



WATERLOO METRO QUARTER OVERSTATION DEVELOPMENT

**Environmental Impact Statement
Appendix L - Operational Waste Management Plan**

SSD-10441 Amending Concept DA

State Significant Development,
Development Application

Prepared for **WL Developer Pty Ltd**

30 September 2020



Reference	Description
Applicable SSD Applications	SSD-10441 Amending Concept DA
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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



1. Executive summary

This report has been prepared by Elephants Foot Recycling Solutions to accompany a concept State significant development (SSD) development application (DA) for the Waterloo Metro Quarter over station development (OSD). This concept SSD DA is submitted as an 'amending DA', that modifies the previously approved concept SSD DA issued for the site (SSD 9393). The modifications contained within the amending DA relate to the northern precinct and central building only. No change is proposed to the original concept SSD DA as it relates to the southern precinct of the Waterloo Metro Quarter site.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the amending concept SSD DA (SSD 10441).

This report concludes that the proposed amending concept DA for the Waterloo Metro Quarter 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 of general waste being diverted to landfill by optimising recycling opportunities onsite;
- Provide appropriate equipment, bins and sufficient space to manage and store waste and recycling generated onsite.

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



2. Introduction

This report has been prepared to accompany a concept SSD DA for the over station development (OSD) at the Waterloo Metro Quarter site. The concept DA seeks consent for an amended building envelope and description of development for the northern precinct and central building of the Waterloo Quarter site approved under SSD 9393. For clarity, this concept DA (formerly referred to as a 'Stage 1' DA) is made under Section 4.22 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

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 concept DA seeks to modify the approved building envelope for the northern precinct (previously comprising 'Building A', 'Building B', 'Building C' and 'Building D' under SSD 9393) through:

- increasing the maximum building height for the southern portion of the building envelope from RL56.2 to RL72.60
- removing the 'tower component' of the northern precinct, reducing the overall height of the tower envelope from RL116.9 to RL90.40, to enable the redistribution of floor space to commercial office floor plates
- amending the description of development to refer to a mid-rise (approximately 17 storey) commercial office building, comprising approximately 34,125sqm of commercial office floor space within the northern portion of the site, rather than a third residential tower.

The concept DA seeks to modify the central building approved building envelope (previously comprising 'Building E' under SSD 9393) through:

- modifying the eastern extent of the podium envelope.

This proposal will not exceed the permissible building height for the site under the Sydney Local Environmental Plan 2012 (SLEP) or the maximum height approved under SSD 9393. Separate detailed SSD DA (s) will be lodged concurrently for the detailed design, construction and operation of the northern precinct and central building. No changes are proposed to the original concept DA as it relates to the southern precinct.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 9 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: SEAR's Requirements

Item	Description of Requirement	Section Reference (this report)
7	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.	Section 8-15



3. The site

The site is located within the City of Sydney Local Government Area (LGA). The site is situated approximately 3.3 kilometres south of Sydney CBD and approximately 8 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 located 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 (the site) is a rectangular shaped allotment and 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 boundaries of the site the subject of the amending concept DA is identified at Figure 5.1. 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 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.



4. Background

4.1 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:

4.1.1 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.

4.1.2 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.

4.1.3 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.

4.1.4 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.

The Sydney Metro project is illustrated in Figure 2.

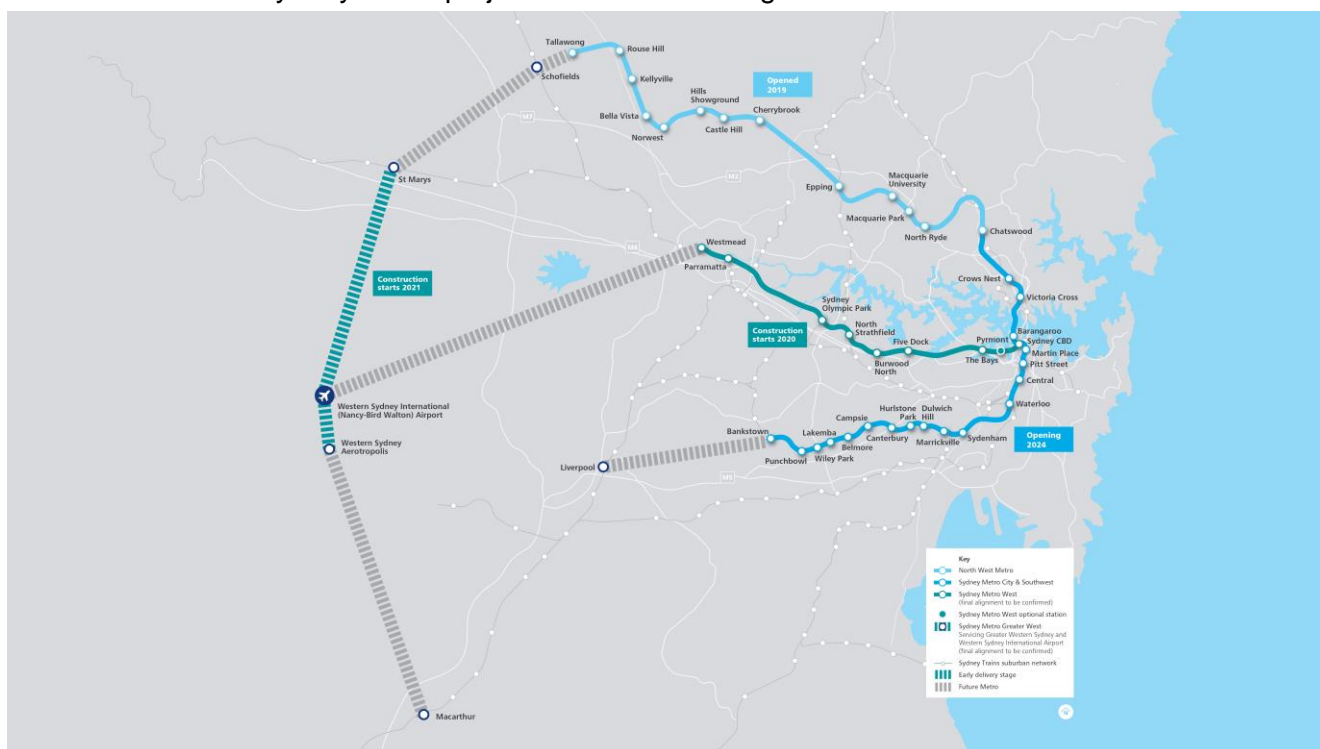


Figure 2 - Sydney Metro alignment map
Source: Sydney Metro

4.2 Sydney Metro CSSI Approval (SSI 7400)

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a critical State significant infrastructure (CSSI) project (reference SSI 7400) (CSSI approval). The terms of the CSSI approval includes all works required to construct the Sydney Metro Waterloo Station. The CSSI approval also includes the construction of below and above ground works within the metro station structure for appropriate integration with the OSD.

With regards to CSSI related works, any changes to the 'metro station box' envelope and public domain will be pursued in satisfaction of the CSSI conditions of approval and do not form part of the scope of the concept SSD DA or detailed SSD DA for the OSD.

Except to the extent described in the EIS or Preferred Infrastructure Report (PIR) submitted with the CSSI application, any OSD buildings and uses do not form part of the CSSI approval and will be subject to the relevant assessment pathway prescribed by the EP&A Act.

The delineation between the approved Sydney metro works, generally described as within the two 'metro station boxes' and surrounding public domain works, and the OSD elements are illustrated in Figure 3.

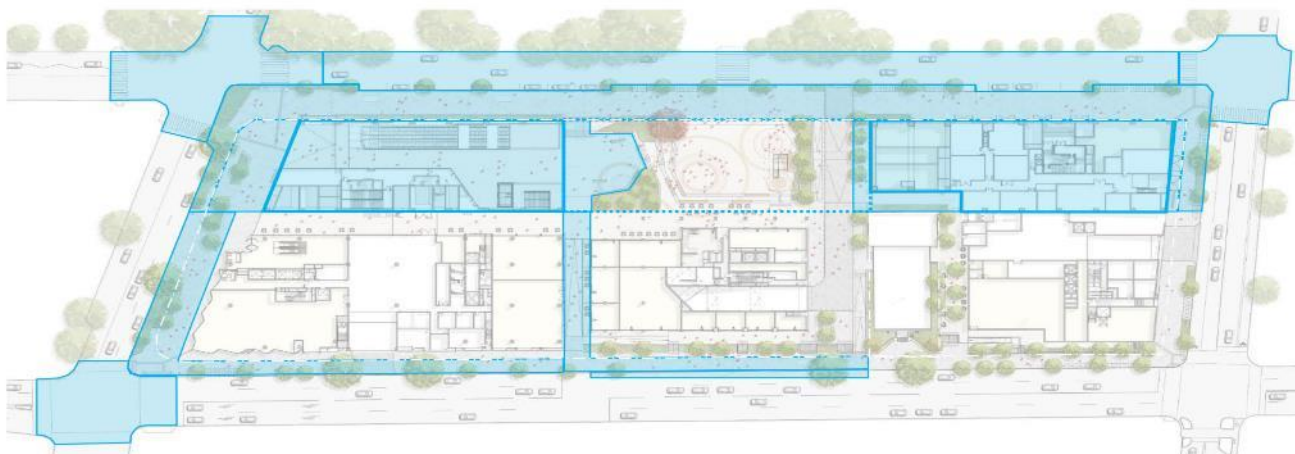


Figure 3 - CSSI Approval scope of works
Source: WL Developer Pty Ltd

4.3 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.

This concept DA has been prepared and submitted to the DPIE and proposes 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.

A concurrent detailed SSD DA will seek development consent for the OSD located within the southern precinct of the site, consistent with the parameters of the original concept approval. Separate SSD DAs have been prepared and will be submitted for the northern precinct, central building, and basement proposed across the Waterloo Metro Quarter site consistent with the amending concept DA.

5. Proposed development

The amending concept DA seeks consent for an amended building envelope and description of development for the northern precinct of the Waterloo Metro Quarter site approved under SSD 9393. Specifically, the proposal seeks to modify the approved building envelope for the northern precinct (previously comprising 'Building A', 'Building B', 'Building C' and 'Building D' under SSD 9393) through:

- increasing the maximum building height for the southern portion of the Northern Precinct from RL56.2 to RL72.60
- removing the 'tower component' of the Northern Precinct, reducing the overall height of the tower envelope from RL116.9 to RL90.40, to enable the redistribution of floor space to commercial office floor plates
- amending the description of development to refer to a mid-rise (approximately 17 storey) commercial office building, comprising approximately 34,125sqm of commercial office floor space within the northern portion of the site, rather than a third residential tower.

The concept DA seeks to modify the central building approved building envelope (previously comprising 'Building E' under SSD 9393) through:

- modifying the eastern extent of the podium envelope.

The modification of the approved concept SSD DA will enable the detailed design of a new commercial building (comprising office and retail premises) to be pursued on the site, significantly increasing the proportion of employment generating floor space on the Waterloo Metro Quarter site. This new commercial building is proposed in replacement of four building envelopes approved under SSD 9393, which comprised one residential tower, and three mid-rise residential buildings.

This proposal will not exceed the permissible building height for the site under the SLEP or the maximum height approved under SSD 9393. As noted above, separate detailed SSD DA(s) will be lodged concurrently for the detailed design, construction and operation of the northern precinct, and central building.

This amending concept DA does not propose to the amend the original concept approval as it relates to the southern precinct.



6. Methodology

Elephants Foot Recycling Solutions (EFRS) have assessed the proposed detailed reference scheme designs, which are subject to separate Detailed Development Applications, and are consistent with this proposed Amending Concept DA, for compliance with City of Sydney Council's *Guidelines for Waste Management in New Developments 2018*.

This report has also been prepared to address Design Criteria 3P & 3T Waste Management of the Waterloo Metro Quarter Design and Amenity Guideline, which makes specific reference to suitable waste areas, waste equipment and collection areas.

EFRS have reviewed the different uses of the site, including residential, retail, commercial and childcare facilities to identify the different waste and recycling types and quantities likely to be generated during operation. Following this review, EFRS established best practice methods for handling the waste and recycling, storage requirements, equipment recommendations and collections.

EFRS confirm that the amendments to the Concept SSD improves the residential and commercial use mix between the Central and Northern Buildings, by significantly reducing general waste generation and increasing recycling rates as residential units are transitioned to commercial and retail tenancies.

An overview of the Development is included below for context.

Southern Precinct

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).

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.

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).

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. Retail Waste Management

The City of Sydney Councils *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the waste and recycling generation for the retail and commercial component of the Northern Precinct. Calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice.

7.1 Estimated Retail Waste Volumes and Provisions

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

Table 2: Calculated Retail Waste and Recycling Generation – Northern Precinct Retail

Type	GFA (m ²)	Food Waste Generation Rate	Generated Food Waste	Garbage Generation Rate (L/100m ² /day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Grocer	412	50	1442	150	4326	300	8652
Pharmacy	270	5	95	15	284	50	945
F & B	58	100	406	100	406	500	2030
F & B	44	100	308	100	308	500	1540
Cafe	44	100	308	100	308	500	1540
Total	828		2289		5632		14707

Table 3: Calculated Retail Waste and Recycling Generation – Central Precinct

Type	GFA (m ²)	Food Waste Generation Rate	Generated Food Waste	Garbage Generation Rate (L/100m ² /day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Health Bar	18	100	126	100	126	500	630
Newsagency	28	5	10	25	49	200	392
Travel	21	5	7	20	30	50	74
Bank	123	5	43	20	172	50	430
Florist	60	5	21	25	105	200	840
F & B	42	100	294	100	294	500	1470
F & B	40	100	280	100	280	500	1400
F & B	77	100	539	100	539	500	2695
F & B	71	100	497	100	497	500	2485
F & B	25	100	175	100	175	500	875
Social Enterprise	60	5	21	20	84	50	210
TOTAL	565		2013		2351		11501

7.2 Retail Waste and Recycling Operations

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 retail staff or cleaners will transport their general waste, food waste and recycling to



the portable general waste compactor and retail/commercial waste and recycling room to place 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.

Cardboard is a major component of the waste generated by retail tenancies. All cardboard should be flattened and placed into the vertical baler.

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



8. Commercial (Offices) Waste Management

The City of Sydney Councils *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the waste and recycling generation for the commercial component of the Northern Precinct. Calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice.

8.1 Estimated Waste Volumes and Provisions

The following table shows the estimated volume (L) of general waste, food waste and recycling generated by the retail and commercial component of the development. A five-day operating week has been assumed for the commercial tenancies.

Table 4: Calculated Commercial Waste and Recycling Generation - Northern Precinct

Type	GFA (m ²)	Food Waste Generation Rate	Generated Food Waste	Garbage Generation Rate (L/100m ² /day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Offices	33,842	5	8460	15	25381	25	42302
Total	33,842		8460		42302		42302

8.2 Commercial Waste and Recycling Operations

Each commercial tenancy on each office level from 1 to 14 will be provided with multiple waste and recycling bins suitable for one days' storage, which should be positioned in the following locations:

- Adjacent to grouped working stations;
- Staff kitchen areas;
- Reception areas; &
- Printer rooms.

Food waste receptacles will be provided in staff tea rooms for the collection of food waste and allocated receptacles will be provided at printers for specialised waste, such as toner cartridges and batteries. All tenants are required to make arrangements with building management for the disposal and recycling of specialised waste and a centralised storage area will be provided in the bulky waste storage room for these items and discarded electronic waste.

Contract cleaners will circulate around the workplace after normal office hours and perform cleaning tasks. At this time the cleaners will collect bagged waste and recyclables from each bin, within their cleaning carts

The cleaners will be responsible for transporting waste to the portable general waste compactor and recycling to the commercial/retail waste and recycling room, placing items into appropriate bins or baler.



9. Childcare Waste Management

The City of Sydney Councils *Guidelines for Waste Management in New Developments 2018* has been referenced to calculate the waste and recycling generation for the childcare component of the Central Precinct. 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 childcare. A five-day operating week has been assumed for the retail tenancies and a five-day operating week has been assumed for the childcare.

Table 5: Calculated Childcare Waste and Recycling Generation - Central Precinct

Type	GFA (m ²)	Food Waste Generation Rate	Generated Food Waste	Garbage Generation Rate (L/100m ² /day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
Childcare	1010	15	1060	50	3535	50	3535
TOTAL	1010		1060		3535		3535

**Note: Only the indoor childcare areas will generate waste and recycling and have been included in the table above.*

9.2 Childcare Waste and Recycling Operations

Most of the waste typically generated by child care facilities include soiled nappies, wipes, and food waste. Dedicated bins should be allocated for general waste and disposable nappies.

20L waste and recycling receptacles will be conveniently located within each indoor playroom, the kitchen and the staff room. All child care centre staff will be responsible for sorting their waste and recyclables into the appropriate receptacles.

A waste storage compartment has been provided on the first level of the childcare to store soiled nappies. A recycling service for soiled disposable nappies must be investigated and bins must be collected on frequent basis (daily is recommended).

The provision for additional 10L food waste receptacles must also be provided within the kitchen areas. It is recommended that a compost facility be investigated for the outdoor play area as a disposal point for the food waste being generated onsite. Compostable material can then be utilised on the surrounding garden area. If this can't be achieved, food waste must be transferred to the central food waste bins located in the retail/commercial waste and recycling room in the loading dock.

At the end of each trading day or as required, allocated staff or contracted cleaners will transport the sorted waste (bagged), food waste and recyclables to the central retail & commercial portable compactor and waste and recycling room.



10. Retail, Commercial and Childcare Storage, Management & Collections

10.1 Bin and Equipment Summary

The Central and Northern Precinct will share waste and recycling facilities within the loading dock located on the ground level of the Northern Precinct.

The following bin and equipment summary is based on the calculations presented in Table. 2-4

General Waste:	1 x 12m ³ or 14m ³ portable compactor (collected as required)
Food Waste:	15 x 120L bins (collected daily)
Recycling (Paper/cardboard):	1 x Cardboard baler producing bales stored on pallets (collected when a minimum of 4 bales are produced)
Recycling (Glass)	1 x Glass crusher and 8 x 60L crushed glass bins (collected as required)
Recycling (Mixed/Other):	6 x 1100L bins (collected 5 x weekly)
Bulky Waste:	Allocated caged area of 15m ² .

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.

10.2 Source Separation

10.2.1 General Waste

1 x 12m³ or 14m³ portable compactor (5:1 compaction ratio) for general waste will be supplied in the loading dock.

Two compactor options have been provided, as per the below:

Portable Eco Weighing Compactor

Each tenant will be supplied with their own pre-programmed security swipe card. When a tenant approaches the unit, they are required to swipe their card and place their bagged waste in the hopper door. The waste is weighed, displayed on the screen for the tenant and the information is sent via GPS to the ECO database management system.

Portable Blade Compactor equipped with a Bin Lifter

240L general waste bins will be either be supplied to each tenant (for BOH storage) or adjacent to the compactor. Tenants will be required to dispose of general waste into the 240L MGBs and when full, decant the waste into the compactor via a designated bin lifter.



When full, compactors will be collected by a nominated contractor operating a hook-lift collection vehicle.

10.2.2 Food Waste

120L bins (collected on a 5 x weekly basis) have been provided in the retail, commercial & childcare waste and recycling room. Staff are required to separate food waste from general waste and empty food waste (from small receptables stored BOH) directly into the 120L MGBs.

The current proposal is for food waste to be collected in the 120L MGBs, however food dehydrators can be investigated during operation to minimise the volume of food waste generated onsite.

10.2.3 Cardboard/Paper Recycling

All cardboard predominantly from packaging will be flattened by staff and fed into the paper/cardboard vertical baler located in the retail, commercial & childcare waste room.

The vertical baler will produce 200kg bales, which will be placed on pallets to await collection by a nominated contractor in the retail/commercial waste and recycling room.

A pallet jack is required to manoeuvre bales and pallets.

10.2.4 Glass Recycling

All glass bottles and jars generated from food and beverage tenancies will be collected in 60L bins and transferred to the glass crusher located in the retail, commercial & childcare waste room when full.

Glass will be fed into the glass crusher and crushed glass will be collected in 60L bins to await collection by a nominated contractor.

10.2.5 Other Recycling (Not Including Paper/Cardboard and Glass)

Bulk 1100L bins (collected on a 5 x weekly basis) have been provided for other recyclables in the retail, commercial & childcare waste and recycling room. Other recyclables include recyclables that are not paper/cardboard and glass, including but not limited to plastic bottles/containers and aluminium and steel cans.

10.2.6 Used Cooking Oil

Building Management will make arrangements for the storage and collection of used cooking oil in a collection container, which will be serviced by the appointed contractor on an as required basis.

10.2.7 Bulky Waste

A designated room has been made available for the storage of bulky (problem) waste, including discarded furniture, computer etc. This room is located in the loading area and has a minimum doorway width of 2.5m to 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 on City of Sydney Councils Guidelines for Waste Management in New Developments, the required GFA for the bulky waste storage room is **15m²**.

10.2.8 Specialised Waste

A designated bunded area will be made available in the bulky waste storage room for the storage of specialised waste, such as toner cartridges and batteries. All tenants are required to make arrangements with building management for the storage and disposal of specialised waste, depending on the type and available collections.

10.3 Equipment Summary

Table 6: Retail, Commercial and Childcare Equipment Summary

	Part	Qty	Refer
General Waste	Portable Compactor (12m ³ or 14m ³)	1	See APPENDIX 3.1 & 3.2 for Compactor Options and Examples)
	240L Bin Lifter (Applicable if a Portable Blade compactor is utilised)	1	See APPENDIX 3.3 for Typical 240L Bin Lifter
Recycling (Paper/Cardboard)	Vertical Cardboard Baler	1	See APPENDIX 3.4 for Typical Cardboard Baler
Recycling (Glass)	Glass Crusher	1	See APPENDIX 3.5 for Typical Glass Crusher

10.4 Waste and Recycling Collections

Private waste contractors will be engaged to service all waste and recycling for the site.

The waste collection vehicles will enter the site via Botany Road and pull up onto the vehicle turntable/loading area.

Contractors will service all bins and bales directly from the commercial/retail waste room.

A hook lift vehicle will remove the general waste portable compactor from site to service, and return it upon completion.



11. Residential 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 residential component of the Central Precinct. Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

11.1 Estimated Waste Volumes and Provisions

The following table shows the estimated volume (L) of waste and recycling generated by the residential component of the Central Precinct.

Table 7: Calculated Residential Waste and Recycling

# Units		Waste Generation Rate (L/unit/week)	Generated Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
150		120	18000	120	18000
TOTAL	150		18000		18000
MGBs & Collections		Waste Bin Size (L)	1100	Recycling Bin Size (L)	1100
		Waste Bins per Week	17	Recycling Bins per Week	17
		Waste Collections per Week	2	Recycling Collections per Week	1
		Total Waste Bins Required	9	Total Recycling Bins Required	17
		Number of Waste Bins Per Day	3	Number of Recycling Bins Per Day	3

**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.*

11.2 Residential Waste and Recycling Operations

Dual chutes (1 x waste chute and 1 x recycling chute) will be installed within Building 2. Access to both chutes will be provided on each residential level.

Waste and recycling discharge into 1100L bins located in the residential chute discharge room on basement 2. Overall, one days' worth of waste and recycling will require 3 x 1100L bins each, therefore 3-bin 1100L linear track systems have been provided for both waste and recycling.

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

On collection days, the building caretaker will transfer full waste and recycling bins from the chute discharge room to the central residential waste room on the ground level, via the designated bin hoist.

In the rare occurrence of a chute blockage, 1 x 240L waste bin and 1 x 240L recycling bin has been provided in a locked compartment on each residential level as "back-up bins". In the event of a chute blockage, the building caretaker will barricade off the chute doors and unlock these compartments for residential use.



11.3 Bin Summary

Waste:	9 x 1100L MGBs collected 2 x weekly
Recycling:	17 x 1100L MGBs collected weekly
Total:	26 x 1100L MGBs

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

11.4 Movement and Transportation of Bins

The building manager is responsible for the transportation of bins from their designated operational location in the chute room to their respective collection area on the ground level loading dock prior to scheduled collection times, and returning them once emptied to resume operational use.

Transfer of waste and all bin movements require minimal manual handling; the operator must assess manual handling risks and provide any relevant documentation to building management.

A bin hoist has been provided to transfer residential bins from the chute discharge room on basement 2 to the central residential waste room on the ground level.

11.5 Source Separation

11.5.1 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.

11.5.2 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.

11.5.3 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.



11.5.4 Residential Bulky Goods

A room or caged area will be made available for the storage of discarded bulky items (e.g. whitegoods, furniture, etc.). This room should be located within close proximity of the collection area and must have a minimum doorway width of 2.5m to allow for easy movement of large waste items in and out of the room.

Based on City of Sydney's Guidelines for Waste Management in New Developments, the minimum required residential bulky goods storage room for this site is **12m²**. A bulky waste storage room has been provided on Basement 1 (See Appendix 1.3), which is accessible to all residents via the residential lift system. On bulky waste collection days, the building caretaker will transfer bulky waste items to the bulky waste storage room on the ground level loading area of the Northern Precinct, via the service lift (See Appendix 1.1). Both bulky waste storage rooms comply with bulky waste requirements.

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.

11.5.5 E-Waste

E-waste (electronic waste) refers to any equipment containing printed circuit boards. E-Waste must not be placed in standard waste 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.

11.5.6 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.



11.5.7 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.

11.5.8 Clothing Waste

Clothing is becoming an increasingly large waste stream for domestic dwellings. Unwanted clothing that is clean and undamaged can be donated to charities. Residents should seek an offsite clothing bin to discard of unwanted clothing

11.6 Equipment Summary

Table 8: Residential Equipment Summary

	Part	Qty	Refer
General Waste	510 Diameter Waste Chute	1	See APPENDIX 3.1 for 610 Waste Chute
	2-bin 1100L MGB Linear Track System	1	See APPENDIX 3.2 for Typical Linear Track System
Recycling	510 Diameter Recycling Chute	1	See APPENDIX 3.1 for 610 Recycling Chute
	2-bin 1100L MGB Linear Track System	1	See APPENDIX 3.2 for Typical Linear Track System

11.7 Waste and Recycling Collection

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

The Council collection vehicle will pull onto the vehicle turntable/loading area via Botany Road and service all bins directly from the residential waste room.

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



12. Waste and Recycling Storage Areas

Access to the residential chute room should be provided to the building caretaker and waste contractors **only**. Under no circumstances should access be provided to any residents.

The residential chute discharge room has been reviewed by EFRS to confirm that the chute offsets are compatible with the linear track systems (see Appendix 1.3) in the current layout.

The central residential waste room must have the capacity to hold all of the waste and recycling bins required for the residential component

Doorways to waste areas fit the size of bins proposed for use in the WMP. Dimensions of standard bins available for use are:

1,100 litres – 1240mm long X 1070mm wide

The areas allocated for waste storage and collection areas are detailed in Table. 5 below. Residential waste and recycling bins are stored separately to non-residential bins.

Table 9: Waste Room Areas

Level	Waste Room Type	MGBs & Equipment	Recommended Area (m ²)
B1	Residential Bulky Waste Transfer Room	NA	12
B2	Residential Chute Discharge Room	Waste: 5 x 1100L MGBs 3-Bin Linear Tracks Recycling: 5 x 1100L MGBs 3-Bin Linear Tracks	35
G	Central Residential Waste Room	Waste: 9 x 1100L MGBs Recycling: 17 x 1100L MGBs	70
G	Residential Bulky Waste Storage Room	NA	12
G	Retail, Commercial & Childcare Waste Room (Shared with the commercial and retail component of the Northern Precinct)	<ul style="list-style-type: none"> 1 x vertical cardboard baler and 2 x pallets to store cardboard bales; 6 x 1100L mixed recycling MGBs; 1 x glass crusher and 8 x 60L MGBs; 15 x 120L food waste MGBs. 	70
G	Retail, Commercial & Childcare Bulky Waste Storage Room (Shared with the commercial and retail component of the Northern Precinct)	NA	15
Other Precinct Waste Areas stored within the Loading Dock			
	Station Waste and Recycling Room & Bulky Waste Area	5 x 240L recycling bins & 4m ² for bulky waste storage	12
	Cope Street Plaza Waste & Recycling Bins	4 x 240L MGBs temporarily stored in the loading dock at the rear of the MRV loading bays	NA

12.1 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.

12.2 Additional Waste Room 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

12.3 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



12.4 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 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 residential 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. Stakeholder Roles and Responsibilities

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

Table 10: 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/Tenants	<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.



14. 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).



15. Report Conditions

The purpose of this report is to document an OWMP as part of an amendment to an approved Concept DA, 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.



16. Conclusion

EFRS have reviewed the architectural plans (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.

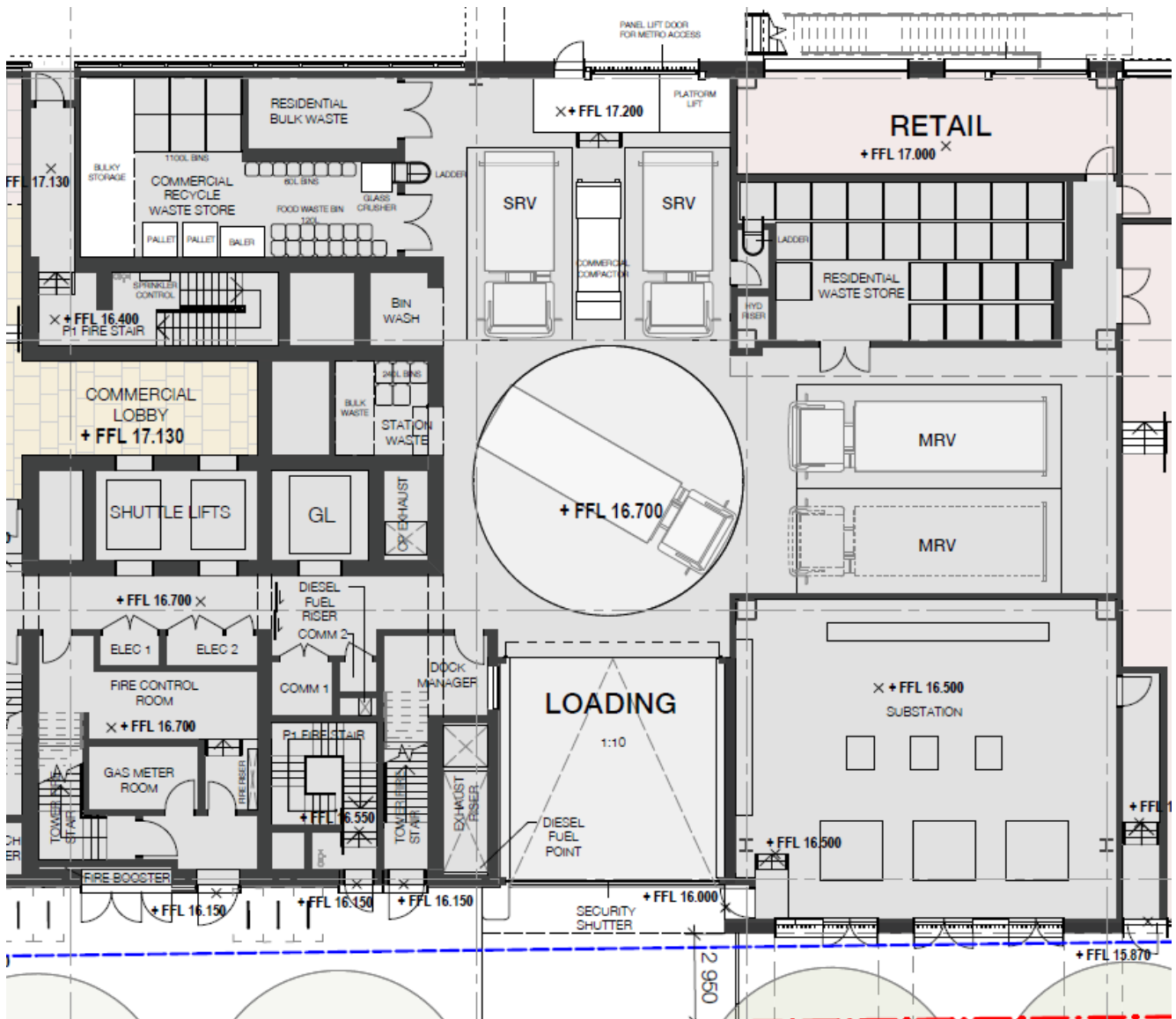
Having undertaken an assessment of the proposed reference scheme which is consistent with the proposed amendments to the Concept SSD (and subject of separate Detailed Development Applications, EFRS confirm that the amendments to the Concept SSD improve the approved Concept DA, whereby waste generation onsite has reduced significantly while recycling has increased with the transition from residential units to offices and retail tenancies.



17. Appendices

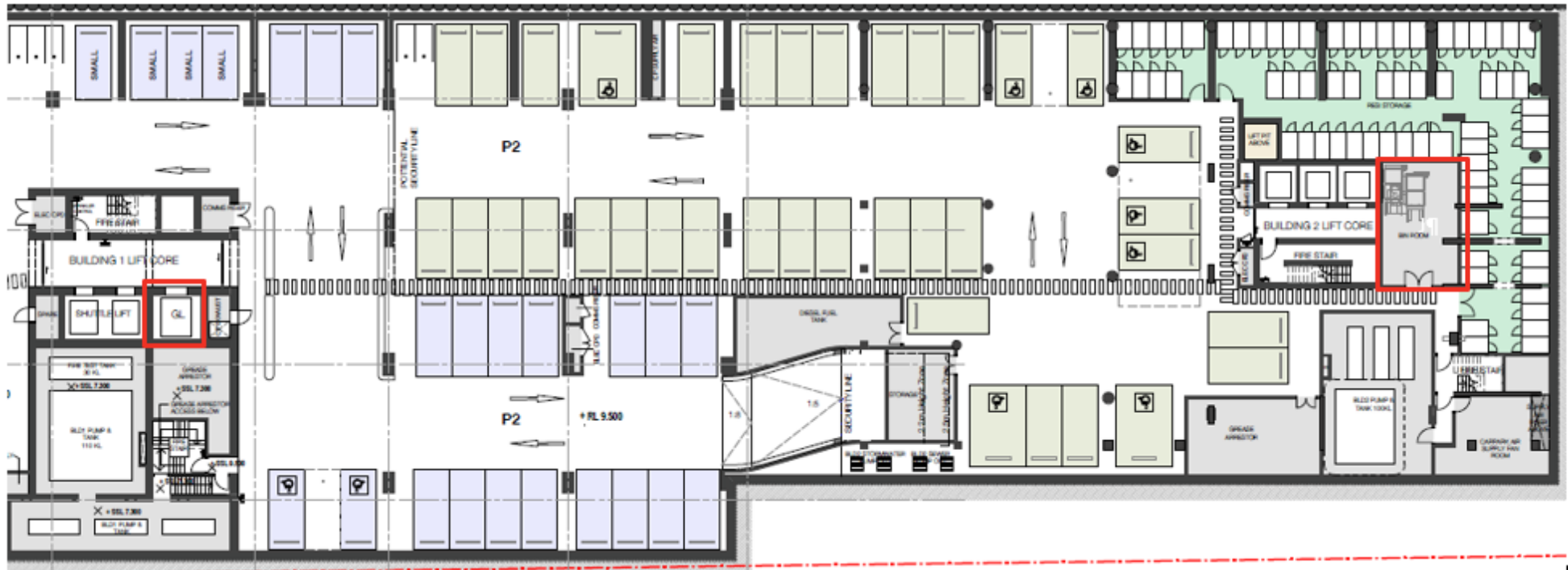
17.1 Appendix 1 – Architectural Drawing Excerpts

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



Source - Woods Bagot, WMQ-BLD1-WBG-AR-DRG-DA100 Revision B dated 31.07.2020 - Building 1 Floor Plan - Ground

17.1.2 Appendix 1.2- Basement 2 Level Displaying Residential Chute Discharge Rooms



Source - Woods Bagot, WMQ-BMNT-WBG-AR-DRG-DA0092 Revision B 30.07.2020 - Level P2 - Basement Carpark

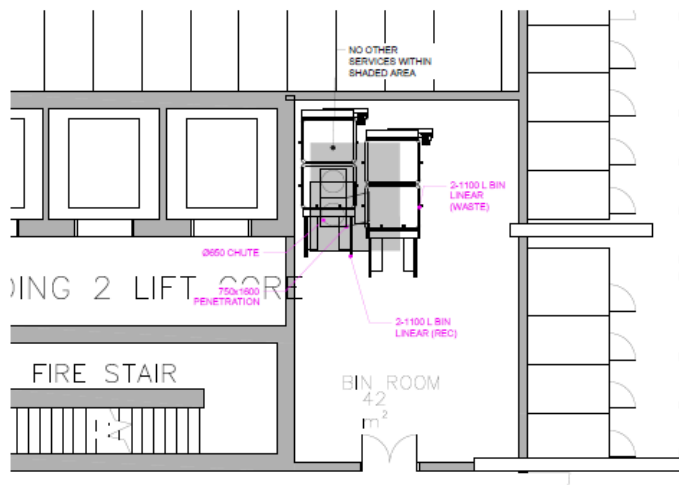
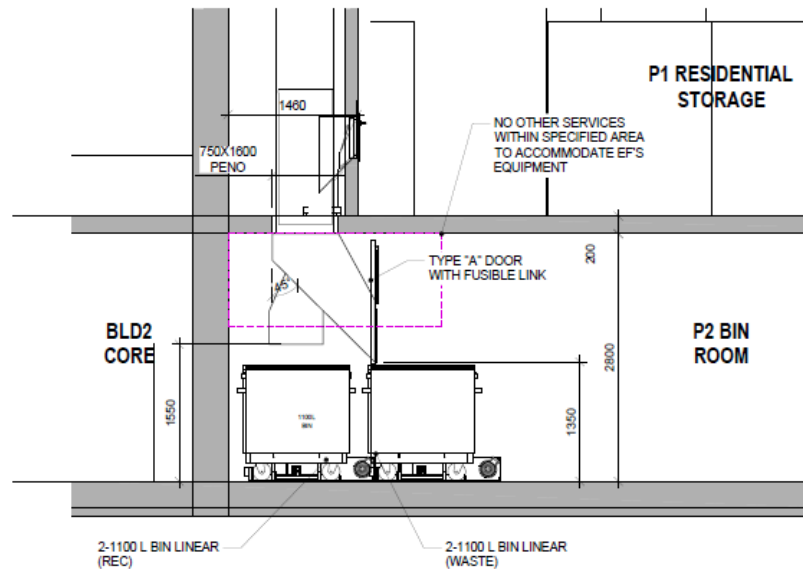
17.1.3 Appendix 1.3 - Basement 1 Displaying Bulky Waste Transfer Room



Source - Woods Bagot, WMQ-BMNT-WBG-AR-DRG-DA0091, Revision B, 30.07.2020 - Level P1 Basement Carpark



17.1.4 Appendix 1.3 - Chute Room and Equipment Design



Source - EFRS, Drawing # NP-02 dated 07.07.2020 - Chute Room Layout

17.1.5 Appendix 1.4 - Typical Residential Level Displaying Waste and Recycling Chute Location



Source: Hassell, WMQ-BLD2-HAS-AR-DRG-DA015, Revision 1 29.07.2020 - Level 5 Plan

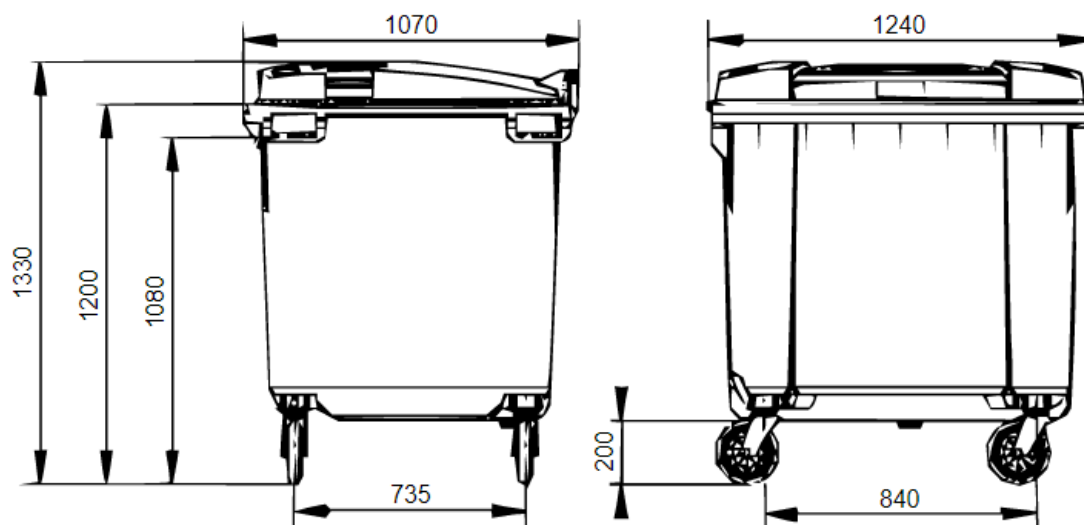


17.2 Appendix 2 – Primary Waste Management Provisions

17.2.1 Appendix 2.1 - Typical BOH Bins for Retail/Childcare



17.2.2 Appendix 2.2 - Typical Bins for Collections



1100L Wheelie Bin Specifications

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

17.2.3 Appendix 2.3 - Signage for Waste and Recycling Bins

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



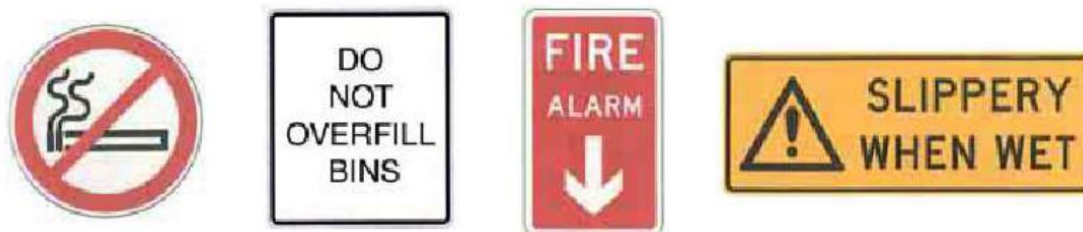
Example bin lid stickers



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.

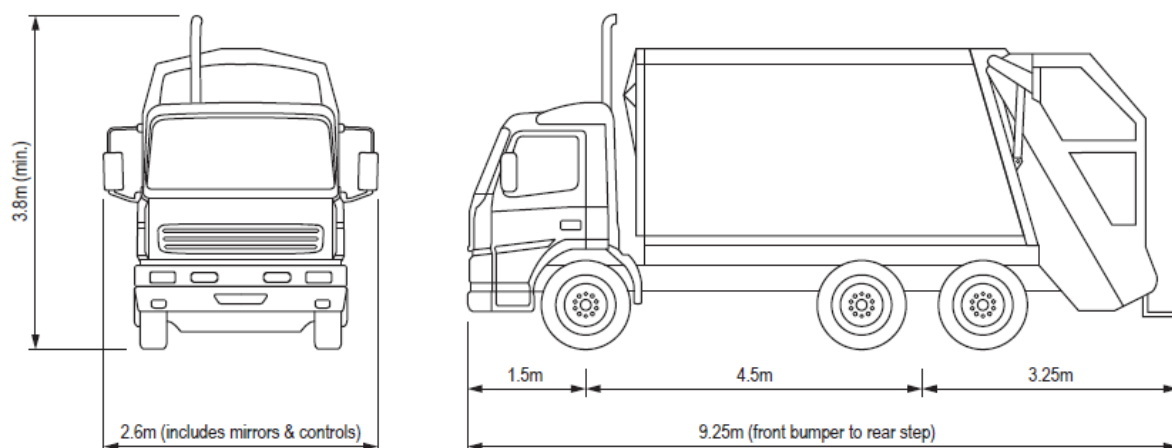
Examples of Australian Standards:



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*

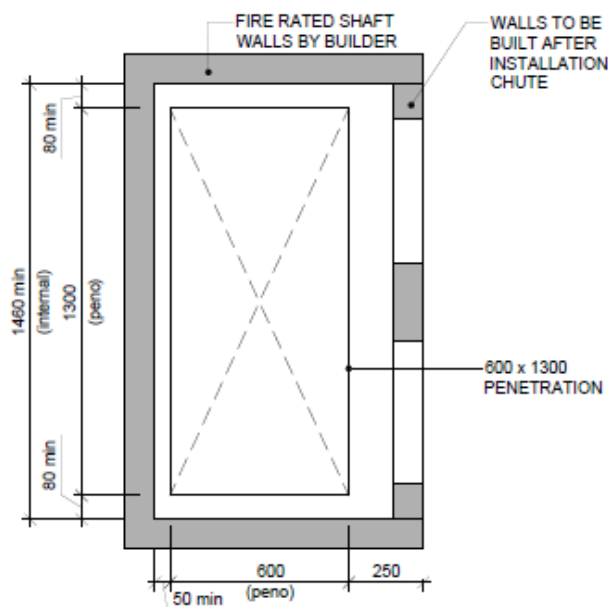
17.2.4 Appendix 2.4 - Typical Collection Vehicle Information



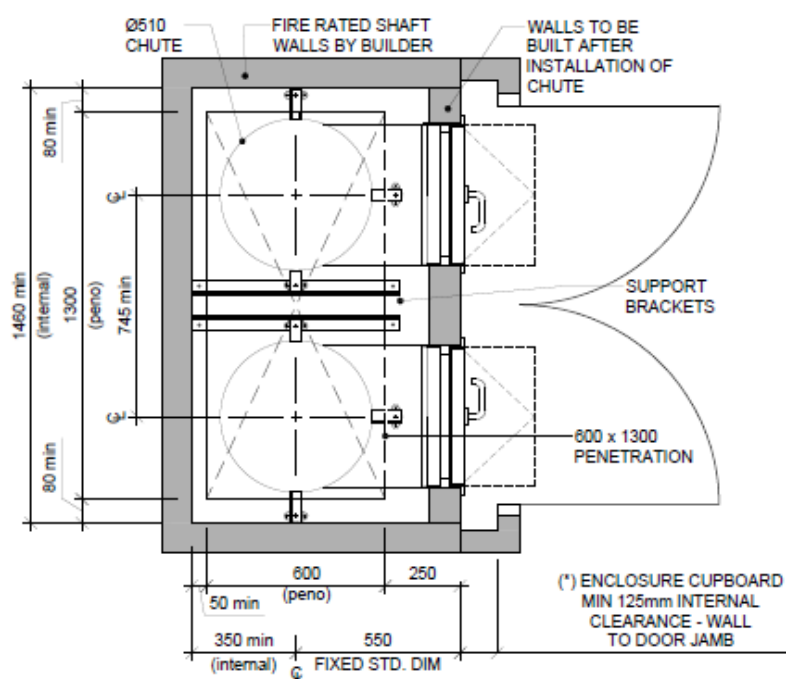
Rear loading vehicle	dimensions
Length overall (m)	9.25
Width overall (m)	2.6
Travel height (m)	3.8
Minimum vertical clearance required (m)	4.0
Maximum weight (t)	26
Turning circle radius – wall to wall (m)	10.5
Lock to lock time (sec)	6
Minimum clearance on both sides of the wheel path (mm)	600
Vehicle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

17.3 Appendix 3 – Waste and Recycling Management Equipment

17.3.1 Appendix 3.1 - Typical Customised Dual Chute Specifications



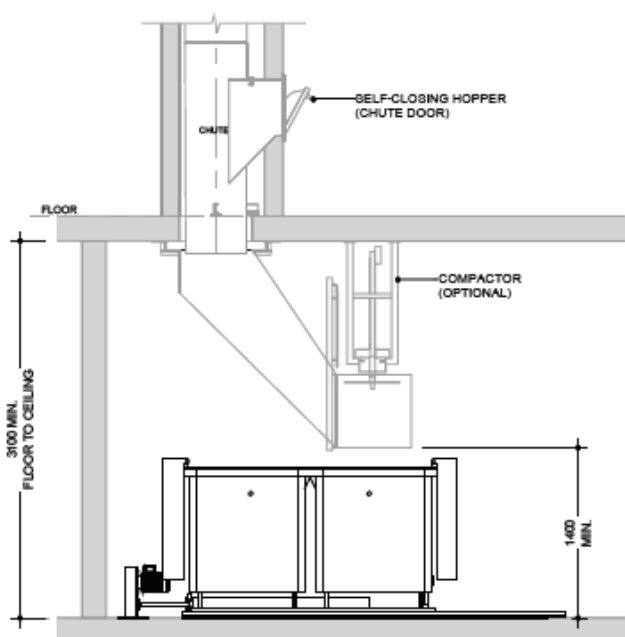
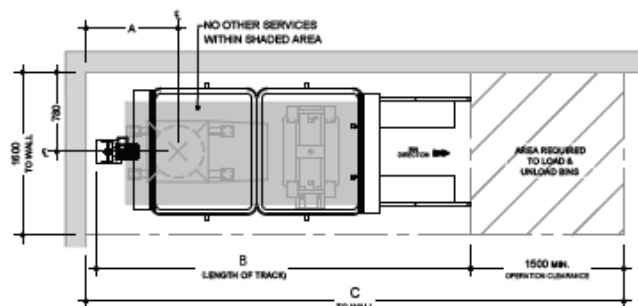
— DUAL (5100) GALVANISED STEEL CHUTE LAYOUT
PENETRATION SET-OUT
SCALE 1:20



Source - Elephants Foot Recycling Solutions

17.3.2 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

17.3.3 Appendix 3.3 - Eco Weighing Compactor - General Waste

Portable Eco Weighing Compactor

The portable ECO compactor is the optimum technology for compacting general waste in a multi-user environment. The ECO @Internet database management system is designed to collect all information from each user who disposes of waste in the ECO compactor.



Each tenant is supplied with their own pre-programmed security swipe card. When a tenant approaches the unit, they are required to follow the on-screen instructions. The tenant will instantly get the weight of their waste displayed on the screen of the ECO compactor. This system will make the tenant more conscious about recycling, and accountable for their waste disposal habits.

Operations are as follows:

1. Swipe the card
2. Place the waste in the hopper when the door automatically opens. (The door cannot be opened unless the card swiped is programmed to be accepted by the ECO compactor)
3. The tenant places the waste inside and pressed the start button. Should the tenant fail to press the start button, after 60 seconds the door will close and the compactor will compact and register the waste to the last swipe card user.
4. Waste is weighed and displayed on the screen for the tenant. The information is sent via GPS to the ECO @Internet database management system.

The ECO @Internet system can be accessed by anyone who holds the password.

Available in 10m³, 12m³, 14m³ models.

Specifications
Length of compactor (14m ³) – 5800mm
Width and height – 2050mm x 2350mm
Height of feed opening – 1270mm from ground level
Filling opening volume – 600L
Stroke – 1287mm
Motor – 5.5kw
Weight – 4450kg
Compacting pressure – 25 tonnes
The compaction ratio is 5:1 (compaction blade system)
Scale is EU Calibrated – 0.1g precisely/ from 1 – 100kg/ class III
Schematics included (Appendix B)
Front and rear wheels
415 volts, 3 phase, 5 pin, D type circuit breaker, 16Amp

Source - Elephants Foot Recycling Solutions

17.3.4 Appendix 3.4 - Typical Portable Blade Compactor - General Waste

Portable Blade Compactor MP1.4

PORTABLE BLADE COMPACTOR

The Portable Blade Compactor is the optimum technology for general waste. Our portable range of compactors features SMS & email communication system, powder coating, rubber seals throughout and hopper lids. Equipped standard with front/rear wheels and front/rear collection hooks, the portable blade is an extreme versatile compactor ideal for general waste and cardboard. Featuring a cross cylinder and telescopic ram, the portable blade compactor will compact the approximately 1.4m³ per stroke.



Available in sizes ranging from 14m³ – 24m³.

Specifications
Length of compactor (including rear hook) – 6690mm (22m ³)
Width and height without the hopper – 2460mm x 2704mm
Height of opening – 1400mm
Volume per stroke – 1.4m ³
Hopper opening W x L – 1860mm x 1050mm
Motor – 5.5kw
Pressing cycle – 40sec
Schematics included
415 volts, 3 phase, 5 pin, D type circuit breaker, 16Amp

Source - Elephants Foot Recycling Solutions

17.3.5 Appendix 3.5 - Typical 240L Bin Lifter

120-240 Litre Eco Weighing Bin Lifter

The ECO bin lifter records user information just like our ECO compactors.

The ECO bin lifter weighs the bin and sends all the user/transaction details to the online database. The owner can then review all transaction details including who used it, time, weights and generate basic excel reports.

This model is designed to suit 120 & 240 litre wheelie bins.

All ECO information can be accessed via any personal computer, smart phone or tablet. Android and Apple devices can download the Elephants Foot app for instant access.

The process is simple.

1. Insert an authorised eco card into the bin lifter control panel
2. Place bin inside the bin lifter
3. Once outside the safety cage and the doors are closed, press start.
4. The bin will then be weighed and tipped
5. Once the bin is lowered, the doors will unlock and the card will be returned to the operator.
6. All data is uploaded to our online database.



Features	120-240 ECO weighing bin lifter
Lifting capacity	up to 140kg
Bin compatibility	120 & 240 litre bins
Operation method	Automatic
Hydraulic	yes
Dimensions	1300mm (W) x 2200mm (L)
Safety	Safety cage & control box
Emergency stop	yes
Tipping height	1450mm
Clearance	3500mm
Suitability in tipping into	bins , dumpsters and compactors
Power	3 phase, 20 Amp, 5 pin, D type circuit breaker
Can it be customised?	yes
Weighing & data capture	yes

Source - Elephants Foot Recycling Solutions

17.3.6 Appendix 3.6 - Typical Vertical Baler



K300

This baler offers maximum volume reduction for minimum cost and floor space. It produces an excellent bale of cardboard up to 250kg. It can bale a range of materials including loose paper, cardboard and plastic film. A great all round vertical baler for medium to large volume operators

Product information

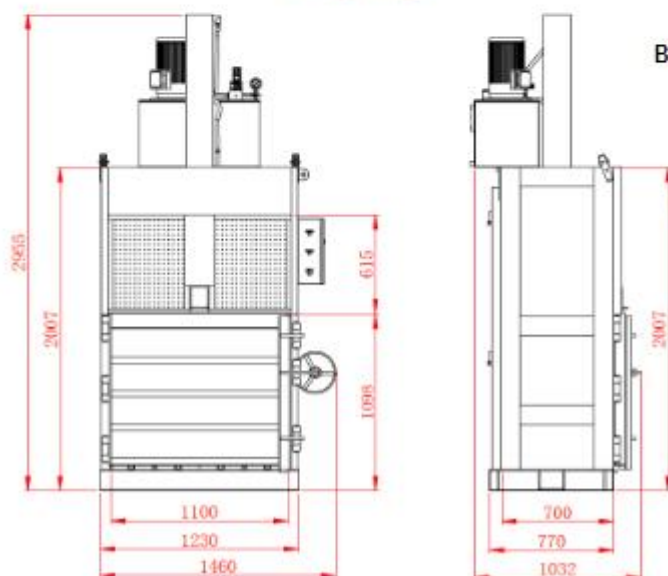
- HxWxD (mm): 2900x1500x1050
- Feed opening LxH (mm): 1100x500
- Weight (kg): 1900
- Cycle Time (sec): 30
- Compaction force(T): 30
- Power Supply (V): 415volt , 3 phase
- Motor (kW): 5.5kw
- Chamber Height (mm): 1400

Bale Dimensions:

- HxWxD (mm): 900x700x1100
- Bale Weight (kg): Up to 250 (cardboard)

Benefits:

- Heavy duty baler – easy to transport and install
- Produces up to 250kg bale of cardboard
- Automatic cycle saves labour time
- Safety control box
- User friendly push button controls
- Robustly constructed for long life
- Automatic chain bale ejector for safe and easy ejecting of bales



Source - Elephants Foot Recycling Solutions

17.3.7 Appendix 3.7 - Typical Glass Crusher



Features

- Reduces frequency of daily/weekly Glass collections
- A reduction ratio of 20:1
- Suitable for 140L and 220L wheelie bins
- Ideal for hotels, restaurants, pubs, nightclubs and recycling centres
- Small Footprint
- Safe and Easy to operate
- Ease of loading, saving you time
- Safety features – CE Certification
- Low maintenance
- Ergonomically design
- Simple to operate
- Quick cycle times – saving you time
- Saving you \$\$\$\$\$



Technical Specifications

Height	2.168m
Width	0.832m
Depth	0.928m
Weight	195kg
Power Supply	220-240V (single phase)
Motor	2.2kW 13amp
Feed Height	1.770m
Noise Level	72 decibels



Source - Waste Initiatives