



WASTE MANAGEMENT PLAN

PREPARED FOR
Kaymet Corporation

ON BEHALF OF
Tony Owen Partners

Mixed Use Development
134 Pitt Street
Redfern NSW

4/10/2016

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REVISIONS

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4/10/2016

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EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the mixed use development located at, 134 Pitt Street, Redfern 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
<i>Baler</i>	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by wire ties and strapping
<i>Chute</i>	A ventilated, essentially vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
<i>Collection Area/Point</i>	The position or area where waste or recyclables are actually loaded onto the collection vehicle
<i>Compactor</i>	A Machine for compressing waste into disposable or reusable containers
<i>Composter</i>	A container/machine used for composting specific food scraps
<i>Crate</i>	A plastic box used for the collection of recyclable materials
<i>Garbage</i>	All domestic waste (Except recyclables and green waste)
<i>Hopper</i>	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
<i>Recycling</i>	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines
<i>Green</i>	Garden organics such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers, and weeds
<i>L</i>	Litre(s)
<i>Liquid Waste</i>	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
<i>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 660, 1000 or 1100, 1500 or 2000

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INTRODUCTION

The following waste management plan pertains to the mixed use development located at 134 Pitt Street, Redfern 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:

- Four, multi-level buildings (*Building A, B, C & D*) with 2 basement levels (*lower and upper*).
 - **Building A** incorporates 2 residential cores and a GFA of 287m² allocated to retail space on the lower ground/ground floor (see Table. 1 for Unit Breakdown Matrix)
 - Core A has 49 residential units; and
 - Core B has 41 residential units.
 - **Building B** incorporates 40 residential units in total.
 - **Building C** incorporates 36 residential units and a GFA of 218.6m² allocated to café space on the ground floor.
 - **Building D** incorporates 3 residential cores and a GFA of 213.3m² allocated to retail space on the lower ground/ground floor.
 - Core A has 19 residential units in total;
 - Core B has 16 residential units in total; and
 - Core C has 17 residential units in total.

Table 1: Unit Breakdown Matrix - Residential

TOTAL DEVELOPMENT - Unit Mix		UNITS	STUDIO	1 BED	2 BED	3 BED
BUILDING A		90	0	51	24	15
BUILDING B		40	1	14	24	1
BUILDING C		36	0	16	20	0
BUILDING D		52	3	21	24	4
TOTAL		218	4	102	92	20
MIX			1.83%	46.79%	42.20%	9.17%

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

CITY OF SYDNEY COUNCIL

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

All waste facilities and equipment are to be designed and constructed to be in compliance with the City of Sydney Council's *Policy for Waste Minimisation in New Developments 2005, Council Advices*, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

- Ensure that each dwelling has adequate space to manage waste.
- Ensure that buildings provide appropriate facilities to manage waste.
- Ensure that residential amenity is not impacted by waste systems and collection 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 City of Sydney.

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

The Council of the City of Sydney's *Policy for Waste minimisation in New Developments* has been referenced to calculate the total number of bins required for the residential units. Please note that calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

Table 2: Calculated Waste Generation – Residential

Building/ Core	# Units	Waste Calculation (L/unit/week)	Generated Waste (L/week)	Compacted Waste (2:1) (L/week)	Recycling Calculation (L/unit/week)	Generated Recycling (L/week)
A:1	49	110	5390	2695	60	2940
A:2	41	110	4510	2255	60	2460
B	40	110	4400	2200	60	2400
C	36	110	3960	1980	60	2160
D:1	19	110	2090	1045	60	1140
D:2	16	110	1760	880	60	960
D:3	17	110	1870	935	60	1020
TOTAL	218		23980	11990		13080

BIN SUMMARY

The following assumptions have been taken into consideration:

- garbage is not compacted at the base of each chute;
- recycling bins are located in the waste compartment on each level;
- garbage is collected 2 x weekly and recycling is collected weekly; and
- the number of bins have been rounded up for best operational outcome.

Table 3: Bin Summary – Residential

Building/Waste Rooms	Garbage			Recycling		
	Bin Capacity (L)	Quantity	Collection Rate (times/week)	Bin Capacity (L)	Quantity	Collection Rate (times/week)
A:1	1100	3	2	240	14	1
A:2	1100	3	2	240	12	1
B	1100	2	2	240	12	1
C	1100	2	2	240	11	1
D:1	1100	1	2	240	7	1
D:2	1100	1	2	240	4	1
D:3	1100	1	2	240	6	1
Total	1100	13	2	240	66	1

*Recycling MGBs have been calculated according to each residential level as opposed to the overall development.

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

7 waste chutes will be supplied by Elephants Foot and installed. Breakdown is as follows:

Building A:1:	single waste chute
Building A:2:	single waste chute
Building B:	single waste chute
Building C:	single waste chute
Building D:1:	single waste chute
Building D:2:	single waste chute
Building D:3:	single waste chute

Garbage discharges into 1100L MGBs which is not compacted. The discharge is located in the waste discharge rooms for each building. 1-2 x 240L recycling bins will be situated in the waste compartment on each residential level for collection of recyclable items.

Full garbage and recycling bins will be transferred to the central bin holding room on the ground level for servicing by Council via a wheel-in/wheel-out arrangement from Pitt Street. An appropriate bin movement aid (bin tug, tractor & trailer) must be used when transferring bulk bins up and down the vehicle ramp.

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's duty is responsible for exchanging or emptying recyclable bins and storing them in the main bin storage room located on lower ground level, ready for collection.

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.

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 Councils comprehensive website for further information:
<http://www.cityofsydney.nsw.gov.au/live/waste-and-recycling/e-waste-and-chemicals/e-waste?gclid=CNvChtTMn8QCFY2XvQodV0sA9w>

COMPOSTING

Council requires that a space for composting and worm farming is to be available for all residents in a communal facility or in small private courtyards (see *APPENDIX C.4 for Typical Worm Farm Specifications*). Composting facilities are to be sited on an unpaved area with soil depth of at least 300mm. Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems (see *APPENDIX C.5 and APPENDIX C.6 for Typical Compost Bins*). Two systems have been included for consideration however there are a variety of compost systems available at hardware stores.

COMMON AREAS

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

WASHROOM FACILITIES

Washroom facilities in 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 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 4: Equipment Summary

Component	Part	Quantity	Notes
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic	7	Chute Diameter (See APPENDIX C.1 for Typical Chute Section)
Equipment A	Garbage Linear Tracks for 1100L MGB with not compacted (For the cores that require 2 bins or more)	4	(See APPENDIX C.2 for Typical Linear System)
Equipment B	Suitable Bin Moving Equipment	Optional	Optional (See APPENDIX C.3 for Typical Bin Mover)

RETAIL WASTE PLAN

The Council of the City of Sydney's *Policy for Waste Minimisation in New Developments* and the *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 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 5: Calculated Waste Generation – Retail

Type	NLA (m ²)	Waste Calculation (L/100m ² /day)	Generated Waste (L/week)	Recycling Calculation (L/100m ² /day)	Generated Recycling (L/week)
Community Room (Building A)	220.9	10	154.63	10	154.63
Retail (Building A)	56.2	50	196.7	50	196.7
Café (Building C)	99.2	215	1492.96	130	902.72
Café (Building C)	118	215	1775.9	130	1073.8
Retail (Building D)	82.8	50	289.8	50	289.8
TOTAL	577.1		3909.99		2617.65

BIN SUMMARY

Based on the waste generation calculations outlined in Table. 5 the required bin quantities have been calculated and are tabulated below:

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

Recycling: **2 x 1100L MGBs collected 3 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). On completion of each trading day or as required, nominated staff/cleaners will transport their waste and recycling to the allocated retail waste room on the upper basement level and place waste and recycling into the appropriate collection bins. On collection days, nominated staff/cleaners will transport retail MGBs to the bin holding room for servicing by a private waste contractor. Note: Retail MGBs be collected on alternating days to residential MGBs after standard business hours.

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.

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.

WASTE ROOM AREAS

All waste discharge rooms housing 2 or more 1100L garbage MGBs will have 2bin linear tracks.

The bin holding room must have the capacity to house all garbage and recycling MGBs required for the entire development and allow adequate space to access and manoeuvre MGBs. A bin wash down area will be provided in this room.

The areas allocated for residential waste rooms, retail waste room, bulky goods storage and the bin holding room are detailed in Table. 6 below. The areas provided are considered suitable for purpose.

Table 6: Waste Room Areas

Location	Waste Room Type	Bin Quantity	Allocated Area (m ²)
A:1 Upper Basement	Waste Discharge Room	3 x 1100L MGBs	18 m ²
A:2 Upper Basement	Waste Discharge Room	3 x 1100L MGBs	18 m ²
B Upper Basement	Waste Discharge Room	2 x 1100L MGBs	18 m ²
C Upper Basement	Waste Discharge Room	2 x 1100L MGBs	18 m ²
D:1 Upper Basement	Waste Discharge Room	1 x 1100L MGB	10 m ²
D:2 Upper Basement	Waste Discharge Room	1 x 1100L MGB	8 m ²
D:3 Upper Basement	Waste Discharge Room	1 x 1100L MGB	8 m ²
Ground	Bin Holding Room	13 x 1100L MGBs & 66 x 240L MGBs	64 m ²
Upper Basement	Bulky Goods Storage		12 m ³
Upper Basement	Retail Waste Room	4 x 1100L MGBs	15 m ²

COLLECTION OF WASTE

RESIDENTIAL

On collection days, the building caretaker will transport all 1100L garbage MGBs from the waste discharge rooms on the basement to the bin holding room on the ground floor via the vehicle ramp. Appropriate bin moving equipment will be used when transferring bulk 1100L MGBs. Accordingly, all 240L recycling MGBs will be transferred from the allocated waste compartments to the bin holding room via the residential lifts.

The Council collection vehicle will pull up on Pitt Street (adjacent to the bin holding room) and service all MGBs via a wheel-in/wheel out arrangement directly from the bin holding room. The travel distance between the storage point and collection point does not exceed 10m. A “*no standing zone*” must be implemented where the collection vehicle is proposed to park during collection times.

Once serviced, the building caretaker will transfer all MGBs back to their allocated waste room.

RETAIL

A private waste contractor will be engaged to collect all retail MGBs to the agreed collection schedule. **Note:** The retail MGBs will be serviced on alternating days from the residential MGBs.

Servicing will occur identically to the residential method – via a wheel in/wheel-out arrangement directly from the bin holding room via Pitt Street.

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 & APPENDIX B.3*). 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.

City of Sydney Council Customer Service

Phone: 02 9265 9333

Email: council@cityofsydney.nsw.gov.au

SULO MGB (MGB, Public Place Bins, Tugs and Bin Hitches)

Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)

Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)

Phone: 1800 333 002

Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)

Phone: 07 3712 8000

Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES

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

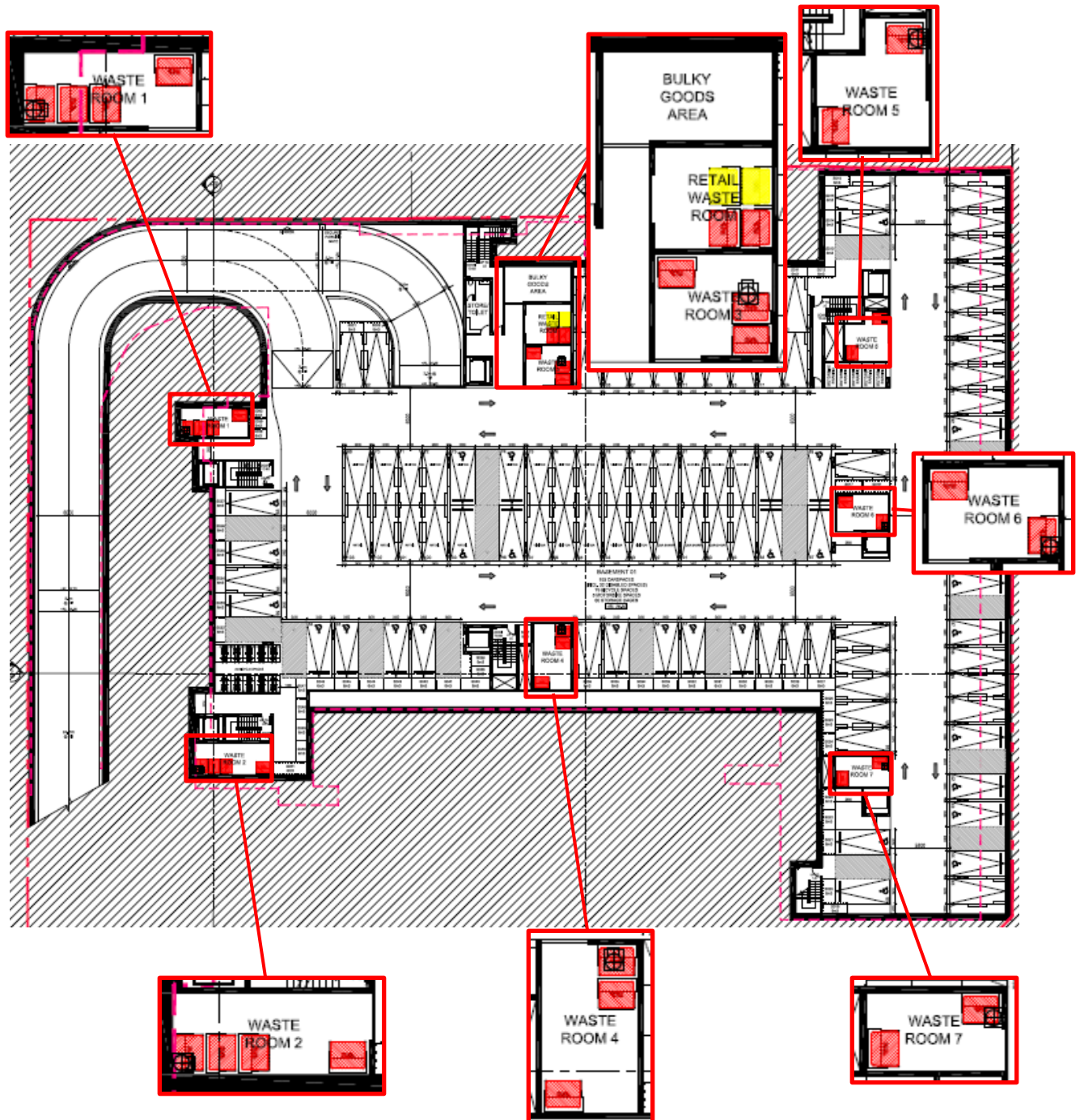
Free call: 1800 025 073

Email: natalie@elephantsfoot.com.au

APPENDICES

APPENDIX A DRAWING EXERPTS

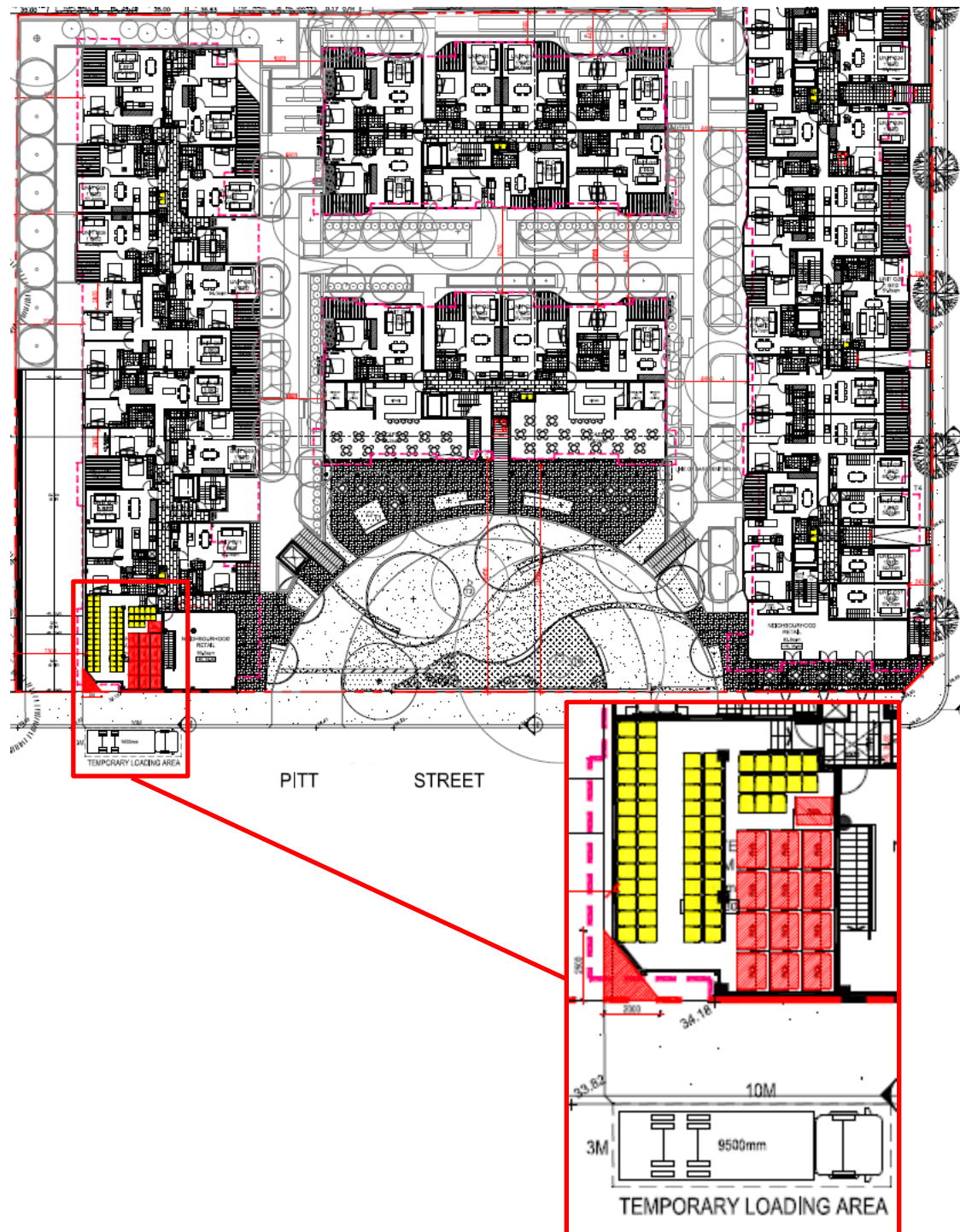
APPENDIX A.1 UPPER BASEMENT LEVEL DISPLAYING WASTE DISCHARGE ROOMS



Tony Owen Partners, Drawing A091 rev A Sept 16 – Upper Basement Plan

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APPENDIX A.2 GROUND LEVEL DISPLAYING COLLECTION AREA



Tony Owen Partners, Drawing A101 rev A Sept 16 – Ground Level Plan

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APPENDIX B CITY OF SYDNEY COUNCIL EQUIPMENT SPECIFICATIONS

APPENDIX B.1 BIN DIMENSIONS

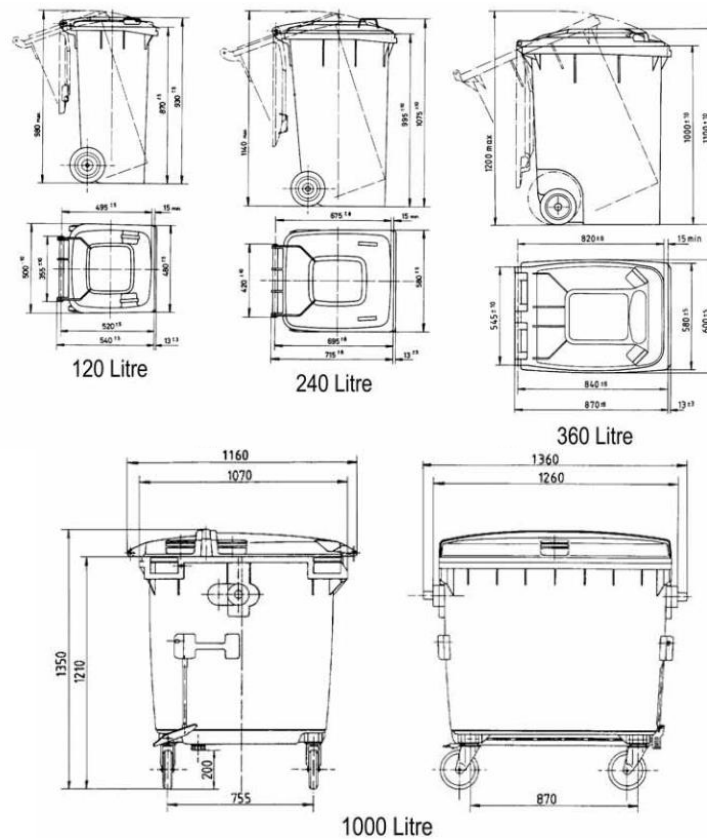
Crates

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



Mobile Garbage Bins (MGBs)

Bin Type	120L MGB	140L MGB	240L MGB	1000L MGB
Height	940 mm	1065 mm	1080 mm	1350 mm
Length	560 mm	540 mm	735 mm	1160 mm
Width	485 mm	500 mm	580 mm	1360 mm



APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS



APPENDIX B.3 SIGNAGE FOR COMMUNAL WASTE ROOMS & NOTICE BOARDS

The City of Sydney Council offers free resources available for communal garbage rooms and notice boards to highlight what can and cannot be recycled. These include stickers for bins and signs for bin rooms.

Book a clean up

預約清除家居物品 수거 예약 จองเก็บขยะในบ้านสาธารณะ

Whitegoods and large household items collected each Wednesday.
 Bookings essential and must be made before 2pm Tuesday. Ask your building manager.
 Please put items at the front of your building.
For more info visit zerowaste.org.au or call 9265 9333.

每周三清除家电和大件家具。请于周二下午2点前预约。请向大楼管理员查询详情。请将物品放在大楼前面。了解详情, 请访问zerowaste.org.au, 或致电9265 9333。

대형 전자제품 및 가구를 수거합니다. 예약은 필수로써 화요일 오후 2시 이전까지 해주셔야 합니다. 해당 건물 매니저에게 문의하세요. 해당 건물 앞에 물건을 놓아 두세요. 더 자세한 정보가 필요하시면, 웹사이트 zerowaste.org.au를 방문하시거나 9265 9333번으로 연락 주시기 바랍니다.

เก็บขยะของบ้านขนาดใหญ่ และเครื่องใช้ในบ้านขนาดใหญ่ ทุกวันพุธ กรุณาติดต่อขอรับคำชี้แจงรายละเอียด และนัดหมายล่วงหน้าก่อนถึงวันขยะของบ้านสาธารณะ ในวันพุธที่ขยะของบ้านสาธารณะของท่าน โปรดนำขยะของบ้านสาธารณะของท่านไปวางหน้าตึกอาคารของท่าน โปรดไปที่ zerowaste.org.au หรือโทรไปที่ 9265 9333

Yes ✓

可回收 12

Separate whitegoods from household items on your kerb - different trucks collect them.
 将家电和家具分开摆放在人行道上。由不同的卡车清运。
 도로 전방에 가구를 물품과 대형 전자제품을 구분해주세요. 각각 별도의 트럭이 수거합니다.
 Separate household items from whitegoods on the kerb. Different trucks collect them.

Fridges
냉장고 ตู้เย็น refrigerator

Barbecues
숯불구이 바베큐 barbecue

Washing machines
세탁기 세탁기 washing machine

Ovens
烤箱 오븐 oven

Rugs & furniture
소파 의자 매트 가구 rug furniture

Mattresses
매트 매트리스 matras

Sofas
소파 sofa sofa

Sticks/branches
나무 가지 stick branch

No X

不可回收 13

Visit zerowaste.org.au to find out how to dispose of hazardous and electronic waste.
 访问zerowaste.org.au 查询如何处置危险品和电子产品。
zerowaste.org.au 방문하여 위험물 및 전자 폐기물을 처리하는 법에 대해 알아보세요.
 Visit zerowaste.org.au to find out how to dispose of hazardous and electronic waste.

Garbage
쓰레기 쓰레기 trash

Motor or cooking oil
자동차 요리기름 엔진오일 motoroil cookingoil

Paints & chemicals
페인트 화학물 페인트 화학물 paint chemical

Car parts & batteries
자동차 배터리 자동차 배터리 carpart battery

Building materials
건축 건축 자재 buildingmaterial

Gas bottles
가스 용기 가스 용기 gasbottle

NO plastic bags

in recycling bins. They jam the machinery.

請勿將塑膠袋投入可回收物垃圾箱。
它們會阻塞機器。

재활용 쓰레기통에 비닐 봉투를 버리지 마세요.
비닐 봉투는 기계 고장의 원인이 됩니다.

ห้ามทิ้งถุงพลาสติก ในถังรีไซเคิล
เพราะอาจทำให้เครื่องติดขัดได้

city of sydney

zerowaste.org.au

CITY OF SYDNEY

Printed March 2014







Garbage✓

		
Meat trays	Nappies	Styrofoam
		
Wrappers	Food	

NO sharps or syringes.

city of sydney zerowaste.org.au **zero waste** **CITY OF SYDNEY** Planet Wiser 2014

Recycling✓

		
Glass	Plastic	Cartons
		
Cans & Aerosols	Paper	Cardboard

NO plastic bags, meat trays, compostable nappies, chip packets / biscuit wrappers.

city of sydney zerowaste.org.au **zero waste** **CITY OF SYDNEY** Planet Wiser 2014

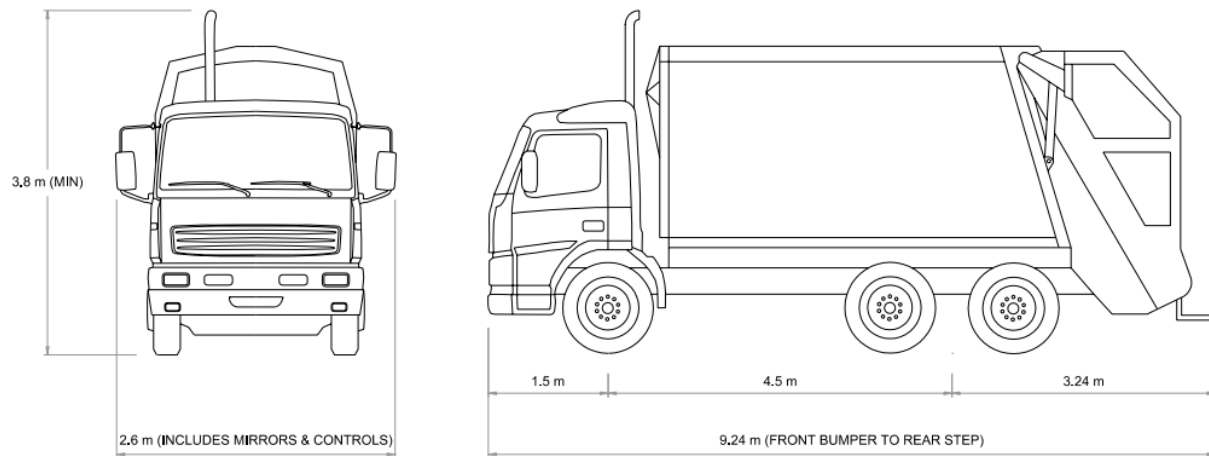
Garden Organics✓

	
Flowers	Sticks & branches (under 10cm thick)
	
Grass clippings	Leaves

If it doesn't fit in this bin, book it for collection through our free clean up service. **Call 9265 9333.**

city of sydney zerowaste.org.au **zero waste** **CITY OF SYDNEY** Planet Wiser 2014

APPENDIX B.4 TYPICAL COLLECTION VEHICLE INFORMATION



Rear loading collection vehicle for MGBs	
Length overall	9.54 m
Width overall	2.6 m
Operational height	4 m
Travel height	3.8 m
Weight (payload)	26 tonnes

APPENDIX B.5 VEHICLE ACCESS/TURNING CIRCLES

Access and turning provisions

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

The design aspects that must be taken into account include the following:

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

Road geometry

The design parameters that must be complied with are:

- A maximum desirable gradient of 10% for turning heads;
- A maximum longitudinal road gradient of 15%;
- A minimum kerb radius of 8.5m at the outside of turn where there is to be no kerbside collection;
- A minimum kerb radius of 10.0m at outside of turn if there is to be kerbside collection;
- A minimum pavement width of 5.0m if less than 24 car-parking spaces are required;
- A minimum pavement width of 6.5m if 25 or more car-parking spaces are required; (use of passing bays is acceptable); and
- An industrial-type strength pavement designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks (The standard road pavement design specifications for an industrial driveway entry on public land is 150mm thick concrete, 20MPa concrete with F82 mesh).

Collection from enclosures

Collection vehicles may enter building basements for the

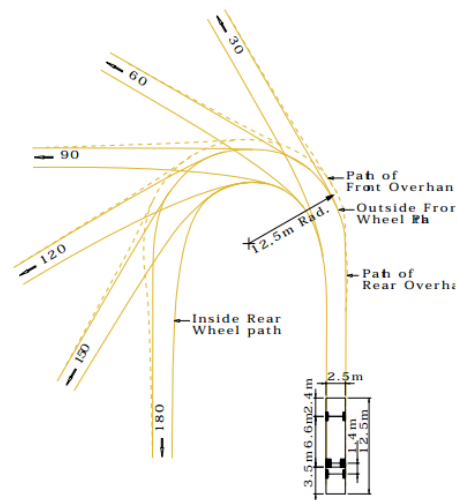
Sample turning circle design

source: AUSTRROADS design single unit truck / BUS (12.5m)

scale 1 : 200 radius 12.5m

ABSOLUTE MINIMUM RADIUS

For use at mandatory stop only. Turning speed up to 5km/h.



Notes:- 1. Locate face of kerbs at least 0.6m clear of wheel paths.

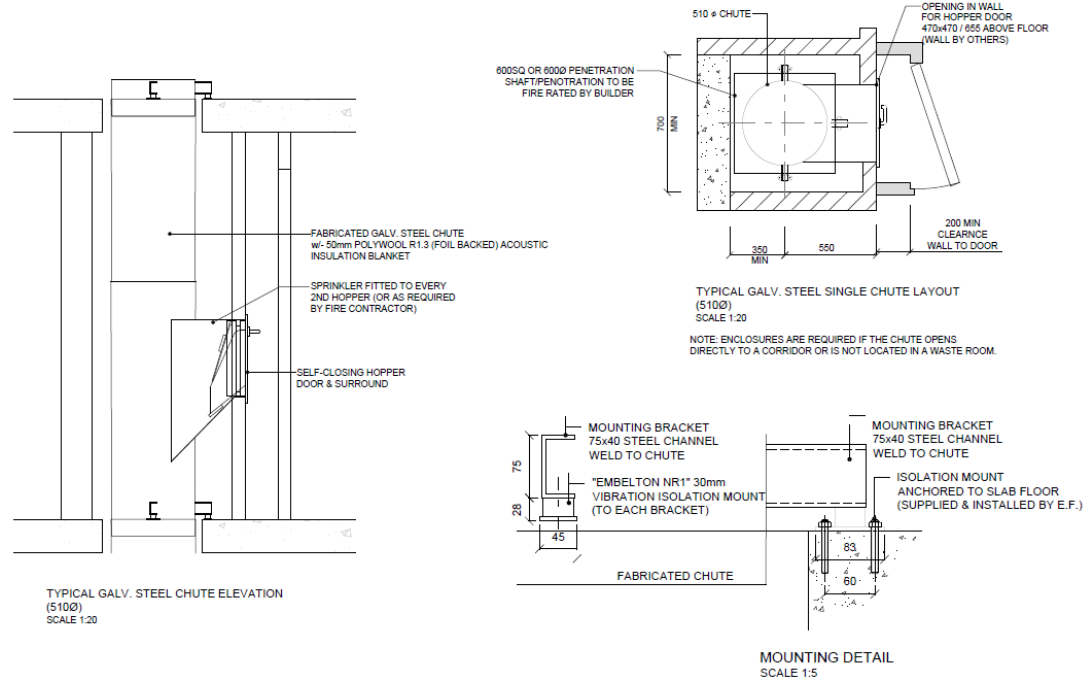
2. Allow 0.6m clearance outside path of overhang and ensure that this area is kept free of road furniture.

collection of waste and/or recyclables provided the following requirements are met:

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

APPENDIX C WASTE MANAGEMENT EQUIPMENT SPECIFICATIONS

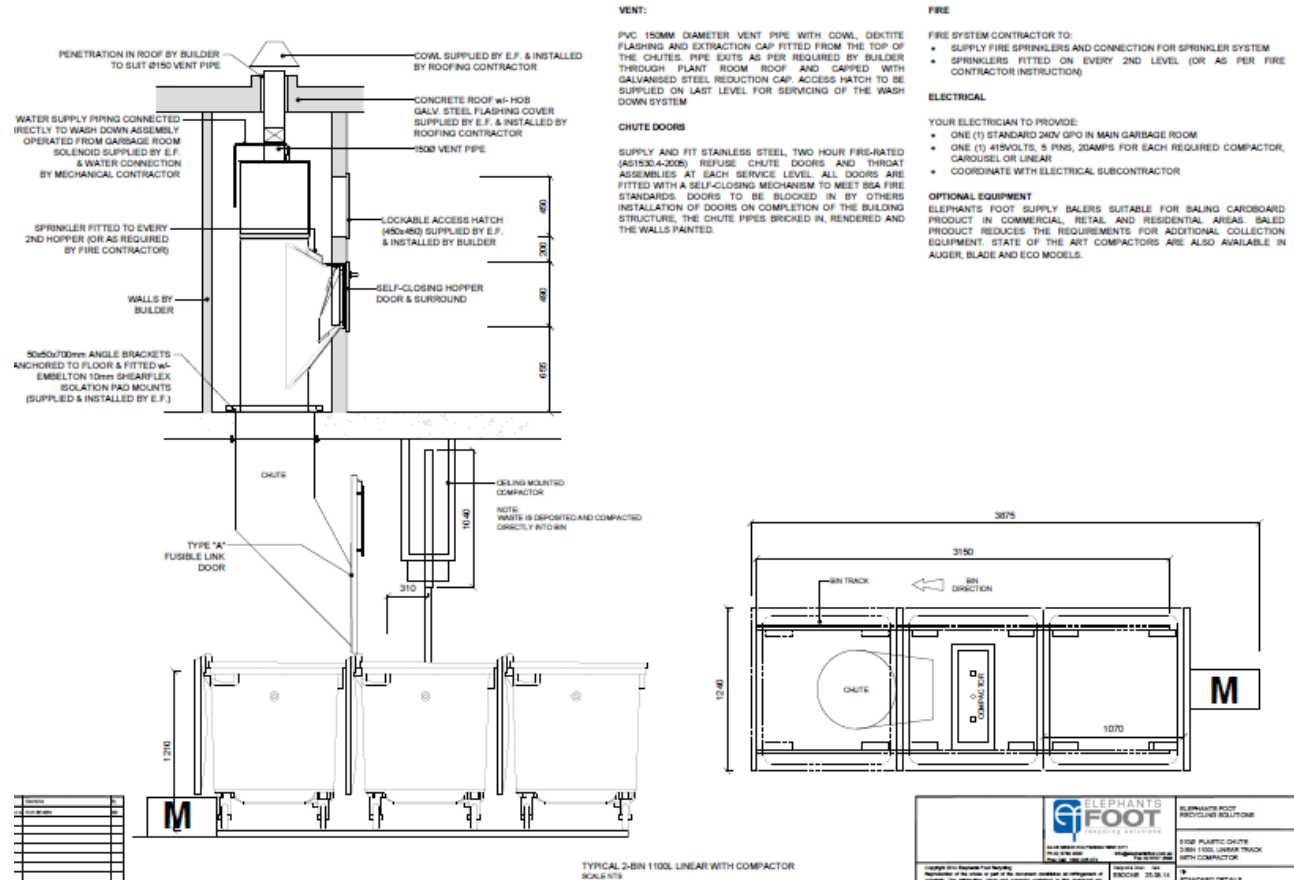
APPENDIX C.1 TYPICAL CHUTE PLAN & ELEVATION



Rev	Date	Description	By
1		Issue for construction	

		ELEPHANTS FOOT WASTE SOLUTIONS	
44-46 Gibson Avenue, Padstow NSW 2211 Australia Phone: +61 2 9780 3500 Email: info@elephantsfoot.com.au		Project Name: 510Ø GALV. STEEL CHUTE LAYOUT Date: 25.08.14 Drawing: 510Ø GALV. STEEL CHUTE LAYOUT	
Copyright © 2014 Elephants Foot Wastingsolutions Pty Ltd. All rights reserved. This document is the property of Elephants Foot Wastingsolutions Pty Ltd. It is to be used for the purpose specified and no part of it may be reproduced without the prior written consent of Elephants Foot Wastingsolutions Pty Ltd.		10 STANDARD DETAILS	
1:100		1:100	

APPENDIX C.2 TYPICAL LINEAR SYSTEM TO SUIT 1100L MGB



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Sydney Head Office 44-46 Gibson Ave Padstow NSW 2211 | **PH:** +612 9780 3500 | **Fax:** +612 9707 2588
Website: www.elephantsfoot.com.au | **Email:** info@elephantsfoot.com.au
 Offices in Victoria & Queensland – **Toll Free:** 1800 025 073

APPENDIX C.3 TYPICAL BIN MOVER



Typical applications:

- Move trolleys, waste bin trailers and 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:

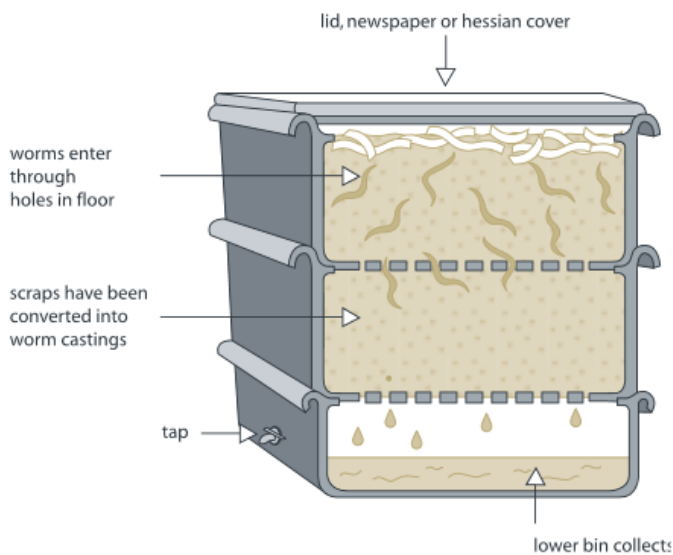
- Up to 1 Tonne on a ramp surface (depending on ballast and incline)
- Anti-rollback system on slopes
- Foot print: 1548L x 795W x 1104H (handle in the drive position)
- Pin Hitch is standard however alternate hitching options may be available to suit your specific application (e.g. tow ball)

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.4 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



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

Height – 300mm per level

Width – 600mm

Length – 900mm

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

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

APPENDIX C.5 TYPICAL APARTMENT STYLE COMPOST BINS

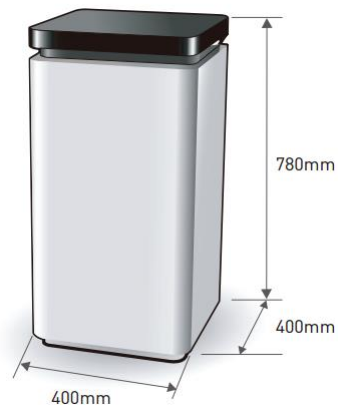


Apartment Style Compost bin – available from hardware stores

Suitable for:

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

APPENDIX C.6 ELECTRIC ORGANIC COMPOST BIN



Product Specifications

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

* Food Waste Handling Capacity – based on an optimal operating environment.

** Ambient temperature range of area where unit may be installed.

SOURCE: *Closed Loop Domestic Composter* – See Useful Contacts

APPENDIX C.7 TYPICAL PUBLIC PLACE WASTE BINS



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

SOURCE: *SULO Environmental Technology*