



Illoura Place, 28 Elizabeth Street, Liverpool  
Mixed Use Development

## OPERATIONAL WASTE MANAGEMENT PLAN

19/10/2021  
Report No. SO1053  
Revision D

Client

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Altis Bulky Retail Pty Ltd as trustee for Altis ARET Sub Trust 20

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## REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description
A	09/07/2021	J. Parker	A. Armstrong	Draft
B	22/07/2021	J. Parker	A. Armstrong	Amendment
C	21/09/2021	J. Parker	A. Armstrong	Final
D	19/10/2021	J. Parker	A. Armstrong	Amendment

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## GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
<i>Baler</i>	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
<i>Bin-carting Route</i>	Travel route for transferring bins from the storage area to a nominated collection point
<i>Chute</i>	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)
<i>Chute Discharge</i>	The point at which refuse exits from the refuse chute
<i>Chute Discharge Room</i>	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
<i>Collection Area/Point</i>	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
<i>Compactor</i>	A machine for compressing waste into disposable or reusable containers
<i>Composter</i>	A container/machine used for composting specific food scraps
<i>Crate</i>	A plastic box used for the collection of recyclable materials
<i>DA</i>	Development Application
<i>DCP</i>	Development Control Plan
<i>EPA</i>	Environmental Protection Authority
<i>HRV</i>	Heavy Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
<i>L</i>	Litre(s)
<i>LEP</i>	Local Environmental Plans guide planning decisions for local government areas
<i>Liquid Waste</i>	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)
<i>Mixed Use Development</i>	A development comprised of two or more different uses
<i>MUD</i>	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
<i>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
<i>MRV</i>	Medium Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities

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<i>Onsite Collection</i>	When the collection vehicle enters the property and services the development within the property boundary from a designated loading area
<i>Owners Corporation</i>	An organisation or group of persons that is identified by a particular name and acts, or may act, as an entity
<i>Service Bins</i>	Bin set aside to be placed under a chute while the remainder of the bins are being collected
<i>SRV</i>	Small Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
<i>WHS</i>	Workplace Health and Safety
<i>Wheel-in wheel-out service</i>	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 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 Illoura Place development located at 28 Elizabeth Street, Liverpool.

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.

## 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.



## 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:

- Liverpool Development Control Plan 2008
- Liverpool Local Environmental Plan 2008

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:

- Liverpool City Council Waste Management Services Fact Sheet 2016
- 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

Liverpool City Council recognises the potential environmental and human health impacts associated with waste generation, storage and disposal. To mitigate these impacts, Council aims to:

- Minimise disposal of waste to landfill and recover resources to minimise depletion of natural resources.
- Ensure waste management for the end use of the development is designed to provide satisfactory amenity for occupants and provide appropriately designed collection systems.
- Minimise ongoing waste to landfill and maximise recycling of ongoing waste.



## 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 Liverpool City Council *Waste Management Services Fact Sheet* (2016) has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic figures, and waste generation rates may differ according to the residents' actual waste management practice.

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 General Waste and Recycling Volumes – Residential*

# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
312	120	37440	120	37440
Collections & Equipment	General Waste Bin Size (L)	1100	Recycling Bin Size (L)	1100
	General Waste Bins per Day	5	Recycling Bins per Day	5
	General Waste Collections per Week	2	Recycling Collections per Week	2
	Total General Waste Bins Required	18	Total Recycling Bins Required	18

### 4.2 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:

General Waste: 18 x 1100L MGBs collected **2 x weekly**

Comingled Recycling: 18 x 1100L MGBs collected **2 x weekly**

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.)

### 4.3 WASTE DISPOSAL PROCEDURES

A dual chute system, comprising one waste chute and one recycling chute will be installed with access provided on each residential level of the building.

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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 must not be bagged when disposed of into the recycling chute.

Both general waste and comingled recyclables will discharge into 1100L MGBs on linear tracks in the chute discharge room located on basement level 1. Neither waste stream will be compacted.

Cardboard boxes should not be disposed of into the chutes. A separate 240L bin for paper and cardboard will be made available in a compartment adjacent to each chute access point. These bins will be managed by the building caretaker. A bin lifter will be provided in the basement for decanting 240L paper/cardboard bins into 1100L comingled recycling bins for collection. The developer may also wish to arrange for a separate paper/cardboard recycling collection service.

Provision has also been made for a smaller bin for glass recycling adjacent to the paper/cardboard recycling bin on each residential level. Use of these bins is subject to a glass collection service becoming available in the future. Alternatively, the developer may wish to explore the use of a glass crusher and an associated collection service.

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

### 4.3.1 COMMON AREAS

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

## 4.4 WASTE COLLECTION PROCEDURES

Council will be engaged to collect the residential waste and recycling in accordance with Council's collection schedule. This report assumes that both general waste and comingled recycling will be collected twice per week.

On the nominated waste collection day, the building caretaker will be responsible for transporting the 1100L MGBs to the temporary bin holding/collection area located on the ground level. Bins will remain on the linear tracks beneath the chutes to collect discharge while the other bins are being serviced.

To service the bins, a Council collection vehicle will access the site via the Service Laneway and park in the loading dock. The building caretaker will provide the driver with access to the bin holding/collection area. Once the bins are serviced, the collection vehicle will exit the site onto the Service Laneway in a forward direction.

All access and clearances to the Waste Collection Room must be able to accommodate a 12.5m 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.

## 4.5 BULKY WASTE PROCEDURES

A room will be made available for the storage of discarded residential bulky items (e.g. whitegoods, furniture, etc.). This room must have a minimum doorway width of 1.5m to allow for easy movement of large waste items in and out of the room.

Residents will need to liaise with building management regarding the transportation of bulky items and the availability of the bulky waste storage room. It is the caretaker's responsibility to arrange collection dates with Council and then coordinate with the residents.

Refer to Council's website for acceptable items and other information regarding bulky waste collection.

## 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.

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

As the *Better Practice Guide* does not provide a rate for food waste, the general waste rate will be divided in half as it is assumed that food waste would account for half of the general waste.

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 all commercial and 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.

*Table 2: Estimated General Waste and Recycling Volumes – Commercial and Retail*

Use	GFA (m <sup>2</sup> )	General Waste Generation Rate (L/100m <sup>2</sup> /day)	Generated General Waste (L/week)	Recycling Generation Rate (L/100m <sup>2</sup> /day)	Generated Recycling (L/week)
Non-Food Retail	249	25	436	100	1742
Café	249	50	871	120	2091
Bar/Restaurant	249	200	3485	280	4878
Offices	7918	5	2771	15	8314
<b>TOTAL</b>	<b>8665</b>		<b>7563</b>		<b>17025</b>
Collections & Equipment	General Waste Bin Size (L)		1100	Recycling Bin Size (L)	
	General Waste Collections per Week		3	Recycling Collections per Week	
	<b>Total General Waste Bins Required</b>		<b>3</b>	<b>Total Recycling Bins Required</b>	

*Table 3: Estimated Food Waste Volumes – Commercial and Retail*

Use	GFA (m <sup>2</sup> )	Food Waste Generation Rate (L/100m <sup>2</sup> /day)	Generated Food Waste (L/week)
Non-Food Retail	249	25	436
Café	249	50	872
Bar/Restaurant	249	200	3486
Offices	7918	5	2771
<b>TOTAL</b>	<b>8665</b>		<b>7565</b>
Collections & Equipment	Food Waste Bin Size (L)		240
	Food Waste Collections per Week		3
	<b>Total Food Waste Bins Required</b>		<b>11</b>



## 5.2 BIN SUMMARY

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

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

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

Food Waste: 11 x 240L 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, recyclables and food waste to the retail/commercial waste rooms and place into the appropriate collection bins. Waste will not be compacted, and recyclables are not intended to be baled.

## 5.4 WASTE COLLECTION PROCEDURES

A private waste collection contractor will be engaged to service general waste, recycling and food waste bins per an agreed schedule. This report assumes that collections for all waste streams will occur three times per week. Collections will need to be organised for different days to residential waste to ensure that the temporary bin holding/collection area is available.

Prior to collections, the building caretaker will be responsible for transporting the MGBs to the temporary bin holding/collection area. On the day of service, the contractor's vehicle will access the site via the Service Laneway and park in the loading dock. Collection staff will then access the bin holding/collection area and service the bins. Once the bins are serviced, the collection vehicle will exit the site onto the Service Laneway in a forward direction.

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.

## 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 preparation areas will be provided with dedicated source separation bins including a general waste bin, recycling bin and food waste bin. Cleaners or nominated staff will be responsible for monitoring these bins and emptying them into collection bins in the retail/commercial waste rooms as required.

### 5.5.2 NON-FOOD RETAIL AREAS

Non-food retail tenancies will be responsible for managing their own waste back of house. This is likely to consist of back of house bins for general waste, recycling and food waste (although food waste generated in these tenancies is likely to be minimal). 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 rooms, decanting general waste, recycling and food waste into the corresponding bins.

### 5.5.3 OFFICE AREAS

Typically, bins for paper or general waste are positioned next to each workers desk or workstation. Bins for general waste, recyclables and food waste 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 rooms.

### 5.5.4 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.

### 5.5.5 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.

### 5.5.6 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.

### 5.5.7 RE-USABLE 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.

### 5.5.8 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



## 6.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

*Table 4: Stakeholder Roles and Responsibilities*

Roles	Responsibilities
Strata or Management	<ul style="list-style-type: none"> <li>Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; and</li> <li>Purchasing any on-going waste management equipment or maintenance of equipment once building is operational.</li> </ul>
Building Manager or Waste Caretaker	<ul style="list-style-type: none"> <li>Maintaining and cleaning chute doors on each level;</li> <li>Coordinating general waste and recycling collections;</li> <li>Cleaning and transporting bins as required;</li> <li>Organising replacement or maintenance requirements for bins;</li> <li>Organising, maintaining and cleaning the waste holding area;</li> <li>Organising bulky goods collection when required</li> <li>Investigating and ensuring prompt clean-up of illegally dumped waste materials.</li> <li>Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins)</li> <li>Abiding by all relevant WH&amp;S legislation, regulations, and guidelines;</li> <li>Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management;</li> <li>Assessing any manual handling risks and preparing a manual handling control plan for waste and bin transfers;</li> <li>Ensuring site safety for residents, children, visitors, staff and contractors; and</li> <li>Ensuring effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.</li> </ul>
Residents	<ul style="list-style-type: none"> <li>Dispose of all general waste and recycling in the allocated waste chutes and/or MGBs provided;</li> <li>Ensure adequate separation of general waste and recycling; and</li> <li>Compliance with the provisions of Council and the OWMP.</li> </ul>
Retail/Commercial Tenants	<ul style="list-style-type: none"> <li>Managing the back of house storage of generated waste and recycling during daily operation.</li> <li>Correctly separating waste and recycling streams. Including bagging general waste and ensuring recyclables are not bagged.</li> <li>Flattening cardboard within the recycling bin.</li> <li>If required, making arrangements for storing used and unused cooking oil in a bunded storage area,</li> <li>Organizing grease interceptor trap servicing,</li> <li>Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and</li> <li>Ensuring the suitable storage for chemicals, pesticides and cleaning products waste back of house.</li> </ul>
Waste Collection Contractor	<ul style="list-style-type: none"> <li>Provide a reliable and appropriate waste collection service;</li> <li>Provide feedback to building managers/residents regarding contamination of recyclables; and</li> <li>Work with building managers to customise waste systems where possible.</li> </ul>
Gardening/Landscaping Contractor	<ul style="list-style-type: none"> <li>Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.</li> </ul>
Developer	<ul style="list-style-type: none"> <li>Purchasing all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata.</li> </ul>

## 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 5: Operational Waste Streams

Waste Stream	Description	Typical Destination	Waste Stream Management
<b>General Waste</b>	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.
<b>Commingled Recyclables</b>	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).	Materials Recovery Facility (MRF)	Commingled recyclables must not be bagged, and instead should be placed loosely in the recycling chute.
<b>Paper and Cardboard Recyclables</b>	Cardboard and paper products are recyclable materials that can be re-processed into new products.	Resource Recovery Centre	Bulky cardboard must not be placed in any chute. Cardboard should be flattened before placing in the designated cardboard bin adjacent to the chutes.
<b>Glass Waste</b>	Empty bottles and jars may be recycled and reprocessed indefinitely. Glass from windows, drinking glasses, mirrors and other similar applications must not be included with glass for recycling.	Resource Recovery Centre	The current intention is for glass waste generated by residents to be deposited into the recycling chute. The use of a glass crusher and/or dedicated glass collection service may also be pursued. Space has been allocated on each residential level for 60-120L glass collection bins to facilitate this. The developer would be responsible for organising for this service to take place. Commercial tenants may also wish to pursue the use of a glass crusher behind bar areas (see APPENDIX: D.5 for example glass crusher).
<b>Secure Documents</b>	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.
<b>Green Waste</b>	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.
<b>Food Waste</b>	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 or placed into designated food waste bins for the retail/commercial tenancies.

## OPERATIONAL WASTE MANAGEMENT PLAN

<b>Electronic Waste</b>	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.
<b>Bulky Items</b>	Items that are 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 own bulky items.
<b>Sanitary Waste</b>	Feminine hygiene waste generated from female bathrooms.	Incineration or Landfill	Sanitary bins are serviced by sanitary waste contractor.
<b>Other</b>	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.

## 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.

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

## 9.0 EQUIPMENT SUMMARY

*Table 6: Equipment Summary*

Part		Qty	Notes
Chutes	Please refer to supplier's information	2	(See APPENDIX: B.1 for Typical Chute Section)
Chute Equipment	General Waste 3-bin 1100L MGB Linear Track System	2	(See APPENDIX: B.2 for Typical Linear System)
Other Equipment	Suitable Bin Moving Equipment	1	(See APPENDIX: C.4 and APPENDIX: C.5 for Typical Bin Movers)
	240L Bin Lifter	1	(See APPENDIX: C.6 for Typical Bin Lifter)

## 10.0 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.

*Table 7: Waste Room Areas*

Level	Waste Room Type	Equipment	Estimated Area Required (m <sup>2</sup> )
B2	Bulky Waste Storage Room	N/A	51
B1	Chute Discharge Room	2 x 3-Bin 1100L Linear Track Systems 1 x 240L Bin Lifter 18 x 1100L MGBs	84
	Additional Bin Storage Room	18 x 1100L MGBs	53
G	Temporary Bin Holding/Collection Area	18 x 1100L MGBs (Residential General Waste) 18 x 1100L MGBs (Residential Recycling) or 3 x 1100L MGBs (Retail/Commercial General Waste) 6 x 1100L MGBs (Retail/Commercial Recycling) 11 x 240L MGBs (Retail/Commercial Food Waste)	105
	Bulky Waste Collection Room	1 x Bin Mover 1 x 240L MGB (e-Waste) 1 x 1100L MGB (Textile Waste) 1 x 1100L MGB (Polystyrene)	19
	Retail/Commercial Waste & Recycling Room	3 x 1100L MGBs (General Waste) 6 x 1100L MGBs (Recycling)	27
	Retail/Commercial Food Waste Room	11 x 240L MGBs (Food Waste)	8

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 1100L bins and/or bulky waste items should be at least 1500mm wide. The following table provides further waste room requirements.

*Table 8: Waste Room Requirements*

Waste Room Type	Waste Room Requirements
Chute Discharge Room	<ul style="list-style-type: none"> <li>Ceiling clearance height must be a minimum of 3000mm (subject to penetration location)</li> <li>The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles</li> </ul>

## OPERATIONAL WASTE MANAGEMENT PLAN

	<ul style="list-style-type: none"> <li>All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room</li> <li>200mm clearance is required around compaction equipment</li> <li>Where a chute offset is required, the angle of the offset must not exceed 40 degrees (subject to number of consecutive offset and/or up to 1500mm)</li> <li>Doorway should be a minimum of 1500mm wide</li> </ul>
Residential Waste Storage Room & Temporary Bin Holding/Collection Area	<ul style="list-style-type: none"> <li>Bins must not be stacked in rows that are more than two bins deep</li> <li>Doorway should be a minimum of 1500mm wide</li> </ul>
Bulky Waste Storage Rooms	<ul style="list-style-type: none"> <li>May be a dedicated room or screened area within another waste room</li> <li>Must be in close proximity to the collection area</li> <li>Area must also be allocated for the segregation of e-waste, gas bottles, cardboard, etc.</li> <li>Doorway should be a minimum of 1500mm wide</li> </ul>
Retail/Commercial Waste Rooms	<ul style="list-style-type: none"> <li>In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin</li> <li>Doorway should be a minimum of 1500mm wide</li> </ul>

### 10.1 BIN MOVEMENTS

The building caretaker 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 exceed 10m, a bin moving device is require 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 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.

## 10.2 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the *Liverpool Development Control Plan 2008*, 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.

### 10.2.1 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/m<sup>2</sup> 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.



## 11.0 USEFUL CONTACTS

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

### LOCAL COUNCIL

Liverpool Council Customer Service      Ph: (02) 8711 7000      E: [lcc@liverpool.nsw.gov.au](mailto:lcc@liverpool.nsw.gov.au)

### PRIVATE WASTE COLLECTION PROVIDER

Capital City Waste Services	Ph: 02 9599 9999	E: <a href="mailto:service@ccws.net.au">service@ccws.net.au</a>
Remondis	Ph: 02 9032 7100	
Suez Environmental	Ph: 13 13 35	
Wastewise NSW	Ph: 1300 550 408	E: <a href="mailto:admin@wastewise.com.au">admin@wastewise.com.au</a>

### BIN MOVING DEVICE SUPPLIERS

Electrodrive	Ph: 1800 333 002	E: <a href="mailto:sales@electrodrive.com.au">sales@electrodrive.com.au</a>
Sitecraft	Ph: 1300 363 152	E: <a href="mailto:sales@sitecraft.com.au">sales@sitecraft.com.au</a>
Spacepac	Ph: 1300 763 444	

### ORGANIC DIGESTERS AND DEHYDRATORS

Closed Loop	Ph: 1300 762 166	
Orca		E: <a href="mailto:contact.australia@feedtheorca.com">contact.australia@feedtheorca.com</a>
Soil Food	Ph: 1300 556 628	
Waste Master	Ph: 1800 614 272	E: <a href="mailto:hello@wastemasterpacific.com.au">hello@wastemasterpacific.com.au</a>

### COOKING OIL CONTAINERS AND DISPOSAL

Auscol	Ph: 1800 629 476	E: <a href="mailto:sales@auscol.com">sales@auscol.com</a>
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### ODOUR CONTROL

Purifying Solutions	Ph: 1300 636 877	E: <a href="mailto:sales@purifyingsolutions.com.au">sales@purifyingsolutions.com.au</a>
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### SOURCE SPERATION BINS

Source Separation Systems	Ph: 1300 739 913	E: <a href="mailto:info@sourceseparationsystems.com.au">info@sourceseparationsystems.com.au</a>
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### MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

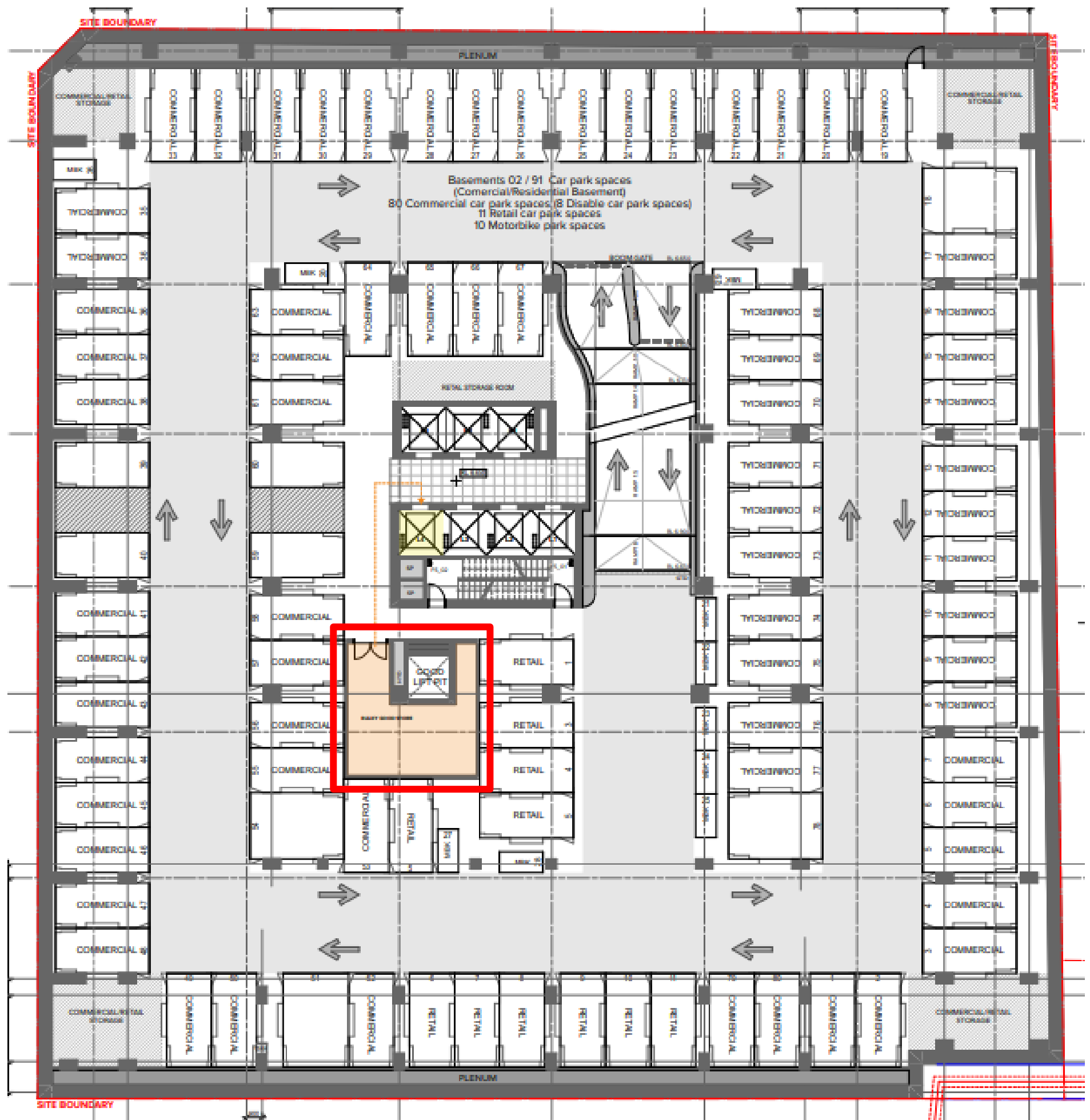
SULO	Ph: 1300 364 388	E: <a href="mailto:sales@sulo.com.au">sales@sulo.com.au</a>
OTTO Australia	Ph: 02 9153 6999	

### CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

Elephants Foot Recycling Solutions	Ph: 1800 025 073	E: <a href="mailto:info@elephantsfoot.com.au">info@elephantsfoot.com.au</a>
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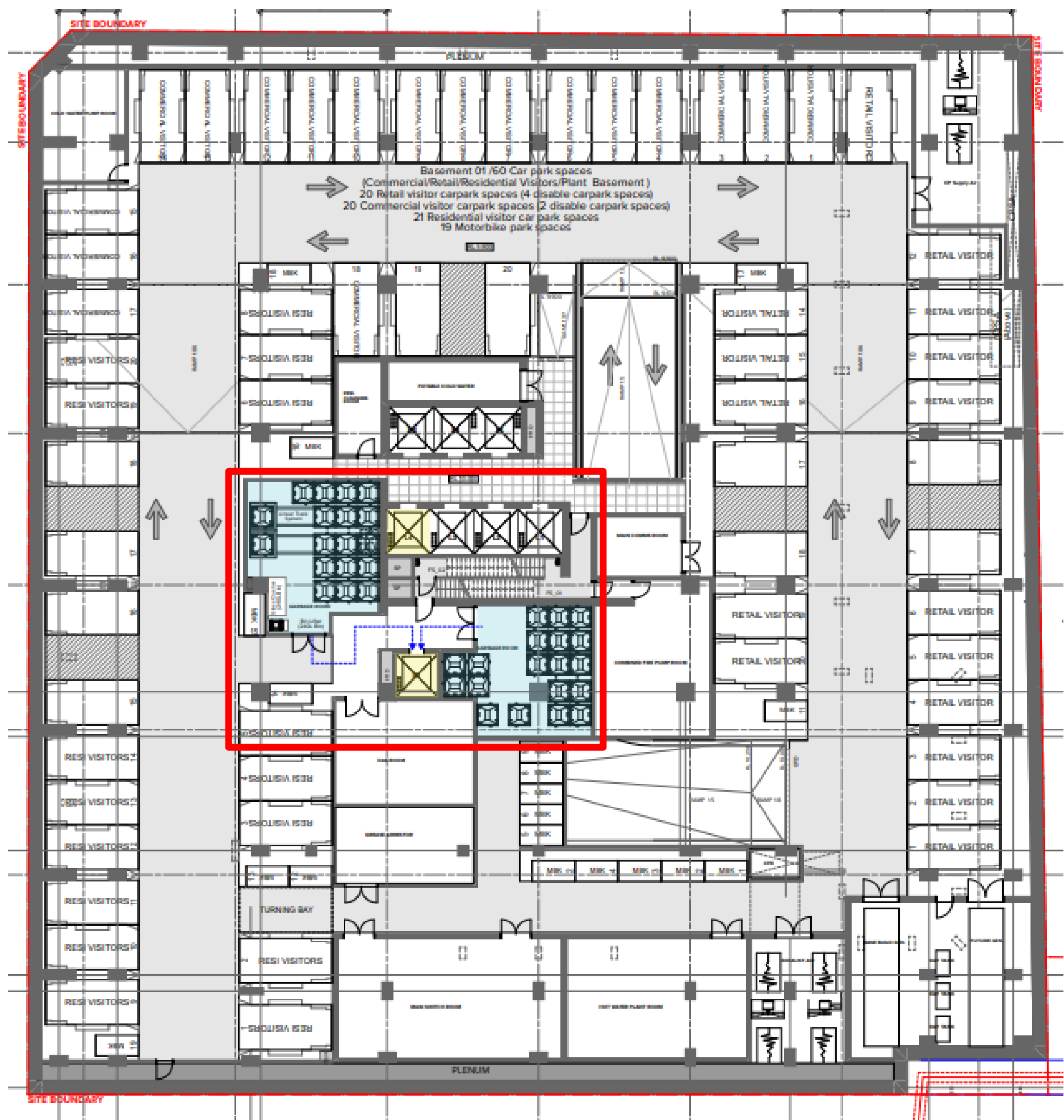
## APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 BASEMENT LEVEL 2 FLOOR PLAN



Source: Turner Studio, Drawing No. DA-820-001, Rev.S1, 20/10/21 – Waste Strategy Diagrams

APPENDIX: A.2 BASEMENT LEVEL 1 FLOOR PLAN



Source: Turner Studio, Drawing No. DA-820-001, Rev.S1, 20/10/21 – Waste Strategy Diagrams

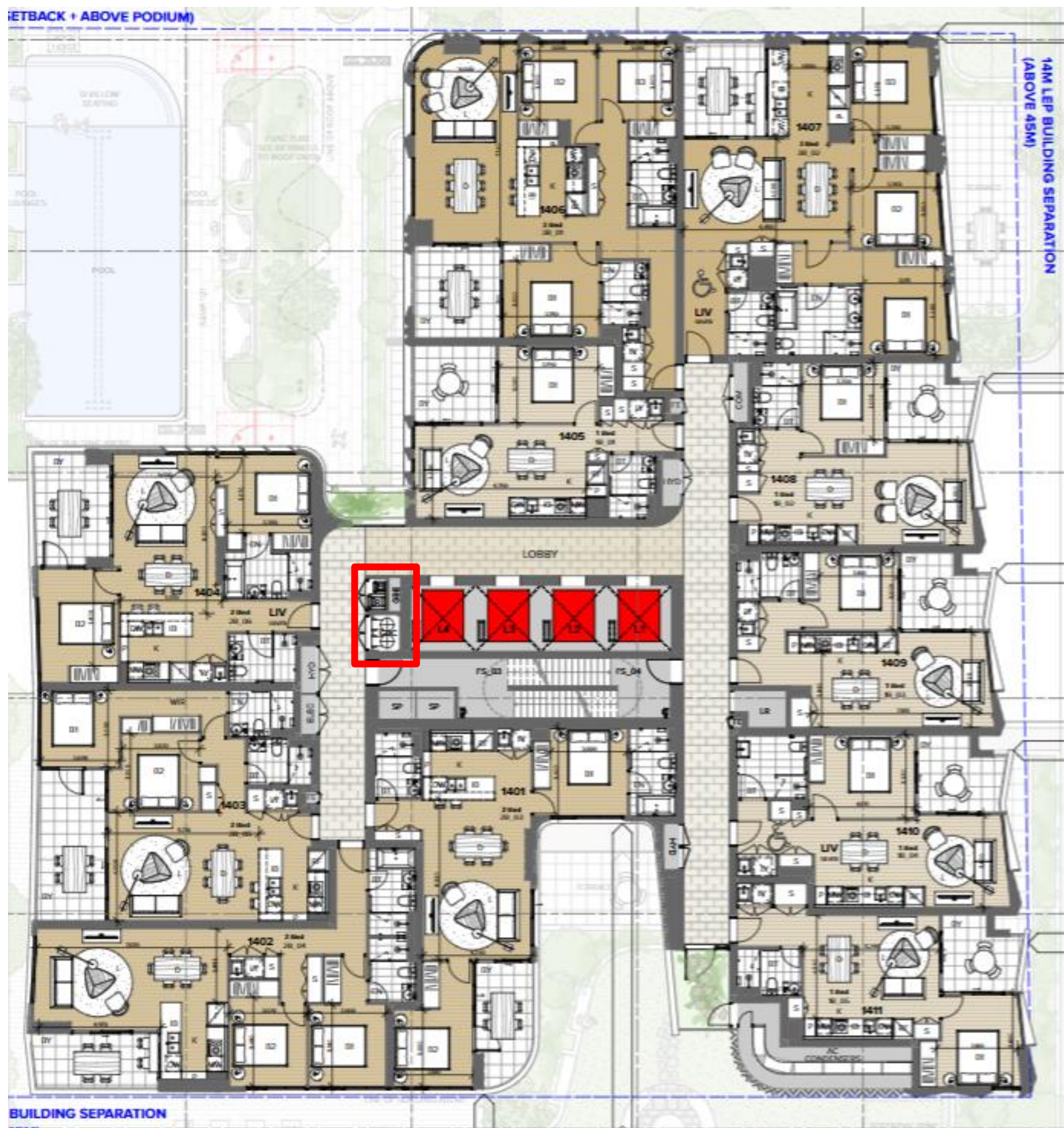


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29



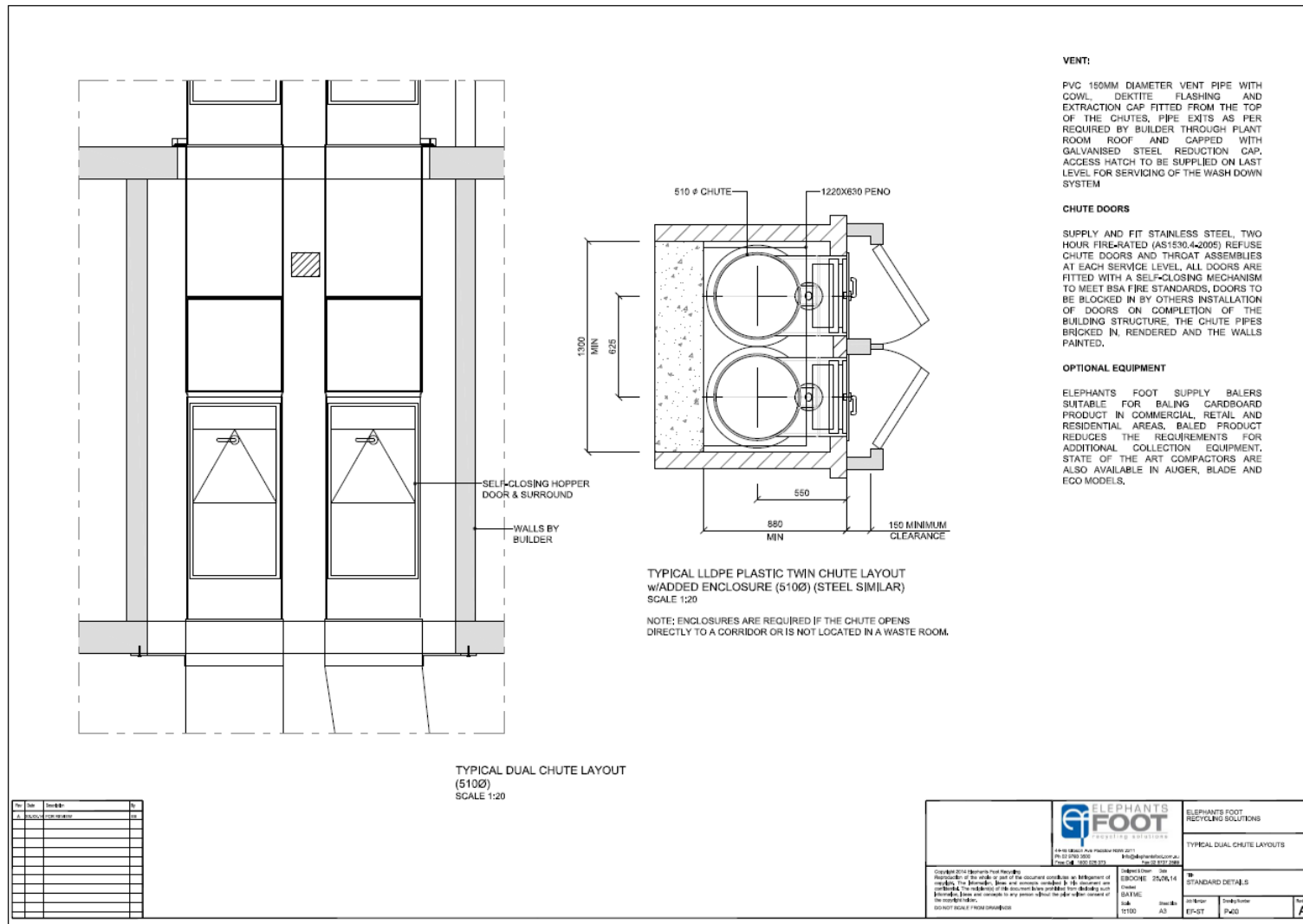
APPENDIX: A.4 TYPICAL RESIDENTIAL FLOOR PLAN



Source: Turner Studio, Drawing No. DA-110-120, Rev.S1, 20/10/21 – GA Plans Typical Level A Highrise

## APPENDIX B: INSTALLATION EQUIPMENT

## APPENDIX: B.1 TYPICAL DUAL CHUTE LAYOUT



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



## 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

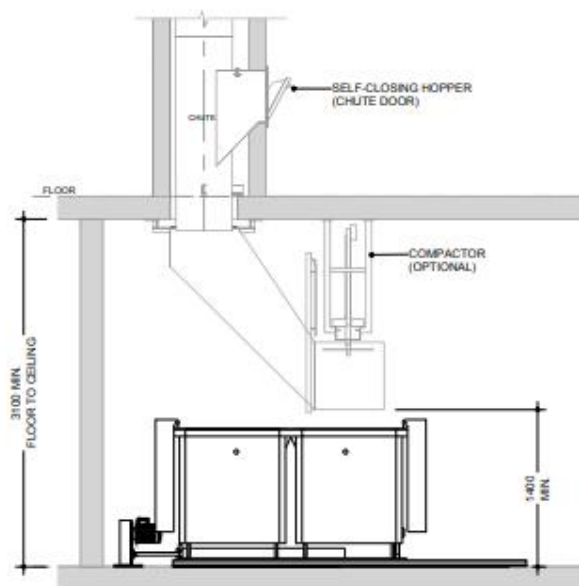
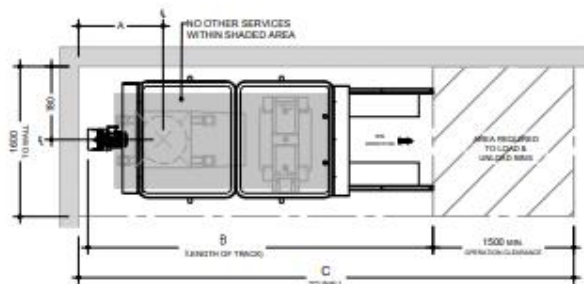
### STANDARD FEATURES & BENEFITS

- 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



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)

## 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*

## 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**




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 <sup>2</sup> )	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

**Wheelie bin**

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**



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 <sup>2</sup> )	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

**Dome or flat lid container**

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](http://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

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

### Large collection vehicles

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

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

**Table B2.1: Collection vehicle dimensions**

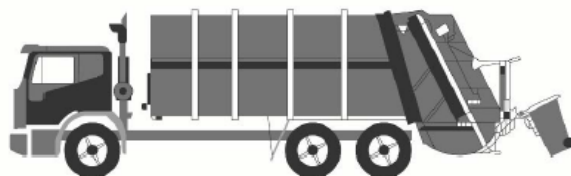
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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

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

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

### Rear-loading collection vehicles

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



Rear-loading waste collection vehicle

### Side-loading collection vehicles

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



Side-loading waste collection vehicle

### Front-lift-loading collection vehicles

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



Front-lift-loading waste collection vehicle

### Small collection vehicles

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

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

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



## APPENDIX: C.4 TYPICAL BIN MOVERS

### 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 TYPICAL SEATED BIN MOVERS

# SITECRAFT

MATERIALS HANDLING EQUIPMENT



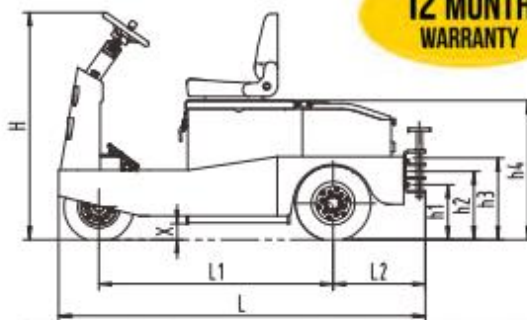
17 Macquarie Drive, Thomastown, VIC 3074

Phone: 1300 363 152 Fax: 1300 722 383

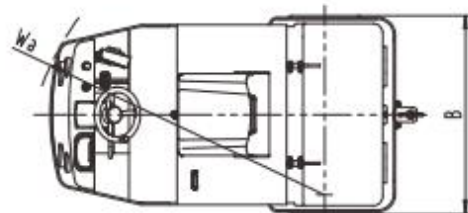
E: sales@sitecraft.com.au ABN: 36 423 328 526

### 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: C.6 TYPICAL 240L BIN LIFTER

### 120-240 Litre Binlifter

The single bin lifter is designed to safely empty wheelie bins into large dumpsters and compactors. With easy operating push button instructions, the bin lifter is complemented by a safety cage.



Features	120-240 litre bin lifter
Lifting capacity	140 kg
Bin compatibility	120 & 240 litre bins
Operation method	Automatic
Hydraulic	yes
Dimensions	850mm (W) x 1800mm (L)
Safety	Safety cage & control box
Emergency stop	yes
Tipping height	1350mm variable
Clearance	2650mm
Suitability in tipping into	bins , dumpsters and compactors
Power	240 volt, 10amp
Can it be customised?	yes
Weighing & data capture	no

## APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS



## APPENDIX: D.1 TYPICAL WORM FARM SPECIFICATIONS

### 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 applied 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 activities. 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 versatile 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

## 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

## APPENDIX: D.3 TYPICAL COOKING OIL CONTAINERS



Drums 205L



Pour in Bulk Tank

[View Brochure](#)



Oil Kaddy System

[View Brochure](#)



Eco System 700L Fixed

Eco System 310L mobile

Eco Systems



Direct-Connect to Fryer

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



APPENDIX: D.4 TYPICAL SOURCE SEPARATION BINS



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

## OPERATIONAL WASTE MANAGEMENT PLAN

### APPENDIX: D.5 TYPICAL GLASS CRUSHER

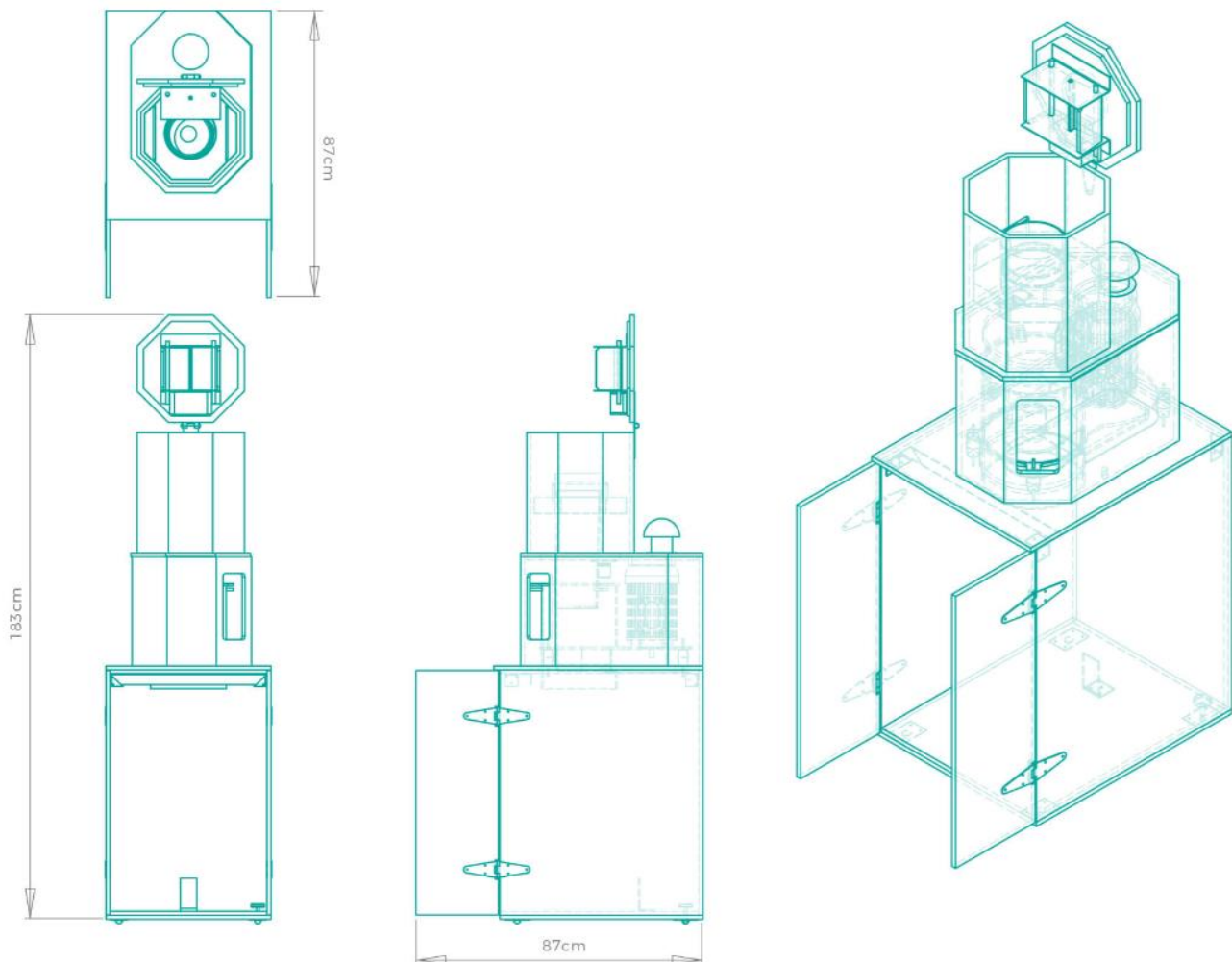
BottleCycler is an innovative glass-crushing machine that's transforming how Australia's events and hospitality industry recycles glass. We're proud to be a finalist in the Premier's Sustainability Awards.

This recognition reflects how we're shaking up the way the hospitality industry does glass. Finally, an easy and effective way for hospitality venues to recycle glass on-the-go.

Our sleek and compact machine blends right into your existing bar area. With a contemporary stainless-steel finish, it crushes glass quickly and quietly, and looks good too.

**The intelligent bin holds up to 300 bottles, saving you the hassle of constantly emptying bins.**

**We're made for hospitality – it's glass recycling made easy.**



Source: <https://bottlecycler.com/our-machine/>