175-177 Cleveland Street, Redfern

Boarding House Development

OPERATIONAL WASTE MANAGEMENT PLAN

1/03/2021
Report No. SO839
Revision B

Client

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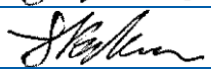
SCOPE

This waste management plan (WMP) only applies to the **operational** phase of the proposed development; therefore the requirements outlined in this WMP must be implemented during the operational phase of the site and may be subject to review upon further expansion for, and/or changes to the development.

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. Elephants Foot Recycling Solutions (EFRS) will provide a separate report to address construction and demolition waste management at this site.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description	Signed
A	8/12/2020	J Parker	A Armstrong	Draft	
B	1/03/2021	J Parker	A Armstrong	Final	

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GLOSSARY OF TERMS

TERM	DESCRIPTION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
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 garbage or recyclables are actually 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
Garbage	All domestic waste (Except recyclables and green waste)
Green Waste	All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers
Hopper	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
L	Litre(s)
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
LRV	Large rigid vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle (HRV)
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
Putrescible Waste	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.

Recycling	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines
Refuse	Material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items
SRV	Small rigid vehicle as in AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities, generally incorporating a body width of 2.33

LIST OF TABLES

INTRODUCTION

EFRS has been tasked to prepare the following waste management plan for EG Development Management for the operational management of waste generated by the boarding house development located at 175-177 Cleveland Street, Redfern.

Waste management strategies and auditing are a requirement for new developments to provide support for the building design, and promote strong sustainability outcomes for 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. ***Compliance*** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this WMP identifies the different waste streams likely to be generated during the operational phase of the development. Associated information includes: how the waste will be handled and disposed of, 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 waste management plan is integral to the overall management of the building and clearly communicated to all relevant stakeholders.

DEVELOPMENT SUMMARY

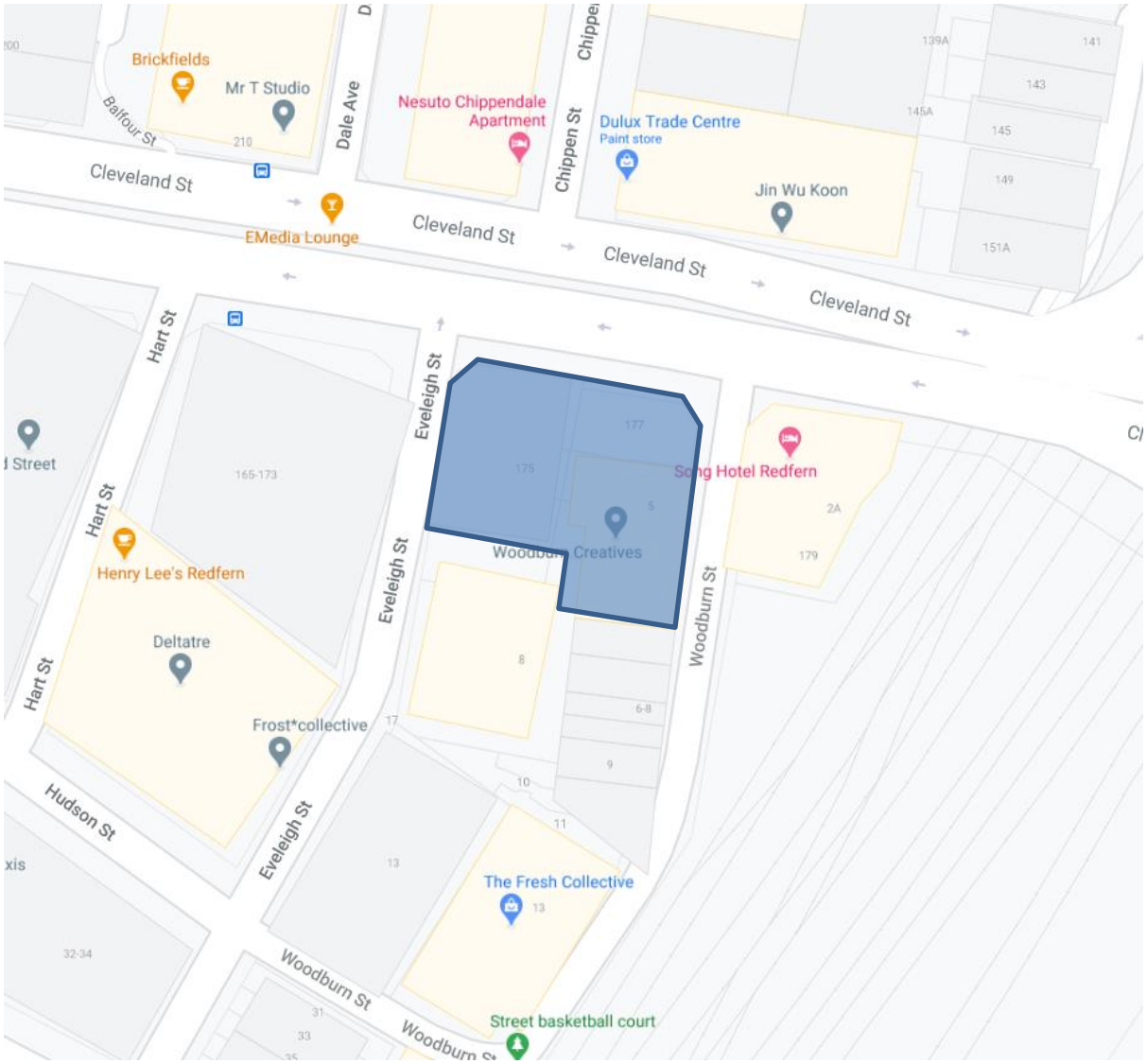
The proposed development falls under the LGA of City of Sydney Council, and consists of:

- 120 boarding house rooms over 5 levels
- Ground floor café with a total GFA of 102.79m^2

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

SITE LOCATION

The site is located at 175-177 Cleveland Street, Redfern, as shown below. The site has frontages to Cleveland Street, Eveleigh Street and Woodburn Street, with vehicle access via Eveleigh Street.



Source: Google Maps

CITY OF SYDNEY COUNCIL

The garbage and recycling will be guided by the services and acceptance criteria of the City of Sydney Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the *Sydney Development Control Plan* (2012), City of Sydney Council's *Guidelines for Waste Management in New Developments* (2018), Council Advice, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

Space – to allocate sufficient areas within developments for the efficient access, storage and collection of waste and recycling.

Access – to ensure waste systems are easy to use and collection vehicles are able to access buildings to remove waste safely and efficiently;

Safety – to ensure safe practises for storage, handling and collection of waste and recycling;

Services – to provide guidance on the Council's expectations for delivering effective waste services including bin handling and collection points, and managing bulky, problem waste and stripout waste.

Management – to ensure clarify regarding the roles providing waste management systems for developments and to demarcate service provision.

STAKEHOLDER ROLES AND RESPONSIBILITIES

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

Table 1: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/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; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; • Ensuring site safety for residents, children, visitors, staff and contractors; • Abiding by all relevant OH&S legislation, regulations, and guidelines; • Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • General maintenance and cleaning of chute doors on each level; • Cleaning and transporting of bins as required; • Organising, maintaining and cleaning the general and recycled waste holding area; • Organising both garbage and recycled waste pick-ups as required; • Organising replacement or maintenance requirements for bins; • Organising bulky goods collection when required; and • Investigating and ensuring prompt clean-up of illegally dumped waste materials.
Tenants and Staff	• Dispose of all garbage and recycling in the allocated waste chutes and/or MGBs provided; • Ensure adequate separation of garbage and recycling; and • Compliance with the provisions of Council and the WMP.
Waste Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers/residents in regard to 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.
Building Contractors	• Removing all construction related waste offsite in a manner that meets all authority requirements.

EDUCATION

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident and staff member by building management to ensure correct use of the waste chute. This should include the correct disposal process for bulky goods (old furniture, large discarded items, etc.), and other appropriate materials (electronic, chemical waste, etc.). It is recommended that information is provided in multiple languages to support correct practises and minimise the possibility of chute blockages as well as contamination in the collective waste bins.

To prevent damage or blockage to rubbish chute DO NOT dispose of any newspapers, 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, bricks or other building materials, furniture, etc. down the chute.

LIMITATIONS

The purpose of this report is to document a Waste Management Plan (WMP) as part of a development application and is supplied by Elephants Foot Recycling Solutions (EFRS) with the following limitations:

- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by the client, and third parties including Council and government information. The assumptions based on the information contained in the WMP 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 managements approach to educating residents and tenants regarding waste management operations and responsibilities;
- the building manager will make adjustments as required based on actual waste volumes (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 or representation is made that the WMP reflects the actual outcome and EFRS will not be liable to you for plans or outcomes that are not suitable for your purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFRS offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- any manual handling equipment recommended 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.

WASTE MANAGEMENT

City of Sydney Council's *Guidelines for Waste Management in New Developments* (2018) have been referenced to calculate the total number of bins required for the boarding house rooms. Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the development.

Table 2: Calculated Waste Generation – Boarding House

Use	Classification	NLA (m^2)	Garbage Generation Rate (L/100m^2/day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m^2/day)	Generated Recycling (L/week)
Boarding House	Boarding House	2502.5	60	10511	30	5255
Collections & Equipment		Bin Size (L)		660	Bin Size (L)	660
		Collections per Week		2	Collections per Week	1
		No. Bins Required		8	No. Bins Required	8

**Note: Food waste figures have been absorbed into that of garbage in order to ensure an adequate number of bins have been accommodated and allow for the potential future segregation of food waste.*

Table 3: Calculated Waste Generation – Café

Use	Classification	NLA (m^2)	Garbage Generation Rate (L/100m^2/day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m^2/day)	Generated Recycling (L/week)
Café	Restaurant/Eating	102.79	200	1439	500	3598
Collections & Equipment		Bin Size (L)		660	Bin Size (L)	660
		Collections per Week		3	Collections per Week	3
		No. Bins Required		1	No. Bins Required	2

**Note: Food waste figures have been absorbed into that of garbage in order to ensure an adequate number of bins have been accommodated and allow for the potential future segregation of food waste.*

BOARDING HOUSE WASTE

A dual chute system consisting of one garbage chute and one recycling chute will be installed with access provided on all residential levels of the building.

Both garbage and comingled recycling discharge into 660L MGBs. The discharge is located in the boarding house waste room on the ground level and neither waste stream is intended to be compacted at the base of the chute.

Full garbage and recycling bins will be collected directly from the waste room.

GENERAL WASTE (GARBAGE)

Residents will be supplied with a collection area in each boarding house room to deposit garbage suitable for one day's storage. This is typically under the kitchen bench or in a similar, alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension. Residents will then carry bagged garbage to the chute access point and deposit it into the chute hopper.

RECYCLING

Residents will also be provided with space beneath the kitchen bench for storage of comingled recyclable items. ***Recycling must not be bagged***. It is recommended that residents use a receptacle such as a crate or dedicated bin for collecting recyclables to ensure correct separation. Residents will then carry their recycling receptacle to the chute access point and empty recycling into the chute hopper.

Cardboard furniture boxes or large cardboard containers should not be included in the recycling chute as such items can cause blockages. Residents should arrange for large cardboard containers to be flattened and deposited directly into the recycling bins in the waste room. This is to be coordinated with the building manager as residents would not ordinarily have access to the waste room. Residents will then transport flattened cardboard boxes to the ground level using the elevator and, with the aid and supervision of the building manager, deposit cardboard directly into recycling collection bins within the waste room.

GREEN WASTE

Green waste is not typically generated from boarding houses other than from surrounding building landscaped areas and is removed by the designated maintenance contractor. In the event that green waste is produced i.e trimming of indoor plants then this may be disposed of via coordination with the building caretaker or cleaner. Very small quantities may be disposed of via the general waste stream.

COMMUNAL AREAS WASTE

It is anticipated that waste generated in the communal areas will be negligible. This area will be supplied with suitably branded waste and recycling bins where considered appropriate. The building manager or cleaners will monitor the capacity of these bins and empty them into the 660L bins in the waste room as required.

Smaller bins for garbage and recycling will be allocated to the cinema areas to be utilised when these areas are in use. The frequency of these bins will depend upon the type of event and frequency of use. Each of these bins will be emptied by contract cleaners during their cleaning routine after these areas have been used.

Cleaners empty the bins into bags which they transport around the building in a cart. Bags of garbage and/or recycling are then deposited directly into the corresponding bins in the ground level waste room.

CAFE WASTE

Tenants operating the café area will be responsible for their own storage of garbage and recycling back of house (BOH).

Food handling for food cooked or prepared, served and consumed on site will produce a typical waste composition of food scraps from plates, packaging waste and some plastics. Staff will be responsible storing this waste in receptacles within the café area.

Cardboard is a major component of the waste generated by food retailers in deliveries. All cardboard should be flattened (to save bin space) and transferred directly to the waste room where it is to be deposited into one of the comingled recycling bins. Whilst cardboard is bulky, it is generally lightweight however it can be contaminated with food or liquid which makes it unsuitable for recycling.

On completion of each trading day or as required, nominated staff will transport their garbage and recycling to the café waste room and place it into the corresponding bins.

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

- all garbage should be bagged and garbage bins should be plastic lined;
- bagging of recyclables is not permitted;
- all interim waste storage is located BOH during operations;
- all flattened cardboard will be collected and removed to the waste room recycling MGB

Note: It is the responsibility of the building manager to monitor the number of bins required for the development. As waste volumes may change according to the development's management, customer base and attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. Seasonal peak periods i.e. public and school holidays should also be considered.

BULKY GOODS

Most bulky goods from the boarding house rooms such as white goods and furniture will be owned by the boarding house operators. Therefore, the building manager will be responsible for the management and disposal of bulky goods. If residents have any bulky goods waste, they can liaise with the building manager to arrange disposal.

It is however, recommended that a bulky goods storage area is provided for the café. A room or caged area will be made available for the storage of discarded retail and commercial bulky items (e.g. whitegoods, furniture, etc.) and problem waste for recycling, such as e-waste and chemical waste. This room should have a minimum doorway width of 1.5m to allow for easy movement of large waste items in and out of the room.

MOVEMENT AND TRANSPORTATION OF BINS

Minimal movement of bins will be required at this development. The building manager/ caretaker will be responsible for any movement of bins that is required.

Transfer of waste and all bin movements require minimal manual handling; the operator must assess manual handling risks and provide any relevant documentation to building management.

If deemed necessary, the developer should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations. Examples of motorised bin moving equipment can be found in APPENDIX B.4 and APPENDIX B.5.

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.

COLLECTION OF WASTE

BOARDING HOUSE

All waste generated by the boarding house rooms will be collected by Council's waste contractor, with garbage being collected twice weekly and recycling on a weekly basis.

On collection days, the contractor's waste vehicle will pull-up on Eveleigh Street, adjacent to the boarding house waste room. Collection staff will then access the waste room and service the bins via a wheel-in/wheel-out scenario.

CAFE

All waste generated by the café will be collected by private contractor to an agreed schedule (this report assumes collections will occur three times per week for all waste streams).

On collection days, the contractor's waste vehicle will pull-up on Eveleigh Street, adjacent to the café waste room. Collection staff will then access the waste room and service the bins via a wheel-in/wheel-out scenario.

COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant to confirm the swept paths, load requirements and clearances for waste collections.

INSTALLATION EQUIPMENT AND DESIGN

EQUIPMENT SUMMARY

Table 4: Equipment Summary

Component	Part	Qty	Notes
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic 510mm or 610mm (for 20+ levels)	2	510/610mm diameter (See APPENDIX C.1 for Typical Chute Section)
Equipment	Suitable Bin Moving Equipment	N/A	Optional (See APPENDIX B.4 & APPENDIX B.5 for Typical Bin Movers)

WASTE ROOM AREAS

All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room. Access to waste discharge rooms should be provided to the building manager/waste caretaker **only**. Under no circumstances should access be provided to any residents, or waste collection staff.

Chute discharge requires a minimum of 3000mm distance from floor to ceiling and needs to be free of service pipes and other overhead obstacles within the immediate space around the chute discharge.

The areas allocated for residential waste rooms, commercial/retail bin store, bulky goods and collection areas are detailed in Table 5 below. The areas provided are estimates only. Final areas will depend upon room and bin layouts.

Table 5: Waste Room Areas

Level	Waste Room Type	Equipment	Estimated Area (m^2)
G	Boarding House Waste Room	8 x 660L MGBs (Garbage) 8 x 660L MGBs (Comingled Recycling)	50
	Café Waste Room	1 x 660L MGBs (Garbage) 2 x 660L MGBs (Comingled Recycling)	8
	Residential Bulky Goods Waste Storage Room	N/A	8
	Retail Bulky Goods Waste Storage Room	N/A	3.4

GARBAGE ROOMS

CONSTRUCTION REQUIREMENTS

The garbage room will be required to contain the following facilities to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room floor to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- for residential: a hot and cold water facility with mixing facility and hose cock must be provided for washing the bins;
- for retail/commercial: a cold water facility with hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board. (Sydney Water);
- tap 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 floor levels;
- the room must be mechanically ventilated;
- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- if 660L or 1100L bins are utilised, 2 x 820mm (minimum) door leafs must be used;
- all personnel doors are hinged, lockable and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

The building manager/caretaker is responsible for waste room signage including safety signage (*see APPENDIX B.2*). 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 the bin underneath.

All chute doors on all residential levels will be labelled with signs directing chute operations and use of chute door.

VENTILATION

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; or
- Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

Mechanical exhaust systems shall comply with AS1668 and not cause any inconvenience, noise or odour problem.

USEFUL CONTACTS

Elephants Foot Recycling Solutions does not warrant or make representation for goods or services provided by suppliers.

SYDNEY COUNCIL CUSTOMER SERVICE
Phone: 02 9265 9333 Email: council@cityofsydney.nsw.gov.au

SULO MGB (MGB, Public Place Bins, Tugs and Bin Hitches)
Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)
Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)
Phone: 1800 333 002 Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)
Phone: 07 3712 8000 Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES (Private Waste Services Provider)
Phone: 02 9359 9999

REMONDIS (Private Waste Services Provider)
Phone: 13 73 73

SITA ENVIRONMENTAL (Private Waste Services Provider)
Phone: 13 13 35

NATIONAL ASSOCIATION OF CHARITABLE RECYCLING ORGANISATIONS INC. (NACRO)
Phone: 03 9429 9884 Email: information@nacro.org.au

PURIFYING SOLUTIONS (Odour Control)
Phone: 1300 636 877 Email: sales@purifyingsolutions.com.au

MOVEXX (Bin Movers)
Phone: 1300 763 444

AUSCOL (Recyling Oils & Animal Fats)
Phone: 1800 629 476

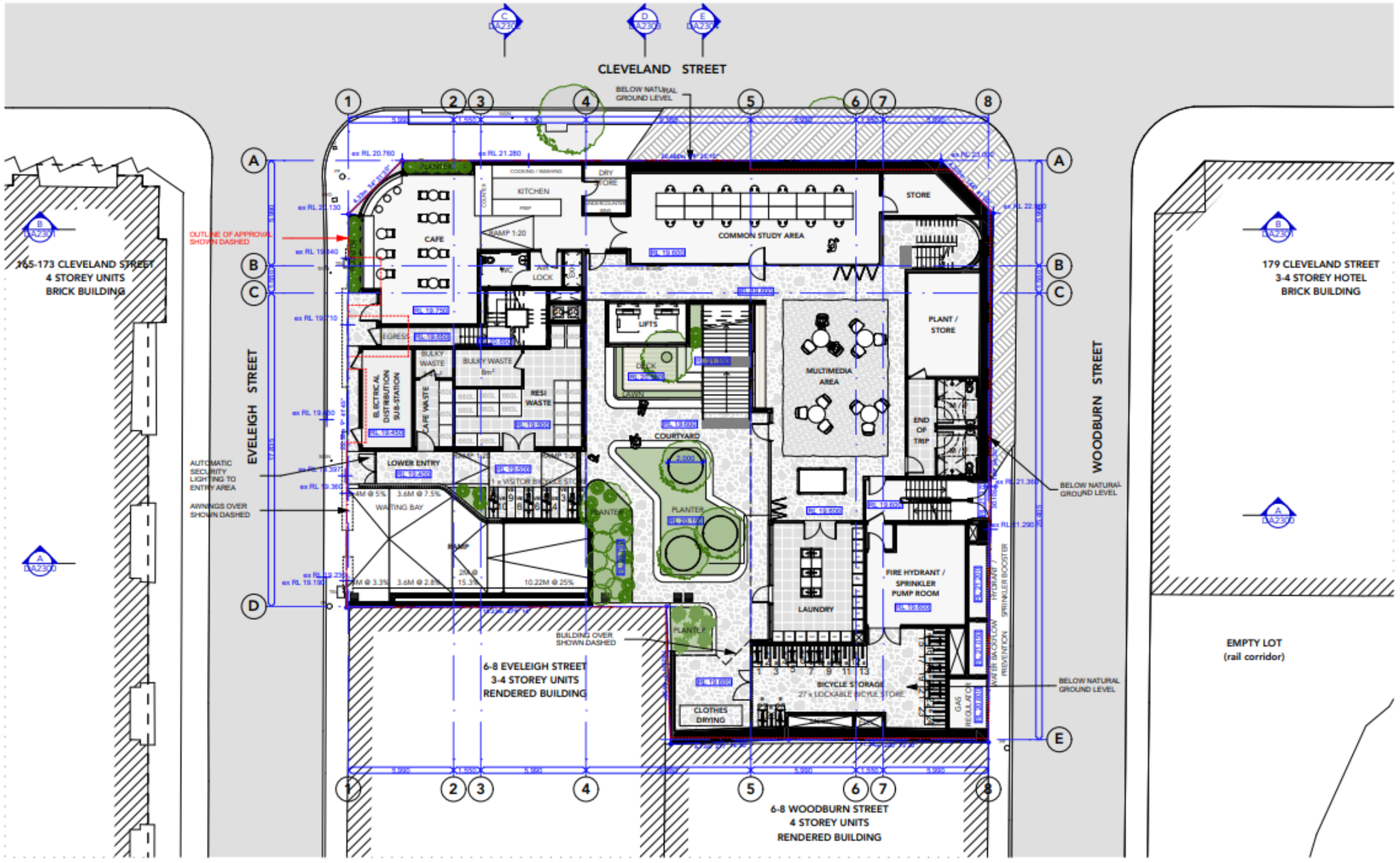
KOMPACT EQUIPMENT (Equipment & Servicing Provider)
Phone: 1300 566 722 Email: info@kompactequipment.com.au

ELEPHANTS FOOT RECYCLING SOLUTIONS (Chutes, Compactors & eDiverter Systems)
44 – 46 Gibson Avenue
Padstow NSW 2211
Phone: 1300 434 374 Email: wmp@elephantsfoot.com.au

APPENDICES

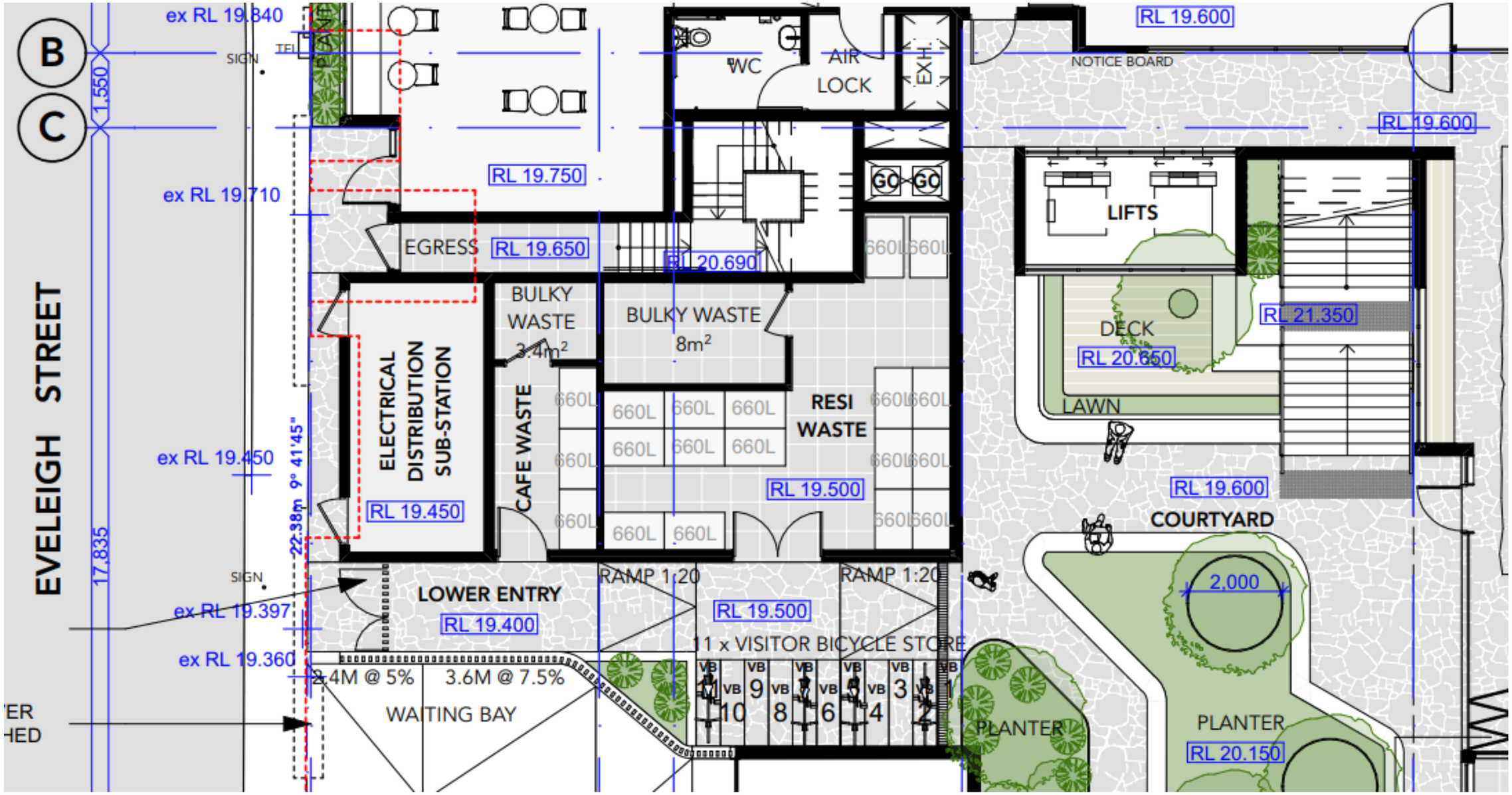
APPENDIX A ARCHITECTURAL DRAWING EXCERPTS

APPENDIX A.1 SITE PLAN



Source: Mark Shapiro Architects, Drawing No. DA2002, Rev.A, 26/02/21 – Ground Floor Plan

APPENDIX A.2 WASTE ROOMS/COLLECTION AREA



Source: Mark Shapiro Architects, Drawing No. DA2002, Rev.A, 26/02/21 – Ground Floor Plan

APPENDIX B PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX B.1 CITY OF SYDNEY TYPICAL BIN SPECIFICATIONS

Australian standard sizes for mobile garbage bins (MGBs)

Standard measurements

Bin type	120L MGB	240L MGB	660L MGB	1100L MGB
Height	940 mm	1080 mm	1250 mm	1470 mm
Length	560 mm	735 mm	850 mm	1245 mm
Width	485 mm	580 mm	1370 mm	1370 mm

Source: City of Sydney Waste Management Guidelines for New Developments (2018)

APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

Waste Signs

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the EPA (Environmental Protection Authority).

Examples of waste wall posters (EPA supplied)

Examples of bin lid stickers (EPA supplied)

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.

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.

Example safety signs

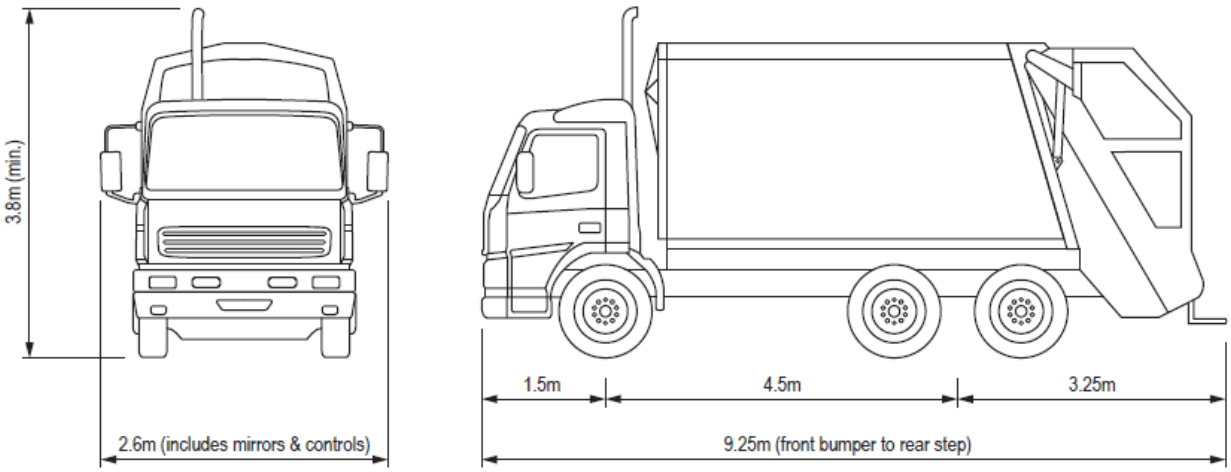
Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)

APPENDIX B.3 CITY OF SYDNEY COLLECTION VEHICLE INFORMATION

Waste collection vehicles may be side loading, rear loading or front-end loading. The size of vehicle varies according to the collection service. Council and its waste contractors use rear-loading, compacting collection vehicles of various capacities to 20 m³ for collecting waste and recycling.

Council and its waste contractors use rear-loading, compacting collection vehicles of various capacities to 20 m³ for collecting waste and recycling.

The following characteristics represent the typical rear-end loading collection vehicle for guidance only.



Dimensions of typical collection vehicle (rear loader)

Vehicle dimensions and design parameters for swept path analysis

The following dimensions are of a typical rear loading collection vehicle and should be used as the design parameters for a swept path analysis.

Rear loading vehicle	dimensions
Length overall (m)	9.25
Width overall (m)	2.6
Travel height (m)	3.8
Minimum vertical clearance required (m)	4.0
Maximum weight (t)	26
Turning circle radius – wall to wall (m)	10.5
Lock to lock time (sec)	6
Minimum clearance on both sides of the wheel path (mm)	600
Vehicle turning speed (km/hr)	5-10

Vehicle access and turning requirements

A turning path analysis should be used to check that the paths of vehicles travelling in the forward direction when negotiating access driveways and circulation roadways, can be accommodated within the proposed location. Turning path analysis should also be used to check the movement out of a loading dock to establish that sufficient width is provided for the vehicle swept path, including maneuvering clearances. In providing turning path analysis, the following should be provided:

- Details of road geometry (details dimension of the driveway, width of the road (carriage way), footpath, kerb and gutter, median and on-street parking where applicable.)
- Dimension details of the design vehicle
- Turning radius and operable speed
- Lock to lock time. It is recommended that a value between three and six seconds is reasonable for most conventional vehicles. It should come through a vehicle data sheet, however, if not a six seconds should be chosen.
- Three clear swept paths line namely wheel path, vehicle body path and 0.6m clearance path

The parameter of the design vehicle for swept path analysis should be obtained from the manufacturer specification (with reference) or the parameters in the vehicle dimension table can be used.

Best design practice for access and egress from a development calls for a separate entrance and exit to allow the collection vehicle to travel in a forward direction at all times. Where there is a requirement for collection vehicles to turn at a cul-de-sac head within a development, the design is to incorporate either a bowl or 'T' or 'Y'-shaped arrangement.

The design aspects to be taken into account include:

- Placement of waste and recycling bins outside each home, or in a common collection area
- The presence of parked cars on access roads
- Trucks are to only be expected to make a three-point turn to complete a U-turn
- Allowing for collection vehicle overhang and possible interference with bins and road furniture.

Road geometry

The design parameters are to comply with the following road geometry:

- A maximum desirable gradient of 10 per cent for turning heads
- Vehicle access for collection and loading will provide for a maximum grade of 1:20 for the first 6 metres from the street, then a maximum of 1:8 with a transition of 1:12 for 4 metres at the lower end
- A maximum longitudinal road gradient of 15 per cent
- A minimum kerb radius of 8.5 metres at the outside of the turn where there is to be on-site collection
- A minimum kerb radius of 10 metres at the outside of the turn where there is to be kerbside collection
- A minimum pavement width of 6.5 metres if 25 or more parking spaces for cars are required (use of passing bays is acceptable)
- An industrial-type strength pavement designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks (the standard road pavement design specifications for an individual driveway entry on public land is 150 mm thick concrete, 20 MPa concrete with F82 mesh).

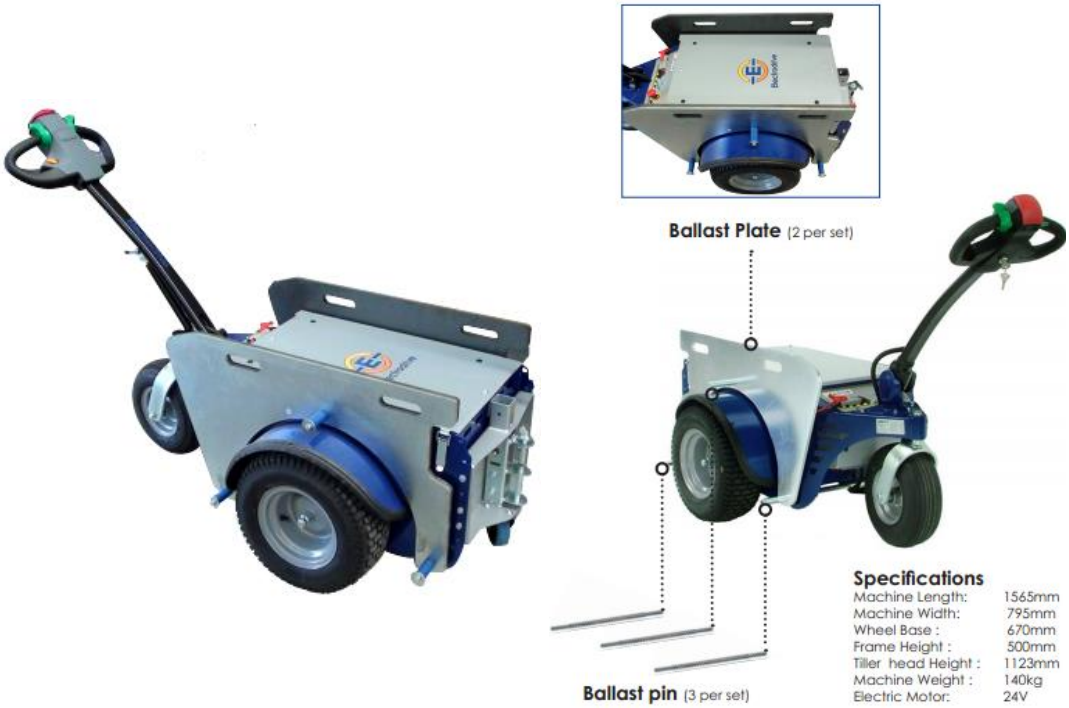
Collection from enclosures

Collection vehicles may enter building basements for the collection of waste and/or recyclables provided the following requirements are met:

- The gradient of the ramp access to basement is not to exceed 1:8
- The height of the structural members and upper floor ceiling are to allow for a typical collection vehicle travel height/ operational height consistent with the type of vehicle employed
- The provision of space is to be adequate to allow the typical three-point turn of collection vehicles
- The basement floor is to be of industrial-type strength pavement and designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks (the standard road pavement design specifications for an industrial driveway entry on public land is 150 mm thick concrete, 20 MPa concrete with F82 mesh).

Source: City of Sydney Waste Management Guidelines for New Developments (2018)

APPENDIX B.4 TYPICAL MOTORISED BIN TUG



Typical applications:

- Move trolleys, waste bin trailers and 660/1100L bins up and down a ramp incline.
- Quiet, smooth operation with zero emissions and simple to use, no driver's licence required
- Suitable for:
    - High rise building & apartment basements
    - Large factories & warehouse with sloped ground
    - Caravan parks & other large outdoor areas

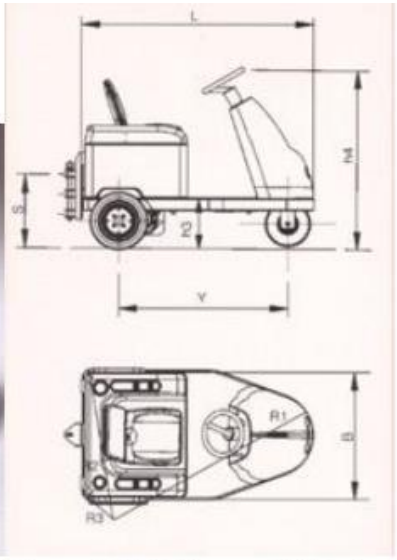
Features:

- 1 tonne tow capacity of inclines up to 8 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 4.5 km/h max speed
- 2 x 80amp batteries – includes charger
- Powerful transaxle
- Hitch to suit 660L bins

Safety Features:

- Intuitive paddle lever control
- Stops and repels the unit if activated when reversing.
- Site assessment recommended to assess ramp incline steepness *(See Useful Contacts)*

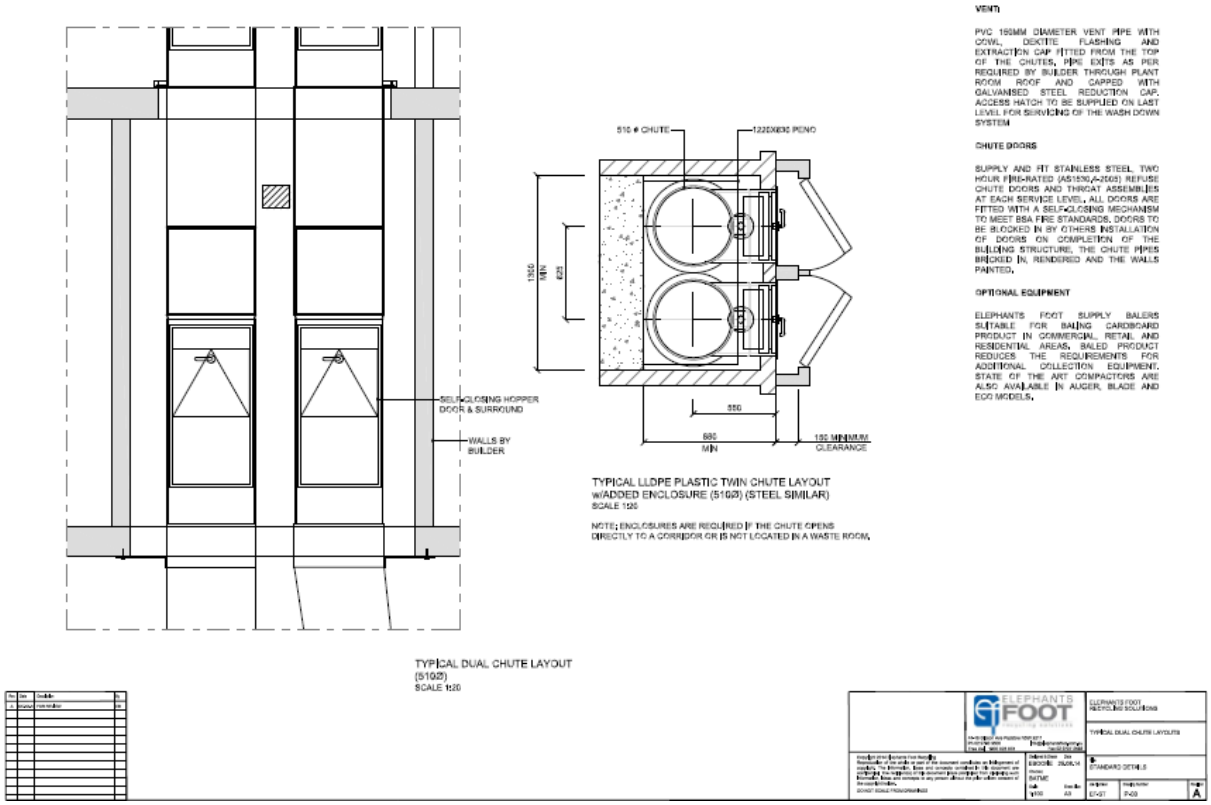
APPENDIX B.5 TYPICAL SEATED BIN MOVER



		UNIT M.	BULL 2	BULL 4
Manufacturer	DEC			
Model	BULL			
Platform loading cap.	Nominal capacity	kg	-----	-----
Pull capacity	Pull nominal capacity	kg	2000	4000
Power type	Electric - endotermic		electric	electric
Controltype	Standing / seated thiller / steer		seated / steer	seated / steer
Tyres	Pn=pneum. Se=superelastic		Pn	Pn
Wheels	N. front/rear - x drive	n.	1/2X	1/2X
Platform dimensions	L x B (lengh x width)	mm	-----	-----
Platform hight	h6 = unload clearence	mm	-----	-----
Overal dimensions	L = lenght B = width h1 = foot leve h3 = Seat height h4 = Steer height	mm mm mm mm mm	1500 900 1820 310 1250	1600 930 1960 340 1330
Turning radius	R1 = front min. external R2 = rear min. external R3 = front min. internal	mm mm mm	1400 1000 400	1500 1000 400
Aisle width	A = 180° turn	mm	2200	2300
Tow hook height	s = center from ground	mm	220-350-490	240-380-520

APPENDIX C INSTALLATION EQUIPMENT

APPENDIX C.1 TYPICAL DUAL WASTE CHUTE SPECIFICATIONS



Waste chutes are supplied per the following specifications:

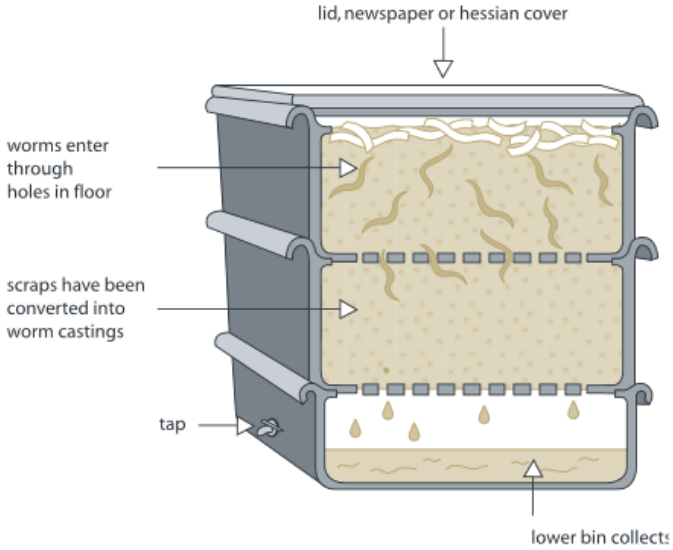
- either 510mm or 610mm (for 20+ levels) galvanised steel or recycled LLDPE polyethylene plastic;
- galvanised steel chute hoppers are wrapped with 50mm poly-wool R1.3 noise insulation foil to assist in noise reduction (or equivalent);
- penetrations on each building level at vertically perpendicular points with minimum penetration dimensions of either 600x600/700x700mm (square) or 650/750mm diameter (round) are required to accommodate the chute installation;
- a wash down system and vent should also be included as part of the chute system;
- council and supplier require that all chutes are installed without offsets to achieve best practise operationally for the building; and
- two hour fire-rated (AS1530.4-2005) stainless steel refuse chute doors at each service level. All doors are to be fitted with a self-closing mechanism to meet BSA fire standards.

NOTE: Chute doors are installed after walls rendered, painted or when required. Information stickers will be placed on each chute door at each residential level.

APPENDIX D SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX D.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



Space requirements for a typical worm farm for an average household:

Height – 300mm per level

Width – 600mm

Length – 900mm

There are many worm farm arrangements. The above dimensions are indicative only.

SOURCE: Department of Environment and Climate Change NSW 2008, Better Practice Guide for Waste Management in Multi-Unit Dwellings

APPENDIX D.2 TYPICAL APARTMENT STYLE COMPOST BINS

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 ELECTRIC ORGANIC COMPOST BIN

CLOSED LOOP
LOVE WHAT YOU DO
CLO'ey

Product Specifications

Decomposition Method	Fermentation by microorganisms
Decomposition Capacity	2 metric tonnes per year* (4 kg per day*)
Rating	220–240 V 50/60 Hz – 1.1 A
Decomposition Time	24 hrs
Operating Temperature	0C and 40C.**
Deodorisation Method	Nano-Filter system
Maximum Power	210 W
Power Usage	Average 1 kwh per day
Weight	21 kgs
External Dimensions	w 400 mm d 400 mm h 780 mm

* Food Waste Handling Capacity – based on an optimal operating environment.
** Ambient temperature range of area where unit may be installed.

SOURCE: Closed Loop Domestic Composter – See Useful Contacts
http://www.closedloop.com.au/domestic-composter

APPENDIX D.4 COOKING OIL CONTAINERS

AUSCOL
A GrainCorp business

Home | About | Services | Our Parent Company | Contact

The RIGHT WAY for Cooking Oil Collection Systems

Drums 205L

Pour in Bulk Tank

View Brochure

Oil Kaddy System

View Brochure

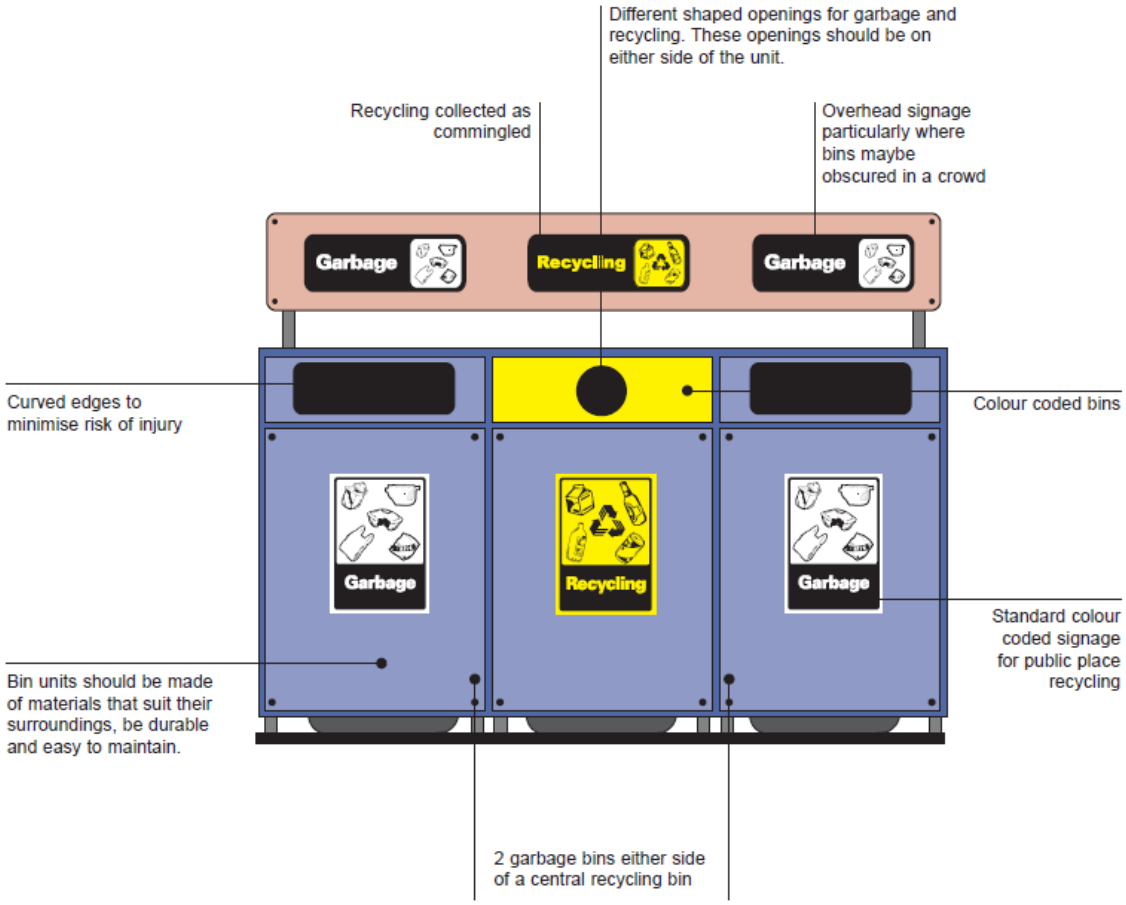
- Collection Service
- Collection Systems
- Recycling & Environment
- Safety
- Fresh Oil *(WA Only)*

Eco Systems

Direct-Connect to Fryer

APPENDIX D.5 TYPICAL BACK OF HOUSE BINS

APPENDIX D.6 TYPICAL PUBLIC PLACE WASTE BINS



Source: *Department of Environment and Conservation (NSW) Better Practice Guide for Public Place Recycling 2005*