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160-172 Lord Sheffield Circuit, Penrith NSW 2750

Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

28/03/2023
Report No. 4351
Revision C

Client

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GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
Chute	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Chute Discharge	The point at which refuse exits from the refuse chute
Chute Discharge Room	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
Collection Area/Point	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
DA	Development Application
DCP	Development Control Plan
EPA	Environmental Protection Authority
HRV	Heavy Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
L	Litre(s)
LEP	Local Environmental Plans guide planning decisions for local government areas
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that must be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
Mixed Use Development	A development comprised of two or more different uses
MUD	Multi-Unit Dwellings comprise of a development with more than one dwelling. This ranges from dual occupancies and attached dwellings to high-rise residential developments
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
Onsite Collection	When the collection vehicle enters the property and services the development within the property boundary from a designated loading area
Owners Corporation	An organisation or group of persons that is identified by a particular name and acts, or may act, as an entity
Service Bins	Bin set side to be placed under a chute while the remainder of the bins are being collected

WHS	Workplace Health and Safety
Wheel-in wheel-out service	A type of waste collection service offered by local councils where the council waste collection personnel enter the premises to collect the bins and returns them to the property

1.0 ACKNOWLEDGEMENT OF COUNTRY

We acknowledge Australia's First Nations People as the Traditional Custodians of this land. We pay respect to ancestors and Elders, past and present. We honour Aboriginal and Torres Strait Islander people and their connection to land, waters and seas, and their vital contribution to the vibrant nation that we share, Australia.

2.0 INTRODUCTION

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by the residential development located at 160 Lord Sheffield Circuit, Penrith NSW 2750.

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.

2.1 SCOPE OF REPORT

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. A construction and demolition WMP will need to be provided separately. EFC can supply this if required.

2.2 REPORT CONDITIONS

The purpose of this report is to document an OWMP as part of a development application, 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.

3.0 LEGISLATION & 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:

- Penrith Development Control Plan 2014
- Penrith Local Environmental Plan 2010

The primary purpose of a development control plan (DCP) is to guide development 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:

- Penrith City Council: Residential Flat Building Waste Management Guidelines
- NSW Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012
- NSW Better practice guide for resource recovery in residential developments 2019
- NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021
- NSW Waste Classification Guidelines 2014
- Australia's National Waste Policy 2018

3.1 PENRITH CITY COUNCIL OBJECTIVES

To ensure new developments are able to access Council's waste service in an efficient and effective manner, the following must be taken into consideration in the assessment of development applications:

- Site planning of the development accommodates on-site waste collection and allows the waste collection vehicle to enter/exit, manoeuvre within the site and access the nominated collection point in a safe and efficient manner.
- Site planning of the development ensures amenity and safety of all users (including residents, caretakers, cleaners and waste collection staff) at all stages of the waste management process.
- Waste management system selection ensures that it is safe and convenient for resident use; and

TABLE OF RFI COMPLIANCE

The table below addresses the preliminary comments raised by Council (DA no. DA22/1086). Each condition has been addressed, and can be referenced in the report by navigating through the allocated sections listed below:

4.0 DEVELOPMENT OVERVIEW

The proposed development falls under the LGA of Penrith City Council, and consists of:

- 1 building with 11 levels in total, incorporating
  - 293 residential units in total
    - separated into 5 cores
  - Retail tenancies with a total GFA of 1703 m^2
  - Commercial tenancies with a total GFA of 4275 m^2

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings

4.1 SITE LOCATION

The site is located at 160-172 Lord Sheffield Circuit, Penrith NSW 2750 as shown in Figure.1 (boundaries are indicative only), and is legally known as LOTS 3001, 3002, and 3011 in DP 1184498. The site has frontages and vehicular access via Lord Sheffield Circuit.

Figure 1: Site Location

Source: SJB Architects.

5.0 RESIDENTIAL WASTE MANAGEMENT

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

5.1 WASTE GENERATION ESTIMATES

The Penrith City Council *Residential Flat Building Waste Management Guidelines* has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic waste and recycling rates. Actual volumes of waste and recycling generated in operation may differ according to the residents' actual waste management practices.

During operation, it is the responsibility of the building manager to monitor the number of bins required for the residential component. Waste and recycling volumes may change according to residents' attitudes to waste disposal and recycling, building occupancy levels or development's management. Any requirements for adjusting the capacity of the waste facilities can 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.

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

Table 1: Estimated Waste and Recycling Volumes – Residential

Type of Dwelling	# Units	Waste Generation Rate (L/Unit/Week)		Generated Waste (L/Week)	Recycling Generation Rate (L/Unit/Week)		Generated Paper Recyclables (L/Week)
R1	47	61.11		2872.2	61.11		2872.2
R2	47	61.11		2872.2	61.11		2872.2
R3	47	61.11		2872.2	61.11		2872.2
R4	48	61.11		2933.3	61.11		2933.3
R5	104	61.11		6355.6	61.11		6355.6
TOTAL	**293**			**17905.6**			**17905.6**
Bins and Collections		Waste Bin Size (L)		1100	Recycling Bin Size (L)		1100
		Waste Collections/Week		2	Recycling Collections/Week		1
		Bins Per Day	Building 1	0.4	Bins Per Day	Building 1	0.4
			Building 2	0.4		Building 2	0.4
			Building 3	0.4		Building 3	0.4
			Building 4	0.4		Building 4	0.4
			Building 5	0.8		Building 5	0.8
		Bins Per Collection	Building 1	**3**	Bins Per Collection	Building 1	**3**
			Building 2	**3**		Building 2	**3**
			Building 3	**3**		Building 3	**3**
			Building 4	**3**		Building 4	**3**
			Building 5	**6**		Building 5	**6**

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

Table 2: Estimated Food Waste and Garden Organics (FOGO) – Residential

Type of Dwelling	# Units	Food Waste Generation Rate (L/Unit/Week)	Generated Food Waste (L/Week)
R1	47	25	1175
R2	47	25	1175
R3	47	25	1175
R4	48	25	1200
R5	104	25	2600
TOTAL	**293**		**7325**
Waste Bin Size (L)			240
Waste Collections/Week			1
Total Required			**31**

Note: FOGO Waste has been calculated using the rates from the '*Better Practice Guidelines for Waste Management in New Residential Developments 2019*'.

5.2 BIN SUMMARY

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

Table 3: Estimated Bin Quantities for Each Building

Building	Waste Bins	Recycling Bins	Service Bins
R1	3 x 1100L MGBs	3 x 1100L MGBs	2 x 1100L MGBs
R2	3 x 1100L MGBs	3 x 1100L MGBs	2 x 1100L MGBs
R3	3 x 1100L MGBs	3 x 1100L MGBs	2 x 1100L MGBs
R4	3 x 1100L MGBs	3 x 1100L MGBs	2 x 1100L MGBs
R5	6 x 1100L MGBs	6 x 1100L MGBs	2 x 1100L MGBs

Total Development Summary:

The total quantity of bins for the entire development is shown below:

General Waste: 18 x 1100L MGBs collected **2 x weekly**
Recycling: 18 x 1100L MGBs collected **1 x weekly**
FOGO Waste: 31 x 240L MGBs collected **1 x weekly**
Chute Service Bins: 10 x 1100L MGBs
Bin Cupboard Bins: 40 x 240L MGBs
Cupboard Service Bins: 5 x 240L MGBs

5.3 WASTE DISPOSAL PROCEDURES

Dual chute systems, comprising one waste chute and one recycling chute will be installed with access provided on each residential level of each core.

Residents will wrap or bag their general waste before placing in the waste chute. Bagged waste should not exceed 3kg in weight, or 35cm x 35cm x 35cm. Recycling (comingle only) must not be bagged when disposed of into the recycling chute. Cardboard boxes or large containers should also not be disposed of in the chute and a separate cardboard collection bins must be made available and managed by the building caretaker.

All residents will have access to a waste storage area within their unit, capable of holding separate receptacles for general waste and recycling. This is usually located within kitchen areas, beneath the workbench. This space should be sized to hold a minimum of 1-days' worth of recyclable, compostable and waste material.

Space for an additional 240L MGB for the disposal of irregular shaped items (recyclables) must be made adjacent within the chute cupboard on each residential level. These bins will be monitored and managed by the building caretaker, which will also act as a back-up bin in case of a chute failure or blockage.

The general waste will discharge from the waste chute into 1100L MGBs on linear tracks and the comingled recyclables will also discharge into 1100L MGBs on linear tracks in the chute discharge room located on the ground level (*see APPENDIX: A.1)*.

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

5.3.1 COMMON AREAS

Residential common areas such as lobbies, amenities and circulation areas will be supplied with suitably branded waste and recycling bins where considered appropriate. These areas generate minimal waste, however general waste and recycling receptacles should be placed in convenient locations.

5.4 WASTE COLLECTION PROCEDURES

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

On the nominated collection day, the building caretaker will be responsible for transporting the 1100L MGBs from each chute discharge room to the waste collection area located on the ground level (*see APPENDIX: A.2)* using the goods lift. It is recommended that extra 1100L service bins are placed under the chute to collect discharge while the other bins are being serviced.

To service the bins, a Council collection vehicle will enter the site from Lord Sheffield Circuit and access the turntable to park in the loading bay (*see APPENDIX: A.2)*. The building caretaker will provide the driver with access to the waste collection room and service the bins onsite. Once the bins are serviced, the collection vehicle will exit the site onto Lord Sheffield Circuit in a forward direction.

All access and clearances to the waste collection room must be able to accommodate a 10.5m long HRV per AS2890.2-2002.

It is the responsibility of the caretaker to ensure that the loading area is clear of any vehicles or obstructions prior to waste collection. When waste collection is complete, the building caretaker will return the bins to resume operational use.

All onsite waste collection infrastructure is to be locked through Council's Abloy Key System in accordance with Section 3.5.5 of the *'Residential flat building waste management guidelines*.

5.5 BULKY WASTE PROCEDURES

A room will be required for the storage of discarded residential bulky items (e.g., whitegoods, furniture, etc.). Penrith City Council's formula for the required area of this room(s) is as follows:

$$\textbf{Bulky Goods Room Area (m}^2\textbf{)} = \left[\text{Number of Units} \times 8\right] \div 52$$

Using this formula, the requirement for 293 units would be 46m² (rounded to the nearest whole number).

The bulky goods room must have a minimum doorway width of 1.5m to allow for easy movement of large waste items.

Residents will need to liaise with the building caretaker regarding the transportation of bulky items and the availability of the bulky goods room. It is the caretaker's responsibility to arrange collection dates with Council.

On the day of bulky waste collection, a Council collection vehicle will enter the site from Lord Sheffield Circuit and park in the loading bay on ground floor. The building caretaker will provide the driver with access to the bulky waste storage room. Once bulky items have been loaded, the collection vehicle will exit the site onto Lord Sheffield Circuit in a forward direction. Refer to Council's website for acceptable items and other information regarding bulky waste collection.

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 WASTE GENERATION ESTIMATES

The NSW EPA's *Better practice guide for resource recovery in residential developments 2019* has been referenced to calculate the total number of bins required for the anticipated tenants. Calculations are based on generic figures, and waste generation rates may differ according to the tenants' actual waste management practice. The waste and recycling generation rates from the NSW EPA's *Better practice guide for resource recovery in residential developments 2019* have been adapted to reflect litres per 100m^2 per day.

The following table shows the estimated volume (L) of general waste and recyclables that will be generated by the commercial and retail tenants.

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 for retail tenancies, and a five-day operating week for commercial office tenancies.

Table 4: Estimated Waste and Recycling Volumes – Commercial

Tenancy Type	GFA m^2	Waste Generation Rate (L/100m^2/Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m^2/Day)	Generated Recyclables (L/Week)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)
Commercial Office	4275	10	2137.5	10	2137.5	1068.8	1068.8
TOTALS	**4275**		**2138**		**2138**	**1069**	1068.8
Bins and Collections		Bin Size (L)	1100	Bin Size (L)	1100	1100	1100
		Bins/Week	1.9	Bins/Week	1.9	0.97	1.0
		Collections/Week	3	Collections/Week	2	1	**1**
		Total Bins	**1**	Total Bins	**1**	**1**	**1**

Table 5: Estimated Waste and Recycling Volumes – Retail

Tenancy Type	GFA m^2	Waste Generation Rate (L/100m^2/Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m^2/Day)	Generated Recyclables (L/Week)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)
Takeaway/Café	568	5960.5	5960.5	5960.5	5960.5	3973.7	1986.8
Shops (no food)	568	1986.8	1986.8	1986.8	1986.8	1324.6	662.3
Greengrocer	568	9536.8	9536.8	9536.8	4768.4	3178.9	1589.5
TOTALS	**1703**	**17484**	**17484**	**17484**	**12716**	**8477**	4238.6
Bins and Collections		Bin Size (L)	1100	1100	1100	1100	1100
		Bins/Week	15.9	15.9	15.9	7.71	3.9
		Collections/Week	4	4	4	3	**2**
		Total Bins	**4**	**4**	**4**	**3**	**2**

6.2 BIN SUMMARY

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

- **Commercial Bin Quantities**

General Waste: 1 x 1100L MGBs collected **3 x weekly.**

Paper/Cardboard: 1 x 1100L MGBs collected **1 x weekly.**

Commingled: 1 x 1100L MGB collected **1x weekly.**

- **Retail Bin Quantities**

General Waste: 4 x 1100L MGBs collected **3 x weekly.**

Paper/Cardboard: 3 x 1100L MGBs collected **3 x weekly.**

Recycling: 2 x 1100L MGB collected **2 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 such as public and school holidays should also be considered.

6.3 WASTE DISPOSAL PROCEDURES

Food and Beverage Tenancies

A retail bin room will be provided on the ground floor that will house general waste, paper/cardboard and commingled recyclables. This room will act as the main bin storage room for the retail tenancies BOH to decant their waste and recycling to, which will also serve as the collection room for the waste and recyclables. Cleaners will circulate through the tenancies and lobbies to dispose of the waste and recyclables to the retail bin room. Nominated staff will also have the option to transport their waste and recyclables to the retail in room via the lifts. On completion of each trading day or as required, nominated staff or contracted cleaners will transport their waste and recycling to the retail bin room and place into the appropriate collection bins.

Food handling for food cooked or prepared, served and consumed on site will produce a typical waste composition of food scraps from plates, packaging waste and some plastics.

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

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

Consideration should be given to the use of cooking oil collection systems. A single service provider may be used to reduce the amount of commercial traffic into the loading bay or around the precinct area. This should be measured against bulk delivery of oils where the same vehicle is used to remove containers of waste cooking oils (see APPENDIX: D.3 for Typical Cooking Oil Collection System)

Offices

A separate commercial bin room for the commercial tenancies have been provided with waste and recycling receptacles for disposal. This room is located within close proximity to the loading dock, where the room will also serve as a collection room for bin receptacles to be emptied onto the collection vehicle. Small bins will be provided around the office (e.g., tea rooms, print rooms, desks) for the collection of general waste and recycling. A space will also be dedicated for the collection of bulky cardboard.

At the end of each trading day, or as needed, it will be the responsibility of nominated staff or cleaning contractors to empty the small waste and recycling bins in the offices into the designated bin receptacles stored BOH and located on that level.

6.4 WASTE COLLECTION PROCEDURES

A private waste collection contractor will be engaged to service the retail waste and recycling bins per an agreed schedule. This report assumes waste and recycling is collected 3 x weekly.

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

Please note that 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 WASTE MANAGEMENT CONSIDERATIONS

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

6.5.1 KITCHEN, OFFICE TEA ROOMS AND FOOD PREPARATION AREAS

Any food preparation area, including kitchens and office tea rooms will be provided with dedicated source separation bins including a general waste bin and a recycling bin. Cleaners or nominated staff will be responsible for monitoring these bins and emptying them as required.

6.5.2 BATHROOMS

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.

6.5.3 PRINTING & PHOTOCOPYING ROOMS

It is recommended that printing rooms and photocopying rooms are supplied with bins for the collection of paper, as well as separate receptacles for ink toner cartridges for recycling. The cleaners or nominated staff are responsible for monitoring these bins and ensuring the items are collected and recycled by an appropriate contractor.

6.5.4 LIQUID WASTE

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

6.5.5 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 general waste as they can have adverse impacts to human health and the environment if disposed of in landfill. Retail and commercial tenants will need to liaise with the building manager when disposing of problem waste streams.

Problem waste streams include chemical waste, liquid wastes, toner cartridges, lightbulbs, eWaste and batteries.

7.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 6: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata, Body Corporate or Management	• 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	• Maintain and clean chute doors on each level; • Coordinate general waste and recycling collections; • Clean and transport bins as required; • Organise replacement or maintenance requirements for bins; • Organise, maintain and clean the waste holding area; • Organise bulky goods collection when required • Investigate and ensure prompt clean-up of illegally dumped waste materials. • Prevent storm water pollution by taking necessary precautions (securing bin rooms, preventing 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 waste and 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 and recycling in the allocated waste chutes and/or MGBs provided; • Ensure adequate separation of general waste and recycling; and • Compliance with the provisions of Council and the OWMP.
Retail/Commercial Tenants	• Manage the back of house storage of generated waste and recycling during daily operation. • Correctly separate waste and recycling streams; bag general waste and ensure recyclables are not bagged. • Flatten cardboard within the recycling bin. • If required, make arrangements for storing used and unused cooking oil in a bunded storage area, • Organise grease interceptor trap servicing, • Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and • Ensure the suitable storage for chemicals, pesticides and cleaning products waste back of house.
Waste Collection Contractor	• Provide a reliable and appropriate waste 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 organic waste 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/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 7: 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 plastics, food scraps, 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. Includes 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 recycling chute or in designated recycling bins. Bulky cardboard must not be placed in any chute, and must be flattened before placing in the designated bin.
Secure Documents	Secure documents are printed paper materials that contain sensitive information.	Recycling Facility	Secure documents are placed in allocated secure document bins. Private contractor removes bins from site.
Green Waste	Green waste 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 green waste from site during scheduled maintenance.
Food Waste	Food waste such as uneaten kitchen scraps that are easily compostable/biodegradable (e.g., vegetable peels, fruit rinds etc).	Composting facility or Landfill	Food waste can be composted on-site, off-site, or else included in the general waste stream.
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 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 Goods 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 materials encouraging correct separation of general waste and recyclables must be provided to each resident and commercial/retail tenant. This should include the correct disposal process for bulky waste such as old furniture, large discarded items, and other materials including electronic and chemical wastes. It is recommended that the building caretaker provides information in multiple languages to support correct behaviours, and to minimise the possibility of chute blockages and contamination in communal waste bins.

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

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

To prevent damage or blockage to rubbish chute DO NOT dispose of any umbrellas, bedding, cigarettes, cartons, coat hangers, brooms, mops, large plastic wrappings from furniture, white goods, any sharp objects, hot liquid or ashes, oil, unwrapped vacuum dust, syringes, paint and solvents, car parts, bike parts, chemicals, corrosive and flammable items, soil, timber, furniture, bricks or other building materials down the chute.

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

The building manager is responsible for waste room signage including safety 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.

Additional space should be considered for material wastes such as textiles (fabrics and cloth). This space should be combined or in close proximity to the bulky waste room for the storage of such materials, and irregular shaped items which will be coordinated between the building caretaker and Council for collection.

9.2 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

10.0 EQUIPMENT SUMMARY

Table 8: Equipment Summary

	Part	Qty	Notes
Chutes	Please refer to supplier's information	10	(See *APPENDIX B.1* for Typical Dual Chute Layout)
Chute Equipment	**Waste** 2-bin 1100L MGB Linear Track System	5	(See *APPENDIX B.2* for Typical Linear System)
	Recycling 2-bin 1100L MGB Linear Track System	5	
Other Equipment	**Suitable Bin Moving Equipment** *-Bin Tug* *-Seated Bin Mover*	Recommended	(See *APPENDIX C.4 and C.5*)

11.0 WASTE ROOMS

The areas allocated for waste storage and collection areas are detailed in the table below, and are estimates only. Final areas will depend on room and bin layouts.

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.)

Table 9: Waste Room Areas

Level	Waste Room Type	Equipment and MGBs	Estimated Area Required (m^2)	Actual Area Provided (m^2)
B1	Chute Discharge Room R1	3 x 1100L MGBs (General waste) 3 x 1100L MGBs (Recycling) 2 x 2-bin 1100L MGB linear systems 2 x 1100L MGBs (Service bins)	40	54
	Chute Discharge Room R2	3 x 1100L MGBs (General waste) 3 x 1100L MGBs (Recycling) 2 x 2-bin 1100L MGB linear systems 2 x 1100L MGBs (Service bins)	40	54
	Chute Discharge Room R3	3 x 1100L MGBs (General waste) 3 x 1100L MGBs (Recycling) 2 x 2-bin 1100L MGB linear systems 2 x 1100L MGBs (Service bins)	40	57
	Chute Discharge Room R4	3 x 1100L MGBs (General waste) 3 x 1100L MGBs (Recycling) 2 x 2-bin 1100L MGB linear systems 2 x 1100L MGBs (Service bins)	40	>44
	Chute Discharge Room R5	6 x 1100L MGBs (General waste) 6 x 1100L MGBs (Recycling) 2 x 1100L MGBs (Service bins) 2 x 2-bin 1100L MGB linear systems	56	76
GF	Residential Bin Holding Room	18 x 1100L MGBs (General waste) 18 x 1100L MGBs (Recycling) 40 x 240L MGBs (Bin cupboard service bins) 1 x bin tug	134	215
TBD	Bulky Goods Waste Storage Room		46	49
GF	Residential FOGO Bin Room	31 x 240L MGBS (FOGO)	25	26
	Retail Bin Room	4 x 1100L MGBs (General waste) 3 x 1100L MGBs (Paper/cardboard) 2 x 1100L MGBs (Commingled)	26	49
	Commercial Bin Room	1 x 1100L MGBs (General waste) 1 x 1100L MGBs (Paper/cardboard) 1 x 1100L MGB (Commingled)	9	25

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 70% of bin GFA factored in for manoeuvrability.

In addition, all doorways and passageways facilitating the movement of bins and/or bulky waste items must be at least 1500mm wide. The following table provides further waste room requirements.

Table 10: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Chute Discharge Room	• Ceiling clearance height must be a minimum of 3000mm • The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles (subject to penetration location) • All waste 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 40 degrees (Subject to number of consecutive offset and/pr up to 1500mm) • Where two sets of volume management equipment are placed under the chutes, a 200mm clearance is required between the equipment.
Residential Bin Holding Room and/or Bin Collection Area	• Bins must not be stacked in rows that are more than two bins deep
Bulky Goods Waste Storage 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 Rooms	• In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin

12.0 BIN MOVING PATHS

The building manager is responsible for the transportation of bins as required from their designated operational locations to the bin holding room as required and returning them once emptied to resume operational use.

Transfer 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 distance of the bin moving paths exceeds 10m, a bin moving device is required to aid the movement of full bins. The developer is responsible for suppling 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/body corporate 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.

12.0 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the *Penrith Development Control Plan 2014,* in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

The *NSW Better practice guide for resource recovery in residential developments (2019)* also states that better practice bin storage areas should achieve more than the minimum compliance requirements, which are as follows:

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

12.1 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.

13.0 USEFUL CONTACTS

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

LOCAL COUNCIL

Penrith Council Customer Service	Ph: (02) 4732 7777	E: council@penrith.city

PRIVATE WASTE COLLECTION PROVIDER

Capital City Waste Services	Ph: 02 9599 9999	E: service@ccws.net.au
Remondis	Ph: 02 9032 7100	
Suez Environmental	Ph: 13 13 35	
Wastewise NSW	Ph: 1300 550 408	E: admin@wastewise.com.au

BIN MOVING DEVICE SUPPLIERS

Electrodrive	Ph: 1800 333 002	E: sales@electrodrive.com.au
Sitecraft	Ph: 1300 363 152	E: sales@sitecraft.com.au
Spacepac	Ph: 1300 763 444	

ORGANIC DIGESTERS AND DEHYDRATORS

Closed Loop	Ph: 1300 762 166	
Orca		E: contact.australia@feedtheorca.com
Soil Food	Ph: 1300 556 628	
Waste Master	Ph: 1800 614 272	E: hello@wastemasterpacific.com.au

COOKING OIL CONTAINERS AND DISPOSAL

Auscol	Ph: 1800 629 476	E: sales@auscol.com

ODOUR CONTROL

EF Neutralizer	Ph: 1300 435 374	E: info@elephantsfoot.com.au

SOURCE SPERATION BINS

Source Separation Systems	Ph: 1300 739 913	E: info@sourceseparationsystems.com.au

MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

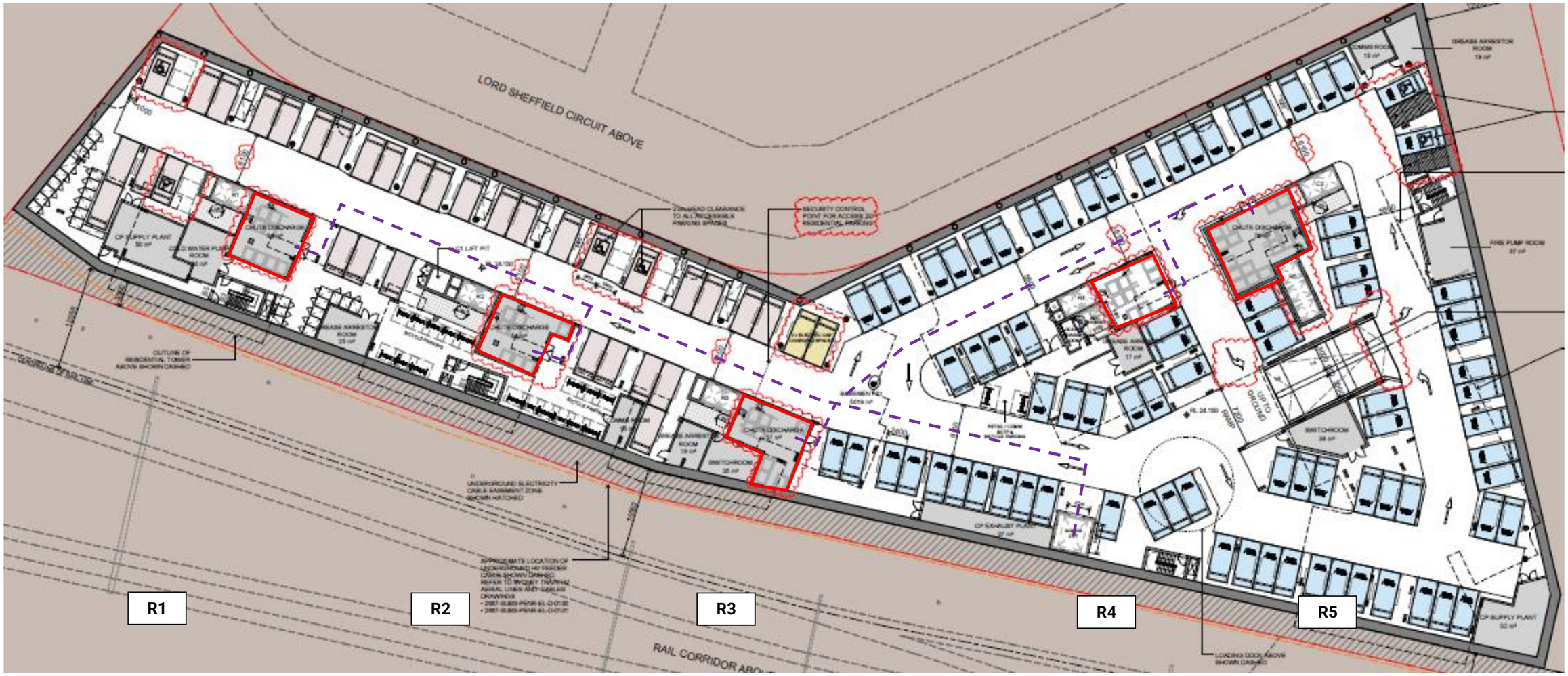
SULO	Ph: 1300 364 388	E: sales@sulo.com.au
OTTO Australia	Ph: 02 9153 6999	

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

Elephants Foot	Ph: 1800 025 073	E: info@elephantsfoot.com.au

APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 BASEMENT 1 FLOOR PLAN



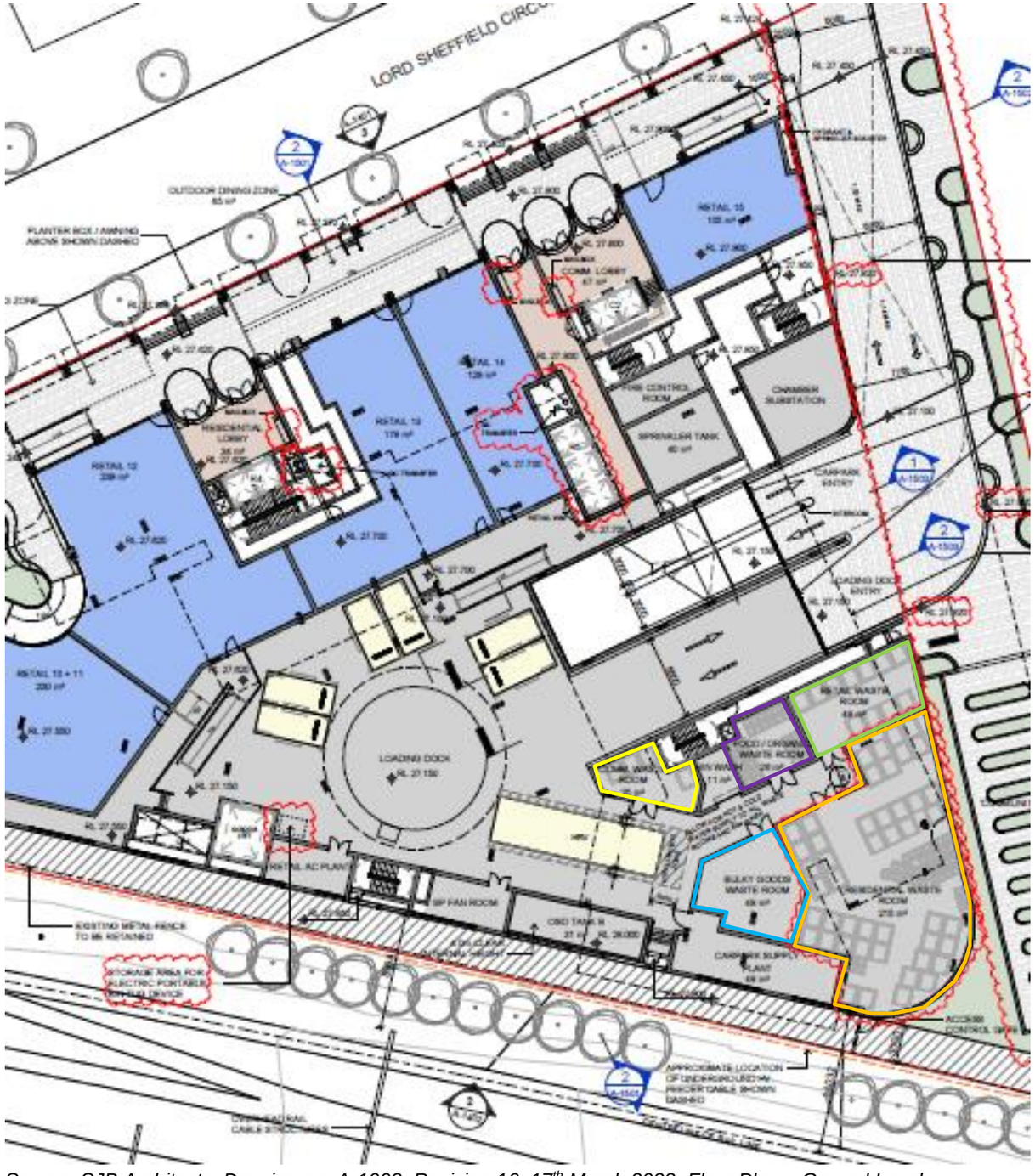
Keys:

-Chute Discharge Room

-Bin Carting Route to Collection Room (Via Goods Hoist).

Source: SJB Architects, Drawing no. A-1002, Revision 12, 17th March 2023, Floor Plan – Basement 1.

APPENDIX: A.2 GROUND FLOOR PLAN



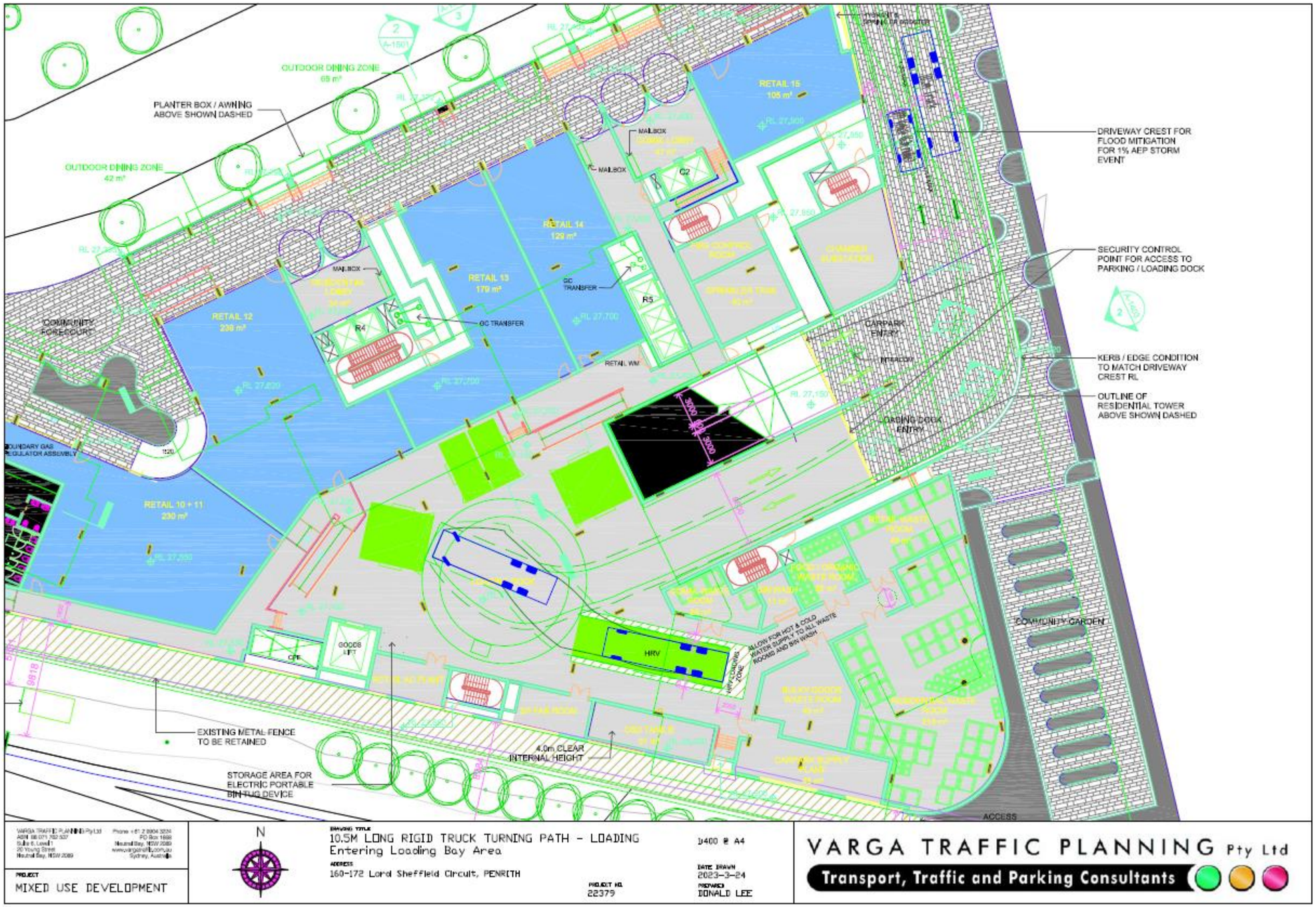
Keys:

- *-Collection Room*
- *-Bulky Waste Room*
- *-Retail Waste Room*
- *-Commercial Waste Room*
- *-FOGO Bin Room*

**Note: Bin washdown facilities have been incorporated into the design, with the required facilities and amenities (such as hot and cold taps). Please refer to section 12.*

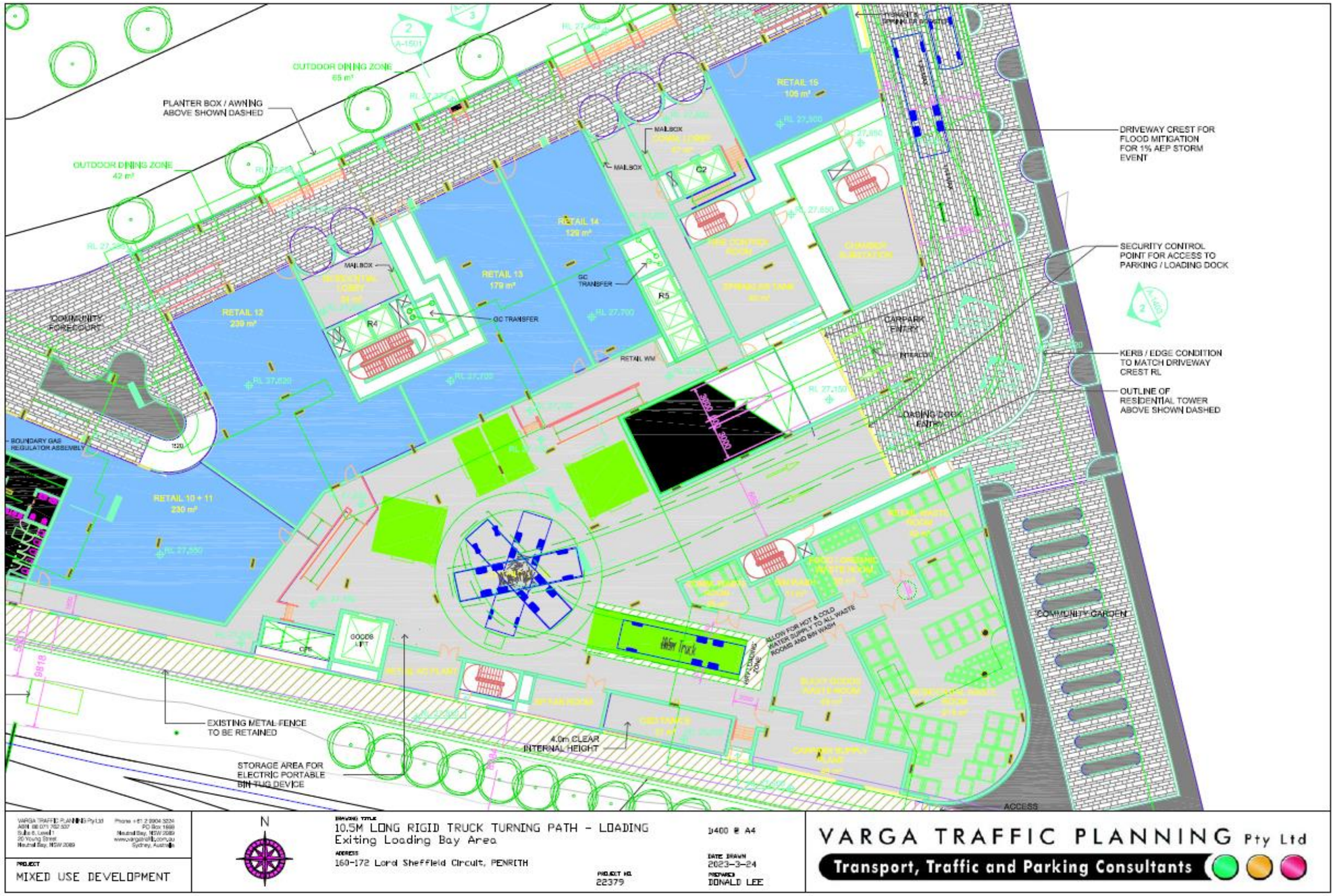
Source: SJB Architects, Drawing no. A-1003, Revision 16, 17th March 2023, Floor Plan – Ground Level.

APPENDIX: A.3 TRAFFIC SWEPT PATH (10.5 METER LONG HRV) – VEHICLE IN.



Source: Varga Traffic Planning Pty Ltd., Project no. 22379, March 2023, 10.5M HRV Truck Turning Path, Entering Loading Dock Area.

APPENDIX: A.4 TRAFFIC SWEPT PATH (10.5 METER LONG HRV) – VEHICLE OUT



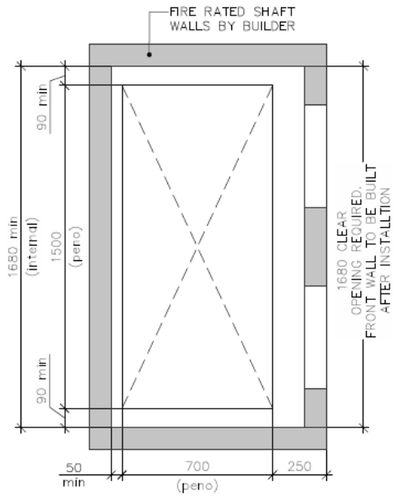
Source: Varga Traffic Planning Pty Ltd., Project no. 22379, March 2023, 10.5M HRV Truck Turning Path, Exiting Loading Dock Area.

APPENDIX B: INSTALLATION EQUIPMENT

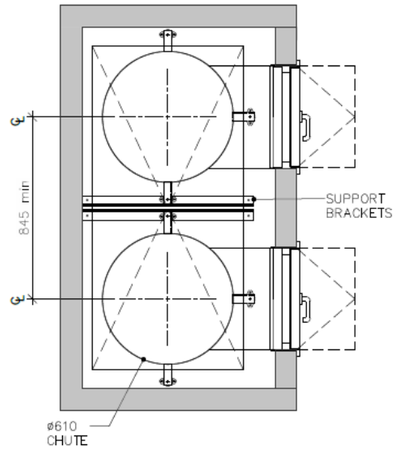
Chute Solutions.™
an Elephants Foot Company

CHUTE SHAFT & PENETRATION SET-OUT

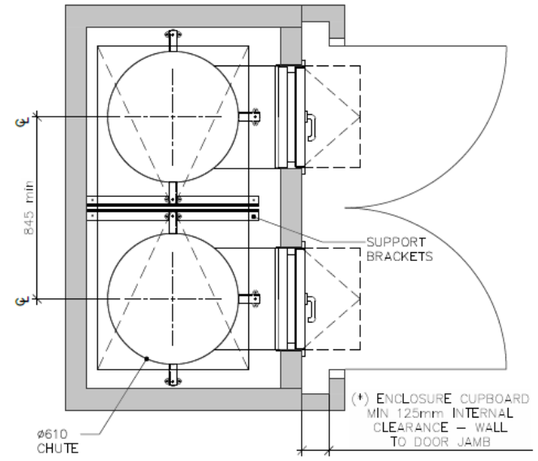
DUAL Ø610 STEEL



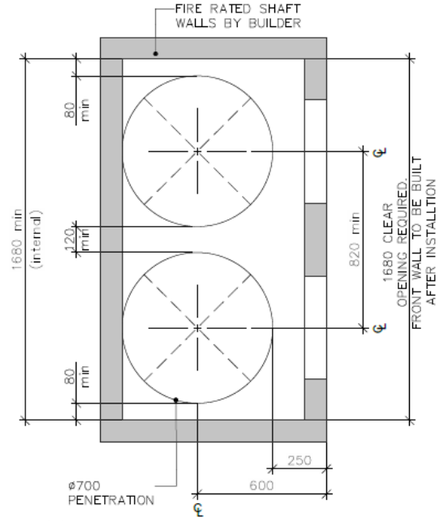
(01) DUAL (610ø) GALV. STEEL CHUTE LAYOUT
PENETRATION SET–OUT



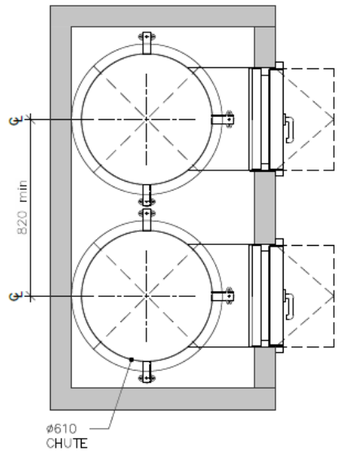
(02) DUAL (610ø) GALV. STEEL CHUTE LAYOUT



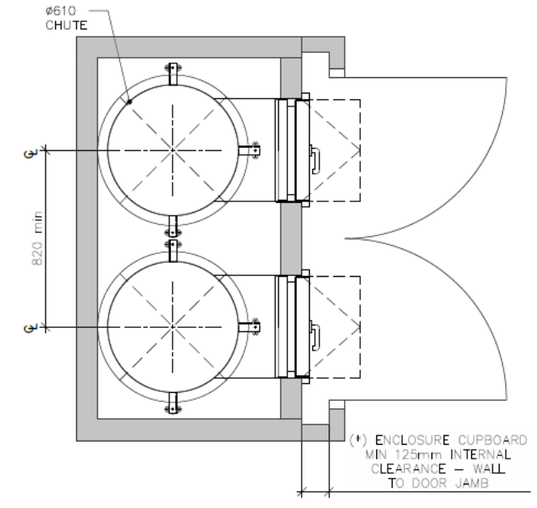
(03) DUAL (610ø) GALV. STEEL CHUTE LAYOUT
with ENCLOSURE CUPBOARD (*)



(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

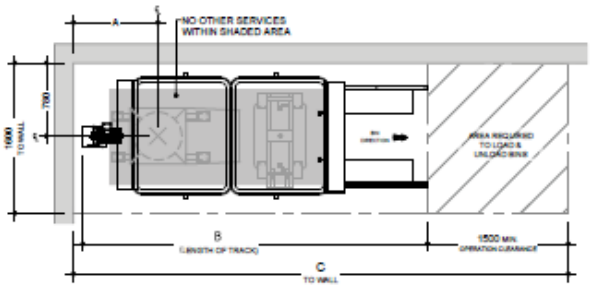
Chute Solutions.™
an Elephants Foot Company

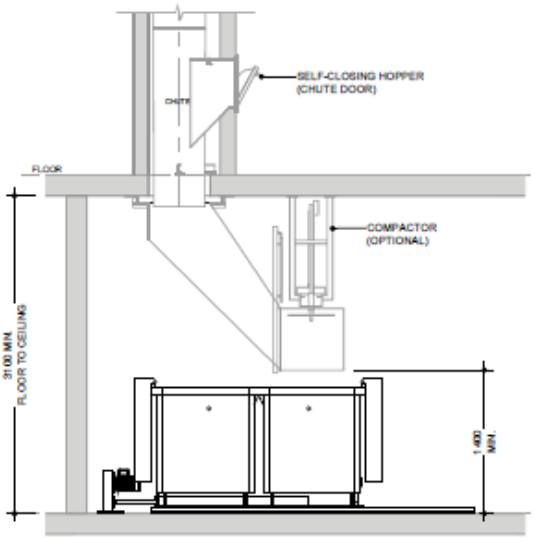
ELEPHANTS FOOT

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 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)

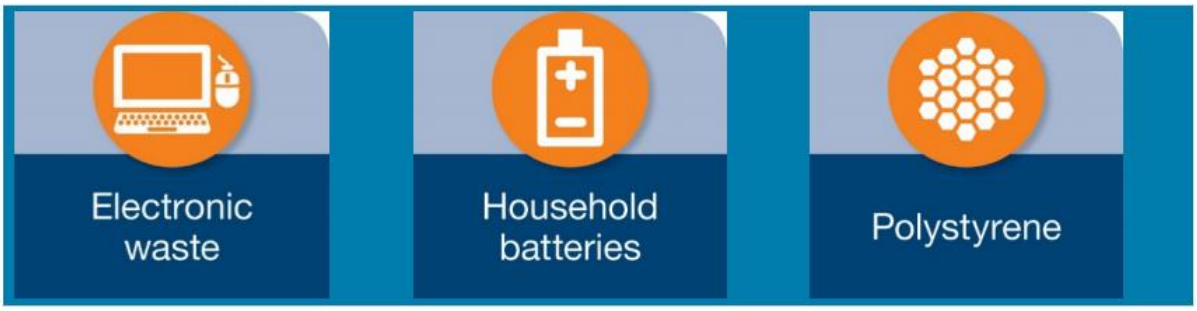
Figure I1.2: Examples of bin lid stickers (EPA supplied)

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 TYPICAL 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

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

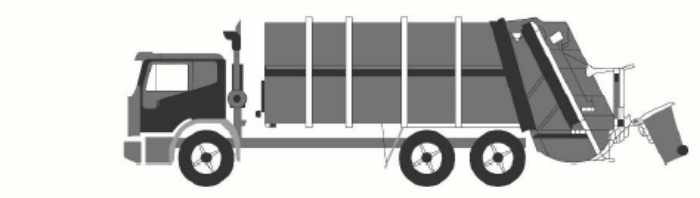
* The maximum reach of a side arm is 3 m.

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

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

Rear-loading collection vehicles

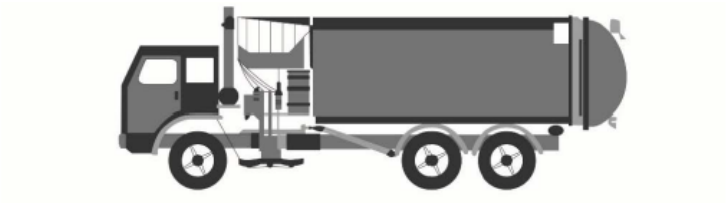
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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.

APPENDIX: C.4 EXAMPLE BIN MOVER

Battery powered tug with a 1 or 2 tonne tow capacity

Features at a glance
One tonne (Evo 1T) or two tonne (Evo 2T) tow capacity
Auto latching hitch
Three speed motor with emergency stop

Typical applications

The Tug Evo is suitable for airports, factories, warehouses, apartment buildings or large facilities. This powered tug is also suitable for transporting medical carts around hospitals or moving heavy specialist equipment.

Features:

- 1 or 2 tonne tow capacity of inclines up to 6 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 5 km/h max speed
- 2 x 12V 42Ah MK-gel batteries with 24V smart charger.
- Powerful transaxle

Safety Features:

- Intuitive control with standard automatic safety brake, forward and reverse drive.
- Emergency stop button.

Emergency back-off button

Source: http://www.electrodrive.com.au/products/tugs/tug-evo.aspx

APPENDIX: C.5 EXAMPLE SEATED BIN MOVERS

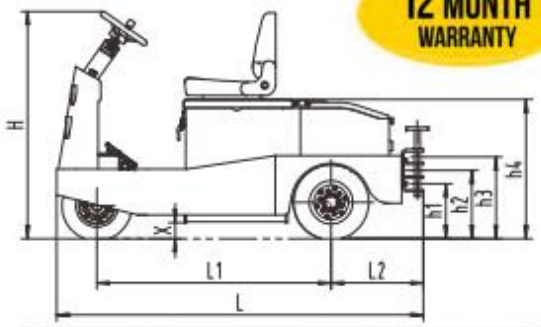
SITECRAFT
MATERIALS HANDLING EQUIPMENT

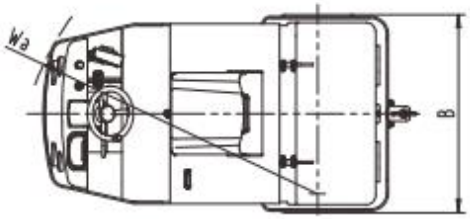
17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

- Towing capacities from 2000 kg to 6,000 kg
- **Full AC electric system** has a brake-releasing function, making the unit easy and effortless to operate; The maintenance-free motor completely solves the issues of DC motor carbon brush.
- Batteries located in the lowest part of frame ensures excellent stability
- Quick open back service cover for easy maintenance and part replacement
- CANbus technology reduces wiring complexity and increases reliability
- H type axle design provides excellent stability
- New high-range steering design; light steering and easy to maintain.
- New large-screen instrument display provides information clearly and directly to the operator.

12 MONTH WARRANTY





Model		ST-2000AC	ST-3000AC	ST-5000AC	ST-6000AC
Towing Capacity	Kg	2000	3000	5000	6000
Drawbar Centre Height	h1/h2/h3 mm	280/350/420	280/350/420	280/350/420	280/350/420
Motor	Kw / V	3Kw / 36V	3Kw / 36V	5Kw / 48V	5Kw / 48V
Total Size	L x B x H mm	1720 x 968 x 1270	1720 x 968 x 1270	1975 x 1100 x 1270	1975 x 1100 x 1270
Total Weight (With Batteries)	Kg	740	780	1240	1280
Wheel Size	Solid Rubber	15*4-8	15*4-8	15*4-8	15*4-8
Wheelbase	L1 mm	1055	1055	1280	1280
Rear Hanging Distance	L2 mm	382	382	500	500
Seat Height	h4 mm	910	910	910	910
Ground Clearance	X mm	90	90	90	90
Turning Radius	Wa mm	1500	1500	1650	1650
Maximum Speed	Km/h	10	8	14	12
Battery	V/Ah	36/200	36/250	48/360	48/400
Battery Weight	Kg	200	250	610	650
Charger	On-board V/Ah	36/30	36/30	48/50	48/50

SITECRAFT
MATERIALS HANDLING EQUIPMENT

17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

ST3000-AC tow tug complete with 6 x 250AH heavy duty batteries

Optional steel / aluminium trailers for moving waste bins, linen trolleys, food trolleys, delivery boxes, etc ...

Source: https://www.sitecraft.net.au/materials-handling/tow-tugs-powered-vehicles/electric-tow-vehicles/

APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX: D.1 EXAMPLE APARTMENT STYLE COMPOST BIN

Apartment Style Compost bin – available from hardware stores

Suitable for:

- Vegetables
- Coffee grounds and filters
- Tea and tea bags
- Crushed eggshells (but not eggs)
- Nutshells
- Houseplants
- Leaves
- Cardboard rolls, cereal
- Boxes, brown paper bags
- Clean paper
- Shredded newspaper
- Fireplace ashes
- Wood chips, sawdust,
- Toothpicks, burnt matches
- Cotton and wool rags
- Dryer and vacuum cleaner lint
- Hair and fur
- Hay and straw

APPENDIX: D.2 TYPICAL COOKING OIL CONTAINERS

Drums 205L

Pour in Bulk Tank

View Brochure

Oil Kaddy System

View Brochure

Eco Systems

Direct-Connect to Fryer

Source: http://www.auscol.com/services/collection-systems/

APPENDIX E: RFI RESPONSE TO DA22/1086

Condition	EFC Response:
Waste and Recycling Generation Rates for Commercial and Retail units are inconsistent with Councils Guidelines. Please use Council generation rates or provide justification for generation rates used.	*The waste and recycling generation rates have been recalculated to align with the Councils Guidelines in Section 6.0.*
Architectural plans do not show the chute lining up with the linear track systems nor the clearances around the linear track systems. Resubmitted plans showing these features with required clearances is required.	*The chute systems have been modified to show the required clearances around the track systems of a minimum of 0.9 meters around the linear track systems, and a minimum of 1.8 meter obstruction between the clearance zone among the entrance and the linear system in APPENDIX A.1.*
Chute rooms R2 (D), R3 (C), R4 (B) and R5 (A) do not have the required clearances around the linear track system	
Plans do not show a route of travel of bins from chute rooms to goods lift and to the bin collection room. The travel route must provide a 1.8m wide path at all points on the route	*Please refer to APPENDIX A.1 and A.2 for the travel route. It has been confirmed by SJB Architects that the 1.8 meter wide path requirement has been met.*
The Chute room doors for are required to have dual outward opening 180 degree doors, 1.8m wide, that are able to be latched open to permit movement of bins.	*The architectural plans have been amended to satisfy this condition. Please see APPENDIX A.1 and APPENDIX A.2.*
It appears waste chutes are available for use on Floor 2 (Commercial space). This is unacceptable as the Chutes are for residential use only. Commercial tenants waste and recycling to be kept separate from residential waste and recycling. Plans are not to show access to residential waste chutes at Floor 2.	The architectural plans have been amended to satisfy this condition to prevent commercial access of the chute system at Floor 2.
Current plans show bins stacked up to 3 deep. Please review design to allow bins to be stacked no deeper than 2 deep. This is contrary to the Operational Waste Management Plan (Section 11 – Table 10).	The architectural plans have been amended to satisfy this condition to allow bins to be stacked no deeper than 2: Food waste is accessible by both sides with the configured stacking arrangement.

No taps currently noted on plans. Hot and Cold water supply is required for cleaning in each waste storage area and Bin Washing area and Chute Room.	*Hot and cold waster supply has been provided and labelled in the plans.*
Goods lift door is undersized to fit 1100L bins. 2 X 1100L bins to fit in lift at a time. Goods lift specification should be provided.	*The goods lift has been sized to accommodate this capacity.*