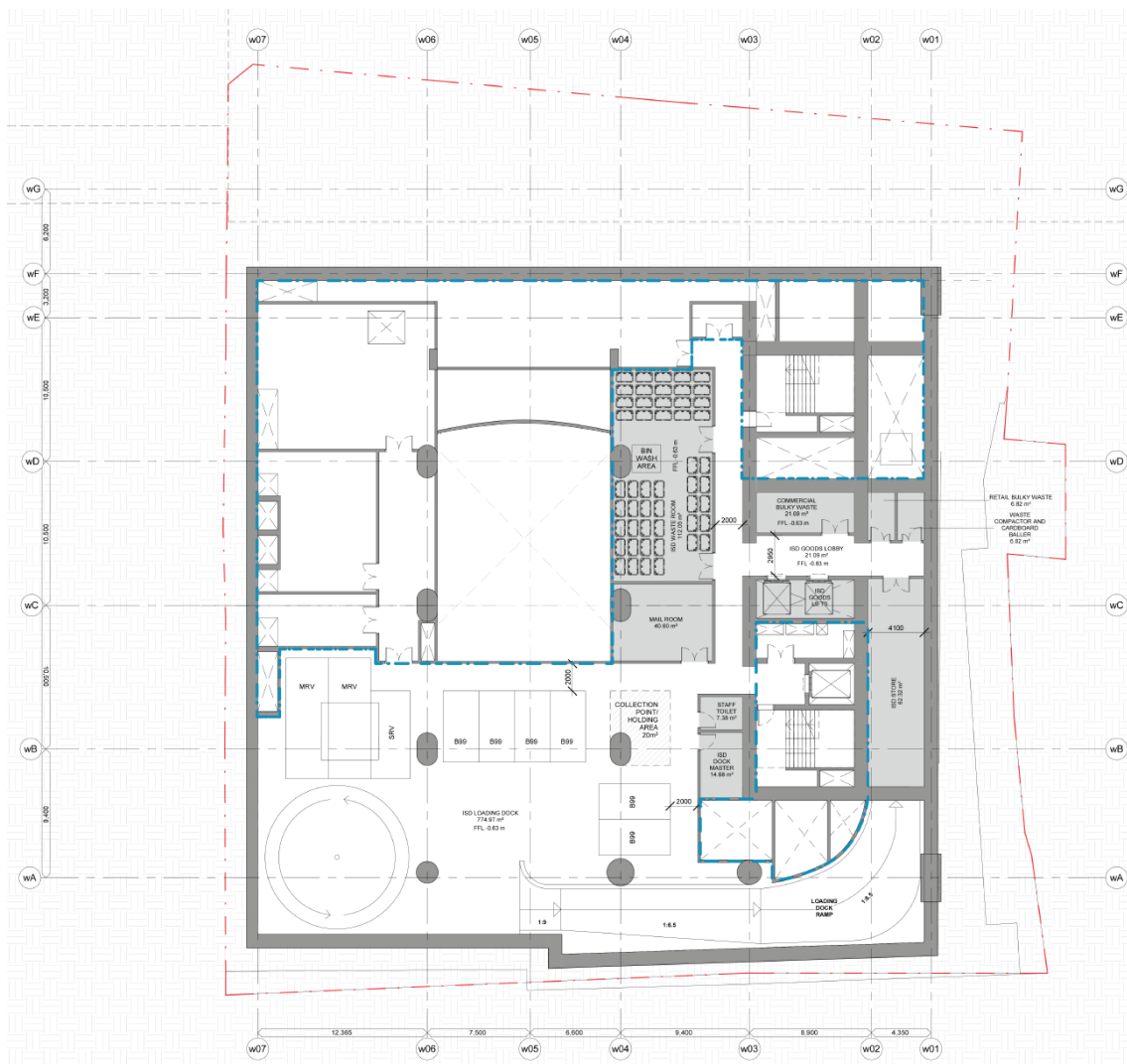


Figure 3-4 Hunter Street West waste storage room and collection point, basement floor design

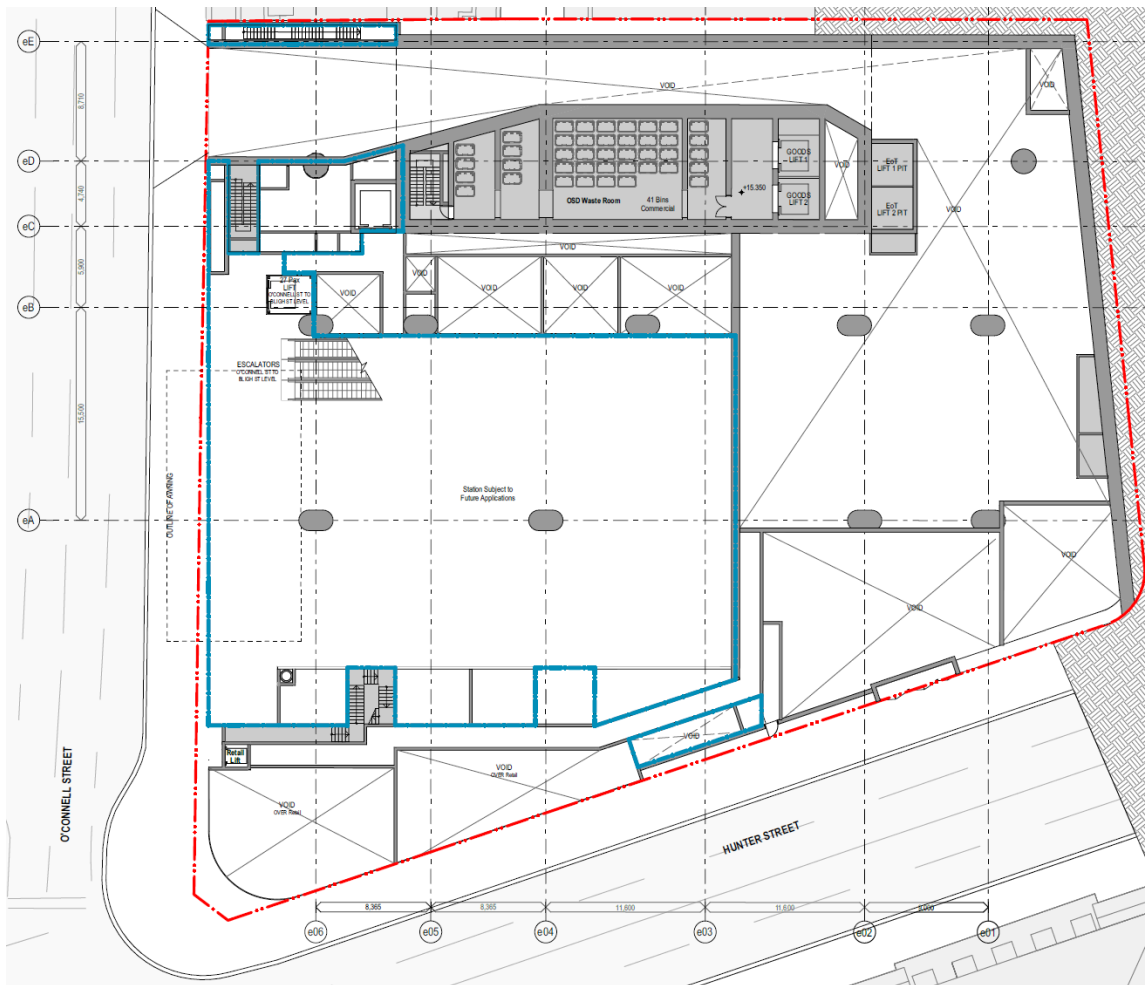


Figure 3-5 Hunter Street East waste storage room, ground mezzanine floor design

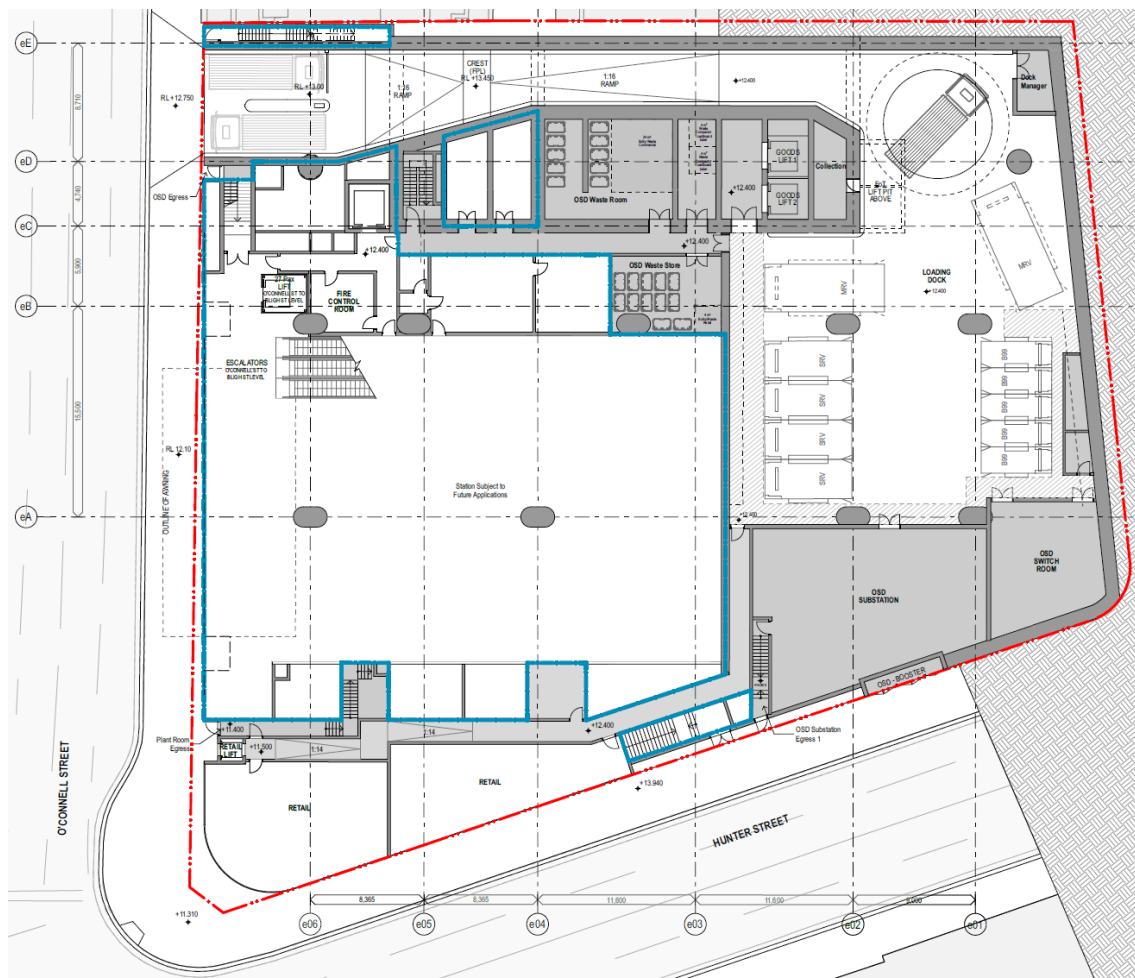


Figure 3-6 Hunter Street East waste storage room, collection point and building access point, ground floor design

3.4.1 Bulky and problem waste

A room or caged/screened area would be made available for the storage of discarded bulky items and problem waste for recycling, such as e-waste and chemical/liquid waste. This room would have a minimum doorway width of 1.5 metres to allow for easy movement of large waste items in and out of the room. Based on the City of Sydney requirements, it is recommended that the bulky waste room is at least 2m² for the retail development (i.e. developments under 100m²), 4m² for developments between 100m² and 2,000m² and additional 4m² is required for every 20,000m² of commercial development.

3.4.2 Re-usable commercial items

Space will be provided on-site for the storage of re-usable commercial items such as crates, pallets, kegs and strip-out waste so that storage in a public space is completely avoided. This space may be located back of house or adjacent to the bulky waste room. The building manager will be responsible for ensuring that storage of these items in public places is completely avoided.

3.4.3 Liquid waste

Liquid wastes such as cleaning products, chemicals, paints, and cooking oil will be stored in a secure space that is bunded and drained to a grease trap in accordance with State government authorities and legislation.

3.4.4 Waste and recycling storage area design

Waste room construction must comply with the minimum standards as outlined in the Sydney DCP 2012, in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area. General design principles and specifications for the Waste Storage Room (WSR) and Central Waste Storage Room (CWSR) at both Hunter Street West and Hunter Street East are outlined in the *City of Sydney Guidelines for Waste Management in New Developments 2018* and include:

- The floors, walls and ceilings of waste and recycling storage areas and chute room(s) are to be finished with a rigid, smooth-faced impermeable material capable of being easily cleaned.
- The floors of waste and recycling storage areas are to be graded and drained to a Sydney Water approved drainage fitting. The floor is to be provided with a ramp to the doorway where necessary.
- A close-fitting and self-closing door or gate operable from within the room is to be fitted to all waste and recycling storage areas.
- Doors/gates to the waste and recycling storage rooms are to provide a minimum clearance width of 900 millimetres.
- At least one door or gate to the waste and recycling storage area is to have sufficient dimensions to allow the entry and exit of waste containers of a capacity nominated for the development.
- Lightweight roller shutter-type doors or grilles should be considered for access to waste and recycling storage areas, as these do not impact on the available storage space. If these types of doors or grilles are used, the requirement for a close-fitting and self-closing door remains, so that waste collectors can access the waste and recycling storage area other than through the roller door or grille.
- The design shall restrict the entry of trespassers, vermin or other animals into the area.
- The waste and recycling storage area is to be provided with an adequate supply of water for cleaning purposes with a hose cock. This does not include within chute rooms.
- The waste and recycling storage area is to be adequately ventilated by either:
 - Natural ventilation openings to external air. The dimension of the openings are not to be less than 5 per cent of the bin bay or bin room floor area.
 - A mechanical exhaust ventilation system in accordance with relevant Australian standards
- Waste and recycling areas are to be provided with artificial light controlled by switches located both outside and inside the storage area.
- Any compactors or mechanical devices, if permitted for the mechanical handling and storage of waste and recycling, are to be fitted with safety operating and cut-off systems.

- Any facet of the waste and recycling management system that is visible from outside the building is to be in keeping with the dominant design of the remainder of the development.

Adequate space must be provided for movement of bins and bulky waste through doorways and passageways. *The City of Sydney Waste Management Guidelines for New Developments 2018* recommend the doors to the waste and recycling storage room are to provide a minimum clearance width of 900 millimetres. However, a minimum clearance of 1200-1500 millimetres is recommended, if feasible, to provide safer clearance.

3.5 Internal waste management

Commercial tenants / building maintenance staff will arrange the disposal of waste to the nearest WSR on a daily basis (or as required). Oversized cardboard could be collected at each WSR on each level in smaller mobile garbage bins, with space for one oversized cardboard bulk bin allocated in the CWSR. Should it be included, cardboard should be transferred to the central aggregation location by building management for emptying as required.

Building management will transfer the waste from the WSR to the CWSR on a daily basis, or as required, via the internal lifts. If bins have high quantities of food waste, daily movement of bins from the WSR is recommended to reduce odour and potential vermin issues.

Cleaning and maintenance of bins located in the WSR on each level and the CWSR will be the responsibility of building management. A bin wash area will be provided adjacent to the CWSR to enable bin cleaning. Additionally, building management will be responsible for ensuring that the following management principles are followed:

- Standard signage on how to use the waste management system and what materials are acceptable to be placed in the recycling must be posted in all communal waste collection and storage areas
- Adequate signage identifying the CWSR and the WSR on each level must be prominently displayed
- All waste and recycling receptacles must be clearly and correctly labelled to identify which materials are to be placed in which bin
- Any compactors or mechanical devices for the storage of waste must be child proofed
- Equipment must be protected from theft and vandalism
- A valid and current contract with a licensed collector for waste and recycling collection and disposal / processing must be held on site.

3.6 Waste collection

The transfer of waste and all bin movements should require minimal handling and if required, the operator must assess the risks associated with manual handling and provide any relevant documentation to building management.

A bin-tug, trailer or tractor consultant should be contacted by the developer to provide equipment recommendations, if required.

Assumed collection frequencies for each commercial and retail waste stream are outlined in Table 3-9 below.

Table 3-9 Waste collection frequency

Source	Waste stream	Collection
Commercial	General waste	5 x weekly
	Comingled waste	5 x weekly
	Food waste	5 x weekly
	Bulky waste	As required
Retail – Convenience Store	General waste	5 x weekly
	Comingled waste	5 x weekly
	Food waste	5 x weekly
	Bulky waste	As required
Retail – Restaurant/Eating	General waste	5 x weekly
	Comingled waste	5 x weekly
	Food waste	5 x weekly
	Bulky waste	As required

The delivery of bins to / from the loading dock from the buildings should be coordinated with the private collection company responsible for the transfer of waste to treatment and disposal facilities. As a minimum, a one-day waste storage capacity has been designed into each CWSR room if a collection is delayed or missed.

The loading dock and access points for the collection areas should be further reviewed by a traffic consultant as the concept design progresses, this is necessary to ensure that height and manoeuvring clearances for collection vehicles is suitable to service the buildings. It is noted that a medium sized waste collection vehicle would be suitable for waste collection from each building.

Collection vehicles accessing the collection point to Hunter Street West will enter via Hunter Street via the ground floor access point and manoeuvre within the loading dock to collect the waste and exit.

Collection vehicles accessing the collection point to Hunter Street East will enter via O’Connell Street via the ground floor access point and manoeuvre within the loading dock to collect the waste and exit. The access points are shown in Figure 3-3 and Figure 3-6.

To avoid/minimise impacts on the environment and local amenity from potential dispersion of site litter and stormwater pollution, it is recommended the building management addresses the following:

- Promote adequate waste disposal into the bins
- Secure all bin rooms (whilst affording access to staff/contractors) and ensuring bin room doors are closed outside of bin collection times
- Prevent overfilling of bins, keep all bin lids closed and bungs leak-free
- Taking action to prevent dumping or unauthorised use and access to waste areas
- Require collection contractor/s to clean up any spillage when clearing bins.

3.7 Station waste

All station waste will be collected and managed by Sydney Metro. Station cleaning staff will collect and dispose of waste / recyclables in the back of house station services to be incorporated in the station design. Station waste collection may share the use of loading bays allocated for Hunter Street (East OSD collection outlined in this WMS, although collection times and contractors may be different. Station management and OSD building operators will liaise to ensure there are no conflicts in shared use of loading bays.

3.8 Compactors, balers and crushers

To reduce the volume of waste, compactors would be used to compress waste into collection containers. Compactors are to be fitted with optical or visual sensors to warn the operator that a bin is to be replaced. The compaction ratio is typically set at around 2:1.

Balers compress bulky materials such as cardboard and plastic film into bales so they remain compacted. They are advantageous in situations where large amounts of bulky materials are generated and space is limited. Materials can be compressed to maximise bin capacity use by allowing more materials to be stored in the bins. Paper and cardboard balers should be considered if waste generation is very high, in these cases it is recommended that paper and cardboard is segregated out at source so that it can be baled separately from other recyclables for a cleaner waste stream. Balers come in a wide variety of sizes and capacities and have a small footprint.

Through an integrated mobile bin (typically 60 litres), bottle crushers are designed to break glass into small, recyclable-sized fragments, known as 'cullet'. This system allows ease of handling and larger weights of glass to be stored in smaller volumes, reducing the storage space required for glass recycling by well over fifty per cent (City of Sydney Guidelines for Waste Management, 2018), and the noise associated with handling glass recycling. Separation of glass would also contribute to a cleaner comingled recycling stream.

4 Conclusion

This report has been prepared to outline the potential impacts from waste generation, storage and collection at Hunter Street East and Hunter Street West OSD and to support a Planning Proposal Request to amend the maximum building height and maximum floor space ratio permitted for both the east and west sites under Sydney LEP 2012.

The Planning Proposal concept design has considered relevant planning and regulatory requirements as detailed in Section 3 during the operational phase of development of Hunter Street (East and West) OSD. This waste strategy forms the framework for the waste management measures for the future concept design and planning stages of the development.

The area and spaces allocated for waste and recycling storage and collection for Hunter Street (East and West) is considered sufficient, based on the expected waste generation from the indicative OSD design.

It is noted that approval is only being sought to amend the maximum building height and maximum FSR permitted for both the east and west sites under the Sydney LEP 2012 to optimise the development potential of both sites. The waste requirements of the Planning Proposal should be considered further during the concept design phase once the precise mix of development use is known. The future concept design should comply with the minimum waste area requirements proposed in this waste management strategy, and a detailed waste strategy should be submitted with the future Concept SSDA demonstrating how the requirements stipulated in this report have been met in the final building design.

5 References

The following standards and guidelines are considered applicable to the Proposal and have been utilised or referenced as appropriate within this scope of assessment:

- Guidelines for Waste Management in New Developments by City of Sydney August 2018
- Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, December 2012 (NSW EPA)
- Better practice guide for resource recovery in residential developments, 2019 (NSW EPA)
- Green Star Design and As Built Manual v1.2
- Sydney Metro, Construction Environmental Management Framework
- Sydney Metro City and Southwest Sustainability Strategy 2017-24
- City of Sydney Local Environmental Plan (LEP) 2012
- Sydney Development Control Plan (DCP) 2012
- City of Sydney Policy for Waste Minimisation in New Developments 2005.

Appendix A Operational waste modelling assumptions

A.1 Waste generating areas

Waste generating area		Value (m ²)
Hunter Street West	Retail	933
	Commercial	65,914
Hunter Street East	Retail	1,454
	Commercial	81,769

Note: The floor area is the basis for estimating the scale of waste generation. Residential units are an exception to this rule, where waste generation is based on number of units.

A.2 Waste generation rates

Waste generating area	General	Recycling	Food waste	Units
Commercial	15	25	5	Litres / 100m ² / day
Retail (non-food sales)	25	100	5	Litres / 100m ² / day
Entertainment (Restaurant / eating)	100	500	100	Litres / 100m ² / day
Residential	120	120	N/A	Litres / Unit / week
Communal	20	50	5	Litres / 100m ² / day

Source: City of Sydney Guidelines for waste management in new developments 2018

A.3 Waste storage requirements Bin Dimensions – Australian standard sizes for mobile garbage bins (MGB)

Bin type and capacity (L)	Width (mm)	Depth (mm)	Height (mm)
120L MGB	485	560	940
240L MGB	580	735	1080
660L MGB	1370	850	1250
1100L MGB	1370	1245	1470

Notes:

* General waste compaction ratio 2:1 assumed

** 0.15 m clearance in between bins has been included for manoeuvring and cleaning

** Minimum aisle space of 1.2m

** Bin wash area 4m²

** Stationary Compactor/ Bin press 4m²

** Cardboard Baler 2m²

A.3 Standard colours

Stream	Bin Body	Bin lid colour
General waste	Dark green	Red
Recycling	Dark green	Yellow
Garden organics waste	Dark green	Lime green