WASTE MANAGEMENT PLAN

PREPARED FOR

Sissons Architects

Mixed Use Development

24-26 Railway Parade
Westmead NSW 2145

20/04/2018

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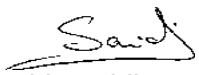
Authorised By: 

Eddy Saidi

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DISTRIBUTION LIST

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EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the mixed use development located at 24-26 Railway Parade, Westmead NSW.

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
Baler	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
Chute	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)
Collection Area/Point	The position or area where waste 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)
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
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
Green	Garden organics such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers, and weeds
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)
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 660, 1000 or 1100, 1500 or 2000

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INTRODUCTION

The following waste management plan pertains to the mixed use development located at 24-26 Railway Parade, Westmead NSW. 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:

- One, 15 level building incorporating:
  - **33 residential** units spanning from level 9 to level 14 (see Table. 1 for Unit Breakdown Matrix);
  - **97**, 1-bedroom hotel suites spanning from level 3 to level 7;
  - A medical centre on level 2 occupying a GFA of **1485m^2**;
  - A tavern on level 1 - occupying a GFA of **491m^2**
  - Food and beverage retail tenancies on level 1 occupying a GFA of **315m^2**
  - Non-food retail tenancies on the upper ground level occupying a GFA of **246m^2**
  - A gym on basement 1 occupying a GFA of **442m^2**
  - A supermarket (**843m^2**) on the upper ground floor – ***Note****: This component will not be included in this waste management plan – please refer to the separate waste management plan on the scheme for the supermarket.*

Table 1: *Residential Unit Breakdown Matrix*

Building	# Units	% Mix
1 Bedroom	9	27.2727
2 Bedroom	21	63.6364
3 Bedroom	3	9.09091
Total	**33**	

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

PARRAMATTA CITY 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 acceptance criteria of the Parramatta City Council. All garbage and recycling generated by the entire development will be collected by a private waste contractor.

All waste facilities and equipment are to be designed and constructed to be in compliance with Parramatta City Council's *Development Control Plan 2011* and *Waste Avoidance and Resource Recovery Plan 2007*, NSW Office of Environment and Heritage's *Model Waste Not Development Control Plan Chapter 2008,* Australian Standards and statutory requirements.

OBJECTIVES

- Reduce the quantity of waste and encourage the recycling of waste generated by demolition and the construction of new developments
- encourage building design that will minimise waste generation over the lifetime of the building
- ensure that the disposal of waste generated by a building's occupants over its lifetime is managed appropriately and efficiently
- ensure that waste storage facilities are located appropriately and do not impact negatively on the streetscape
- ensure that waste can be effectively collected and managed
- assist in achieving Federal and State Government waste minimisation targets.

REQUIREMENTS

WARR Principle 1: Council believes that the priority for waste management is to reduce consumption in the first place. In adopting this position, Council recognises that products and services will be consumed. As a result the second priority will be on managing the waste generated as a resource.

WARR Principle 2: Council believes that source separation is essential for any waste collection or treatment approach. In adopting this position, Council recognises that there is no one single solution to waste treatment and that a suite of techniques is required.

WARR Principle 3: Council believes that the disposal of waste is the direct responsibility of the individual or business that produced it. In adopting this position, Council recognises that currently it is difficult for individuals to reduce their waste. Council therefore will assist residents in managing their waste. Council also recognises that business, government and the community will need to work together to bring about continuous improvement in managing our waste.

WARR Principle 4: Council will work towards the concept of zero waste. In doing so it will develop short term targets and continually review and improve its actions as technology changes. In adopting this position, Council recognises that this is a long term goal and that Council only has a limited influence in total waste management.

WARR Principle 5: Council believes that it is important to prioritise different products and sectors in order to efficiently work towards zero waste. In adopting this position, Council recognises that some products or sectors may achieve this more readily than others.

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 and recycling 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

Council references the NSW Office of Environment and Heritage, *Model Waste Not Development Control Plan Chapter 2008* for waste generation rates. Using these rates, the total waste generated by the development can be calculated as follows:

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	33	80	2640	1320	40	1320
TOTAL	**33**		**2640**	**1320**		**1320**

BIN SUMMARY

The following assumptions have been taken into consideration:

- garbage is not compacted at the base of the chute;
- recycling is not compacted at the base of the chute; and
- number of bins have been rounded up for best operational with outcome.

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

Garbage: **2** x **1100L** MGBs collected **2 x weekly**
Recycling: **1** x **1100L** MGB collected **2 x 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

Two (2) waste chutes will be installed, discharging garbage into 1100L MGBs and recycling into 1100L MGBs. The discharge is located in the residential waste room on the lower ground level.

Full garbage and recycling bins will be serviced directly from the residential waste room via the vehicle loading bay.

WASTE HANDLING

WASTE

All residents of each building 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 1100L MGB collecting waste from each chute, rotate full bins to the storage and collection area, and replace empty 1100L MGB under each chute operation.

RECYCLING

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,

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.

The caretaker/cleaner will be required to check the 1100L MGB collecting waste from each chute, rotate full bins to the storage and collection area, and replace empty 1100L MGB under each chute operation.

TEMPORARY STORAGE OF BULKY GOODS

A room or caged area must be allocated for the storage of discarded bulky items and recyclable electronic goods and sign marked appropriately. The allocated space must be a minimum of **8m³**. Recyclable electronic goods include batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes and smoke detectors.

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.

Residents should be directed to Council's comprehensive website for further information.

COMPOSTING

A space for composting and worm farming is recommended to be available for all residents in a communal facility or in small private courtyards (*see APPENDIX C.5 for Typical Worm Farm Specifications*). Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems (*see APPENDIX C.6 and APPENDIX C.7 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 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.

GREEN WASTE

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

WASTE CHUTES

Waste chutes for each level of the residential building 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 access will only be available to residents residing on level 9-14

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.

EQUIPMENT SUMMARY

Table 3: *Equipment Summary*

Component	Part	Quantity	Notes
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic	**2**	Chute Diameter (*See APPENDIX C.1 for Typical Chute Section*)
Equipment A	*Garbage and Recycling* Linear or Carousel tracks for 1100L MGB with not compacted	**Optional**	(*See APPENDIX C.2 for Typical Linear System*) (*See APPENDIX C.3 for Typical Carousel*)
Equipment B	Suitable Bin Moving Equipment	**Optional**	(*See APPENDIX C.4 for Typical Bin Mover*)

HOTEL WASTE PLAN

The NSW EPA's *Better Practice Guide for Waste Management and Recycling in Commercial and Industrial Facilities* has been referenced to calculate the total number of bins required for the hotel.

Waste: 5L/bed/day
Recycling: 1L/bed/day

Table: *Calculated Waste Generation - Hotel*

Hotel Suites	Quantity	Waste Calculation (L/day)	Generated Waste (L/week)	Recycling Calculation (L/day)	Generated Recycling (L/week)
1 Bedroom	97	5	3395	1	679
TOTAL	**97**		**3395**		**679**

BIN SUMMARY

Using the assumptions stated, the required capacity and quantity of garbage and recycling bins is as follows:

Garbage: **2 x 1100L** MGBs collected **2 x weekly**
Recycling: **1 x 1100L** MGBs collected **weekly**

NOTE: The choice of bin sizes are 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

The vast majority of people who stay in hotels generally spend a relatively short time at the facility, therefore the waste generated in each unit is managed by the staff. Most waste generated is from goods received at the loading dock in the form of packaging (cardboard and plastic film), food waste, recyclables (mixed containers), newspapers and magazines. Office paper may also be generated however this is generally a minimal quantity.

All guests of each hotel suite will be supplied with a collection receptacle in each unit (generally in the main room and bathroom, under bench or similar alternate area) to deposit garbage and collect recyclable material suitable for one days storage. Garbage receptacles must be supplied with bin liners. Recycling must not be bagged. It is recommend that hotel guests use a crate or dedicated bin for collecting recyclables within the allocated hotel space provided to ensure correct separation before recyclables are transferred to the garbage room. It is expected that hotel guests will place clean and empty recycling items into the collection bins.

Nominated staff or cleaners will transport sorted garbage and recyclable items to the hotel garbage room on the lower ground level and place bagged garbage into 1100L collection bins

and recycling (comingle) into 1100L collection bins. Collection will be undertaken by a private waste contractor on the agreed days of collection.

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

RETAIL/COMMERCIAL AND TAVERN 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/Commercial & Tavern*

Type	NLA (m^2)	Waste Calculation ($L/100m^2$/day)	Generated Waste (L/week)	Recycling Calculation ($L/100m^2$/day)	Generated Recycling (L/week)
Food	157.5	80	882	135	1488.375
Restaurant	157.5	670	7386.75	135	1488.375
Non-Food (>100m^2)	246	50	861	50	861
Tavern	491	80	2749.6	35	1202.95
Gym	442	10	309.4	10	309.4
TOTAL	**1494**		**12188.75**		**5350.1**

BIN SUMMARY

Using the assumptions stated, the required capacity and quantity of garbage and recycling bins is as follows:

Garbage: **6 x 1100L** MGBs collected **2 x weekly**
Recycling: **3 x 1100L** MGBs collected **2 x 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

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 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 access corridor, to the commercial waste room on lower ground level and place waste and recycling into the appropriate collection bins.
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.

MEDICAL WASTE PLAN

Table 5: *Calculated Waste Generation - Medical*

Type	NLA (m^2)	Waste Calculation (L/100m^2/day)	Generated Waste (L/week)	Recycling Calculation (L/100m^2/day)	Generated Recycling (L/week)
Clinic 1	1485	10	1039.5	10	1039.5
TOTAL	**1485**		**1039.5**		**1039.5**

Table 6: *Required Provisions for Health Waste*

Size/Type of Practice	Generated Waste (# 240L Bins)	Collection	Comments
2-3 Doctors	1	Weekly	**Medical waste requires locked 240L MGBs** Sharps bins supplied to each doctor and the treatment room. Full sharps containers are placed in the 240L MGBs Replacement sharps containers provided by the medical waste service provider
4-6 Doctors	2	Weekly	
7-12 Doctors	3	Weekly	
Day Surgery	2	Twice Weekly	Day Surgeries typically produce more waste and require more frequent collections to reduce odour issues

BIN SUMMARY

Using the assumptions stated, the required capacity and quantity of garbage and recycling bins is as follows:

Garbage: **3 x 240L** MGBs collected **2 x weekly**
Recycling: **3 x 240L** MGBs collected **2 x weekly**

WASTE MANAGEMENT

The health centres will have dedicated medical waste bins supplied as per the medical waste contractor's recommendations for the site. Waste from out-of-date and partly used medicines, infectious medical wastes, hazardous wastes and radioactive wastes must be stored and disposed of according to specific industry-based regulations. Correct segregation and containment of all wastes is required under the Waste Act.

Medical waste bins will be collected by the appointed contractor on a wheel in/wheel out basis and replacement bins provided on a scheduled collection frequency - compatible key for the Health Services waste storage area may need to be provided to the waste service provider.
Storage and collection requirements for any medical waste:

Table 7: *Storage and Collection Requirements*

Area	Location
Storage	An EPA licence may be required to store Hazardous Wastes. Storage areas are to be free from odour and must discourage the harbourage of vermin. Health Care Facilities must provide an enclosed structure such as a shed, garage, cage, fenced area or separate loading bay to store waste. The holding area should be located away from food and clean storage areas, it must not be accessible to the public, have a lockable door and rigid impervious flooring. Clean up facilities, spills kits, appropriate drainage and bunding should be provided. Where wastes are stored in bins the bin must be locked and a specific area, with adequate drainage, for washing equipment should be designated
Containers	All containers of medical waste to be stored in a secure location. Loads contained in MGBs and trolleys should be less than 55kgs and bins must be colour coded and marked in accordance with the Waste Management Guidelines for Health Care Facilities
Spillage	Ensure all necessary equipment required to clean and disinfect the area in case of accidental spillage is easily available and accessible. It is essential that personnel involved in spill management receive education and training in emergency procedures and handling requirements. Spill kits that have been used should be disposed of with the type of waste that has been cleaned up, eg used cytotoxic spill kits should be disposed of with cytotoxic waste
Mixed waste	Any waste mixed with medical waste must be treated as medical waste
Sharps	Needles, syringes and surgical instruments must be handled so the disposal of these items does not incorporate cutting, bending or any other manipulation that could generate aerosols or splatter contaminated fluids. All sharps containers should be assessed for compliance with the current NSW Health Infection Control Policy and the relevant Australian Standard
Collections	Medical waste shall remain within the storage areas and only be moved during collections. Collections will be performed by a transporter licensed by the EPA to collect and transport

NOTE: Chutes MUST NOT be installed or used for the transport of Health Service wastes.

WASTE ROOM AREAS

Each waste room must hold all the waste bins generated weekly, and allow enough room to clean and safely manoeuvre bins. A bin wash down area is provided within each waste room.

The areas allocated for the residential waste room, commercial waste room, medical waste room and bulky goods storage are detailed in Table 8 below. The areas provided are considered suitable for purpose.

Table 8: *Waste Room Areas*

Location	Waste Room Type	Bin Quantity	Recommended Area (m^2)
Lower Ground	Residential	3 x 1100L MGBs	16
Lower Ground	Bulky Goods		8
Lower Ground	Commercial - *hotel/retail/tavern*	12 x 1100L MGBs	32
Lower Ground	Medical	6 x 240L MGBs	10

Note: *Increasing the collection frequencies will decrease the required bin quantities and waste room GFA.*

COLLECTION OF WASTE

RESIDENTIAL

All residential waste will be collected by a private waste contractor directly from the residential waste room – via the loading dock/turntable.

COMMERICAL

All commercial waste, including the waste generated from the hotel, retail and tavern will be collected by a private waste contractor directly from the commercial waste room – via the loading dock/turntable.

MEDICAL

Medical waste MGBs will be collected by the appointed contractor on a wheel in/wheel out basis and replacement bins provided on a scheduled collection frequency - compatible key for the Health Services waste storage area may need to be provided to the waste service provider.

Please refer to Table. 7 regarding collection requirements for medical waste streams.

COLLECTION AREA

The collection areas will need to be reviewed by a traffic consultant to confirm that these (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.

It is our understanding that a traffic consultant is preparing drawings 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 dimensions. This information and supporting drawings will be provided separate to this report.

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 as part of a development application and is supplied 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.

Parramatta City Council Customer Service
Phone: 02 9265 9333 Email: council@parracity.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 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

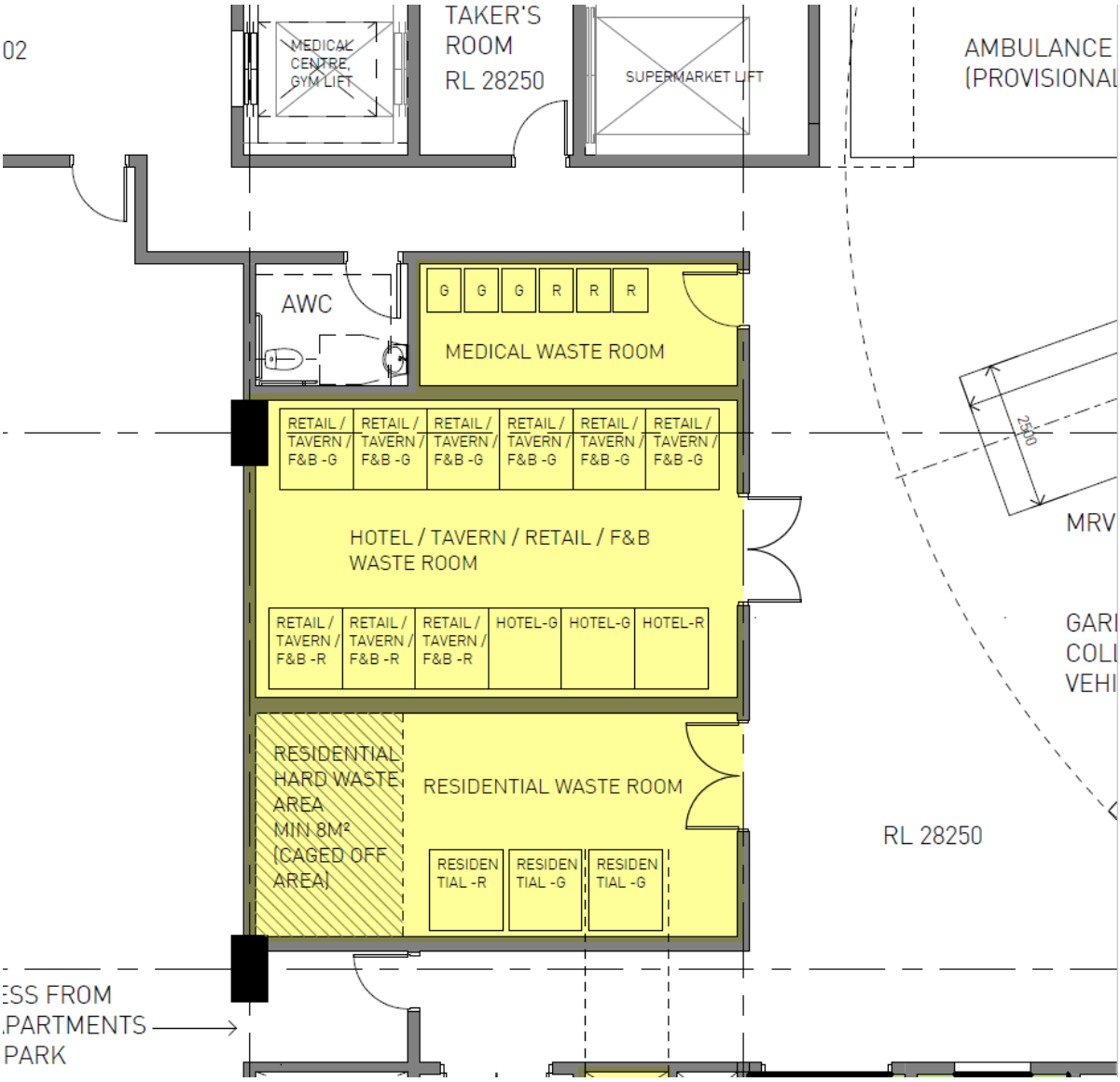
PURIFYING SOLUTIONS (Odour Control)
Phone: 1300 636 877 Email: sales@purifyingsolutions.com.au

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

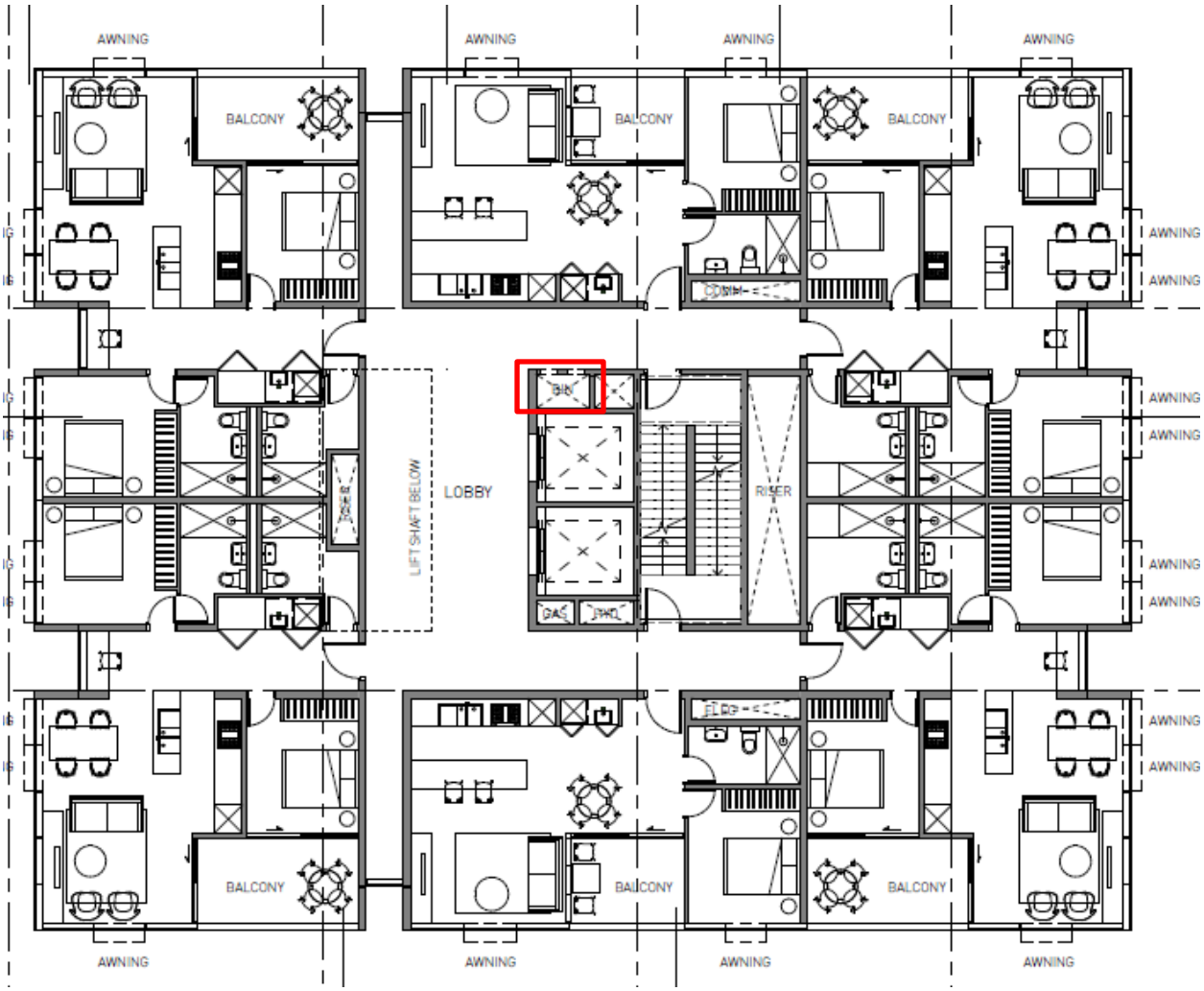
APPENDIX A DRAWING EXERPTS

APPENDIX A.1 LOWER GROUND LEVEL DISPLAYING WASTE ROOMS



Sissons Architects, Drawing DA114 Rev A April 2018 – Lower Ground

APPENDIX A.2 TYPICAL RESIDENTIAL LEVEL DISPLAYING CHUTE LOCATION



Sissons Architects, Drawing DA122 Rev 3 11/08/2017 – Level 9-11

APPENDIX B EQUIPMENT SPECIFICATIONS

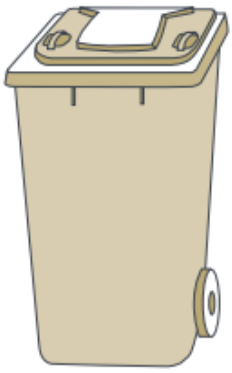
APPENDIX B.1 BIN DIMENSIONS AND SPECIFICATIONS

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

Dome or flat lid containers

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

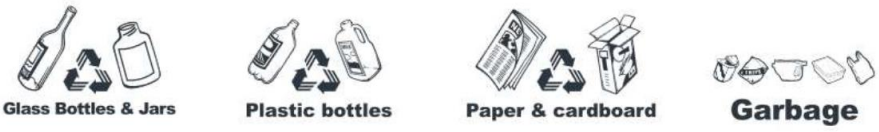
APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

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

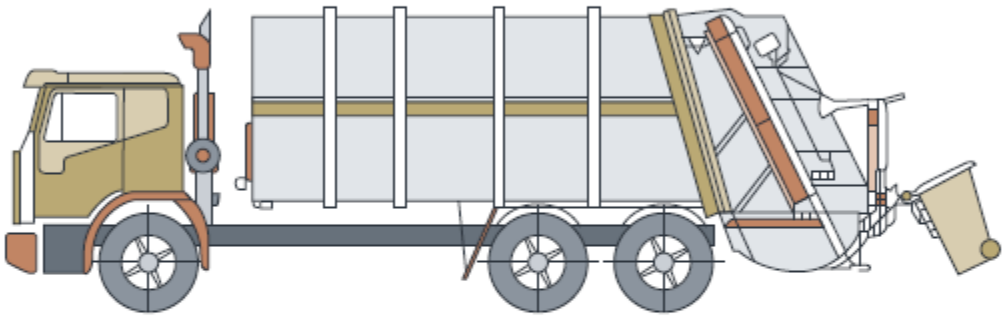
APPENDIX B.3 TYPICAL COLLECTION VEHICLE INFORMATION

Collection vehicles

Waste collection vehicles may be side loading, rear-end loading, front-end loading or crane trucks. The size of vehicle varies according to the collection service. Thus it is impossible to specify what constitutes the definitive garbage vehicle. Developers should consult the local council and/or relevant contractors regarding the type of vehicle used in that area.

The following characteristics represent the typical collection vehicle, however, these are only for guidance.

It may be possible to engage a collection service provider to use smaller collection vehicles to service developments with narrow roadways and laneways, or for on-site collections. However, as the availability of smaller vehicles to make services varies between councils and private contractors, wherever possible the development should be designed to accommodate vehicles of a similar size to that reported below.



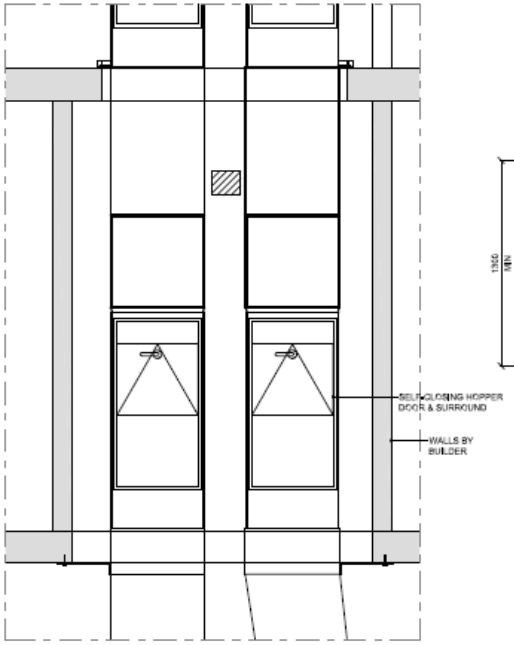
Rear loading collection vehicle

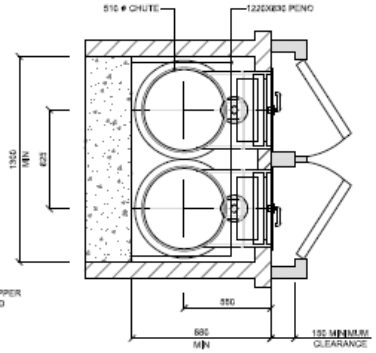
Rear loading collection vehicle	
Length overall	10.24m
Width overall	2.5m
Operational height	3.5m
Travel height	3.5m
Weight (vehicle only)	12.4 tonnes
Weight (payload)	9.5 tonnes
Turning circle	18.0m

This is commonly used for domestic garbage and recycling collections from MUDs. It can be used to collect waste stored in MGBs or bulk bins, particularly where bins are not presented on the kerbside.

APPENDIX C WASTE MANAGEMENT EQUIPMENT SPECIFICATIONS

APPENDIX C.1 TYPICAL CHUTE PLAN & ELEVATION





TYPICAL LLDPE PLASTIC TWIN CHUTE LAYOUT
w/ADDED ENCLOSURE (510Ø) (STEEL SIMILAR)
SCALE 1:20

NOTE: ENCLOSURES ARE REQUIRED IF THE CHUTE OPENS DIRECTLY TO A CORRIDOR OR IS NOT LOCATED IN A WASTE ROOM.

VENT:

PVC 150MM DIAMETER VENT PIPE WITH COWL, DEKTITE FLASHING AND EXTRACTION CAP FITTED FROM THE TOP OF THE CHUTES. PIPE EXITS AS PER REQUIRED BY BUILDER THROUGH PLANT ROOM ROOF AND CAPPED WITH GALVANISED STEEL REDUCTION CAP. ACCESS HATCH TO BE SUPPLIED ON LAST LEVEL FOR SERVICING OF THE WASH DOWN SYSTEM

CHUTE DOORS

SUPPLY AND FIT STAINLESS STEEL TWO HOUR FIRE-RATED (AS1530.4-2005) REFUSE CHUTE DOORS AND THROAT ASSEMBLIES AT EACH SERVICE LEVEL. ALL DOORS ARE FITTED WITH A SELF-CLOSING MECHANISM TO MEET BSA FIRE STANDARDS. DOORS TO BE BLOCKED IN BY OTHERS INSTALLATION OF DOORS ON COMPLETION OF THE BUILDING STRUCTURE, THE CHUTE PIPES BRICKED IN, RENDERED AND THE WALLS PAINTED.

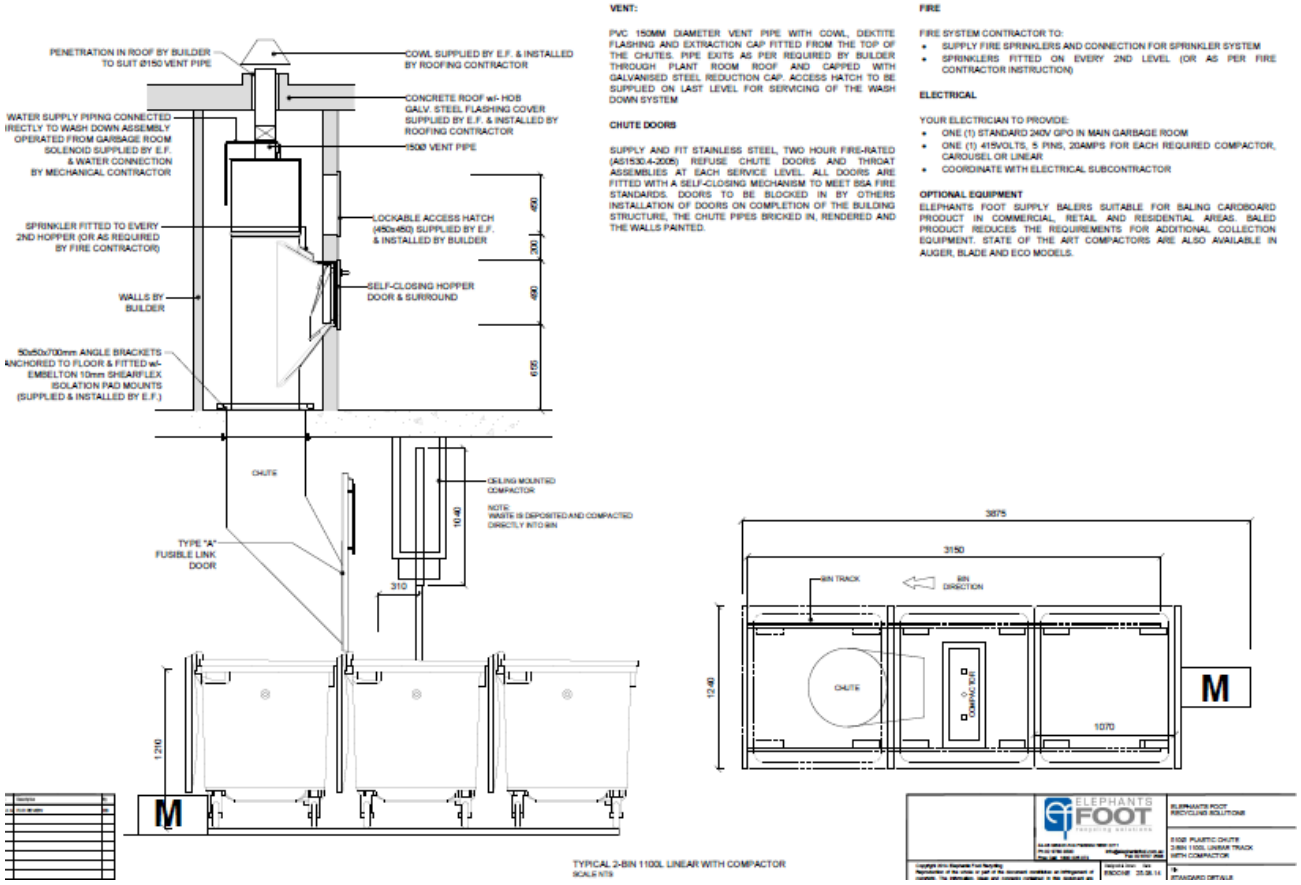
OPTIONAL EQUIPMENT

ELEPHANTS FOOT SUPPLY BALERS SUITABLE FOR BALING CARDBOARD PRODUCT IN COMMERCIAL, RETAIL AND RESIDENTIAL AREAS. BALED PRODUCT REDUCES THE REQUIREMENTS FOR ADDITIONAL COLLECTION EQUIPMENT. STATE OF THE ART COMPACTORS ARE ALSO AVAILABLE IN AUGER, BLADE AND ECO MODELS.

TYPICAL DUAL CHUTE LAYOUT
(510Ø)
SCALE 1:20

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.2 TYPICAL LINEAR SYSTEM TO SUIT 1100L MGB



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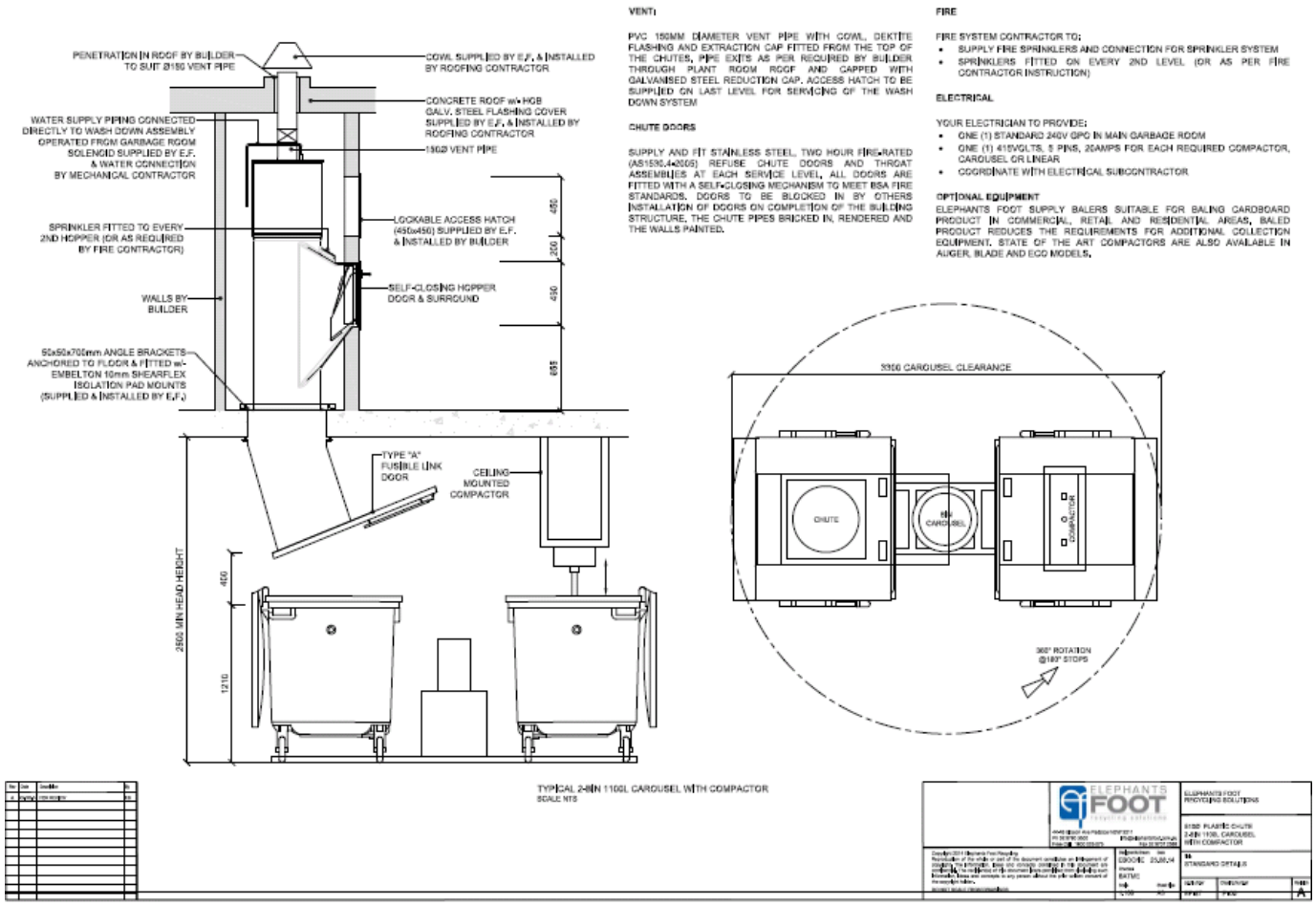
APPENDIX C.3 TYPICAL CAROUSEL TO SUIT 1100L MGB



APPENDIX C.4 TYPICAL BIN MOVER

Typical applications:

- Move trolleys, waste bin trailers and 660litre/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:

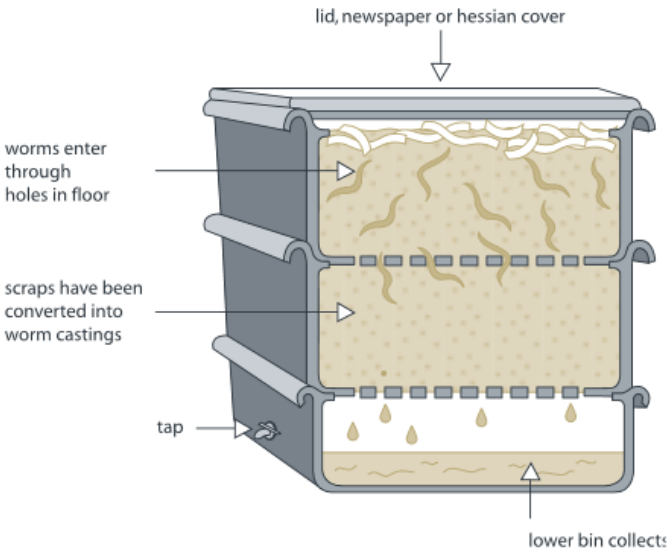
- Up to 1 Tonne on a ramp surface (depending on ballast and incline)
- Anti-rollback system on slopes
- Foot print: 1548L x 795W x 1104H (handle in the drive position)
- Pin Hitch is standard however alternate hitching options may be available to suit your specific application (e.g. tow ball)

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.5 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.6 TYPICAL APARTMENT STYLE COMPOST BINS

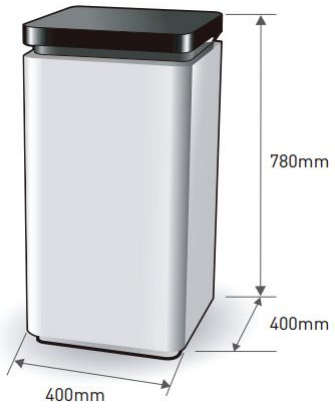
Apartment Style Compost bin – available from hardware stores

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.7 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*

APPENDIX C.8 TYPICAL PUBLIC PLACE WASTE BINS

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

SOURCE: *SULO Environmental Technology*