



64 Bathurst Street, Liverpool
Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

18/12/2018
Report No. 18051
Revision D

Client

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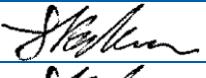
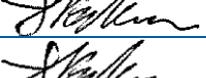
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SCOPE

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. It is Elephants Foot Recycling Solutions' (EFRS) understanding that a construction and demolition WMP will be completed by a separate party appointed by the developer, and submitted separately to this report. Typically, the head contractor of the site will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description	Signed
A	4/09/2018	J Parker	A Armstrong	Draft	
B	26/11/2018	J Parker	A Armstrong	Amendment	
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D	18/12/2018	J Parker	A Armstrong	Amendment	

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GLOSSARY OF TERMS

TERM	DESCRIPTION
<i>Baler</i>	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
<i>Chute</i>	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
<i>Chute Discharge</i>	The point at which refuse exits from the refuse chute
<i>Chute Discharge Room</i>	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
<i>Collection Area/Point</i>	The identified position or area where garbage or recyclables are actually loaded onto the collection vehicle
<i>Compactor</i>	A machine for compressing waste into disposable or reusable containers
<i>Composter</i>	A container/machine used for composting specific food scraps
<i>Crate</i>	A plastic box used for the collection of recyclable materials
<i>Garbage</i>	All domestic waste (Except recyclables and green waste)
<i>Green Waste</i>	All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers
<i>Hopper</i>	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
<i>L</i>	Litre(s)
<i>Liquid Waste</i>	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)
<i>LRV</i>	Large rigid vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle (HRV)
<i>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
<i>MRV</i>	Medium rigid vehicle
<i>PPE</i>	Personal Protective Equipment
<i>Putrescible Waste</i>	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.

<i>Recycling</i>	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
<i>Refuse</i>	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

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INTRODUCTION

EFRS has been tasked to prepare the following WMP for Elton Consulting for the operational management of waste generated by the mixed use development located at 64 Bathurst Street, Liverpool.

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 WMP is integral to the overall management of the building and clearly communicated to all relevant stakeholders.

DEVELOPMENT SUMMARY

The proposed development falls under the Local Government Area of Liverpool Council, and consists of:

- 1 building of 21 levels
 - 66 residential units in total (see Table 1 for Unit Breakdown Matrix)
 - Retail units with a total GFA of 335m²
 - Commercial units with a total GFA of 2047m²

Table 1: Unit Breakdown Matrix

Type	# Units	% Mix
1 Bed	15	22.73
2 Bed	45	68.18
3 Bed	6	9.09
	66	

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

SITE DESCRIPTION

The site includes a parcel of land legally described as Lot 10 DP 816556 with a total site area of 2,924 square metres (sqm). Huckstepp Serviceway dissects the site in a North-South direction, creating in two distinct and separate portions of land, as described and shown below.

The mixed-use development is proposed on the Western portion of the site only, being 64 Bathurst Street. There is no development proposed on the Eastern portion of the site.

Address	Description	Site Area (sqm)	Existing development
64 Bathurst Street	Eastern portion of site	1,331	At-grade bitumen car park with 55 car spaces.
203-209 Northumberland Street	Western portion of site	1,593	8 storey commercial building with basement car parking (access via Huckstepp serviceway).

AERIAL MAP OF SITE



LIVERPOOL CITY COUNCIL

The residential garbage and recycling will be guided by the services and acceptance criteria of the Liverpool City Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Liverpool City Council's *Liverpool Development Control Plan 2008*, Council's Fact Sheet for *Waste Management Services for Residential Flat Buildings and Multi Dwelling Housing*, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

- To minimise waste generation and disposal to landfill with careful source separation, reuse and recycling.
- To avoid the generation of waste through design, material selection and building practices.
- To plan for the types, amount and disposal of waste to be generated during demolition, excavation and construction of the development.
- To ensure efficient storage and collection of waste and quality design of facilities

COUNCIL REQUIREMENTS

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

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

Pollution Prevention – Prevent stormwater pollution that may occur as a result of poor waste storage and management practises;

Noise Minimisation – Provide acoustic insulation to the waste service facilities or residential units adjacent to or above chutes, waste storage facilities, chute discharge, waste compaction equipment and waste collection vehicle access points;

Ecologically Sustainable Development (ESD) – Promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;

Hygiene – Ensure health and amenity for residents, visitors and workers in the Liverpool City Council.

Source: Liverpool City Council's *Liverpool Development Control Plan 2008*

STAKEHOLDER ROLES AND RESPONSIBILITIES

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

Table 2: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/Management	<ul style="list-style-type: none"> 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/Waste Caretaker	<ul style="list-style-type: none"> 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 health and safety 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.
Residents/Tenants	<ul style="list-style-type: none"> 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.
Council/Private Waste Contractor	<ul style="list-style-type: none"> Provide a reliable and appropriate waste collection service; Provide feedback to building managers/residents in regards to contamination of recyclables; and Work with building managers to customise waste systems where possible.
Gardening/Landscaping Contractor	<ul style="list-style-type: none"> Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Building Contractors	<ul style="list-style-type: none"> 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 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.

It is also recommended that the owners' corporation website contain information for residents to refer to regarding use of the chute. Information should include:

- Directions on using the chute doors;
- Recycling and garbage descriptions (council provides comprehensive information);
- How to dispose of bulky goods and any other items that are not garbage or recycling;
- Residents' obligations to health and safety and 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 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 WMP as part of a development application and is supplied by EFRS with the following limitations:

- Council are subject to changing waste and recycling policies and requirements at their own discretion. Information in this operational WMP is correct as of May 2018.
- Drawings, estimates and information contained in this WMP 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;

OPERATIONAL WASTE MANAGEMENT PLAN

- Design of waste management chute equipment and systems must be approved by the supplier.

RESIDENTIAL WASTE MANAGEMENT

The Liverpool City Council's Fact Sheet for *Waste Management Services for Residential Flat Buildings and Multi Dwelling Housing* has been referenced to calculate the total number of bins required for the residential units. 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 residential component of the development.

Table 3: Calculated Waste Generation – Residential

# Units	Garbage Generation Rate (L/unit/week)	Generated Garbage (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
66	120	7920	120	7920
Collections & Equipment	Garbage Bin Size (L)	660	Recycling Bin Size (L)	660
	Garbage Bins per Day	2	Recycling Bins per Day	2
	Garbage Collections per Week	2	Recycling Collections per Week	2
	Total Garbage Bins Required	6	Total Recycling Bins Required	6
Waste Rooms	Equipment (if any)	1 x 240L Bin Lifter // 1 x 2-Bin 660L Linear Track		
	Discharge and Storage Room	Approx. 30sqm		

HOUSEHOLD WASTE

1 garbage chute will be installed with access provided on all residential levels. The chute is to be used for the disposal of garbage only.

Garbage discharges into 660L bulk bins on a linear track system. The discharge is located in the waste discharge room on level 1. Both the garbage and recycling will not be compacted.

240L recycling bins will be situated in the waste compartment on each residential level for collection of recyclable items. The caretaker/cleaners will be responsible for monitoring the capacity of recycling bins and transferring full bins to the waste room on the ground level where they are to be decanted into the 660L bulk bins using the bin lifter provided (See APPENDIX C.3 – *Typical Bin Lifter*).

Full garbage and recycling bins will be collected directly from the waste room (see APPENDIX A.2 – *Collection/Loading Area*) by Council.

COMMON AREAS

The lobbies, amenities and circulation areas will be supplied with suitably branded waste and recycling bins where considered appropriate. These areas generate minimal waste, however garbage and recycling receptacles should be provided and located in convenient locations.

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

SOURCE SEPERATION

Waste avoidance, recovery and reuse of discarded materials and responsible management of hazardous waste are all crucial elements of sustainable development. Effective waste management practices in residential developments significantly improve environmental, social, and economic outcomes on both a local and regional scale, and should be integrated into the waste management processes.

GENERAL WASTE (GARBAGE)

Residents will be supplied with a collection area in each unit to deposit garbage and collect recyclable material suitable for one day's storage. This is typically located generally in the kitchen, under bench or 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.

RECYCLING

Recycling must not be bagged. It is recommended that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation.

Cardboard furniture boxes or large cardboard containers should not be included in the garbage chute – a cardboard collection bin will be made available to residents to deposit flattened cardboard and will be managed by the waste caretaker. Residents should be advised of the location of these bins by building management.

GREEN WASTE

Green waste is not typically generated from multi-unit dwellings 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 or balcony 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.

BULKY GOODS

A room or caged area will be made available for the storage of discarded residential bulky items (e.g. whitegoods, furniture, etc.). This room should be located within close proximity of the garbage and recycling bin collection room and must have a minimum doorway width of 1.5m to allow for easy movement of large waste items in and out of the room.

These areas are crucial to prevent residents from illegally dumping bulky waste on the footpath outside Councils scheduled collection times. Regular illegal dumping can attract other dumped waste, generate litter, detract significantly from the quality and appearance of the development and reduce amenity of the street.

Residents will be required to liaise with building management regarding the transportation and disposal of bulky goods. Ideally, bulky waste should be collected on a regular schedule so that the storage area does not become overfull and so that residents know when to place items in there for collection. Councils may arrange for more frequent collections of bulky waste for MUDs, however collection frequencies vary among different local government areas.

Donations to charitable organisations should be encouraged. Clean, sound furniture and household goods etc. are highly sought after to provide for the disadvantaged. Donations can be arranged with the assistance of the building manager/waste caretaker.

ELECTRONIC WASTE

Electrical waste (e.g. fluorescent tubing, batteries, laptops etc.) can potentially contaminate soil and surrounding water bodies if not disposed correctly. These items must not be placed in standard garbage and recycling bins. Disposal or recycling of electronic waste will be organised with the assistance of the building caretaker. These items must not be placed in garbage or recycling bins due to safety and environmental factors. Residents and/or the building manager may choose to contact Council to find out about new/existing strategies for the disposal/collection of electronic waste.

CHEMICAL WASTE

Chemical wastes (e.g. cleaning chemicals, paints, oils solvents) pose detrimental effects to human health and the environment and should be disposed of to a suitable licensed disposal facility. No liquid wastes or wash down waters should be disposed of via the storm water drainage system. Household Chemical CleanOut events are held at various locations throughout NSW on specified dates throughout the year. Locations and dates are subject to change; hence it is recommended that the building caretaker confirm these details with their local Council.

ORGANIC WASTE AND COMPOSTING

Recycling organic waste, such as food scraps and garden materials, dramatically reduces the quantity of waste being diverted to land fill and thus reduces residents' ecological footprint. Compost material can also be returned to the soil as a rich fertilizer and improve plant growth and the overall health of surrounding vegetation. It is recommended that a space for composting and worm farming is made available for all residents in a communal facility or in small private courtyards (see APPENDIX D.1). Composting facilities are to be sited on an unpaved area with soil depth of at least 300mm. Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems (see APPENDIX D.2 and APPENDIX D.3).

PUBLIC SPACES

Public spaces are likely to generate minimal waste from the people utilizing these areas. Waste and recycling bins should be placed throughout public spaces to minimise the likelihood of littering (see APPENDIX D.6 – *Typical Public Place Waste Bins*).

Areas allocated to outdoor public space will be managed by Council, unless another type of arrangement has been agreed with by Council. Public waste bins placed in outdoor public areas will be serviced and maintained by Council.

CLOTHING WASTE

Clothing is becoming an increasingly large waste stream for domestic dwellings. Unwanted clothing that is clean and undamaged can be donated to charities. Building management may choose to provide clothing donation bins for residents to donate their unwanted clothing. Building management can directly contact a charity to supply a donation bin or choose to provide their own nondenominational donation bin. Once a sufficient amount of clothing has been collected, the building management will be responsible for arranging the collection of donated items with the relevant charity.

COMMERCIAL/RETAIL WASTE MANAGEMENT

The *Better Practice Guide for Waste Management and Recycling* has been referenced to calculate the total number of bins required for the retail and commercial areas. Calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the commercial/retail component of the development. A seven day operating week has been assumed.

Table 4: Calculated Waste Generation – Commercial/Retail

Type	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)
Commercial	2047	10	1432.9	10	1432.9
Restaurant	335	670	15711.5	135	3165.8
TOTAL	2382		17144.4		4598.7
Collections & Equipment	Bin Size (L)		1100	Bin Size (L)	1100
	Collections per Week		3	Collections per Week	3
	No. Bins Required		6	No. Bins Required	2
Waste Rooms	Equipment		None		
	Storage Room		Approx. 25sqm		

COMMERCIAL WASTE MANAGEMENT

Typically, bins for paper or general waste are positioned next to each workers desk or work station. One or both of these bins are emptied by contract cleaners. The cleaners circulate around the workplace after normal office hours and also perform other cleaning tasks, generally vacuuming and cleaning toilets. Bins for general waste and recyclables are also located centrally in each office, generally in the kitchen area and printer room.

Cleaners empty the bins into bags which they transport around the office/s in a cart which is also used to store cleaning products, spare bags, PPE and consumables.

Bags of garbage and/or recycling are placed in a central location by the cleaners (often outside the goods lift/s) and transported to the collection bins by another cleaner.

RETAIL WASTE MANAGEMENT

Tenants 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. Café or restaurant staff will be responsible for their own BOH waste management.

Cardboard is a major component of the waste generated by cafes/restaurants. All cardboard should be flattened (to save bin space), placed in and collected from bulk bins. Whilst cardboard is bulky, it is generally lightweight however it can be contaminated with food or liquid which makes it unsuitable for recycling.

OPERATIONAL WASTE MANAGEMENT PLAN

On completion of each trading day or as required, nominated retail staff/cleaners will transport their garbage and recycling to the retail/commercial waste room on level 1 and place garbage and recycling into the appropriate collection 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;
- individual recycling programs are recommended for retailers to ensure commingled recycling is correctly separated;
- any food and beverage tenant will make arrangements for storing used and unused cooking oil in a bunded storage area;
- the operator will organise grease interceptor trap servicing;
- a suitable storage area needs to be provided and effectively bunded for chemicals, pesticides and cleaning products;
- dry basket arrestors need to be provided to the floor wastes in the food preparation and waste storage areas; and
- 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 retail tenancy 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.

COMMON AREAS

Any staff tea points will be supplied with a dedicated commingled MGB for the collection of all recyclable glass, aluminium, steel and plastic items. Staff will be responsible for sorting this material and allocating recyclables into the correct collection facility.

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

WASTE OILS

Consideration should be given to the use of cooking oil collection systems. A single service provider may be used to reduce the amount of commercial traffic into the loading bay or around the site. This should be measured against bulk delivery of oils where the same vehicle is used to remove containers of waste cooking oils (see APPENDIX D.4 for Typical Cooking Oil Collection System).

OTHER WASTE STREAMS

Tenants are required make arrangements for the disposal and recycling of specialised waste (toner cartridges, batteries, etc.). Disposal of hard, electronic, liquid waste and any detox (paint/chemicals) can be organised with the assistance of the building management/cleaners.

MOVEMENT AND TRANSPORTATION OF BINS

The building manager/waste caretaker is responsible for the transportation of bins from their designated operational locations to their respective collection room/areas prior to scheduled collection times, and returning them once emptied to resume operational use.

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 required 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

RESIDENTIAL

Residential waste will be collected by Council with both garbage and recycling being collected twice weekly.

Council's waste vehicle will pull into the site and service all bins from the residential waste room. The building manager/waste caretaker will be responsible for ensuring that bins are neatly arranged within this area prior to the collection time for ease of servicing.

Once all bins have been serviced, the vehicle will leave the site in a forward-facing direction. The onsite path of travel and collection area will need to allow for a rear lift vehicle of 3.4m servicing height.

RETAIL & COMMERCIAL

Waste generated by the retail and commercial units will be collected by a private contractor to an agreed schedule (this report assumes three times weekly collections for the retail and commercial premises).

The private contractor's waste vehicle will pull-up at the loading area adjacent to the waste rooms and service all bins directly from this location.

Once all bins have been serviced, the contractor's waste vehicle will leave the site in a forward-facing direction/

COLLECTION AREA

It is EFRS' understanding that the collection areas have been reviewed by a traffic consultant to confirm the swept paths for waste collections, access and egress.

INSTALLATION EQUIPMENT AND DESIGN

EQUIPMENT SUMMARY

Table 5: Equipment Summary

Component	Part	Qty	Notes
Equipment A	Bin Lifter	1	(See APPENDIX C.3 for Typical Bin Lifter)
Equipment B	Linear Track	1	(See APPENDIX C.2 for Typical Linear Track)
Equipment C	Suitable Bin Moving Equipment	N/A	Optional (See APPENDIX B.4 for Typical Bin Mover)

WASTE ROOM AREAS

Any compaction units should be caged off to ensure the safety of any personnel accessing the waste room.

The areas allocated for residential waste storage, commercial/retail bin store, bulky goods and collection areas are detailed in Table 6 below. The areas recommended below are estimates only. Final areas will depend upon room and bin layouts.

Table 6: Waste Room Areas

Level	Waste Room Type	Equipment	Allocated Area (m ²)
L1	Residential Waste Room	6 x 660L MGBs (Garbage) 6 x 660L MGBs (Recycling) 1 x 2-Bin 660L Linear Track (Garbage) 1 x 240L Bin Lifter (Recycling)	30
	Bulky Goods Waste Storage Room	N/A	8m ³
	Retail/Commercial Waste Room	6 x 1100L MGBs (Garbage) 2 x 1100L MGBs (Recycling)	25

Note: Any requirement for increasing storage capacity for retail/commercial waste can be met by increasing the frequency of collections.

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 walls and above all bins, clearly stating what type of waste or recyclables is to be placed in the bin underneath.

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

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

LIVERPOOL CITY COUNCIL CUSTOMER SERVICE

Phone: 1300 36 21 70 Email: lcc@liverpool.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@purifysolutions.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

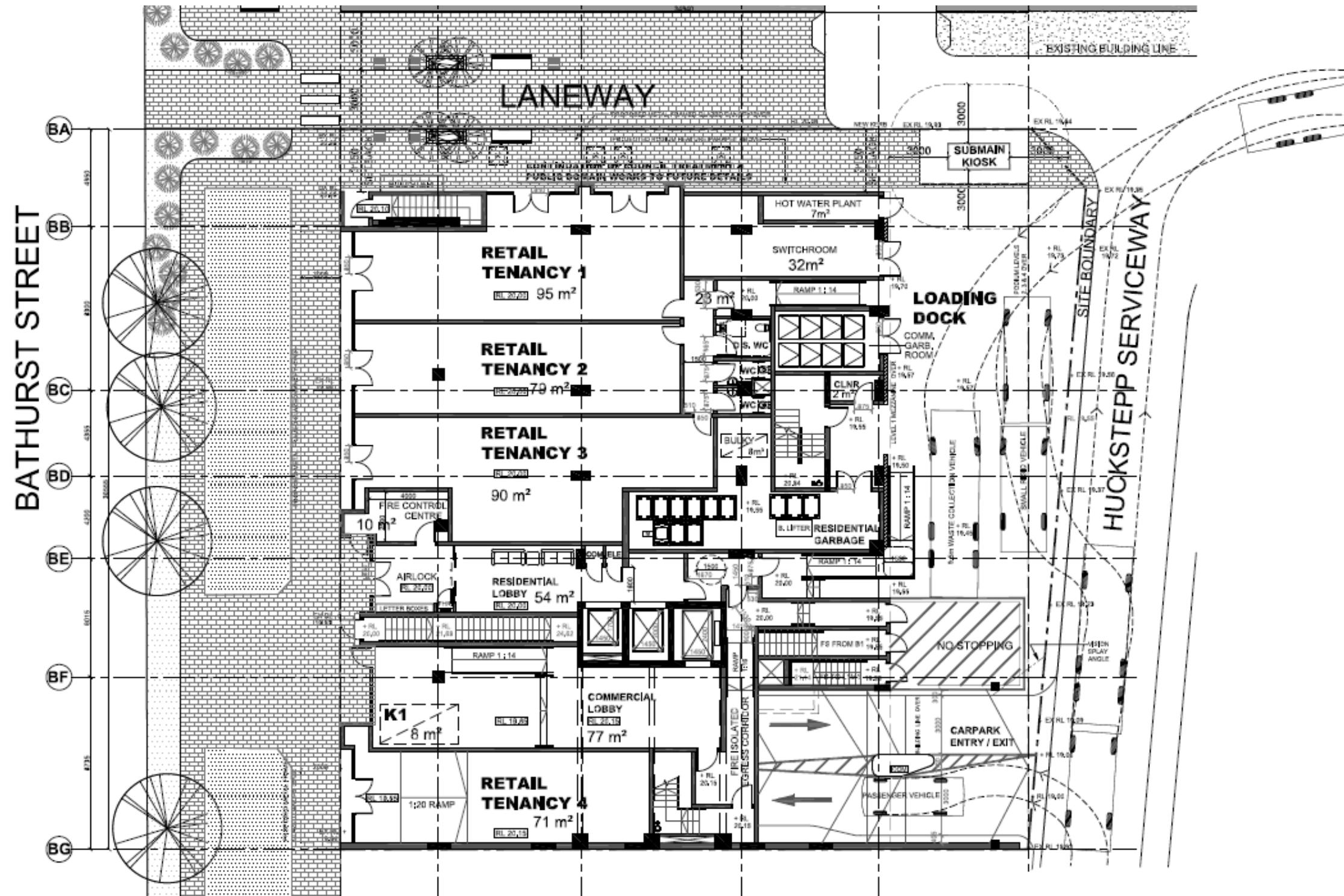
Phone: 1300 434 374

Email: wmp@elephantsfoot.com.au

APPENDICES

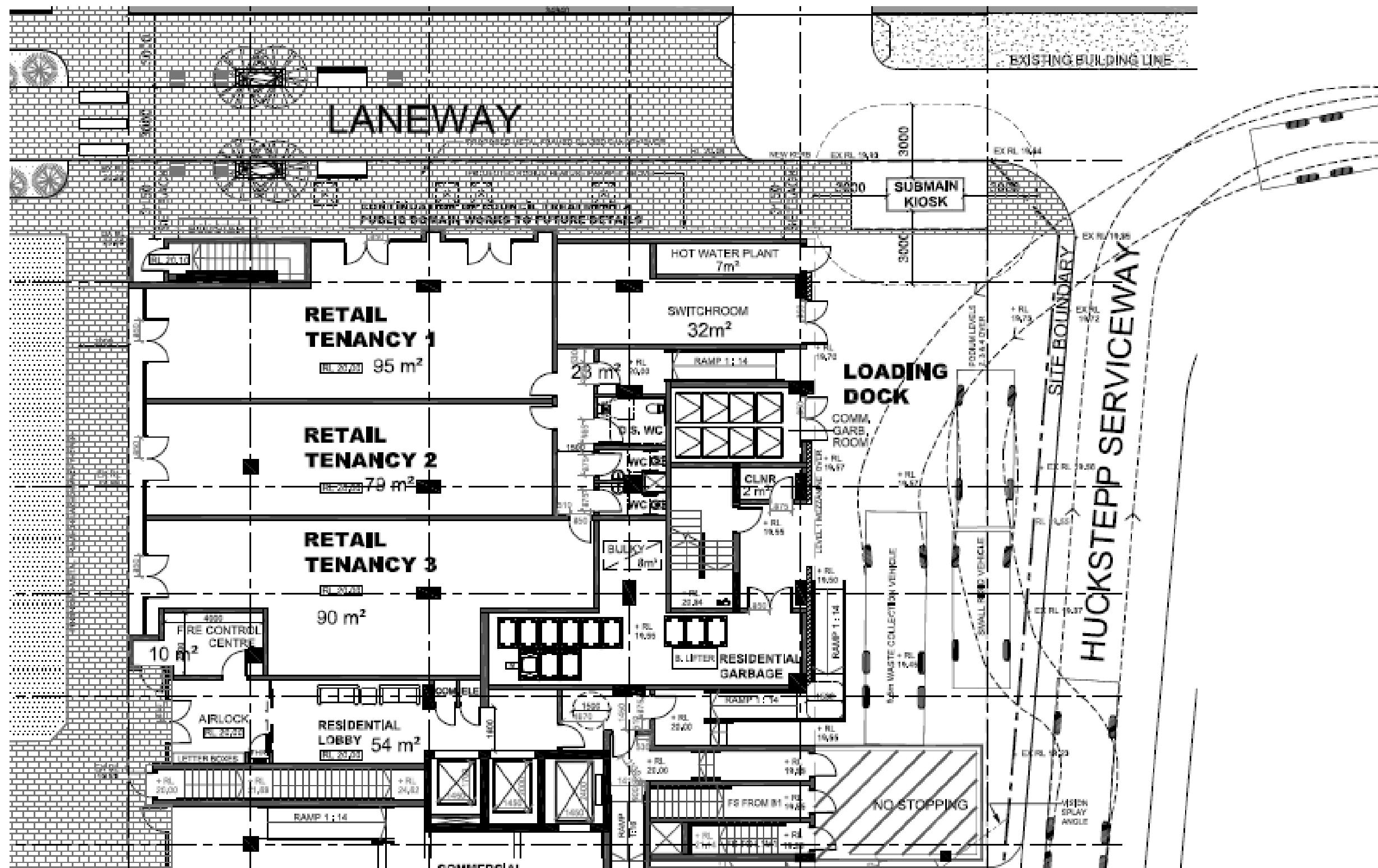
APPENDIX A ARCHITECTURAL DRAWING EXERPTS

APPENDIX A.1 SITE PLAN



Source: Saunders Global, Drawing No. DA09, Rev.A, 17/12/18 – Level 1 Ground Level Floor Plan

APPENDIX A.2 WASTE ROOMS & COLLECTION AREA



Source: Saunders Global, Drawing No. DA09, Rev.A, 17/12/18 – Level 1 Ground Level Floor Plan

APPENDIX B PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX B.1 TYPICAL BIN SPECIFICATIONS

Bin Receptacle	Length (mm)	Width (mm)	Height (mm)	Bin Footprint (m ² /bin)
140L	640	535	920	0.27
240L	730	580	1060	0.42
360L	865	650	1100	0.42
660L	1420	780	1210	1.16

SOURCE: Liverpool City Council Waste Fact Sheet (2016)

APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

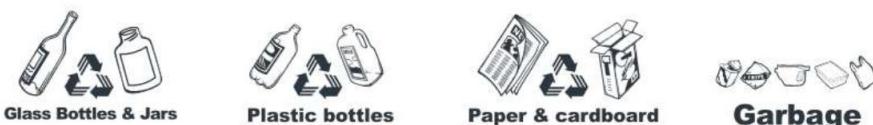
WASTE SIGNS

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the Department of Environment and Heritage.

Example wall posters



Example bin lid stickers



SAFETY SIGNS

The design and use of safety signs for waste rooms and enclosures should comply with AS1319 Safety Signs for Occupational Environment. Safety signs should be used to regulate and control safety behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Each development will need to decide which signs are relevant for its set of circumstances and service provided.

Examples of Australian Standards:



Australian Standards are available from the SAI Global Limited website (www.saiglobal.com).

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

APPENDIX B.3 TYPICAL COLLECTION VEHICLE INFORMATION

Vehicle	Length	Width	Height	Servicing height	Weight (loading)	Turning Radius
Side	9.5m	2.5m	3.5m	3.5m	23.0t	Kerb to kerb 10.3m Wall to Wall 11.0m
Rear	9.9m	2.5m	3.4m	3.4m	22.5t	Kerb to kerb 10.5m Wall to Wall 11.5m

SOURCE: *Liverpool City Council Waste Fact Sheet (2016)*

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

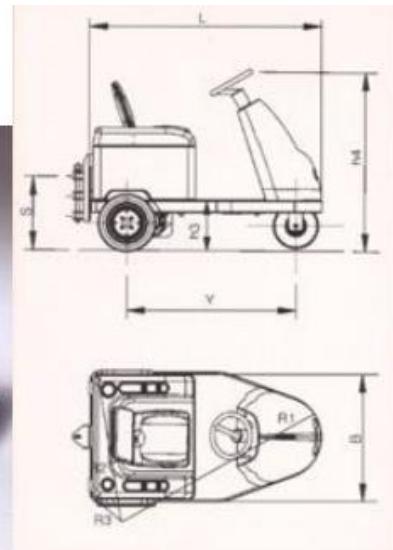
Features:

- 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*)

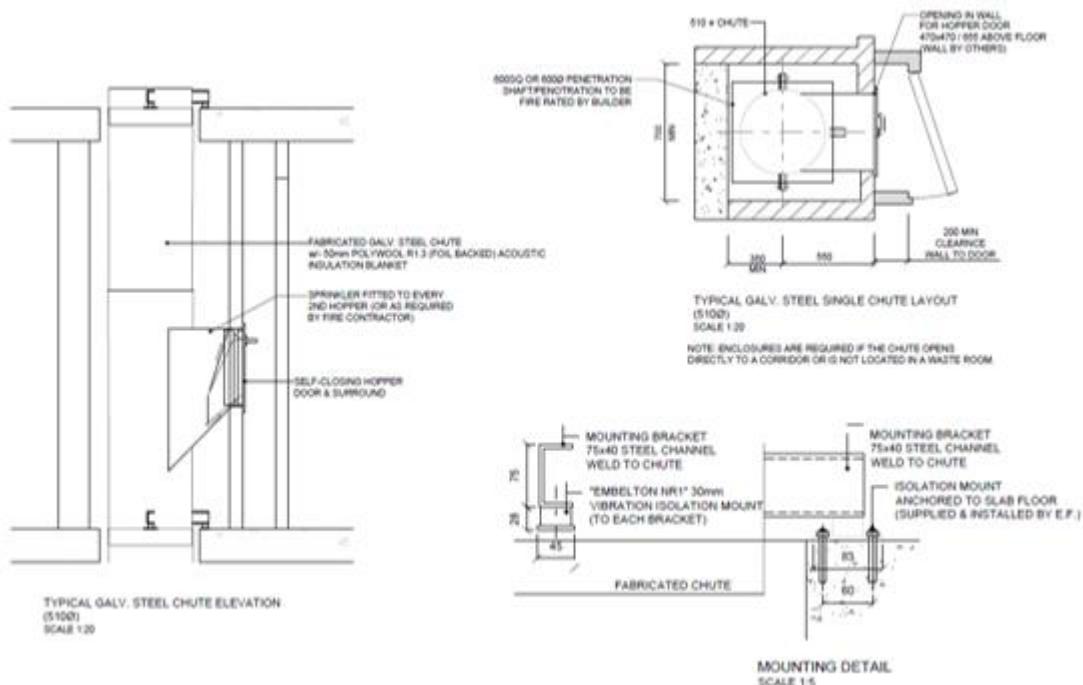
APPENDIX B.5 TYPICAL SEATED BIN MOVER



	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 - endothermic		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 (length x width)	mm	-----
Platform height	h6 = unload clearance	mm	-----
Overall dimensions	L = length	mm	1500
	B = width	mm	900
	h1 = foot lever	mm	1820
	h3 = Seat height	mm	310
	h4 = Steer height	mm	1250
Turning radius	R1 = front min. external	mm	1400
	R2 = rear min. external	mm	1000
	R3 = front min. internal	mm	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 SINGLE WASTE CHUTE SPECIFICATIONS

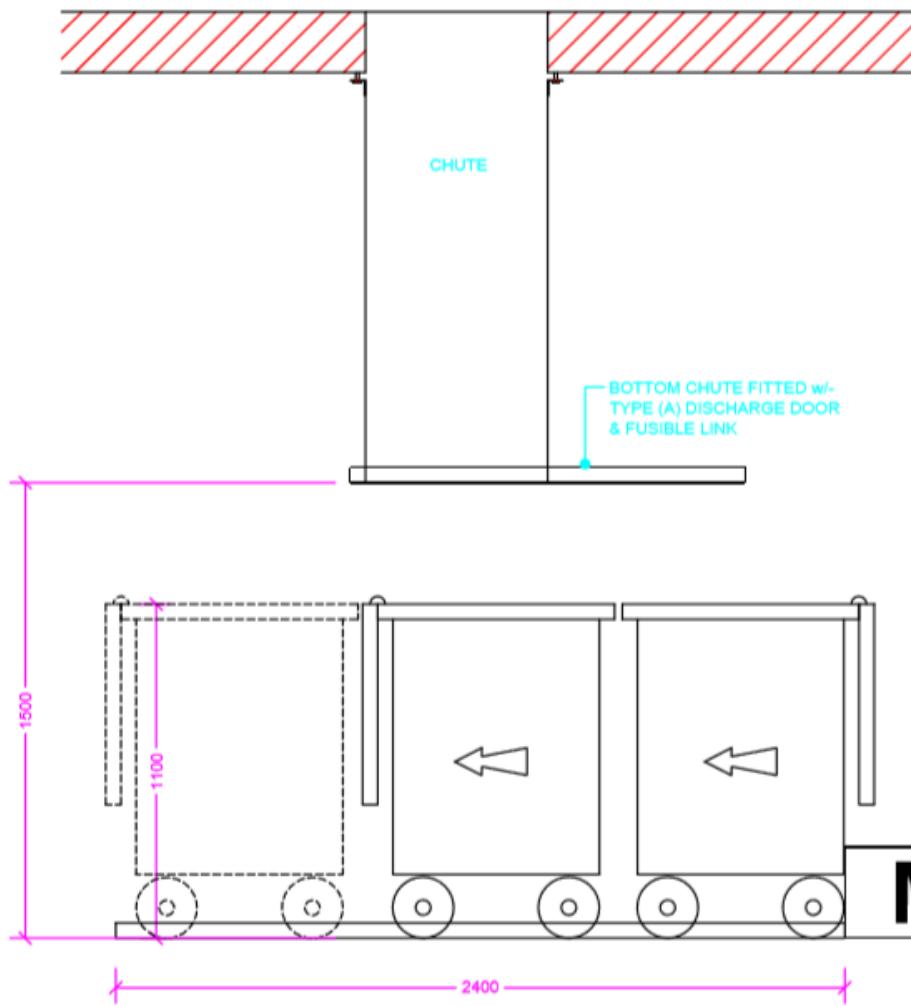
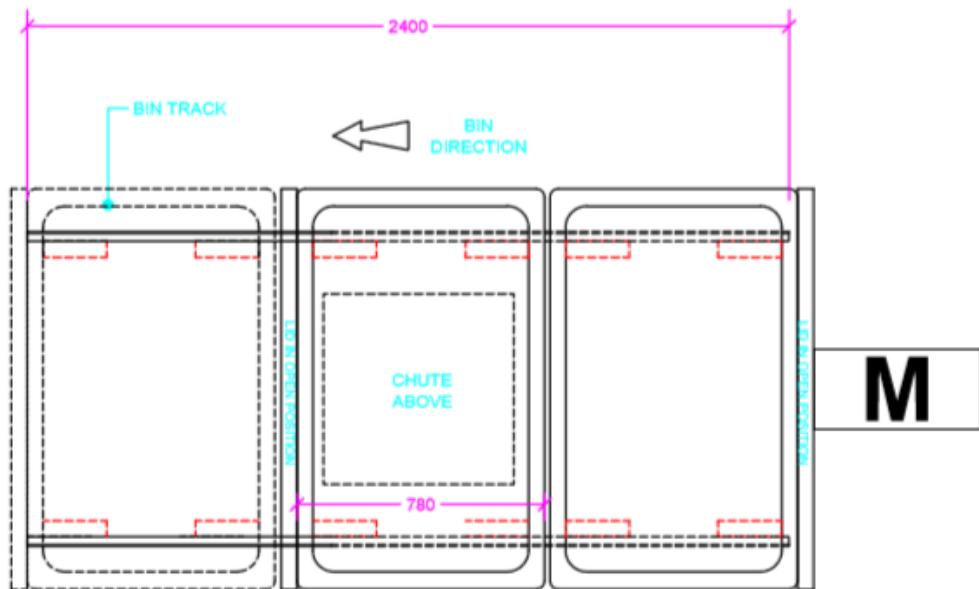


Waste chutes are supplied per the following specifications:

- 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 C.2 TYPICAL LINEAR TRACK



APPENDIX C.3 TYPICAL BIN LIFTER

120-240 Litre Binlifter

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

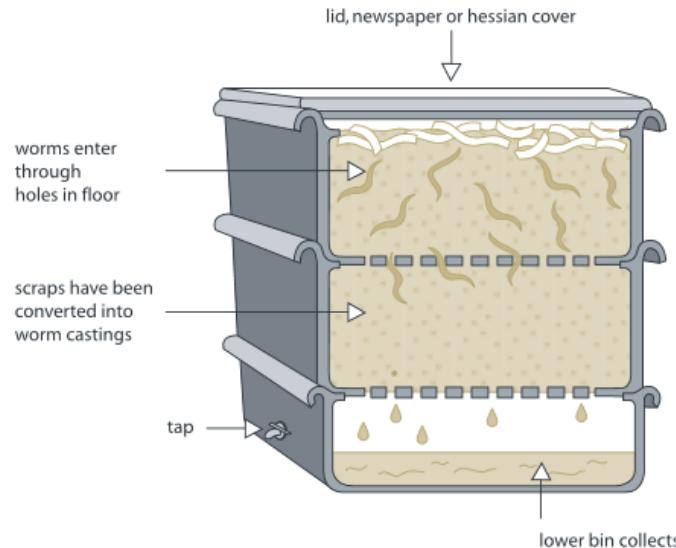


Features	120-240 litre bin lifter
Lifting capacity	140 kg
Bin compatibility	120 & 240 litre bins
Operation method	Automatic
Hydraulic	yes
Dimensions	850mm (W) x 1800mm (L)
Safety	Safety cage & control box
Emergency stop	yes
Tipping height	1350mm variable
Clearance	2650mm
Suitability in tipping into	bins,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

APPENDIX D SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX D.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



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

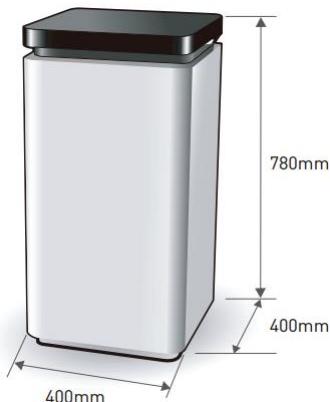


Apartment Style Compost bin – available from hardware stores

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



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



A GrainCorp business

Home About **Services** Our Parent Company Contact

The RIGHT WAY for Cooking Oil Collection Systems



Drums 205L



Pour in Bulk Tank



Oil Kaddy System

Collection Service

Collection Systems

Recycling & Environment

Safety

Fresh Oil (W/W Only)

[View Brochure](#)

[View Brochure](#)



Eco Systems 700, Fixed Eco Systems 300, mobile



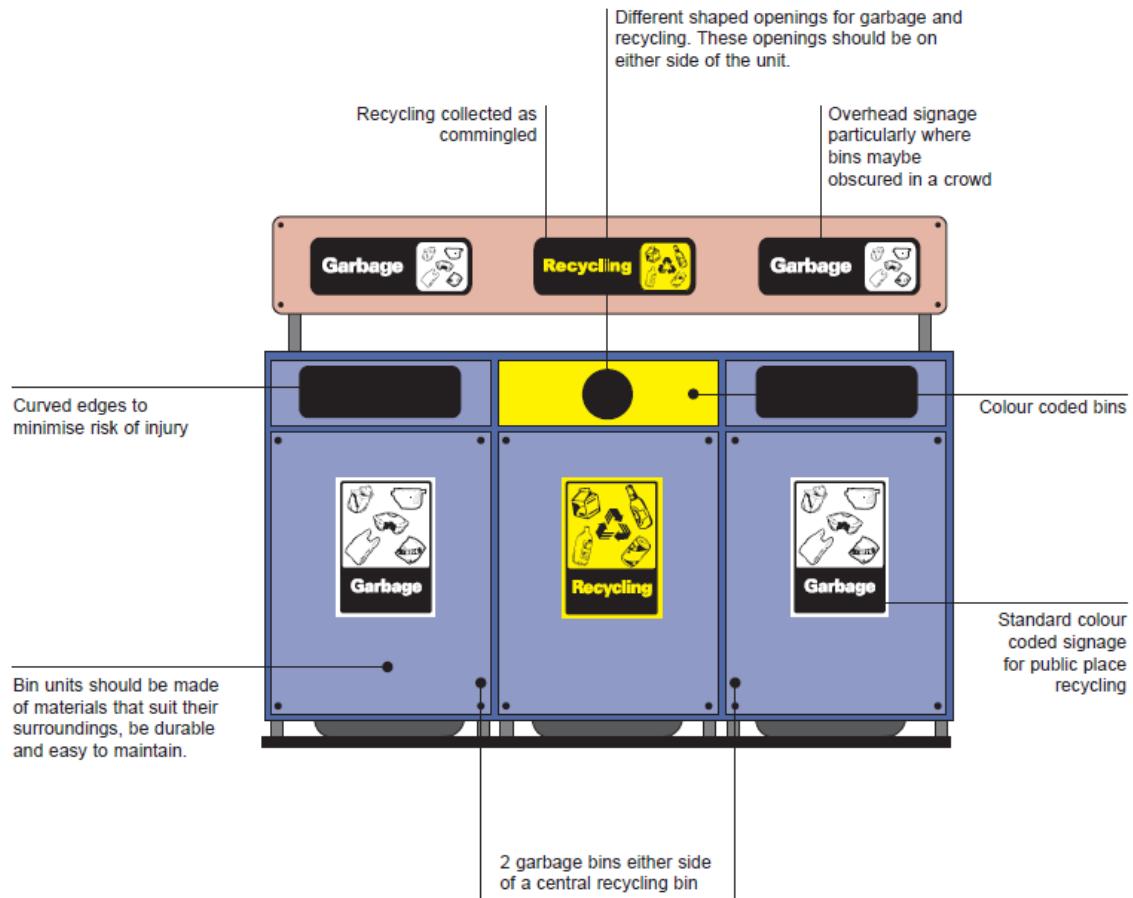
Eco Systems

Direct-Connect to Fryer

APPENDIX D.5 TYPICAL BACK OF HOUSE BINS FOR RETAIL/COMMERCIAL OPERATIONS



APPENDIX D.6 TYPICAL PUBLIC PLACE WASTE BINS



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