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Thornton Central Village
Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

17/11/2021
Report No. SO1071
Revision C

Client

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C	17/11/2021	J. Parker	A. Armstrong	Amendment

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GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
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
Compactor	A machine for compressing waste into disposable or reusable containers
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
MRV	Medium Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities

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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
SRV	Small Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
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

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1.0 INTRODUCTION

Elephants Foot Recycling Solutions (EFRS) has been engaged to prepare the following waste management plan for the operational management of waste generated by the mixed use Thornton Central Village development located on Lord Sheffield Circuit, Penrith.

Waste management strategies and audits are required for new developments in order to support the design and sustainable performance of the building. It is EFRS'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.

1.1 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. EFRS can supply this if required.

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1.2 REPORT CONDITIONS

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

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

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2.0 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

2.1 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
- Adequate waste storage area(s) are provided within the development site to store all required waste bins.

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3.0 DEVELOPMENT OVERVIEW

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

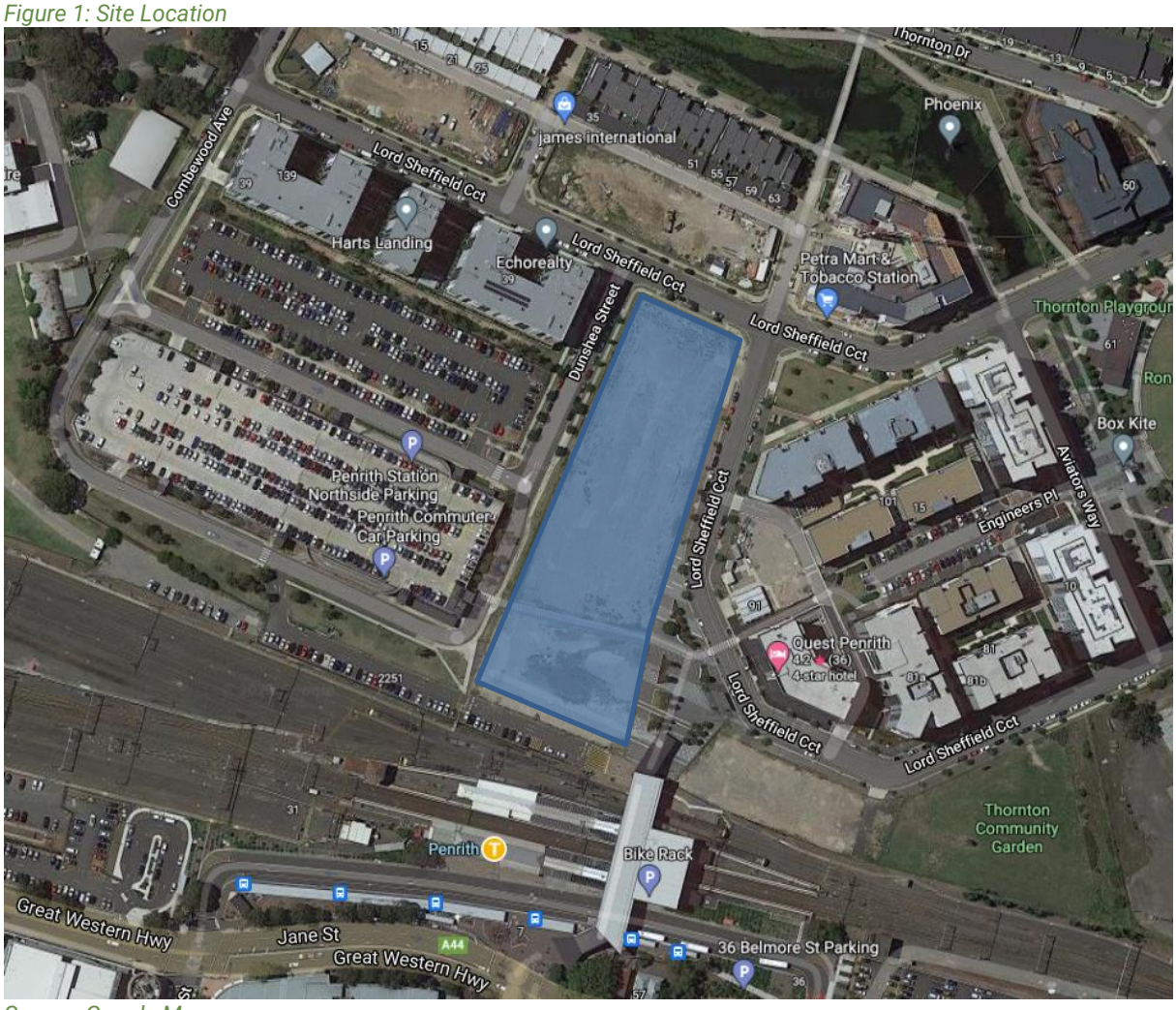
- 2 towers (A & B) in Lot 3003 and 2 towers (C & D) in Lot 3004-3005
  - 553 residential units in total
  - Retail and commercial tenancies on the ground floor and level 1 of all Lots
  - Medical centre in Lot 3003 with a total GFA of 627m^2
  - Childcare Centre in Lot 3003 with capacity for approximately 100 children

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

3.1 SITE LOCATION

The site is located on Lord Sheffield Circuit, Penrith, as shown in Figure.1. The site has frontages to Lord Sheffield Circuit and Dunshea Street, with vehicle access via Dunshea Street.

Figure 1: Site Location



Source: Google Maps

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4.0 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.

4.1 WASTE GENERATION ESTIMATES

The Penrith City Council *Residential Flat Building Waste Management Guidelines* have been referenced to calculate the volumes of waste likely to be generated by the residential units. Calculations are based on generic general waste and recycling rates. Actual volumes 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 each tower. 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 may be achieved by changing the size/capacity of the equipment used or the frequency of collections. Building management will be required to negotiate any changes to equipment 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 & Recycling Volumes – Residential

Building/ Lift Core	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
Tower A	241	61.11	14728	61.11	14728
Tower B	75	61.11	4583	61.11	4583
Tower C	80	61.11	4889	61.11	4889
Tower D	157	61.11	9594	61.11	9594
TOTAL	**553**		**33794**		**33794**

**Note: A pair of 1100L service bins should be provided in each chute discharge room for use during collection periods. These bins are not included in the above figures.*

Table 2: Estimated Compactor Requirements – Residential

	General Waste	Recycling
Amount Generated (L/week)	**33,794**	**33,794**
Compaction Ratio	2:1	2:1
Compacted Volume (L/week)	16,897	16,897
Compactor Volume (L)	23,000	23,000
Total Volume / Compactor Size	0.73	0.73
Collection Frequency (per week)	1	1

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4.2 CHUTE DISCHARGE EQUIPMENT SUMMARY

It is strongly recommended that bins and equipment at the base of each chute allow for at least 2 days' worth of general waste and recycling generation. As such, the following equipment is recommended:

Tower A: 2 x 4-Bin Carousel Systems will hold **2 days' waste**

Tower B: 2 x 2-Bin Linear Track Systems will hold **2 days' waste**

Tower C: 2 x 2-Bin Linear Track Systems will hold **2 days' waste**

Tower D: 2 x 3-Bin Linear Track Systems will hold **2 days' waste**

4.3 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:

General Waste: 1 x 23m³ Integrated Auger Compactor collected **1 x weekly**

Recycling: 1 x 23m³ Integrated Auger Compactor collected **1 x weekly**

Service Bins: 8 x 1100L MGBs (2 per chute discharge room)

4.4 WASTE DISPOSAL PROCEDURES

Dual chute systems, comprising 1 general waste chute and 1 recycling chute will be installed with access provided on each residential level of each tower.

Residents will wrap or bag their general waste before placing it into the waste chute. Bagged waste should not exceed 3kg in weight, or 35cm x 35cm x 35cm. Recycling (comingled only) must not be bagged when disposed of into the recycling chute. Cardboard boxes and other large cardboard items should also not be disposed of into the chute. Residents should be encouraged to coordinate with the building caretaker regarding the disposal of large cardboard items. The caretaker can then arrange for these items to be deposited directly into the 1100L recycling bins.

Both general waste and recycling will discharge from the chutes into 1100L bins in the chute discharge rooms on basement level 1. Volume handling equipment will be used to manage the bins beneath each chute as per Section 4.2 of this report.

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

4.4.1 COMMON AREAS

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

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4.5 WASTE COLLECTION PROCEDURES

All residential waste generated at this site is intended to be collected from the Lot 3003 loading dock. The building caretaker will monitor the 1100L bins in the chute discharge rooms on basement level 1 and transfer them to the goods lift once full. Using the goods lift, they will be brought up to the ground level and emptied into the corresponding integrated auger compaction unit using the associated bin lifter.

It is envisaged that the caretaker will be required to transfer bins from each chute discharge room every two days and that they will use a ride-on bin moving device with a trailer to move the bins around the basement. When not in use, the bin moving device will be stored in the waste equipment store on basement level 1.

Council's waste contractor will be engaged to service the compaction units using a hook-lift collection vehicle (see APPENDIX: C.3 for an example hook-lift vehicle specification). This report assumes that both the general waste and the recycling compactor will be serviced on a weekly basis. The vehicle will access the Lot 3003 loading dock from Dunshea Street and utilise the turntable so that the rear of the vehicle can be aligned with the corresponding compactor for servicing. This will also enable the vehicle to leave the site in a forward direction. The compactors will be taken offsite to be emptied, before being returned to the site to resume operational use.

It is the responsibility of the caretaker to ensure that the turntable is clear of any vehicles or obstructions prior to residential waste collection times.

4.6 BULKY WASTE PROCEDURES

A room(s) 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:

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

Using this formula, the requirement for 553 units would be 85m².

It is proposed that a room of approximately 35m² be provided close to the Lot 3003 loading dock for bulky goods collections. The remaining 50m² is to be provided on basement level 1, divided between each of the towers to allow convenient access for residents. All bulky goods rooms will 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 rooms. It is the caretaker's responsibility to arrange collection dates with Council and transfer bulky goods from the basement to the ground level of Lot 3003 for collection. This is to be carried out using the bin moving device and goods lift.

On the day of bulky goods collection, a Council collection vehicle will enter the site from Dunshea Street and park in the Lot 3003 loading dock . The building caretaker will provide the driver with access to the bulky goods room, likely via electronic keycode system. Once bulky items have been loaded onto the vehicle, the vehicle will exit the site onto Dunshea Street in a forward direction. Refer to Council's website for acceptable items and other information regarding bulky waste collection.

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5.0 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. Please note that the proposed supermarket has not been included in this section as it is intended that this will be addressed in a separate report provided by the operator.

5.1 WASTE GENERATION ESTIMATES

The NSW EPA's *Better Practice Guide for Resource Recovery* (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 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 bins, a storage room, and a waste collection service.

The following estimates are based on a seven-day operating week.

Table 3: Estimated Waste and Recycling Volumes – Commercial & Retail (Lot 3003)

Tenancy Type	Category	GFA (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)
Convenience Retail	Retail: Grocery & Convenience	554	120	4654	240	9307
Fresh Food & Dining	Restaurants	271	400	7588	280	5312
Commuter Retail	Food Retail: Takeaway	194	150	2037	100	1358
Medical Centre	Medical	631	20	883	10	442
Tenancy	**Type**	**No. of Children**	**General Waste Generation Rate** (L/child/day)	**Generated General Waste** (L/week)	**Recycling Generation Rate** (L/child/day)	**Generated Recycling** (L/week)
Childcare Centre	Childcare	100	5	2500	5	2500
TOTAL				**17662**		**18919**
Collections & Equipment		General Waste Bin Size (L)		1100	Recycling Bin Size (L)	1100
		General Waste Collections per Week		3	Recycling Collections per Week	3
		Total General Waste Bins Required		6	Total Recycling Bins Required	6

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Table 4: Estimated Waste and Recycling Volumes – Commercial & Retail (Lot 3004-3005)

Tenancy Type	Category	GFA (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)
Fresh Food & Dining	Restaurants	209	400	5852	280	4096
Dining & Event Space	Restaurants	273	400	7644	280	5351
Commuter Retail	Food Retail: Takeaway	140	150	1470	100	980
Commercial	Office	447	10	313	15	469
TOTAL		**1069**		**15279**		**10897**
Collections & Equipment		General Waste Bin Size (L)		1100	Recycling Bin Size (L)	1100
		General Waste Collections per Week		3	Recycling Collections per Week	3
		Total General Waste Bins Required		5	Total Recycling Bins Required	4

5.2 BIN SUMMARY

Based on the estimated commercial and retail waste generated, the recommended bin quantities and collection frequencies for each Lot are as follows:

Lot 3003

General Waste: 6 x 1100L MGBs collected **3 x weekly**
Recycling: 6 x 1100L MGBs collected **3 x weekly**

Lot 3004-3005

General Waste: 5 x 1100L MGBs collected **3 x weekly**
Recycling: 4 x 1100L MGBs collected **3 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.

5.3 WASTE DISPOSAL PROCEDURES

Staff will be responsible for waste management within each tenancy during daily operations. This will be carried out back of house where possible.

On completion of each trading day or as required, nominated staff or contracted cleaners will transport all general waste, and recyclables to the retail/commercial waste room for that particular Lot, placing bagged general waste and decanting loose recycling into the corresponding bins.

5.4 WASTE COLLECTION PROCEDURES

A private waste collection contractor with an SRV will be engaged to service general waste and recycling bins as per an agreed schedule (see APPENDIX: C.4 for an example SRV specification). This report assumes that collections for both waste streams will occur three times per week.

On collection days, the contractor's vehicle will enter each loading dock from Dunshea Street and pull up adjacent the retail/commercial waste room. Collection staff will then access the retail/commercial waste room and service the bins. Once the bins have been serviced, the collection vehicle will exit the site onto Dunshea Street in a forward direction.

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It is the responsibility of the caretaker to ensure that the loading area is clear of any vehicles or obstructions prior to waste collection.

See 5.6.2 for *Medical Waste Collection Procedures.*

5.5 OTHER WASTE MANAGEMENT CONSIDERATIONS

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

5.5.1 FOOD RETAIL AREAS

Food and beverage tenancies will be provided with dedicated source separation bins back of house for general waste and recycling. It is recommended that the bins are stored in food preparation areas. Cleaners or nominated staff will be responsible for monitoring these bins and emptying them into collection bins in the retail/commercial waste room as required.

5.5.2 NON-FOOD RETAIL AREAS

Non-food retail tenancies will also have back of house bins for general waste and recycling. At the end of each trading day or as required, nominated staff or cleaners will transfer waste to the collection bins in the retail/commercial waste room.

5.5.3 CHILDCARE CENTRE

It is expected that the contract cleaners appointed by the childcare centre will remove bagged general waste and separated recycling from the allocated waste areas and deposit into the corresponding bins in the retail/childcare waste room for Lot 3003.

Secure destruction bins may also be operated on a wheel-in/wheel-out basis by an appointed contractor if required.

It is recommended that all amenities and workstation areas be furnished with suitable general waste and recycling bins. Washroom facilities should be supplied with collection bins for paper towels (if used). Nappy bins (if used) and sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

Staff tea points and food preparation areas will also be supplied with dedicated general waste and recycling bins.

5.5.4 OFFICE AREAS

Typically, bins for general waste and paper/cardboard recycling are positioned next to each worker's desk or workstation. Bins for general waste and comingled recyclables are also located centrally in office areas. These bins are emptied by contract cleaners, with waste usually stored in the cleaner's cart before being transferred to the collection bins in the retail/commercial waste room.

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.

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5.5.5 GYM AREAS

Smaller bins for general waste and recycling will be situated at regular intervals throughout the gym. The frequency of these bins will depend upon the frequency of use. Each of these bins will be emptied by the contract cleaners during their cleaning routine after hours, before being transferred to the collection bins in the retail/commercial waste room for Lot 3003.

5.5.6 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.

5.5.7 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.

5.5.8 RE-USEABLE COMMERCIAL ITEMS

Space will be provided back of house for the storage of re-usable commercial items such as crates, pallets, kegs and strip out waste. The building manager will be responsible for ensuring that storage of these items in public places is completely avoided.

5.5.9 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
- Batteries

5.6 MEDICAL CENTRE WASTE MANAGEMENT CONSIDERATIONS

The medical centre will generate medical waste in addition to general waste and recycling. Medical waste is any solid waste that is hazardous or contains potentially infectious material generated from biological and medical sources and activities. Medical waste can include, but is not limited to: sharps and pharmaceutical waste, clinical waste, cytotoxic waste, and radioactive waste. The management of the various medical waste streams are further outlined in APPENDIX: D.4.

It is the responsibility of the medical centre operator to determine the types of medical waste that will be generated by the development, and to arrange for the appropriate bins and collection services for the relevant medical waste types.

The medical centre operator is also responsible for appointing a medical waste collection contractor prior to the operation of the site to provide and service the appropriate medical waste bins.

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Medical waste must be managed and disposed of in accordance with the *Protection of the Environment Operations Act* 1997 and the *Protection of the Environment Operations (Waste) Regulation* 2005.

Please refer to the following table for the storage and collection requirements of the medical waste streams when the site becomes operational.

Table 5: Storage and Collection Requirements for Medical Waste

Area	Location
Storage	According to best practice as detailed in Waste Management Association of Australia, Biohazardous Waste Industry Group, *Manual for the Management of Biohazardous Waste*, 6th edition 2010, storage can be in a dedicated and purpose-built room or dedicated storage area for mobile garbage bins back of house. The appropriate storage will depend on the type of medical waste, volumes and servicing processes. In accordance with NSW Health's *Clinical and Related Waste Management for Health Services* 2017 , health services must provide an enclosed structure such as a shed, garage, cage or fenced area or separate loading bay to store medical waste. The storage area for anatomical and/or clinical waste may require refrigeration to prevent decomposition of the waste if this waste stream is not removed on a frequent basis. Any medical waste holding area must: • Be located away from food and clean storage areas, • Be inaccessible to the public, • Have a lockable door, • Have rigid impervious flooring, • Allow for regular cleaning, and • Prevent odour and vermin. An EPA licence may be required to store Hazardous Wastes.
Containers	All medical waste must be stored in the correct medical waste container with correct colour coding and labelling in accordance the *Australian Dangerous Goods Code Edition 7.3 (ADG Code).* All containers of medical waste to be stored in a secure location.
Spillages	Clean up facilities, spills kits, appropriate drainage and bunding should be provided within the Waste Storage Area. Ensure all necessary equipment required to clean and disinfect the area in case of accidental spillage is easily available and accessible. It is essential that personnel involved in spill management receive education and training in emergency procedures and handling requirements. Spill kits that have been used should be disposed of with the type of waste that has been cleaned up, e.g. used cytotoxic spill kits should be disposed of with cytotoxic waste.
Mixed waste	Any waste mixed with medical waste must be treated as medical waste
Sharps	Sharps containers should be placed within "arms reach" of where the sharps are generated. Full containers will be sealed and then transported utility rooms/ designated storage area to awaiting collection by contractors.

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Collections	It is intended that as per normal practice for these types of facilities, that the appointed contractor will service the medical waste containers/bins from their operational location within the facility and replace them at the same time with empty containers/bins. Medical waste shall remain within the storage areas and only be moved during collections. Collections will be performed by a transporter licensed by the EPA to collect, transport and dispose of the medical waste stream accordingly.

5.6.1 MEDICAL WASTE ROOM REQUIREMENTS

Medical waste rooms provided within a development should strive to meet the following best practice guidelines as outlined in Waste Management Association of Australia, Biohazardous Waste Industry Group's *Manual for the Management of Biohazardous Waste*, 6th edition 2010:

- Storage area base is an impervious surface surround by a bund appropriate to contain any spill
- All loading/unloading takes place within the bunded area in such a manner to ensure any spills are appropriately managed
- The base and walls of bunded areas are free of gaps or cracks
- Where vehicular access to the bunded area is required, bunds are constructed to prevent them from being damage by vehicles
- Signage is posted with the biohazard symbol and other labelling appropriate to the types of waste stored in that area
- The bunded area drains to a sump or sewer to collect spills and wash water.
- If any refrigerator facilities are provided, they shall be contained within a secure area.

5.6.2 MEDICAL WASTE COLLECTION PROCEDURES

General waste and recycling generated by the medical centre will be serviced from the retail/commercial waste room in Lot 3003, alongside other retail/commercial waste.

Medical waste is to be collected by an appointed contractor directly from operational locations within the facility. Containers/bins will be replaced at the time of servicing with empty containers/bins.

Medical waste shall remain within the storage areas and only be moved during collections. Collections will be performed by a transporter licensed by the EPA to collect, transport and dispose of the medical waste stream accordingly.

Any dedicated medical waste rooms will be included within the footprint of the medical centre and will be designed to meet best practice fit-out requirements as outlined in Waste Management Association of Australia, Biohazardous Waste Industry Group's *Manual for the Management of Biohazardous Waste*, 6th edition 2010.

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6.0 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 or Management	• Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organising internal waste audits/visual assessments on a regular basis • Purchasing any on-going waste management equipment or maintenance of equipment once building is operational; and • Managing any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Maintaining and cleaning chute doors on each level; • Coordinating general waste and recycling collections; • Cleaning and transporting bins as required; • Organising replacement or maintenance requirements for bins; • Organising, maintaining and cleaning the waste holding area; • Organising bulky goods collection when required • Investigating and ensuring prompt clean-up of illegally dumped waste materials. • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • Abiding by all relevant WH&S legislation, regulations, and guidelines; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assessing any manual handling risks and preparing a manual handling control plan for waste and bin transfers; • Ensuring site safety for residents, children, visitors, staff and contractors; and • Ensuring 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	• Managing the back of house storage of generated waste and recycling during daily operation. • Correctly separating waste and recycling streams. Including bagging general waste and ensuring recyclables are not bagged. • Flattening cardboard within the recycling bin. • If required, making arrangements for storing used and unused cooking oil in a bunded storage area, • Organizing grease interceptor trap servicing, • Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and • Ensuring 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	• Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchasing all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata.

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7.0 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 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 bins. Bulky cardboard must not be placed in any chute. Cardboard should be flattened before placing in the designated recycling bin.
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 consists of unwanted or uneaten kitchen scraps that are easily compostable/biodegradable (e.g. vegetable peels, fruit rinds, coffee grounds).	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.

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8.0 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.

8.1 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.

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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.

8.2 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

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9.0 EQUIPMENT SUMMARY

Table 8: Equipment Summary

Type	Part	Qty	Notes
Chutes	Please refer to supplier's information	8	(See APPENDIX: B.1 for Typical Chute Layout)
Chute Discharge Equipment	4-bin 1100L MGB Carousel (Tower A) 2-bin 1100L MGB Linear Track System (Tower B & C) 3-bin 1100L MGB Linear Track System (Tower D)	8	(See APPENDIX: B.2 for Typical Linear Systems) (See APPENDIX: B.3 for Typical Carousel Systems)
Compactors	23m³ Integrated Auger Compactor	2	(See APPENDIX: B.4 for Typical Integrated Auger Compactor)
Other Equipment	Suitable Bin Moving Equipment	1	(See APPENDIX: C.5 for Typical Bin Mover)

10.0 WASTE ROOMS

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

EFRS recommends bins sizes, collection frequencies and/or equipment for best practice waste management at this site, however EFRS 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)
G	Residential Bin Holding/ Collection Area (All Lots)	1 x 23m³ Integrated Auger Compactor (General Waste) 1 x 23m³ Integrated Auger Compactor (Recycling)	50
	Residential Bulky Goods Collection Room	N/A	36
	Retail/Commercial Waste Room (Lot 3003)	6 x 1100L MGBs (General Waste) 6 x 1100L MGBs (Recycling)	38
	Retail/Commercial Waste Room (Lot 3004-3005)	5 x 1100L MGBs (General Waste) 4 x 1100L MGBs (Recycling)	32
B1	Tower A Chute Discharge Room	1 x 4-Bin 1100L Carousel System (General Waste) 1 x 4-Bin 1100L Carousel System (Recycling) 2 x 1100L MGBs (Service Bins)	35
	Tower B Chute Discharge Room	1 x 2-Bin 1100L Linear Track System (General Waste) 1 x 2-Bin 1100L Linear Track System (Recycling) 2 x 1100L MGBs (Service Bins)	30
	Tower C Chute Discharge Room	1 x 2-Bin 1100L Linear Track System (General Waste) 1 x 2-Bin 1100L Linear Track System (Recycling) 2 x 1100L MGBs (Service Bins)	30
	Tower D Chute Discharge Room	1 x 3-Bin 1100L Linear Track System (General Waste) 1 x 3-Bin 1100L Linear Track System (Recycling) 2 x 1100L MGBs (Service Bins)	35
	Tower A & B Bulky Goods Storage Room	N/A	28
	Tower C Bulky Goods Storage Room	N/A	14
	Tower D Bulky Goods Storage Room	N/A	15
	Waste Equipment Store	1 x Ride-On Bin Moving Device 1 x Bin/Bulky Goods Trailer	20

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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 Rooms	• 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 between sets of volume handling 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) • Doorway should be a minimum of 1500mm wide
Bulky Goods Rooms	• 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 Waste Rooms	• In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin

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11.0 BIN MOVING PATHS

The building manager is responsible for the transportation of bins from the chute discharge rooms to the compactors and returning them once emptied to resume operational use. It is anticipated that this will need to be carried out, no more than once every two days as the equipment beneath each chute will have the capacity to hold two days' worth of waste.

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 exceed 10m, a bin moving device is require to aid the movement of full bins (see APPENDIX: C.5 for example bin moving devices). 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 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.

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12.0 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the Penrith City Council DCP (2014) and *Residential Flat Building Waste Management Guidelines,* 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.

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13.0 USEFUL CONTACTS

EFRS 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@penrithcity.nsw.gov.au

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

Purifying Solutions	Ph: 1300 636 877	E: sales@purifyingsolutions.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 Recycling Solutions	Ph: 1800 025 073	E: info@elephantsfoot.com.au

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APPENDIX A: ARCHITECTURAL PLANS

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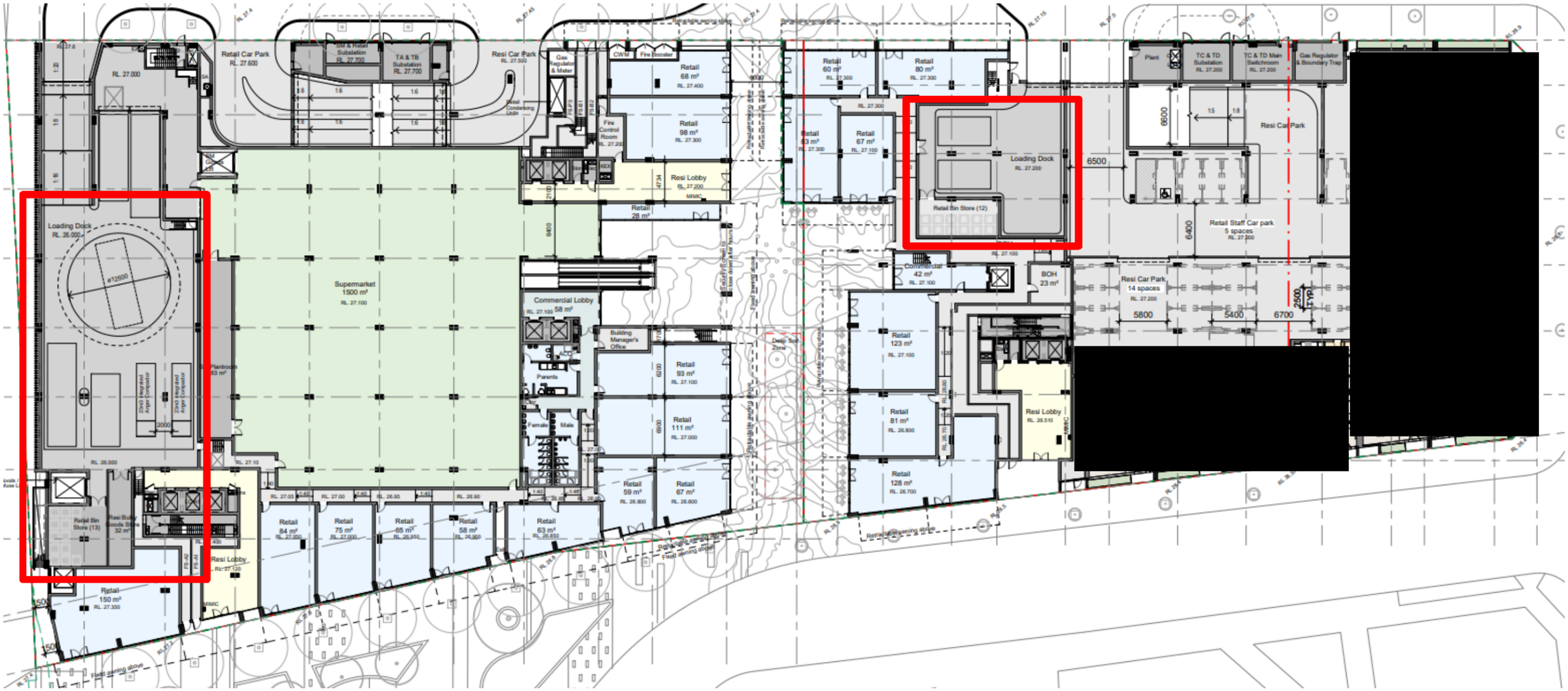
APPENDIX: A.1 GROUND FLOOR PLAN



Source: Crone Architects, Drawing No. DA-01-10510, Rev.A, 17/11/21 – Proposed Floor Plan - Ground Floor

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Source: Crone Architects, Drawing No. DA-01-10509, Rev.A, 17/11/21 – Proposed Floor Plan - Level B1

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APPENDIX B: INSTALLATION EQUIPMENT

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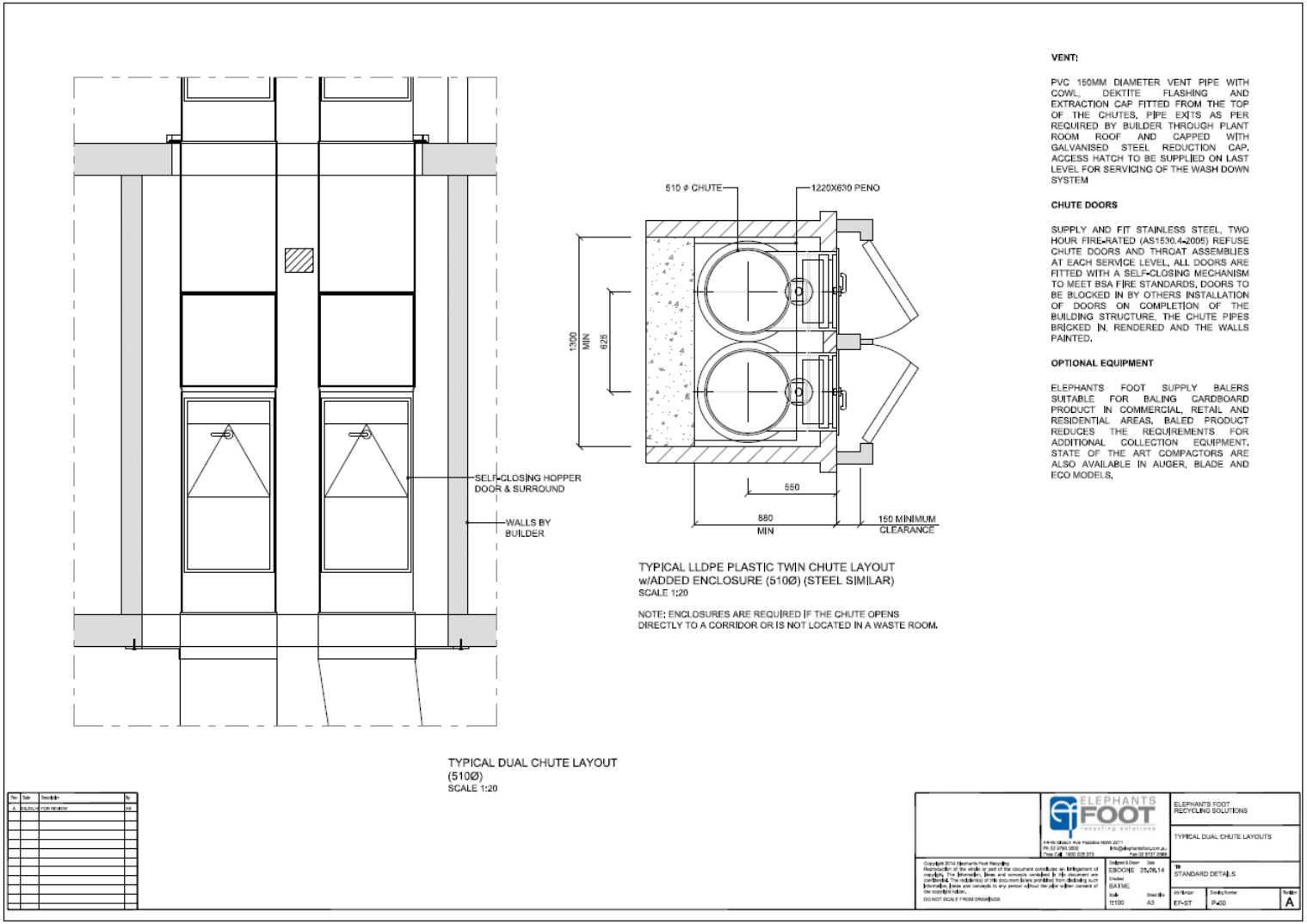
APPENDIX: B.1 TYPICAL DUAL CHUTE LAYOUT



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

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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

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ELEPHANTS FOOT recycling solutions

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44-46 GIBSON AVE, PADSTOW NSW 2211
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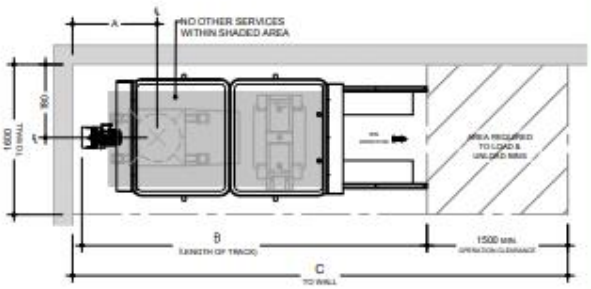
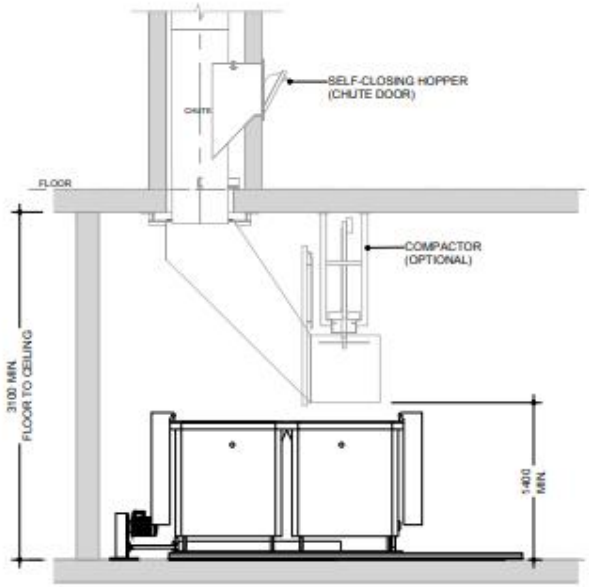
LINEAR TRACK SYSTEM





1100 LITRE BIN

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

Notes:

Bins not provided by Elephants Foot

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

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

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

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

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

ELEPHANTS FOOT recycling solutions

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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

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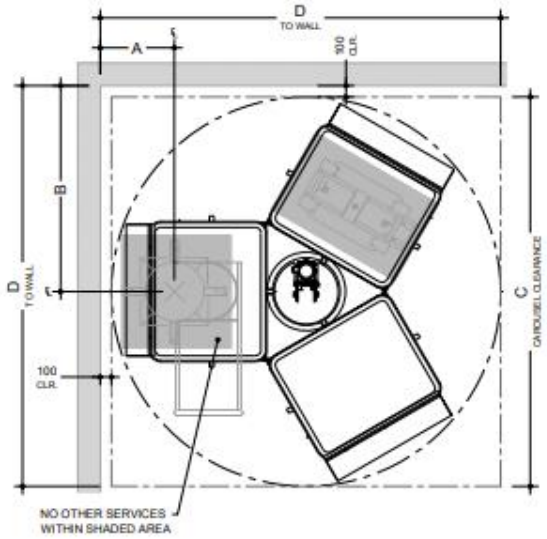
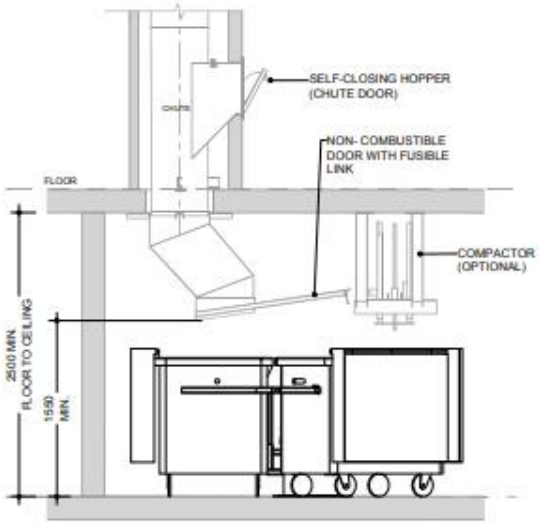
CAROUSEL SYSTEM





1100 LITRE BIN

1100 LITRE BIN 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

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

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3.12.2 Integrated Auger Compactor Electrical Specifications

Electrical Requirements	Description
Electrical Outlet	5 Pin, 415 Volt, 32 Amp Outlet
Phase	3 Phase, 1 Neutral and 1 Earth
Location	Electrical located within 1m of the unit
Circuit Breaker	D Curve Circuit Breaker - Large enough to start and run 10kw electric motor - Breaker size to be confirmed with breaker supplier

Table 16: Electrical requirements for the operation of integrated auger compactors

3.12.3 Integrated Auger Compactor Schematics (7m)

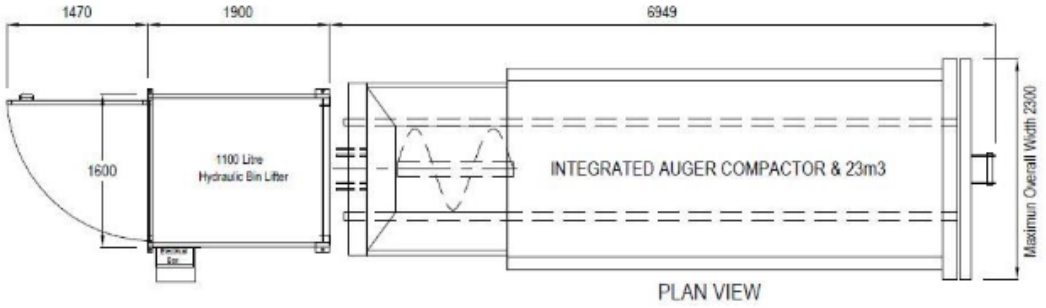

Figure 50: 7.0m Integrated Auger schematic with rear loading bin lifter

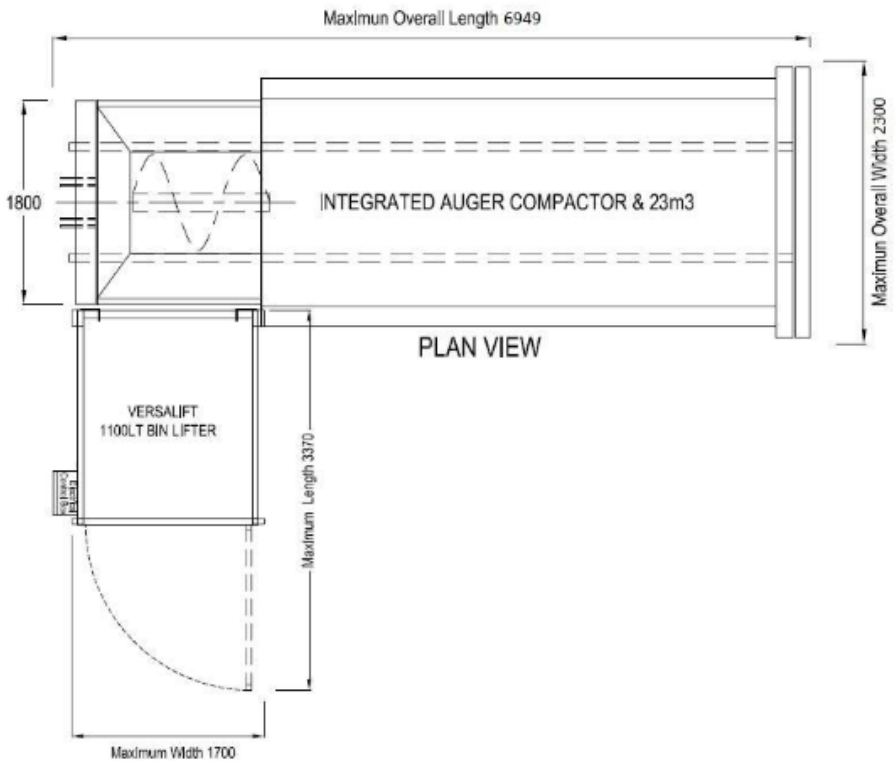

Figure 51: 7.0m Integrated Auger schematic with side loading bin lifter

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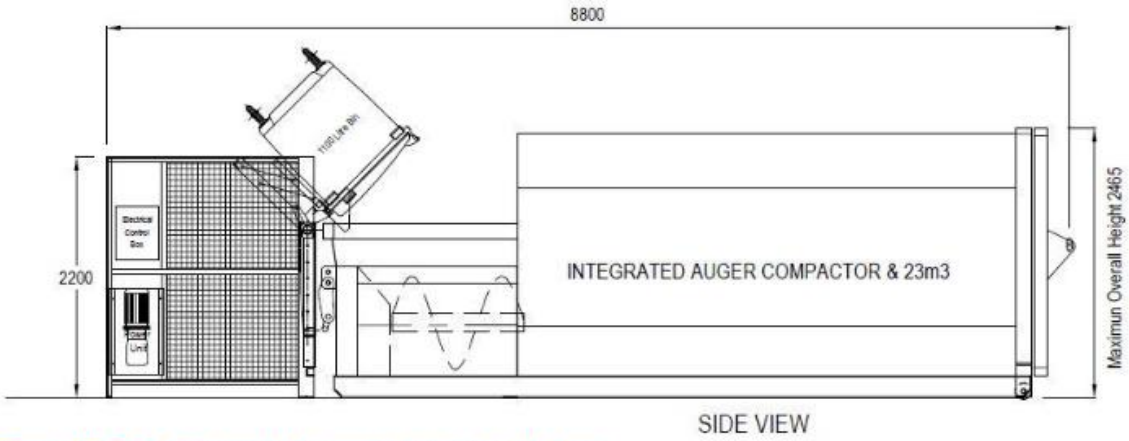

Figure 52: 7.0m Integrated Auger schematic side view

3.12.4 Guide Rail Specifications

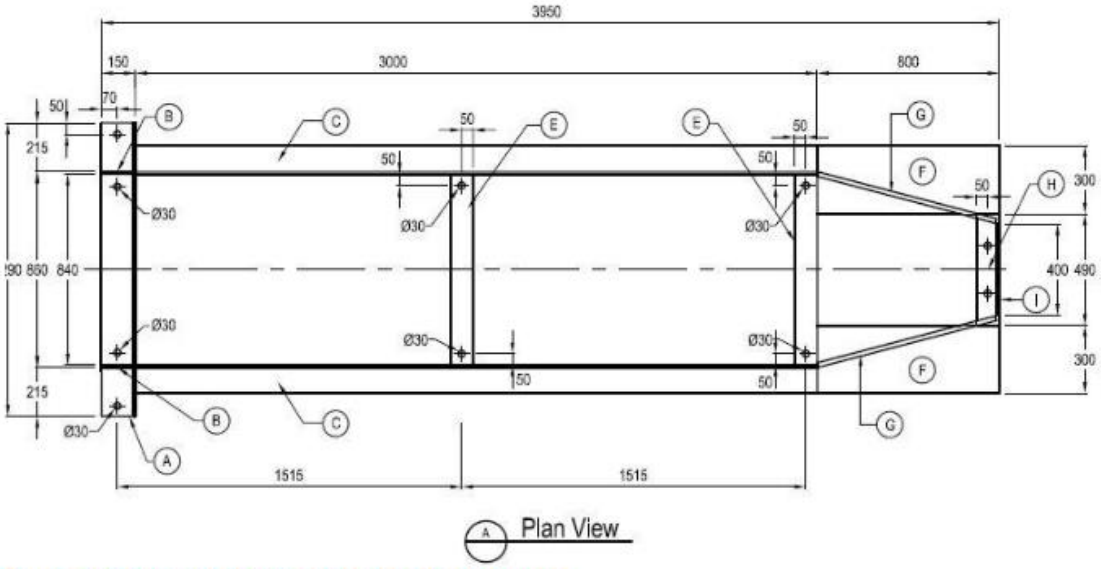

Figure 53: Integrated Auger Guide rails plan view

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3.12.5 Bin Lifter Specifications

Description	Specifications
Bin Capacity	1100L Bin
Lifter Capacity	350kg
Electric Motor	3kw
Power Supply	412V, 3 phase, 10amp, 5 pin

Table 17: Operational specifications for the operation of 1100L bin lifters

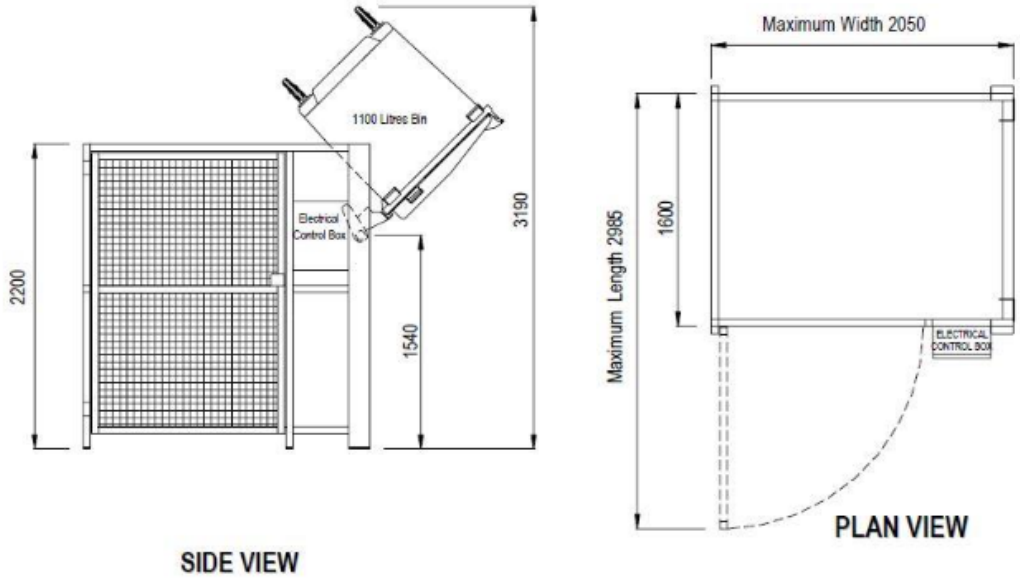

Figure 54: 1100L bin lifter schematic side and plan view

Source: Penrith City Council Residential Flat Building Waste Management Guidelines

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APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS

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APPENDIX: C.1 TYPICAL BIN SPECIFICATIONS

Size	Height (mm)	Width (mm)	Depth (mm)
240L Bin	1100	600	740
660L Bin	1400	800	1260
1100L Bin	1330	1090	1240

Table 5: Standard Bin Size and Dimensions

Figure 10: Image of typical 240L, 660L and 1100L waste collection bins

Source: Penrith City Council Residential Flat Building Waste Management Guidelines

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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

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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

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APPENDIX: C.3 TYPICAL HOOK-LIFT COLLECTION VEHICLE INFORMATION

Vehicle Class	Heavy Rigid Vehicle Dimensions
Overall Length (m)	9.1
Operational Length- Loaded (m)	10.2
Design Width (m)	2.8
Design Height (m)	3.7
Swept Circle (m)	22.5
Clearance (travel height) (m)	4.5
Roadway/ramp grade (max)	1:6.5 (15.4%)
Rate of change of grade (max)	1:16 (6.25%) in 7.0m of travel
Gross Weight (max tonnes)	28.0
Front Chassis Clearance	13^0
Rear Chassis Clearance	16^0

Table 15: Standard dimensions sourced from manufacture specifications

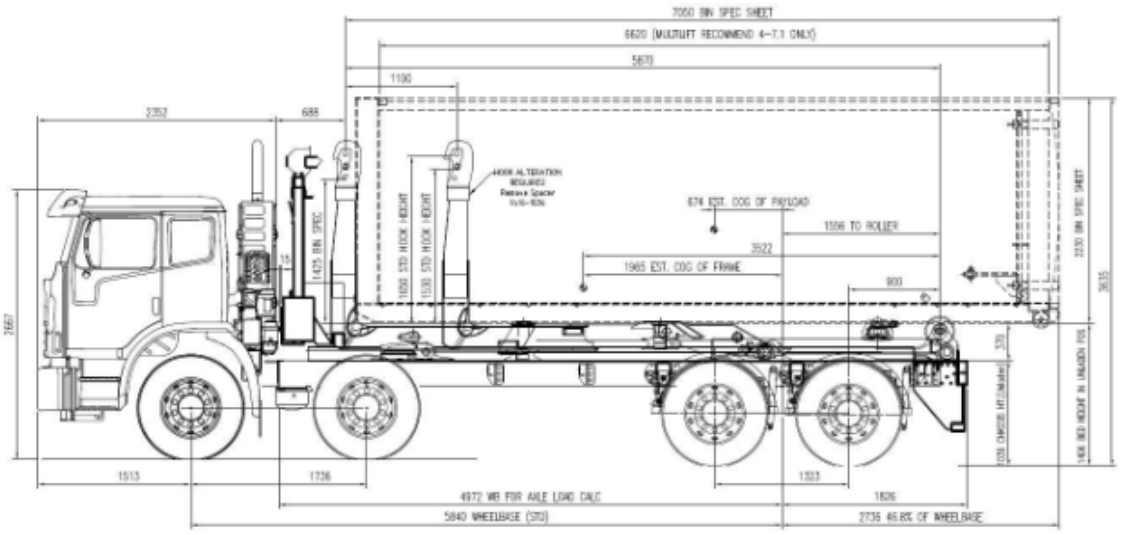

Figure 48: 9.1m Hook Lift Waste Collection Vehicle specifications

NOTE: Consideration of vehicle dimensions including rear operational requirements and overhead clearances are required when assessing collection points and route of travel for waste collection vehicles.

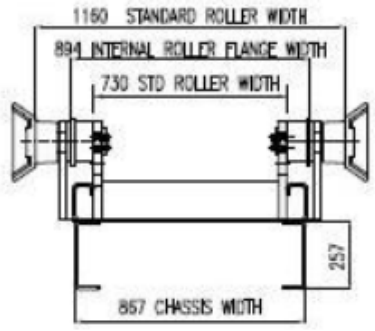

Figure 49: 9.1m Hook Lift Waste Collection Vehicle tray specifications

Source: Penrith City Council Residential Flat Building Waste Management Guidelines

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VEOLIA
ENVIRONMENTAL SERVICES

REARLIFT TRUCK 4X2
MID RANGE 10m³ & 12m³ BODY

Specifications:

- Overall Length – 6440mm (6.14 METRES)
- Overall Width - 2200mm (2.20 METRES) *NOTE: DOES NOT INCLUDE MIRRORS*
- Maximum Height – 2830mm (2.83 METRES)
- Turning Circle - 15000mm (15.00 METRES) Kerb to Kerb
- Tare Weight - 6200 kg's
- GVM - 10400 kg's
- 120 litre & 240 litre & 660 litre & 1100 litre Plastic SULO bins

SYDNEY/CITY AREA ONLY

Source: Capital City Waste Services

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APPENDIX: C.5 TYPICAL BIN MOVERS

For the internal movement of 660L and 1,100L bins the following design specifications apply:

- The bin carting route from the waste chute room to the waste collection room is to be as direct/short as possible, free from obstructions, and not require bins to be carried over any stairs.
- The bin carting route for 240L bins is to be a maximum of 75m in length, a maximum grade of 1:24 and via a 1.8m unobstructed access corridor
- For larger bins (660L & 1100L), the maximum unassisted route of travel is 10m, maximum grade of 1:24 and via a 1.8m unobstructed access corridor
- The movement of bins from the basement to the waste collection room is not permitted via the basement ramp.

Bin tug devices can be broken into two categories; Electric Ride On Tug Devices and Electric Portable Bin Tug Devices. Unit specifications and operations clearances for each system are provided below:

3.6.1 Electric Ride On Tug Device

Figure 11: Typical Electric Ride On Tug Device used by the caretaker for the movement of 660L & 1100L bins within the development

Note: All Electric Ride On Tug Devices must utilise a Gel Battery operating system. Council does not support the use of Lead Acid Battery's due to fire and maintenance hazards.

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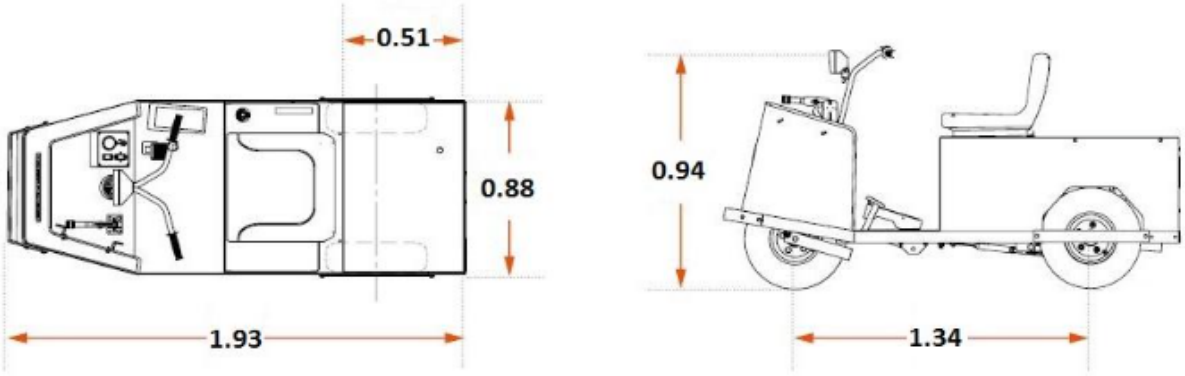

Figure 12: Schematic of a Typical Electric Ride On Tug Device

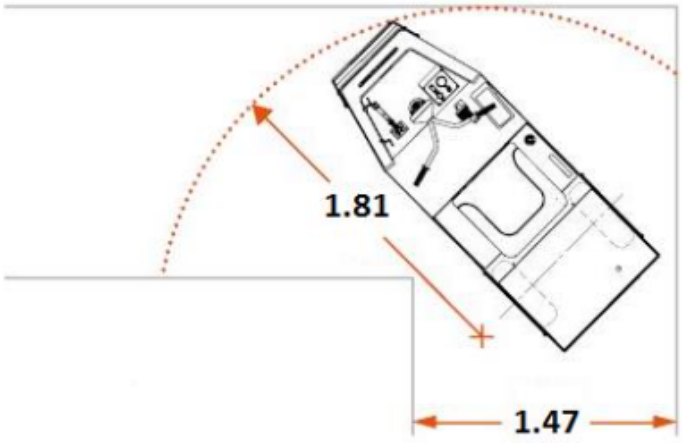

Figure 13: Swept path model for a Typical Electric Ride On Tug Device

Vehicle Classification	Dimensions
Length (m)	1.93
Width (m)	0.88
Height (m)	0.94
Wheelbase (m)	1.34
Powertrain	36-Volt
Seating Capacity (kg)	1 Person
Unit Weight (kg)	426
Aisle Clearance (m)	1.80
Towing Capacity (kg)	3,629
Speed (km/h)	9.6

Table 7: Typical Electric Tug Device unit specifications

To facilitate bin movements (660L & 1100L bins) via an Electric Ride On Tug Device two configurations can be utilised. These include a Universal Towing Device (section 3.6.1.1) and an Aluminium Trailer (section 3.6.1.2).

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3.6.1.2 Aluminium Trailer

The aluminium trailer is used for the transportation of 660L and 1100L bins within a development. The trailer is attached to the Electric Tug Device and operates like a standard vehicle trailer. The trailer has key features including:

- Heavy Gauge Aluminium construction
- Engineered to be light weight, robust and easily cleaned
- Fixed draw bar for easy attachment
- Rear ramp for the loading of 660L and 1100L bins

Figure 17: Aluminium Trailer attached to the Electric Tug Device for 660L and 1100L bin movements

Figure 18: Aluminium Trailer attached to an Electric Tug Device

Source: Penrith City Council Residential Flat Building Waste Management Guidelines

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APPENDIX: C.6 BIN LIFT SIZE CALCULATIONS

WASTE GENERATION ESTIMATES

Table 1: Estimated Waste & Recycling Volumes – Residential

Building/ Lift Core	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
Tower A	241	61.11	14728	61.11	14728
Tower B	75	61.11	4583	61.11	4583
Tower C	80	61.11	4889	61.11	4889
Tower D	157	61.11	9594	61.11	9594
TOTAL	**553**		**33794**		**33794**

BIN MOVEMENT SUMMARY

Tower A General Waste: 2104L/day = <2 x 1100L bins per day
Tower A Recycling: 2104L/day = <2 x 1100L bins per day

Tower B General Waste: 655L/day = <1 x 1100L bin per day
Tower B Recycling: 655L/day = <1 x 1100L bin per day

Tower C General Waste: 698L/day = <1 x 1100L bin per day
Tower C Recycling: 698L/day = <1 x 1100L bin per day

Tower D General Waste: 1371L/day = <2 x 1100L bins per day
Tower D Recycling: 1371L/day = <2 x 1100L bins per day

Total General Waste: = <6 x 1100L bins per day
Total Recycling: = <6 x 1100L bins per day

Overall Total: = <12 x 1100L bins per day **OR** two trips in a 6 or 8 bin lift.

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APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS

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Worm farms

Worm farms or vermiculture systems transform food and other organic material into vermicast (worm compost) and vermi-liquid (liquid extraction from a worm farm). Seafood, seafood shells, meat or bones, and dairy products are not an acceptable part of the worms' diet and should not be appled to these systems. Worm farms can occupy a small footprint and be located on balconies or in gardens. The worm farm should be placed in a sheltered position to avoid getting too hot in summer.

Worm farms come in different sizes and designs and are sold through hardware stores and often at local government offices. Medium and large-scale worm farms can service many households and commercial acticities. These larger systems need a management process to ensure they are properly maintained.

Onsite composting

Compost tumblers and bins and compost bays transform food and other organic material into useful soil enhancer (compost). They are more versatlie than worm farms as they can generally process a wider range of materials, including woody garden organics and can be placed in the sun. A variety of compost bins and tumblers are available from hardware stores or some local councils. There are also various online resources on how to construct them using recycling materials such as timber pallets. The footprint area requirement for a typical single household compost bin is about 1m x 1m x 1m.

Before setting up an onsite composter or worm-farm system, check with council for any local requirements such as setback distances from property boundaries.

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

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APPENDIX: D.2 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

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APPENDIX: D.3 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/

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APPENDIX: D.4 MEDICAL WASTE STREAMS AND MANAGEMENT

The following are the various medical waste streams and their storage guidelines as detailed in NSW Health's *Clinical and Related Waste Management for Health Services* 2017.

Medical Waste Stream	Medical Waste Stream Description and Management	Container Example
Sharps Waste	Sharps waste is any clinical object capable of inflicting a penetrating injury which may or may not be contaminated with blood and or body substance. This includes needles, ampoules and any other sharp objects or instruments designed to perform penetrating procedures Sharps container should be located adjacent to the work area where sharps are used. When the sharps residue container is filled to the black line, the container should be sealed and labelled.	
Pharmaceutical Waste	Pharmaceutical waste refers to any waste pharmaceuticals or other chemical substances specified as regulated goods in the Poisons and Therapeutic Goods Act 2008. This includes any substance specified in a Schedule of the Poisons List under the Act, as well as any therapeutic good which is unscheduled. Pharmaceutical waste also includes expired or discarded pharmaceuticals, filters or other material contaminated by pharmaceutical products. Pharmaceutical waste bins must be lockable	
Clinical Waste	Clinical waste with the potential to cause injury, infection, or offence: • Unrecognisable human tissue (excluding hair, teeth, nails, and anatomical waste) • Bulk blood or other body fluids (or body substances) • Material and equipment visibly stained by blood or body fluids (includes incontinence pads and disposable nappies that come from an infectious patient) [3] • Lab specimens, cultures, or other waste from lab investigations • Waste from medical or veterinary research • Genetically Modified Organisms (GMOs) For incineration or autoclaving and shredding, autoclave tape and bag indicators must be used to show autoclaving has been completed. Fluid may be discharged into sewer depending on Liquid Trade Agreement between the health service and water utility. All clinical waste once treated by a process acceptable to NSW Health may be reclassified in accordance with the Waste Classification.	

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Cytotoxic Waste	Cytotoxic waste is any material contaminated with residues or preparations containing materials toxic or otherwise harmful to cells. This includes any residual cytotoxic drug or laboratory chemical and any discarded material or clinical waste associated with the preparation or administration or excretion of cytotoxic drugs. This may include Genetically Modified Organisms (GMOs) or tissues containing GMOs If Cytotoxic waste is generated it must be placed within an approved purple cytotoxic bag or container. When this container is full, it should be placed in a locked purple cytotoxic waste wheelie bin. Once the larger wheelie bin is full, its collection should be organized.	
Radioactive	Radioactive waste is material that includes sharps and clinical waste contaminated with a radioisotope from the medical or research use of radionuclides, e.g. during nuclear medicine, radioimmunoassay, and bacteriological procedures, and may be in solid, liquid, or gaseous form, and which emits a level of radiation above the level set by regulatory authorities. Radioactive material must be stored on site in an appropriate storage area until it decays to below the thresholds of a “radioactive substance” as defined under the Radiation Control Act and Regulation. Handling and storage must comply with a Radiation Management Plan in accordance with the Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (ARPANSA 2008).	
Anatomical Waste	Anatomical waste is identifiable human body parts such as limbs, organs, placenta and recognisable or large pathological specimens resulting from investigation or treatment of a patient. It does not include deceased bodies.	

Please note: Containers shown above are examples only, please refer to supplier information

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APPENDIX: D.5 TYPICAL SOURCE SEPARATION BINS

Source: https://www.sourceseparationsystems.com.au/

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