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14-16 Marshall Avenue, 5-9 Holdsworth Avenue and 2-10 Berry Road, St Leonards

Residential Development

OPERATIONAL WASTE MANAGEMENT PLAN

20/04/2023
Report No. 3447
Revision C

Client

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REVISION REFERENCE

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A	07-03-2023	T. McPherson	Draft
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C	20-04-2023	T. McPherson	Final

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GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
Chute	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Chute Discharge	The point at which refuse exits from the refuse chute
Chute Discharge Room	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
Collection Area/Point	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
Compactor	A machine for compressing waste into disposable or reusable containers
Composter	A container/machine used for composting specific food scraps
DA	Development Application
DCP	Development Control Plan
EPA	Environmental Protection Authority
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
WHS	Workplace Health and Safety
Wheel-in wheel-out service	A type of waste collection service offered by local councils where the council waste collection personnel enter the premises to collect the bins and returns them to the property

1.0 PROJECT OVERVIEW

Elephants Foot Recycling Solutions (EFRS) has been engaged to prepare the following waste management plan for the operational management of waste generated by the Residential development located at 14-16 Marshall Avenue, 2-10 Berry Road, and 5-9 Holdsworth Avenue.

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 has been provided by EFC separately.

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:

- Lane Cove Council Local Development Plan 2010
- Lane Cove Local Environmental Plan 2010

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

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

- Lane Cove Council: Development Control Plan 2010
- 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

Lane Cove 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 appropriate waste storage and collection facilities.
- Maximise source separation and recovery of recyclables.
- Ensure waste management systems are as intuitive for occupants as possible and are readily accessible.
- Ensure appropriate resourcing of waste management systems, including servicing.
- Minimise risk to health and safety associated with handling and disposal of waste and recycled material and ensure optimum hygiene.
- Minimise adverse environmental impacts associated with waste management.
- Discourage illegal dumping by providing on site storage, and removal services

3.0 INTRODUCTION

This OWMP has been prepared by T. McPherson on behalf of Modern Construction & Development **(Proponent)** and in support of a development application submitted to Lane Cove Council (**Council**) for construction of a mixed-use development comprising of 10 allotments with a total site area of 5,874sqm. The site is known as Areas 13,14 and 15 within the St Leonards South Precinct, and is bound by Marshall Avenue to the north, Holdsworth Avenue to the east and Berry Road to the west.
This development proposal seeks consent for the demolition of all existing buildings and structures on site and the construction of three separate 10 to 11 storeys residential flat buildings development, in accordance with the broader development within the St Leonards South Precinct.
More specifically, the proposed works are described as follows:

- Construction of three residential buildings comprising:
  - A consolidated basement car park comprising four levels and one part basement level;
  - Vehicular access via Holdsworth Avenue (from Area 14).
- Significant landscaping integrated throughout the site with a focus on the central green spine.

A key component of the development is to incorporate the desired future character of the St Leonards South Precinct and emphasis on the unique context of the locality through architectural expression and landscaping.

The proposed development is aligned with Council's vision for the St Leonards South Precinct and will create a landmark development within this corner site to celebrate the gateway entrance to the St Leonards South Precinct.

4.0 BACKGROUND

The site forms part of the Council led St Leonards South Planning Proposal followed by the amendments to the LEP, DCP and implementation of a new Landscape Master Plan (LMP). The intent of the amendments is to allow for higher density residential development in the area. The LEP amendments were gazetted in October 2020 and came into effect on 1 November 2020.

The new planning framework is also supported by a site specific DCP and a LMP which were adopted by Council on 19 October 2020. These documents are intended to supplement the LEP controls to provide more detailed built form and landscape guidelines.

5.0 PRELODGEMENT DISCUSSIONS

The proposal for the development of Area's 13, 14 & 15 has led to multiple preliminary discussions with Lane Cove Council. The Proponent has been consulting extensively with Lane Cove Council throughout the Planning Proposal phase, and in addition met with senior planning staff in November 2020 to seek clarity on a range of matters while the design review structure was being finalised.

Post gazettal of the LEP and as part of the pre-DA process, the applicant met with Council and the Design Excellence Panel (**DEP**) on multiple occasions. Preliminary design schemes were presented at these meetings.

On 19 August 2022, Lane Cove Council issued a Letter to the Applicant providing detailed comments on the proposal. The correspondence generally accepted the design responses with one amendment pertaining to the southern setback controls for Levels 5-10 of buildings in Areas 14 & 15.

6.0 SITE LOCATION

The subject site is located at 2-10 Berry Road, 5-9 Holdsworth Avenue and 14-16 Marshall Avenue, St Leonards. The site comprises 10 allotments with a total site area of 5,874sqm. It is acknowledged that the Proponent owns all lots forming part of the site.

The site is known as Areas 13, 14 and 15 within the St Leonards South Precinct and in the Lane Cove Local Government Area (LGA). St Leonards is located 6km north of the Sydney CBD. The subject site is in proximity and highly accessible to the commercial centres of North Sydney, Chatswood and Macquarie Park. The site is located within convenient walking distance to St Leonards rail station and the future metro station.

The surrounding development has undergone significant transition, from low density dwellings to medium and high density residential and mixed use. The desired future character for St Leonards South Precinct is for a liveable, walkable, connected, safe area which helps build upon the transit, commercial and residential opportunities of St Leonards. This transition is being supported by current development activity, recent approvals and further planned development.

Address	**Lot and Deposited Plan**
14 Marshall Avenue	Lot 2 in DP7259
16 Marshall Avenue	Lot 1 in DP7259
2 Berry Road	Lot 38 in DP7259
4 Berry Road	Lot 37 in DP7259
6 Berry Road	Lot 36 in DP7259
8 Berry Road (*to be acquired from neighbour)	Lot 35 in DP7259
10 Berry Road (*to be acquired from neighbour)	Lot 34 in DP7259
5 Holdsworth Avenue	Lot 7 in DP7259
7 Holdsworth Avenue	Lot 8 in DP7259
9 Holdsworth Avenue	Lot 9 in DP7259

Figure 1: Site Location

(Source: Six Maps).

Figure 2: Proposed St Leonards Masterplan Aerial View.

(Source: A+ Design, 2020).

7.0 RESIDENTIAL WASTE MANAGEMENT

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

7.1 WASTE GENERATION ESTIMATES

The *Lane Cove Development Control Plan 2010* has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic waste and recycling rates. Actual volumes of waste and recycling generated in operation may differ according to the residents' actual waste management practices.

During operation, it is the responsibility of the building manager to monitor the number of bins required for the development. 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 provided.

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

Table 1: Estimated Waste and Recycling Volumes – Residential

Bldg.	# Units	Waste Generation Rate (L/Unit/Week)		Generated Waste (L/Week)	Generated Waste 2:1 (L/Week)	Commingled Recycling Generation Rate (L/Unit/Week)		Generated Paper Recyclables (L/Week)	Paper/Cardboard Generation Rate (L/Unit/Week)		Generated Paper Recyclables (L/Week)
13	60	80		4800	2400	24		1440	24		1440
14	55	80		4400	2200	24		1320	24		1320
15	72	80		5760	2880	24		1728	24		1728
TOTAL	**187**			**14960**	**7480**			**4488**			**4488**
Bins and Collections		Waste Bin Size (L)		660	660	Recycling Bin Size (L)		660	Recycling Bin Size (L)		240
		Waste Collections/Week		1	1	Recycling Collections/Week		1	Recycling Collections/Week		1
		Bins Per Day	*Bldg. 13*	1.0	0.5	Bins Per Day	*Bldg. 13*	0.3			
			Bldg. 14	1.0	0.5		*Bldg. 14*	0.3			
			Bldg. 15	1.2	0.6		*Bldg. 15*	0.4			
		Bins Per Collection	*Bldg. 13*	**8**	**4**	Bins Per Collection	*Bldg. 13*	**3**	Bins Per Collection **Note: One Bin per Level*	*Bldg. 13*	**10**
			Bldg. 14	**7**	**4**		*Bldg. 14*	**2**		*Bldg. 14*	**12**
			Bldg. 15	**9**	**5**		*Bldg. 15*	**3**		*Bldg. 15*	**11**

**Note: An additional 240L MGB should be provided for on each residential level. These bins are not included in the above figures.*

***Note: It is strongly recommended bins/equipment at the base of each chute allow for 1-days' worth of waste or recycling generation*

7.2 BIN SUMMARY

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

General Waste:	13 x 660L MGBs collected **1 x weekly.**
Commingled Recyclables:	8 x 660L MGBs collected **1 x weekly.**
Cardboard/Paper Recyclables:	33 x 240L MGBs collected **1 x weekly.**
Note (One bin per residential level)*	
Service Bins:	6 x 660L MGBs

7.3 WASTE DISPOSAL PROCEDURES

Previous correspondence with Lane Cove Council has revealed the development can utilise a dual chute system, accompanied by a 240L bin. Dual chute systems, comprising of 1 (one) waste chute and 1 (one) recycling chute will be installed within all buildings. Residents will be provided access to the chutes and 240L bin on each residential level, all located within a dedicated waste cupboard along their common corridors.

Residents will wrap or bag their general waste before placing in the waste chute. Bagged waste should not exceed 3kg in weight, or 35cm x 35cm x 35cm. Recycling (comingle only) must not be bagged when disposed of into the recycling chute. Cardboard boxes or large containers should also not be disposed of in the chutes; a separate 240L cardboard bin will be made available on each residential level and managed by the building caretaker for paper/cardboard recycling, which will assist in the prevention of a chute blockage.

Volume reduction equipment has been recommended to accommodate the storage of the estimated waste and recycling volumes. The general waste will terminate from the waste chute into a 660L bin, and commingled recycling will discharge from the commingled recycling chute into linear track systems. These bins and equipment will be located within the chute discharge rooms on the ground level (*see APPENDIX: A.1*). General waste will be compacted in a 2:1 ratio.

Residents in building 14 will reside in the same level as the chute discharge room on ground floor. All residents will have access to a bin cupboard housing space for 3 x 240L bins (general waste, commingled and cardboard/paper recyclables. The general waste bins will be decanted into the larger 660L bins with the aid of a bin lifter, whilst the other bins will be collected and rotated when required.

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

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

7.3.1 COMMON AREAS

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

The building caretaker will be responsible for monitoring and transporting these receptacles to the allocated bins stored within the bin collection room, then returning the designated receptacles to their required locations.

7.4 WASTE COLLECTION PROCEDURES

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

On the nominated waste and commingled recycling collection day, the building caretaker will be responsible for transporting the 660L MGBs to the bin collection room located on the ground level (*see APPENDIX: A.1*). It is recommended that extra 660L service bins are placed under the waste and commingled recycling chute to collect discharge while the other bins are being serviced.

On the nominated paper/cardboard recycling collection day, the building caretaker will be responsible for transporting the 240L MGBs to the bin collection room located in the ground level.

To service the bins, a Council collection vehicle will enter the site from Holdsworth Avenue and park in the loading bay. The building caretaker will provide the driver with access to the bin collection room. Once the bins are serviced, the collection vehicle will exit the site onto Holdsworth Avenue in a forward direction.

All access and clearances to the bin collection room have been designed to accommodate a 8.8m long MRV *(See APPENDIX C.3*).

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 bin collection is complete, the building caretaker will return the bins to their designated locations to resume their operational use.

7.5 BULKY WASTE PROCEDURES

An area has been 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 bin collection room and must have a minimum doorway width of 1700mm 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 next to the Central Collection Area (*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 of bulky waste collection, a Council collection vehicle will enter the site from Holdsworth Avenue and park in the loading bay. The building caretaker will provide the driver with access to the bulky waste storage room. Once bulky items have been loaded, the collection vehicle will exit the site onto Holdsworth Avenue in a forward direction. Refer to Council's website for acceptable items and other information regarding bulky waste collection.

8.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 2: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata or Management	• Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organising internal waste audits/visual assessments on a regular basis • Purchasing any on-going waste management equipment or maintenance of equipment once building is operational; and • Managing any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Maintaining and cleaning chute doors on each level; • Coordinating general waste and recycling collections; • Cleaning and transporting bins as required; • Organising replacement or maintenance requirements for bins; • Organising, maintaining and cleaning the waste holding area; • Organising bulky goods collection when required • Investigating and ensuring prompt clean-up of illegally dumped waste materials. • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • Abiding by all relevant WH&S legislation, regulations, and guidelines; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assessing any manual handling risks and preparing a manual handling control plan for waste and bin transfers; • Ensuring site safety for residents, children, visitors, staff and contractors; and • Ensuring effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Residents	• Dispose of all general waste and recycling in the allocated waste chutes and/or MGBs provided; • Ensure adequate separation of general waste and recycling; and • Compliance with the provisions of Council and the OWMP.
Waste Collection Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers/residents regarding contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/ Landscaping Contractor	• Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchasing all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata.

9.0 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 3: Operational Waste Streams

Waste Stream	Description	Typical Destination	Waste Stream Management
General Waste	The remaining portion of the waste stream that is not recovered for re-use, processing, or recycling. May include soft plastics, food scraps, polystyrene, etc.	Landfill	Waste should be bagged before placing in chutes, or in designated waste bins.
Paper and Cardboard Recyclables	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.
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 recycling chute or in 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. Green waste will be collected in council or private contractor bins and removed from site.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Building manager arranges collection for e-waste recycling as needed by residents. Commercial tenants arrange for recycling of their own e-waste.
Bulky Items	Items that are to too large to place into general rubbish collection. This includes disused and/or broken furniture, mattresses, white goods, etc.	Resource Recovery Centre or Landfill	Residents liaise with building manager to store in Bulky Goods Room. Building manager arranges with Council for removal. Commercial tenants are responsible for removal of their bulky items.
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.

10.0 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 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.

10.1 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.

10.2 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

11.0 EQUIPMENT SUMMARY

Table 4: Equipment Summary

	Part	Qty	Notes
Chutes	Please refer to supplier's information	6	(See *APPENDIX B.1* for Typical Chute System)
Chute Equipment	Please See Tables 5, 6 and 7. For options.		
Other Equipment	Suitable Bin Moving Equipment	Recommended	(See *APPENDIX C.4 and C.5* for Bin Moving Equipment)

12.0 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.

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.)

The following table will show three options regarding the potential arrangements onsite.

Table 5: Waste Room Areas using linear track systems.

Level	Waste Room Type	Equipment and MGBs	Estimated Area Required (m^2)	Actual Area Provided (m^2)
GF	Building 13 Chute Discharge Room	General waste: 4 x 660L MGBs Commingled Recycling: 3 x 660L MGBs Service bins: 1 x 660L MGBs 1 x 2-bin 660L linear track system	23	29.3
	Building 14 Chute Discharge Room (Caged area)	1 x 2-bin 660L linear track system Service bins: 2 x 660L MGBs	11	21.3
	Building 14 Collection Room	General waste: 12 x 660L MGBs Commingled Recycling: 8 x 660L MGBs Paper/cardboard: 33 x 240L MGBs 1 x bin tug	80	88.4
	Building 15 Chute Discharge Room	General waste: 5 x 660L MGBs Commingled Recycling: 3 x 660L MGBs Service bins: 3 x 660L MGBs 1 x 2-bin 660L linear track system	32	55.8
	Bin Room for Residents in GF, Building 14	General waste: 1 x 240L MGB Commingled Recycling: 1 x 240L MGB Paper/cardboard: 1 x 240L MGB	3	>3
	Central Bulky Goods Collection Room		30	34.7

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 1700mm wide per Lane Cove Council's DCP. The following table provides further waste room requirements.

Table 6: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Chute Discharge Room	• Ceiling clearance height must be a minimum of 3100mm • The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles (subject to penetration location) • All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room • 200mm clearance is required around compaction equipment • Where a chute offset is required, the angle of the offset must not exceed 40 degrees (Subject to number of consecutive offset and/pr up to 1500mm) • Where two sets of volume management equipment are placed under the chutes, a 200mm clearance is required between the equipment.
Central Collection Room	• Bins must not be stacked in rows that are more than two bins deep
Bulky Goods Waste Storage Room	• May be a dedicated room or screened area within another waste room • Must be in close proximity to the collection area • Area must also be allocated for the segregation of e-waste, gas bottles, cardboard, etc. • Doorway should be a minimum of 1700mm wide

13.0 BIN MOVING PATHS

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

Transfer of bins should minimise manual handling where possible, as bins become heavy when full. The building manager must assess manual handling risks and provide any relevant documentation to key personal.

The routes along the bin moving path should;

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

As the distance of the bin moving paths 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.

12.0 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in *the Lane Cove Development Control Plan 2010,* in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

The *NSW Better Practice Guide for Resource Recovery in Residential Developments (2019)* also states that better practice bin storage areas should achieve more than the minimum compliance requirements, which are as follows:

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

12.1 ADDITIONAL CONSIDERATIONS

- Waste room floor to be sealed with a two-pack epoxy;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- Tap height and light switch height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above finished floor level;
- Optional automatic odour and pest control system installed;
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors must be used;
- All personnel doors are hinged, lockable and self-closing;
- Conform to the Building Code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured;
- Waste and recycling rooms must have their own exhaust ventilation system either;
    - Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum. Mechanical exhaust systems shall comply with AS1668.4.2012 and not cause any inconvenience, noise or odour problem; or
    - Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area.

13.0 USEFUL CONTACTS

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

LOCAL COUNCIL

Lane Cove Customer Service	Ph: (02) 9911 3555	E: service@lanecove.nsw.gov.au

PRIVATE WASTE COLLECTION PROVIDER

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

BIN MOVING DEVICE SUPPLIERS

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

ORGANIC DIGESTERS AND DEHYDRATORS

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

COOKING OIL CONTAINERS AND DISPOSAL

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

ODOUR CONTROL

Purifying Solutions	Ph: 1300 636 877	E: sales@purifyingsolutions.com.au

SOURCE SPERATION BINS

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

MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

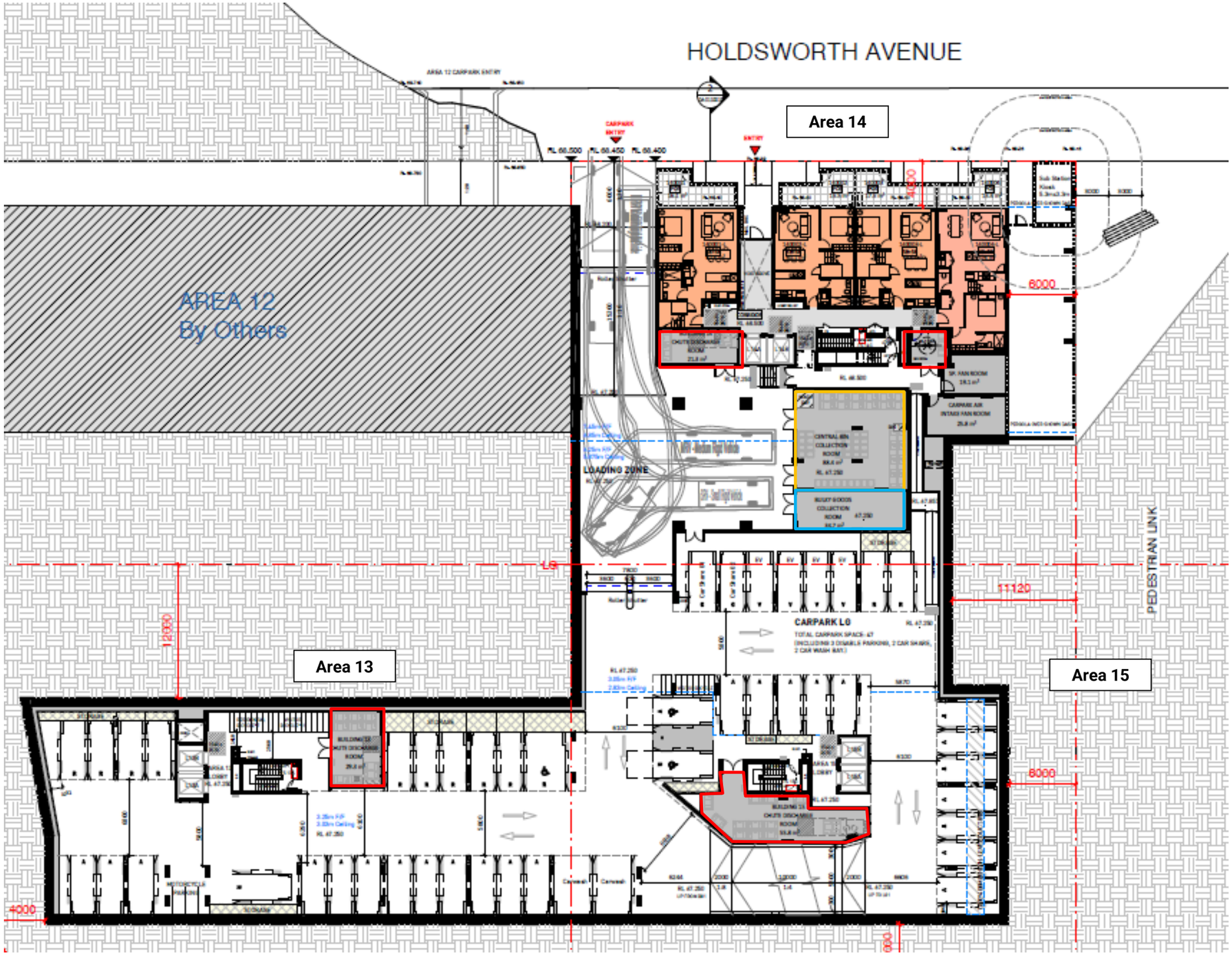
SULO	Ph: 1300 364 388	E: sales@sulo.com.au
OTTO Australia	Ph: 02 9153 6999	

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

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

APPENDIX A: ARCHITECTURAL PLANS

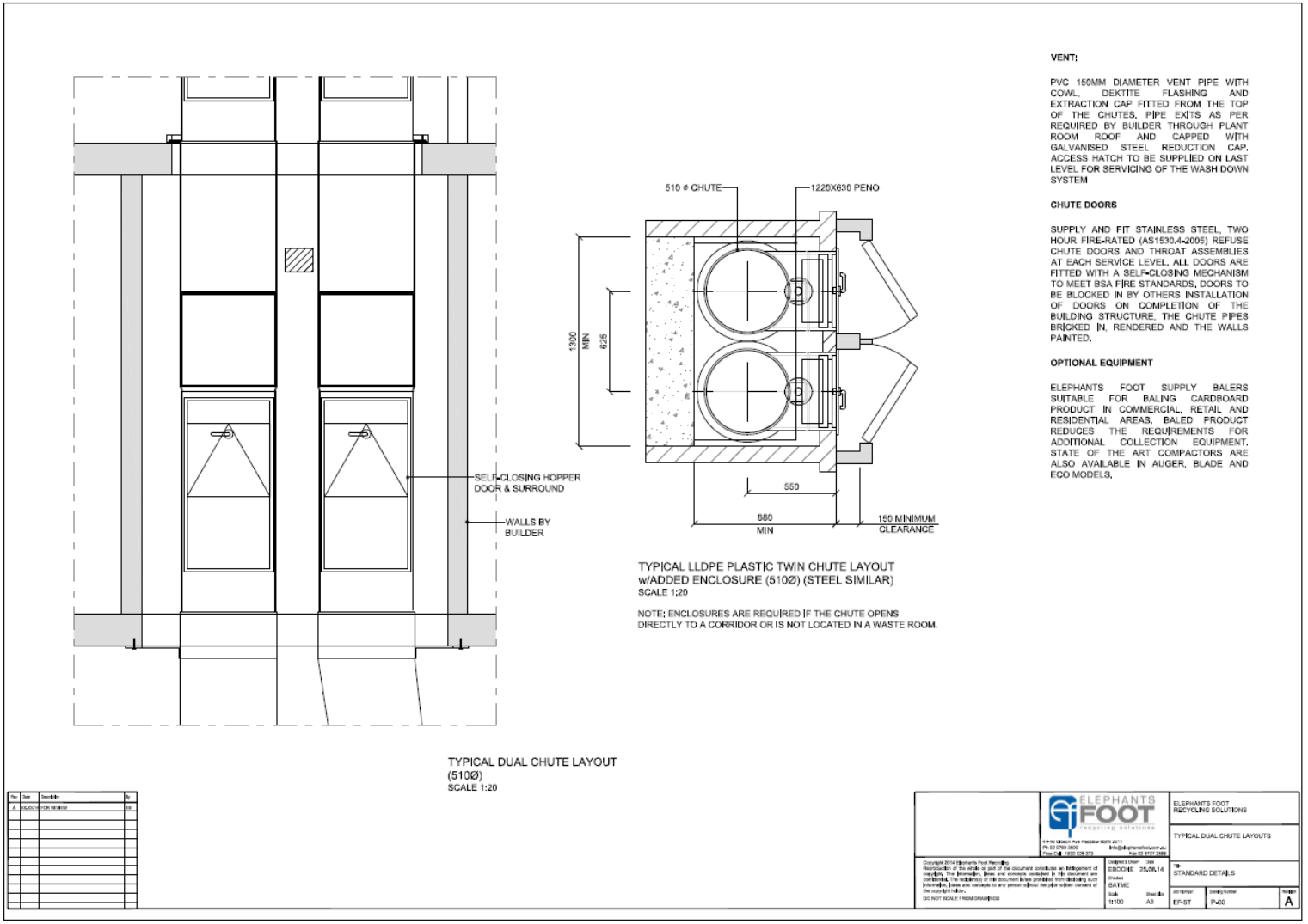
APPENDIX: A.1 BASEMENT 01 FLOOR PLAN



Source: PTW Architects, Drawing no. DA-B1GRD10, Revision H (March 2023), Ground Floor Plan.

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 660L MGBS

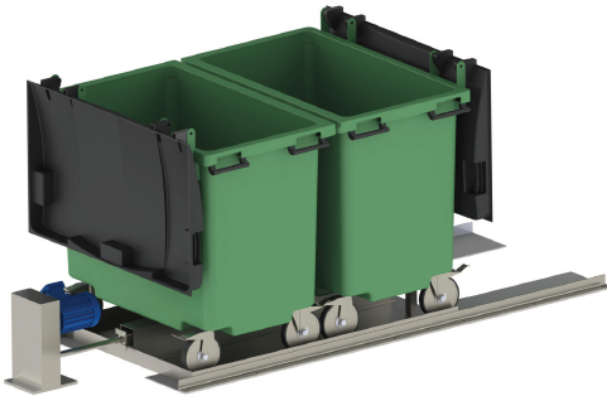
ELEPHANTS FOOT® recycling solutions

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)

660 LITRE LINEAR TRACK SYSTEM

PRODUCT INFORMATION

Elephants Foot 660 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 standard 2 or 3. Our 4 Bin option is available as a special order.



SPECIFICATIONS

System Control	Electric PLC
Power Supply	415 V AC / 10A / 5 PIN
Motor Size (kW)	0.55
Maximum bin load	265 kg
Noise (dBA)	<85
Bin Size (L)	660
Cycle time (sec)	60
Bin Quantity options	2, 3, or 4

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

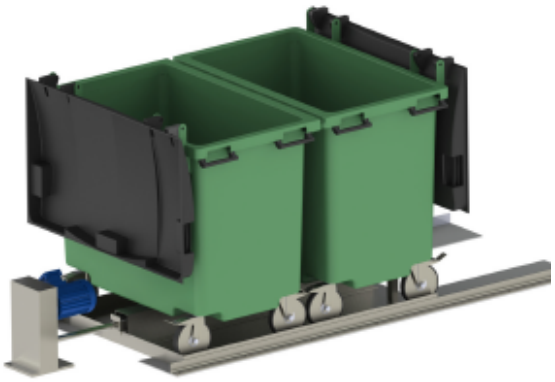
STANDARD FEATURES & BENEFITS

- 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

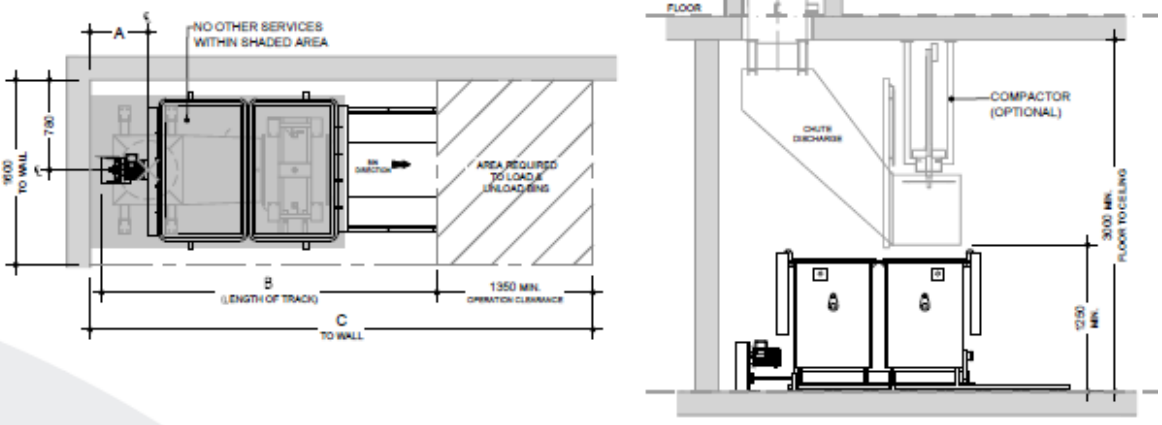
ELEPHANTS FOOT

660 LITRE LINEAR TRACK SYSTEM



No. of Bins	Reference (mm)		
	A	B	C
2	500	2950	4350
3	1450	4650	6050
4	2300	6300	7750

Available with or without compaction unit, our standard 240 litre bin Linear Track System can support 2, 3 or 4 bin quantities.



Notes:
Bins not provided by Elephants Foot

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

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

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

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

APPENDIX: B.3 TYPICAL CAROUSEL SYSTEM FOR 660L MGBS

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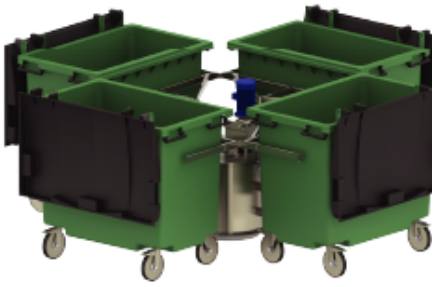
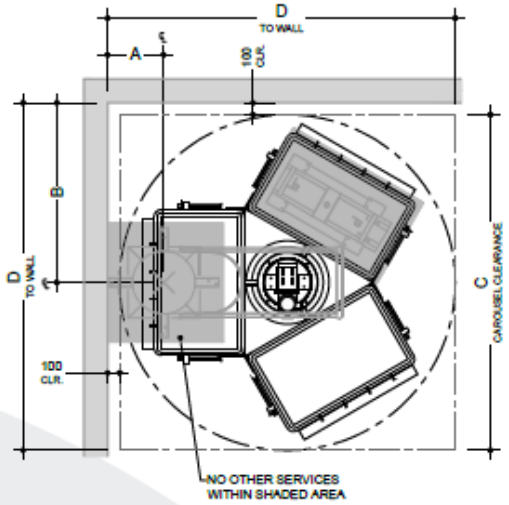
ELEPHANTS FOOT

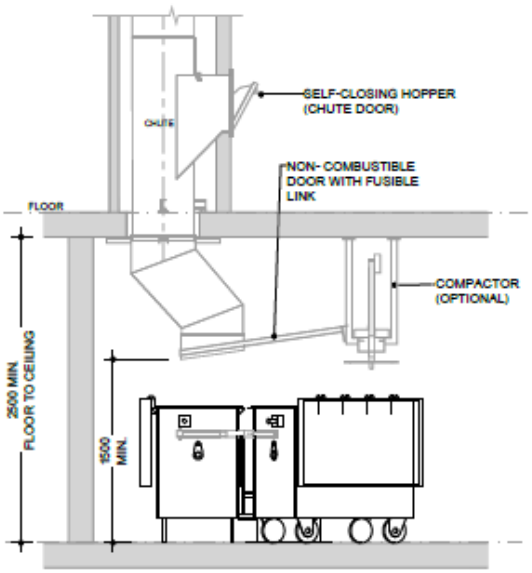
660 LITRE CAROUSEL SYSTEM



No. of Bins	Reference (mm)			
	A	B	C	D
2	500	1450	2700	2850
3	500	1550	2850	2950
4	500	1750	3300	3450
5	500	2050	3760	3900

Available with or without compaction unit, our standard 660litre bin Carousel System is available in standard 2, 3 or 4 bin options. Our 5 Bin option is available as a special order.





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.

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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,

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.

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

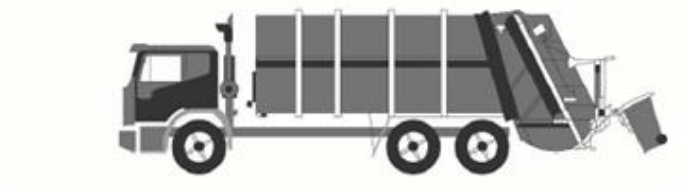
Small collection vehicles

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.

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.

SOURCE: Better Practice Guide For Resource Recovery In Residential Developments 2019

APPENDIX C.4 APPENDIX 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.

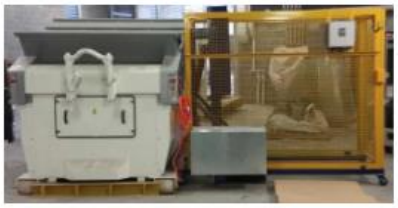
Emergency back-off button

Source: [*http://www.electrodrive.com.au/products/tugs/tug-evo.aspx*](http://www.electrodrive.com.au/products/tugs/tug-evo.aspx)

APPENDIX C.5 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 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