



WASTE MANAGEMENT PLAN

466-480 New Canterbury Road,
Dulwich Hill
Mixed Use Development

PREPARED FOR
BJA Architecture

23/05/2017

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EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the mixed use development located at 466-480 New Canterbury Road, Dulwich Hill.

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

- i. ***Ensure waste is managed to reduce the amount of waste and recyclables to land fill*** by assisting residents to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins in the retail precinct to reinforce these messages.
- ii. ***Recover, reuse and recycle*** generated waste wherever possible.
- iii. ***Compliance*** with all relevant codes and policies.

To assist in providing clean and well-segregated waste material, it is essential that this waste management plan is integral to the overall management of the building and clearly communicated to residents and tenants.

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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 wire ties and strapping
<i>Chute</i>	A ventilated, essentially 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>Collection Area/Point</i>	The position or area where waste 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>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>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>Green</i>	Garden organics such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers, and weeds
<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>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 660, 1000 or 1100
<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.



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INTRODUCTION

The following waste management plan pertains to the mixed use development located at 466-480 New Canterbury Road, Dulwich Hill. This waste management plan is an operational waste management plan and will address the phases of the completed development.

For the purpose of this report the proposed development will consist of:

- 4 buildings with 6 building cores (see *appendix A.1 for site plan*)
 - 156 residential units in total (see Table 1 for Unit Breakdown Matrix)
 - 4 retail units
 - Total GFA of 362m²
 - 5 commercial units
 - Total GFA of 337m²

Table 1: Unit Breakdown Matrix

	Building A		Building B		Building C		Building D		TOTAL	
Level	# Units	% Mix	# Units	% Mix	# Units	% Mix	# Units	% Mix	# Units	% Mix
Basement 1	0	0.00	0	0.00	3	3.41	2	9.52	5	3.21
Ground	4	16.00	3	13.64	7	7.95	3	14.29	17	10.90
Level 1	4	16.00	5	22.73	12	13.64	4	19.05	25	16.03
Level 2	5	20.00	5	22.73	12	13.64	4	19.05	26	16.67
Level 3	6	24.00	5	22.73	12	13.64	4	19.05	27	17.31
Level 4	6	24.00	4	18.18	12	13.64	4	19.05	26	16.67
Level 5	0	0.00	0	0.00	10	11.36	0	0.00	10	6.41
Level 6	0	0.00	0	0.00	10	11.36	0	0.00	10	6.41
Level 7	0	0.00	0	0.00	10	11.36	0	0.00	10	6.41
	25		22		88		21		156	

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

ASHFIELD COUNCIL

The assessment of waste volumes is an estimate only and will be influenced by the development's management and occupant's attitude to waste disposal and recycling.

The residential waste and recycling will be guided by the services and acceptance criteria of Ashfield Council. The residential waste and recycling will be collected by council. The retail and commercial waste will be collected by private contractor.

All waste facilities and equipment are to be designed and constructed to be in compliance with Ashfield Council's *Interim Development Assessment Policy 2013* which came into effect in February 2014 pursuant to Section 79C of the Environmental Planning and Assessment Act, the *Better Practice Guide for Waste Management in Multi-unit Dwellings 2008* by the Department of Environment and Climate Change NSW, Australian Standards and statutory requirements.

Ashfield Council's interim policy will be used to assess development applications submitted under the Ashfield LEP 2013 for administrative purposes and the policy will remain in place until a new comprehensive Ashfield Development Control Plan is adopted by Council.

OBJECTIVES

- To maximise reuse and recycling of building/construction materials, household generated waste and industrial/commercial waste.
- To encourage building designs and construction techniques that minimise waste generation.
- To require on-site source separation and other design and siting standards which assist waste collection and management services offered by Council and/or other private sector.
- To minimise the overall environmental impacts of waste.
- To achieve Federal and State Government waste minimisation targets as set out in the Waste Avoidance and Resource Recovery Act 2001.

GENERATED WASTE VOLUMES

The assessment of projected waste volumes is a calculated estimate only and will be influenced by the development's management and occupant's waste disposal and recycling practices.

CONSTRUCTION AND DEVELOPMENT WASTE

The head contractor will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements. Please refer to the separate waste management plan submitted for construction waste as part of the Development Application.

BUILDING MANAGER/WASTE CARETAKER

All waste equipment movements are to be managed by the building manager/cleaners at all times. No tenants or residents will be allowed to transport waste or recyclables from the waste room; tenants and residents will only transport their waste to the allocated bin room.

The building manager/cleaner duties include, but are not limited to, the following:

- general maintenance and cleaning of the chute doors on each level (Frequency dependent on waste generation and will be determined based upon building operation);
- organising, maintaining and cleaning the general and recycled waste holding areas (Frequency will depend on waste generation and will be determined based upon building operation);
- transporting of bins as required;
- organising both garbage and recycled waste pick-ups as required;
- cleaning and exchanging all bins;
- ensure site safety for residents, children, visitors, staff and contractors;
- abide by all relevant OH&S legislation, regulations, and guidelines;
- assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers; and
- provide to staff/contractors equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities

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 and occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation.

REPORTING

It is recommended that building management ensure that all waste service providers submit monthly reports on all equipment movements and weights of any waste and recycling products removed from the development. Regular reviews of servicing should take place to ensure operational and economic best practise and to assist with sustainability reporting.

EDUCATION

Building management is responsible for creating and managing the waste management education process.

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident to ensure correct use of the waste chute. This should include the correct disposal process for bulky goods (old furniture, large discarded items, 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 WHS 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.

It is expected that leasing arrangements with retail/commercial operations contain direction on waste management services and expectations.

RESIDENTIAL WASTE PLAN

The *Better Practice Guide for Waste Management and Recycling in Multi-unit Dwellings* has been referenced to calculate the total number of bins required for the residential units. Please note that calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

Table 2: Calculated Waste Generation – Residential

Building/ Core	# Units	Waste Calculation (L/unit/week)	Generated Waste (L/week)	Compacted Waste (2:1) (L/week)	Recycling Calculation (L/unit/week)	Generated Recycling (L/week)
Core A	21	120	2520	1260	120	2520
Core B	49	120	5880	2940	120	5880
Core C	39	120	4680	2340	120	4680
Core D	22	120	2640	1320	120	2640
Core E	15	120	1800	900	120	1800
Core F	10	120	1200	600	120	1200
TOTAL	156		18720	9360		18720

BIN SUMMARY

The following assumptions have been taken into consideration:

- garbage is compacted at the base of each chute;
- recycling bins are located in the waste compartment on each level; and
- number of bins have been rounded up for best operational outcome.

Using the assumptions stated, the required capacity and quantity of garbage and recycling bins have been calculated below:

Garbage

- 15 x 240L MGBs collected **three times weekly**
 - 2 x 240L MGBs for Core A
 - 4 x 240L MGBs for Core B
 - 4 x 240L MGBs for Core C
 - 2 x 240L MGBs for Core D
 - 2 x 240L MGBs for Core E
 - 1 x 240L MGBs for Core F

Recycling

- 156 x 240L MGBs collected **fortnightly**
 - 21 x 240L MGBs for Core A
 - 49 x 240L MGBs for Core B
 - 39 x 240L MGBs for Core C
 - 22 x 240L MGBs for Core D
 - 15 x 240L MGBs for Core E
 - 10 x 240L MGBs for Core F

NOTE: Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities may be changed. As waste volumes may change according to the development's type, bin numbers and collection frequencies may be altered to suit the building operation.

WASTE MANAGEMENT

6 waste chutes will be installed with access provided on all residential levels of each core. The chutes are to be used for the disposal of garbage only.

Garbage discharges into 240L MGBs placed on Linear Tracks located in the waste rooms for each building core. This garbage is compacted.

Recycling bins will be situated in the waste compartment on each residential level for collection of recyclable items.

Full waste and recycling bins will be transferred to the collection area on basement level 1 (see *Appendix A.5*) for servicing by Council. The building manager will be responsible for carrying this out.

WASTE HANDLING

WASTE

Residents will be supplied with a collection area in each unit (generally in the kitchen, under bench or similar alternate area) to deposit garbage and collect recyclable material suitable for one days storage. Residents should wrap or bag their waste. Bagged waste should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

The caretaker/cleaner will be required to check the bins collecting waste from each chute, rotate full bins to the storage and collection area, and replace empty bins under each chute.

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 waste chute – a cardboard collection bin will be made available to residents to deposit flattened cardboard and will be managed by the waste caretaker. Bins will be located in the garbage and bulky goods area.

The caretaker/cleaner will exchange/empty recycling bins and store full bins in the bin holding room located on the basement level for collection.

TEMPORARY STORAGE OF BULKY GOODS

A room or caged area of 25m³ will need allocated for the storage of discarded residential bulky items and should be incorporated with the waste and recycling bin store and collection room. This area must will made available close to the collection area.

It is envisaged that bulky goods will be managed by the appointed waste caretaker/s. Residents will be required to liaise with building management regarding all bulky goods movements.



It is recommended that donations to charitable organisations be encouraged. Clean, sound furniture and household goods etc. are highly sought after to provide for the disadvantaged. Donations will be arranged with the assistance of the building manager/caretaker.

OTHER WASTE STREAMS

Disposal or recycling of electronic, liquid waste and home detox (paint/chemicals etc.) will be organised with the assistance of the building caretaker. These items must not be placed in waste or recycling bins due to safety and environmental factors.

COMPOSTING

Council suggests that a space for composting and worm farming is to be available for all residents in a communal facility or in small private courtyards (see *APPENDIX C.4 for Typical Worm Farm Specifications*). 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 C.5 and APPENDIX C.6 for Typical Compost Bins*). Two systems have been included for consideration however there are a variety of compost systems available at hardware stores.

COMMON AREAS

The lobbies, retail amenities and circulation areas will be supplied with suitably branded waste and recycling bins, where considered appropriate. Building management will monitor use and ensure bins are exchanged and cleaned. These areas generate negligible waste however garbage and recycling receptacles should be placed in convenient locations.

WASHROOM FACILITIES

Washroom facilities in staff areas 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.

Building management will monitor use and ensure waste bins are exchanged and cleaned.

GREEN WASTE

Any green waste will be collected and removed from site by the maintenance contractor during scheduled or arranged servicing of these areas.

EQUIPMENT SUMMARY

Table 3: Equipment Summary

Component	Part	Quantity	Notes
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic	6	(See APPENDIX C for Typical Chute Section)
Equipment A	<i>Garbage</i> Linear Tracks for 240L MGB with compaction	6	(See APPENDIX C.2 for Typical Linear System)
Equipment B	Suitable Bin Moving Equipment	N/A	Optional (See APPENDIX C.3 for Typical Bin Mover)

RETAIL WASTE PLAN

The *Better Practice Guide for Waste Management and Recycling in Multi-unit Dwellings* has been referenced to calculate the total number of bins required for the retail areas. Please note that calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice. Please note that if food tenants are placed, the waste generation rates will require adjustment. A seven day operating week has been assumed.

Table 4: Calculated Waste Generation – Retail

Type	NLA (m ²)	Waste Calculation (L/100m ² /day)	Generated Waste (L/week)	Recycling Calculation (L/100m ² /day)	Generated Recycling (L/week)
Café/Restaurant	136	670	6378.4	135	1285.2

BIN SUMMARY

Garbage

- 2 x 1100L MGBs collected **three times weekly**

Recycling

- 1 x 1100L MGBs collected **three times weekly**

NOTE: Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities may be changed. As waste volumes may change according to the development's type, bin numbers and collection frequencies may be altered to suit the building operation.

WASTE MANAGEMENT

Retail tenants will be required to be responsible for their own storage of waste 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 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.

On completion of each trading day or as required, nominated retail staff/cleaners will transport their waste and recycling, using the service lift, to the retail waste room on basement level 1 and place waste and recycling into the appropriate collection bins (see *Appendix A.4 - Retail/Commercial Waste Room*).

It is recommended that:

- all waste should be bagged and waste bins should be plastic lined;
- bagging of recyclables is not permitted;
- all waste collections located BOH during operations;
- individual recycling programs are recommended for retailers to ensure commingled recycling is separated correctly;
- 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 affectively bunded for chemicals, pesticides and cleaning products;
- dry basket arresters need to be provided to the floor wastes in the food preparation and waste storage areas;
- washroom facilities should be supplied with collection bins for paper towels (if used); and
- all flattened cardboard will be collected and removed to the waste room recycling MGB

NOTE: Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities may be changed.

WASHROOM FACILITIES

Washroom facilities in retail and staff areas 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.

Building management will monitor use and ensure waste bins are exchanged and cleaned.

COMMERCIAL WASTE PLAN

The *Better Practice Guide for Waste Management and Recycling in Multi-unit Dwellings* has been referenced to calculate the total number of bins required for the commercial areas. Please note that calculations are based on generic figures; waste generation rates may differ according to office practice. A seven day operating week has been assumed.

Table 5: Calculated Waste Generation – Commercial

Type	NLA (m ²)	Waste Calculation (L/100m ² /day)	Generated Waste (L/week)	Recycling Calculation (L/100m ² /day)	Generated Recycling (L/week)
Office	40	10	28	10	28
Office	45	10	32	10	32
Office	74	10	52	10	52
Office	129	10	90	10	90
Office	49	10	34	10	34
Office	64	10	45	10	45
Office	100	10	70	10	70
Office	62	10	43	10	43
TOTAL	563		394		394

BIN SUMMARY

Garbage

- 2 x 240L MGBs collected **weekly**

Recycling

- 2 x 240L MGBs collected **weekly**

NOTE: Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities may be changed. As waste volumes may change according to the development's type, bin numbers and collection frequencies may be altered to suit the building operation.



WASTE MANAGEMENT

Typically, one or more bins for paper or 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 waste 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.

COMINGLE RECYCLING

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

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.

Please note that all collection receptacles and bins should be branded with the appropriate stickers and the use of the Mobius loop or similar identifying recycling equipment.

OTHER RETAIL/COMMERCIAL WASTE

Tenants usually make their own arrangements for the disposal and recycling of toner cartridges and batteries. Disposal of hard, electronic, liquid waste and any detox (paint/chemicals) shall be organised with the assistance of the building management/cleaners.

WASTE ROOM AREAS

The areas allocated for residential waste rooms, commercial/retail bin store, bulky goods and collection areas are detailed in Table 6 below. The areas provided are considered suitable for purpose.

Table 6: Waste Room Areas

Location	Waste Room Type	Equipment	Allocated Area (m ²)
Basement Level 1	Residential Waste Discharge Room A	2 x 240L MGBs (Garbage) 21 x 240L MGBs (Recycling) 1 x 3-Bin 240L Linear Tracks	>28
	Residential Waste Discharge Room B	4 x 240L MGBs (Garbage) 49 x 240L MGBs (Recycling) 1 x 2-Bin 240L Linear Tracks	>40
	Residential Waste Discharge Room C	4 x 240L MGBs (Garbage) 39 x 240L MGBs (Recycling) 1 x 2-Bin 240L Linear Tracks	>35
	Residential Waste Discharge Room D	2 x 240L MGBs (Garbage) 22 x 240L MGBs (Recycling) 1 x 2-Bin 240L Linear Tracks	>28
	Residential Waste Discharge Room E	2 x 240L MGBs (Garbage) 15 x 240L MGBs (Recycling) 1 x 2-Bin 240L Linear Tracks	>25
	Residential Waste Discharge Room F	1 x 240L MGBs (Garbage) 10 x 240L MGBs (Recycling) 1 x 2-Bin 240L Linear Tracks	>20
	Residential Waste Collection Area	15 x 240L MGBs (Garbage) 156 x 240L MGBs (Recycling)	>120
	Commercial/Retail Waste Collection Area	2 x 1100L MGBs (Retail Garbage) 1 x 1100L MGBs (Retail Recycling) 2 x 240L MGBs (Commercial Garbage) 2 x 240L MGBs (Commercial Recycling)	>25
	Bulky Goods Store	N/A	25m ³

COLLECTION OF WASTE

RESIDENTIAL

Residential waste will be collected by Council with garbage being serviced three times weekly and recycling on a fortnightly basis.

Council's waste vehicle will enter the basement via the access ramp and pull into the loading bay adjacent to the waste collection room. The bins will be serviced from this location.

Once all bins have been serviced, the waste vehicle will leave the site in a forward facing direction.

It will be the building manager/waste caretaker's responsibility to return all bins to their respective locations after servicing has taken place so that they may resume operational use.

RETAIL AND COMMERCIAL

Retail and commercial waste will be collected by private contractor to the agreed collection schedule (this report assumes three times weekly for retail waste and weekly collections for commercial waste).

The private contractor's waste vehicle will enter the basement via the access ramp and pull into the loading bay adjacent to the waste collection room. The bins will be serviced from this location.

Once all bins have been serviced, the waste vehicle will leave the site in a forward facing direction.

It will be the building manager/waste caretaker's responsibility to return all bins to their respective locations after servicing has taken place so that they may resume operational use.

COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant (or equivalent) to confirm the swept paths for waste collections, access and egress, internal manoeuvring to assume parked position for loading and to exit, load requirements as well as collection vehicle. It must be ensured that that the collection vehicle (and other trucks if required) can enter and exit the building in a forward direction. The final number of truck movements will depend on management of waste contract; final configuration of waste and recycling arrangements therefore number of bin lifts and additional irregular truck movements for hard waste.

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;
- all personnel doors are hinged 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.

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.

STORM WATER PREVENTION & LITTER REDUCTION

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:

- promote adequate waste disposal into the bins;
- secure all bin rooms (whilst affording access to staff/contractors);
- prevent overfilling of bins, keep all bin lids closed and bungs leak-free;
- take action to prevent dumping or unauthorised use of waste areas; and
- ensure collection contractors clean-up any spillage that may occur when clearing bins

ADDITIONAL INFORMATION

Transfer of waste and all bin movements require minimal manual handling therefore the operator must assess manual handling risks and provide any relevant documentation to building management. If required, a bin-tug, trailer or tractor consultant should be contacted to provide equipment recommendations. Hitches may require installation to move multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.

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 conditions:

- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by you 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 chute equipment and systems must be approved by the supplier.



USEFUL CONTACTS

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

Ashfield Council Customer Service

Phone: 02 9716 1800

Email: info@ashfield.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

Phone: 02 9359 999

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

Elephants Foot Recycling Solutions (Chutes, Compactors and eDiverter Systems)

44 – 46 Gibson Avenue

Padstow NSW 2211

Free call: 1800 025 073

Email: natalie@elephantsfoot.com.au

APPENDICES

APPENDIX A DRAWING EXERPTS

APPENDIX A.1 SITE PLAN



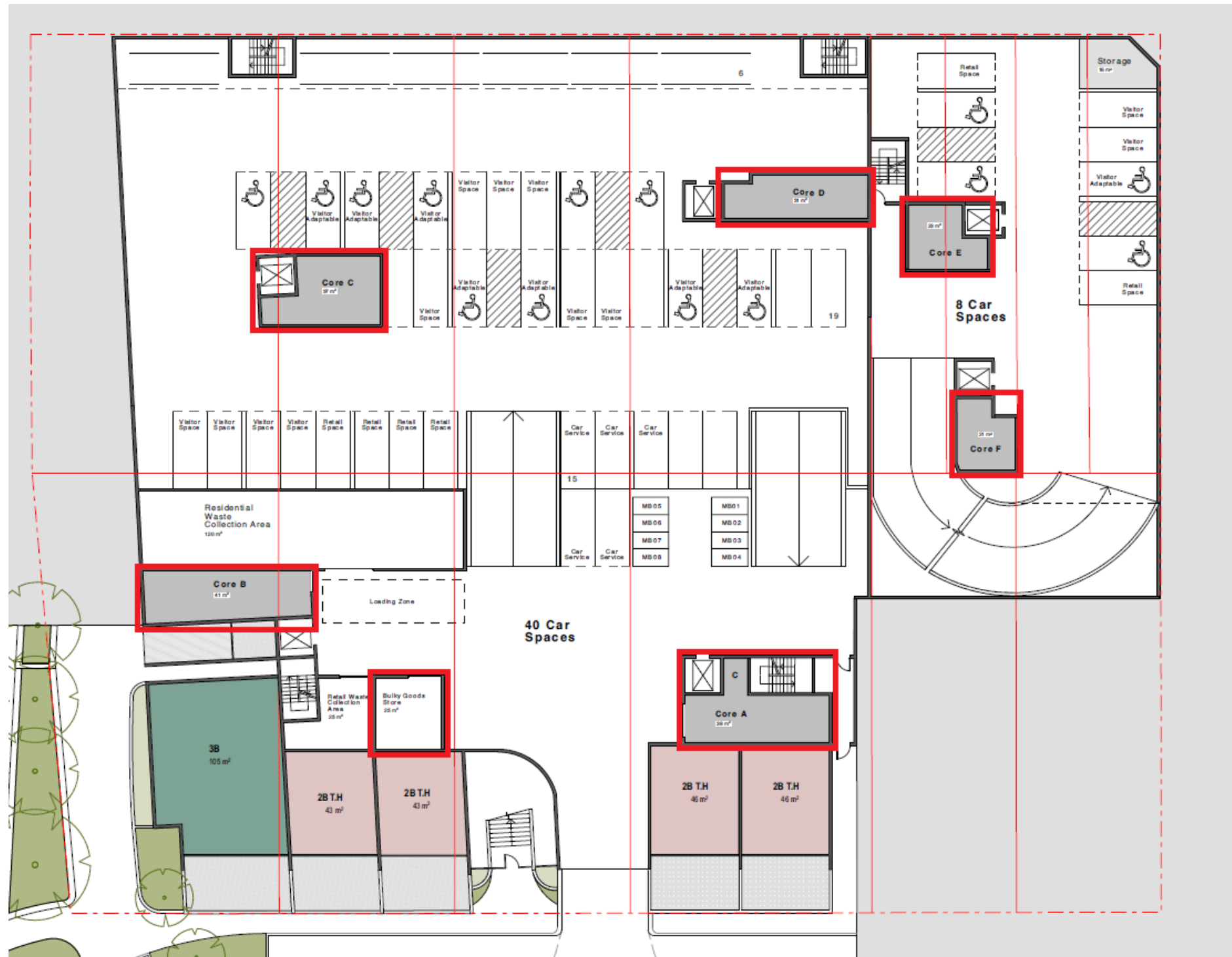
Source: BKA Architecture - Dulwich Grove Precinct - Urban Design Study – Ground Floor Plan

APPENDIX A.2 TYPICAL CHUTE LOCATION



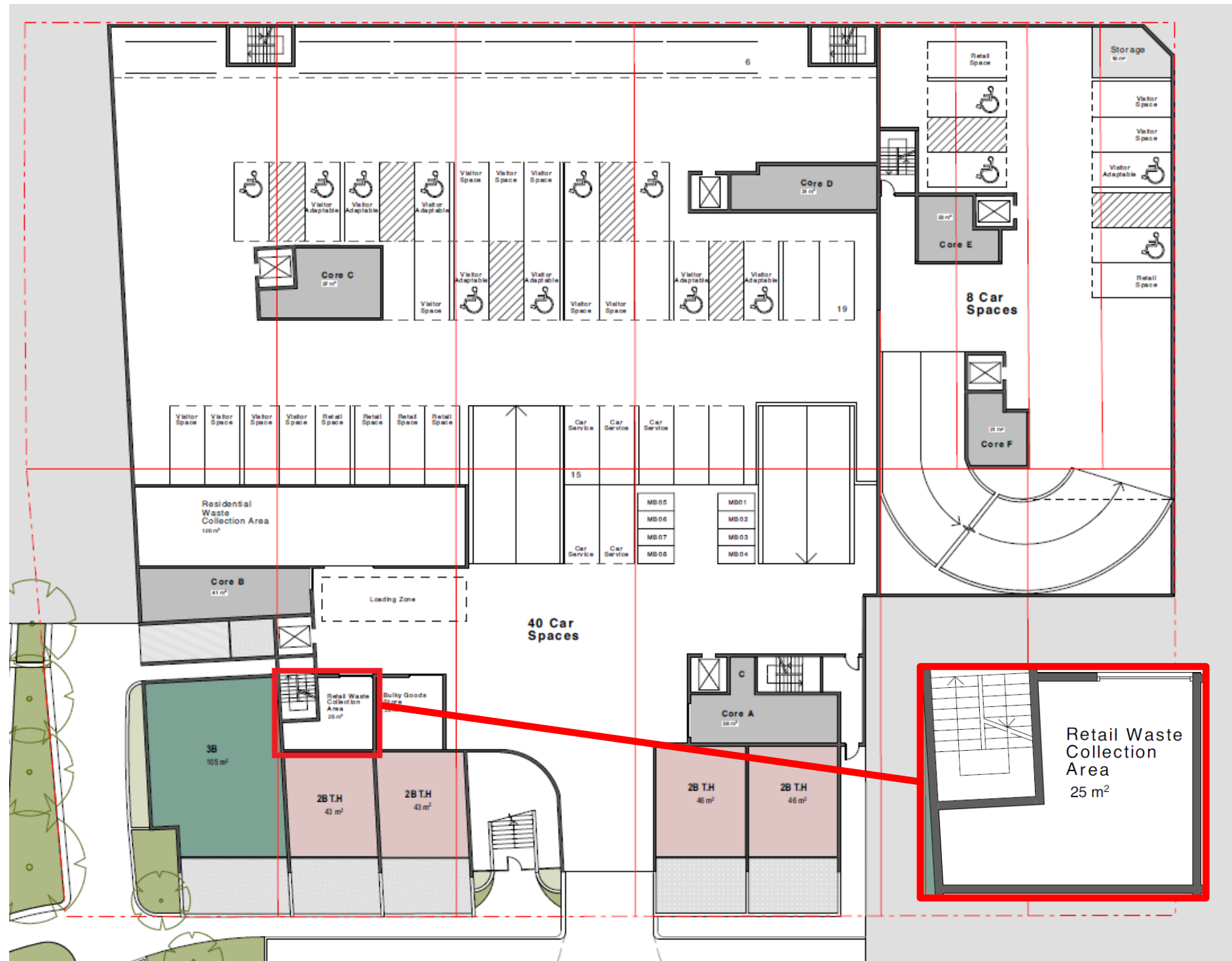
Source: BKA Architecture - Dulwich Grove Precinct - Urban Design Study – Level 1 Floor Plan

APPENDIX A.3 RESIDENTIAL WASTE & BULKY GOODS



Source: BKA Architecture, Drawing No. SK010, RevA, Dated 27/04/17 – CONCEPT - Basement

APPENDIX A.4 RETAIL/COMMERCIAL WASTE ROOM



Source: BKA Architecture, Drawing No. SK010, RevA, Dated 27/04/17 – CONCEPT - Basement

APPENDIX A.5 COLLECTION/LOADING AREA



Source: BKA Architecture, Drawing No. SK010, RevA, Dated 27/04/17 – CONCEPT - Basement

APPENDIX B BETTER PRACTICE GUIDE SPECIFICATIONS

APPENDIX B.1 BIN DIMENSIONS

Crates



Crate size	50L Crate	70L Crate	90L Crate
Height	320 mm	395 mm	420 mm
Length	575 mm	575 mm	450 mm
Width	445 mm	445 mm	450 mm

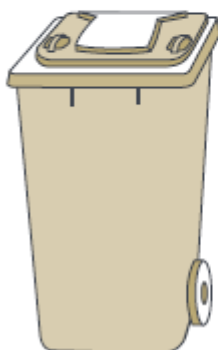
The above dimensions are indicative only of common crate sizes

Mobile garbage bins (MGBs)

MGBs with capacities up to 1700L should comply with the Australian Standard for Mobile Waste Containers (AS 4123). AS 4123 specifies standard sizes and sets out the colour designations for bodies and lids of mobile waste containers that relate to the type of materials they will be used for.

Indicative sizes only for common MGB sizes are provided below. Note that not all MGB sizes are shown; the dimensions are only a guide and differ slightly according to manufacturer, if bins have flat or dome lids and are used with different lifting devices. Refer to AS 4123 for further detail.

Mobile containers with a capacity from 80L to 360L with two wheels



Bin Type	80 Litre MGB	120 Litre MGB	140 Litre MGB	240 Litre MGB	360 Litre MGB
Height	870 mm	940 mm	1065 mm	1080 mm	1100 mm
Depth	530 mm	560 mm	540 mm	735 mm	885 mm
Width	450 mm	485 mm	500 mm	580 mm	600 mm

Mobile containers with a capacity from 500L to 1700L with four wheels



Bin Type	660 Litre MGB	770 Litre MGB	1100 Litre MGB	1300 Litre MGB	1700 Litre MGB
Height	1250	1425	1470	1480	1470
Depth	850	1100	1245	1250	1250
Width	1370	1370	1370	1770	1770

Dome or flat lid containers

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



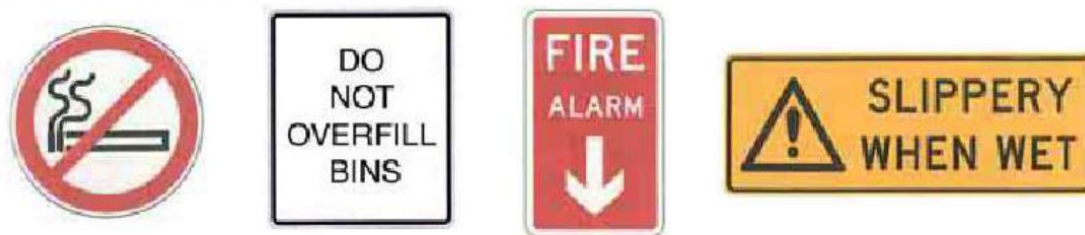
Example bin lid stickers



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: *Better Practice Guide to Waste Management in Multi-Unit Dwellings*, 2008, DECC

APPENDIX B.3 TYPICAL COLLECTION VEHICLE INFORMATION

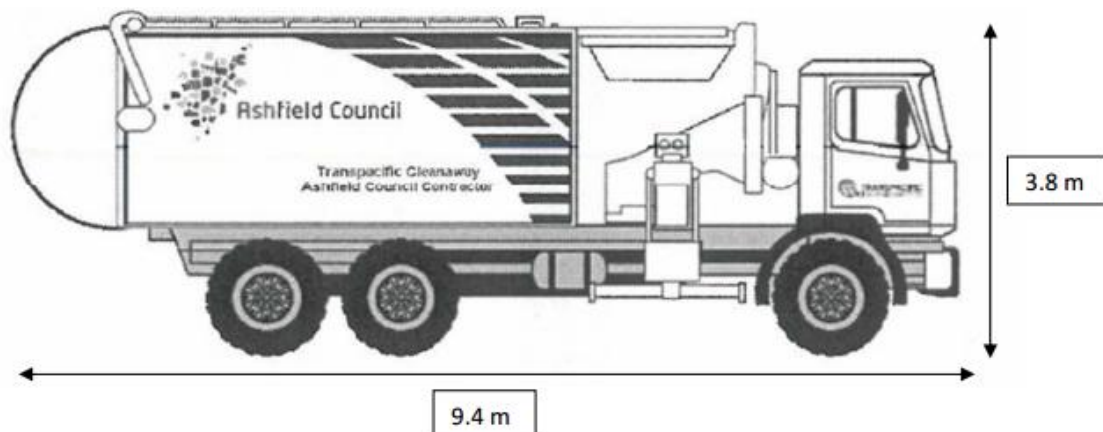
Vehicle Dimensions & Tare

SIDE LOADERS	FRONT AXLE (kg)	REAR AXLE (kg)	TOTAL (kg)
TARE (estimated)	5,851	6,563	12,413
Loaded Truck Mass (estimated)	5,993	17,000	22,993

	Length	Width	Height
Vehicle	9.4 m	2.6 m	3.8 m
Side arm clearance for collection		3.9 m	4.0 m
Turning Circle (wall to wall)		23.2 m	



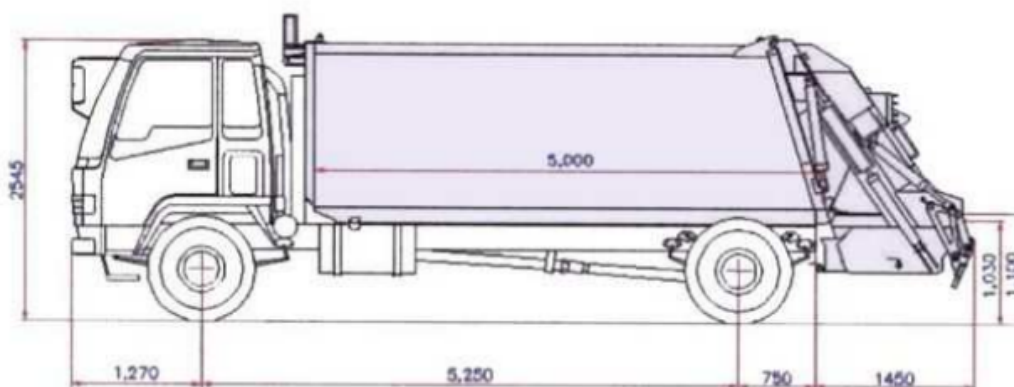
Figure 14: Inner West Council collection vehicle



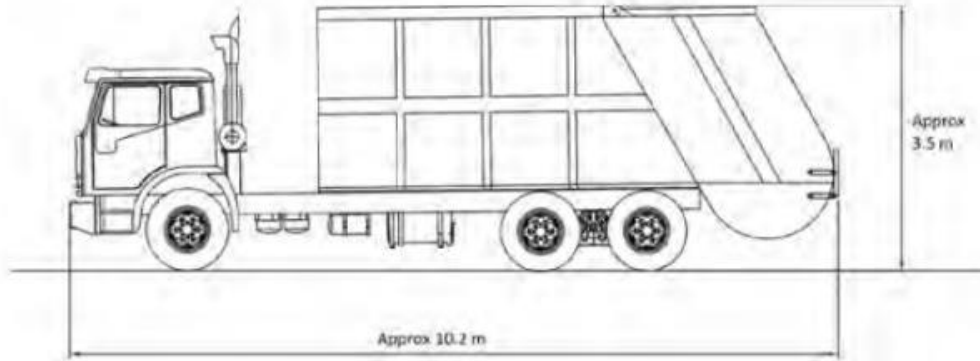
ELEPHANTS FOOT WASTE COMPACTORS PTY LTD ABN 70 001 378 294
Sydney Head Office 44-46 Gibson Ave Padstow NSW 2211 | **PH:** +612 9780 3500 | **Fax:** +612 9707 2588
Website: www.elephantsfoot.com.au | **Email:** info@elephantsfoot.com.au
 Offices in Victoria & Queensland – **Toll Free:** 1800 025 073

Non-Council collection vehicle typical dimensions (commercial premises - for information only: dimensions should be confirmed)

Mini REAR LOADING COLLECTION VEHICLE (app 8m³ capacity)	
Length overall	4.6 - 5 m
Width overall	2.1 m
Operational height	2.4 m
Travel height	2.4 m
Tare weight	2.7 – 3.0 tonnes
Payload weight	ns
Turning circle	ns



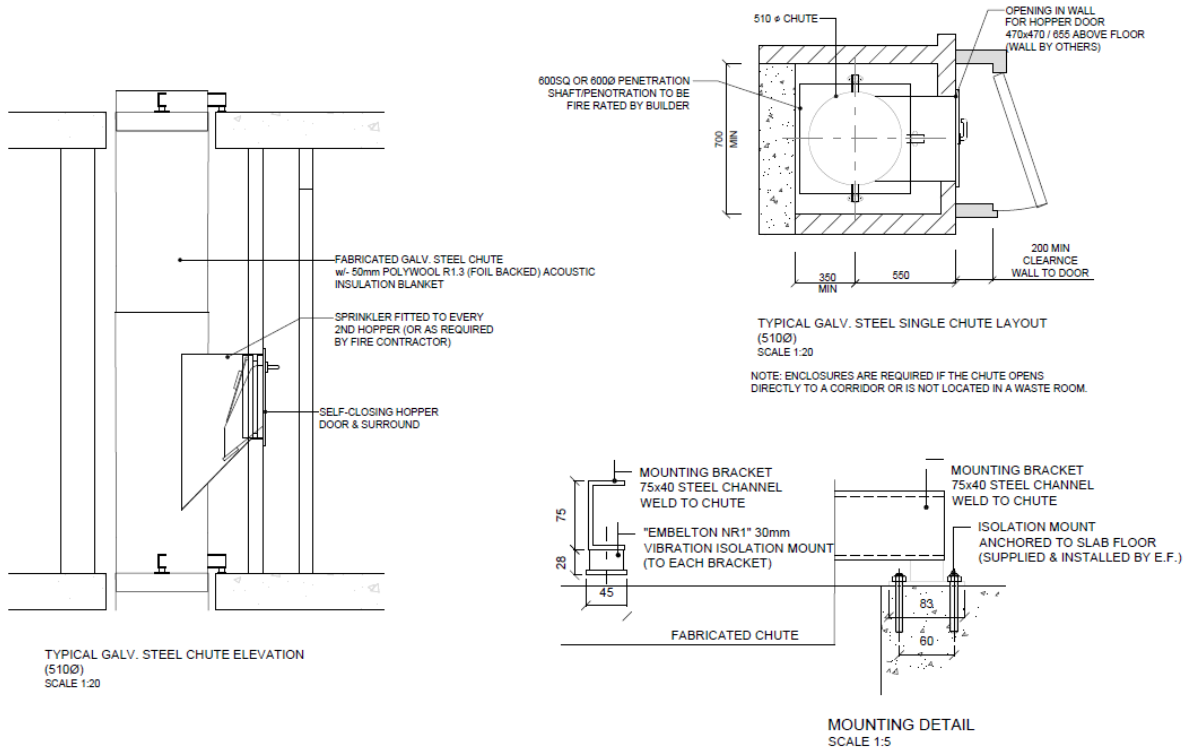
MEDIUM REAR LOADING COLLECTION VEHICLE (app 14m³ capacity)	
Length overall	7.5 - 9 m
Width overall	2.3 m
Operational height	2.4 – 3 m
Travel height	2.4 -3 m
Tare weight	6 -10 tonnes
Payload weight	ns
Turning circle	ns



REAR LOADING COLLECTION VEHICLE	
Length overall	8.0 - 10.3 m
Width overall	2.5 m
Operational height	3.5 – 4.3 m
Travel height	3.5 – 4.3 m
Tare weight	12.4 – 13.0 tonnes
Payload weight	9 tonnes
Turning circle	18 - 25 m

APPENDIX C WASTE MANAGEMENT EQUIPMENT SPECIFICATIONS

APPENDIX C.1 TYPICAL WASTE CHUTE SPECIFICATIONS

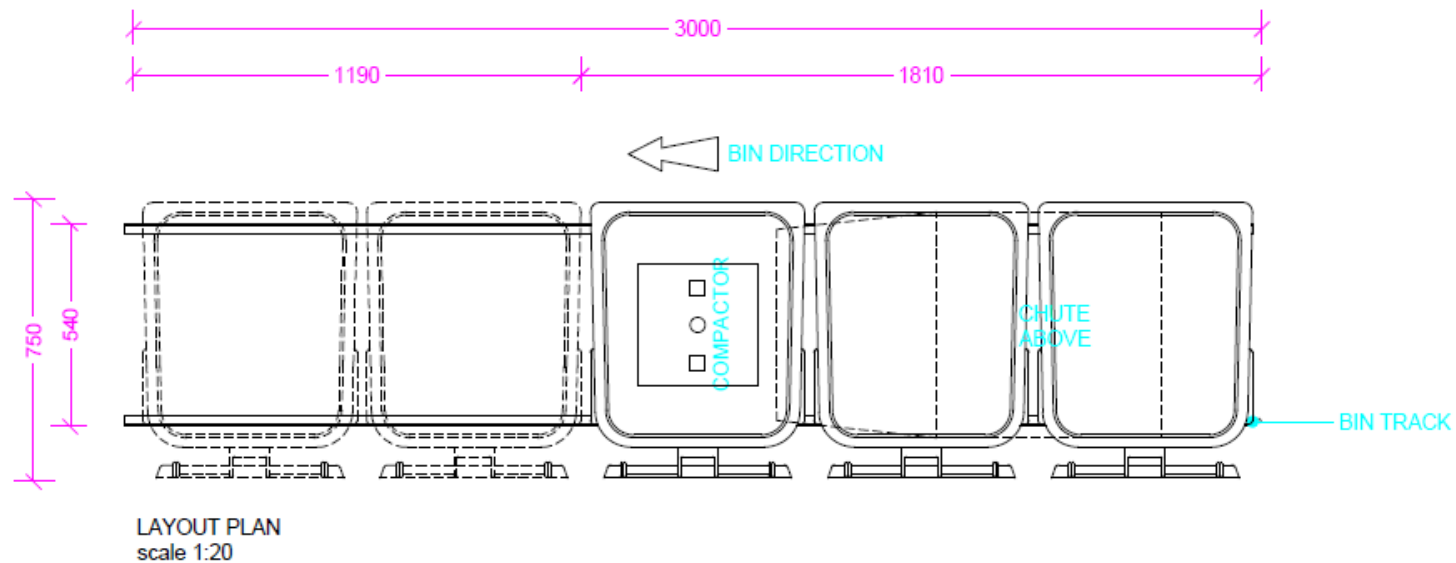


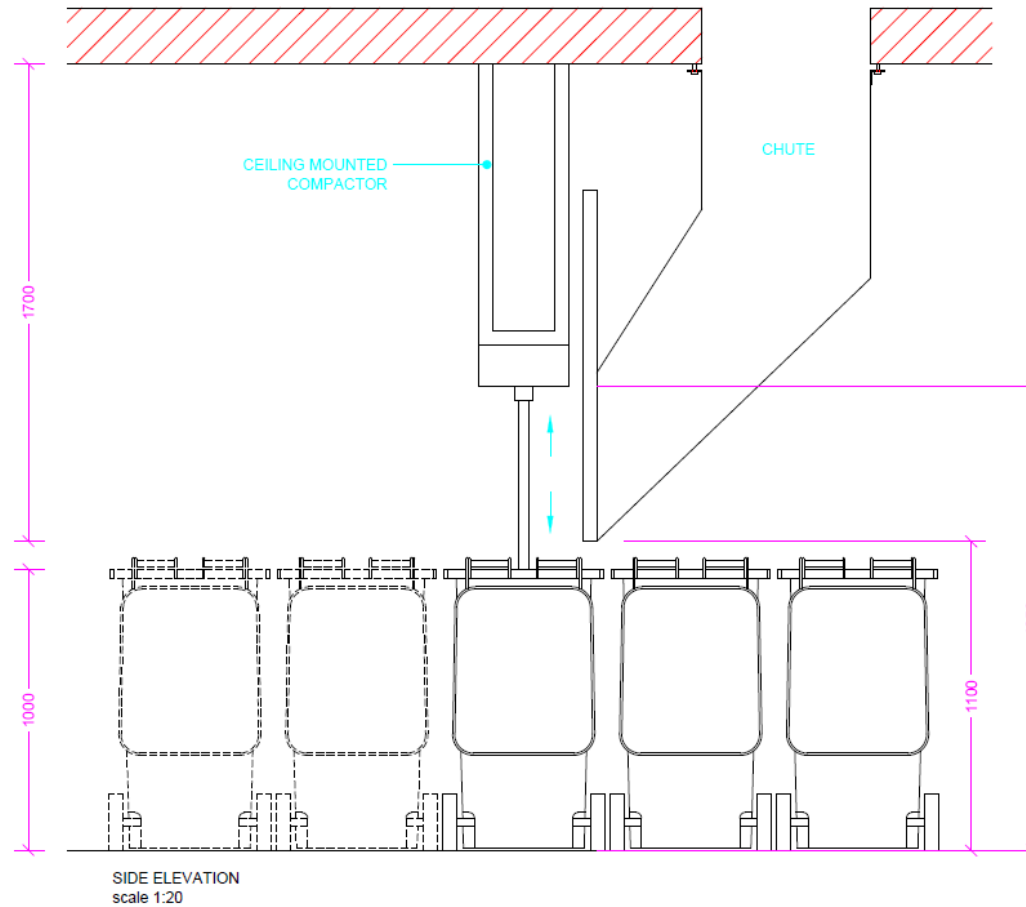
Waste chutes are supplied per the following specifications:

- either 510mm galvanised steel or 510mm recycled LLDPE polyethylene plastic;
- galvanised steel chute hoppers are wrapped with 50mm poly-wool R1.3 noise insulation foil to assist in noise reduction;
- penetrations on each building level at vertically perpendicular points with minimum penetration dimensions of 600mm x 600mm (square or 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 SYSTEM TO SUIT 240L MGB





ELEPHANTS FOOT WASTE COMPACTORS PTY LTD ABN 70 001 378 294
Sydney Head Office 44-46 Gibson Ave Padstow NSW 2211 | **PH:** +612 9780 3500 | **Fax:** +612 9707 2588
Website: www.elephantsfoot.com.au | **Email:** info@elephantsfoot.com.au
 Offices in Victoria & Queensland – **Toll Free:** 1800 025 073

APPENDIX C.3 TYPICAL BIN MOVER



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:

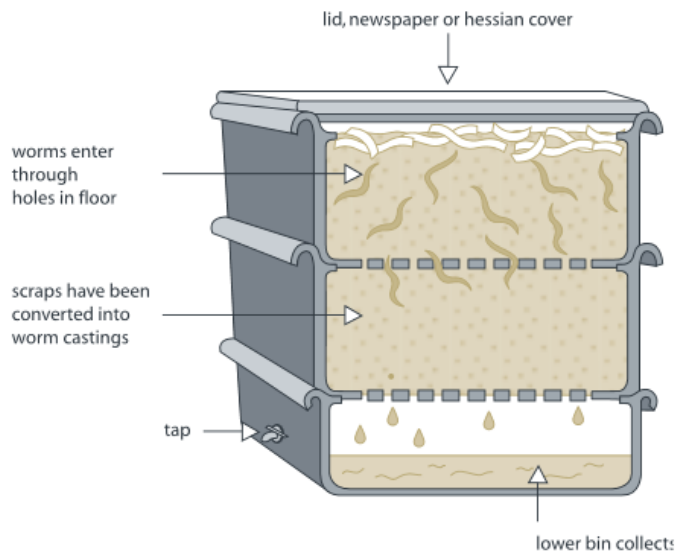
- 1 tonne tow capacity of inclines up to 8 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 4.5 km/h max speed
- 2 x 80amp batteries – includes charger
- Powerful transaxle
- Hitch to suit 660L bins

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 C.4 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 C.5 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 C.6 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*

APPENDIX C.7 TYPICAL PUBLIC PLACE WASTE BINS



** Products and specifications may change according to manufacturer.*

SOURCE: SULO Environmental Technology