Consulting.™
an Elephants Foot Company

1-7 Andrews Ave & 26 Glen St, Bondi NSW

Residential Development

OPERATIONAL WASTE MANAGEMENT PLAN

16/10/2024
Report No. 4978
Revision F

Client

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REVISION REFERENCE

Revision	Date	Prepared by	Description
A	18/04/23	S. Lee	Draft
B	01/08/23	S. Lee	Draft
C	17/08/23	S. Lee	Final
D	18/08/23	S. Lee	Amendment
E	08/05/24	S. Lee	Amendment
F	16/10/24	S. Lee	Amendment

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GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
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
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
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

1 INTRODUCTION

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by the residential development located at 1-7 Andrews Ave & 26 Glen St, Bondi NSW.

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

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

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

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

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

It is essential that this OWMP is integrated into the overall management of the building and is clearly communicated to all relevant stakeholders.

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. EFC 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 EFC with the following limitations:

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

This OWMP is only finalised once the draft watermark has been removed. If the draft watermark is present, the information in the OWMP is not confirmed.

2 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:

- Waverley Development Control Plan 2022
- Waverley Local Environmental Plan 2012

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:

- Waverley Development Control Plan 2022
- 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

Waverley Council considers waste management to be highly important for the protection and enhancement of both the natural and built environments. As such, Council aims:

- To ensure new developments and changes to existing developments are designed to minimise waste generation and maximize resource recovery.
- To encourage waste storage facilities that are designed to enable source separation for recovery.
- To ensure waste and recycling systems are easy to use and complement Council's waste and recycling services.
- To prevent stormwater pollution that may result from poor waste and recycling storage and management practices.
- To ensure waste storage areas have sufficient volume, are easily accessible, safe, hygienic and are aesthetically incorporated into the design of the development.
- To minimise impacts of waste and waste bins presented on public land for collection on pedestrian and vehicle access, safety and amenity
- To provide flexibility to expand or reconfigure waste separation systems, so that owners and occupants have options to access a range of waste services

3 DEVELOPMENT OVERVIEW

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

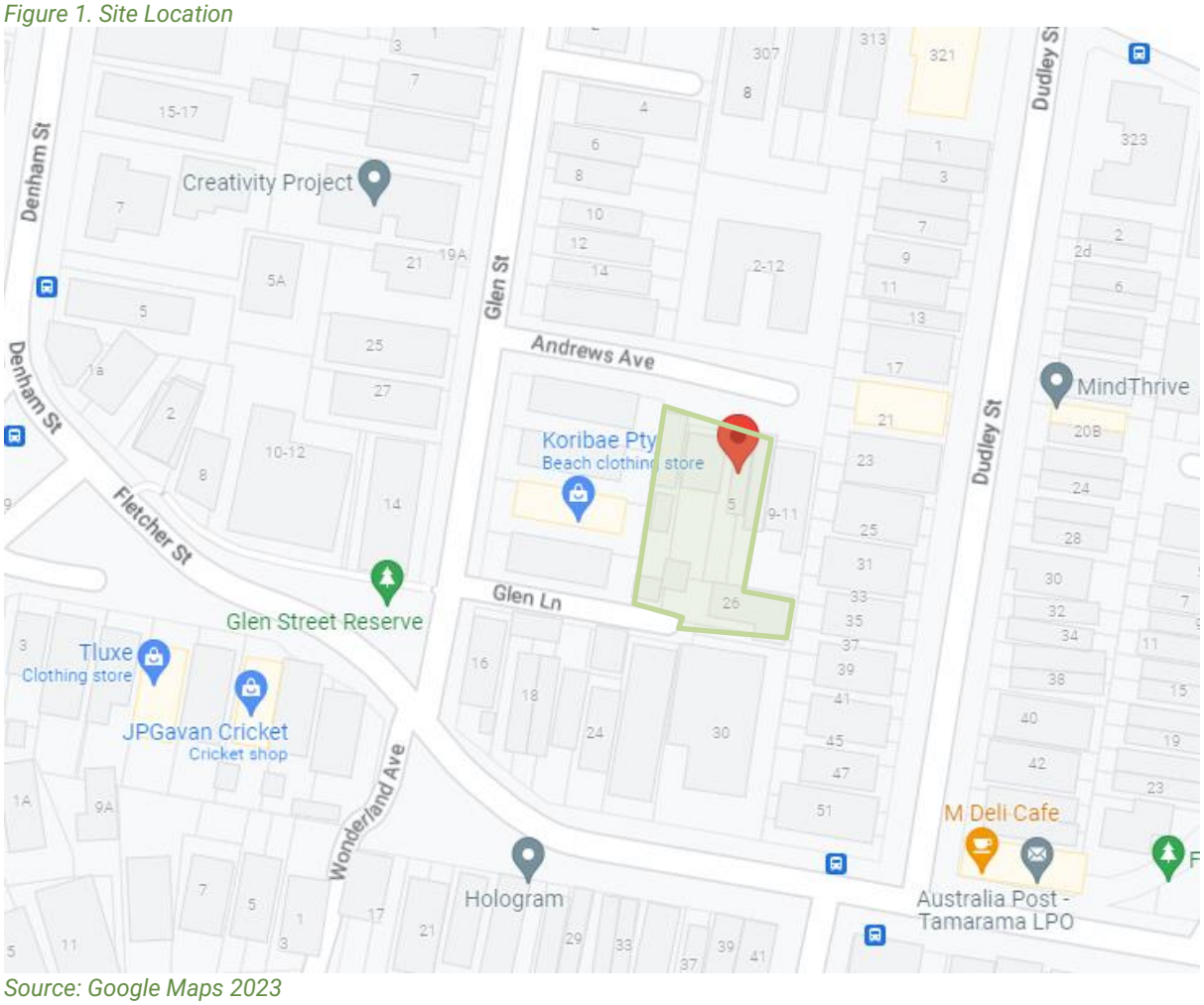
- 1 building with 4 levels.
  - 8 residential units in total
    - with 1 core

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 at 1-7 Andrews Ave & 26 Glen St, Bondi NSW as shown in Figure.1 (boundaries are indicative only). The site has frontages to Glen Lane and Andrews Avenue and vehicle access via Glen Lane.

Figure 1. Site Location



Source: Google Maps 2023

4 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 Waverley Development Control Plan 2022 has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic waste generation rates. Actual volumes of waste and recycling in operation may differ according to the residents' actual waste management practice.

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

Table 1: Estimated Waste Volumes

# Units	General Waste Generation Rate (L/Unit/Week)	Generated General Waste (L/week)	Compacted Generated General Waste (2:1) (L/week)
8	120	960	480
TOTAL		**960**	480
Collections & Equipment	Bin Size (L)	240	240
	Collections per Week	1	1
	Total Bins Recommended	**4**	**2**
	Bins Filled per Day	0.57	0.29

**Note: An additional 240L MGB should be provided for the chute discharge for use during collection periods. These bins are not included in the above figures.*

***Note: It is strongly recommended bins/equipment at the base of each chute allow for 2-days' worth of waste or recycling generation.*

The New South Wales State Government is requiring all local councils to introduce a FOGO (Foods Organics and Garden Organics) collection service to be implemented within the next 2-7 years. Therefore, the food waste stream will be included in the waste management planning detailed in this report. NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments 2019* has been referenced to calculate the total number of food waste bins required for the residential units.

Calculations are based on generic food/garden waste rates. Actual volumes of food waste generated in operation may differ according to the residents' waste management practices.

Table 2: Estimated FOGO Waste Volumes

# Units	FOGO Waste Generation Rate (L/unit/week)	Generated FOGO Waste (L/week)
8	20	160
TOTAL		**160**
Bins and Collections	Bin Size (L)	240
	Bins per Week	1
	Collections per Week	1
	Total FOGO Bins Required for Collection	**1**

**Note: At the time of writing, Council do not have an active FOGO waste collection service. Provision for FOGO waste bins at this development has been included to account for a future FOGO waste collection service.*

Table 3: Estimated Commingled Recycling Volumes

Level	Units	Commingled Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)	Recycling Bins per Week	Recycling Bins per Fortnight	Recycling Collection Per Fortnight	Total Recycling Bins Required
Ground	2	60	120	0.5	1	1	1
Level 1	3	60	180	0.75	1.5	1	2
Level 2	2	60	120	0.5	1	1	1
Level 3	1	60	60	0.25	0.5	1	1
TOTAL	**8**		**480**	**2**	**4**		**5**

Table 4: Estimated Cardboard/Paper Recycling Volumes

Level	Units	Paper/Cardboard Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)	Recycling Bins per Week	Recycling Bins per Fortnight	Recycling Collection Per Fortnight	Total Recycling Bins Required
Ground	2	60	120	0.5	1	1	1
Level 1	3	60	180	0.75	1.5	1	2
Level 2	2	60	120	0.5	1	1	1
Level 3	1	60	60	0.25	0.5	1	1
TOTAL	**8**		**480**	**2**	**4**		**5**

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: 2 x 240L MGBs collected **1 x weekly**

Recycling: 5 x 240L MGBs collected **fortnightly**

Cardboard/Paper Recyclables: 5 x 240L MGBs collected **fortnightly**

FOGO: 1 x 240L MGBs collected **fortnightly**

Service Bin: 1 x 240L MGB to be used under chute during bin collection times

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.

4.3 EQUIPMENT SUMMARY

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

General Waste Chute: 1x 4-Bin 240L MGB Carousel System will hold **4+ day's waste**

In addition to this equipment, it is recommended that the service bin is stored in the chute discharge rooms.

The equipment recommended in the Chute Discharge Rooms is to manage more than 2 days' worth of estimated waste volumes from the building core. Therefore, this represents more than the minimum equipment required in these rooms to satisfy best practice requirements. More bins or large volume handling equipment can be included in these rooms to increase days of capacity or manual labour required in operation.

4.4 WASTE DISPOSAL PROCEDURES

A single waste chute will be installed with access on each residential level. Residents will wrap or bag their general waste before placing in the chute. Bagged waste should not exceed 3kg in weight, or 35cm x 35cm x 35cm.

The general waste will discharge from the chute into 240L MGBs on a carousel system in the chute discharge room located on the basement level (see APPENDIX A.1). General waste will be compacted.

A separate cupboard for the storage of 2 x 240L MGBs will be provided next to each waste chute for the storage of commingled recyclables and cardboard/paper recyclables. Residents will be responsible for loosely placing their recyclables into the 240L MGBS. Recyclables must not be bagged.

Residents on level 3 will use the lift to take their garbage to one of the chute disposal points on lower levels. They can dispose of their recycling in either the lower-level recycling bins or the recycling bins in the basement, which are used to replace full bins on the levels.

Food waste must be disposed of according to councils' policies (compostable bin liner). There will be a FOGO bin in the residential bin room on basement level. Refer to Council guidance for the types of materials accepted in the general waste, recycling and FOGO streams.

4.5 WASTE COLLECTION PROCEDURES

On the nominated waste collection day, recycling bins on the upper levels will be moved down to the basement level. The building caretaker will use the garbage lift to transport all the bins from basement level to ground level; they will then move the bins to kerbside on Andrews Ave.

To service the bins, a Council collection vehicle will park along Andrews Ave. Once the bins are serviced, the collection vehicle will continue along Andrews Ave in a forward direction. When waste collection is complete, the building caretaker will return the bins to resume operational use. Quantities, sizes, and servicing of bins may be modified according to actual waste generation rates by residents.

4.6 BULKY WASTE PROCEDURES

An area will be made available for the storage of discarded residential bulky items (e.g. whitegoods, furniture, etc.). This room should be located within close proximity of the garbage and recycling bin collection room and 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 on basement level (see APPENDIX A.1). It is the caretaker's responsibility to arrange collection dates with Council and then coordinate with the residents.

On the day before collection, the building caretaker will ensure that the bulky waste is moved to the kerbside. On the day of bulky waste collection, a Council collection vehicle will park along Andrews Ave. Once bulky items have been loaded, the collection vehicle will continue along Andrews Ave. Refer to Council's website for acceptable items and other information regarding bulky waste collection.

5 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 5: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/Owners Corporation or Management	• Ensure all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organise internal waste audits/visual assessments on a regular basis • Purchase any on-going waste management equipment or maintenance of equipment once building is operational; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Coordinate general waste and recycling collections; • Clean and transport bins as required; • Organise replacement or maintenance requirements for bins; • Organise, maintain and clean the waste holding area; • Organise bulky goods collection when required • Investigate and ensure prompt clean-up of illegally dumped waste materials. • Prevent storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • Abide by all relevant WH&S legislation, regulations, and guidelines; • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Ensure site safety for residents, children, visitors, staff and contractors; and • Ensure effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Residents	• Dispose of all general waste and recycling in the allocated MGBs provided; • Ensure adequate separation of general waste and recycling; and • Comply with the provisions of Council and the OWMP.
Waste Collection Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers/residents regarding contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/ Landscaping Contractor	• Remove all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchase all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata/ owners corperation.

6 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 6: 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 the designated waste bins.
Paper and Cardboard Recyclables	Cardboard and paper products are recyclable materials that can be re-processed into new products.	Resource Recovery Centre	Cardboard should be flattened before placing in the designated cardboard bin.
Commingled Recyclables	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 designated recycling bins.
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. Plant cuttings from indoor plants etc can be included in the FOGO waste stream.
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 FOGO waste stream.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	The building manager can arrange for the collection of e-waste recycling as needed by residents
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.
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.

7 EDUCATION

Educational materials encouraging correct separation of general waste and recyclables must be provided to each resident. 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 contamination in communal waste bins.

7.1 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 signage should conform to the relevant Australian Standards.

7.2 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

8 EQUIPMENT SUMMARY

Table 7: Equipment Summary

	Part	Qty	Notes
Chutes	Please refer to supplier's information	1	(See APPENDIX B.1 for Typical Single Chute Layout)
Chute Equipment	Waste 4-bin 240L MGB Carousel with Compactor	1	(See APPENDIX B.3 for Typical Carousel)
Other Equipment	Suitable Bin Moving Equipment	Recommended	(See APPENDIX C.4 for Typical Bin Movers)

9 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 8: Waste Room Areas

Level	Waste Room Type	Equipment and MGBs	Estimated Area Required (m^2)
Basement	Chute Discharge Room	4-bin 240L MGB Carousel with Compactor for General Waste	$7m^2$
	Residential Bin Room	1 x 240L MGBs for Commingled Recycling 1 x 240L MGBs for Cardboard/Paper Recycling 1 x 240L MGBs for FOGO	$2.5m^2$
	Bulky Goods Waste Storage Room	Bulky Waste Problem Waste	$5m^2$
Ground Level to Level 2	Disposal Point	1 x 240L MGBs for Commingled Recycling 1 x 240L MGBs for Cardboard/Paper Recycling Garbage Chute Disposal point	$1.5m^2$
Kerbside Collection: Approximately 12 x 240L MGBs to be placed on the Kerbside			

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

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 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 per Council's DCP. The following table provides further waste room requirements.

Table 9: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Chute Discharge Room	• Ceiling clearance height must be a minimum of 3000mm **(3100mm with compactor)** (subject to penetration location) • The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles • All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room • 200mm clearance is required around compaction equipment • Where a chute offset is required, the angle of the offset must not exceed 40 degrees (subject to number of consecutive offset and/or up to 1500mm) • Where the chute discharge room also acts as the collection point, the chute discharge and any equipment underneath the chute should be caged off to ensure the safety of personnel accessing the room.
Residential Bin Room	• Bins should be arranged so that all bins are accessible. Bins are not to be placed in front another or in such a way as to restrict access to the other bins for use. • Bin room should be safe for residents to access • Room must be well ventilated either naturally or mechanically in accordance with AS1668.4.2012 • Must include bin and room cleaning facilities such as hose hock and drainage for odour and hygiene control. • It is recommended a dustpan and broom is provided in this room for residents to clean up unexpected spillages when using bins.
Bulky Goods Waste Storage Room	• May be a dedicated room or screened area within another waste room • Must be in close proximity to the collection area. • An area can also be allocated for the segregation of e-waste, gas bottles, cardboard, etc. • Doorway should be a minimum of 1500mm wide.

10 BIN MOVING PATHS

The building caretaker is responsible for the transportation of bins as required from their designated operational locations to the kerbside 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 personnel.

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.

If the distance of the bin moving paths exceeds 10m, a bin moving device is recommended 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/ owners corporation 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.

11 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the Waverley Development Control Plan 2022, 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.

11.1 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.

12 USEFUL CONTACTS

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

LOCAL COUNCIL

Waverley Council Customer Service Centre	Ph: (02) 9083 8000	E: info@waverley.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

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

SOURCE SPERATION BINS

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

MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

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

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

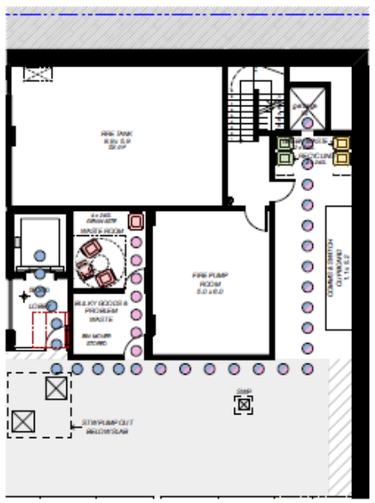
Elephants Foot	Ph: 1800 025 073	E: info@elephantsfoot.com.au

APPENDIX A: ARCHITECTURAL PLANS

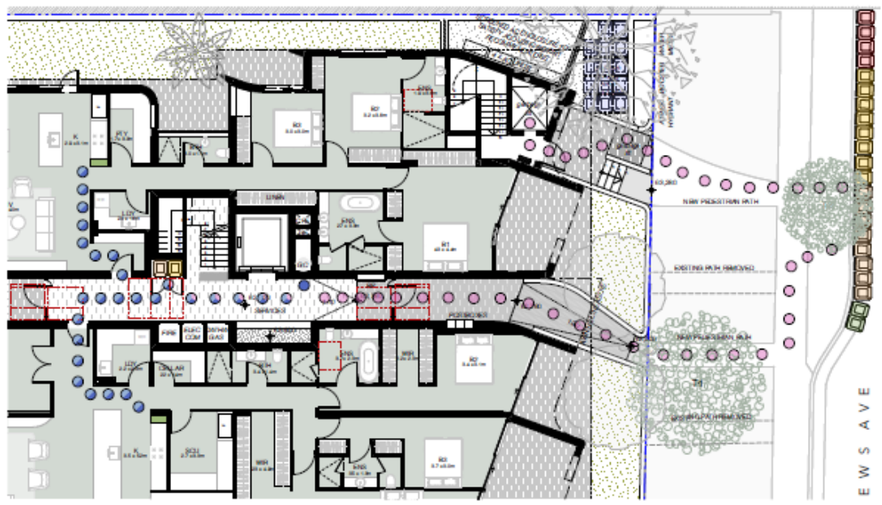
APPENDIX: A.1 WASTE MANAGEMENT PLAN

WASTE MGT PLAN

- LOCATION OF GENERAL WASTE HOLDING AREA
- LOCATION OF PAPER RECYCLING HOLDING AREA
- LOCATION OF OTHER RECYCLING HOLDING AREA
- LOCATION OF GREEN WASTE HOLDING AREA
- LOCATION OF TEMPORARY BIN HOLDING AREA
- LOCATION OF COMPOSTING
- PATH OF TRAVEL FOR RESIDENTS TO RECYCLING AREA
- PATH OF TRAVEL TO GARBAGE CHUTE
- PATH OF TRAVEL FOR CONTRACTOR FROM GARBAGE HOLDING AREA TO KERBSIDE



BASEMENT



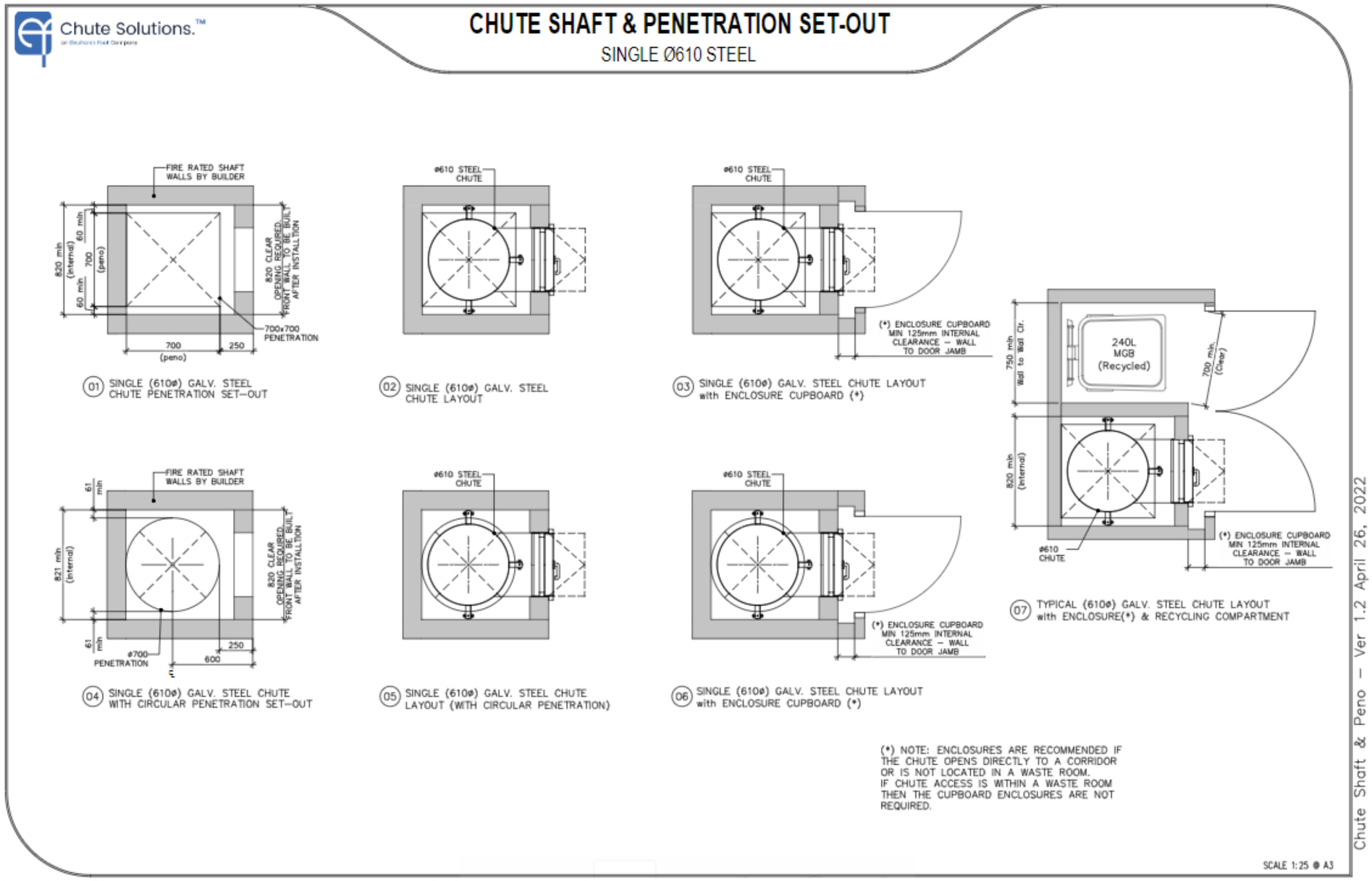
GROUND FLOOR

TYPICAL LEVEL

Source: MHNDU, Drawing No. DA 9301, Revision I, October 2024 – Waste Management Plan

APPENDIX B: INSTALLATION EQUIPMENT

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



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

APPENDIX: B.2 TYPICAL CAROUSEL SYSTEM FOR 240L 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)

240 LITRE CAROUSEL SYSTEM

PRODUCT INFORMATION

Elephants Foot 240 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 240 litre bin Carousel System is available in 4 or 5 bin options.

SPECIFICATIONS

System Control	Electric PLC
Power Supply	415 V AC / 10A / 5 PIN
Motor Size (kW)	0.37
Maximum bin load	96 kg
Noise (dBA)	<85
Bin Size (L)	240
Cycle time (sec)	60
Bin Quantity options	4 or 5

OPTIONAL EXTRAS

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

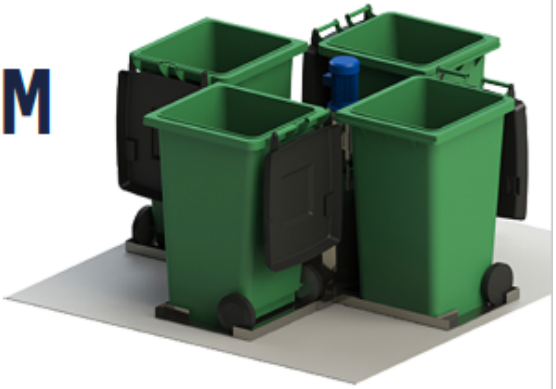
STANDARD FEATURES & BENEFITS

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

Chute Solutions.™
an Elephants Foot Company

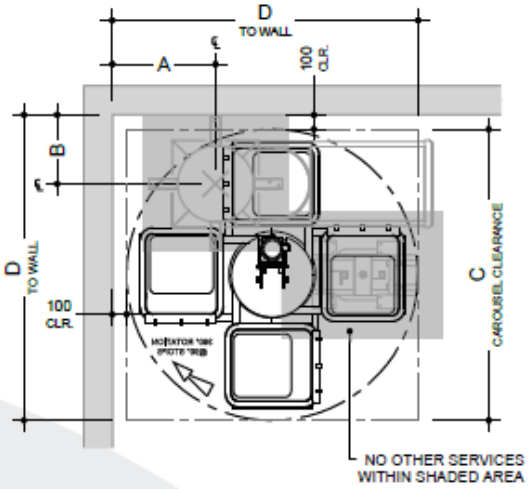
ELEPHANTS FOOT

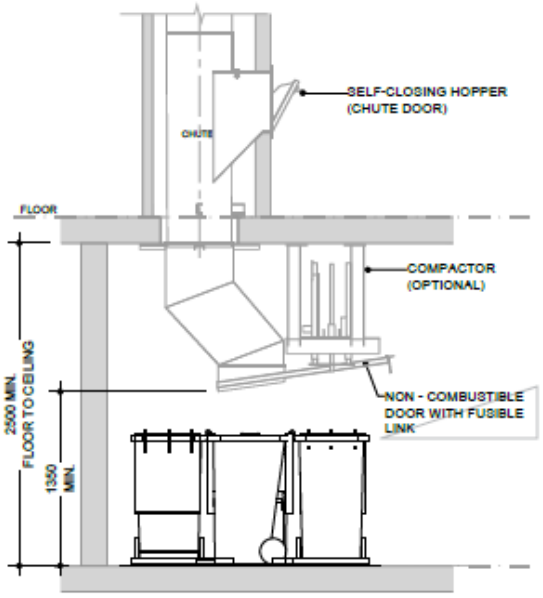
240 LITRE CAROUSEL SYSTEM



No. of Bins	Reference (mm)			
	A	B	C	D
4	750	500	2020	2200
5	900	600	2460	2600

Available with or without compaction unit, our standard 240 litre bin Carousel System is available in 4 or 5 bin options.





Notes:
Bins not provided by Elephants Foot

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

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

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

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

APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX: C.1 TYPICAL BIN SPECIFICATIONS

Mobile bins

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

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

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

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

Wheelie bin

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

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

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

Dome or flat lid container

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

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

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

APPENDIX: C.2 SIGNAGE FOR WASTE AND RECYCLING BINS

Waste signs

Signs and educational materials perform several functions including:

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

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

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

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

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

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

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

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

Problem waste signs

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

Figure I2.1: Problem waste signs

Safety signs

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

Figure I3.1: Example safety signs

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

APPENDIX: C.3 TYPICAL COLLECTION VEHICLE INFORMATION

General

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

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

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

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

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

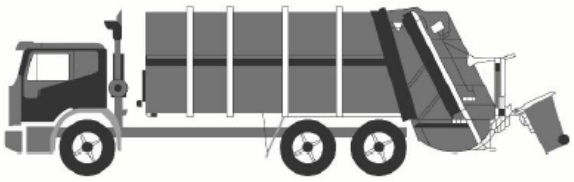
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0	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

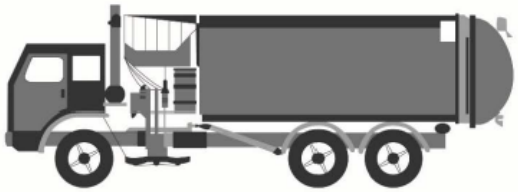
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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

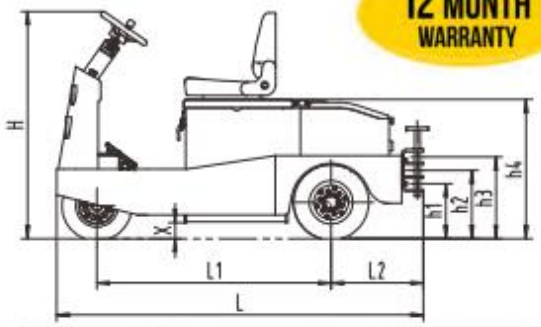
SITECRAFT
MATERIALS HANDLING EQUIPMENT

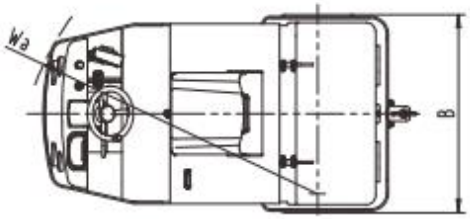
17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

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 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 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 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 SOURCE SEPARATION BINS

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