88 Christie

88 Christie Street, 71-79 Lithgow Street, 546-564 Pacific Highway St. Leonards
Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

22/05/2020
Revision H

Client

JQZ

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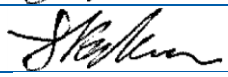
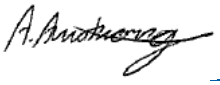
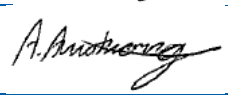
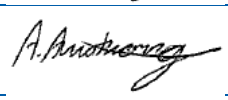
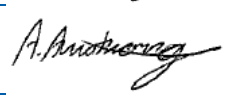
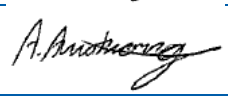
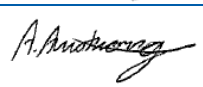
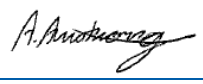
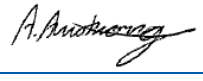
SCOPE

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 EFRS's 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	28/11/2017	J Parker	A Armstrong	Draft	
B	6/12/2017	J Parker	A Armstrong	Amendment	
C	19/12/2017	A Armstrong	N Beattie	Amendment	
D	21/12/2017	A Armstrong	N Beattie	Final	
E	11/04/2018	A Armstrong	E Saidi	Amendment	
F	11/05/2018	A Armstrong	E Saidi	Amendment	
G	26/11/2019	A Armstrong	E Saidi	Amendment	
H	14/05/2020	A Armstrong	E Saidi	Amendment	
I	18/05/2020	D Trinder	A Armstrong	Amendment	
J	22/05/2020	A Armstrong	E Saidi	Amendment	

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GLOSSARY OF TERMS

TERM	DESCRIPTION
Chute	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Chute Discharge	The point at which refuse exits from the refuse chute
Chute Discharge Room	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
Collection Area/Point	The identified position or area where garbage or recyclables are actually loaded onto the collection vehicle
Compactor	A machine for compressing waste into disposable or reusable containers
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
Garbage	All domestic waste (Except recyclables and green waste)
Green Waste	All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers
Hopper	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
L	Litre(s)
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
LRV	Large rigid vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle (HRV)
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
MRV	Medium rigid vehicle
Putrescible Waste	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
Recycling	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines

Refuse	Material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items
SRV	Small rigid vehicle as in AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities, generally incorporating a body width of 2.33

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INTRODUCTION

EFRS has been tasked to prepare the following waste management plan for JQZ for the operational management of waste generated by the mixed use development located at 82-90 Christie Street, 71-79 Lithgow Street, 546-564 Pacific Highway St. Leonards.

Waste management strategies and auditing are a requirement for new developments to provide support for the building design, and promote strong sustainability outcomes for the building. It is EFRS's belief that a successful waste management strategy contains three key objectives:

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

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

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

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

It is essential that this waste management plan is integral to the overall management of the building and clearly communicated to all relevant stakeholders.

DEVELOPMENT SUMMARY

The proposed development falls under the LGA of Lane Cove Council, and consists of 2 x Towers (Tower A & B) incorporating:

- **637** residential units in total (see Table 1 for Unit Breakdown Matrix);
- 31 x retail tenancies across the lower ground, ground and first floor with a total GFA of **4314 m²**;
- 15 x commercial tenancies spanning from the ground level to level 14 with a total GFA of **17584m²**;
- A library on the lower ground level with a GFA of **1064m²**; &
- A supermarket (excluding an associated liquor store and BOH services) with a total GFA of 2424m². ***Note:*** *This component will not be included in this WMP – a separate WMP provided by the supermarket tenant will be provided*.

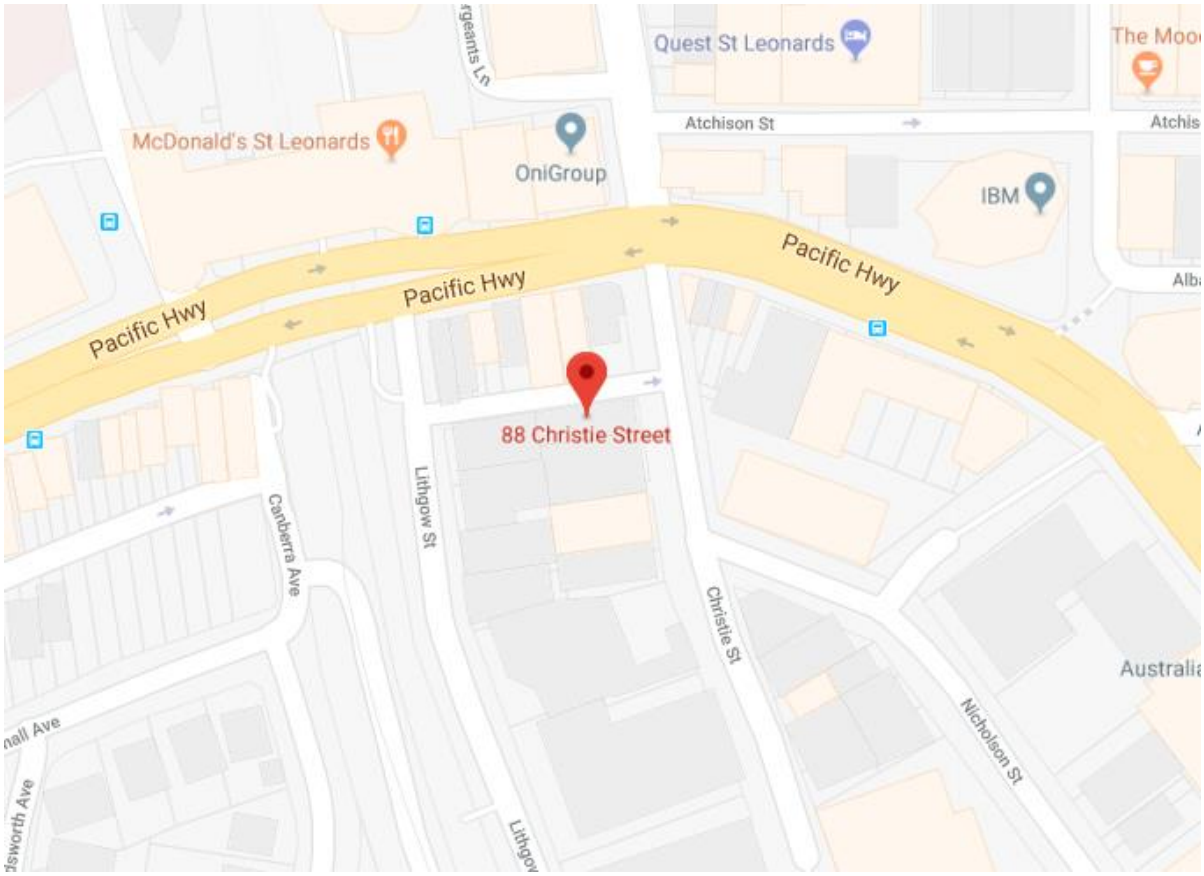
Table 1: Unit Breakdown Matrix

Type	Tower A	Tower B	TOTAL
Studio	0	0	0
1 Bed	121	60	181
2 Bed	260	121	381
3 Bed	55	16	71
4 Bed	4	0	4
5 Bed	0	0	0
	440	**197**	**637**

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

SITE LOCATION

The site is located at 88 Christie Street, as shown in Figure.1. The site has frontages to Christie Street, Pacific Highway and Lithgow Street, with vehicle access via Lithgow Street



Source: Google Maps

LANE COVE COUNCIL

The residential garbage and recycling will be guided by the services and acceptance criteria of the Lane Cove Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Lane Cove Council's *Lane Cove Development Control Plan 2010,* Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

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

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 Lane Cove Council.

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	• 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	• Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; • Ensuring site safety for residents, children, visitors, staff and contractors; • Abiding by all relevant OH&S legislation, regulations, and guidelines; • Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • If a blockage is evident, building management or cleaning staff must immediately take steps to identify the level concerned and clear the blockage • 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	• 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	• 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	• Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Building Contractors	• Removing all construction related waste offsite in a manner that meets all authority requirements.

EDUCATION

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident 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 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.

LIMITATIONS

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

- Council are subject to changing waste and recycling policies and requirements at their own discretion. Information in this operational waste management plan is correct as of November 2017.
- The works agreed to in the fee proposal includes a review of the waste management plans and up to three amendments. Any revisions subsequent to the third amendments will be charged at an hourly rate.
- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by the client, and third parties including Council and government information. The assumptions based on the information contained in the WMP is outside the control of EFRS;
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building managements approach to educating residents and tenants regarding waste management operations and responsibilities;
- The building manager will make adjustments as required based on actual waste volumes (if waste is greater than estimated) and increase the number of bins and collections accordingly;
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures;
- The report has been prepared with all due care however no assurance or representation is made that the WMP reflects the actual outcome and EFRS will not be liable to you for plans or outcomes that are not suitable for your purpose, whether as a result of incorrect or unsuitable information or otherwise;

- EFRS offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Any manual handling equipment recommended should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply;
- Design of waste management chute equipment and systems must be approved by the supplier.

RESIDENTIAL WASTE MANAGEMENT

The *Lane Cove Development Control Plan 2010* has been referenced to calculate the total number of bins required for the residential units.

Lane Cove Council's waste and recycling generation rates for residential developments is as follows:

Waste:	1x 240L MGBs per three units collected weekly
Recycling Co-mingled:	1x 240L MGBs per ten units collected weekly
Recycling Paper:	1x 240L MGBs per ten units collected weekly

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

Building/ Core	# Units	Garbage Generation Rate (L/unit/week)	Generated Garbage (L/week)	Compacted Garbage (2:1) (L/week)	Comingled Recycling Generation Rate (L/unit/week)	Generated Comingled Recycling (L/week)
Tower 1	440	80	35200	17600	24	10560
Tower 2	197	80	15760	7880	24	4728
TOTAL	**637**		**50960**	**25480**		**15288**

**Note: An additional 660L MGB should be provided for each waste room for use during collection periods. These bins are not included in the above figures.*

BIN SUMMARY

The following assumptions have been taken into consideration:

- garbage is compacted at the base of each chute;
- mixed container recycling is not compacted at the base of each chute;
- 240L paper/cardboard recycling bins are located in the waste compartment on each residential level.

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

Garbage

- **38 x 660L** MGBs collected **weekly**
  - 26 x 660L MGBs for Tower 1
  - 12 x 660L MGBs for Tower 2

Mixed Container Recycling

- **24 x 660L** MGBs collected **weekly**
  - 16 x 660L MGBs for Tower 1
  - 8 x 660L MGBs for Tower 2

Paper & Cardboard Recycling

- **71 x 240L** MGBs collected **weekly**
  - 47 x 240L MGBs for Tower 1
  - 24 x 240L MGBs for Tower 2

Note: *The Applicant has been advised that additional collection frequencies on top of Councils standard service incurs additional service charges.*

HOUSEHOLD WASTE

Two (2) garbage chutes and 2 recycling chutes will be installed with access provided on all residential levels of each tower. Garbage chutes will be used to transfer waste to a room that is provided with a garbage compactor and carousel and/or linear systems. Recycling chutes will be used to transfer recycling to a room that is provided with recycling carousel and/or linear systems.

Garbage discharges into 660L MGBs placed on linear compactor tracks and mixed container recycling) into 660L MGBs placed on linear tracks (with no compaction). The discharge is located in the waste and recycling discharge rooms on basement level 2 for each tower.

240L paper/cardboard MGBs will be stored in allocated paper/cardboard recycling rooms on basement 7, which is a residential basement. Signage will be provided on all chute doors directing residents to the basement 7 waste room to dispose of paper/cardboard recyclables.

On collection days, the building caretaker will transfer full garbage and recycling bins from the waste and recycling discharge rooms on Basement 2 and paper/cardboard recycling bins (basement 7) to the collection room on the lower ground level, via the designated goods lift. An appropriate bin movement aid will be used to transfer MGBs throughout the basement level (see APPENDIX B.4 for Typical Bin Movers). This device will be stored securely in the collection room.

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 1.8m to allow for easy movement of large waste items in and out of the room. A sliding door will be used as opposed to hinged doors to allow easy access for bulk waste items.

Lane Cove council requires that any development with 10 or more dwellings must have a bulky goods room. Lane cove council requires that the bins are designed to the following minimum sizes:

- 1-10 units - $10m^2$
- 11-20 units - $20m^2$
- **>21 units - $30m^2$**

The bulky goods storage room provided is **$30m^2$** and is located on basement 2.

Building Management will be responsible for bulky waste movements and a concierge service will be implemented. Residents will be required to liaise and book bulk waste movements with building management. Only the building caretaker and concierge will have access to the bulky goods storage 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 place throughout public spaces to minimise the likelihood of littering (see 0).

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.

Public areas on commercial developments such as food courts will be managed by building management. Cleaners will circulate throughout the food court while clearing tables and will remove waste as required.

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

Tenancy	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)
C01	Commercial	17584.00	10	12308.80	10	12308.80
	Library	1063.80	10	744.66	10	744.66
		18647.80		**13053.46**		**13053.46**
Collections & Equipment		Bin Size (L)		1100	Bin Size (L)	1100
		Collections per Week		3	Collections per Week	3
		No. Bins Required		4	No. Bins Required	4
		Storage Room		25sqm		

Table 5: Calculated Waste Generation – Retail

Tenancy	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)
B0101	Non-Food (>100m^2)	212.80	50	744.80	50	744.80
B0102	Non-Food (>100m^2)	92.30	50	323.05	50	323.05
B0103	Non-Food (>100m^2)	194.30	50	680.05	50	680.05
LG01	Non-Food (>100m^2)	87.70	50	306.95	50	306.95
LG02	Non-Food (>100m^2)	19.90	50	69.65	50	69.65
LG03	Non-Food (>100m^2)	273.00	50	955.50	50	955.50
LG04	Non-Food (>100m^2)	243.70	50	852.95	50	852.95
LG05	Non-Food (<100m^2)	132.70	50	464.45	25	232.23
LG06	Non-Food (<100m^2)	64.10	50	224.35	25	112.18
LG07	Non-Food (<100m^2)	104.40	50	365.40	25	182.70
LG08	Non-Food (<100m^2)	78.90	50	276.15	25	138.08
LG09	Non-Food (<100m^2)	130.60	50	457.10	25	228.55
LG10	Non-Food (>100m^2)	102.40	50	358.40	50	358.40
LG11	Non-Food (<100m^2)	72.60	50	254.10	25	127.05
G01	Non-Food (<100m2)	96.90	50	339.15	25	169.58
G02	Non-Food (<100m2)	59.80	50	209.30	25	104.65
G03	Non-Food (<100m^2)	24.60	50	86.10	25	43.05
G04	Restaurant	532.80	670	24988.32	135	5034.96
G05	Restaurant	128.40	670	6021.96	135	1213.38
G06	Restaurant	270.60	670	12691.14	135	2557.17
G07	Restaurant	182.20	670	8545.18	135	1721.79
G08	Non-Food (<100m^2)	118.30	50	414.05	25	207.03
G09	Non-Food (<100m^2)	81.80	50	286.30	25	143.15
G10	Non-Food (<100m^2)	46.00	50	161.00	25	80.50
G11	Non-Food (<100m^2)	36.60	50	128.10	25	64.05
G12	Non-Food (<100m^2)	81.20	50	284.20	25	142.10
G13	Non-Food (<100m^2)	69.20	50	242.20	25	121.10
G14	Non-Food (<100m^2)	84.00	50	294.00	25	147.00
G15	Non-Food (<100m^2)	44.30	50	155.05	25	77.53
G16	Non-Food (<100m^2)	46.00	50	161.00	25	80.50
101	Non-Food (<100m2)	602.70	50	2109.45	25	1054.73
	TOTAL	**4314.80**		**63449.40**		**18274.38**
Collections & Equipment		Bin Size (L)		1100	Bin Size (L)	1100
		Collections per Week		5	Collections per Week	3
		No. Bins Required		12	No. Bins Required	6
Waste Rooms		Equipment		None		
		Storage Room		60sqm		

COMMERCIAL & LIBRARY WASTE MANAGEMENT

Typically, receptacles for garbage and recycling are positioned next to each workers desk or workstation. 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 then transported to the commercial waste room on the lower ground level.

RETAIL WASTE MANAGEMENT

Tenants will be responsible for their own storage of garbage and recycling back of house (BOH) during daily operations.

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.

On completion of each trading day or as required, nominated retail staff/cleaners will transport their garbage and recycling to the retail waste room on the lower ground level 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 precinct area. This should be measured against bulk delivery of oils where the same vehicle is used to remove containers of waste cooking oils (see APPENDIX x 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.

SUPERMARKET

The Supermarket retail area equates to 2424m² (excluding BOH operations and associated liquor outlet).

Waste streams from the supermarket and liquor outlet will be detailed in a separate waste management plan supplied by the tenant for approval. It is envisaged that waste and cardboard recycling will be collected by a nationally appointed private waste contractors with supermarket cardboard waste being baled. The baler will be located BOH and operated by appointed supermarket staff. The liquor store will be provided with appropriate collection bins for garbage and recycling; cardboard which will be the main waste stream generated.

240L MGB for organic waste will be utilised by the supermarket. Number of bins required TBA by the supermarket. Bins will be located BOH and full bins stored in cool rooms prior to collection.

All waste management for the supermarket will be handled in the loading dock area and removed from the loading dock by their appointed waste services provider.

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.

The developer must contact a trailer and tractor consultant to provide equipment recommendations. Examples of motorised bin moving equipment can be found in APPENDIX B.4).

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 on a weekly basis.

On collection days, the building caretaker will transfer full garbage and recycling bins from the waste discharge rooms on Basement 2 to the collection room on the lower ground level, via the designated goods lift. An appropriate bin tractor and trailer will be used to transfer MGBs (see APPENDIX B.4 for Bin Tractor & Trailer).

Council's waste vehicle will access the site via Lithgow Street and pull into the loading area from where the bins are to be serviced.

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

The building manager/waste caretaker will then be responsible for returning all bins to the relevant location to resume operational use.

RETAIL/COMMERCIAL

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

The contractor's waste vehicle will access the site via Lithgow Street and pull into the loading area from where the bins are to be serviced.

COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant 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.

INSTALLATION EQUIPMENT AND DESIGN

EQUIPMENT SUMMARY

Table 6: Equipment Summary

Component	Part	Qty	Notes
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic 510mm or 610mm (for 20+ levels)	4	510/610mm diameter (See APPENDIX C for Typical Chute Section)
Equipment A	Garbage Tower A: 3-bin 660L MGB Linear Track System with Compactor Tower B: 2-bin 660L MGB Linear Track System with Compactor	2	(See APPENDIX C.2 for Typical Carousel)
	Mixed Container Recycling Tower A & B: 2-bin 660L MGB Linear Track System without Compactor	2	See APPENDIX C.2 for Typical Linear System)
Equipment B	Suitable Bin Tractor and Trailer	N/A	(See Appendix B.4)

WASTE ROOM AREAS

Access to waste discharge rooms should be provided to the building manager/waste caretaker **only**. Under no circumstances should access be provided to any residents, or waste collection staff.

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

Doors to all rooms must be 1800mm wide and should ideally be sliding doors as opposed to hinged doors to enable easy access and manoeuvring of 660L MGBs.

The areas allocated for residential waste rooms, commercial/retail bin store, bulky goods and collection areas are detailed in Table 7 below. The areas provided are estimates only. Final areas will depend upon room and equipment layouts.

Table 7: Waste Room Areas

Level	Waste Room Type	Equipment	Allocated Area (m^2)
Basement Level 2 (Tower A)	Residential Waste & Recycling Chute Room 1 (Appendix A.3)	1 x 3-Bin 660L Linear System (Garbage) 1 x 2-Bin 660L Linear System (Mixed Container Recycling) 2 x 660L MGBs (Garbage) 2 x 660L MGBs (Mixed Container Recycling)	30
Basement Level 2 (Tower B)	Residential Waste & Recycling Chute Room 2 (Appendix A.3)	1 x 2-Bin 660L Linear System (Garbage) 1 x 2-Bin 660L Linear Track (Mixed Container Recycling) 2 x 660L MGBs (Garbage) 2 x 660L MGBs (Mixed Container Recycling)	30
Basement Level 1	Retail Waste Room (Appendix A.4)	12 x 1100L MGBs (Garbage) 6 x 1100L MGBs (Recycling)	55
	Commercial Waste Room (Appendix A.4)	4 x 1100L MGBs (Garbage) 4 x 1100L MGBs (Recycling)	30
	Collection/Loading Area (Appendix A.4)	38 x 660L MGBs (Garbage) 24 x 660L MGBs (Mixed Container Recycling) 70 x 240L MGBs (Paper/Cardboard Recycling)	190
Basement Level 2	Bulky Goods Storage (Appendix A3)	N/A	30
Basement Level 7 (Tower A)	Paper/Cardboard Recycling Room	47 x 240L MGBs (Paper/Cardboard Recycling)	40
Basement Level 7 (Tower B)	Paper/Cardboard Recycling Room	24 x 240L MGBs (Paper/Cardboard Recycling)	24

WASTE ROOMS

CONSTRUCTION REQUIREMENTS

The waste and recycling rooms 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, 1800mm wide sliding doors should be used;
- All personnel doors are hinged, lockable and self-closing;
- Waste collection area must hold all bins – bin movements should be with ease of access;
- Conform to the building code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

The building manager/caretaker is responsible for waste room signage including safety signage (*see APPENDIX B.2*). Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in the bin underneath.

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

VENTILATION

Waste and recycling rooms must have their own exhaust ventilation system either;

- Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum; or
- Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

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

USEFUL CONTACTS

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

Lane Cove Council Customer Service
Phone: (02) 9911 3555 Email: lccouncil@lanecove.nsw.gov.au

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

CLOSED LOOP (Organic Dehydrator)
Phone: 02 9339 9801

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

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

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

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

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

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

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

MOVEXX (Bin Movers)
Phone: 1300 763 444

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

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

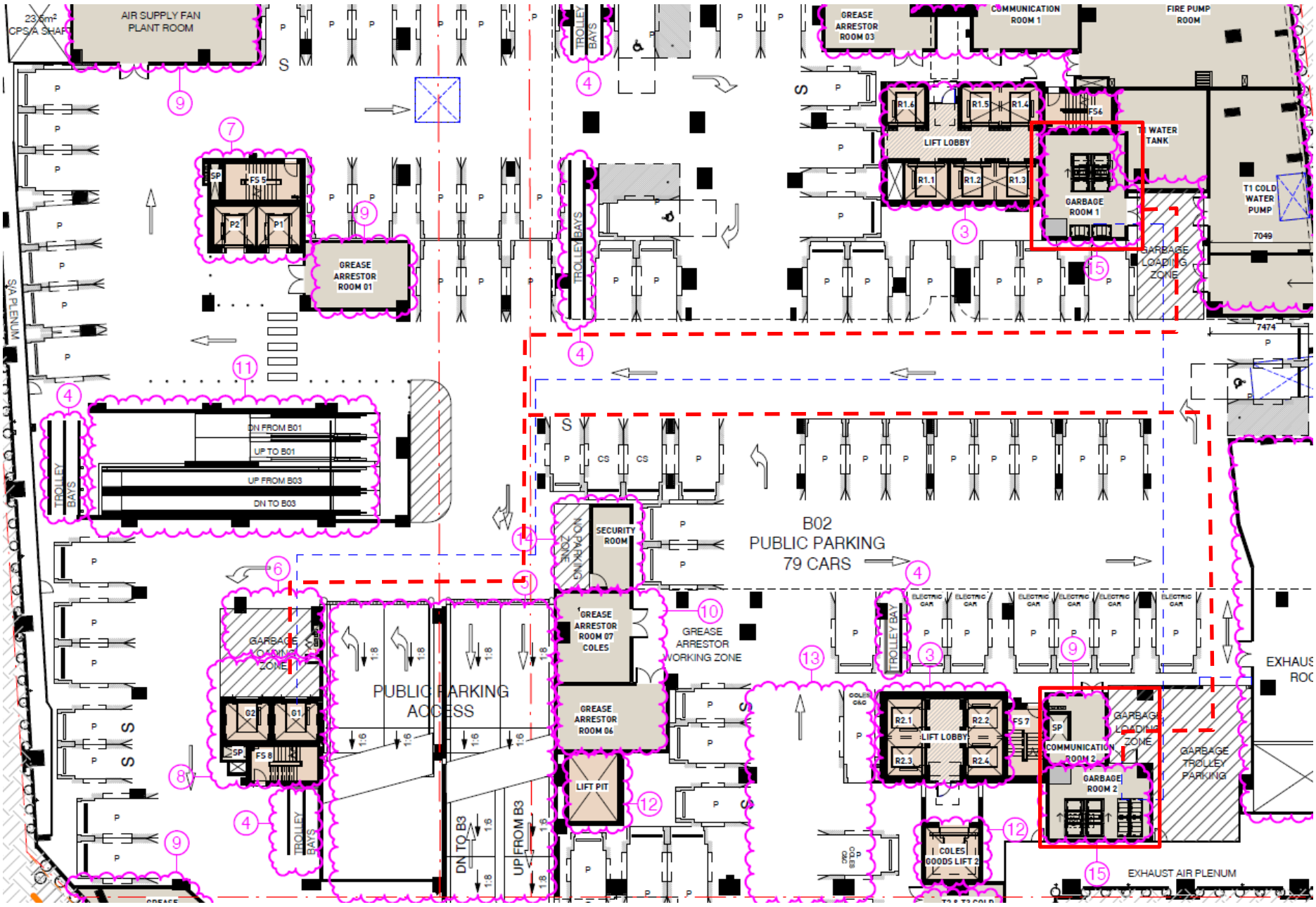
APPENDIX A.1 TYPICAL CHUTE LOCATIONS

Source: Source: PTW, DA-10-2300 Rev K 04/05/2020 - Level 3

APPENDIX A.2 BASEMENT 7 DISPLAYING PAPER/CARDBOARD RECYCLING ROOMS

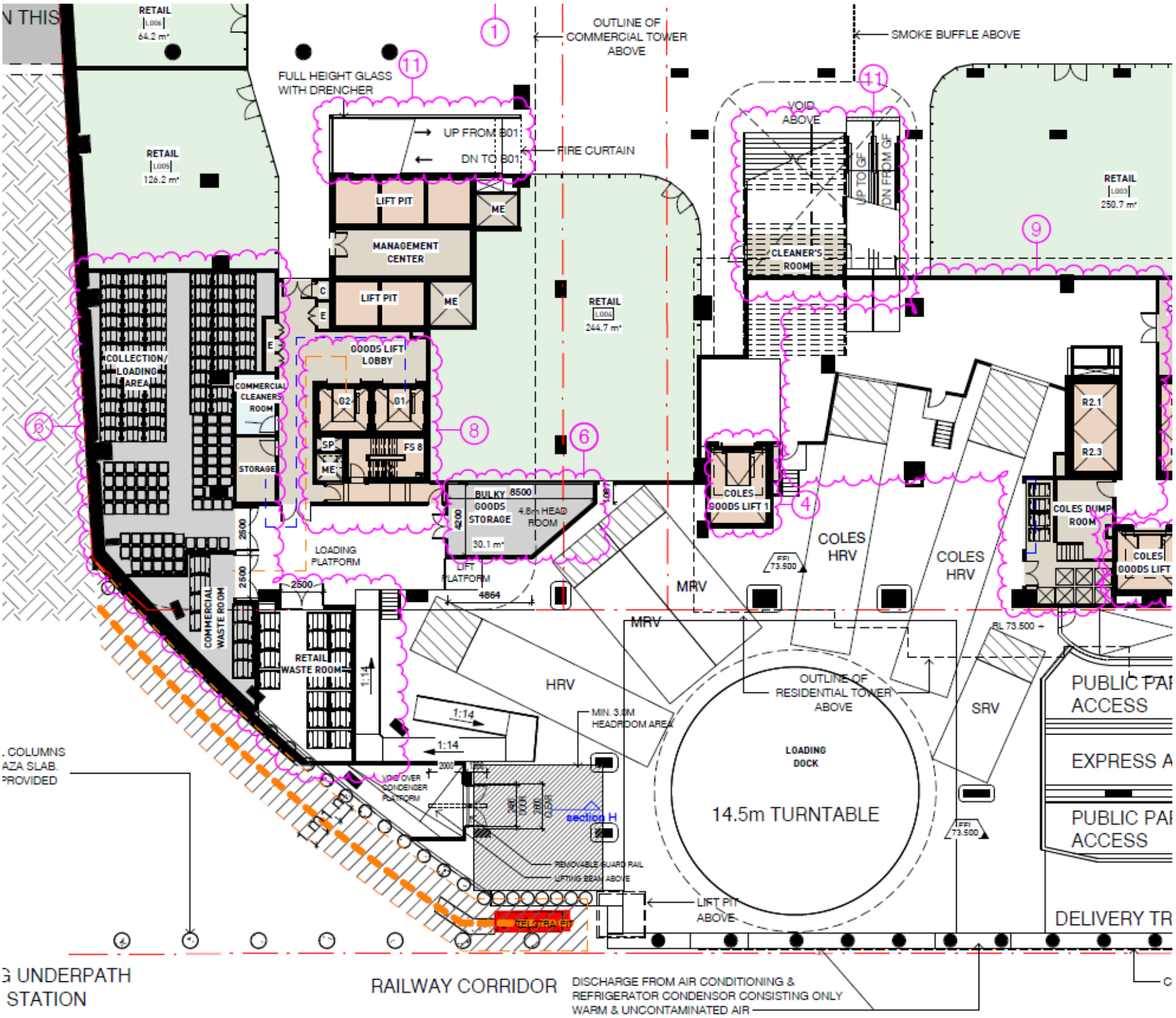
Source: PTW, DA-10-1200 Rev J 04/05/2020 - Basement 7

APPENDIX A.3 BASEMENT 2 DISPLAYING WASTE AND RECYCLING DISCHARGE ROOMS



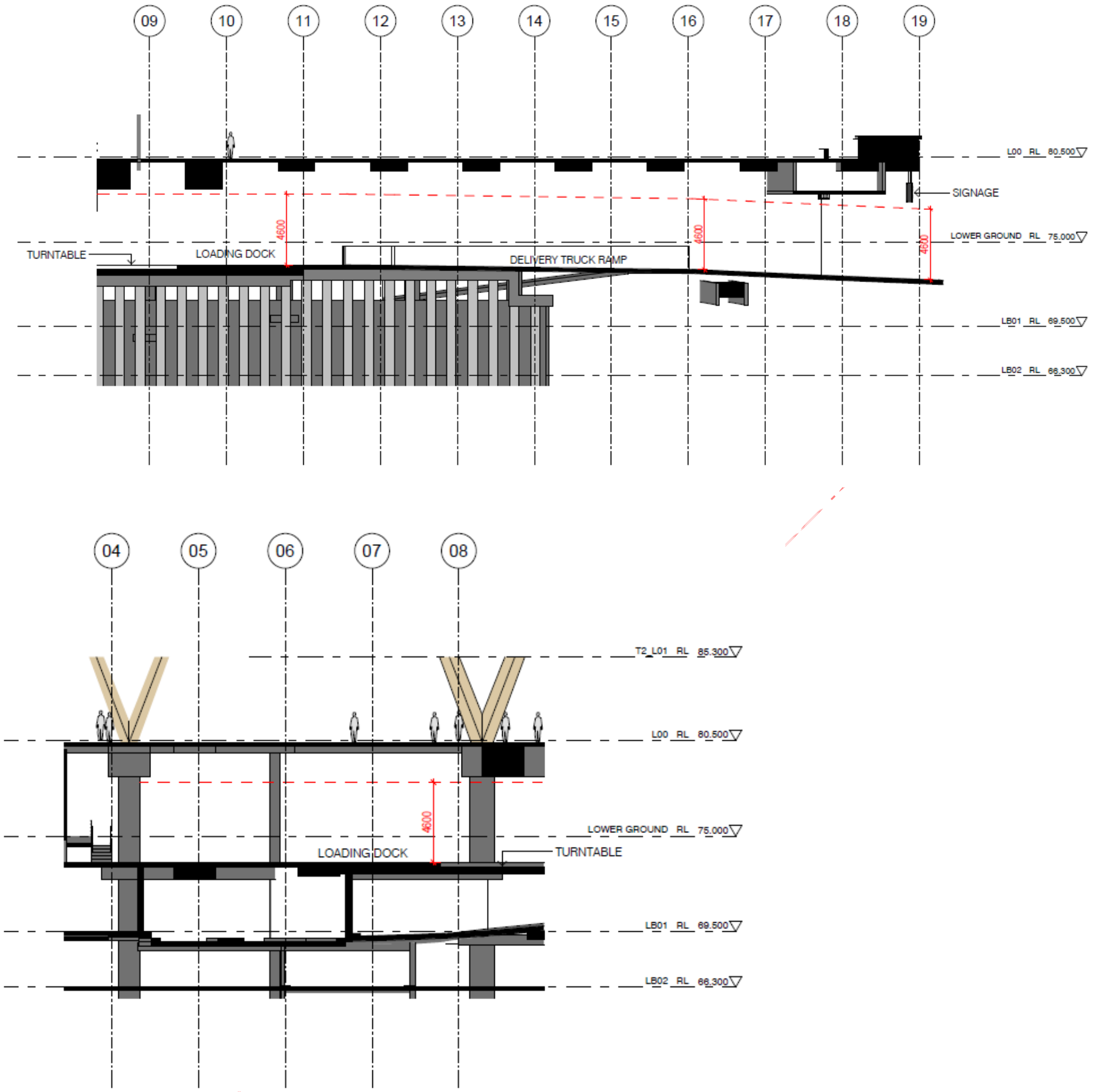
Source: PTW, DA-10-1700 Rev J 04/05/2020 - Basement 2

APPENDIX A.4 COLLECTION/LOADING AREA



Source: PTW, DA-10-1900 Rev L 04/05/2020 - Lower Ground

APPENDIX A.5 LOADING DOCK SECTION PLANS



Source: PTW Architects

APPENDIX B PRIMARY WASTE MANAGEMENT PROVISION

APPENDIX B.1 LANE COVE BIN SPECIFICATIONS

Bin type	Height	Depth	Width
80 Litre Bin	870mm	530mm	450mm
120 Litre Bin	940mm	560mm	485mm
240 Litre Bin	1080mm	735mm	580mm

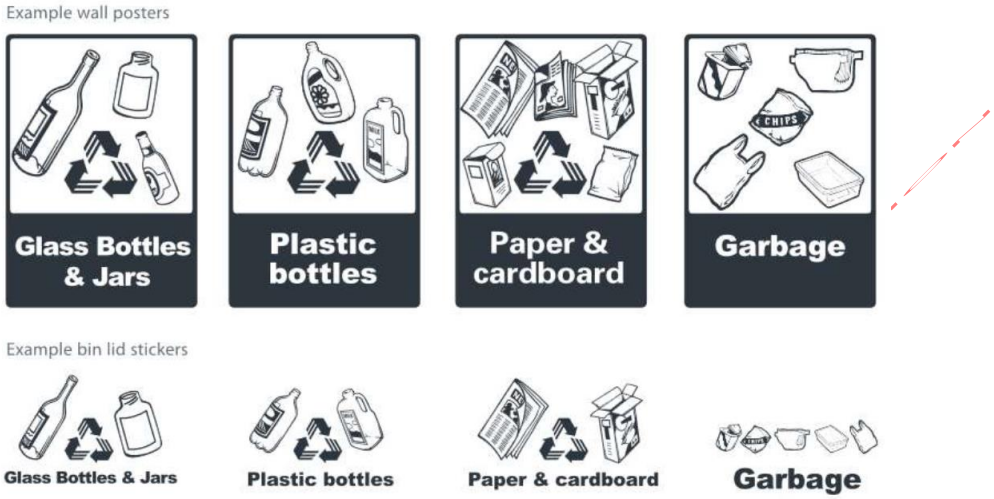
These dimensions are only a guide and differ slightly according to manufacturer, if bins have flat or dome lids and are used with different lifting devices.

Source: Lane Cove Development Control Plan 2010

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.



SAFETY SIGNS

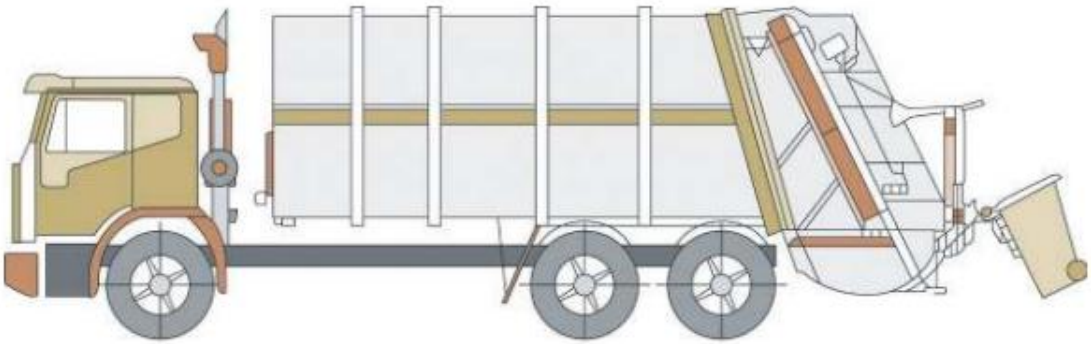
The design and use of safety signs for waste rooms and enclosures should comply with AS1319 Safety Signs for Occupational Environment. Safety signs should be used to regulate and control safety behaviour, warn of hazards and provide emergency information, including fire protection information. Below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

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

APPENDIX B.3 LANE COVE COLLECTION VEHICLE INFORMATION

- **Typical Council Garbage Truck used for Domestic Waste Collection – Rear Load**

• Length overall	• 8.0 metres
• Width overall	• 2.5 metres
• Operational height	• 4.3 metres
• Travel height	• 4.3 metres
• Weight (vehicle and load)	• 22.5 tonnes
• Weight (vehicle only)	• 13 tonnes
• Turning Circle	• 25.0 metres



rearloader garbage truck

APPENDIX B.4 TYPICAL BIN TRACTOR & TRAILER

RIDE OR SEAT ON TUG – BIN MOVER

DEC Bull+Canopy and Aluminium Trailer

DEC Bull with Bin Towing Devices

Skatework with Trailer

Cushman Burden Carrier with Trailer

Cushman 5/8K + Bin Towing

Motrec MP-240 with trailer

Typical Applications:

- Move trolleys, waste bin trailers and 240L, 660 L/ 1100 Litre bins up and down a ramp incline. Ideal for Apartment Buildings (to move waste bins located at a basement level to road level).
- Quiet, smooth operation with zero emissions and simple to use, no driver's licence required.

Features:

- Up to 1 Tonne on a ramp surface (depending on ballast and incline)
- Anti-rollback system on slopes
- Small Foot print: 130 cm Long x 789 cm Wide x 90 cm High (with handle in folded position)
- Pin Hitch is standard however alternate hitching options may be available to suit your applications (e.g. Tow ball)

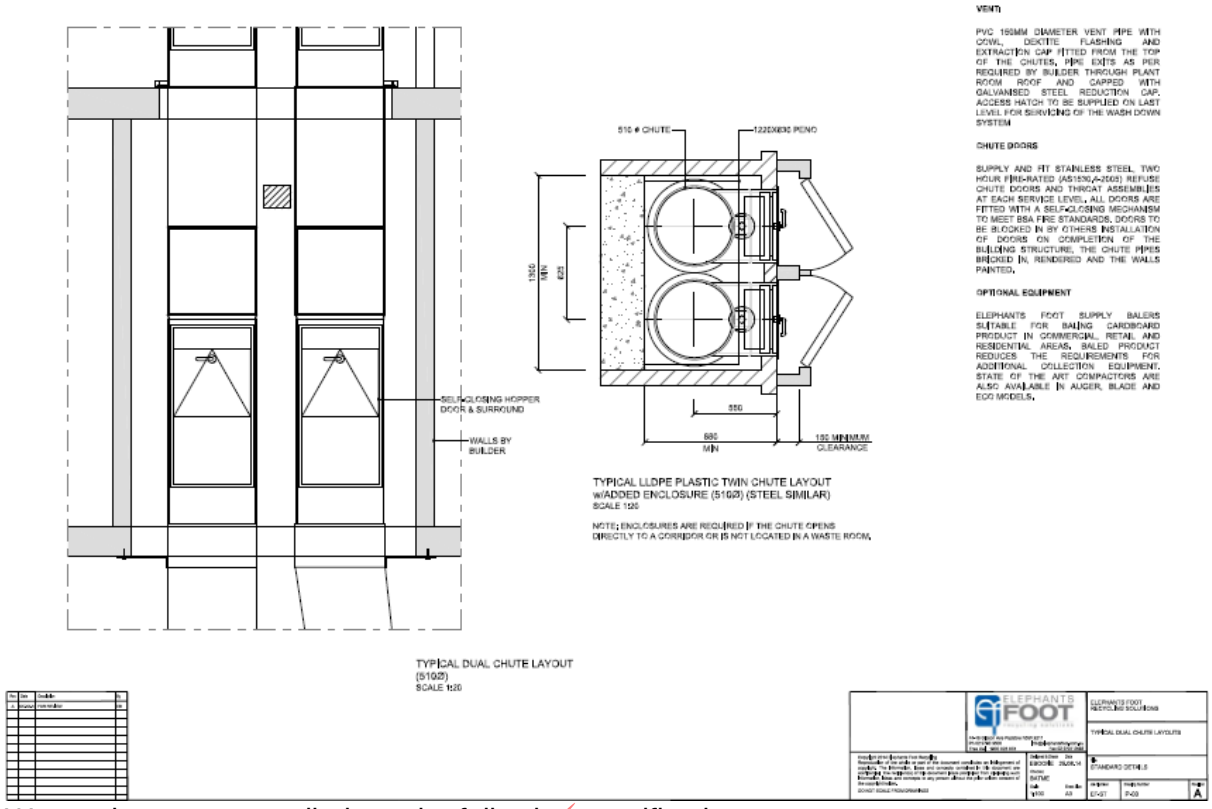
Safety Features:

- Intuitive paddle lever control
- Safety button stops and repels the unit if activated when reversing
- Site assessment recommended to check ramp incline steepness (see useful contacts)

Spacepac Industries - http://ev.spacepac.com.au/

APPENDIX C INSTALLATION EQUIPMENT

APPENDIX C.1 TYPICAL DUAL WASTE CHUTE SPECIFICATIONS

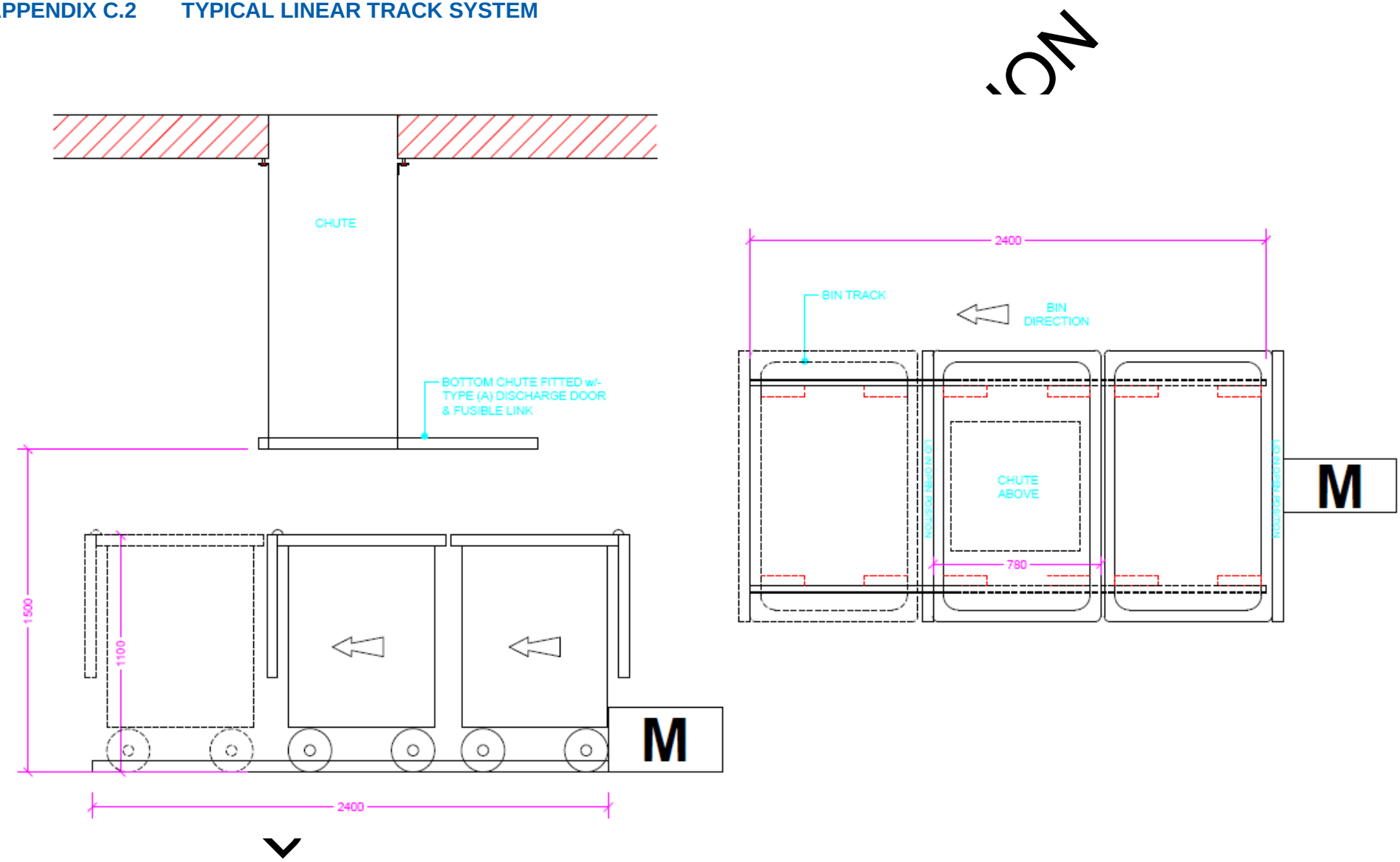


Waste chutes are supplied per the following specifications:

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

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

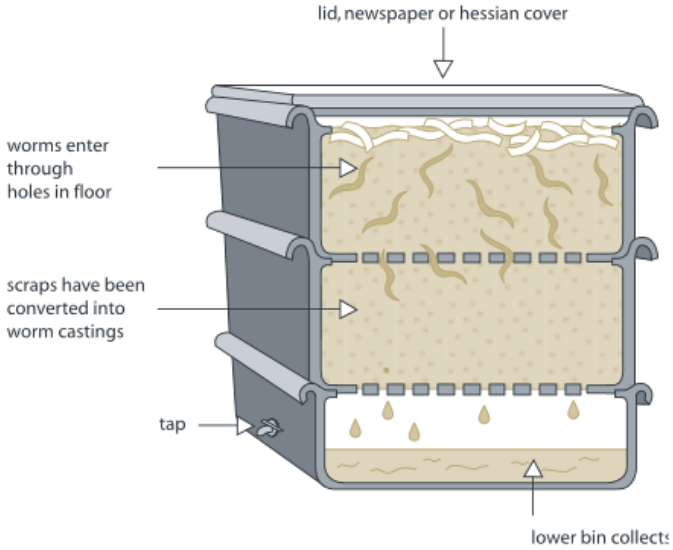
APPENDIX C.2 TYPICAL LINEAR TRACK SYSTEM



APPENDIX D SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX D.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



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

Height – 300mm per level

Width – 600mm

Length – 900mm

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

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

APPENDIX D.2 TYPICAL APARTMENT STYLE COMPOST BINS

Apartment Style Compost bin – available from hardware stores

Suitable for:

- Vegetables
- Coffee grounds and filters
- Tea and tea bags
- Crushed eggshells (but not eggs)
- Nutshells
- Houseplants
- Leaves
- Cardboard rolls, cereal
- Boxes, brown paper bags
- Clean paper
- Shredded newspaper
- Fireplace ashes
- Wood chips, sawdust,
- Toothpicks, burnt matches
- Cotton and wool rags
- Dryer and vacuum cleaner lint
- Hair and fur
- Hay and straw

APPENDIX D.3 ELECTRIC ORGANIC COMPOST BIN

CLOSED LOOP
LOVE WHAT YOU DO
CLO'ey

Product Specifications

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

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

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

APPENDIX D.4 COOKING OIL CONTAINERS

AUSCOL
A GrainCorp business

Home | About | Services | Our Parent Company | Contact

The RIGHT WAY for Cooking Oil Collection Systems

Drums 205L

Pour in Bulk Tank

View Brochure

Oil Kaddy System

View Brochure

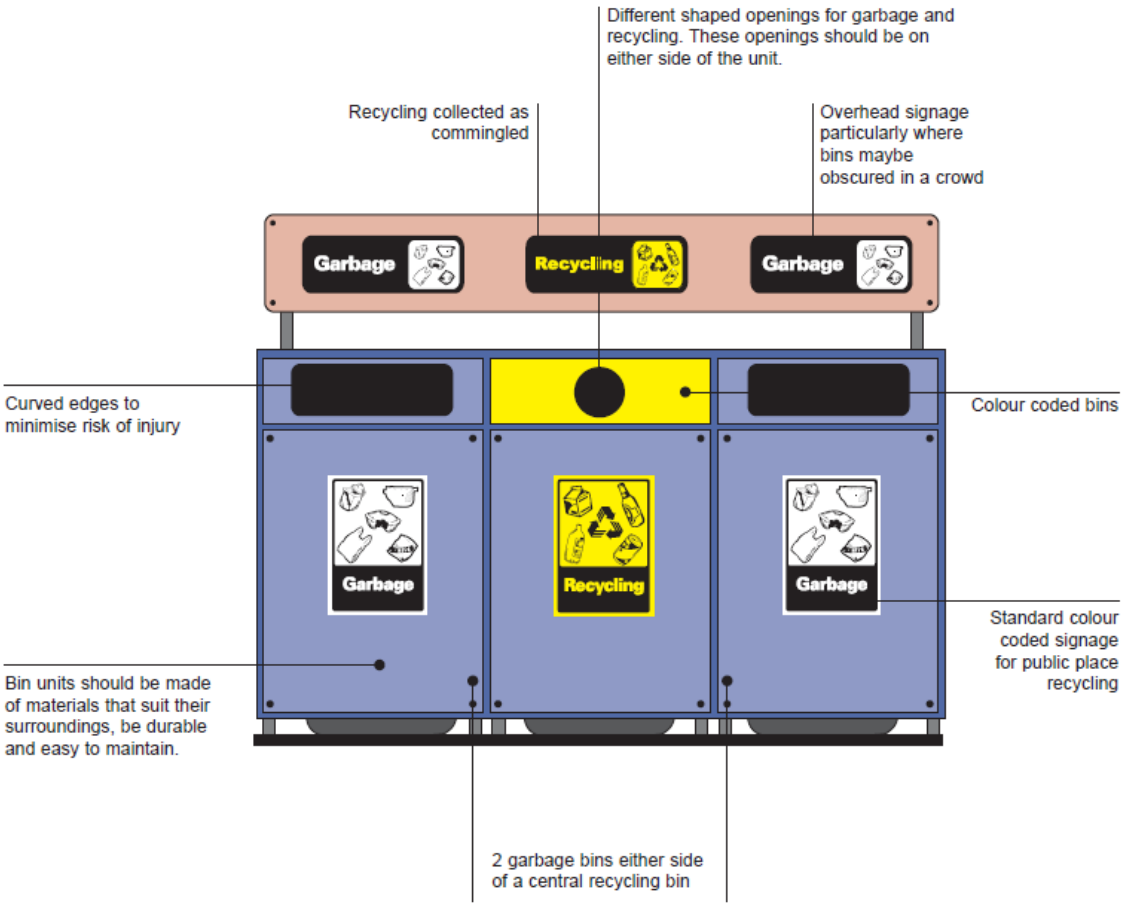
- Collection Service
- Collection Systems
- Recycling & Environment
- Safety
- Fresh Oil *(WA Only)*

Eco Systems

Direct-Connect to Fryer

APPENDIX D.5 TYPICAL BACK OF HOUSE BINS 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*