ELEPHANTS FOOT Consulting

37 Archer Street, Chatswood NSW 2067

Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

6/11/2025
Report No. 5483
Revision E

Client

HPG General Pty Lyd
Heritage House, Suite 1, 256 Victoria Avenue, Chatswood

Architect

Fuse Architects
Studio 64
61 Marlborough Street

ELEPHANTS FOOT GROUP

Consulting
an Elephants Foot Company

ABN: 47 644 736 514
ELEPHANTS FOOT CONSULTING. PTY LTD
1300 456 374 | consulting@elephantsfoot.com.au
www.elephantsfoot.com.au

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B	02/05/2025	M. Cuevas	J. Parker	Amendment
C	06/05/2025	M. Cuevas	J. Parker	Updated Plans
D	08/05/2025	M. Cuevas	J. Parker	Final
E	06/11/2025	T. McPherson	J. Parker	Amendment

TABLE OF CONTENTS

LIST OF TABLES

GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Bin-Carting Route	Travel path for transporting bins from their allocated storage location to the nominated collection point
Bin Hoist	A device used for lifting or lowering bins between different levels
Bin Lifter	A device used to mechanically lift bins for the purpose of emptying them into larger bins and/or compactors.
Bin Mover	Either a handheld device (commonly referred to as a bin tug) or a ride-on device (typically a tractor or Class C vehicle with an attached bin trailer) used to facilitate the movement of bins across long distances or up ramps
Bulk Bins	Containers with a capacity greater than 1100L designed to be collected by a front-loading vehicle
Bulky Waste	Recycling items that are too large to be deposited into bins, including furniture, whitegoods, electronics and mattresses
Chute	A vertical pipe passing from floor to floor of a building with openings at each level for the disposal of general waste, recycling or FOGO.
Chute Discharge	The termination point of a chute whereby the chute offsets deposited general waste, recycling or FOGO into bins
Chute Discharge Room	A room enclosing the termination point of the chute/s, including bins and volume handling equipment that is accessible only to the building caretaker
Collection Area/Point	Designated area or point where bins are loaded onto the collection vehicle for servicing
Compactor	A device used for compressing general waste inside it's bin typically at a ratio of 2:1
Comingled Recycling	Waste stream for the recycling of plastic bottles, other plastics, paper, glass and metal containers
Communal Bin Room	A central, shared bin room accessible to all residents or staff to dispose of their waste stream
DA	Development Application
DCP	Development Control Plan
eDiverter	A single chute fitted with a diversion system to allow two separate waste streams (typically general waste and recycling) to be disposed of concurrently.
EPA	Environment Protect Authority
FOGO	Food Organics and Garden Organics
General Waste	All non-recyclable and non-hazardous waste that is sent to landfill
HRV	Heavy Rigid Vehicle

Kerbside Collection	A collection arrangement whereby bins are presented in a single row along the kerb and serviced by a collection vehicle on the street.
L	Litre
LEP	Local Environmental Plan
Mixed Use Development	A development comprising a combination of both residential and commercial units or two or more different land uses within the one development.
Mobile Bins	Containers with a capacity up to and including 1100L designed to be collected by a rear-loading vehicle
Multi-unit Residential Development	Also known as MUD's, residential flat buildings, or apartment blocks, this is a residential development with multiple units that typically share facilities and services such as bins and collections.
MRV	Medium Rigid Vehicle
Onsite Collection	A collection arrangement whereby all bins are serviced by a collection vehicle within the property boundary, either in the building's basement or at grade and off-street.
Owners Corporation	An organisation or group of persons that is identified by a particular name and that acts, or may act, as an entity
Paper/ Cardboard Recycling	Waste stream for the recycling of paper and cardboard only.
Recycling	Waste stream that combines all recycling, including comingled recycling, paper/cardboard and metals.
Ro-Ro Compactor Unit	A large, portable compactor unit which is collected and serviced by a hook lift vehicle
Service Bins	Supplementary bins which are provided to residents or staff for use during collection periods either in communal bin rooms or under chutes
Source Separation Receptacles	Communal containers used throughout the development for the day-to-day disposal of different waste streams
SRV	Small Rigid Vehicle
Volume Handling Equipment	Equipment which comes in the form of either carousel or linear tracks positioned at the base of the chute/s to mechanically replace full bins with empty bins
Waste Stream	A classification used to describe waste of a particular type (eg. food waste stream)
WHS	Workplace Health and Safety
Wheel-Out Wheel Back	A collection arrangement whereby a collection vehicle parks on the street and collection staff exit the vehicle to wheel each bin from a designated storage area to the vehicle for servicing and returns them upon completion.

1.0 EXECUTIVE SUMMARY

This report comprises an addendum to the OWMP report prepared by Elephants Foot Consulting to support a State Significant Development Application (SSDA) for a mixed-use building at 37 Archer Street, Chatswood. It provides additional information to describe amendments to the proposed design which have been implemented in response to feedback received from the State Design Review Panel (SDRP), the Department of Planning, Housing and Infrastructure (DPHI) and Willoughby City Council (WCC). Public exhibition of the application occurred between 20 June 2025 and 21 July 2025.

The report includes a description and explanation of the design changes adopted and provides a response to the matters identified by DPHI, the SDRP, WCC and the public submissions received during the exhibition period. The report comprises part of a suite of technical documents prepared by the project team in support of the application and should be read in conjunction with these documents.

The key design changes that have been introduced are summarised as follows:

- **Improvement of the height and scale transition to the adjoining conservation area**:
  - Two storey reduction in podium height fronting Bertram Street.
  - Setback of the street wall has been increased from 8m to 9m.
- **Redistribution of floorspace**: Floorspace within the building element fronting Bertram Street has been transferred to the Archer Street tower resulting in an overall increase in the height of the tower to 30 storeys (additional two storeys).
- **Increased and improved landscaping** through substitution of bleachers and other hard elements by soft green landscaping.

The project description has been updated as follows:

Project Element	Summary

Project Summary	The project includes demolition of all existing buildings and structures and the removal of all trees on the site, and construction of a mixed-use building to 30 storeys comprising residential and commercial uses.
	Specifically, the SSDA seeks development consent for:
	• Demolition of existing buildings and structures and removal of trees including two street trees on Bertram Street.
	• Excavation of the site to a depth of **RL71.85m** and construction of a **6-level basement**.
	• Construction of a mixed-use building up to **30-storeys** in height (**RL190.55m**) comprising the following uses:
	  ○ Residential apartments: A total of **122 apartments**, including **25 affordable housing units (2,145.98sqm)**, and residential amenities.
	  ○ Office tenancies: occupying levels 1 and 2.
	  ○ Retail tenancies: a double storey retail unit fronting Bertram Street.
	  ○ Food and beverage tenancies: ground level.
	▪ Provision of car and bicycle parking spaces at basement level.
	▪ Provision of residential amenities and services, including a swimming pool and gym.
	▪ Provision of a publicly accessible landscaped through site link.
	▪ Associated works for the provision of infrastructure and servicing.

Site/Project Area	The site has a total area of **2,201m^2**. The entirety of the site will be physically disturbed by the project.

Project Element	Summary
Proposed uses	▪ Shop top housing ▪ Retail premises, including food and drink premises and a two-storey retail unit ▪ Office premises
Gross Floor Area (GFA)	Total **14,228m²** which includes: ▪ Residential GFA: **12,435.65m²** including affordable housing GFA of **2,145.98m²** ▪ Non-residential GFA: **1,870.85m²** – Commercial GFA: **1,321m²** – Retail tenancy with a total GFA of: **170m²** – Three food and beverage tenancies, with a total GFA: **384m²**
Floor Space Ratio (FSR)	**6.46:1**
Maximum height	**99.74m** above existing ground level (**RL 190.55m**) **30 storeys**
Apartments and Mix	The proposal will deliver **122 dwellings** in the following mix: ▪ **1-bedroom: 21 (17%)** ▪ **2-bedroom: 61 (50%)** ▪ **3-bedroom: 30 (25%)** ▪ **4-bedroom: 10 (8%)** Adaptable apartments: 61 (50%) **97** of these apartments will be market housing and **25** apartments will be affordable housing (15% of overall GFA). Additionally, a monetary contribution will be provided in lieu of floorspace within the project to meet the requirement for affordable housing under clause 6.8 of the WLEP.
Parking	**154** car parking spaces: ▪ **115** residential including **15** accessible spaces ▪ **18** visitor spaces. **1** of these spaces is accessible. ▪ **6** spaces allocated to the affordable housing units including **1** accessible space. ▪ **4** commercial spaces. **2** of these spaces are accessible. ▪ **3** retail spaces. ▪ **8** food and beverage spaces. ▪ **11** motorcycle parking spaces.
Bicycle Parking	**28** secure spaces with the development's basement with **11** additional rack spaces provided at ground floor level (through site link)

This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following mitigation measures:

Table 1 Mitigation Measures

Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure	Action/responsible
Recycling and Reuse	Construction and Operation	Provide recycling bins to recover valuable materials from waste.	**Action** Workers and residents will dispose of their recycling into the bins provided. This could include recycling glass, plastics, and paper.
Food Organics and Garden Organics	Operation	Provide FOGO bins to help divert organic waste from landfills.	**Action** Residents will dispose of their FOGO into the bins provided. This could include food scraps, garden clippings, and other biodegradable materials.
Education	Construction and Operation	Educational material encouraging correct separation of general waste, recycling and FOGO must be provided to each worker, resident and tenant.	Building management provide information in multiple languages to support correct behaviours, and to minimise the possibility of chute blockages and contamination in communal bins. Building management will ensure everyone is aware of the importance of waste minimization and how to dispose of waste correctly.
Policy and Regulation Compliance	Construction and Operation	Regularly review and update waste management plans to comply with environmental regulations.	Regularly review the policies to ensure they remain in line with evolving environmental regulations and best practices

2.0 SEARS REQUIREMENTS – WASTE MANAGEMENT

The table below displays the SEARs requirements for waste, and the relevant section it is addressed by.

Table 2– SEARs Requirements

Item	Description of Requirement	Section Reference
17	- Identify, quantify and classify the likely waste streams to be generated during construction and operation. - Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. - Identify appropriate servicing arrangements for the site. - If buildings are proposed to be demolished or altered, provide a hazardous materials survey.	Sections 5.1, 5.2, 5.3, 5.4, 5.5, 6.6, 6.1, 6.2, 6.3, and 6.4 identify the waste streams and provide the waste estimations, disposal procedures, and waste collections for the residential and retail components in the development's operation stage. The report also describes the measures to be implemented, such as source separation, education, signage, and construction of waste room requirements detailed in sections in sections 8 to 15.1.

3.0 RESPONSE TO RFI

The table below provides a record for EFC responses to each comment by the DPHI and Council.

Table 3– EFC Response to RFI.

Item No.	Council Comment / Requirement	EFC Response
In Willoughby DCP (2023), Council has formally adopted the Waste Management Technical Guide and Development Controls by North Sydney Regional Organisation of Councils (NSROC) for multi-dwelling housing, residential flat buildings and mixed-use developments. • The NSROC technical guide (NSROC 2018) provides comprehensive information to achieve best practice design and construction of waste management and recycling systems. • The NSROC development controls (NSROC 2018a) provide specific requirements for internal waste storage facilities, individual bin storage areas, communal bin storage areas, bin carting routes, and access for collection vehicles. • All major residential developments must comply with the technical guide and the specific controls for multi dwelling housing, residential flat buildings, and mixed-use buildings. The development proposed corresponds to the high-rise definition in NSROC 2018 (NSROC, 2018, Section 1.2) and it is a mixed-use development. The proposal should conform to NSROC (2018) particularly including: • Section 3 - Requirements that apply to all developments; and • Section 5.3 - Residential flat buildings: high-rise; and • Section 6 – Mixed-use development. This SSDA does not satisfy the minimum requirements for waste management in the WDCP 2023 (Section 4.3.8) and Northern Sydney Regional Organisation of Councils (NSROC) 2018 Waste Management Technical Guide and Development Controls. Waste-related comments for the proposed development are outlined below.		
1	**Incorrect waste collection frequency** Council collects general waste onsite in bulk bins twice weekly. Once per week is proposed (OWMP, 2025, Section 5.2 Residential bin summary).	The Operational Waste Management Plan (OWMP) has been amended to reflect collections occurring twice weekly for general waste. Refer to section 5.2.
2	**Inconsistent number of households** The OWMP (2025, Rev D) calculates waste generation with 124 residential units, whereas the Architectural Plans (SSDA 002, Rev A, "Development Summary") includes 125 residential units.	The Operational Waste Management Plan (OWMP) has been amended to reflect the total updated unit mix. The latest unit mix has now been confirmed as 122 residential units, with general waste collected twice weekly as above. Refer to Section 5.2.

3	**<u>Residential waste and recycling bins sizes</u>** The bin sizes for residential waste and recycling should match, either 660L or 1,100L. Currently waste is proposed as 660L and recycling is proposed as 1,100L.	Compaction in 660L bins for general waste has been recommended due to the high risks associated with 'bin splitting' and 'wheel breakages' associated with the larger 1100L bins. The OWMP has been amended to reflect 1100L bins for general waste with no compaction, matching the recycling stream. Refer to section 5.2 and 14.
4	**<u>Charity waste / other recycling area</u>** The OWMP (2025, Rev D) does not include charity and other recycling space (6m2), which is required in the Willoughby DCP (NSROC, 2018, Section 3.12.1).	The Council requirements refer to the NSROC Document, which specifies a requirement to accommodate a $6m^2$ for charity and problem wastes space. This has been included within the bulky waste room, where $6m^2$ is shaded as a 'hatched' line. Refer to section 14 and APPENDIX A.1.
5	**<u>Temporary storage areas for collection (collection holding rooms)</u>** The NSROC waste management guide (2018) requires temporary storage areas for collection through various sections, particularly Section 3.15 Temporary Bin Storage Areas, including Table 12. Key requirements are: a) Distance from loading area, temporary holding rooms to be located within 2m of bin storage location (e.g., Section 2.1 – Table 1, Onsite Collection and Section 3.13.4 - Table 10, On-Site Collection Area). b) Door widths: *"Doorway a minimum 2.5m"*. c) "A maximum grade of 7% (or a maximum grade of 3% where larger bins 660L and/or 1100L are used (NSROC, Table 13)". The collection point provided (Fuse Architects, Ground Floor Plan, Rev A, 20.03.2025) only appears to provides a single collection area for bins. The development should provide designated collection areas for each of: • Residential bins. • Residential bulky waste. • Non-residential bins. The use of collection rooms is preferred, with boundaries implied given they need a door. This may be particularly important on the Ground Floor for odour management and general hygiene. The collection loading area may need to be washed so there should be water provision (hot and cold) and a sewer connection as in the requirements for bin storage rooms. The collection holding rooms should be located within 2m of the collection point (NSROC,	The Council is recommending the bins to be located within 2 meters of the Councils collection vehicle. The Councils vehicle is a 10.5 meter-long HRV, with the requirement to accommodate a parking space for a 12. 5 meter-long HRV. The temporary collection area has been calculated to store the maximum number of bins on a collection day with accordance to the Councils collection schedule: • General waste is collected on Monday and Thursdays • Recycling is collected on Wednesdays • FOGO is still within its planning phase. According to the NSROC document (Section 3.15) it states that temporary storage areas are permitted, which will be maintained to eliminate the requirement of multiple collection rooms and a redesign on the ground floor. Non-residential waste provisions have been estimated separately, refer to section 14.

	Section 2.1 Development application submission requirements) for onsite collection. NSROC (2018, Section 5.2 Highrise RFB) states, *"bin storage area shall be no more than 2metres for waste collection vehicle parking for on-site collection or temporary storage area is required."* Non-residential waste should be stored separately to residential waste (NSROC, Section 3 Waste management considerations for all developments, Section 3.1.2 Commercial Services).	

6	**<u>Bin storage area sizes</u>** The OWMP (2025, Rev D, Table 10: Waste Room Areas) appears to provide internal sufficient space for bins and bulky waste (excluding charity waste / other recycling). However, it does not clearly demonstrate consideration of sufficient storage space for: - The additional space needed in bin rooms for any equipment that may be required (chutes, compactors, bin lifters, bin tugs etc) above the amount of space required for bins. - Locations for temporary holding of bins for collection within 2m of the loading area. - Residential bulky waste room: 27m2, whereas, required: 28m2. A bin lifter would be required to decant bin contents from the residential on-floor chute room cupboard bins (usually 240L) into the bulk recycling bins for collection. However, currently on-floor bins are not provided. - It is typical that residential on-floor chute room cupboard bins are 240L bins, but this is not clear in the OWMP (Rev D). - The OWMP (2025, Rev D, Section 5.4.1-Residential General Waste and Recycling Disposal Procedures) states *"The general waste will discharge from the chute into 660L bins on linear tracks and the recycling will discharge into 1,100L MGBs on linear tracks in the Chute Discharge Rooms located on the basement."*	Refer to APPENDIX A.1 to A.3 for the annotated architectural plans, and section 14 for the updated waste room area calculations. A bin lifter will not be proposed as it is not necessary for this development: a 240L recycling bin adjacent to the chute system on each residential level is not proposed in this report due to the redesign implications of surrounding services.
7	**<u>Chute rooms and bin cupboards on each residential level</u>** The architectural plans show dual chutes for waste and recycling. • However, the waste chute hoppers should be located in a waste cupboard, which also has space for additional bin(s). This is required in the WDCP 2023 NSROC (2018, p 46) and a recycling bin (in addition to any recycling chute proposed) serves to assist in the case of a bin for cardboard recycling that cannot be placed down the chute (which is a large portion of Council's recycling), back-up for the recycling chute and to future proof the development in the case of food organics collection. The OWMP (Rev D, Section 5.4.1) notes that cardboard or large containers cannot be placed down the chute: *"Cardboard boxes or large containers should not be disposed of in the recycling chute. These items should be disposed of directly into the collection*	The provision of a 240L recycling bin adjacent to the chute system will not be proposed in this report due to the redesign measures that impact surrounding services. Bulky and irregular-shaped cardboards will be disposed of directly within the bulky waste storage room, or with coordination with the building caretaker.

	bins in coordination with the building manager". Bins need to be provided on each residential level. • NSROC (2018, p48) also notes regarding the chute entry that *"Waste disposal points must be located on the corridor of each floor directly adjacent to the recycling cupboard and no more than 30m travelling distance from each dwelling"*.	
8	**<u>Internal residential waste</u>** The proposal is not clear that there is a provision for space allocated inside each residential unit for source-separation with capacity for two days waste generation (NSROC 2018, Section 3.8).	There is sufficient space allocated inside the kitchen of each residential unit for source-separation with capacity for two days waste generation to meet the requirements of NSROC 2018, Section 3.8. Further details will be provided at detailed design stage
9	**<u>Waste storage conditions and amenities</u>** The proposal mentions *"All passageways facilitating the movement of bulky waste items should be at least 1,500mm wide and doorways at a minimum of 2.5m wide"* (OWMP, Rev D, Section 14.0 Waste rooms), which clearly shows that all of the required conditions and amenities for communal bin storage areas (e.g. NSROC 2018, Section 3.10.3, Table 8) have been met, including location, drainage, taps and aisle width, access, door widths of a minimum of 2.5m (2,500mm) wide. These should be shown on the architectural plans.	It is recommended that these dimensions are displayed in the architectural plans to close off this comment (i.e., door widths, dimensions of walls in bin rooms, areas provided etc). Drainage and taps can be provided and labelled in the plans (with confirmation of the relevant services engineer). Refer to APPENDIX A.1 to A.3 for the updated plans with dimensions added.
10	**<u>Construction and demolition waste plan</u>** It is noted that the EIS (ref, Section x) contains some information on construction and demolition waste volumes, it also notes (Urbis, 2025, Section 6.2.6. Waste Management) that "*an Operational Waste Management Plan (OWMP) and Construction Waste Management Plan (CWMP) has been prepared by Elephant's Foot for the proposal at Appendix DD."* However, the Appendix DD is only an OWMP and there was no CWMP. A construction and demolition waste plan needs to be provided (NSROC 2018, Table 1, Construction and Demolition Waste Management Plans) that addresses at least the following items: Estimated weights of waste to be generated during demolition and construction as well as the volume supplied (including any excavation material); An estimate of the percentage of waste that will be reused or recycled as well as disposed, targeting an 85% recovery rate (demolition may realistically will have a general waste fraction but none is supplied).	A Construction & Demolition report has been provided by EFC as a separate document.

	Clear evidence of the method(s) used to calculate expected waste generation (such as an excavation plan); Nominated landfill facilities (if any), as well as recycling facilities (provided), by waste type; and Plans showing the location of onsite waste facilities during the demolition and construction phases, including vehicle access.	

4.0 SCOPE OF REPORT

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by the mixed use development located at 37 Archer Street, Chatswood.

Waste management strategies and audits are required for new developments in order to support the design and sustainable performance of the building. It is EFC's belief that a successful waste management strategy contains three key objectives:

i. ***Promote responsible source separation*** to reduce the amount of waste that goes to landfill by implementing convenient and efficient waste management systems.

ii. ***Ensure adequate waste provisions and robust procedures*** that will cater for potential changes during the operational phase of the development.

iii. ***Comply*** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this operational waste management plan (OWMP) identifies the different waste streams likely to be generated during the operational phase of the development, as well as how the waste will be handled and disposed, details of bin sizes/quantities and waste rooms, descriptions of the proposed waste management equipment used, and information on waste collection points and frequencies.

It is essential that this OWMP is integrated into the overall management of the building and is clearly communicated to all relevant stakeholders.
This operational waste management plan (OWMP) only applies to the **operational** phase of the proposed development; therefore, the requirements outlined in this OWMP must be implemented during the operational phase of the site and may be subject to review upon further expansion of, and/or changes to the development.

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report.

4.1 REPORT CONDITIONS

The purpose of this report is to document an OWMP as part of a SSDA, which is supplied by EFC 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 EFC,
- 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 EFC will not be liable for plans or results that are not suitable for purpose due to incorrect or unsuitable information or otherwise,
- EFC 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,
- EFC cannot be held accountable for late changes to the design after the OWMP has been submitted to Council,
- EFC 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,
- EFC 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.

4.2 LEGISLATION AND GUIDANCE

Waste management and resource recovery regulation in Australia is administered by the Australian Constitution, Commonwealth laws, and international agreements. State and territory governments maintain primary responsibility for controlling development and regulating waste. The following legislation has been enacted in New South Wales, and provides the lawful underpinnings of this OWMP.

- NSW Environmental Planning & Assessment Act 1979
- NSW Protection of the Environment Operations Act 1997
- NSW Waste Avoidance & Resource Recovery Act 2001

At the local level, councils or Local Government Areas (LGAs) require OWMPs to be included in new development applications. This OWMP is specifically required by:

- Willoughby Development Control Plan 2023
- Willoughby Local Environmental Plan 2012

The primary purpose of a Development Control Plan (DCP) is to guide the planning process according to the aims of the corresponding local environmental plan (LEP). The DCP must be read in conjunction with the provisions of the relevant LEP.

Information provided in this OWMP comes from a wide range of waste management guidance at the local, state, and federal levels. The primary sources of guidance include:

- NSW Better Practice Guide For Resource Recovery In Residential Developments 2019
- NSW Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012
- NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021
- NSW Waste Classification Guidelines 2014
- Australia's National Waste Policy 2018

5.0 RESIDENTIAL WASTE MANAGEMENT

The following section outlines best practice waste management for the residential component of the development, including waste stream generation estimates and disposal and collection procedures.

5.1 RESIDENTIAL WASTE GENERATION ESTIMATES

The *Willoughby Development Control Plan 2023 including NSROC (2018) which has been adopted by Council and the NSW EPA's Better Practice Guide for Resource Recovery in* Residential Development (2019), have been referenced to calculate the total number of bins required for the *residential units. The NSW EPA's Better Practice Guide has been referenced to calculate the FOGO waste bins required. Calculations are based on generic figures, and waste generation rates may differ according to the residents' actual waste management practice.*

The following table shows the estimated volume (L) of general waste, recyclables and FOGO generated by the development.

Table 4: Estimated Waste and Recycling Volumes – Residential

# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)	FOGO Waste Generation Rate (L/unit/week)	Generated FOGO Waste (L/week)
122	140	17080	120	14640	50	6100
Bins & Collections	General Waste Bin Size (L)	1100	Recycling Bin Size (L)	1100	FOGO Waste Bin Size (L)	240
	General Waste Bins per Day	2.2	Recycling Bins per Day	1.9	FOGO Waste Bins per Day	3.6
	General Waste Collections per Week	2	Recycling Collections per Week	1	FOGO Waste Collections per Week	1
	Total General Waste Bins Required	**8**	**Total Recycling Bins Required**	**14**	**Total FOGO Waste Bins Required**	**26**

Note:

- *An additional bin should be provided for each chute discharge for use during collection periods. These bins are not included in the above figures.*
- *It is strongly recommended bins/equipment at the base of each chute allow for 2-days' worth of waste or recycling generation.*

5.2 RESIDENTIAL BIN SUMMARY

Based on the estimated volumes of general waste, recycling and FOGO generated by the residential component of this development, the recommended bin quantities and collection frequencies are as follows:

General Waste: 8 x 1100L bins collected **2 x weekly.**

Recycling: 14 x 1100L bins collected **1 x weekly.**

FOGO: 26 x 240L bins collected **1 x weekly.**

During operation, it is the responsibility of the building manager to monitor the number of bins required for the residential component of the development. General waste, recycling and FOGO volumes may change according to residents' attitudes to waste disposal, building

occupancy levels or the development's management. Any requirements for adjusting the capacity of the waste facilities may be achieved by changing the number of bins, the bin sizes or collection frequencies. Building management will be required to negotiate any changes to bins or collections with the collection service provider.

5.3 RESIDENTIAL CHUTE DISCHARGE EQUIPMENT SUMMARY

It is strongly recommended that the bins and equipment at the base of each chute allows for at least 2 days' worth of general waste and recycling generation. Based on the estimated general waste and recycling volumes generated by each building/core, the following equipment is recommended:

Table 5: Chute Discharge Equipment Summary

Volume Handling Equipment					
General Waste			Recycling		
Generated General Waste (L/week)	# 1100L Bins Required for 2 days' Capacity	Recommended Chute Discharge Equipment	Generated Recycling (L/week)	# 1100L Bins Required for 2 days' Capacity	Recommended Chute Discharge Equipment
17080	4.44	4-Bin Carousel System"	14640	3.80	4-Bin Carousel System

With the current constraints of infrastructure available, just over a single day's worth of general waste could be achieved, with recycling achieving 2 days storage of volume within the chute discharge area. The above is a recommendation only and equivalent volume handling equipment may be used subject to equipment supplier's recommendation/review.

5.4 RESIDENTIAL WASTE DISPOSAL PROCEDURES

All residents will have access to a storage area within their own unit capable of holding separate receptacles for general waste, recycling and FOGO. This is located within kitchen areas beneath the workbench. There is sufficient space allocated inside the kitchen of each residential unit for source-separation with capacity for two days waste generation to meet the requirements of NSROC 2018, Section 3.8. Further details will be provided at detailed design stage

5.4.1 RESIDENTIAL GENERAL WASTE AND RECYCLING DISPOSAL PROCEDURES

Dual chute systems comprising of a single general waste chute and single recycling chute will be installed. Access will be provided to all residents on each residential level. Residents will be responsible for walking their own general waste and recycling to their allocated disposal point and placing their general waste into the general waste chute and recycling into the recycling chute.

Residents will wrap or bag their general waste before placing in the general waste chute. Bagged waste should not exceed 3kg in weight, or 35cm x 35cm x 35cm. Residents will be responsible for loosely placing their recycling into the recycling chute. Recycling should be clean and must not be bagged as soft plastics contaminate recycling.

Cardboard boxes or large containers should not be disposed of in the recycling chute. These items should be disposed of directly into the collection bins in coordination with the building manager. The general waste and recycling will discharge into volume management equipment to assist with the automatic rotation of bins. The building manager will monitor bin capacities under the dual chute systems and exchange full bins with empty bins on the track systems when required.

Refer to Council guidance for the types of materials accepted in the general waste and recycling streams

5.4.1 RESIDENTIAL FOGO DISPOSAL PROCEDURES

The majority of organics waste generated from multi-unit residential developments (MUD's) comprises of food waste as opposed to garden waste. As such, calculations and management recommendations provided in this report considers that FOGO bins will primarily comprise or food organics.

The residents of each unit will be provided with a kitchen caddy for the separation of FOGO. Food organics must be contained in accordance with Willoughby Council's future FOGO collection service procedures (for example a compostable liner). Any clippings from residential units can also be disposed of with the FOGO.

The building will be provided with a Communal FOGO Bin Room which contains 240L bins for FOGO. The residents will be responsible for walking their own FOGO down to the Communal FOGO Bin Room and placing it into the bins. Building management is responsible for ensuring that the Communal FOGO Bin Room and FOGO bins are washed down frequently to ensure that hygiene and odour is managed.

5.5 RESIDENTIAL BIN COLLECTION PROCEDURES

Council will be engaged to collect the residential general waste, recycling and FOGO in accordance with Council's collection schedule. This report assumes that general waste will be collected twice weekly, with recycling and FOGO collected once weekly.

The Building Manager/Caretaker is also responsible for ensuring that the bins are adequately arranged for an efficient collection. It is recommended that additional service bins be placed under the chute to collect discharge while the other bins are being serviced.

It is the responsibility of the caretaker to ensure that the loading area is clear of any vehicles or obstructions prior to waste collection. On the day of collection, a Council collection vehicle will enter the site from Bertram Street and park in the loading bay. The Building Manager/Caretaker will be responsible for ensuring that the collection staff have access to the collection point. The collection staff will exit the vehicle and collect the bins from the Collection Point and return the empty bins once serviced.

Upon completion of servicing, the collection vehicle will exit the site onto Bertram Street in a forward direction. The Building Manager/Caretaker is responsible for returning the bins to their operational location to resume use.

All access and clearances to the waste collection point must be able to accommodate a HRV per AS2890.2-2002/ Council's collection vehicle.

5.6 OTHER RESIDENTIAL WASTE MANAGEMENT CONSIDERATIONS

The following sections outline other waste management considerations for the residential components.

5.6.1 RESIDENTIAL COMMON AREAS

Residential common areas will be supplied with suitably branded source separation receptacles where considered appropriate. Receptacles should be placed in convenient locations which are accessible to all residents. The building manager will monitor the capacity of these receptacles and empty the contents into the central collection bins as required.

5.6.2 LANDSCAPED AREAS AND GARDEN ORGANICS

Garden organics generated from surrounding landscaped areas and indoor foliage typically consists of lawn clippings, cuttings, leaves and branches. Garden organics generated from surrounding landscaped areas will be managed and removed from the site by the designated landscaping contractors as they carry out scheduled landscaping maintenance works.

Garden organics generated from foliage within each residential unit will be managed by the residents and should be disposed of into the FOGO bins.

5.6.3 RESIDENTIAL BULKY WASTE PROCEDURES

An area will be made available for the storage of discarded residential bulky waste items (e.g. whitegoods, furniture, etc.). This room achieves a minimum doorway width of 2.5m to facilitate the movement of large items in and out of the room.

Willoughby Council requires that size of the Bulky Waste Room provided is proportional to the number of units in the building at a rate of $10m^2$ for the first 40 units then $2m^2$ for every 10 units thereafter at per the *NSROC Waste Management Guidelines 2018*. Additional to this, $6m^2$ has been for onsite storage of a charity bin. The bulky waste room and charity bin room have been combined.

Residents will need to liaise with building management regarding the transportation of bulky items and the availability of the Bulky Waste Room. It is the caretaker's responsibility to arrange collection dates with Council and coordinate these times with the residents. Prior to bulky waste collections, the Building Manager/Caretaker will transport the bulky waste items from the Bulky Waste Room on basement 2 to the Collection Area on Ground Level.

On the day of bulky waste collection, a Council collection vehicle will enter the site from Bertram Street and park in the loading bay. Collection staff will collect the bulky waste items from the Collection Point/Bulky Waste Room. Once bulky items have been loaded onto the vehicle, the collection vehicle will exit the site onto Bertram Street in a forward direction.

6.0 COMMERCIAL AND RETAIL WASTE MANAGEMENT

The following section outlines best practice waste management for the commercial and retail components of the development, including waste generation estimates and waste disposal and collection procedures.

6.1 COMMERCIAL AND RETAIL WASTE GENERATION ESTIMATES

The *Northern Sydney Regional Organisation of Councils Waste Management Technical Guide (NSROC, 2018)* has been referenced to calculate the total number of bins required. Calculations are based on generic figures, and waste generation rates may differ according to actual waste management practice.

The total GFA of the retail component has been divided into thirds to take into account the waste generation of future possible tenancies. It is assumed that retail tenancies will share waste bins, the waste storage room, and the waste collection service.

The following estimates are based on a seven-day operating week except for the offices, which are based on a five-day operating week.

Table 6: Estimated Waste and Recycling Volumes – Commercial and Retail

Tenancy Type	Floor Area (m^2)	General Waste Generation Rate (L/100m^2/day)	Generated General Waste (L/week)	Recycling Generation Rate (L/100m^2/day)	Generated Recycling (L/week)
Shops with over 100m2	**108**	50	378	50	378
Restaurant	**131**	660	6052	120	1100
Shops with less 100m2	**52**	50	182	25	91
	79	50	277	25	138
	88	20	123	25	154
Offices	**1165**	10	816	10	816
TOTAL	**1623**		**7012**		**1862**
Bins & Collections		General Waste Bin Size (L)	1100	Recycling Bin Size (L)	1100
		General Waste Bins per Day	0.9	Recycling Bins per Day	0.2
		General Waste Collections per Week	2	Recycling Collections per Week	1
		Total General Waste Bins Required	**4**	**Total Recycling Bins Required**	**2**

6.2 COMMERCIAL AND RETAIL BIN SUMMARY

Based on the estimated waste and recycling volumes generated the commercial and retail tenancies, the recommended bin quantities and collection frequencies are as follows:

General Waste: 4 x 1100L bins collected **2 x weekly.**

Recycling: 2 x 1100L bins collected **1 x weekly.**

Bin sizes, quantities, and/or collection frequencies may be modified by the building manager once the proposed development is operational. Building management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal peak periods should also be considered.

6.3 COMMERCIAL AND RETAIL WASTE DISPOSAL PROCEDURES

All tenancies will be responsible for their own general waste and recycling disposal procedures within their own vicinity. On completion of each trading day or as required, nominated staff or contracted cleaners will transport all general waste and recycling to the Retail Bin Room in the Ground Floor and place into the appropriate collection bins.

6.4COMMERCIAL AND RETAIL WASTE COLLECTION PROCEDURES

A private waste contractor will be engaged to service the retail general waste and recycling bins as per an agreed collection schedule. This report assumes that general waste is collected twice weekly, and recycling is collected once weekly.

On the day of service, a private waste collection vehicle will enter the site from Bertram Street and park in the loading bay. The building caretaker will provide the driver with access to the commercial/retail waste room. Once the bins are serviced, the collection vehicle will exit the site onto Bertram Street in a forward direction.

Please note: The collection of commercial/retail bins should occur on separate days from the collection of residential bins to ensure proper segregation of waste streams.

6.5 OTHER COMMERCIAL AND RETAIL WASTE MANAGEMENT CONSIDERATIONS

Based on the types of tenancies anticipated for this development, the following waste management practices are recommended.

6.5.1 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.

6.5.2 PRINTING & PHOTOCOPYING ROOMS

It is recommended that rooms are areas designed for printing or photocopying be provided with an area for the interim storage of paper receptacles, as well as separate receptacles for used toner and/or printer cartridges for recycling. The cleaners or nominated staff are responsible for monitoring these receptacles and ensuring that items are collected and recycled by an appropriate contractor.

6.5.3 LIQUID WASTE

Liquid wastes as such cleaning products, chemicals, paints, solvents, and motor and cooking oil will be stored in a secure room and enclosed by a low wall intended to contain any liquid spillage or inundation to other areas. Liquid waste will be drained to a grease trap, in accordance with legislation and the requirements of State government authorities and agencies. Further information can be provided by the Services Consultant.

6.5.4 PROBLEM WASTE

The building manager is responsible for making arrangements for the disposal and recycling of problem waste streams with an appropriate contractor. Problem wastes cannot be placed in the general waste stream as they can have adverse impacts to human health and the environment if disposed of in landfill. Retail and commercial tenants must liaise with the building manager when disposing of problem waste streams.

Problem waste streams include:

- Chemical Waste
- Liquid wastes
- Toner cartridges
- Lightbulbs
- eWaste
- Batteries

7.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 7: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata, Body Corporate or Management	• Co-ordinate the waste strategy within the site. • Ensure all waste service providers submit monthly reports on all equipment movements and waste quantities/weights. • Organise internal waste audits/visual assessments on a regular basis. • Purchase any on-going waste management equipment or maintenance of equipment once building is operational; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Co-ordinate general waste, recycling and FOGO collections • Clean and transport bins as required. • Maintain and clean chute doors on each level. • Organise replacement or maintenance requirements for bins. • Organise, maintain and clean bin storage areas. • Organise bulky waste collections when required. • Investigate and ensure prompt clean-up of illegally dumped waste materials. • Prevent storm water pollution by taking necessary precautions (secure bin rooms, prevent overfilling of bins). • Abide by all relevant WH&S legislation, regulations, and guidelines. • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management. • Assess any manual handling risks and prepare a manual handling control plan for bin transfers. • Ensure site safety for residents, children, visitors, staff and contractors; and • Ensure effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Residents	• Dispose of all general waste, recycling and FOGO in the allocated chutes and/or bins provided. • Ensure adequate separation of general waste, recycling and FOGO; and • Comply with the provisions of Council and the OWMP.
Retail/Commercial Tenants	• Management co-ordinates own private contractor collections. • Manage general waste and recycling within their tenancy during daily operations. • Correctly separate general waste and recycling streams. • Flatten cardboard within the recycling bin. • If required, arrange for storing used and unused cooking oil in a bunded area, • Organise grease interceptor trap servicing, and • Ensure the suitable storage for chemicals, pesticides and cleaning products waste back of house.
Waste Collection Contractor	• Provide a reliable and appropriate bin collection service. • Provide feedback to building managers/residents regarding contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/ Landscaping Contractor	• Remove all garden organics generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchase all equipment required to implement this OWMP prior to the occupation of the building to be provided to the Strata or Body Corporate.

8.0 SOURCE SEPARATION

Better practice waste management includes the avoidance, reuse, and recovery of unwanted items, which can be achieved through source separation. The table below outlines what is typically included in various waste streams and how they can be managed. Refer to your local council for a list of accepted materials. Planet Ark can be accessed online to find other facilities that recover unwanted items.

Table 8: Operational Waste Streams

Waste Stream	Description	Typical Destination	Waste Stream Management
General 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.	Landfill	Waste should be bagged before placing in chutes, or in designated waste bins.
Recycling	A mixture of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (e.g. aluminium, glass, steel, hard plastics, cartons). Also included cardboard and paper products.	Resource Recovery Centre	Recycling must not be bagged, and instead should be placed loosely in the designated recycling chute. Bulky cardboard must not be placed in any chute. Cardboard should be flattened before placing in the designated cardboard recycling bin.
FOGO	FOGO consists of unwanted or uneaten kitchen scraps that are easily compostable/biodegradable (e.g. vegetable peels, fruit rinds, coffee grounds) and garden organics including lawn clippings, leaves, pruning's and branches.	Composting Facility	FOGO should be bagged in compostable liners when deposited into the chute/s or bins and will be collected by Council.
Garden Organics	Garden organics consists of unwanted organic materials that are easily biodegradable and/or compostable (e.g. lawn clippings, branches)	Resource Recovery Centre	Landscape Maintenance Contractors will remove the garden organics from site during scheduled maintenance.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Building manager arranges collection for e-waste recycling as needed by residents. Commercial tenants arrange for recycling of their own e-waste.
Bulky Waste Items	Items that are to too large to place into general rubbish collection. This includes disused and/or broken furniture, mattresses, white goods, etc.	Resource Recovery Centre or Landfill	Residents liaise with building manager to store in Bulky Waste Room. Building manager arranges with Council for removal. Commercial tenants are responsible for removal of their bulky items.
Sanitary Waste	Feminine hygiene waste generated from female bathrooms.	Incineration or Landfill	Sanitary bins are serviced by sanitary waste contractor.
Other	Other recyclable items that require special recovery may include ink cartridges, batteries, chemical waste, fluorescent tubes, etc.	Resource Recovery Facility	Building manager arranges collection by appropriate recycling services when required.

9.0 EDUCATION

Educational material encouraging correct separation of general waste, recycling and FOGO 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 provide information in multiple languages to support correct behaviours, and to minimise the possibility of chute blockages and contamination in communal 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 general waste, recycling and FOGO streams (refer to Council guidance);
- How to dispose of bulky waste and any other items that are not general waste, recycling or FOGO (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).

9.1 SIGNAGE

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 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 signage. 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.

10.0 POLLUTION PREVENTION

Building management shall be responsible for the following to minimise dispersion of site litter and prevent stormwater pollution to avoid impact to the environment and local amenity:

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

11.0BIN WASHING

The bins will be cleaned by the building manager periodically to ensure hygiene and minimise odour. Bin washing can occur within the bin rooms, using the room clean down facilities (i.e tap connection and drain). Alternatively, a specialist bin washing contractor can be engaged to clean the bins to an agreed schedule. The specialist bin contactor would collect the bins from the bin holding area and clean the bins with their specialised vehicle.

12.0 BIN MOVING PATHS

The building manager is responsible for the transportation of bins from their designated operational locations to the collection area, returning them once emptied to resume operational use.

Any movement of bins should minimise manual handling where possible, as bins become heavy when full. The building manager must assess manual handling risks and provide any relevant documentation to key personal. The routes along the bin moving path should;

- Allow for a continuous route that is wholly within the property boundary.
- Be free from obstruction and obstacles such as steps and kerbs.
- Be constructed of solid materials with a non-slip surface
- Be A minimum of 300mm wider than the largest bin used onsite.
- If bins are moved manually, the route must not exceed a grade of 1:14.
- If a bin moving device is used, the route cannot exceed the maximum operating grade of the device. This is typically a grade of 1:4, however this will vary depending on the model of bin moving device acquired for the site.

As the bins are intended to be moved up the vehicle ramp/As the distance of the bin moving paths exceeds 10m, a bin moving device will be required to aid the movement of full bins. The developer is responsible for supplying all equipment required for moving bins this includes any bin lifters, bin moving devices and waste transfer bins. This equipment must be new and appropriate for the site. The developer should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations.

Once the site is operational (and the developers is no longer involved) the building proprietors/strata will be responsible for maintaining, repairing and replacing waste management equipment.

Bins may have to be fitted with hitches to enable the simultaneous transportation of multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.

13.0 EQUIPMENT SUMMARY

Table 9: Equipment Summary

	Part	Qty	Notes
Chutes	Please refer to supplier's information	2	(See APPENDIX: B.1 for Typical Dual Chute Layout)
Chute Equipment	**Waste** 4-bin 1100L MGB Carousel System Without Compactor	1	(See APPENDIX B.3 and B.5 for Typical Carousel and Linear track for 1100L bins)
	Recycling 4-bin 1100L MGB Carousel System Without Compactor	1	
Other Equipment	Suitable Bin Moving Equipment	1	(See APPENDIX: D.1 and APPENDIX: D.2 for Typical Bin Movers)

14.0 WASTE ROOMS

The areas allocated for waste storage and collection areas are detailed in the table below and are estimates only. Additional bins or volume handling equipment can be included in these rooms to increase days of capacity or manual labour required in operation.

Table 10: Waste Room Areas

Level	Waste Room Type	Equipment	Estimated Area Required (m^2)
Basement 2	Residential Bulky Waste Room	**Bulky Waste**	28
		Charity Waste	6
Basement 1	Chute Discharge Room	**General waste:** 4-bin 1100L Carousel System **Recycling:** 4-bin 1100L Carousel System	50
Basement 1	Communal FOGO Bin Room	FOGO: 26 x 240L Bins	23
Basement 1	Residential Bin Holding Room	General waste: 8 x 1100L Bins Recycling: 14 x 1100L Bins	110
Basement 1	Commercial / Retail Bin Room	General waste: 4 x 1100L Bins Recycling: 2 x 1100L Bins	18
Basement 1	Tug Store	Bin Tug	4
Ground Floor	Bin Collection Area	Max Space for: General waste: 8 x 1100L Bins FOGO: 26 x 240L Bins	96

EFC recommends bins sizes, collection frequencies and/or equipment for best practice waste management at this site, however EFC also acknowledges there are a range of other suitable options that may alter waste room requirements (e.g. floor area, accessibility, head height, etc.)

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 60% of bin GFA factored in for manoeuvrability. In addition, all passageways facilitating the movement of bulky waste items should be at least 1500mm wide and doorways at a minimum of 2.5m wide. The following table provides further waste room requirements.

Table 11: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Chute Discharge Room	• Ceiling clearance height must be a minimum of 3000mm (3100mm with compactor) (subject to penetration location) • The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles • All chute discharge points should be caged off to ensure the safety of any personnel accessing the waste room • 200mm clearance is required around compaction equipment • Where a chute offset is required, the angle of the offset must not exceed 30 degrees (subject to number of consecutive offset and/or up to 1500mm)
Residential Bin Holding Room and/or Bin Collection Area	• Bins must not be stacked in rows that are more than two bins deep.
Communal FOGO Rooms	• Bins should be arranged so that all bins are accessible. Bins are not to be placed in front of one another or in such a way as to restrict access to the other bins for use. • Rooms must be well ventilated either naturally or mechanically in accordance with AS1668.4.2012 • Cleaning facilities such as hose hock and drainage for odour and hygiene control must be provided. • It is recommended a dustpan and broom is provided in this room for residents to clean up unexpected spillages when using bins.
Bulky Waste Room	• May be a dedicated room or screened area within another waste room • Must be in close proximity to the collection area • Area must also be allocated for the segregation of e-waste, gas bottles, cardboard, etc. • Doorway should be a minimum of 1500mm wide
Retail/Commercial Bin Room	• In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin • Bins must be coordinated with the hinge of the lid facing the back. This is to allow for ideal access to the bin.

15.0 CONSTRUCTION REQUIRMENTS

Waste room construction must comply with the minimum standards as outlined in the *Willoughby Development Control Plan 2023,* 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.

15.1 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;
- 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
- 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. Mechanical exhaust systems shall comply with AS1668.4.2012 and not cause any inconvenience, noise or odour problem; or
    - Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area.

16.0 USEFUL CONTACTS

EFC does not warrant or make representation for goods or services provided by suppliers.

LOCAL COUNCIL

Willoughby Council Customer Service	Ph: 02 9777 1000	E: email@willoughby.nsw.gov.au

PRIVATE WASTE COLLECTION PROVIDER

Capital City Waste Services	Ph: 02 9599 9999	E: service@ccws.net.au
Sydney Waste	Ph: 02 8661 0031	
Waste Clear	Ph: 1300 525 352	E: admin@wastecleart.com.au

BIN MOVING DEVICE SUPPLIERS

Elephants Foot Equipment	Ph: 1300 435 374	E: equipment@elephantsfoot.com.au
Sitecraft	Ph: 1300 363 152	E: sales@sitecraft.com.au

BALER SUPPLIERS

Elephants Foot Equipment	Ph: 1300 435 374	E: equipment@elephantsfoot.com.au

ORGANIC DIGESTERS AND DEHYDRATORS

Elephants Foot Equipment	Ph: 1300 435 374	E: equipment@elephantsfoot.com.au
Waste Master	Ph: 1800 614 272	E: hello@wastemasterpacific.com.au

COOKING OIL CONTAINERS AND DISPOSAL

Cookers	Ph: 1300 882 299	E: info@cookers.com.au
Auscol	Ph: 1800 629 476	E: sales@auscol.com

ODOUR CONTROL

Elephants Foot Equipment	Ph: 1300 435 374	E: equipment@elephantsfoot.com.au

SOURCE SPERATION BINS

Method Recycling	Ph: 0499 890 455

BINS AND BIN EQUIPMENT

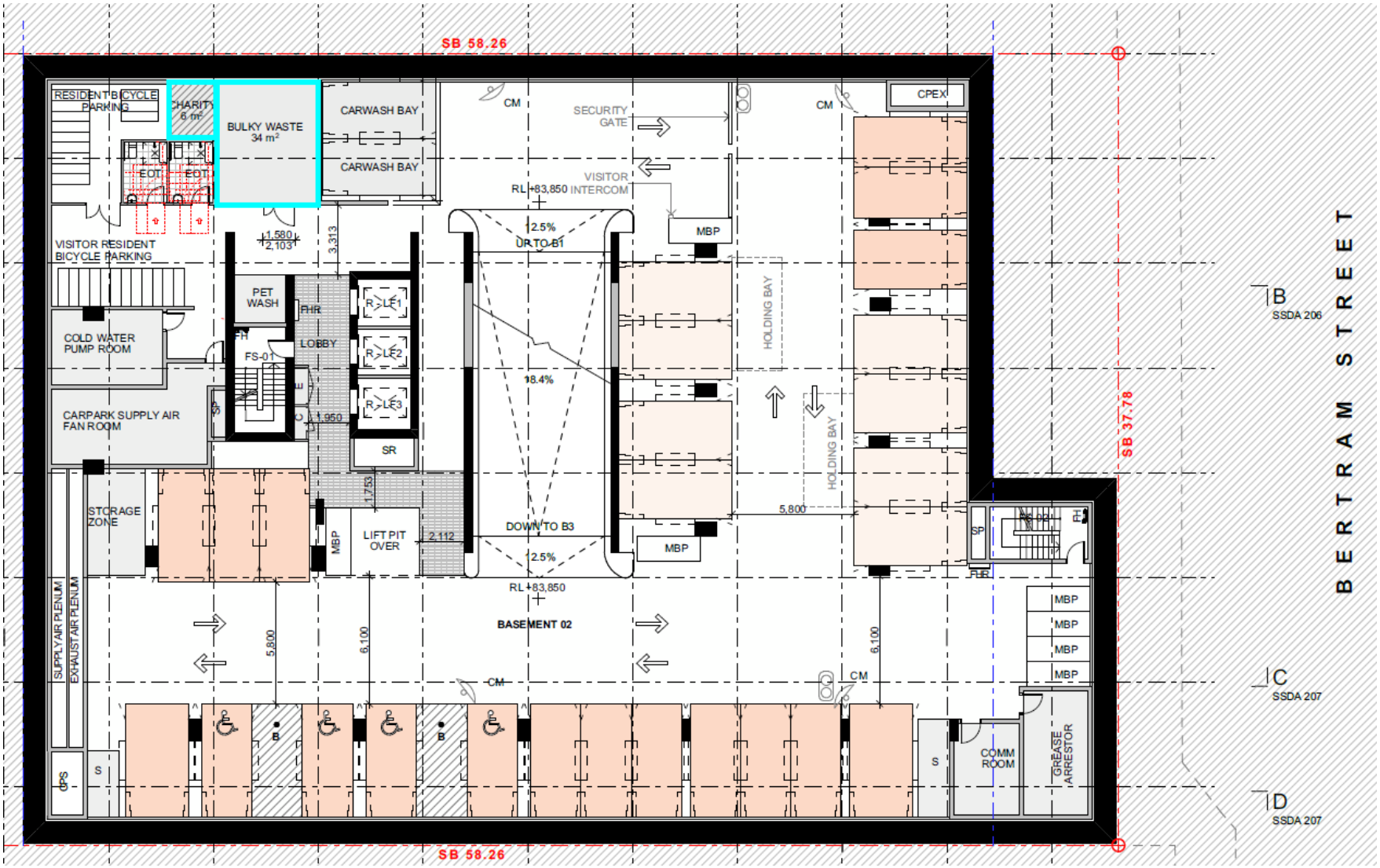
Elephants Foot Equipment	Ph: 1300 435 374	E: equipment@elephantsfoot.com.au
SULO	Ph: 1300 364 388	E: sulosales@pactgroup.com

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

Elephants Foot Chute Solutions	Ph: 1300 435 374	E: chutes@elephantsfoot.com.au

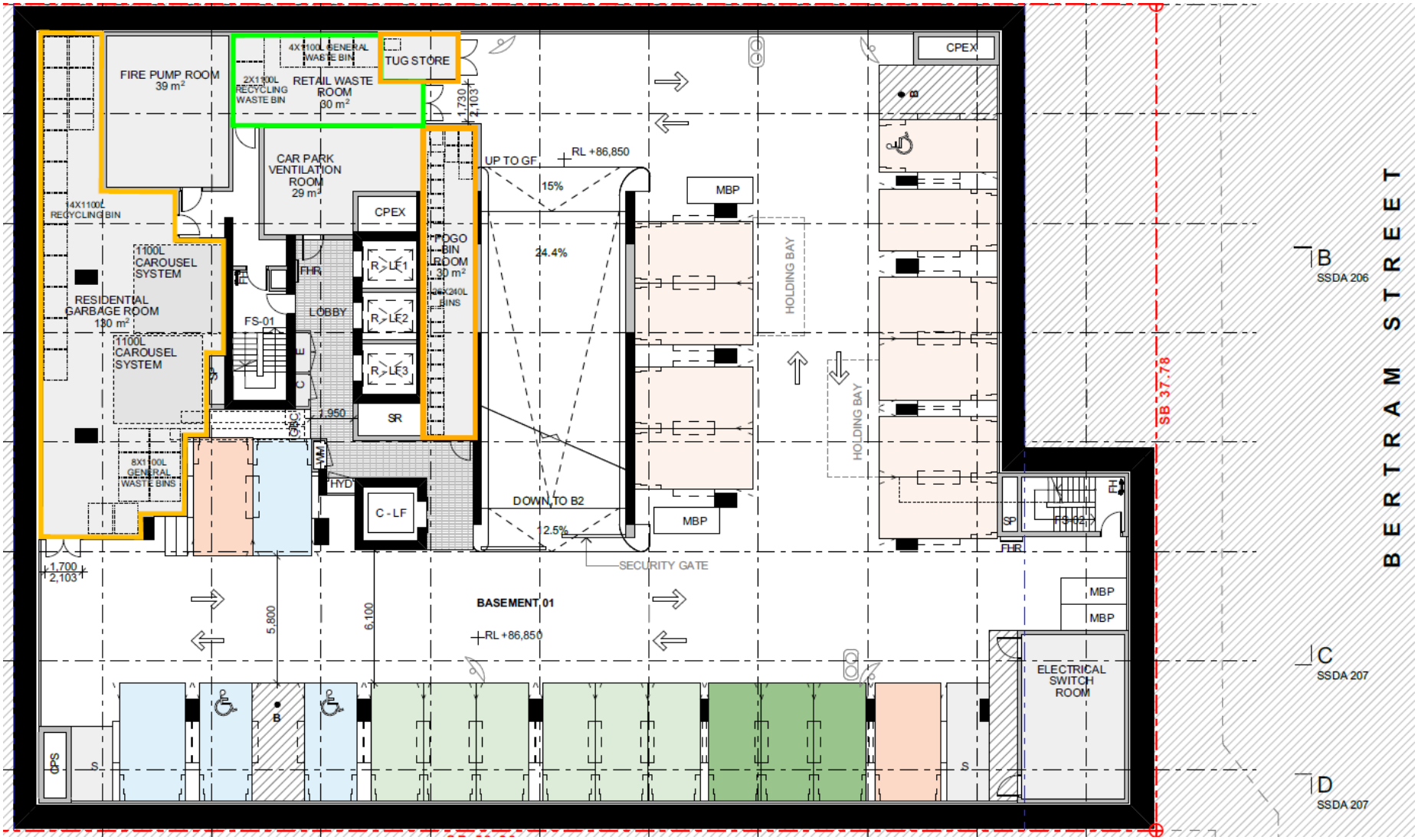
APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 BASEMENT 2 PLAN



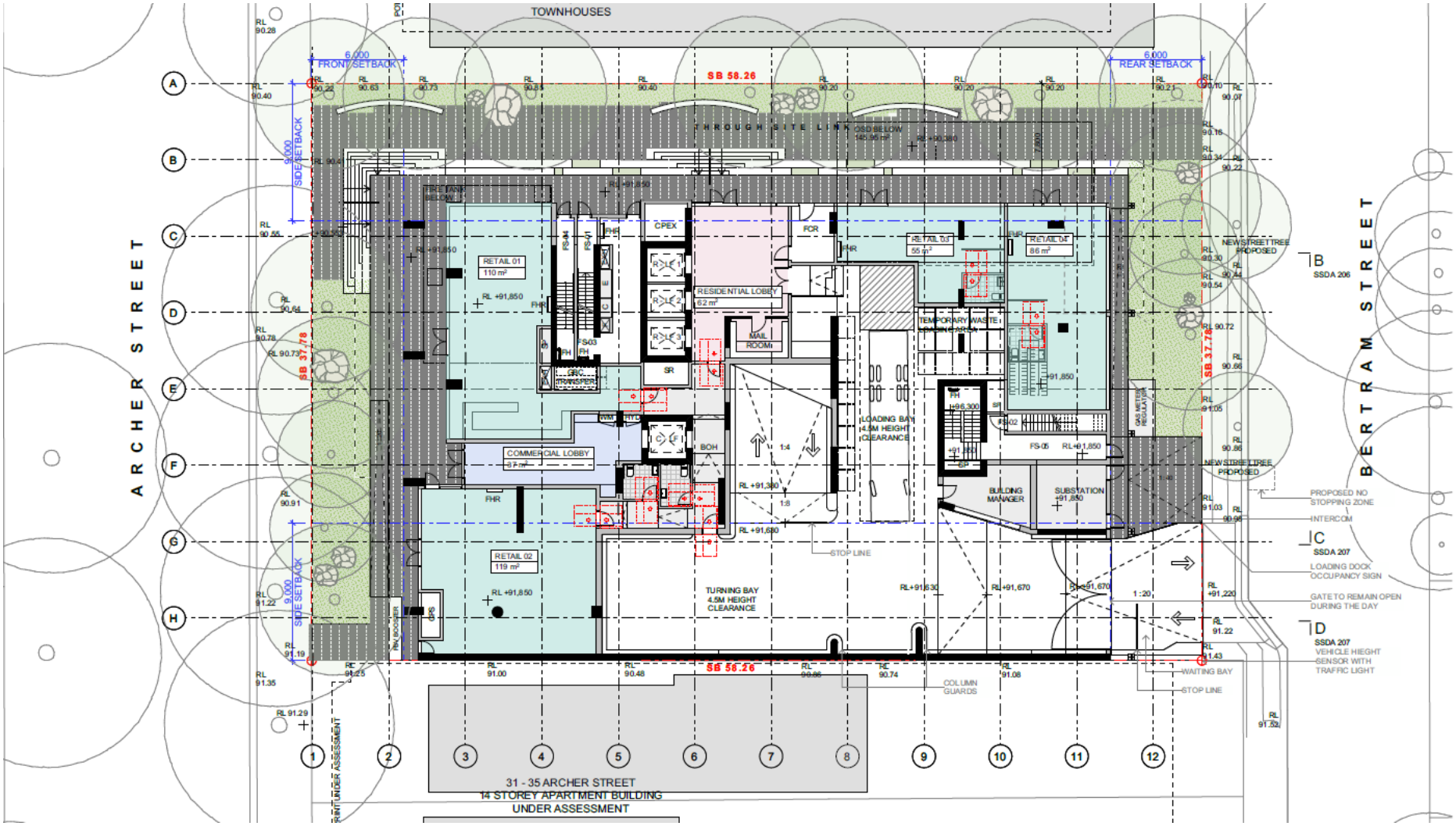
Source: Fuse Architects, Sheet Number: SSDA 103, Rev B, 30.10.2025, Basement 2

APPENDIX: A.2 BASEMENT 1 PLAN



Source: Fuse Architects, Sheet Number: SSDA 104, Rev B, 30.10.2025 - Basement 1 Plan

APPENDIX: A.3 GROUND FLOOR PLAN



Source: Fuse Architects, Sheet Number: SSDA 106, Rev B, 30/10/2025, Ground Floor Plan

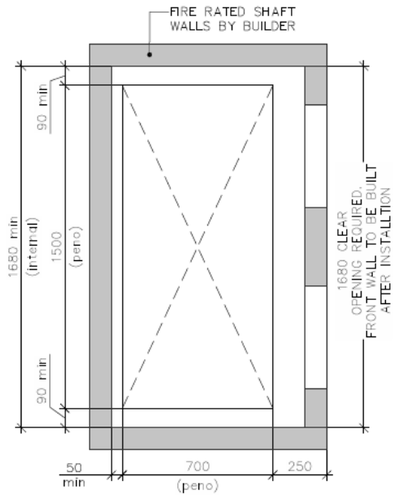
APPENDIX B: INSTALLATION EQUIPMENT

APPENDIX: B.1 TYPICAL DUAL CHUTE SHAFT & PENETRATION LAYOUT

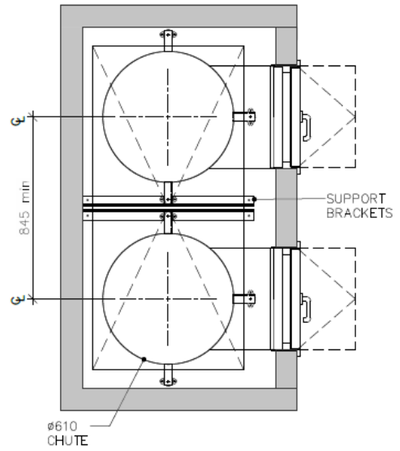
Chute Solutions.™
an Elephants Foot Company

CHUTE SHAFT & PENETRATION SET-OUT

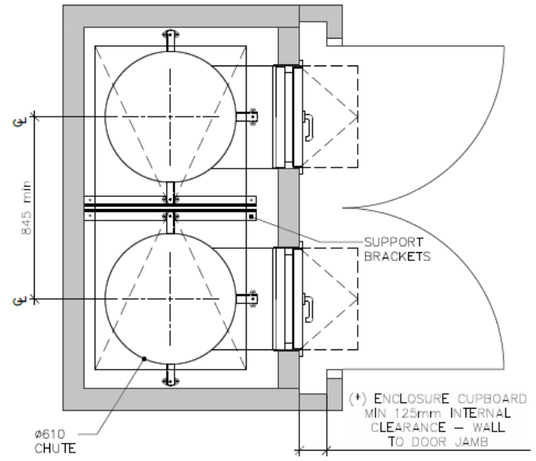
DUAL Ø610 STEEL



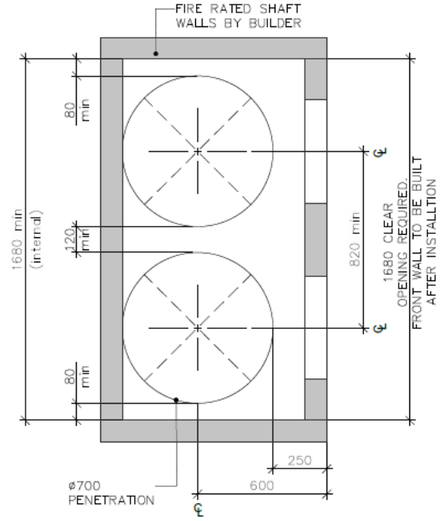
(01) DUAL (610ø) GALV. STEEL CHUTE LAYOUT PENETRATION SET–OUT



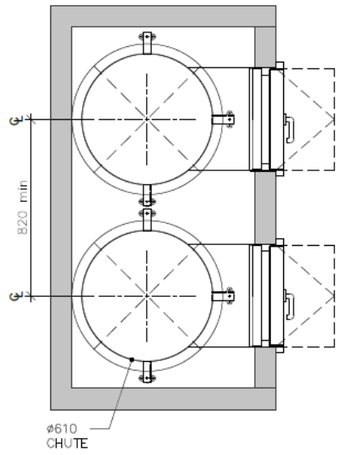
(02) DUAL (610ø) GALV. STEEL CHUTE LAYOUT



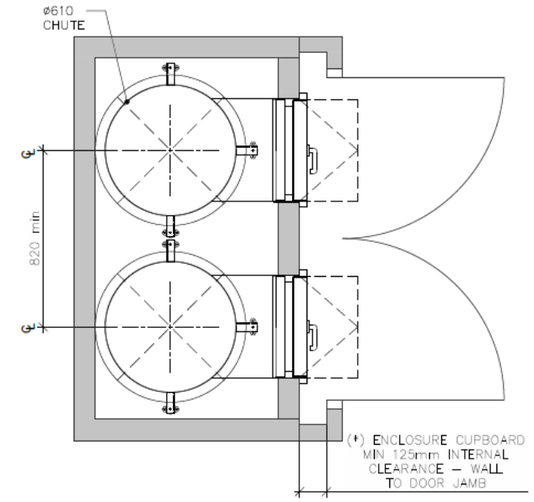
(03) DUAL (610ø) GALV. STEEL CHUTE LAYOUT with ENCLOSURE CUPBOARD (*)



(04) DUAL (610ø) GALV. STEEL CHUTE LAYOUT WITH CIRCULAR PENETRATION SET–OUT



(05) DUAL (610ø) GALV. STEEL CHUTE LAYOUT (W/ CIRCULAR PENETRATION)



(06) DUAL (610ø) GALV. STEEL CHUTE LAYOUT with ENCLOSURE CUPBOARD (*)

(*) NOTE: ENCLOSURES ARE RECOMMENDED IF THE CHUTE OPENS DIRECTLY TO A CORRIDOR OR IS NOT LOCATED IN A WASTE ROOM. IF CHUTE ACCESS IS WITHIN A WASTE ROOM THEN THE CUPBOARD ENCLOSURES ARE NOT REQUIRED.

SCALE 1:25 @ A3

Chute Shaft & Peno – Ver 1.2 April 26, 2022

Please Note: This is an example only – please refer to supplier's information and specifications.

APPENDIX: B.2 TYPICAL LINEAR TRACK SYSTEM FOR 1100L MGBS

ELEPHANTS FOOT recycling solutions

ELEPHANTS FOOT RECYCLING SOLUTIONS
44-46 GIBSON AVE, PADSTOW NSW 2211
E info@elephantsfoot.com.au W elephantsfoot.com.au
Free Call: 1300 4 ELEPHANT (1300 435 374)

1100 LITRE LINEAR TRACK SYSTEM

PRODUCT INFORMATION

Elephants Foot 1100 Litre bin Linear Track System is a versatile waste handling solution for many types of multi-storey or multi-level developments. The Linear Track System collects waste or recycling being disposed from the floors above through the chute system, discharging the material via a hopper that feeds the bins. Electromechanically driven with automated operation, the system utilises linear motion to automatically change over full bins. Once all the bins are filled, an indicator light will illuminate signifying that the bins are ready for withdrawal and collection. Available with or without compaction unit, our standard 660 litre bin Linear Track System is available in the standard 2 bin option. Our 3 Bin option is available as a special order.

SPECIFICATIONS

System Control	Electric PLC
Power Supply	415 V AC / 10A / 5 PIN
Motor Size (kW)	1.1
Maximum bin load	440 kg
Noise (dBA)	<85
Bin Size (L)	1100
Cycle time (sec)	60
Bin Quantity options	2 or 3

OPTIONAL EXTRAS

- Compaction unit – Please refer to the bin compactor product information sheet for details and specifications
- Enhanced safety add on's – Interlocking barriers, occupancy sensors or safety light curtains (presence sensing light barriers)
- Full bin SMS and email notification
- CMMS and BMS integration
- Extend warranty – Terms and conditions apply

STANDARD FEATURES & BENEFITS

- Simple operation with user friendly controls
- Increased waste servicing efficiency for the development.
- Automatic system control with manual override
- Robust unit construction for long performance life
- Low service and maintain costs
- Rotating flashing beacon (activated during operation)
- Quiet and efficient system operation
- Maximise safety for residents, caretakers and collectors
- Restrained design with minimal moving parts
- Can suit low ceiling clearances
- Floor contact components fully galvanised steel
- Retro fitting options to suit other chutes systems
- Compliant with relevant Building Codes and Standards
- Standard 12 month warranty

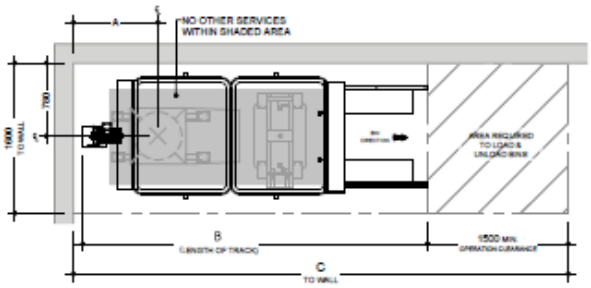
Chute Solutions.™
an Elephants Foot Company

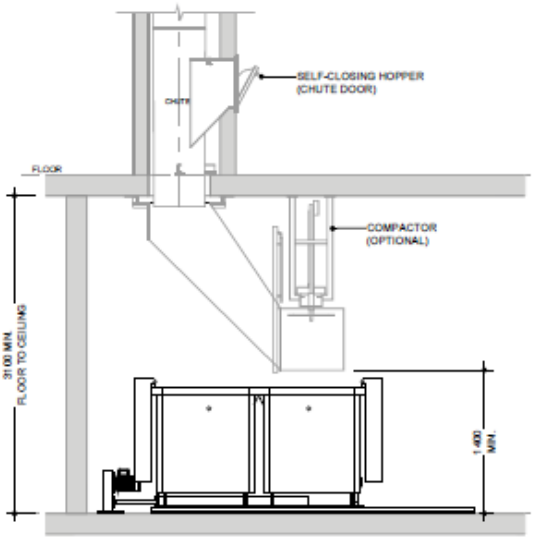
ELEPHANTS FOOT

1,100 LITRE LINEAR TRACK SYSTEM

No. of Bins	Reference (mm)		
	A	B	C
2	900	3700	5300
3	2100	5940	7550

Available with or without compaction unit, our standard 1100 litre bin Linear Track System is available in the standard 2 bin option. Our 3 Bin option is available as a special order.





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

Please Note: This is an example only – please refer to supplier's information and specification

APPENDIX: B.3 EXAMPLE CAROUSEL SYSTEM FOR 1100L MGBS

ELEPHANTS FOOT
recycling solutions

ELEPHANTS FOOT RECYCLING SOLUTIONS
44-46 GIBSON AVE, PADSTOW NSW 2211
E info@elephantsfoot.com.au W elephantsfoot.com.au
Free Call: 1300 4 ELEPHANT (1300 435 374)

1100 LITRE CAROUSEL SYSTEM

PRODUCT INFORMATION

Elephants Foot 1100 Litre bin Carousel System is a versatile waste handling solution for many types of multi-storey or multi-level developments. The Carousel System collects waste or recycling being disposed from the floors above through the chute system, discharging the material via a hopper that feeds the bins positioned on the unit. Electromechanically driven with automated operation, the Carousel System automatically replaces full bins by a revolving circular platform. Once all the bins on the system are filled, an indicator light will illuminate signifying that the bins are ready for withdrawal and collection. Available with or without compaction unit, our standard 660litre bin Carousel System is available in standard 2, 3 or 4 bin options. Our 5 Bin option is available as a special order.

SPECIFICATIONS

System Control	Electric PLC
Power Supply	415 V AC / 10A / 5 PIN
Motor Size (kW)	0.37
Maximum bin load	440 kg
Noise (dBA)	<85
Bin Size (L)	660
Cycle time (sec)	60
Bin Quantity options	2, 3, 4 or 5

OPTIONAL EXTRAS

- Compaction unit – Please refer to the bin compactor product information sheet for details and specifications
- Enhanced safety add on's - Interlocking barriers, occupancy sensors or safety light curtains (presence sensing light barriers)
- Full bin SMS and email notification
- CMMS and BMS integration
- Extend warranty – Terms and conditions apply

STANDARD FEATURES & BENEFITS

- Simple operation with user friendly controls
- Increased waste servicing efficiency for the development.
- Automatic system control with manual override
- Robust unit construction for long performance life
- Low service and maintain costs
- Rotating flashing beacon (activated during operation)
- Quiet and efficient system operation
- Maximise safety for residents, caretakers and collectors
- Restrained design with minimal moving parts
- Can suit low ceiling clearances
- Floor contact components fully galvanised steel
- Retro fitting options to suit other chutes systems
- Compliant with relevant Building Codes and Standards
- Standard 12 month warranty

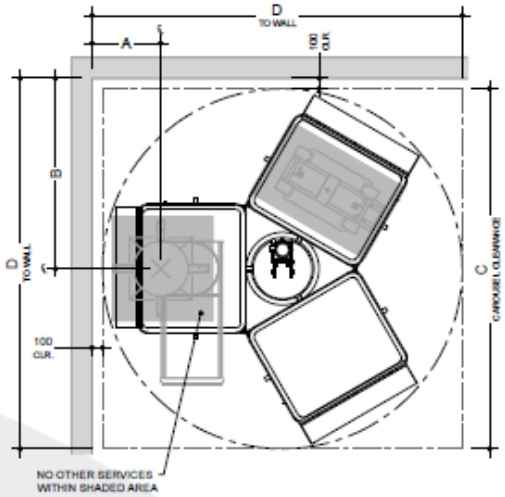
Chute Solutions.™
an Elephants Foot Company

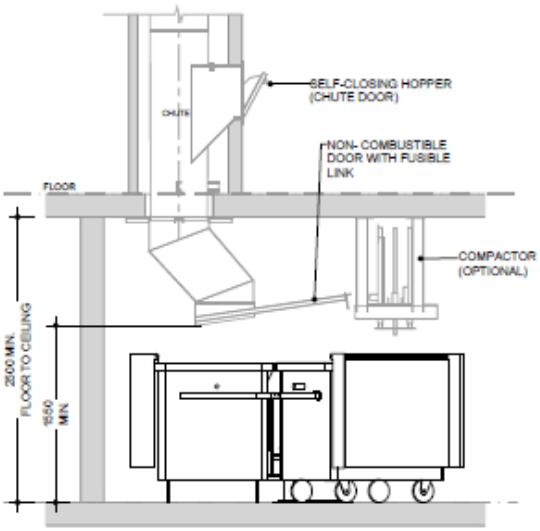
ELEPHANTS FOOT

1,100 LITRE CAROUSEL SYSTEM

No. of Bins	Reference (mm)			
	A	B	C	D
2	650	1700	3200	3350
3	650	1850	3460	3600
4	650	2050	3940	4050

Available with or without compaction unit, our standard 1100 litre bin Carousel System is available in standard 2, 3 or 4 bin options. Our 5 Bin option is available as a special order.





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

Please Note: This is an example only – please refer to supplier's information and specification

APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX: C.1 TYPICAL BIN SPECIFICATIONS

Mobile bins

Mobile bins come in a variety of sizes and are designed for lifting and emptying by purpose-built equipment.

Mobile bins with capacities of up to 1700L must comply with *AS4123.6-2006 Mobile waste containers* which specifies standard sizes and sets out the colour designations for the bodies and lids of mobile waste containers indicating the type of materials they are used to collect.

The most common bin sizes are provided below, although not all sizes are shown. The dimensions are a guide only and differ slightly between manufacturers. Some bins have flat or domed lids and are used with different lifting devices. Refer to *AS4123.6-2006* for further details.

Table G1.1: Average dimension ranges for two-wheel mobile bins

Wheelie bin

Bin capacity	80L	120L		140L		240L	360L
Height (mm)	870	940	1065	1080	1100		
Depth (mm)	530	530		540		735	820
Width (mm)	450	485		500		580	600
Approximate footprint (m^2)	0.24	0.26–0.33		0.27-0.33		0.41–0.43	0.49
Approximate weight (kg)	8.5	9.5		10.4		15.5	23
Approximate maximum load (kg)	32	48		56		96	Not known

Sources include Sulo, Single Waste, Cleanaway, SUEZ, just wheelie bins and Perth Waste for two-wheel mobile bins

Table G1.2: Average dimension ranges for four-wheel bulk bins

Dome or flat lid container

Bin capacity	660L	770L	1100L	1300L	1700L
Height (mm)	1250	1425	1470	1480	1470
Depth (mm)	850	1100	1245	1250	1250
Width (mm)	1370	1370	1370	1770	1770
Approx footprint (m^2)	0.86–1.16	1.51	1.33–1.74	2.21	2.21
Approx weight (kg)	45	Not known	65	Not known	Not known
Approx maximum load (kg)	310	Not known	440	Not known	Not known

Sources include Sulo, Signal Waste, Cleanaway, SUEZ, Just Wheelie Bins and Perth Waste

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX: C.2 SIGNAGE FOR WASTE AND RECYCLING BINS

Waste signs

Signs and educational materials perform several functions including:

- informing residents why it is important to recover resources and protect the environment
- providing clear instructions on how to use the bins and services provided
- alerting people to any dangers or hazards within the bin storage areas.

All waste, recycling and organic bins should be Australian Standard colours and clearly and correctly labelled, such as by a sticker on the lid and/or the body of the bin.

Communal bin storage areas should be clearly signposted with signs outlining how to correctly separate waste into the bins provided. The local council responsible for waste services may be a good source of signs and posters and can advise on what signs are suitable.

Information on who to contact to find out more about the recycling and/or other resource recovery services in the building should also be displayed in communal areas, such as on a noticeboard.

The Planet Ark website also has resources available free of charge for use by businesses and councils. These signs can be found at businessrecycling.com.au/research/signage.cfm

Figure I1.1: Examples of waste wall posters (EPA supplied)

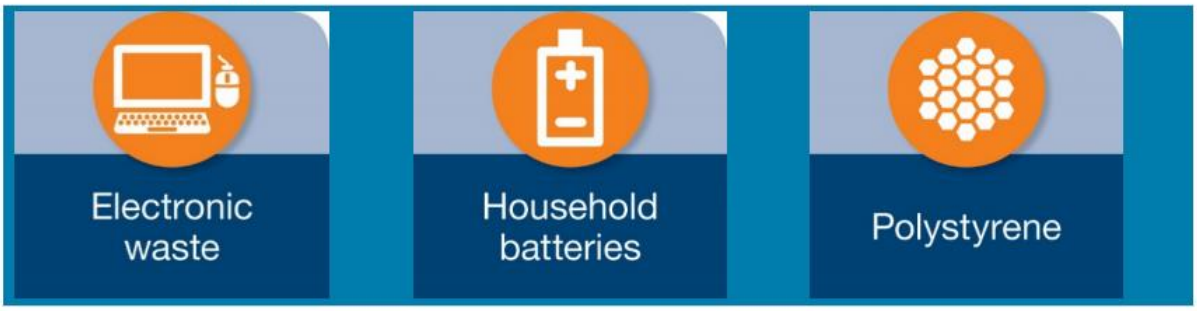
Figure I1.2: Examples of bin lid stickers (EPA supplied)

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

Problem waste signs

The EPA has also produced a range of images and signs that can be used for problem wastes, such as fluoro globes and tubes, household and car batteries, e-waste and smoke detectors. To access these resources, contact the NSW EPA. Some examples are shown below.

Figure I2.1: Problem waste signs



Safety signs

The use of safety signs for waste resource recovery rooms must comply with *AS1319 Safety signs for occupational environments*. Safety signs must be used to regulate and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Suitable signs should be decided for each development as required.

Figure I3.1: Example safety signs

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX: C.3 EXAMPLE COLLECTION VEHICLE INFORMATION

General

Appropriate heavy rigid vehicle standards should be incorporated into the road and street designs in new developments where onsite collections are proposed. Road and street designs must comply with relevant Acts, regulations, guidelines, and codes administered by Austroads, Standards Australia, NSW Roads and Maritime Services, WorkSafe NSW and any local council traffic requirements.

Applicants and building designers should consult with councils and other relevant authorities before designing new roads or streets and access points for waste collection vehicles to establish specific design requirements.

Table H4.1: Australian Standards for turning circles for medium and heavy rigid class vehicles

Vehicle class	Overall length (m)	Design width (m)	Design turning radius (m)	Swept circle (m)	Clearance (travel) height (m)
Medium rigid vehicle	8.80	2.5	10.0	21.6	4.5
Heavy rigid vehicle	12.5	2.5	12.5	27.8	4.5

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

Large collection vehicles

Waste collection vehicles may be side-loading, rear-loading, front-lift-loading, hook or crane lift trucks. Vehicle dimensions vary by collection service, manufacturer, make and model. It is not possible to provide definitive dimensions, so architects and developers should consult with the local council and/or contractors.

The following characteristics represent typical collection vehicles and are provided for guidance only. Reference to *AS2890.2 Parking facilities: off-street commercial vehicle facilities* for detailed requirements, including vehicle dimensions, is recommended.

Table B2.1: Collection vehicle dimensions

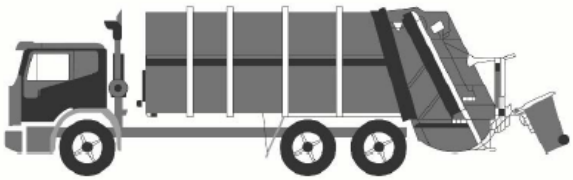
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0	13.0
Maximum payload (t)	10.0	10.8	11.0	14.5	9.5
Turning circle (m)	25.0	21.4	25.0	25.0	18

* The maximum reach of a side arm is 3 m.

Sources: JJ Richards, SUEZ, MacDonald Johnson, Cleanaway, Garwood, Ros Roca, Bingo and Edbro. Figures shown represent the maximum dimensions for each vehicle type.

Rear-loading collection vehicles

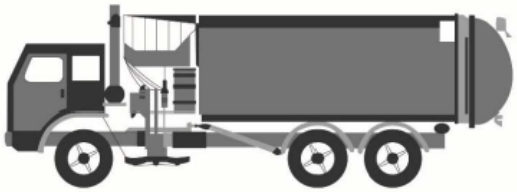
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



Rear-loading waste collection vehicle

Side-loading collection vehicles

This is the most commonly used vehicle for domestic waste, recycling and organics collections. It is only suitable for collecting mobile bins up to 360L in capacity.



Side-loading waste collection vehicle

Front-lift-loading collection vehicles

These vehicles are commonly used for collecting commercial and industrial waste. They can only collect specially designed front-lift bulk bins and not mobile bins.

Front-lift-loading waste collection vehicle

Small collection vehicles

Typically, councils and their contractors operate with large collection vehicles (heavy rigid class vehicles) because they carry greater payloads and allow for more cost-effective collection services. Some councils, or their contractors, may have smaller collection vehicles in their fleet. Early discussion with the council is important to confirm this, but it should not be assumed that the council will have access to small collection vehicles.

The waste management systems and the location of the collection point should always be designed so that the council can provide the standard domestic waste service.

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX: D.1 EXAMPLE HANDHELD BIN MOVERS

movexx
smart electric tugs

MOVEXX T2500
BIN MOVER BATTERY ELECTRIC

Movexx T2500 Tow Tug is an extremely user friendly battery powered mobile towing unit that is ideal for applications where trolleys and rolling objects need to be moved from one place to another simply, efficiently and without physical effort. Some standard features included are: battery indicator, on board battery charger, battery, adjustable handle, dual speed and electric brake.

These units are fitted with an electromagnetic brake system for use on ramps and slopes

Features
- Electromagnetic brake for use on ramps and slopes
- Adjustable height handle

SPECIFICATION

MODEL	DIMENSIONS (MM)	OPTIONS	PULL - PUSH CAPACITY (KG)	BATTERY
T2500-D	511 (w) x 757 (l)	* Centre mount 2x 240 lt. wheelie bin attachment	2500	AGM batteries 2x 85AH up to 8 hrs continuous operation

TOWING CAPACITY - ON FLAT GROUND (all models)	TOWING CAPACITY - SLOPE (all models)
Towing up to 4x 660 lt. Wheelie Bin	Towing up to 2x 660 lt. Wheelie Bin Up / Down maximum 25% (1:4 slope)
Towing up to 4x 1100 lt. Wheelie Bin	Towing up to 1x 1100 lt. Wheelie Bin Up / Down maximum 25% (1:4 slope)
	**Electromagnetic brake for use on ramps and slopes

Please Note: This is an example only – please contact supplier for specific recommendations.

Source: Sitecraft - www.sitecraft.net.au

APPENDIX: D.2 EXAMPLE SEATED BIN MOVERS

MOTREC MT180
36V BATTERY ELECTRIC BIN MOVER

This hardworking tow device delivers outstanding performance. With its efficient motor and 4,500kg push-pull capacity.
The MT180 is ideal for moving bin trailer also narrow enough to fit through most door openings. From its all-steel construction to its all-wheel braking, this tow tractor is built for years of heavy use in total comfort and safety. All this combined with superior AC technology makes short work of though requests.

Features
- Front & rear brakes
- Pneumatic Tyres
- Comfortable ergonomic adjustable seat
- Complete with headlight, break lights, tailing lights & horn

SPECIFICATION

MODEL	DIMENSIONS (MM)	OPTIONAL EXTRAS	PULL - PUSH CAPACITY (KG)	BATTERY
MT180 36V	760 (w) x 2030 (l) x 1160 (h)	Flashing light on pole Conditional registration kit Cabin includes windscreen Weather Curtains	4500	48V TPPL battery pack, 157AH

TOWING CAPACITY - ON FLAT GROUND / SLOPE (all models) (all models)
Towing up to 5x 660 lt. Wheelie Bin Up / Down maximum 25% (1:4 slope)
Towing up to 4x 1100 lt. Wheelie Bin Up / Down maximum 25% (1:4 slope)

Please Note: This is an example only – please contact supplier for specific recommendations.

Source: Sitecraft - www.sitecraft.net.au

APPENDIX: D.3 EXAMPLE BIN TRAILERS

SITECRAFT
MATERIALS HANDLING EQUIPMENT

BIN TRAILER
WITH ALUMINUM RAMP

Bin trailer suitable for moving 240lt, 660lt and 1,100lt bins including a 1200mm rear ramp complete with locking latches and gas strut assist. Height draw bar fitted with a jockey wheel large pneumatic tyres with precision bearing hubs

SPECIFICATION

MODEL	DIMENSION (MM)	SUITABLE FOR MOVING	PART NUMBERS	REAR RAMP DIMENSION (MM)
4x Bins Trailer	Internal - 1560 (l) x 1200 (w) External - 2300 (l) x 1500	**4x 240lt.** Wheelie Bin **2x 660lt.** Wheelie Bin **1x 110lt.** Wheelie Bin	78811604	1200mm rear ramp complete with positive locking and gas strut assist
6x Bins Trailer	Internal - 2350 (l) x 1200 (w) External - 3100 (l) x 1500 (w)	**6x 240lt.** Wheelie Bin **3x 660lt.** Wheelie Bin **2x 1100lt.** Wheelie Bin	78811065	1200mm rear ramp complete with positive locking and gas strut assist
8x Bins Trailer	Internal - 3200 (l) x 1200 (w) External - 3900 (l) x 1500 (w)	**8x 240lt.** Wheelie Bin **4x 660lt.** Wheelie Bin **3x 1100lt.** Wheelie Bin	78811066	1200mm rear ramp complete with positive locking and gas strut assist
10x Bins Trailer	Internal - 3900 (l) x 1200 (w) External - 4600 (l) x 1500 (w)	**10x 240lt.** Wheelie Bin **5x 660lt.** Wheelie Bin **4x 1100lt.** Wheelie Bin	78811067	1200mm rear ramp complete with positive locking and gas strut assist

OPTIONS

- Full registration
- Upgrade Includes : Lights | Wiring | Suspension | aaa Tyres | Compliance Plate

Please Note: This is an example only – please contact supplier for specific recommendations.

Source: Sitecraft - www.sitecraft.net.au

APPENDIX: D.4 EXAMPLE BIN TOWING ATTACHMENTS

Logistec

UNIVERSAL BIN TOWING ATTACHMENTS

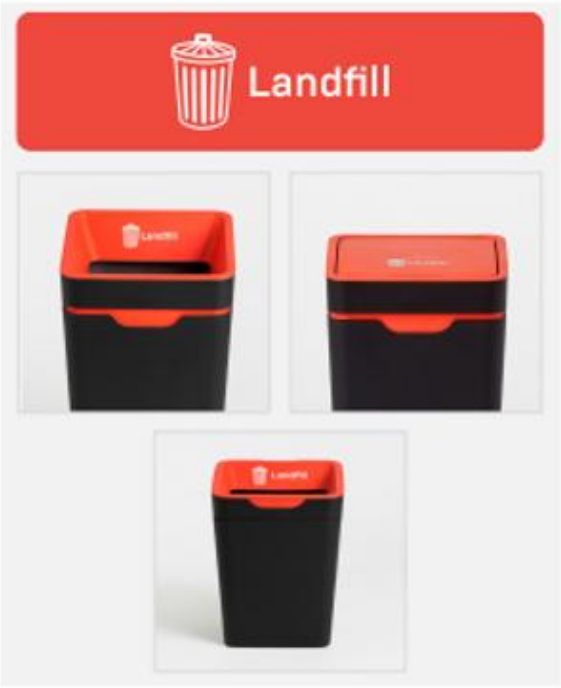
SUITE 660LT / 1100LT WHEELIE BINS

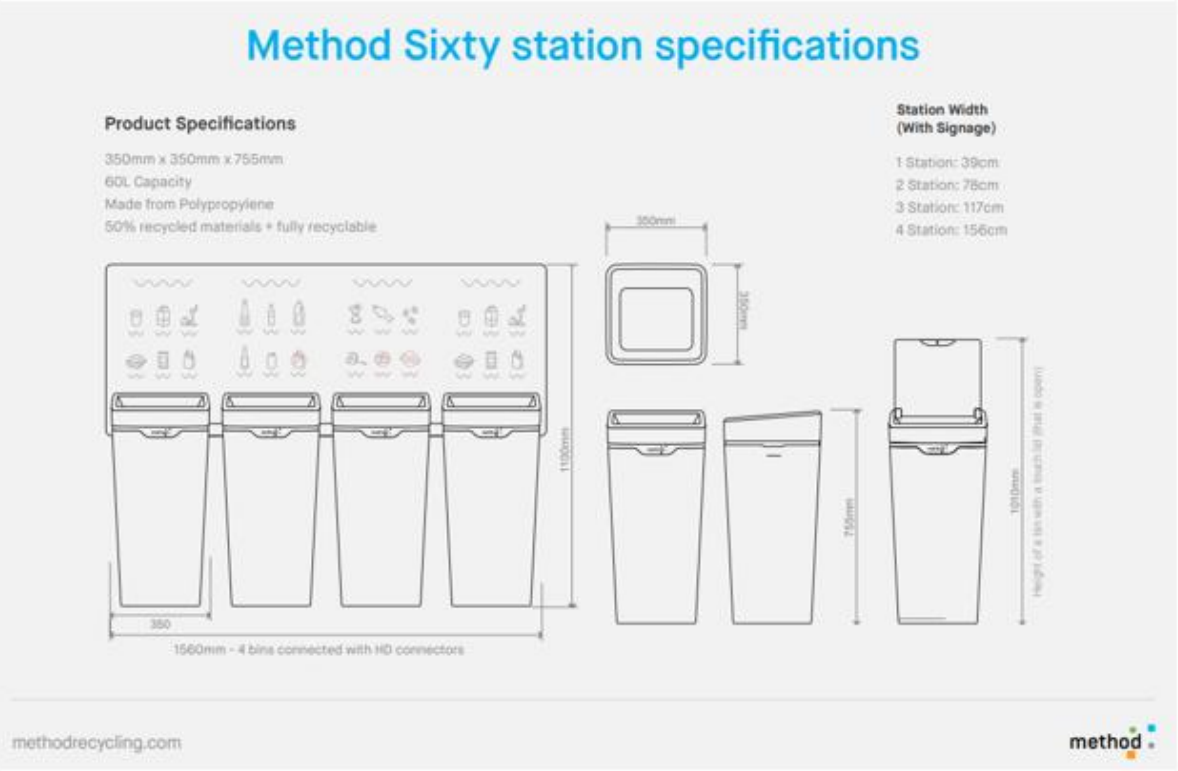
PARTS & FEATURES
Front Only - Part Number: 78811672
• Suit Sulo & Otto 600lt / 1100lt MGBs
• Spring loaded draw bar folds up
• No drilling of holes in the bin required
• Solidly fixed to the base of the bin using the castor mounting bolts
• Passivated zinc finish for long life
• Correct Rear Fixed or Directional Lock castors should be used
Rear Only - Part Number: 78811673
• Suit Sulo & Otto 600lt / 1100lt MGBs
• No drilling of holes in the bin required
• Solidly fixed to the base of the bin using the castor mounting bolts
• Passivated zinc finish for long life
• Correct Rear Fixed or Directional Lock castors should be used
For Steel Bin Front Only - Part Number: 78811781
• Suit Sulo & Otto 600lt / 1100lt MGBs
• No drilling of holes in the bin required
• Solidly fixed to the base of the bin using the castor mounting bolts
• Passivated zinc finish for long life
• Correct Rear Fixed or Directional Lock castors should be used
Direction Lock : 53191001
• Suit Sulo & Otto 600lt / 1100lt MGBs
• No drilling of holes in the bin required
• Solidly fixed to the base of the bin using the castor mounting bolts
• Passivated zinc finish for long life
• Correct Rear Fixed or Directional Lock castors should be used

Please Note: This is an example only – please contact supplier for specific recommendations.

Source: Sitecraft - www.sitecraft.net.au

APPENDIX: D.5 EXAMPLE SOURCE SEPARATION RECEPTACLES





Source: Method Recycling - www.methodrecycling.com

Consulting.™
an Elephants Foot Company

37 Archer Street, Chatswood NSW 2067
Mixed Use Development

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

6/11/2025
Revision D

Client
HPG General Pty Ltd
Heritage House, Suite 1, 256 Victoria Avenue, Chatswood

Architect
Fuse Architects
Studio 64
61 Marlborough Street

ELEPHANTS FOOT

ABN: 47 644 736 514
ELEPHANTS FOOT CONSULTING. PTY LTD
1300 456 374 | consulting@elephantsfoot.com.au
www.elephantsfoot.com.au

REVISION REFERENCE

Revision	Date	Prepared by	Description
A	13/03/2025	M. Cuevas	Draft
B	07/05/2025	M. Cuevas	Amendment
C	08/05/2025	M. Cuevas	Final
D	06/11/2025	T. McPherson	Amendment

CONTENTS

LIST OF TABLES

1 EXECUTIVE SUMMARY

This report comprises an addendum to the C&D report prepared by Elephants Foot Consulting to support a State Significant Development Application (SSDA) for a mixed-use building at 37 Archer Street, Chatswood. It provides additional information to describe amendments to the proposed design which have been implemented in response to feedback received from the State Design Review Panel (SDRP), the Department of Planning, Housing and Infrastructure (DPHI) and Willoughby City Council (WCC). Public exhibition of the application occurred between 20 June 2025 and 21 July 2025.

The report includes a description and explanation of the design changes adopted and provides a response to the matters identified by DPHI, the SDRP, WCC and the public submissions received during the exhibition period. The report comprises part of a suite of technical documents prepared by the project team in support of the application and should be read in conjunction with these documents.

The key design changes that have been introduced are summarised as follows:

- **Improvement of the height and scale transition to the adjoining conservation area**:
  - Two storey reduction in podium height fronting Bertram Street.
  - Setback of the street wall has been increased from 8m to 9m.
- **Redistribution of floorspace**: Floorspace within the building element fronting Bertram Street has been transferred to the Archer Street tower resulting in an overall increase in the height of the tower to 30 storeys (additional two storeys).
- **Increased and improved landscaping** through substitution of bleachers and other hard elements by soft green landscaping.

The project description has been updated as follows:

Project Element	Summary

Project Summary	The project includes demolition of all existing buildings and structures and the removal of all trees on the site, and construction of a mixed-use building to 30 storeys comprising residential and commercial uses.
	Specifically, the SSDA seeks development consent for:
	• Demolition of existing buildings and structures and removal of trees including two street trees on Bertram Street.
	• Excavation of the site to a depth of **RL71.85m** and construction of a **6-level basement**.
	• Construction of a mixed-use building up to **30-storeys** in height (**RL190.55m**) comprising the following uses:
	  ○ Residential apartments: A total of **122 apartments**, including **25 affordable housing units (2,145.98sqm)**, and residential amenities.
	  ○ Office tenancies: occupying levels 1 and 2.
	  ○ Retail tenancies: a double storey retail unit fronting Bertram Street.
	  ○ Food and beverage tenancies: ground level.
	▪ Provision of car and bicycle parking spaces at basement level.
	▪ Provision of residential amenities and services, including a swimming pool and gym.
	▪ Provision of a publicly accessible landscaped through site link.
	▪ Associated works for the provision of infrastructure and servicing.

Site/Project Area	The site has a total area of **2,201m²**. The entirety of the site will be physically disturbed by the project.

Project Element	Summary
Proposed uses	▪ Shop top housing ▪ Retail premises, including food and drink premises and a two-storey retail unit ▪ Office premises
Gross Floor Area (GFA)	Total **14,228m²** which includes: ▪ Residential GFA: **12,435.65m²** including affordable housing GFA of **2,145.98m²** ▪ Non-residential GFA: **1,870.85m²** – Commercial GFA: **1,321m²** – Retail tenancy with a total GFA of: **170m²** – Three food and beverage tenancies, with a total GFA: **384m²**
Floor Space Ratio (FSR)	**6.46:1**
Maximum height	**99.74m** above existing ground level (**RL 190.55m**) **30 storeys**
Apartments and Mix	The proposal will deliver **122 dwellings** in the following mix: ▪ **1-bedroom: 21 (17%)** ▪ **2-bedroom: 61 (50%)** ▪ **3-bedroom: 30 (25%)** ▪ **4-bedroom: 10 (8%)** Adaptable apartments: 61 (50%) **97** of these apartments will be market housing and **25** apartments will be affordable housing (15% of overall GFA). Additionally, a monetary contribution will be provided in lieu of floorspace within the project to meet the requirement for affordable housing under clause 6.8 of the WLEP.
Parking	**154** car parking spaces: ▪ **115** residential including **15** accessible spaces ▪ **18** visitor spaces. **1** of these spaces is accessible. ▪ **6** spaces allocated to the affordable housing units including **1** accessible space. ▪ **4** commercial spaces. **2** of these spaces are accessible. ▪ **3** retail spaces. ▪ **8** food and beverage spaces. ▪ **11** motorcycle parking spaces.
Bicycle Parking	**28** secure spaces with the development's basement with **11** additional rack spaces provided at ground floor level (through site link)

This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following mitigation measures:

Table 1 Mitigation Measures

Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure	Action/responsible
Recycling and Reuse	Construction and Demolition	Provide recycling bins to recover valuable materials from waste.	**Action** Workers will dispose of their recycling into the bins provided. This could include recycling glass, plastics, and paper.
Education	Construction and Demolition	Educational material encouraging correct separation of general waste, recycling and must be provided to each worker.	Building management will ensure everyone is aware of the importance of waste minimization and how to dispose of waste correctly.
Policy and Regulation Compliance	Construction and Demolition	Regularly review and update waste management plans to comply with environmental regulations.	Regularly review the policies to ensure they remain in line with evolving environmental regulations and best practices.

Table 2: SEARs Requirements

Item	Description of Requirement	Section Reference
17	Identify, quantify and classify the likely waste streams to be generated during construction and operation. Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements for the site. If buildings are proposed to be demolished or altered, provide a hazardous materials survey.	Sections 5.1, 5.2, and 5.3 identify the waste streams and provide the construction and demolition quantities along with the closest location for proper disposal. Refer to sections 4.3, 4.4, and 4.5 for opportunities for reuse, recycling, and management of hazardous waste materials and excavation waste.

2 SCOPE OF REPORT

A Waste Management Plan (WMP) is to be submitted with all development applications for new and change-of-use developments that will generate construction, demolition and operational waste.

This WMP applies only to the **construction** and **demolition** phases of the proposed development. The requirements outlined in this WMP must be implemented on site during construction and demolition may be subject to review upon any change to the design. Construction and demolition waste management requirements will also be subject to review as part of the Construction Management Plan.

The waste management for the **operational** phase of the development is not addressed in this report. An operational WMP will need to be provided separately.

2.1 Legislation and Guidance

Information provided in this WMP comes from a wide range of construction and demolition waste management guidance at the local, state, and federal levels. The primary sources of guidance include:

- Australian Government, Department of Sustainability, Environment, Water, Population and Communities. *Construction and Demolition Waste Guide – Recycling and Re-use Across the Supply Chain*. (2014, November).
- NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021
- NSW Waste Classification Guidelines 2014
- Australia's National Waste Policy 2018
- NSW Waste and Sustainable Materials Strategy 2041

2.2 Waste Diversion Targets

To quantify and measure this sustainable approach to waste management, the NSW WARR Strategy 2014-2021 outlines specific targets in order to clarify the state's long-term goals and priorities. These targets were supported by industry, community, state, and local governments during the Strategy's consultation phase, and include:

- Increasing construction and demolition recycling rates to 80%
- Increasing waste diverted from landfill to 75%
- Reducing litter by 40%
- Reduce illegal dumping incidents by 30%

2.3 Report Objectives

Throughout this report, EFC aims to encourage where practical, having regard to the design, and the site constraints, the following waste management practices for the duration of the demolition and construction stage of the development:

- Re-use of excavated material on-site and disposal of any excess to an approved site;
- Green waste mulched and re-used on-site as appropriate, or recycled off-site;
- Bricks, tiles and concrete re-used on-site as appropriate, or recycled off-site;
- Plasterboard waste returned to supplier for recycling;
- Framing timber re-used on site or recycled off-site;

- Windows, doors and joinery recycled off-site;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements;
- Plumbing, fittings and metal elements recycled off site;
- Ordering accurate quantities of materials and prefabrication of materials where possible;
- Re-use of formwork;
- Careful source separation of off-cuts to facilitate re-use, resale or recycling.

2.4 Limitations

This report has been prepared by EFC for the sole purpose of providing a Construction and Demolition Waste Management Plan (C & D WMP) to support a development application. The report is provided with the following limitations:

- This report is for the sole use of HPG General Pty Ltd (including their officers, employees and advisers) and should not be used or relied upon by any other party without prior written consent from EFC;
- Drawings, estimates and information contained in this report have been prepared by analysing information, plans and documents supplied by the client, or nominated third parties. Any assumptions based on the information contained in the report are outside the control of EFC;
- The calculations presented in the report are estimates only. The amount of waste generated will be dependent on the approach taken by site management, including the levels of training and education offered to site staff and the actions and attitudes of staff themselves.
- The site manager will make adjustments as required based on actual waste volumes (e.g. if waste volumes are greater than estimated, then waste storage capacity and collection frequencies will increase accordingly) and increase the amount of waste storage and collection frequency accordingly;
- The report has been prepared with all due care and attention; however, no assurance or representation is made that the WMP reflects the actual outcome. EFC will not be liable to for any plans or outcomes that are not suitable for purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFC offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Examples of equipment provided in this report should be reviewed by the appropriate equipment supplier who will assess the correct equipment for supply. Reference to any other business or product besides EFC and EFC equipment is for information purposes only, and is not officially endorsed or recommended by EFC.

3 GENERAL WASTE MANAGEMENT PROVISIONS

3.1 Stakeholder Roles and Responsibilities

All stakeholders have a responsibility for their own environmental performance and compliance with all legislation.

The Construction Contractor will be responsible for implementing this WMP, although site staff have a responsibility to ensure their own compliance at all times. Where possible, an Environmental Management Representative (EMR) should also be appointed for the project to help ensure compliance. The following table demonstrates the primary roles and responsibilities of the respective stakeholders:

Table 3: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Site Management	• Organise waste collections as required; • Organise replacement or maintenance requirements for bins; • Investigate and ensure prompt clean-up of illegally dumped waste materials; • Notify the Principal Certifying Authority (Council) of the appointment of waste removal, transport or disposal contractors for waste tracking purposes; • Ensure waste related equipment is well maintained; • Ensure accurate calculations so only the required amount of materials are ordered; • Ensure segregation of materials to maximise reuse and recycling; • Check waste sorting and storage areas routinely for cleanliness, hygiene, contamination and OH&S issues; • Ensure all monitoring and audit results are well documented and are carried out as specified in the WMP; • Ensure effective signage, communication and education is provided to site staff/contractors; • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; • Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers;
Site Staff/Contractors	• Ensure adequate separation and disposal of waste streams in compliance with the WMP; • Abide by all relevant OH&S legislation, regulations, and guidelines; • Attend training and inductions as required; • Clean and transport bins as required; • Carry out daily visual inspections of waste storage areas; • Organise, maintain and clean the waste storage areas;
Environmental Management Representative (EMR)	• Approach and establish the local commercial reuse of materials where reuse on-site is not practical; • Establish separate skips and recycling bins for effective waste segregation and recycling purposes; • Ensure staff and contractors are aware of site requirements; • Provision of training of the requirements of the WMP and specific waste management strategies adopted for the development; • Contaminated waste management and approval of off-site waste transport, disposal locations and check licensing requirements; • Arrange assessment of suspicious potentially contaminated materials, hazardous materials and liquid waste; • Monitor, inspect and report requirements.
Waste Collection Contractors	• Provide a reliable and appropriate waste collection service; • Provide feedback to site management regarding contamination of waste streams; • Work with site management to customise waste systems where possible.

3.2 Monitoring and Reporting

It is recommended that the following measures be taken to improve demolition and construction waste management in future and to provide more reliable waste generation figures:

- Compare projected waste quantities with actual waste quantities produced.
- Conduct waste audits of current projects (where feasible).
- Note waste generated and disposal methods.
- Look at past waste disposal receipts.
- Record this information to help in waste estimations for future waste management plans.

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, dockets/receipts verifying recycling/disposal in accordance with the WMP must be kept and presented to Council or the EPA if and when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists/logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training should be undertaken and signage re-examined.

All environmental incidents are to be dealt with promptly to minimise potential impacts. An incident register must be maintained on-site at all times and should include the contact details of the 24-hour EPA Pollution line. Likely incidents to occur during the construction and demolition stage of the development may involve fuel or chemical spills, seepage or mishandling of hazardous waste, or unlicensed discharge of pollutants to environment.

3.3 Opportunities for Reuse and Recycling

There are many opportunities to reduce the volume of waste generated during demolition and construction. Adaptive reuse of building materials should be encouraged, with significant consideration given to methods of reusing or recycling materials onsite as well as sourcing used or recycled materials from elsewhere to be used on site.

The site should facilitate where practical reuse and recycling by 'deconstruction', whereby various materials are carefully dismantled and sorted. Any unwanted reusable materials can be taken to a second-hand building centre, reducing waste disposal costs.

Materials that are individually wrapped should also be avoided where possible, with preference given for materials that can be delivered in returnable packaging such as timber pallets.

The table below gives examples of potential reuse and recycling options for the materials likely to be used/generated in construction and demolition at this development:

Table 4: Potential Reuse/Recycling Options for Construction Materials

Material	Reuse/Recycling Potential
Asphalt	Hot in-place recycling or reprocessed into Reclaimed Asphalt Pavement (RAP).
Bricks	Cleaned and/or rendered for reuse, crushed for fill, sold or provided to a recycled materials yard
Cardboard Packaging	Recycled at a paper/cardboard recycling facility
Carpet	Cleaned and reused for the same purpose, reused in landscaping or garages/sheds, recycled at an appropriate processing facility
Concrete, Masonry, Spoil	Reused on-site as fill, levelling or crushed for road base
Doors, Windows, Fittings	Reused in new or existing buildings or sent to second-hand supplier
Glass	Recycled at a glass recycling facility, aggregate for concrete production, crushed for termite barrier, reused as glazing
Green Waste (Organics)	Mulched, composted for reuse, trees chipped for use in landscaping or removed carefully and reused onsite or sold
Hardwood Beams	Reused as floorboards, fencing, furniture or sent to second-hand timber supplier
Insulation Material	Reprocessed to remove impurities and reused for the same purpose or as off-cuts, compressed for ceiling tile manufacture
Metal, Steel/Copper Pipe	Recycled at a metal recycling facility, melted into secondary materials for structural steel, roofing, piping etc. copper sold for re-use
Other Timber	Reused in formwork, ground into mulch for garden or sent to second-hand timber supplier
Plasterboard	Crushed for reuse in manufacture of new plasterboard, returned to supplier or used in landscaping
Plastics	Reused as secondary materials for playgrounds, park benches etc.
Roof Tiles	Cleaned and reused, crushed for reuse for landscaping and driveways or sold or provided to a recycled materials yard
Soil	Stockpiled onsite for reuse as fill
Synthetic & Recycled Rubber	Reused for the same purpose or reprocessed for use in manufacture/construction of safety barriers, speed humps
Topsoil	Stockpiled onsite for reuse in landscaped areas

3.4 Management of Hazardous Waste Materials

For the purpose of this report, hazardous waste materials include any waste that poses a hazard or potential harm to human health or the environment, particularly asbestos waste and asbestos containing material (ACM). The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

During the construction phase of the development, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g. asbestos) and dispose of all contaminated/hazardous waste at an appropriately licenced facility, where applicable.

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Site Manager is to stop work immediately in that location and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

The following general mitigation measures will apply:

- Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather;
- Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal;
- Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA);
- Decontamination of all equipment prior to demobilisation from the site is important so that contaminated materials are not spread off-site.

3.5 Management of Excavation Waste

For the purpose of this report, excavation waste consists of any unwanted material generated from excavation activities such as a reduced level dig, site preparation and levelling and the excavation of foundations, basements, tunnels and service trenches. This will typically consist of soil and rock. The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

All excavated material generated on this site may be re-used in the landscaping or used on other sites as fill material, provided no contamination is present. If sandstone is found to be present, this may be sold or incorporated into the building design.

The following measures and safeguards will apply to the development for excavated material:

- Wherever practical, excavation material will be reused as part of the development;
- Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot;
- A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes;

- Transportation routes for excavation material removed from site will be identified and used.

4 SITE SPECIFIC WASTE MANAGEMENT PROVISIONS

4.1 Demolition Waste Volumes and Management

The demolition stage of the development provides the greatest opportunity for waste minimisation and resource recovery. The first thing that should be considered is whether it is possible to reuse existing buildings or parts of buildings for the proposed use. With careful on-site sorting and storage and by staging work programs it is possible to reuse many materials, either on or off-site.

The existing dwellings at this site will be demolished and a new building will be constructed. Where possible, materials will be reused, such as crushing concrete for use as clean fill. However, the majority of the components of the building will either be reused for the same purpose or disposed of offsite.

A demolition contractor will be engaged during this phase of the project. The contractor will be responsible for ensuring all demolition activities are planned and undertaken in accordance with relevant waste minimisation policies and DA requirements.

The table below illustrates the anticipated volumes of materials generated at this development during the demolition stage. Volumes have been advised by our client. The table below illustrates the anticipated volumes of materials generated at this development during the demolition stage.

The table below illustrates the anticipated volumes of materials generated at this development during the demolition stage. The volumes of demolition materials in the following table are sourced from estimates outlined in the Camden Council's *Waste Management Guidelines* 2019. Our client has reviewed these estimations are to their satisfaction and acknowledges volumes may be updated when more accurate data can be determined by the relevant party.

Table 5: Demolition Waste Conversion

Material	Volume (m3)	*Tonnes (t)	**Appx. Percentage Recovered
Bricks	168	201.6	100%
Concrete	56	84	100%
Timber	182	34.58	33%
Plasterboard	182	36.4	50%
Other waste	112	33.6	30%
Totals	**700**	**390.18**	

**The conversion of materials from volume to tonnes is based on the information provided in a consultation paper published by WA Department of Water and Environmental Regulation <https://www.der.wa.gov.au/images/documents/our-work/consultation/current-consultation/Consultation%20Sheet%20-Approved%20method%20for%20recyclers.pdf>*

***The percentage of recycled demolition waste is estimated by BINGO, and is based on the average quantities of materials received and recovered at their facilities.*

The table below illustrates how the demolition materials will be managed, and estimates percentage of materials diverted from landfill.

Table 6: Demolition Waste Management

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Bricks	☐	**201.6**	☐	☒	☐	**201.6**
Concrete	☐	**84**	☐	☒	☐	**84**
Timber	☐	**34.58**	☐	☒	☒	**11.4**
Plasterboard	☐	**36.4**	☐	☒	☒	**18.2**
Other Waste	☐	**33.6**	☐	☒	☒	**10.1**
	Total	**390.18**			**Total**	**325.3**
					Total Diversion of Waste from Landfill (Minimum 80%)	**83.4%**

4.2 CONSTRUCTION WASTE VOLUMES AND MANAGEMENT

Waste generated during the construction stage of the development will be managed by the principal contractor and sub-contractors, with materials being reused and recycled wherever possible. Where neither reuse nor recycling are possible, waste will be disposed of as general waste at a licensed landfill site.

Recyclable material generated during construction will largely consist of off-cuts and discarded bricks, timber, steel, concrete, tiles, plasterboard, and piping, as well as packaging materials.

It is important to note that source separation of waste on-site may offer cost savings when compared to the disposal of mixed waste at landfill sites. Further cost savings may be achieved through the use of reusable and recycled-content materials and by reusing materials.

The table below illustrates the anticipated volumes of materials generated at this development during the construction stage. The volumes of construction materials in the following table are sourced from estimates outlined in the Camden Council's *Waste Management Guidelines* 2019. Our client has reviewed these estimations are to their satisfaction and acknowledges volumes may be updated when more accurate data can be determined by the relevant party.

Table 7: Construction Waste Conversion

Material	Volume (m3)	*Tonnes (t)	**Approx. Percentage Recovered
Bricks	445.0	534.00	100%
Concrete	435.0	652.5	100%
Timber	180.0	34.2	33%
Plasterboard	149.0	29.8	50%
Metals	229.0	114.5	100%
Other waste	1682.0	504.6	30%
Totals	**3120.0**	**1869.6**	

**The conversion of materials from volume to tonnes is based on the information provided in a consultation paper published by WA Department of Water and Environmental Regulation <https://www.der.wa.gov.au/images/documents/our-work/consultation/current-consultation/Consultation%20Sheet%20-Approved%20method%20for%20recyclers.pdf>*

***The percentage of recycled waste is estimated by BINGO, and is based on the average quantities of materials received and recovered at their facilities.*

The table below illustrates how the construction materials will be managed, and estimates percentage of materials diverted from landfill.

Table 8: Construction Waste Management

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Bricks	☐	534.00	☐	☒	☐	534.00
Concrete	☐	652.5	☐	☒	☐	0.00
Timber	☐	34.2	☐	☒	☒	652.50
Plasterboard	☐	29.8	☐	☒	☒	11.29
Metals	☐	114.5	☐	☒	☐	14.90
Other	☐	504.6	☐	☒	☒	114.50
Total		1869.6	**Total**			1478.57
Total Diversion of Waste from Landfill						**79.1%**

4.3 Recycling Directory

Construction materials removed from site will need to be managed in accordance with the provisions of current legislation and may include segregation by material type classification in accordance with NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste* and disposal at facilities appropriately licensed to receive the particular materials.

Please find the below recommendations for recycling drop off locations for all materials likely to be generated at this development. Only the nearest locations are provided. See www.businessrecycling.com.au for additional locations:

Table 9: Recycling Directory

	Business Name	Suburb	Distance (km)
Bricks	Bingo Recycling Centre	Artarmon	2.1
	Cleanaway Ryde Resource Recovery Centre	North Ryde	6
	AE Biggs	Oxford Falls	8.8
Tiles	Bingo Recycling Centre	Artarmon	2.1
	Cleanaway Ryde Resource Recovery Centre	North Ryde	6
	AE Biggs	Oxford Falls	8.8
Concrete	Cleanaway Ryde Resource Recovery Centre	North Ryde	6
	AE Biggs	Oxford Falls	8.8
	Genesis Alexandria	Alexandria	12.3
Timber	Bingo Recycling Centre	Artarmon	2.1
	Cleanaway Ryde Resource Recovery Centre	North Ryde	6
	AE Biggs	Oxford Falls	8.8
Plasterboard	Bingo Recycling Centre	Artarmon	2.1
	AE Biggs	Oxford Falls	8.8
	Kimbriki Resource Recovery Centre	Ingleside	12.9
Metals	Bingo Recycling Centre	Artarmon	2.1
	Cleanaway Ryde Resource Recovery Centre	North Ryde	6
	AE Biggs	Oxford Falls	8.8

4.4 Site-Specific Operational Measures

Training/Site Inductions

All staff employed during the construction stage of the development must undertake site-specific induction training regarding the procedures for waste management. Employees of the head contractor will undertake a specific induction outlining their duties and how they are to enforce the waste management procedures.

Induction training will include the following at a minimum:

- Legal obligations;
- Emergency response procedures on site;
- Waste storage locations and separation of waste;
- Litter management in transit and on site;
- The implications of poor waste management practices;
- Correct use of general-purpose spill kits;
- Responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

Materials Selection and Ordering

- Selection of all materials will be undertaken by architectural designers;
- Prefabrication of materials off-site where possible;
- Materials requirements are to be accurately calculated to minimise waste from over-ordering;
- Materials ordering process is to aim at minimisation of materials packaging;
- Material Safety Data Sheets (MSDS) are to accompany all materials delivered to site, where required, to ensure that safe handling and storage procedures are implemented.

Waste Avoidance Opportunities

- Limiting unnecessary excavation;
- Selection of construction materials taking into consideration to their long lifespan and potential for reuse;
- Ordering materials to size and ordering pre-cut and prefabricated materials;
- Reuse of formwork;
- Planned work staging;
- Use of naturally ventilating buildings to reduce ductwork;
- Reducing packaging waste on-site by returning packaging to suppliers where possible, purchasing in bulk and requesting cardboard or metal drums rather than plastics;
- Requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels;
- Reduction of PVC use;
- Use of low VOC (volatile organic compounds) paints, floor coverings and adhesives;
- Use of fittings and furnishings that have been recycled or incorporate recycled materials;
- Use of building materials, fittings and furnishings with consideration to their longevity, adaptation, disassembly, reuse and recycling potential.

Site Procedures

- Excavated materials will be used onsite where practical;
- Green waste will be mulched and reused in landscaping either onsite or offsite;
- Concrete, tiles and bricks will be reused or recycled offsite;
- Steel will be recycled offsite; all other metals will be recycled where economically viable;
- Framing timber will be reused on-site or recycled off-site;
- Windows, doors and joinery will be recycled off-site where possible;
- Plumbing, fittings and joinery will be recycled off-site where possible;
- Plasterboard will be re-used in landscaping on-site or returned to the supplier for recycling where possible;
- All used crates will be stored for reuse unless damaged;
- All glass that can be economically recycling will be;
- All solid waste timber, brick, concrete, rock, plasterboard and other materials that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements;
- Provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site;
- Beverage container recycling will be provided on-site for employee use;
- All waste and recycling will be disposed of via council approved systems.

4.5 Location and Design of Waste Management Facilities

General Requirements

All waste management facilities onsite should:

- Be conveniently located to enable easy access for on-site movement and collection;
- Be incorporated with other loading/unloading facilities;
- Have sufficient space for the quantity of waste generated and careful source separation of recyclable materials;
- Have sufficient space to contain any on-site treatment facilities, such as compaction equipment;
- Have adequate weather protection and, where required, be enclosed or undercover;
- Be secure and lockable;
- Be well-ventilated and drained to the sewer;
- Be clearly sign-marked to ensure appropriate use.

Waste and Recycling Receptacles

A sufficient quantity of skip bins should be provided for the separate storage of each type of C&D material generated on site. This will assist in maximising source separation and resource recovery, while reducing the costs and quantity of materials disposed of at landfill.

The size of the receptacles should be appropriate to the nature of waste generated and the available storage area. In general, the following options would be acceptable:

Bin Size	Access	Dimensions
2.5m	Top loading	
3m	Drop door walk-in	
4m	Drop door walk-in	
5m	Drop door walk-in	
6m	Double doors walk-in	

Source: Aussie Bins

If the developer chooses to adopt a traditional waste management strategy, whereby waste is deposited into comingled skip bins to be sorted offsite, skip bins would be considered sufficient for purpose. However, if the site is to pursue source separation, dedicated skips for the following materials are recommended:

- Timber;
- Plasterboard;
- Concrete;
- Bricks;
- Scrap metal;
- General waste.

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided where applicable. Where possible, additional bins will be provided in common areas for the collection of commingled recyclables such as beverage containers (glass, plastic, aluminium), paper products, recyclables food containers, etc. Specialised bins for cigarette butts should also be provided.

Safety and Signage

The following safety measures should be considered for the waste storage area:

- Location should not interfere with sight lines of drivers entering or leaving the site;
- Skip bins should be clearly visible and located in well-lit areas;
- Safe paths of travel should be designated using reflective tape, barriers and cones;
- Skip bins must be secured and must not be over-filled to reduce risk of injury through bins moving and falling objects.

Standard signage will be installed in all waste areas, with all skip bins colour coded and labelled appropriately on all sides to allow clear identification of the type of waste to be deposited into each bin.

Refer to the EPA's website for standard construction waste and recycling signs:

www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

Space and Siting Requirements

The waste storage area will be located adjacent to the entrance to the site to enable access and allow sufficient space for the required skip bins and servicing requirements. The storage area will also be flexible in order to cater for change of use throughout construction works.

Where space is restricted, dedicated stockpile areas will be allocated onsite, with regular transfers to the dedicated skip bins for sorting and collections.

The position of the designated waste holding area onsite may change according to building works and the progression of the development. Access, visual amenity and WHS will always be integral to the selection of waste storage area locations. Any stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

Servicing and Transport

The frequency of waste removal from site will be determined by the volume of materials deposited into the dedicated skip bins. Skip bins will be monitored on a daily basis by the Site Manager to ensure they do not overflow. If skip bins are reaching capacity, removal and replacement should be organised for within 24 hours.

All skip bins leaving the site will be covered with a suitable tarpaulin to reduce spillage of waste while in transit.

All waste collection for construction works will be conducted between approved hours as per Council requirements (typically between 7am and 7pm Monday to Friday, and between 7am and 1pm on Saturdays). All waste generated on site will be transported to an approved and appropriately licensed resource recovery facility and/or landfill site.

4.6 Existing Structures

Proposed Bin Storage Area

Source: Urbis 2024

Note: the proposed bin location is indicative only, this may change based on site logistics.

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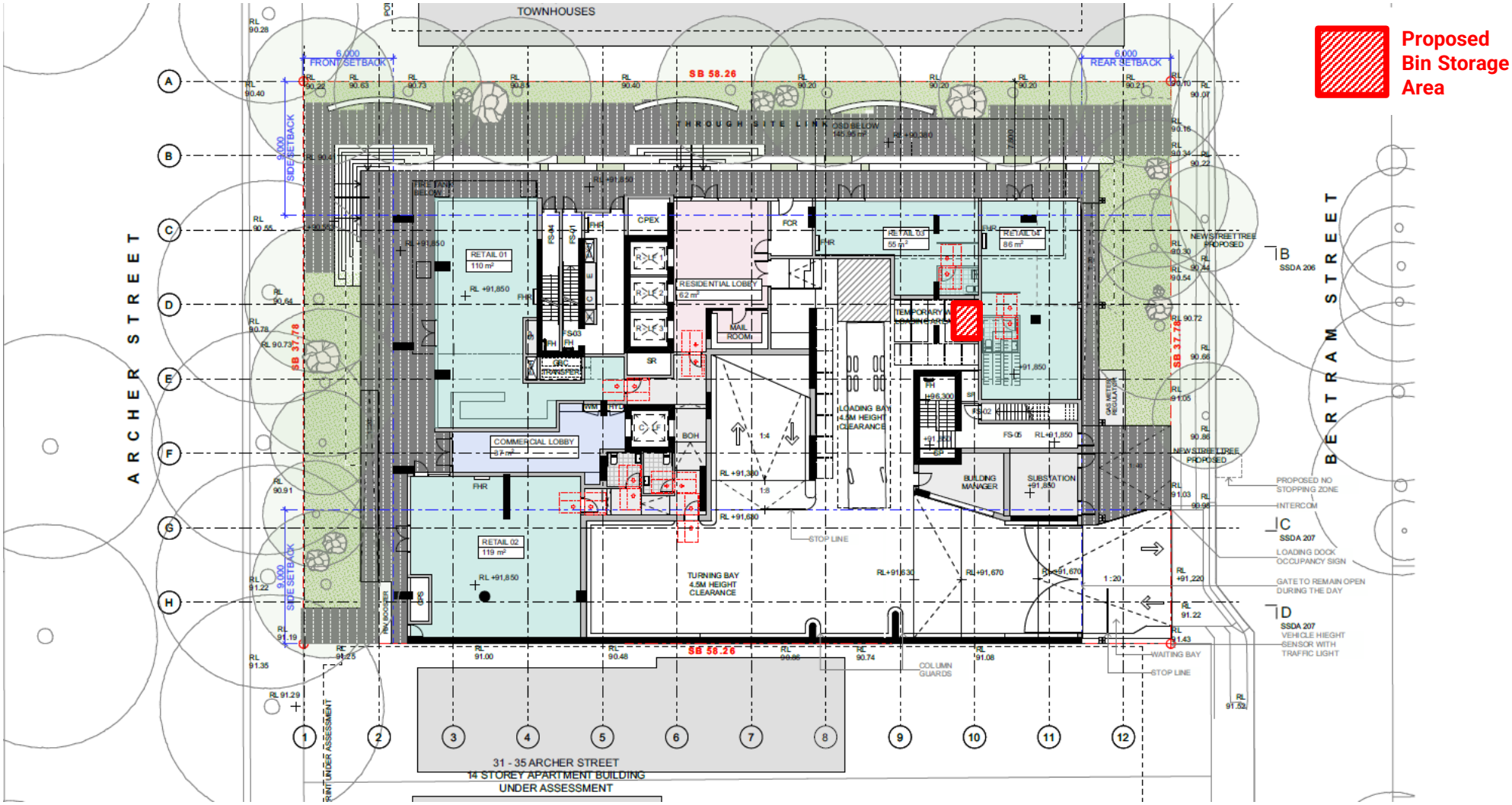
4.7 Site Plans



Source: Fuse Architects, Sheet Number: SSDA 106, Rev B, 30/10/2025, Ground Floor Plan.
Note: the proposed bin location is indicative only, this may change based on site logistics.