



28-32 Evan Street, Penrith NSW
Residential Development

OPERATIONAL WASTE MANAGEMENT PLAN

14/12/2017
Report No.
Revision A

Architect

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SCOPE

This waste management plan (WMP) only applies to the **operational** phase of the proposed development; therefore the requirements outlined in this WMP must be implemented during the operational phase of the site and may be subject to review upon further expansion for, and/or changes to the development.

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. It is EFRS's understanding that a construction and demolition WMP will be completed by a separate party appointed by the developer, and submitted separately to this report. Typically, the head contractor of the site will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements.

REVISION REFERENCE

| Revision | Date | Prepared by | Reviewed by | Description | Signed |
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GLOSSARY OF TERMS

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

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| <i>Recycling</i> | Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines |
| <i>Refuse</i> | Material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items |
| <i>SRV</i> | Small rigid vehicle as in AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities, generally incorporating a body width of 2.33 |

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INTRODUCTION

EFRS has been tasked to prepare the following waste management plan for Marchese Partners for the operational management of waste generated by the residential development located at 28-32 Evan Street, Penrith NSW.

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

- i. **Promote responsible source separation** to reduce the amount of waste that goes to landfill, by implementing convenient and efficient waste management systems
- ii. **Ensure adequate waste provisions and robust procedures** that will cater for potential changes during the operational phase of the development
- iii. **Compliance** with all relevant council codes, policies, and guidelines.

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

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

DEVELOPMENT SUMMARY

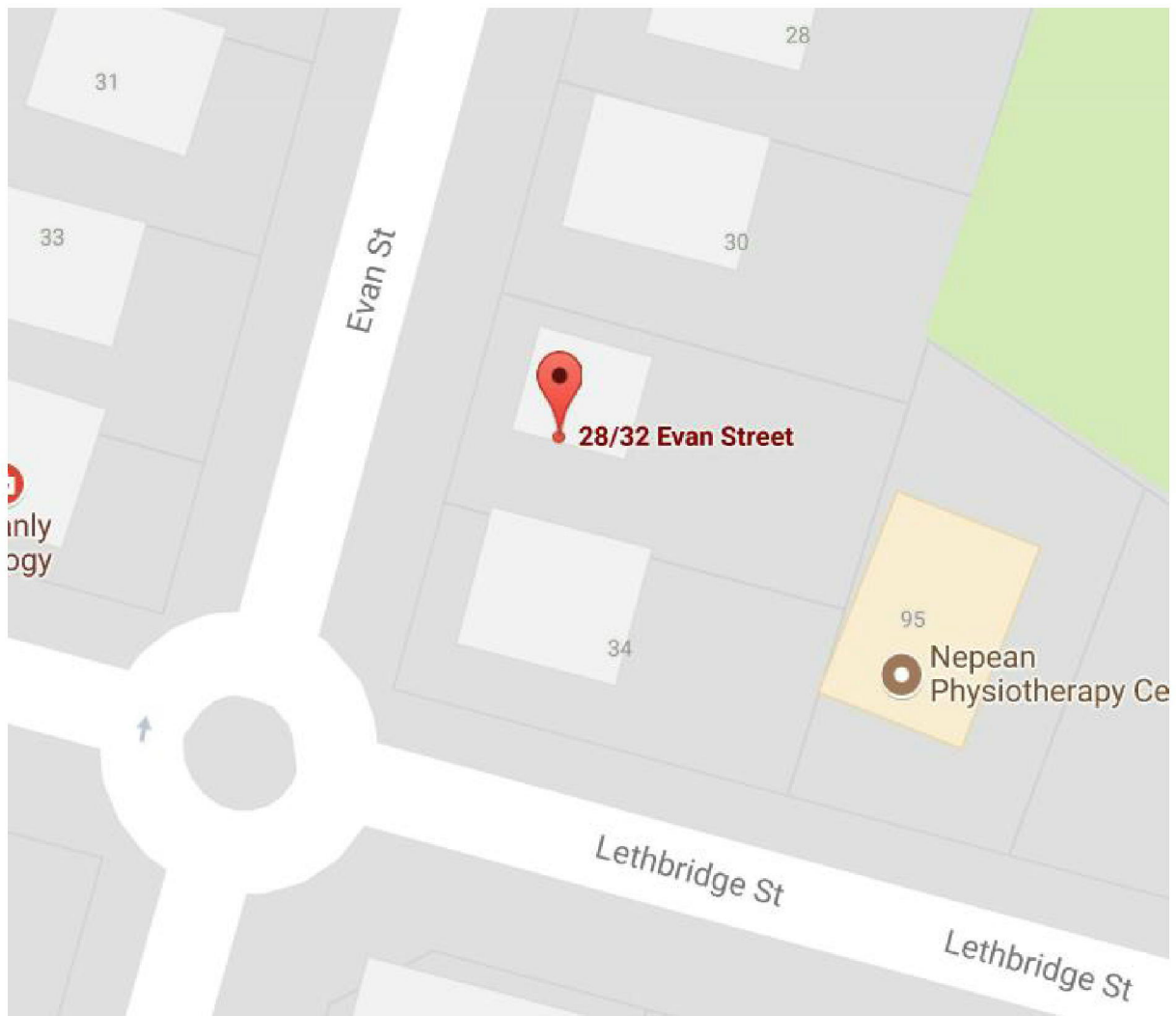
The proposed development falls under the LGA of Penrith City Council, and consists of:

- One residential building incorporating:
 - 54 residential units in total
 - Separated into 2 cores.

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

SITE LOCATION

The site located is 28-32 Evan Street, Penrith, as shown in Figure.1. The site only has a frontage to Evan Street, with vehicle access via Evan Street.



PENRITH CITY COUNCIL

The residential garbage and recycling will be guided by the services and acceptance criteria of the Penrith City Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Penrith Council's *Penrith Development Control Plan 2014, Residential Flat Building Waste Management Guidelines*, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

- To facilitate sustainable waste management within the City of Penrith in accordance with the principles of Ecologically Sustainable Development;
- To manage waste in accordance with the 'Waste Hierarchy' to:
 - Avoid producing waste in the first place;
 - Minimise the amount of waste produced;
 - Re-use items as many times as possible to minimise waste;
 - Recycle once re-use options have been exhausted; and
 - Dispose of what is left, as a last resort, in a responsible way to appropriate waste disposal facilities;
- To assist in achieving Federal and State Government waste minimisation targets as set out in the *Waste Avoidance and Resource Recovery Act 2001* and *NSW Waste Avoidance and Resource Recovery Strategy 2007*;
- To minimise the overall environmental impacts of waste by:
 - Encouraging development that facilitates ongoing waste avoidance and complements waste services offered by both Council and/or private contractors;
 - Requiring on-site source separation and other design and siting standards which assist waste collection and management services offered by Council and/or the private sector;
 - Encouraging building designs and construction techniques that minimise waste generation;
 - Maximising opportunities to reuse and recycle building and construction materials as well as other wastes in the ongoing use of a premise; and
 - Reducing the demand for waste disposal.

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 Penrith City Council.

STAKEHOLDER ROLES AND RESPONSIBILITIES

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

Table 1: Stakeholder Roles and Responsibilities

| Roles | Responsibilities |
|----------------------------------|--|
| Strata/Management | <ul style="list-style-type: none"> Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; Organising internal waste audits/visual assessments on a regular basis; and Manage any non-compliances/complaints reported through waste audits. |
| Building Manager/Waste Caretaker | <ul style="list-style-type: none"> Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; Ensuring site safety for residents, children, visitors, staff and contractors; Abiding by all relevant OH&S legislation, regulations, and guidelines; Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) If a blockage is evident, building management or cleaning staff must immediately take steps to identify the level concerned and clear the blockage General maintenance and cleaning of chute doors on each level; Cleaning and transporting of bins as required; Organising, maintaining and cleaning the general and recycled waste holding area; Organising both garbage and recycled waste pick-ups as required; Organising replacement or maintenance requirements for bins; Organising bulky goods collection when required; and Investigating and ensuring prompt clean-up of illegally dumped waste materials. |
| Residents/Tenants | <ul style="list-style-type: none"> Dispose of all garbage and recycling in the allocated waste chutes and/or MGBs provided; Ensure adequate separation of garbage and recycling; and Compliance with the provisions of Council and the WMP. |
| Council/Private Waste Contractor | <ul style="list-style-type: none"> Provide a reliable and appropriate waste collection service; Provide feedback to building managers/residents in regards to contamination of recyclables; and Work with building managers to customise waste systems where possible. |
| Gardening/Landscaping Contractor | <ul style="list-style-type: none"> Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location. |
| Building Contractors | <ul style="list-style-type: none"> Removing all construction related waste offsite in a manner that meets all authority requirements. |

EDUCATION

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident by building management to ensure correct use of the waste chute. This should include the correct disposal process for bulky goods (old furniture, large discarded items, etc.), and other appropriate materials (electronic, chemical waste, etc.). It is recommended that information is provided in multiple languages to support correct practises and minimise the possibility of chute blockages as well as contamination in the collective waste bins.

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

- Directions on using the chute doors;
- Recycling and garbage descriptions (council provides comprehensive information);
- How to dispose of bulky goods and any other items that are not garbage or recycling;
- Residents' obligations to whs and building management; and
- How to prevent damage or blockages to the chute (example below).

To prevent damage or blockage to rubbish chute DO NOT dispose of any newspapers, umbrellas, bedding, cigarettes, cartons, coat hangers, brooms, mops, large plastic wrappings from furniture, white goods, any sharp objects, hot liquid or ashes, oil, unwrapped vacuum dust, syringes, paint and solvents, car parts, bike parts, chemicals, corrosive and flammable items, soil, timber, bricks or other building materials, furniture, etc. down the chute.

LIMITATIONS

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

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

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

RESIDENTIAL WASTE MANAGEMENT

The Penrith Council's *Residential Flat Building Waste Management Guidelines* has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the residential development.

Table 2: Calculated Waste Generation – Residential

| Building/ Core | # Units | Garbage Generation Rate (L/unit/week) | Generated Garbage (L/week) | Recycling Generation Rate (L/unit/week) | Generated Recycling (L/week) |
|----------------------------|------------------------------|--|--|--|------------------------------------|
| Core A | 27 | 120 | 3240 | 120 | 3240 |
| Core B | 27 | 120 | 3240 | 120 | 3240 |
| TOTAL | 54 | | 6480 | | 6480 |
| Collections & Equipment | Garbage Bin Size (L) | | 1100L | Recycling Bin Size (L) | |
| | Garbage Collections per Week | | 2 | Recycling Collections per Week | |
| | Total Garbage Bins Required | | 6 | Total Recycling Bins Required | |
| Waste Rooms | Chute Discharge Equipment | | 2 x 2Bin Linear Track Systems for each waste discharge room | | |
| | Discharge and Storage Room | | Recommended Room size for each waste discharge room - 25msqr | | |

***Note:** An additional 1100L MGB has been provided in the summary for each chute discharge for use during collection periods.

****Note:** An additional 2 x 240L garbage MGBs and 2 x 240L recycling MGBs will be required for residents with no chute access on the ground level of Core A.

HOUSEHOLD WASTE

Two (2) garbage chutes and 2 recycling chutes will be installed with access provided on all residential levels of each core.

Garbage discharges into 1100L MGBs placed on linear tracks and recycling (comingle) into 1100L MGBs placed on linear tracks. The discharge for Core A is located in the waste room on basement 1 and the discharge for Core B is located in the waste room on the ground level. This garbage and recycling is not compacted.

Residents residing on the ground level of Core A (no chute access) will be required to manually dispose of their garbage and recyclables into 240L MGBs located into the separate waste compartment adjacent to the waste room.

On collection days, full garbage and recycling bins from the Core B waste room will be transferred by the bin hoist to the waste room on the ground level. Council will service all MGBs via the designated service vehicle slip lane – off Evan Street.

COMMON AREAS

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

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

SOURCE SEPERATION

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

GENERAL WASTE (GARBAGE)

Residents will be supplied with a collection area in each unit to deposit garbage and collect recyclable material suitable for one day's storage. This is typically located generally in the kitchen, under bench or similar alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

RECYCLING

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

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

GREEN WASTE

Green waste is not typically generated from multi-unit dwellings other than from surrounding building landscaped areas and is removed by the designated maintenance contractor. In the event that green waste is produced i.e trimming of indoor or balcony plants then this may be disposed of via coordination with the building caretaker or cleaner. Very small quantities may be disposed of via the general waste stream.

BULKY GOODS

Penrith Council requires that a bulky goods room is provided at the following rate:

Household bulky waste room dimensions = no. of dwellings x 8 m² / 52 (weeks)

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

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

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

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

ELECTRONIC WASTE

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

CHEMICAL WASTE

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

ORGANIC WASTE AND COMPOSTING

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

PUBLIC SPACES

Public spaces are likely to generate minimal waste from the people utilizing these areas. Waste and recycling bins should be placed throughout public spaces to minimise the likelihood of littering.

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

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

CLOTHING WASTE

Clothing is becoming an increasingly large waste stream for domestic dwellings. Unwanted clothing that is clean and undamaged can be donated to charities. Building management may choose to provide clothing donation bins for residents to donate their unwanted clothing. Building management can directly contact a charity to supply a donation bin or choose to

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provide their own nondenominational donation bin. Once a sufficient amount of clothing has been collected, the building management will be responsible for arranging the collection of donated items with the relevant charity.

MOVEMENT AND TRANSPORTATION OF BINS

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

Transfer of waste and all bin movements require minimal manual handling; the operator must assess manual handling risks and provide any relevant documentation to building management.

Council requires that the bin carting route for 240L bins is to be a maximum of 75m in length, a maximum grade of 1:24 and 1.8m unobstructed corridor.

For the internal movement of 660L and 1,100L bins a Tug Device is required to assist the caretaker to manoeuvre the bins from the chute room to waste collection room. Specifications of the device and location of where it will be stored are required to be submitted with the waste management plan lodged to Council for review.

Bins may have to be fitted with hitches to enable the simultaneous transportation of multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.

COLLECTION OF WASTE

On collection days, the building caretaker will transfer all MGBs from the Core B waste room to the Core A waste room, via the bin hoist.

The Council collection vehicle will pull up into the designated service vehicle slip lane via Evan Street and will service all MGBs via a wheel-in/wheel-out arrangement.

Once serviced, the building caretaker will transfer all MGBs back to their allocated storage locations.

COLLECTION AREA

Where the collection area will be secured, the locking mechanism installed must be an Abloy system employed by Council. The installation of the locking system and the supply of keys will be provided by Council at the developer's cost.

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

INSTALLATION EQUIPMENT AND DESIGN

EQUIPMENT SUMMARY

Table 3: Equipment Summary

| Component | Part | Qty | Notes |
|-------------|--|-----|---|
| Chutes | Galvanised Steel / LLDPE Polyethylene Plastic 510mm or 610mm (for 20+ levels) | 2 | 510/610mm diameter (See APPENDIX C for Typical Chute Section) |
| Equipment A | Garbage 2-bin 1100L MGB Linear Track System with no Compactor | 2 | (See APPENDIX C.2 for Typical Linear System) |
| | Recycling 2-bin 1100L MGB Linear Track System with no Compactor | 2 | See APPENDIX C.2 for Typical Linear System) |
| Equipment B | Suitable Bin Moving Equipment | 1 | Optional (See 0 for Typical Bin Mover) |

WASTE ROOM AREAS

All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room. Access to waste discharge rooms should be provided to the building manager/waste caretaker **only**. Under no circumstances should access be provided to any residents, or waste collection staff.

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

The areas allocated for residential waste rooms, commercial/retail bin store, bulky goods and collection areas are detailed in Table 4 below. The areas provided have been assessed by EFRS and deemed suitable for purpose.

Table 4: Waste Room Areas

| Level | Waste Room Type | Equipment | Recommended Area (m ²) |
|-------|--------------------------------|---|------------------------------------|
| G | Waste Room – Core A | 14 x 1100L MGBs 2 x 2-bin 1100L MGB Linear Track Systems | 25 |
| G | Waste Compartment | 4 x 240L MGBs | 3 |
| B1 | Waste Room – Core B | 7 x 1100L MGBs 2 x 2-bin 1100L MGB Linear Track | 24 |
| TBC | Bulky Goods Waste Storage Room | | 8.3m ³ |

Note: Any requirement for increasing storage capacity can be done by increasing the frequency of collections for all waste.

GARBAGE ROOMS

CONSTRUCTION REQUIREMENTS

The garbage room will be required to contain the following facilities to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- Waste room floor to be sealed with a two pack epoxy;
- Waste room walls and floor surface is flat and even;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- For residential: a hot and cold water facility with mixing facility and hose cock must be provided for washing the bins;
- For retail/commercial: a cold water facility with hose cock must be provided for washing the bins;
- Any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board. (Sydney water);
- Tap height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above floor levels;
- The room must be mechanically ventilated;
- Light switch installed at height of 1.6m;
- Waste rooms must be well lit (sensor lighting recommended);
- Optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- If 660l or 1100l bins are utilised, 2 x 820mm (minimum) door leafs must be used;
- All personnel doors are hinged, lockable and self-closing;
- Waste collection area must hold all bins – bin movements should be with ease of access;
- Conform to the building code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

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

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

VENTILATION

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

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

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

USEFUL CONTACTS

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

Penrith Council Customer Service

Phone: 02 4732 7777

Email: council@penrithcity.nsw.gov.au

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

Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)

Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)

Phone: 1800 333 002

Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)

Phone: 07 3712 8000

Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES (Private Waste Services Provider)

Phone: 02 9359 9999

REMONDIS (Private Waste Services Provider)

Phone: 13 73 73

SITA ENVIRONMENTAL (Private Waste Services Provider)

Phone: 13 13 35

NATIONAL ASSOCIATION OF CHARITABLE RECYCLING ORGANISATIONS INC.
(NACRO)

Phone: 03 9429 9884

Email: information@nacro.org.au

PURIFYING SOLUTIONS (Odour Control)

Phone: 1300 636 877

Email: sales@purifyingsolutions.com.au

MOVEXX (Bin Movers)

Phone: 1300 763 444

AUSCOL (Recycling Oils & Animal Fats)

Phone: 1800 629 476

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

44 – 46 Gibson Avenue

Padstow NSW 2211

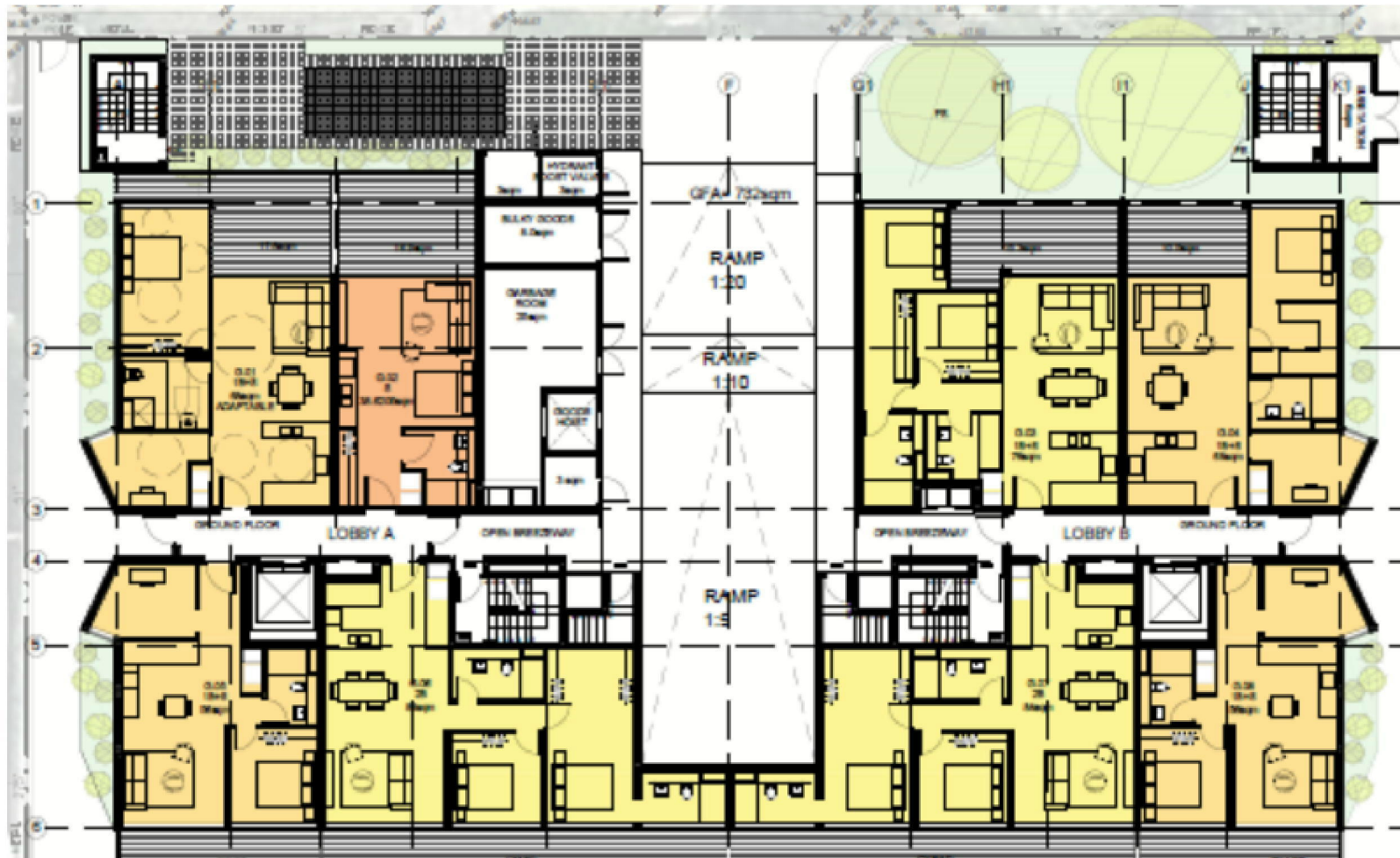
Free call: 1800 025 073

Email: natalie@elephantsfoot.com.au

APPENDICES

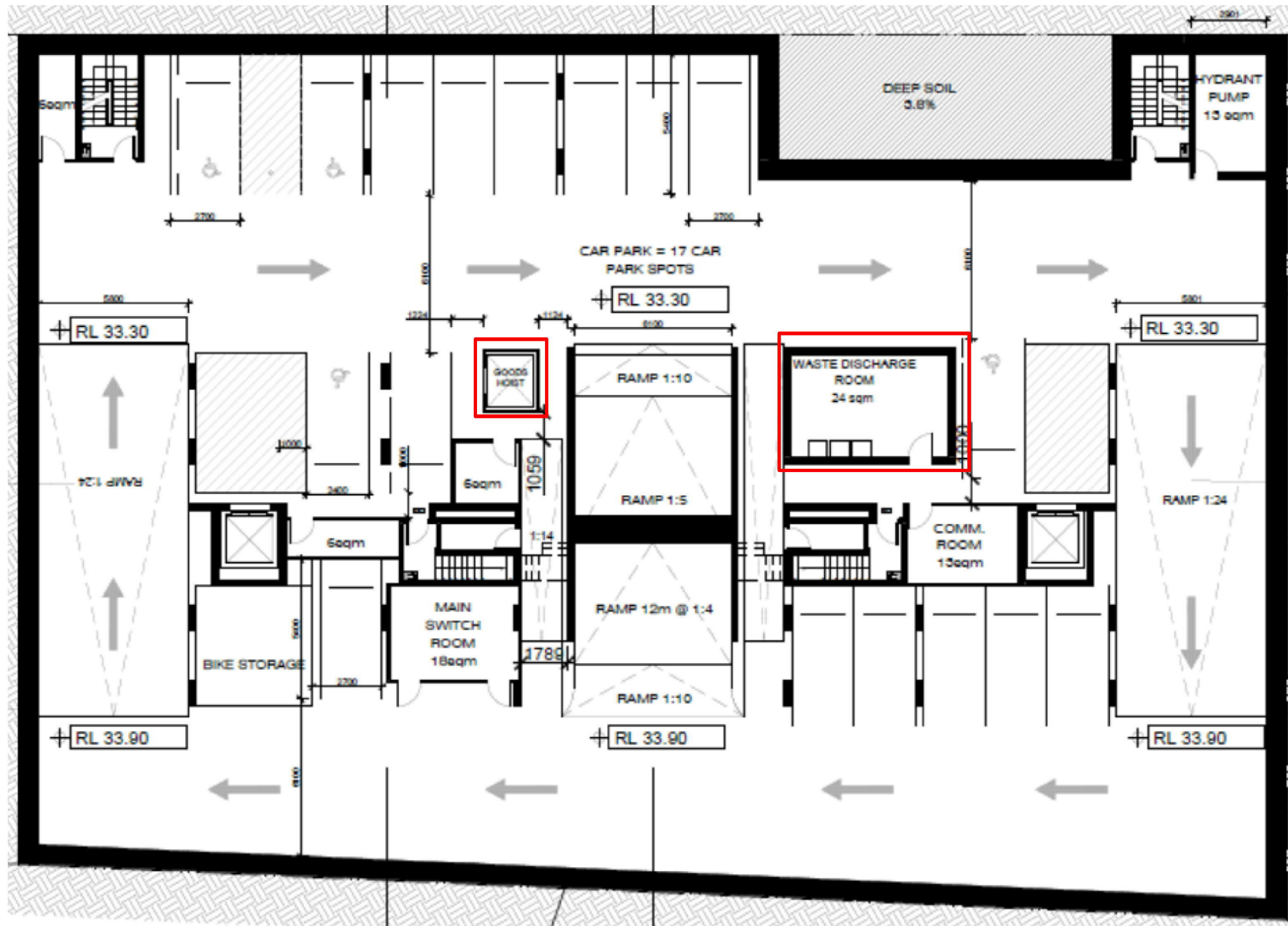
APPENDIX A ARCHITECTURAL DRAWING EXERPTS

APPENDIX A.1 SITE PLAN



Excerpt: Marchese Partners, Drawing DA1.03 P1 15.12.2017 – Site Plan

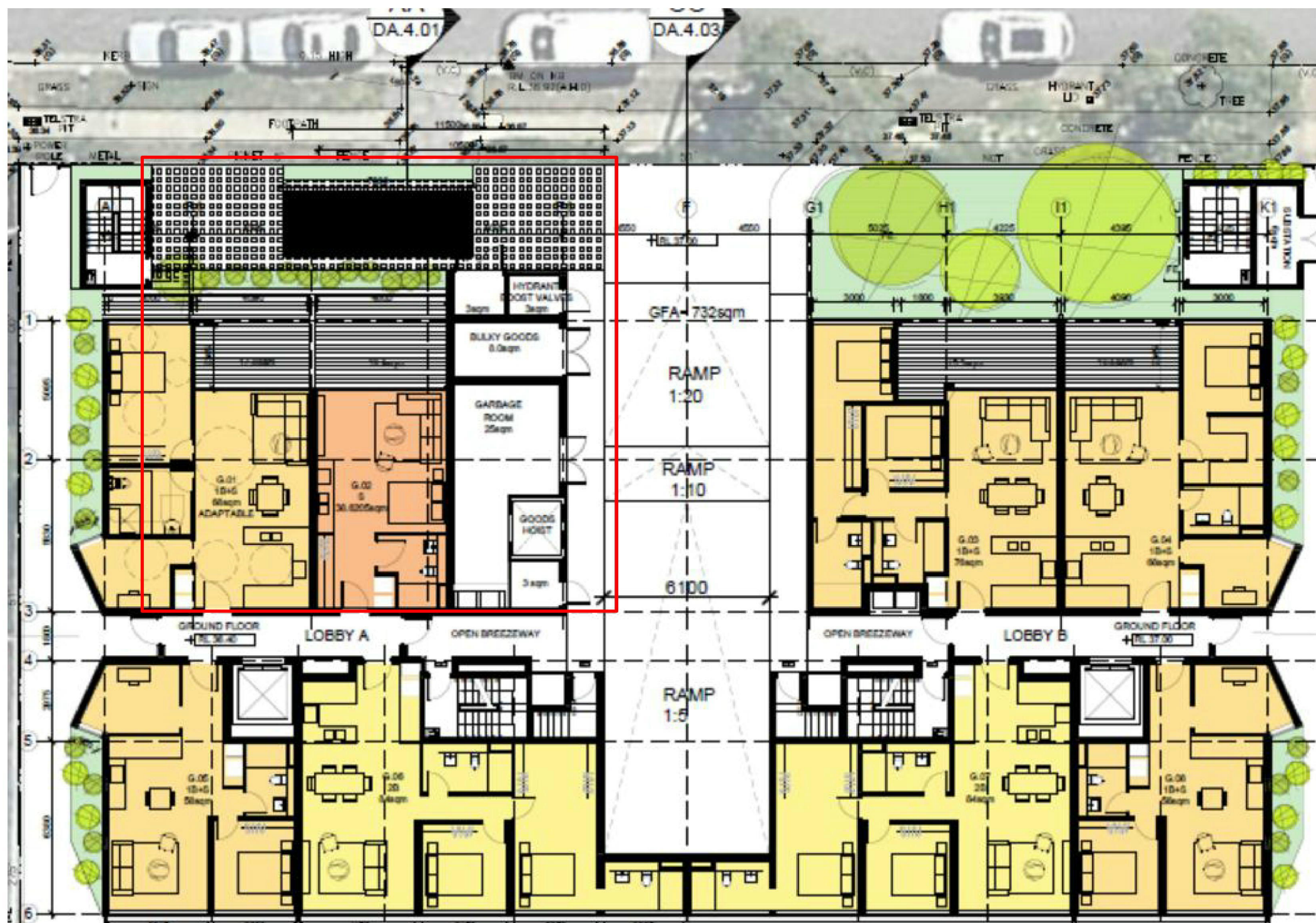
APPENDIX A.2 WASTE DISCHARGE ROOMS



Excerpt: Marchese Partners, Drawing DA1.05 P1 15.12.2017 – Basement 1

OPERATIONAL WASTE MANAGEMENT PLAN

APPENDIX A.3 COLLECTION AREA AND BULKY GOODS STORAGE



Excerpt: Marchese Partners, Drawing DA1.02 P1 15.12.2017 – Ground

APPENDIX A.4 TYPICAL LEVEL DISPLAYING WASTE CHUTE LOCATION



Excerpt: Marchese Partners, Drawing DA2.03 P1 15.12.2017 – Level 5

APPENDIX B PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX B.1 PENRITH BIN SPECIFICATIONS

| A | Height (mm) | Length (mm) | Width (mm) |
|-----------|-------------|-------------|------------|
| 240L Bin | 1100 | 740 | 600 |
| 660L Bin | 1400 | 1260 | 800 |
| 1100L Bin | 1330 | 1240 | 1090 |

Table 1: Standard Bin Size and Dimensions



Figure 1: Image of a typical 240L, 660L and 1100L waste collection bins

Source: Penrith's *Residential Flat Building Waste Management Guidelines*

OPERATIONAL WASTE MANAGEMENT PLAN

APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

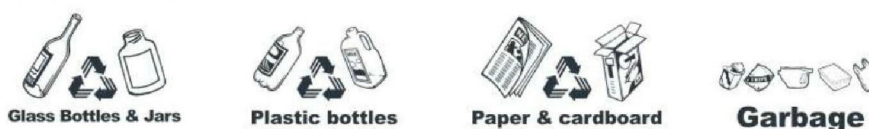
WASTE SIGNS

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

Example wall posters



Example bin lid stickers



SAFETY SIGNS

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

Examples of Australian Standards:



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

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

APPENDIX B.3 PENRITH COLLECTION VEHICLE INFORMATION FOR MGBS

NOTE: Small Residential Flat Buildings outlined in section 4.3 do not require on site waste allocation therefore no vehicle specifications have been provided of the 12.5m heavy Rigid Collection Vehicle.

The following dimensions are provided for a standard heavy rigid vehicle as identified in Australian Standard 2890.2:

| Vehicle Class: | Heavy Rigid Vehicle Dimensions |
|-------------------------------|--------------------------------|
| Overall Length (m) | 10.5 |
| Operational Length (m) | 12.5 |
| Design Width (m) | 2.8 |
| Design Height (m) | 3.7 |
| Swept Circle (m) | 22.5 |
| Clearance (travel height) (m) | 4.5 |
| Roadway/ramp grade (max) | 1:6.5 (15.4%) |
| Rate of change of grade (max) | 1:16 (6.25%) in 7.0m of travel |
| Weight Fully Loaded (tonnes) | 22.5 |
| Capacity (m ³) | 24 |
| Front Chassis Clearance | 13 ^o |
| Rear Chassis Clearance | 16 ^o |

Table 6: Standard dimensions sourced from AS 2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities

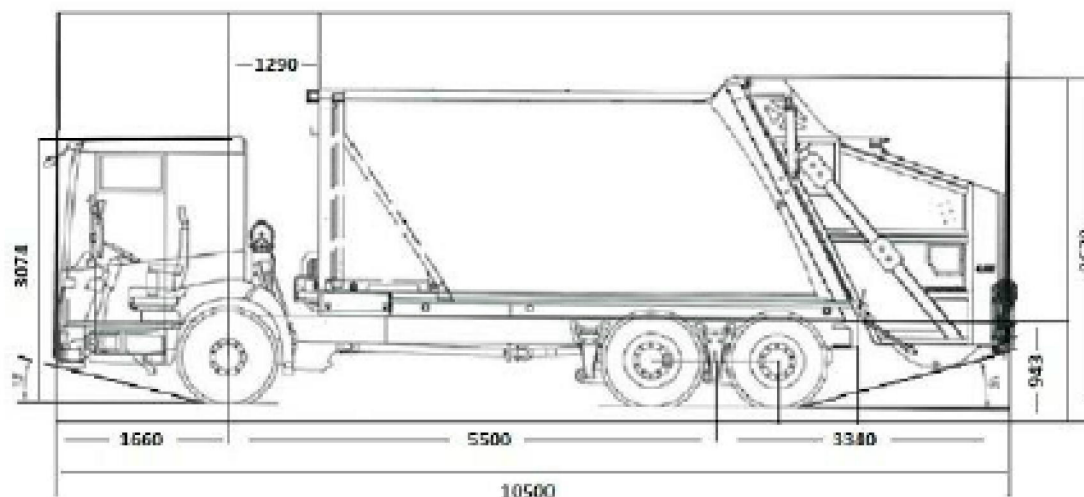


Figure 5: 10.5m Heavy Rigid Waste Collection Vehicle specifications

NOTE: Consideration of vehicle dimensions including rear operational requirements and overhead clearances are required when assessing collection points and route of travel for waste collection vehicles.

Source: Penrith's *Residential Flat Building Waste Management Guidelines*

TYPICAL MOTORISED BIN TUG



Typical applications:

- Move trolleys, waste bin trailers and 660/1100L bins up and down a ramp incline.
- Quiet, smooth operation with zero emissions and simple to use, no driver's licence required
- Suitable for:
 - High rise building & apartment basements
 - Large factories & warehouse with sloped ground
 - Caravan parks & other large outdoor areas

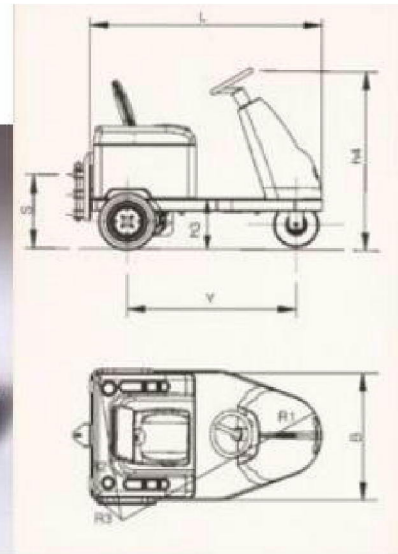
Features:

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

Safety Features:

- Intuitive paddle lever control
- Stops and repels the unit if activated when reversing.
- Site assessment recommended to assess ramp incline steepness (*See Useful Contacts*)

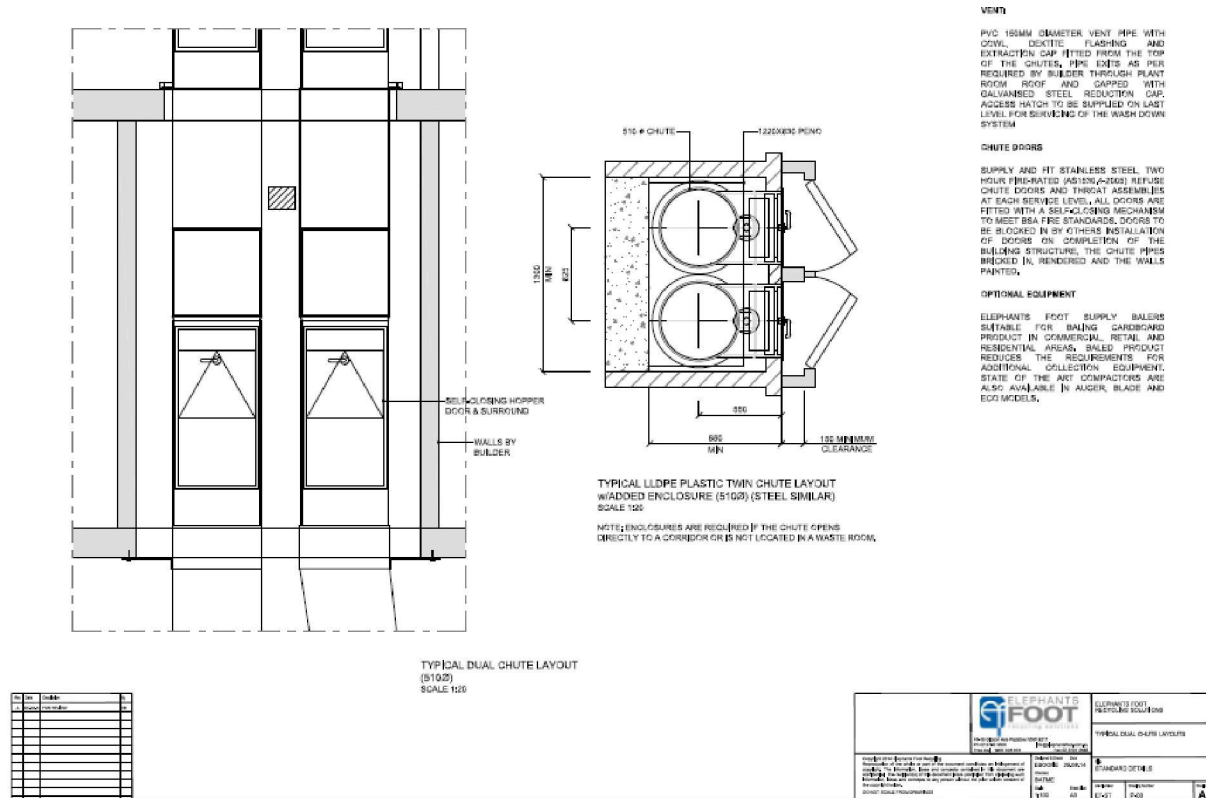
APPENDIX B.4 TYPICAL SEATED BIN MOVER



| | | UNIT M. | BULL 2 | BULL 4 |
|-----------------------|-----------------------------------|---------|----------------|----------------|
| Manufacturer | DEC | | | |
| Model | BULL | | | |
| Platform loading cap. | Nominal capacity | kg | ----- | ----- |
| Pull capacity | Pull nominal capacity | kg | 2000 | 4000 |
| Power type | Electric - endothermic | | electric | electric |
| Control type | Standing / seated thiller / steer | | seated / steer | seated / steer |
| Tyres | Pn=pneum. Se=superelastic | | Pn | Pn |
| Wheels | N. front/rear - x drive | n. | 1/2X | 1/2X |
| Platform dimensions | L x B (length x width) | mm | ----- | ----- |
| Platform height | h6 = unload clearance | mm | ----- | ----- |
| Overall dimensions | L = length | mm | 1500 | 1600 |
| | B = width | mm | 900 | 930 |
| | h1 = foot level | mm | 1820 | 1960 |
| | h3 = Seat height | mm | 310 | 340 |
| | h4 = Steer height | mm | 1250 | 1330 |
| Turning radius | R1 = front min. external | mm | 1400 | 1500 |
| | R2 = rear min. external | mm | 1000 | 1000 |
| | R3 = front min. internal | mm | 400 | 400 |
| Aisle width | A = 180° turn | mm | 2200 | 2300 |
| Tow hook height | s = center from ground | mm | 220-350-490 | 240-380-520 |

APPENDIX C INSTALLATION EQUIPMENT AND WASTE ROOM LAYOUTS

APPENDIX C.1 TYPICAL DUAL WASTE CHUTE SPECIFICATIONS



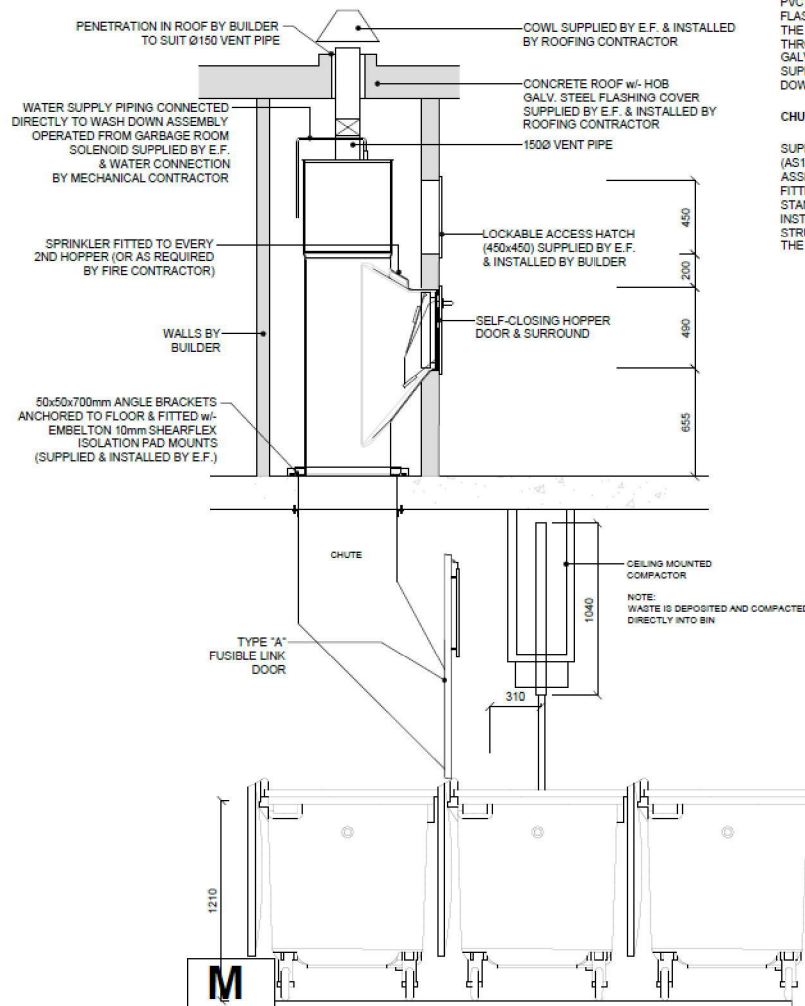
Waste chutes are supplied per the following specifications:

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

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

OPERATIONAL WASTE MANAGEMENT PLAN

APPENDIX C.2 TYPICAL LINEAR TRACK SYSTEM



VENT:

PVC 150MM DIAMETER VENT PIPE WITH COWL, DEKITE 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.

FIRE

FIRE SYSTEM CONTRACTOR TO:

- SUPPLY FIRE SPRINKLERS AND CONNECTION FOR SPRINKLER SYSTEM
- SPRINKLERS FITTED ON EVERY 2ND LEVEL (OR AS PER FIRE CONTRACTOR INSTRUCTION)

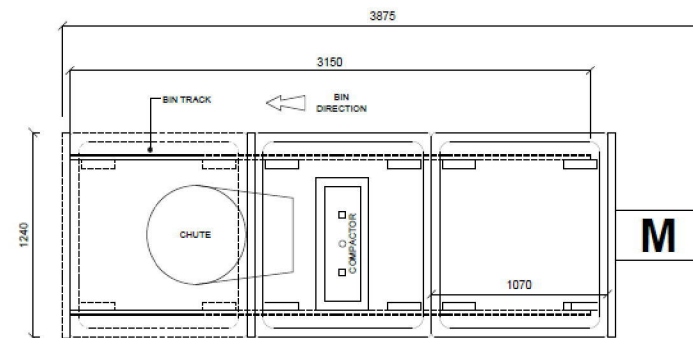
ELECTRICAL

YOUR ELECTRICIAN TO PROVIDE:

- ONE (1) STANDARD 240V GPO IN MAIN GARBAGE ROOM
- ONE (1) 415VOLTS, 5 PINS, 20AMPS FOR EACH REQUIRED COMPACTOR, CAROUSEL OR LINEAR
- COORDINATE WITH ELECTRICAL SUBCONTRACTOR

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.

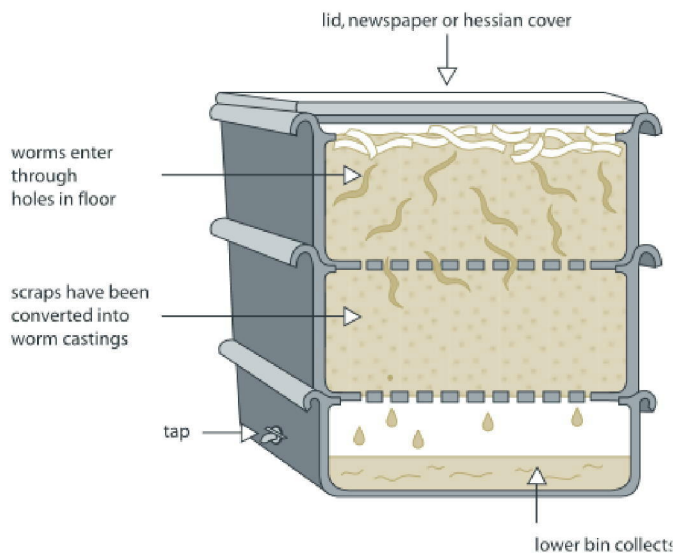


TYPICAL 2-BIN 1100L LINEAR WITH COMPACTOR
SCALE NTS

APPENDIX D SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX D.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



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

Height – 300mm per level

Width – 600mm

Length – 900mm

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

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

APPENDIX D.2 TYPICAL APARTMENT STYLE COMPOST BINS



Apartment Style Compost bin – available from hardware stores

Suitable for:

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

APPENDIX D.3 ELECTRIC ORGANIC COMPOST BIN



Product Specifications

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

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

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

SOURCE: Closed Loop Domestic Composter – See Useful Contacts

<http://www.closedloop.com.au/domestic-composter>