



WATERLOO METRO QUARTER OVER STATION DEVELOPMENT

Appendix L Operational Waste Management Plan

SSD-10437 Southern Precinct

Appendix L
SSD-10437 Southern Precinct

Detailed State Significant Development
Development Application

Prepared for **Waterloo Developer Pty Ltd**

[05 February 2021]

Reference	Description
Applicable SSD Applications	SSD-10437 Southern Precinct
Author	Elephants Foot Waste Compactors Ashleigh Armstrong
Reviewed	Waterloo Developer Pty Ltd Simon Joseph
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The following amendments have been made to Version B of this report following City of Sydney Council's initial comments.

Section	Amendment
7.1	A potential strategy has been established for the Social Housing component to separate and manage food waste from general waste if this is to become an additional Council service during operation. It is understood that this depends on the outcome of the food waste trial that City of Sydney Council is currently conducting.
7.4.1	A storage location for textile waste has been identified for the Social Housing component.
8.1	A potential strategy has been established for the Boarding House component to separate and manage food waste from general waste in the instance that the boarding house operator elects to separate these streams during operation.
13	The Social Housing bulky waste storage room has been increased by 1m ² to allow for textile storage.

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1. Glossary and abbreviations

Reference	Description
ACHAR	Aboriginal Cultural Heritage Assessment Report
ADG	Apartment Design Guide
AHD	Australian height datum
AQIA	Air Quality Impact Assessment
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
BC Reg	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
CEEC	critically endangered ecological community
CIV	capital investment value
CMP	Construction Management Plan
Comingled Recycling	A mixture of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (eg. aluminium, steel, hard plastics, cartons).
Concept DA	A concept DA is a staged application often referred to as a 'Stage 1' DA. The subject application constitutes a detailed subsequent stage application to an approved concept DA (SSD 9393) lodged under section 4.22 of the EP&A Act.
Council	City of Sydney Council
CPTED	Crime Prevention Through Environmental Design
CSSI approval	critical State significant infrastructure approval
CTMP	Construction Traffic Management Plan
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
DA	development application
DCP	Development Control Plan
DPIE	NSW Department of Planning, Industry and Environment

Reference	Description
DRP	Design Review Panel
EFRS	Elephants Foot Recycling Solutions
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPA Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	ecologically sustainable design
GANSW	NSW Government Architect's Office
GFA	gross floor area
Green Waste	Unwanted organic materials that are easily biodegradable and/or compostable (eg. lawn clippings, plant trimmings)
HIA	Heritage Impact Assessment
IAP	Interchange Access Plan
LGA	Local Government Area
NCC	National Construction Code
OSD	over station development
OWMP	Operational Waste Management Plan
PIR	Preferred Infrastructure Report
POM	Plan of Management
PSI	Preliminary Site Investigation
RMS	Roads and Maritime Services
Sanitary Waste	Feminine hygiene waste generated from female bathrooms
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No 55—Remediation of Land
SEPP 65	State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development

Reference	Description
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2009
SREP Sydney Harbour	State Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State significant development
SSD DA	State significant development application
SLEP	Sydney Local Environmental Plan 2012
Transport for NSW	Transport for New South Wales
TIA	Traffic Impact Assessment
The proposal	The proposed development which is the subject of the detailed SSD DA
The site	The site which is the subject of the detailed SSD DA
VIA	Visual Impact Assessment
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.
WMQ	Waterloo Metro Quarter
WMP	Waste Management Plan
WSUD	water sensitive urban design

2. Executive summary

This Waste Management Plan has been prepared by Elephants Foot Waste Compactors to accompany a detailed State significant development (SSD) development application (DA) for the Southern Precinct over station development (OSD) at the Waterloo Metro Quarter site.

This report has been prepared to address the relevant conditions of the concept SSD DA (SSD 9393) and the Secretary's Environmental Assessment Requirements (SEARs) issued for the detailed SSD DA (SSD 10437).

This report concludes that the proposed Southern Precinct OSD is suitable and warrants approval subject to the implementation of the following mitigation measures.

- Provide separate waste and recycling facilities for residential and commercial/retail components of the site;
- Reduce the proportion general waste being diverted to landfill by optimising recycling opportunities onsite;
- Provide sufficient bins and space to manage and store waste and recycling generated onsite.
- Provide suitable loading areas to facilitate safe and efficient waste and recycling collections.

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

EFRS have reviewed the architectural plans (final DA version) and confirm that the waste and recycling management facilities are in line with this Waste Management Plan, SEAR requirements, Waterloo Metro Quarter Design and Amenity Guidelines and City of Sydney Council's *Guidelines for Waste Management in New Developments 2018*.

3. Introduction

This report has been prepared to accompany a detailed State significant development (SSD) development application (DA) for the Southern Precinct over station development (OSD) at the Waterloo Metro Quarter site. The detailed SSD DA is consistent with the concept approval (SSD 9393) granted for the maximum building envelope on the site, as proposed to be modified.

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (DPIE) for assessment.

The detailed SSD DA seeks development consent for the design, construction and operation of:

Southern Precinct

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9-storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level tenancies including Makerspace, gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 April 2020 and issued for the detailed SSD DA. Specifically, this report has been prepared to respond to the SEARs requirements summarised below.

Table 1: SEARs Requirements

Item	Description of requirement	Section reference (this report)
8	The EIS shall include framework for how the proposed development will reflect national best practice sustainable building principles to improve environmental performance, including energy and water efficient design and technology, use of renewable energy and best practice in waste management strategy. Demonstrate sufficient waste and recycling management facilities storage and holding areas for servicing.	7-13
Plans and Documents	The EIS must include a Waste Management Plan	7-13

This report has also been prepared in response to the following conditions of consent issued for the concept SSD DA (SSD 9393) for the OSD as summarised in the table below.

Table 2: Conditions of Concept Approval

Item	Description of requirement	Section reference (this report)
3P	1. Service vehicles and garbage trucks must access and egress the site in a forward direction. Mechanical turntables can be provided in the loading areas.	Section 16.4
	2. Separate parking spaces are to be provided for service vehicles and are not to be shared with parking provided for any other purpose.	Section 12
	3. Waste collection and loading are to be in accordance with the City of Sydney's <i>Guidelines for Waste Management in New Developments</i>	Section 12
	4. Waste collection and loading areas are to be accommodated wholly within the development in the following order of preference: <ul style="list-style-type: none"> • In the building's basement; • At grade within the building in a dedicated collection or loading bay; & • At grade and off street within a safe vehicular circulation system where in all cases vehicles will enter and exit the premises in a forward direction. 	Section 12 & 16.5
	5. The waste collection and loading points are to be designed to: Allow waste collection and loading operations to occur on a level surface away from vehicle ramps.	Section 16.5
	6. Provide sufficient side and vertical clearance to allow the lifting arc for automated bin lifters to remain clear of any walls or ceilings and all ducts, pipes and other services.	Section 12
3T	1. Comply with the City of Sydney's <i>Guidelines for Waste Management in New Developments</i> .	Section 7-13
	2. Provide space inside each dwelling for separate storage of at least two days' volume of general waste, recyclables and compostable material.	Section 7.4
	3. Provide a centralised waste and storage area(s) near the collection point with capacity to store all waste and recycling likely to be generated in the building(s) in the period between normal collection times.	Section 7.2 & 13
	4. Provide a separate space (attached to the waste and storage area) for the storage and recycling of bulky waste, textile waste and problem waste for collection.	Section 7.4
	5. If a chute system is used, a dual chute system (i.e. one chute for waste and one for recycling) is to be provided for buildings with more than nine storeys.	Section 7.3
	6. A chute room is required on each habitable floor that has a chute system. The chute room is to be designed in accordance with the City of Sydney's	Section 7.3 & 13

Item	Description of requirement	Section reference (this report)
	<i>Guidelines for Waste Management in New Developments.</i>	

4. The site

The site is located within the City of Sydney Local Government Area (LGA). The site is situated about 3.3 kilometres south of Sydney CBD and eight kilometres northeast of Sydney International Airport within the suburb of Waterloo.

The Waterloo Metro Quarter site comprises land to the west of Cope Street, east of Botany Road, south of Raglan Street and north of Wellington Street (refer to Figure 1). The heritage-listed Waterloo Congregational Church at 103–105 Botany Road is within this street block but does not form a part of the Waterloo Metro Quarter site boundaries.

The Waterloo Metro Quarter site is a rectangular shaped allotment with an overall site area of approximately 1.287 hectares.

The Waterloo Metro Quarter site comprises the following allotments and legal description at the date of this report. Following consolidation by Sydney Metro (the Principal) the land will be set out in deposited plan DP1257150.

- 1368 Raglan Street (Lot 4 DP 215751)
- 59 Botany Road (Lot 5 DP 215751)
- 65 Botany Road (Lot 1 DP 814205)
- 67 Botany Road (Lot 1 DP 228641)
- 124-128 Cope Street (Lot 2 DP 228641)
- 69-83 Botany Road (Lot 1, DP 1084919)
- 130-134 Cope Street (Lot 12 DP 399757)
- 136-144 Cope Street (Lots A-E DP 108312)
- 85 Botany Road (Lot 1 DP 27454)
- 87 Botany Road (Lot 2 DP 27454)
- 89-91 Botany Road (Lot 1 DP 996765)
- 93-101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891)
- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)
- 156-160 Cope Street (Lot 31 DP 805384)
- 107-117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)
- 170-174 Cope Street (Lot 2 DP 205942).

The detailed SSD DA applies to the Southern Precinct (the site) of the Waterloo Metro Quarter site. The site has an area of approximately 4830sqm. The subject site comprises the following allotments and legal description at the date of this report.

[Southern Precinct DA]

- 130–134 Cope Street (Lot 12 DP 399757) (Part)
- 136–144 Cope Street (Lots A-E DP 108312) (Part)
- 93–101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891) (Part)
- 156–160 Cope Street (Lot 31 DP 805384)
- 107–117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)

- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)
- 170–174 Cope Street (Lot 2 DP 205942).

The boundaries of the overall site are identified at Figure 1, and the subject site of the detailed SSD DA is identified at Figures 2 and 3. The site is reasonably flat with a slight fall to the south.

The site previously included three to five storey commercial, light industrial and shop top housing buildings. All previous structures except for an office building at the corner of Botany Road and Wellington Street have been demolished to facilitate construction of the new Sydney Metro Waterloo station. As such the existing site is predominately vacant and being used as a construction site. Construction of the Sydney metro is currently underway on site in accordance with critical State significant infrastructure approval (CSSI 7400).



Figure 1 - Aerial image of the site
Source: Urbis

The area surrounding the site consists of commercial premises to the north, light industrial and mixed-use development to the south, residential development to the east and predominantly commercial and light industry uses to the west.

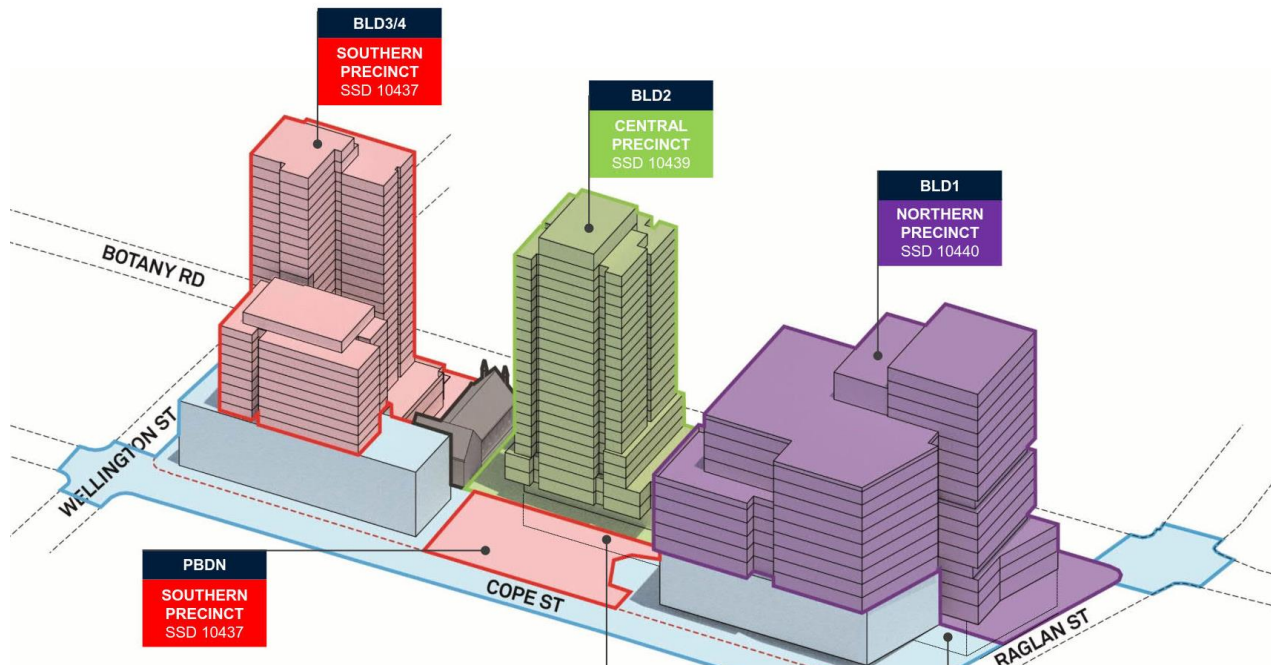


Figure 2 - Waterloo Metro Quarter site, with sub-precincts identified
Source: HASSELL

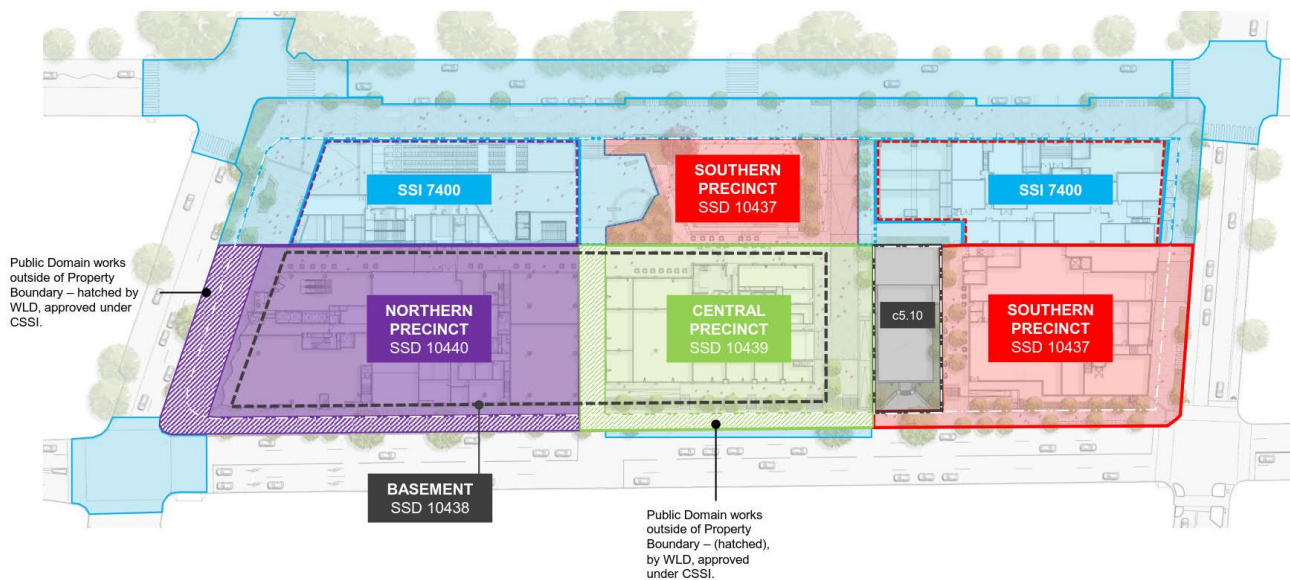


Figure 3 - Waterloo Metro Quarter site, with sub-precincts identified
Source: Waterloo Developer Pty Ltd

5. Background

5.1 About Sydney Metro

Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. A new standalone railway, this 21st century network will revolutionise the way Sydney travels.

There are four core components:

5.1.1 Sydney Metro North West

This project is now complete and passenger services commenced in May 2019 between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and \$1 billion under budget.

5.1.2 Sydney Metro City & South West

Sydney Metro City & Southwest project includes a new 30km metro line extending metro rail from the end of Metro Northwest at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the ultimate capacity to run a metro train every two minutes each way through the centre of Sydney.

Sydney Metro City & Southwest will deliver new metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition, it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.

5.1.3 Sydney Metro West

Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs.

The locations of seven proposed metro stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays.

The NSW Government is assessing an optional station at Pyrmont and further planning is underway to determine the location of a new metro station in the Sydney CBD.

5.1.4 Sydney Metro Greater West

Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service.

The Australian and NSW governments are equal partners in the delivery of this new railway.

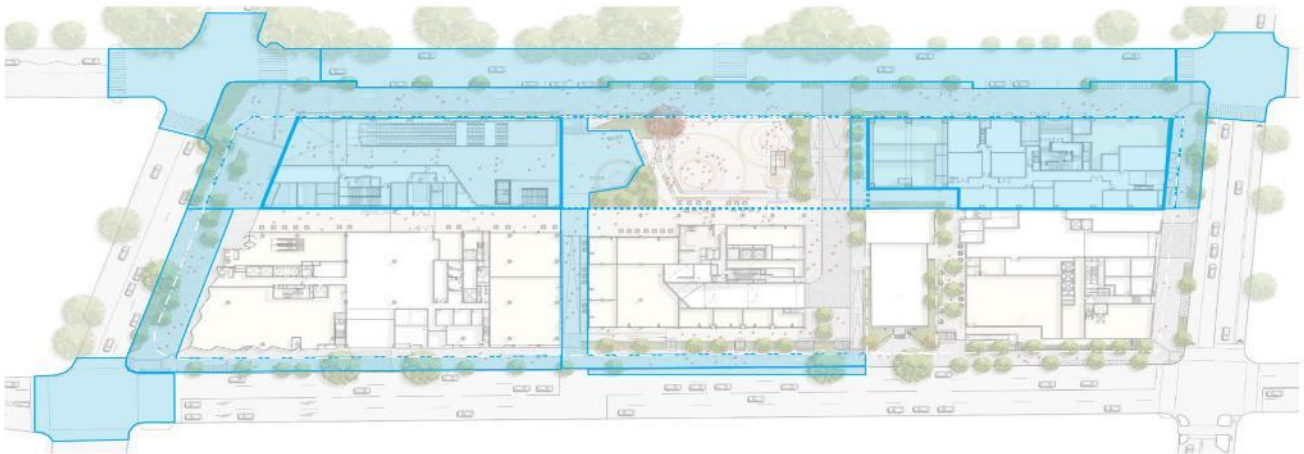


Figure 5 - CSSI Approval scope of works
Source: WL Developer Pty Ltd

5.3 Concept Approval (SSD 9393)

As per the requirements of clause 7.20 of the *Sydney Local Environmental Plan 2012* (SLEP), as the OSD exceeds a height of 25 metres above ground level (among other triggers), development consent is first required to be issued in a concept DA (formerly known as Stage 1 DA).

Development consent was granted on 10 December 2019 for the concept SSD DA (SSD 9393) for the Waterloo Metro Quarter OSD including:

- a maximum building envelope for podium, mid-rise and tower buildings
- a maximum gross floor area of 68,750sqm, excluding station floor space
- conceptual land use for non-residential and residential floor space
- minimum 12,000sqm of non-residential gross floor area including a minimum of 2,000sqm of community facilities
- minimum 5% residential gross floor area as affordable housing dwellings
- 70 social housing dwellings
- basement car parking, motorcycle parking, bicycle parking, and service vehicle spaces.

The detailed SSD DA seeks development consent for the OSD located within the Southern Precinct of the site, consistent with the parameters of this concept approval. Separate SSD DAs have been prepared and will be submitted for the Central Precinct, Northern Precinct and Basement proposed across the Waterloo Metro Quarter site.

A concurrent amending concept SSD DA has been prepared and submitted to the DPIE which proposed to make modifications to the approved building envelopes at the northern precinct and central building. This amending concept SSD DA does not impact the proposed development within the southern precinct.

6. Proposed development

6.1 Waterloo Metro Quarter Development

The Waterloo Metro Quarter OSD comprises four separate buildings, a basement carpark and public domain works adjacent to the Waterloo Metro station.

Separate SSD DAs will be submitted concurrently for the design, construction and operation of each building in the precinct;

- Southern precinct SSD-10437,
- Basement Car Park SSD-10438,
- Central precinct SSD-10439, and
- Northern precinct-SSD-10440.

An overview of the Development is included below for context. This detailed SSD DA seeks development consent for the design, construction and operation of the Southern Precinct.

6.1.1 Southern Precinct [Subject DA]

The Southern Precinct comprises:

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9 storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level retail tenancies including Makerspace and gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington Streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

6.1.2 Basement Car Park

The Basement Car Park comprises:

- 2-storey shared basement car park and associated excavation comprising
- Ground level structure
- Carparking for the Commercial Building 1, Residential Building 2, social housing Building 4, Waterloo Congregational Church and Sydney Metro
- Service vehicle bays
- commercial end of trip and bicycle storage facilities
- Retail end of trip and bicycle storage facilities

- residential storage facilities
- shared plant and services.

6.1.3 Central Precinct

The Central Precinct comprises:

- 24-storey residential building (Building 2) comprising approximately 126 market residential and 24 affordable housing apartments, to be delivered as a mixture of 1 bedroom, 2 bedroom and 3 bedroom apartments
- Ground level retail tenancies, community hub, precinct retail amenities and basement car park entry
- level 1 and level 2 community facilities (as defined in the SLEP) intended to be operated as a childcare centre
- landscaping and private and communal open space at roof top levels to support the residential accommodation
- new public open space including the delivery of the Church Square, including vehicle access to the basement via a shared way from Cope Street, expanded footpaths and public domain upgrades on Botany Road
- external licensed seating areas
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

6.1.4 Northern Precinct

The Northern Precinct comprises:

- 17-storey commercial building (Building 1) comprising Commercial floor space, with an approximate capacity of 4000 workers
- ground level retail tenancies, loading dock facilities serving the northern and central precinct including Waterloo metro station
- landscaping and private open space at podium and roof top levels to support the commercial tenants
- new public open space including the delivery of the Raglan Street Plaza, Raglan Walk and expanded footpaths on Raglan Street and Botany Road and public domain upgrades
- external licensed seating areas
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

7. Social Housing Waste Management

City of Sydney Council's *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the total number of MGBs required for the social housing. Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

7.1 Estimated Waste Volumes and Provisions

The following table shows the estimated volume (L) of waste and recycling generated by the social housing component of the development.

Table 3: Calculated Waste and Recycling Generation - Social Housing

# Units	Waste Generation Rate (L/unit/week)	Generated Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
70	120	8400	120	8400
TOTAL 70		8400		8400
MGBs & Collections	Waste Bin Size (L)	1100	Recycling Bin Size (L)	1100
	Waste Bins per Week	8	Recycling Bins per Week	8
	Waste Collections per Week	2	Recycling Collections per Week	1
	Total Waste Bins Required	4	Total Recycling Bins Required	8
Daily MGB Requirements	Number of Waste Bins Per Day	2	Number of Recycling Bins Per Day	2

**Note: An additional 1100L MGB should be provided for each chute discharge for use during collection periods. These bins are not included in the above figures.*

City of Sydney Council have advised that the city is trialling a food waste collection service and encourages the provision for this. Should this eventuate, the social housing component will willingly oblige, however waste generation rates, available bin sizes and collection frequencies are not available at this stage in City of Sydney Council's *Guidelines for Waste Management in New Developments 2018*.

Based on the food waste generation rate for single dwellings (40L/dwelling/week), 8 x 120L bins would substitute 1 x 1100L general waste bin. If this is to occur during operation, 8 x 120L food waste bins will be provided in the social housing waste room for residents to access and dispose of their food waste. The chutes and linear track systems must be caged off from these bins, with access granted to authorised personnel only.

7.2 Bin Summary

Waste: 4 x 1100L MGBs collected 2 x weekly
 Recycling: 8 x 1100L MGBs collected weekly
Total: 12 x 1100L MGBs

Waste and recycling containers will not be supplied until construction in developments is completed unless otherwise organised with waste services.

7.3 Social House Waste Operation

Dual chutes (1 x waste chute and 1 x recycling chute) will be installed within the building. Access to both chutes will be provided on each social housing level.

Back-up bins, including 2 x 240L bins, will be provided in a locked compartment on each residential level in case the waste and recycling chute becomes blocked. In the rare instance that this occurs, the building caretaker will close off the inoperative chute and unlock the backup bin compartments so residents can utilise these bins to dispose of waste and recyclables.

Waste and recycling discharge into 1100L bins located in the social housing waste and recycling room on the ground level. Overall, one days' worth of waste and recycling will require 2 x 1100L MGBs each, therefore 2-bin 1100L linear track systems have been provided for both waste and recycling. Access to the social housing waste room will be provided to the building caretaker and waste contractors only. Residents are not permitted to access this room.

The building caretaker will be responsible for monitoring the capacity of MGBs and replacing full MGBs with empty MGBs on the track systems when required.

Full bins will be serviced by Council directly from the social housing waste and recycling room. Chute offsets and equipment will be caged off, with access granted to the building caretaker only.

7.4 Social Housing Source Separation

7.4.1 General Waste

Residents will be supplied with a collection area in each unit to deposit waste suitable for two day's minimum storage. This is typically located generally in the kitchen, under bench or similar alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

7.4.2 Recycling

Recycling must not be bagged. It is recommended that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation.

Cardboard furniture boxes or large cardboard containers should not be included in the waste chute – cardboard collection bins will be made available to residents in the bulky goods storage room on the ground level to deposit flattened cardboard. This will be managed by the waste caretaker. Residents should liaise with building management to access the bulky waste storage room to deposit large cardboard items.

7.4.3 Green Waste

Green waste is not typically generated from mixed-use developments other than from surrounding building landscaped areas and is removed by the designated maintenance contractor. In the event that green waste is produced i.e trimming of indoor or balcony plants then this may be disposed of via coordination with the building caretaker or cleaner. Very small quantities may be disposed of via the general waste stream.

7.4.4 Residential Bulky Goods

A bulky waste storage room has been made available for the storage of discarded bulky items (e.g. whitegoods, furniture, etc.). This room is located within close proximity of the collection area and has been provided with double doors to allow for easy movement of large waste items in and out of the room.

The minimum required social housing bulky goods storage room for this site is **9m²**.

These areas are crucial to prevent residents from illegally dumping bulky waste on the footpath outside Councils scheduled collection times. Regular illegal dumping can attract other dumped waste, generate litter, detract significantly from the quality and appearance of the development and reduce amenity of the street.

Residents will be required to liaise with building management regarding the transportation and disposal of bulky goods. Ideally, bulky waste should be collected on a regular schedule so that the storage area does not become overfull and so that residents know when to place items in there for collection. Councils may arrange for more frequent collections of bulky waste for MUDs, however collection frequencies vary among different local government areas.

Donations to charitable organisations should be encouraged. Clean, sound furniture and household goods etc. are highly sought after to provide for the disadvantaged. Donations can be arranged with the assistance of the building manager/waste caretaker.

7.4.5 E-Waste

E-waste (electronic waste) refers to any equipment containing printed circuit boards. E-Waste must not be placed in standard garbage or recycling, E-Waste can potentially contaminate soil and surrounding water bodies if not disposed of correctly. The best disposal method for e-waste is recycling through a E-waste service or council.

Disposal or recycling of electronic waste will be organised with the assistance of the building caretaker. Residents and/or the building manager may choose to contact Council to find out about new or existing strategies for the disposal and collection of electronic waste.

7.4.6 Chemical Waste

Chemical wastes (e.g. cleaning chemicals, paints, oils solvents) pose detrimental effects to human health and the environment if not disposed of correctly. Chemical wastes should be disposed of at a suitable licensed disposal facility. No liquid wastes or wash down waters should be disposed of via the storm water drainage system.

Residents will need to liaise with the building manager when disposing of their chemical wastes. The building manager will be responsible for arranging the correct disposal of chemical waste. Household Chemical CleanOut events are held at various locations throughout NSW on specified dates throughout the year. Locations and dates are subject to change. It is recommended that the building caretaker confirm these details with their local Council.

7.4.7 Organic Waste and Composting

It is recommended that a space for composting and worm farming is made available for all residents in a communal facility or in small private courtyards. Composting facilities

are to be sited on an unpaved area with soil depth of at least 300mm. Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems.

7.4.8 Textile Waste

Textiles are becoming an increasingly large waste stream for domestic dwellings. A textile storage crate will be provided in the bulky waste storage room for unwanted clothing that is clean and undamaged. Residents are encouraged to bag their unwanted textiles and transfer these to the textile crate in the bulky waste storage room. When full, the building caretaker must arrange for these to be donated to charities or seek an offsite clothing bin.

7.5 Social Housing Waste Collection

Council will service social housing waste twice a week and recycling will be collected on a weekly basis.

The Council collection vehicle will pull into the designated vehicle loading area on the ground level (access via Wellington Street) and service all MGBs directly from the social housing waste room.

The development must have a residential rating or applied for a residential rating prior to a City of Sydney waste service commencing.

8. Boarding House Waste Management

The City of Sydney Councils *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the total number of MGBs required for the boarding house.

8.1 Estimated Waste Volumes and Provisions

The following table shows the estimated volume (L) of waste (including food waste) and recycling for the boarding house component of the development.

Table 4: Calculated Waste & Recycling Generation - Boarding House

Type	NLA (m ²)	Food Waste Generation Rate	Generated Food Waste	Waste Generation Rate (L/100m ² /day)	Generated Waste (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Boarding House	11012	30	23125	30	23125	30	23125

The provision of food waste has been considered in the above calculations and bin summary below, however food waste will be included with the general waste stream in this report. Should the site opt to separate food waste from general waste during operation, this provision has been allowed for and 38 x separate 120L food waste bins will be provided in the waste room to substitute 4 x 1100L waste bins. These food waste bins will be caged off at the southern end of the waste room and a door will be inserted to provide access to residents if this is to occur.

8.2 Bin Summary

Waste (including food waste): 9 x 1100L MGBs collected 5 x weekly
 Recycling: 5 x 1100L MGBs collected 5 x weekly
Total: 14 x 1100L MGBs collected 5 x weekly

It is the responsibility of the building manager to monitor the number of bins required for the development. As waste volumes may change according to the development's management, customer base and retail tenancy attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. Seasonal peak periods i.e. public and school holidays should also be considered.

8.3 Boarding House Waste Operation

Dual chutes (1 x waste chute and 1 x recycling chute) will be installed within the boarding house building. Access to both chutes will be provided on each boarding house level.

An alternative proposal has been developed to mitigate the risks of potential chute malfunctions. These items will also be implemented as an alternative to the provision of "back-up bins" on each level.

- Provide customised 650 diameter chutes to allow additional space for larger items to descend through the chute system (see *APPENDIX C.1 for Typical Specifications*).
- Provide customized hopper doors with reduced dimensions to prevent large items being disposed of into the chute (see *APPENDIX C1 for Typical Specifications*).

- Engineer a blockage alert system within each chute that will alert the building manager of a blockage within 10 minutes of its occurrence.
- Generate a tutorial/education booklet for all residents on how to adequately dispose of different waste streams and how to effectively utilise the chute systems. The tutorial/education booklet will contain information provided in the Education section of this WMP.
- Conduct an in-house workshop for both residents and the building caretaker once the development commences operation. This will feed on from information provided in the education booklet.

Waste and recycling discharge into 1100L bins located in the boarding house (IGLU) waste and recycling room on the ground level. Linear track systems have been provided for both waste and recycling.

The building caretaker will be responsible for monitoring the capacity of MGBs and replacing full MGBs with empty MGBs on the track systems when required.

Full bins will be serviced by a private waste contractor directly from the social housing waste and recycling room.

8.4 Boarding House Source Separation

8.4.1 General Waste

Residents will be supplied with a collection area in each room to deposit waste suitable for two day's minimum storage. This is typically located generally in the kitchen, under bench or similar alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

8.4.2 Recycling

Recycling must not be bagged. It is recommended that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation.

Cardboard furniture boxes or large cardboard containers should not be included in the waste chute – cardboard collection bins will be made available to residents in the bulky goods storage room to deposit flattened cardboard. This will be managed by the waste caretaker. Residents should be advised of the location of these bins by building management.

8.4.3 Boarding House Bulky Goods Storage

A room or caged area will be made available for the storage of discarded bulky items. This room should be located within close proximity of the collection area and has been provided with double doors for easy movement of large waste items in and out of the room.

The minimum required boarding house bulky goods storage room for this site is **15m²**.

Residents will not have direct access to the bulky waste storage room, and will be required to liaise with Iglu management regarding the transportation and disposal of bulky goods.

8.5 Boarding House Re-Use Program

The Boarding House component of the development is encouraged to have optional buy-in programs for residents, providing convenient solutions to procure furniture, bicycles and other goods, whilst minimising waste to landfill via a circulatory supply-and-demand system.

8.5.1 Bulky Waste Program

Furniture that is not already provided by IGLU and bicycles will be stored within the bulky goods area (and bicycle storage) and will be made available to residents through a buy-in option, whereby residents can use the furniture for their tenancy period. Upon vacating the tenancy, students can opt to sell (privately) or return items to the availability pool and made available for future residents.

8.5.2 Library Program

Resources such as textbooks and other printed materials will be made available through a library program. Residents will be encouraged to utilise the buy-in program which will be cheaper than purchasing new resources and will ensure resources are used until the end of its life, rather than being discarded after one use. A bunded area in the bulky waste storage room will be made available to store these materials if required.

8.6 Boarding House Waste Collection

Private waste contractors will be engaged to service the separate waste streams to an agreed collection schedule.

The collection vehicle will pull into the designated vehicle loading area on the ground level (access via Wellington Street) and service all MGBs directly from the boarding house waste room.

9. Gym & Makerspace Waste Management

The City of Sydney Councils *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the total number of MGBs required for the gym and makerspace areas.

These areas are considered as retail spaces, with the Makerspace having a food focus and gym having a retail focus. Calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice.

9.1 Estimated Waste Volumes and Provisions

The following table shows the estimated volume (L) of general waste, food waste and recycling generated by the gym and makerspace component of the development. A seven-day operating week has been assumed.

Table 5: Calculated Waste & Recycling Generation – Gym/Makerspace

Type	NLA (m ²)	Food Waste Generation Rate (L/100m ² /day)	Generated Food Waste (L/week)	Waste Generation Rate (L/100m ² /day)	Generated Waste (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Makerspace/ Kitchen/Dining	300	100	2100	100	2100	500	10500
Gym/Retail	978	5	342	25	1712	200	13692
TOTAL	1278		2442		3812		24192

9.2 Bin Summary

General Waste:	1 x 1100L MGBs collected 5 x weekly
Food Waste:	5 x 120L MGBs collected 5 x weekly
Recycling (Paper/cardboard):	2 x 1100L MGBs collected 5 x weekly
Recycling (Other):	2 x 1100L MGBs collected 5 x weekly

It is the responsibility of the building manager to monitor the number of bins required for the development. As waste volumes may change according to the development's management, customer base and retail tenancy attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. Seasonal peak periods i.e. public and school holidays should also be considered.

9.3 Gym & Makerspace Waste Operations

9.3.1 Gym & Makerspace

Typically, receptacles for general waste and recycling are positioned in convenient locations throughout the vicinity. Bins for general waste and recyclables are also located in offices, staff tea rooms and rest rooms. The provision of a food waste bin must be made available within the kitchen area.

Contract cleaners will circulate around the gym/makerspace after standard operating hours and perform cleaning tasks. At this time the cleaners will empty the waste and

recycling bins into bags which they will then transport to the gym & makerspace waste room located on the ground floor.

Tenants are required make arrangements for the disposal and recycling of specialised waste (toner cartridges, batteries, etc.). Disposal of hard, electronic, liquid waste and any chemical waste (paint/chemicals) can be organised with the assistance of the building management or cleaners.

9.3.2 Makerspace Kitchen

Tenants will be responsible for their own storage of general waste, food waste and recycling back of house (BOH) during daily operations. On completion of each trading day or as required, nominated staff or cleaners will transport their general waste, food waste and recycling to the central gym & makerspace waste room and place general waste, food waste and recycling into the appropriate collection bins.

Food handling for food cooked or prepared, served and consumed on site will produce a typical waste composition of food scraps from plates, packaging waste and some plastics. Café or restaurant staff will be responsible sorting this into the appropriate bins.

To ensure the proper management and disposal of waste, tenants must be made aware of the following practices:

- All garbage should be bagged and garbage bins should be plastic lined;
- Bagging of recyclables is not permitted;
- All interim waste storage is located BOH during operations;
- Individual recycling programs are recommended for retailers to ensure co-mingled recycling is correctly separated;
- Any food and beverage tenant will make arrangements for storing used and unused cooking oil in a bunded storage area;
- The operator will organise grease interceptor trap servicing;
- A suitable storage area needs to be provided and effectively bunded for chemicals, pesticides and cleaning products;
- Dry basket arrestors need to be provided to the floor wastes in the food preparation and waste storage areas; and
- All flattened cardboard will be collected and removed to the waste room recycling MGB

9.3.3 Common Areas

The lobbies, amenities and circulation areas will be supplied with suitably branded waste and recycling bins where considered appropriate. These areas generate minimal waste, however garbage and recycling receptacles should be provided and located in convenient locations.

Any staff tea points will be supplied with a dedicated co-mingled MGB for the collection of all recyclable glass, aluminium, steel and plastic items. Staff will be responsible for sorting this material and allocating recyclables into the correct collection facility.

9.3.4 Washroom Facilities

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

9.4 Gym & Makerspace Source Separation

Allocated staff and/or cleaners for the gym and makerspace will have access to the gym & makerspace waste room and bulky waste storage room to dispose of the following waste and recycling streams.

9.4.1 General Waste

Bulk 1100L MGBs (collected on a 5 x weekly basis) have been provided for general waste.

9.4.2 Food Waste

Currently, 120L MGBs (collected on a 5 x weekly basis) has been provided for the storage of food waste.

9.4.3 Cardboard/Paper Recycling

All cardboard predominantly from packaging will be flattened by staff and transferred to the paper/cardboard 1100L bulk MGBs, which are collected on a 5 x weekly basis.

9.4.4 Other Recycling (Not Including Cardboard/Paper)

Bulk 1100L MGBs (collected on a 5 x weekly basis) have been provided for other recyclables.

9.4.5 Bulky Waste

A designated room will be made available for the storage of bulky (problem) waste, including discarded furniture, computer etc. This room should be located adjacent to the commercial/retail waste room and has been provided with double doors allow for easy movement of large waste items in and out of the room.

Additional areas must be available within this room for re-usable commercial items such as crates, pallets, kegs, strip out waste and similar items so that storage in a public place is completely avoided.

A designated, secure area within the bulky waste storage room must be allocated for liquid wastes, commercial cleaning products, chemicals, paints, solvents, and motor and cooking oil. The area for liquid waste storage is to be bunded, and drained to a grease trap, in accordance with legislation and the requirements of State government authorities and agencies.

Based of City of Sydney Councils Guidelines for Waste Management in New Developments, the required GFA for the bulky waste storage room is **8m²**.

9.5 Gym & Makers Space Waste Collection

Private waste contractors will be engaged to service the separate waste streams to an agreed collection schedule.

Collection will occur directly from the retail/commercial waste room via the designated vehicle loading bay.

10. Cope Street Plaza Public Domain Waste Management

The following documents have been referenced for the waste and recycling management strategy for the Cope Street Plaza Public Domain.

- *Event Guidelines* - City of Sydney, 2018
- *Better Practice Guide for Public Place Recycling* - Department of Environment and Conservation (NSW) 2005
- *Waste Wise Events* - Department of Environment and Conservation (NSW) 2007

This space will be accessible to the public 24 hours of a day, 7 days a week (daily operation). The site will also be adaptable to host a variety of events, including markets (events operation).

10.1 Daily Waste Operations

Permanent waste and recycling bins will be placed throughout the public area in strategic locations to minimise the likelihood of littering. Waste and recycling bins will be placed together in bin stations to help increase the recovery of recyclables.

Public waste bins placed in outdoor public areas will be serviced by a precinct waste contractor and will be maintained by Mirvac.

10.1.1 Bin Summary for Daily Operations

The bin stations will consist of a single general waste bin paired with a single recycling bin.

It is recommended that 2 permanent bin stations be dispersed evenly throughout Cope Street Plaza. Bins should be placed near seating areas where food will likely be consumed, and along popular paths of travel for pedestrians.

The bin stations will need to be accessible to all members of the community, including people in wheelchairs and young children. This will require consideration to be given to the height of bins and openings.

The Department of Environment and Conservation (NSW) *Better Practice Guide for Public Place Recycling* (2007) recommends several key rules for effective public place waste management systems:

- Recycling should be collected in co-mingled bins;
- Bins should feature different shaped openings for general waste and recyclables;
- Openings allowing material to be placed into bins should be on all accessible sides of the unit;
- Overhead signage should be installed, particularly where bins maybe obscured in a crowd;
- Bins and bin stations should be colour-coded according to Australian standard as4123.7-2006 *mobile waste containers - part 7: colours, markings and designation requirement*;
- Standard colour-coded signage should be used that conforms to Australian standards and also conform to the NSW EPA's standard recycling signs; and
- General waste and recycling bins should always be located together.

10.1.2 Waste Collection for Daily Operation

The standard bins from the permanent bin stations around the park will be serviced by a private contractor from the loading dock of the Northern precinct on an agreed schedule.

WQD cleaners will be provided with keys to the permanent bin stations, in order to access the waste and recycling collection receptacles. Cleaners will transfer these bins to the loading dock for servicing, as required.

It is recommended extra collections of the permanent park bins are scheduled after an event.

10.2 Events Waste Operations

For events where the number of people in attendance require additional crowd management equipment (e.g. port-a-loos, cash machines, etc.), it is recommended that additional bins are used to help manage the increase in waste and recycling volumes.

These additional bins should be provided in key locations around the event. Bins should be provided in bin stations where a general waste and recycling bin are placed together along with signage indicating what items can be placed into each bin.

Throughout the event, bins will be monitored by the event staff to prevent overflowing. As the bins become full, event staff will replace the full bins with empty or partially filled bins as required. Depending on the event size, the event managers may choose to store spare bins in a back-of-house location.

10.2.1 Bin Summary for Events

Front of house bins are the additional waste and recycling bins brought into an event for the event attendees use. Front of house bins are typically 2-wheeled mobile garbage bins (MGBs) that can be easily manoeuvred. The size of the front of house bins will be determined by the event organisers, based on the size of the event and contract with the bin suppliers.

The bins should be placed in bin stations. A bin station is made up of one or more pairs of general waste and recycling bins; each appropriately labelled with standard signage.

These bin stations should be strategically placed at several locations around the event site. The bin station should be clearly marked on the event site plan and any site maps provided to patrons. When choosing the placement of bin stations, the following should be considered:

- Location of food and drink stalls
- Location of public toilets
- Accessibility (e.g. near footpaths, entry, exit)
- Location of public seating (e.g. for consuming food and beverages)
- Back of house bins are additional waste and recycling bins brought into an event for the event operators, stallholders' waste and recycling.

10.2.2 Waste Collection for Events

The waste and recycling generated at an event will be collected by a private contractor. Depending on the event organisation, the same or separate contractor will also collect and remove the additional bins used during the event from the site.

At the end of the event, cleaners will circulate through the site and collect litter from the grounds for disposal, and transfer bin to the loading dock of the Northern precinct for servicing. A nominated private waste contractor will collect and remove bins from the site, and the same or separate contractor will collect any additional bins used during the event.

11. Stakeholder Roles and Responsibilities

The following table demonstrates the primary roles and responsibilities of the respective stakeholders:

Table 6: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/Management	<ul style="list-style-type: none"> Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; Organising internal waste audits/visual assessments on a regular basis; and Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	<ul style="list-style-type: none"> Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; Ensuring site safety for residents, children, visitors, staff and contractors; Abiding by all relevant OH&S legislation, regulations, and guidelines; Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) General maintenance and cleaning of chute doors on each level; Cleaning and transporting of bins as required; Organising, maintaining and cleaning the general and recycled waste holding area; Organising both waste and recycled waste pick-ups as required; Organising replacement or maintenance requirements for bins; Organising bulky goods collection when required; and Investigating and ensuring prompt clean-up of illegally dumped waste materials.
Residents	<ul style="list-style-type: none"> Dispose of all garbage and recycling in the allocated waste chutes and/or MGBs provided; Ensure adequate separation of waste and recycling; and Compliance with the provisions of Council and the WMP.
Serviced Apartment Operator	<ul style="list-style-type: none"> Sort through guests' receptacles to ensure the separation of waste and recyclables; Dispose of waste and recyclables in the MGBs provided.
Council or Private Waste Contractor	<ul style="list-style-type: none"> Provide a reliable and appropriate waste collection service; Provide feedback to building managers/residents in regards to contamination of recyclables; and Work with building managers to customise waste systems where possible.
Gardening/Landscaping Contractor	<ul style="list-style-type: none"> Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.

12. Collection Areas

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant to confirm the swept paths, load requirements and clearances for waste collections. It must be ensured that the collection vehicle (and other trucks if required) can enter and exit the building in a forward direction.

A head height clearance of no less than 4m has been provided for vehicle access on the property.

Unimpeded access will be provided for collection from the waste and recycling storage locations at all times.

Prior to operation, Council's Waste Services unit must be contacted for information on installation of a compatible (GAR) key system to allow for the City's staff to collect social housing waste and recycling receptacles and bulky waste directly from the nominated waste holding areas.

Commercial tenancies will have a commercial waste contract in place prior to commencement of business trading.

13. Waste Storage Areas

Access to the social housing waste room should be provided to the building caretaker and waste contractors **only**. Under no circumstances should access be provided to any residents. Access to the bulky waste storage room can be accessed by residents when arranged through management.

Chute discharge requires a minimum of 3000mm distance from floor to ceiling and needs to be free of service pipes and other overhead obstacles within the immediate space around the chute discharge.

Doorways to waste areas fit the size of bins proposed for use in the WMP. Dimensions of standard 1100L bins available for use are 1240mm long X 1070mm wide

The areas allocated for waste storage and collection areas are detailed in Table. 5 below. Social housing (residential) waste and recycling MGBs are stored separately to non-residential MGBs.

Table 7: Waste Room Areas

Level	Waste Room Type	MGBs & Equipment	Minimum Area Required (m ²)
G	Social Housing Waste & Recycling Room	Waste: 4 x 1100L MGBs 2-Bin 1100L Linear Track System Recycling: 8 x 1100L MGBs 2-Bin 1100L Linear Track System	70
B1	Social Housing Bulky Waste Storage (Caged off)	1 X textile crate and sufficient room to store discarded furniture	9
B1	Boarding House Waste & Recycling Room	Waste: 10 x 1100L MGBs 2-Bin 1100L Linear Track System Recycling: 6 x 1100L MGBs 2-Bin 1100L Linear Track System	69
B1	Boarding House Bulky Waste Storage (Caged off)	NA	15
B1	Retail/Commercial Waste & Recycling Room	General Waste: 1 x 1100L MGBs Food Waste: 5 x 120L MGBs Recycling (paper/cardboard): 2 x 1100L MGBs; Recycling (other) 2 x 1100L MGBs	24
1	Retail/Commercial Bulky Waste Storage	NA	8

13.1 Waste and Recycling Equipment Summary

Table 8: Equipment Summary

Component	Part	Qty	Refer
Chutes	Social Housing	2	APPENDIX 3.2
	Boarding House	2	APPENDIX 3.2
Equipment A	Waste 2-bin 1100L MGB Linear Track System	2	APPENDIX 3.3
	Recycling 4-bin 1100L MGB Linear Track System	2	APPENDIX 3.3

13.2 Waste Room Construction Requirements

Waste room construction must comply with the minimum standards as outlined in the *City of Sydney Council Guidelines for Waste Management in New Developments*, in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

- The *NSW Better Practice Guide for Resource Recovery in Residential Developments (2019)* also states that better practice bin storage areas should achieve more than the minimum compliance requirements, which are as follows:
- Ensuring BCA compliance, including ventilation. Where required, ventilation system must comply with AS1668.4-2012 The use of ventilation and air conditioning in buildings.
- Ensuring storage areas are well lit (sensor lighting preferred) and have lighting available 24 hours a day.
- Provision of bin washing facilities, including taps for hot and cold water provided through a centralised mixing valve. The taps must be protected from bins and be located where they can be easily accessed even when the area is at bin capacity.
- Floor constructed of concrete at least 75mm thick.
- Floor graded so that any water is directed to a sewer authority approved drainage connection to ensure washing bins and/or waste storage areas do not discharge flow into the stormwater drain.
- Provision of smooth, cleanable and durable floor and wall surfaces that extend up the wall to a height equivalent to any bins held in the area.
- Ensuring ceilings are finished with a smooth-faced non-absorbent material capable of being cleaned.
- All surfaces (walls, ceiling and floors) finished in a light colour.

13.3 Additional Considerations

- Waste room floor to be sealed with a two-pack epoxy;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;

- Tap height and light switch height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above finished floor level;
- The room must be mechanically ventilated;
- Optional automatic odour and pest control system installed
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors must be used;
- All personnel doors are hinged, lockable and self-closing;
- Conform to the Building Code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured

13.4 Ventilation

Waste and recycling rooms must have their own exhaust ventilation system either;
Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum;
or
Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

Mechanical exhaust systems shall comply with AS1668.4.2012 and not cause any inconvenience, noise or odour problem

13.5 Signage and Education

Signage and education are essential components to support best practice waste management including resource recovery, source separation, and diversion of waste from landfill.

Signage should include:

- Clear and correctly labelled waste and recycling bins,
- Instructions for separating and disposing of waste items. Different languages should be considered,
- Locations of, and directions to, the waste storage areas with directional signs, arrows, or lines,
- The identification of all hazards or potential dangers associated with the waste facilities, and
- Emergency contact information should there be issues with the waste systems or services in the building.

The building manager is responsible for waste room signage including safety. Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in each bin.

All chute doors on all residential levels will be labelled with signs directing chute operations and use of chute door.

All signage should conform to the relevant Australian Standards.

Educational materials encouraging correct separation of general waste and recyclables must be provided to each resident and commercial/retail tenant. This should include the correct disposal process for bulky waste such as old furniture, large discarded items, and other materials including electronic and chemical wastes. It is recommended that the building caretaker provides information in multiple languages to support correct behaviours, and to minimise the possibility of chute blockages and contamination in communal waste bins.

Education and communication must be provided consistently on a regular basis to encourage behaviour change and account for transient building personnel such as new residents, tenants, or cleaning staff. It is also recommended that the owners' corporation website contain information for residents' referral regarding use of the chute. Information should include:

- Directions on using the chute doors;
- Descriptions of items accepted in the recycling and general waste streams (refer to Council guidance);
- How to dispose of bulky goods and any other items that are not general waste or recycling (refer to Council guidance);
- Residents' obligations to health and safety as well as building management; and
- How to prevent damage or blockages to the chute (example below).

14. Report Conditions

The purpose of this report is to document an OWMP as part of a development application, which is supplied by EFRS with the following limitations:

- Drawings, estimates and information contained in this OWMP have been prepared by analysing the information, plans and documents supplied by the client and third parties including Council and other government agencies. The assumptions based on the information contained in the OWMP is outside the control of EFRS,
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building management's approach to educating residents and tenants regarding waste management operations and responsibilities,
- The building manager will adjust waste management operations as required based on actual waste volumes (e.g. if waste is greater than estimated) and increase the number of bins and collections accordingly,
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures,
- The report has been prepared with all due care; however no assurance is made that the OWMP reflects the actual outcome of the proposed waste facilities, services, and operations, and EFRS will not be liable for plans or results that are not suitable for purpose due to incorrect or unsuitable information or otherwise,
- EFRS offer no warranty or representation of accuracy or reliability of the OWMP unless specifically stated,
- Any manual handling equipment recommended in this OWMP should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply,
- Design of waste management chute equipment and systems must be approved by the supplier,
- EFRS cannot be held accountable for late changes to the design after the OWMP has been submitted to Council,
- EFRS will provide specifications and recommendations on bin access and travel paths within the OWMP, however it is the architect's responsibility to ensure the architectural drawings meet these provisions,
- EFRS are not required to provide information on collection vehicle swept paths, head heights, internal manoeuvring or loading requirements. It is assumed this information will be provided by a traffic consultant,
- Council are subject to changing waste and recycling policies and requirements at their own discretion.

This OWMP is only finalised once the Draft Watermark has been removed. If the Draft Watermark is present, the information in the OWMP is not confirmed.

15. Conclusion

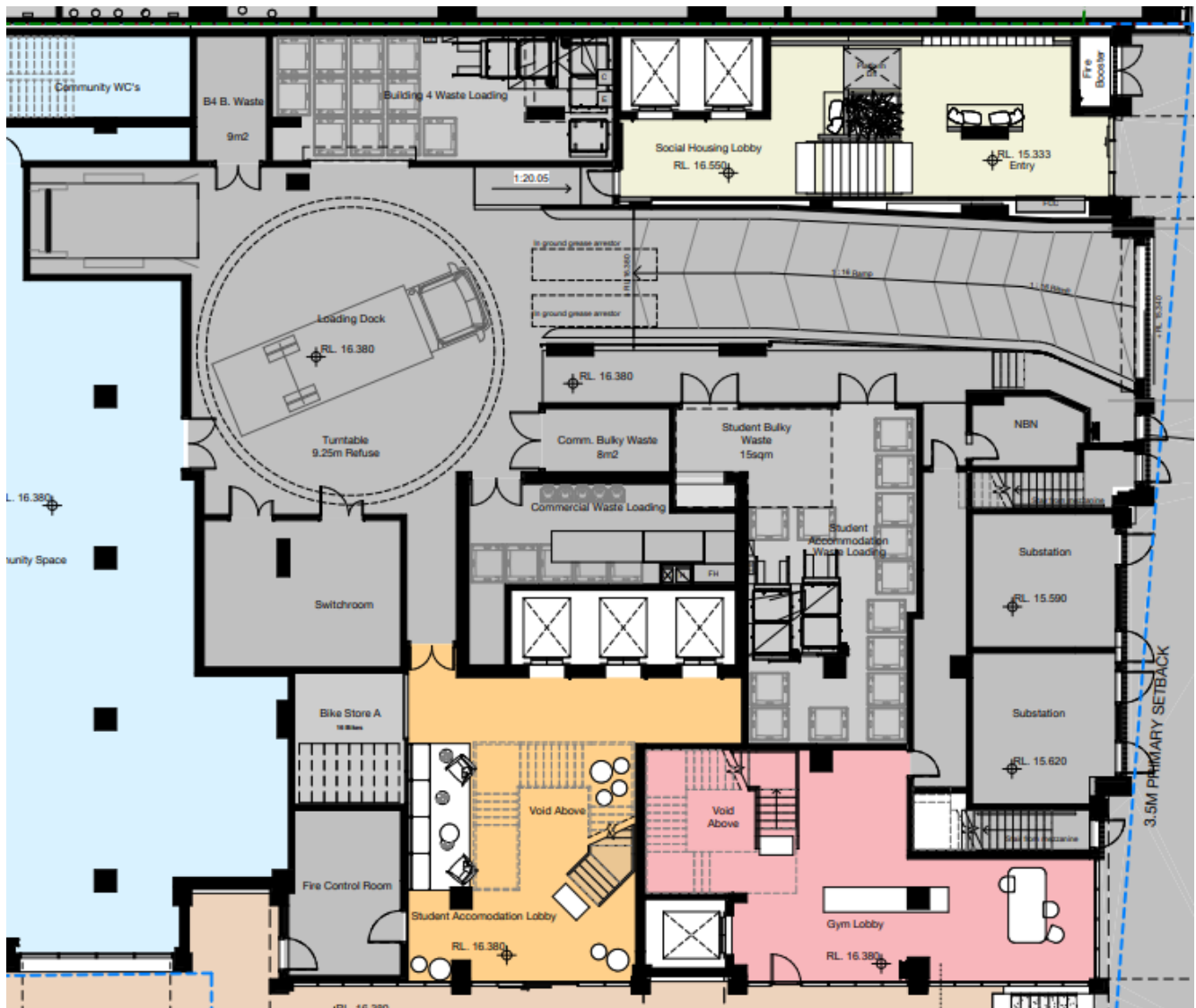
EFRS have reviewed the architectural plans (final DA version) and confirm that the waste and recycling management facilities are in line with this Waste Management Plan, SEAR requirements, Waterloo Metro Quarter Design and Amenity Guidelines and City of Sydney Council's *Guidelines for Waste Management in New Developments 2018* for the following reasons.

- Residential waste and recycling facilities are stored separately to boarding house, retail waste and recycling facilities;
- Waste and recycling rooms are sized sufficiently to store the required bins and bulky waste items;
- Separate waste and recycling streams have been identified and have been managed effectively to reduce the proportion of general waste being diverted to landfill optimise recycling;
- Suitable waste and recycling management equipment has been proposed, chutes as dual chutes and volume handling equipment; &
- Loading areas are suitable to accommodate Council collection vehicles and private waste contractors.

16. Appendices

16.1 Appendix 1 – Architectural Plans

16.1.1 Appendix 1.1 - Ground Level Displaying Waste Rooms and Collection Area



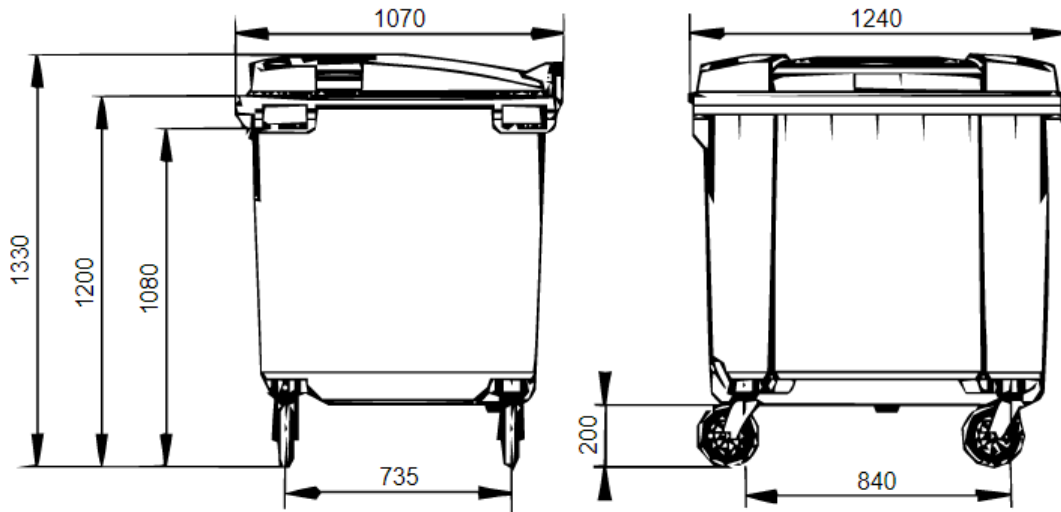
Source - Bates Smart, WMQ-BLD3-BSA-AR-DRG-DA100, Revision L 15/02/2021 - Ground Floor Plan

16.2 Appendix 2 – Primary Waste Management Provisions

16.2.1 Appendix 2.1 - Typical BOH Bins



16.2.2 Appendix 2.2 - Typical Bins for Collection



1100L Wheelie Bin Specifications

Model	MGB1100
Volume	1100 litres
Maximum load weight	440 kg
Length	1070mm
Width	1240mm
Height	1330mm
Weight	65 kg

16.2.3 Appendix 2.3 - Signage for Waste and Recycling

WASTE SIGNS

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the Department of Environment and Heritage.

Example wall posters



Example bin lid stickers



SAFETY SIGNS

The design and use of safety signs for waste rooms and enclosures should comply with AS1319 Safety Signs for Occupational Environment. Safety signs should be used to regulate and control safety behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Each development will need to decide which signs are relevant for its set of circumstances and service provided.

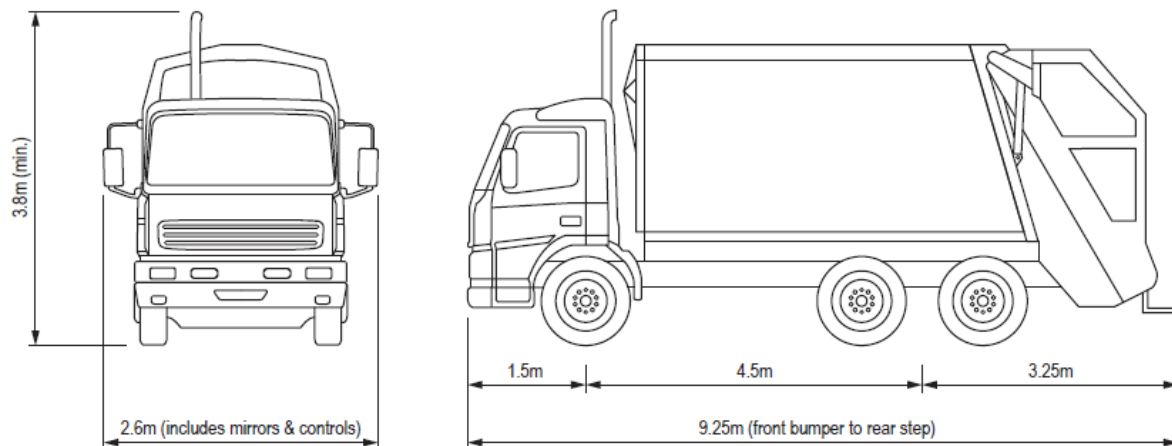
Examples of Australian Standards:



Australian Standards are available from the SAI Global Limited website (www.saiglobal.com).

SOURCE: Department of Environment and Climate Change NSW 2008, Better Practice Guide for Waste Management in Multi-Unit Dwellings

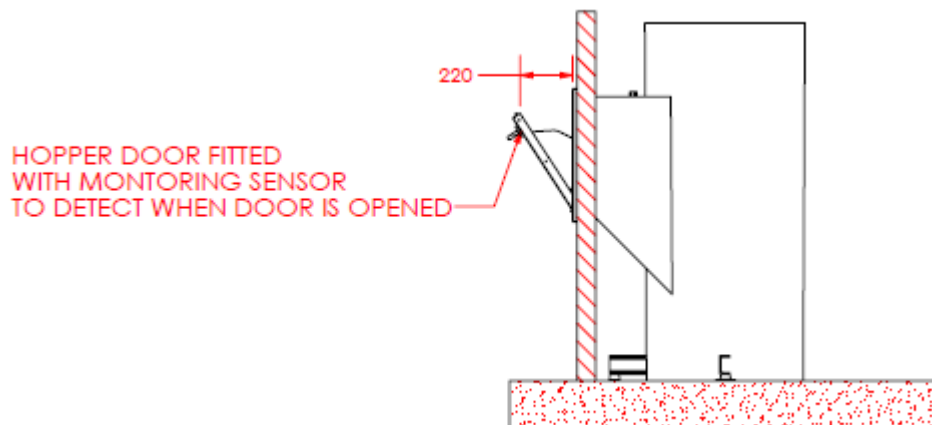
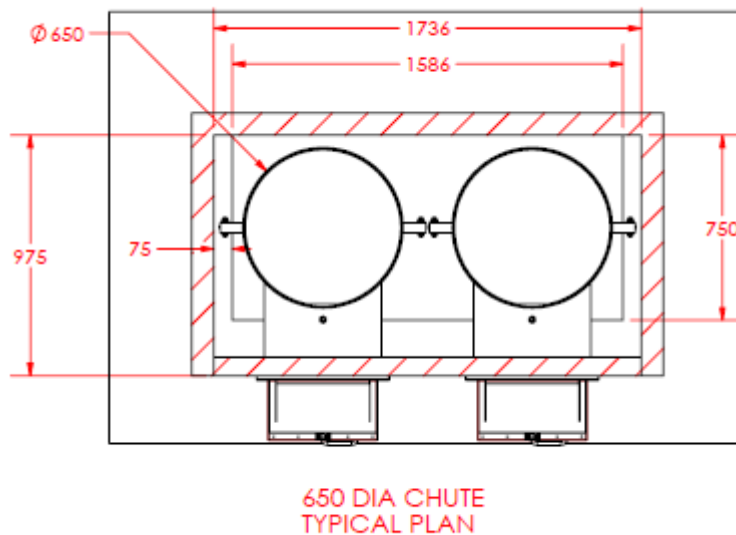
16.2.4 Appendix 2.4 -Typical Collection Vehicle Information



Rear loading vehicle	dimensions
Length overall (m)	9.25
Width overall (m)	2.6
Travel height (m)	3.8
Minimum vertical clearance required (m)	4.0
Maximum weight (t)	26
Turning circle radius – wall to wall (m)	10.5
Lock to lock time (sec)	6
Minimum clearance on both sides of the wheel path (mm)	600
Vehicle turning speed (km/hr)	5-10

16.3 Appendix 3 – Waste Management Installation Equipment

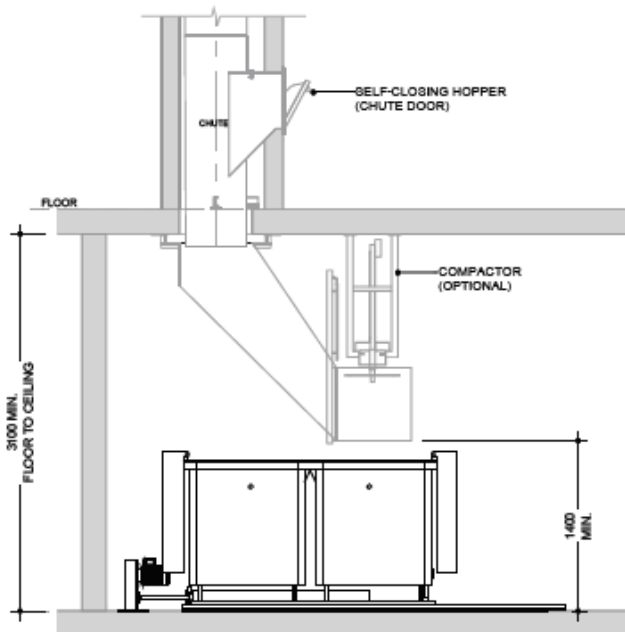
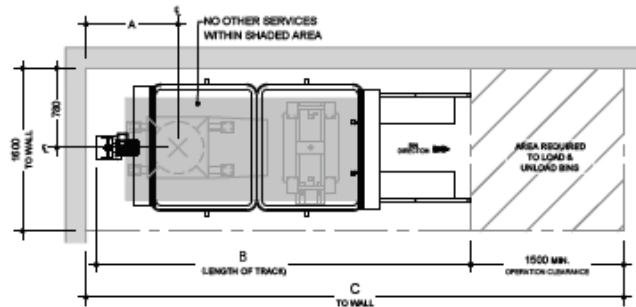
16.3.1 Appendix 3.1 - Typical Customized Dual Chute Specifications - Preliminary Design



Elephants Foot Recycling Solutions, Sheet 1, Rev 01 03/06/2019

16.3.2 Appendix 3.2 - Typical Linear Track System

LINEAR TRACK SYSTEM



1100 LITRE BIN

1100 LITRE BIN LINEAR TRACK SYSTEM			
No. of Bins	Reference (mm)		
	A	B	C
2	900	3700	5300
3	2100	5940	7550

Notes:

Bins not provided by Elephants Foot

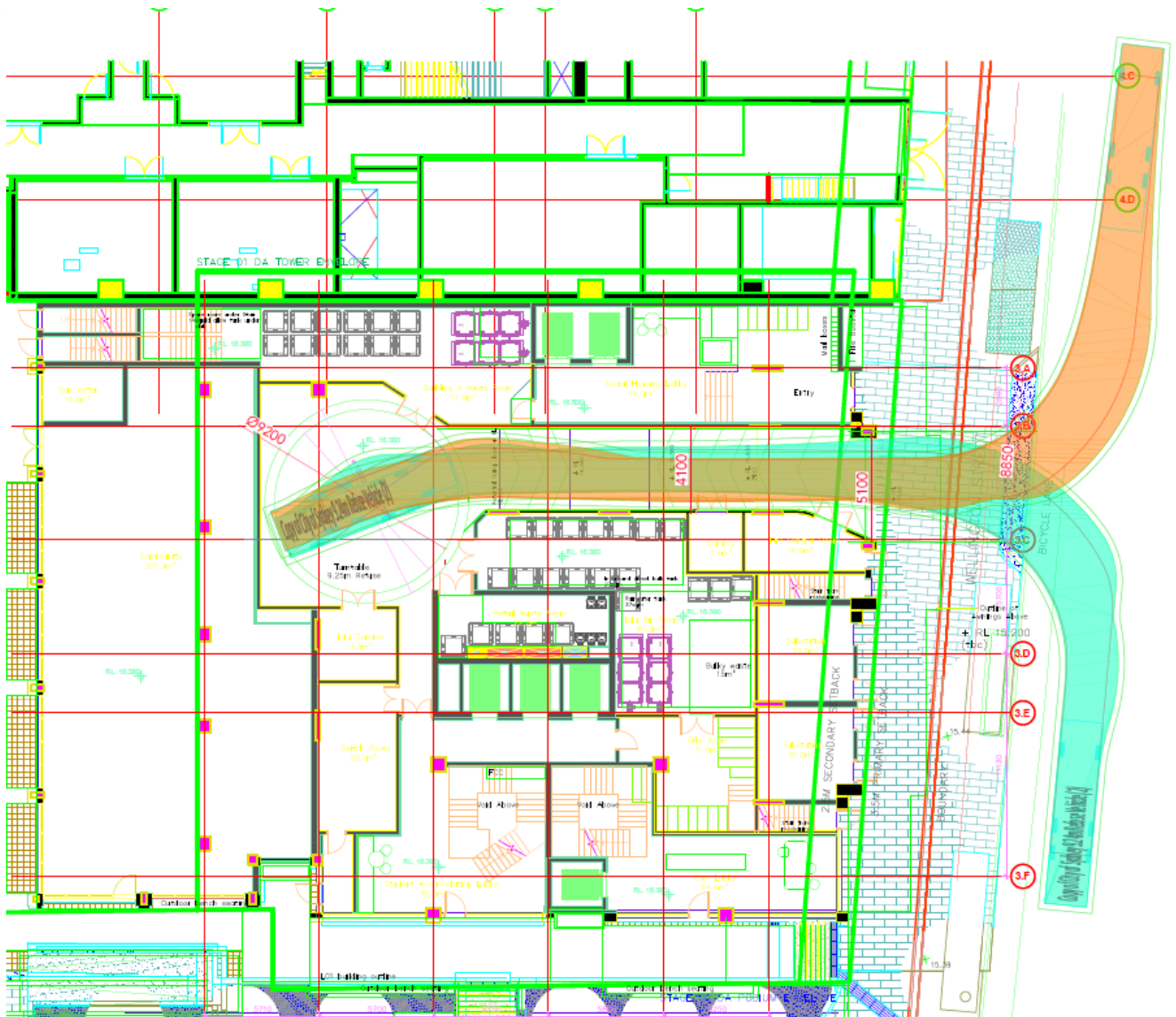
Drawings shown are for general information purposes only and provide minimum equipment spacial requirements for waste room design.

These drawings are not intended for site specific use or for construction. Each project is unique and will be designed to suit.

Additional equipment options, systems and configurations are available. For design assessment, information and advice, please contact an Elephants Foot design consultant on 1300 435 374

Source - Elephants Foot Recycling Solutions

16.4 Appendix 4 - Collection Vehicle Swept Paths



Source - PTC, South-LD-001, Revision 1 13.07.2020 - Loading Dock Assessment