WASTE MANAGEMENT PLAN

PREPARED FOR
MIRVAC

ON BEHALF OF
BVN

MIXED USE DEVELOPMENT
2 FIGTREE DRIVE, SYDNEY OLYMPIC PARK, NSW. 2127.

ISSUED JULY 2015

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REVISIONS

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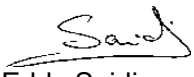
Authorised By: 

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Date: 5/08/2015

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EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the residential development located at 2 Figtree Drive, Sydney Olympic Park, NSW. 2127.

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
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
Putrescible Waste	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.

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INTRODUCTION

The following waste management plan pertains to the residential development located at, 2 Figtree Drive, Sydney Olympic Park, NSW. 2127. This waste management plan is an operational waste management plan and will address the phases of the completed development.

The plan outlines measures to achieve the following objectives:

- avoid the generation of unnecessary waste;
- minimise the quantities of wastes generated ending up as landfill;
- recover, reuse and recycle waste generated onsite where possible; and
- aim to achieve Federal and State Government waste minimisation targets in accordance with regional waste plans.

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

- Four multi-level buildings known as
  - Building West (11 levels),
  - Building South (10 levels),
  - Building East (15 levels)
  - Building North (5 levels)
  - In addition to 3 basement levels.
- 422 residential units in total (see unit mix below)
- 1500sqm's of Retail

Table 1: Unit Breakdown Matrix

Building	# Units	% Mix
1 Bedroom	158	37%
2 Bedroom	223	53%
3 Bedroom	41	10%
Total	**422**	**100%**

Each section of this development has been examined individually within this report however; the waste management process must be effectively coordinated between all sections for the system to work. All waste facilities and equipment are to be designed and constructed to be in compliance with the Auburn City Council, Australian Standards and statutory requirements.

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings (*see appendix A. Drawing Excerpts*)

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

The residential waste and recycling will be guided by the services and acceptance criteria of Auburn City Council. The residential waste and recycling will be collected by council.

All waste facilities and equipment are to be designed and constructed to comply with *The Auburn Development Control Plan 2010,* Australian Standards and statutory requirements.

OBJECTIVES

- Ensure waste minimisation through source separation, reuse and recycling
- Ensure efficient storage, access, collection of waste and quality design of facilities
- Implement the principles of the waste hierarchy of avoiding, reusing and recycling during the demolition, construction and ongoing use of premises through efficient resource recovery
- Promote the principles of ecologically sustainable development through waste avoidance, resource recovery and recycling to achieve improved environmental outcomes
- Ensure facilities are provided for efficient solid waste management
- Achieve the design of waste and recycling storage/collection systems in buildings and land use activities which are: hygienic, safe to operate, of an adequate size, and visually compatible with their surroundings
- Ensure that adequate and appropriate storage areas for recyclables and waste are designed to meet the objectives of ecologically sustainable development.

REQUIREMENTS

- Provide waste and recycling bin enclosures that:
  - are adequate in size;
  - are durable and waterproof;
  - blend in with the development;
  - avoid visual clutter; and
  - are easy to maintain in a clean and hygienic condition.
- Waste removed from sites is reduced
- Waste is minimised and resource recovery maximised by increased source separation of materials to ensure efficient management of waste and recyclable materials.
- Stormwater pollution that occurs as a result of poor waste, recycling, storage and management practices is prevented.
- Minimised noise during waste and recycling collection, and residential waste facility usage
- Safety and hygiene is to:
  - Promote safe practices for storage, handling and collection of waste and recycling

- ensure health and amenity for residents and workers in the Auburn local government area.

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 or waste chute.

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.

Training videos are available to assist in educating residents to use the eDiverter chute doors correctly and the can be found in the links as follows:

eDIVERTER VIDEOS	TENANT VIDEO
https://vimeo.com/98294003	https://vimeo.com/98294002
http://youtu.be/kGBGXOe6P0I	http://youtu.be/kGBGXOe6P0I

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 Auburn City Council's *Development Control Plan 2010* 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)	Recycling Calculation (L/unit/week)	Generated Recycling (L/week)
Building West	120	120	14400	80	9600
Building North	30	120	3600	80	2400
Building East	175	120	21000	80	14000
Building South	97	120	11640	80	7760
Total	**422**		**50640**		**33760**

BIN SUMMARY

The following assumptions have been taken into consideration:

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

Using the assumptions indicated the required capacity and quantity of garbage and recycling bins have been calculated and tabulated respectively in the following tables:

Table 3: *Bin Summary – Residential*

		Garbage			Recycling		
Waste Rooms	**Building Core**	**Bin Capacity** (L)	**Quantity**	**Collection Rate** (times/week)	**Bin Capacity** (L)	**Quantity**	**Collection Rate** (times/week)
Garbage Room B0.12	Building West	660	8	3	660	15	1
Garbage Room B0.13	Building North	660	2	3	660	4	1
Garbage Room B0.14	Building East	660	11	3	660	22	1
Garbage Room B0.15	Building South	660	6	3	660	12	1
Total		**660**	**27**	**3**	**660**	**53**	**1**

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

Each building will be supplied with an eDiverter system which comprises of a single waste chute fitted with a recycling diversion.

Diversion systems allow for the installation of a single-use chute door for both garbage and recycling disposal. Providing building owners with significant savings in cost due to the following reasons:

- no recycling areas required on each level – costs savings for developers;
- no recycling bin movement via lifts – energy cost savings;
- reduced bin cleaning time – labour cost savings;
- overall reduced labour for building operators; and
- reduced ongoing building maintenance (may assist in strata fee reduction) – labour cost savings

Four (4) waste chutes will be installed and fitted with eDiverter systems supplied by Elephants Foot. Breakdown is as follows:

Building	Chutes System
Building West	single waste chute with eDiverter and Dual Linear Tracks
Building North	single waste chute with eDiverter
Building East	single waste chute with eDiverter and Dual Linear Tracks
Building South	single waste chute with eDiverter and Dual Linear Tracks

Garbage discharges into 660L MGBs which are not compacted, and recycling (comingle) into 660L MGBs which are also not compacted. The discharge is located in the waste rooms for each building. Full bins will be transferred to the waste storage room on Level 00 for servicing by Council. (see *Appendix A.* Loading Dock / Waste Storage Room*)*

WASTE HANDLING

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 before using the chute system. Bagged waste should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

Recycling must not be bagged. It is recommend that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation before using the chute system. It is expected that residents will place clean and empty recycling items into the chute when using the recycling function.

Each residential level has a service room with access to a chute outlet which provides the opportunity to dispose of garbage and recyclable items *(see Appendix A.1-* Residential Level Chute Access*).*

Once putrescible and recyclable waste streams are separated, the resident will carry these to the chute door and deposit bagged waste and loose recyclables using the buttons on the chute door. (see Appendix C.5 - E-diverter Hopper / access Doors)

Residents will select a recycling or waste function button located on each chute door. Direction on using the diversion system will be prominently displayed on each chute door.

The selection button moves a mechanism that guides either the waste or recycling into the correct collection bin, located in the waste room below. If residents on other levels select the same disposal function, they are able to deposit the same waste at the same time (i.e. waste system – all doors will open).

If commingled recycling is chosen during a waste disposal operation, the resident will be required to wait for the diverter to move from the waste bin to the recycling bin function. A wait time of three to ten seconds is the maximum time delay. The chute door will open but will not close until the diverter has returned to accept the correct waste stream.

NOTE: The operation will default to garbage in the case of a power outage.

TEMPORARY STORAGE OF BULKY GOODS

Council requires a room or caged area to be allocated for the storage of discarded bulky items and recyclable electronic goods and sign marked appropriately. Provision has been made for a bulky goods storage room within close proximity to the loading area on level 00 (see Appendix A.5 Bulky Goods Storage) The room meets council requirements for an allocated minimum space of 4m³ per 100 units. The storage area is readily accessible to all residents for use via coordination with the building caretaker/ management.

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

Electronic goods or hazardous waste must not be placed in garbage or recycling bins for safety and environmental reasons. Residents should be directed to Councils comprehensive website for further information.

WASHROOM FACILITIES

Washroom facilities in common or retail areas should be supplied with collection bins for paper towels (if used). Sanitary bins must also be arranged with an appropriate contractor.
Building management will monitor use and ensure waste bins are exchanged and cleaned.

GREEN WASTE

There may 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 or 610mm galvanised steel or 510mm recycled LLDPE polyethylene plastic;
- galvanised steel chutes or plastic chutes are fully wrapped with Vibralag acoustic wrap to assist in noise reduction;
- chutes are fixed to each slab level with galvanised steel brackets and Dynabolts;
- 30 mm Embleton Neoprene rubber isolation mounts under brackets on all levels;
- mounting brackets are site specific to accommodate penetrations or building shafts;
- penetrations on each building level at vertically perpendicular points with minimum penetration dimensions of 600mm x 600mm or 700mm x 700mm (square or round) for 510mm and 610mm chutes respectively are required to accommodate the chute installation;
- chute is supplied with a vent exiting at the top of each chute, openings for placement of fire sprinklers on every second level and wash down 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 and throat assemblies are fitted at each required service level. All doors are fitted with a bottom hinged, self-closing mechanism, electronic lock out solenoid, connecting controls ready for wiring to diverter control box

eDIVERTER

Figure 1: *eDiverter Logo*

Each of the waste rooms for will be supplied with an Elephants Foot eDiverter waste and recycling diversion system. Bottom chutes will direct garbage product into 660L MGBs placed on Linear Tracks and recycling discharging into 660L MGBs placed on Linear Tracks. The garbage is not compacted; and recycling not compacted for all bin rooms (s*ee APPENDIX C.1 for Typical eDiverter*).

eDiverter specifications:

- split system body 5mm plate with two bottom out lets;
- steel impact hopper for garbage and recycling products;
- hopper bin feeds and containments which flow waste and recyclables directly into collection bins;
- shut out door with manual over ride to close off chute fitted with fusible link;

- internal diverter plate 5mm activated by a hydraulic cylinder;
- hydraulic power pack with single phase 0.55kW motor and all associated connections;
- PLC control box in garbage room, programmed to operate diverter and lock out doors;
- 12 core 24 volt cables mounted to the external of chute pipes;
- doors fitted with electronic lock out normally closed solenoid;
- at each level above every chute door, four bottom operating switch board;
- electric connections at each station; and
- system connections and operation from every level - test and commission

ACOUSTICS

It is recommended that the walls of the shaft area surrounding the chutes and the chute hopper system construction be built to an Rw 50 construction. This is required to ensure acoustic compliance with typically recommended noise levels. Please note that noise from garbage chutes is not regulated by the BCA.

The following table supplies acoustic criteria that are typically recommended as a satisfactory internal noise level in apartments during the use of chute systems.

Table 4: *Recommended Satisfactory Internal Noise Level in Apartments*

Space Type	**Allowable Maximum Level** (dB(A)L max)
Bedrooms	30
Living Room	35

EQUIPMENT SUMMARY

Table 5: *Equipment Summary*

Component	**Part**	**Quantity**	**Notes**
Chutes	Galvanised Steel / LLDPE Polyethylene Plastic	4	Chute Diameter (*See APPENDIX C.2 for Typical Chute Section*)
Equipment A	eDiverter Discharge Systems		For each waste room level
	Garbage Linear Tracks for 660L MGB not compacted	3	(*See APPENDIX C.3 for Typical Linear System*)
	Recycling Linear Tracks for 660L MGB not compacted	3	(*See APPENDIX C.3 for Typical Linear System*)
Equipment B	Suitable Bin Moving Equipment	1	Optional (*See APPENDIX C.4 for Typical Bin Mover*)

RETAIL WASTE PLAN

The *Better Practice Guide for Waste Management and Recycling in Multi-unit Dwellings* has been referenced to calculate the total number of bins required for the retail areas. Please note that calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice. Please note that waste generation rates are based on the highest output, being for restaurants, to ensure space is provided for any retail mix. A seven day operating week has been assumed.

Table 6: *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)
Food	1500	660	69300	135	14175
TOTAL	**1500**		**69300**		**14175**

BIN SUMMARY

Table 7: *Bin Summary - Retail*

	Garbage			Recycling		
Building/Waste Rooms	**Bin Capacity** (L)	**Quantity**	**Collection Rate** (times/week)	**Bin Capacity** (L)	**Quantity**	**Collection Rate** (times/week)
	1100	11	6	1100	5	3

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

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.

Waste and recycling should be stored back of house during operating hours. On completion of each trading day or as required, nominated retail staff/cleaners will transport their waste and recycling to the retail waste and place waste and recycling into the appropriate collection bins

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

For each of the buildings the waste rooms will need to accommodate the eDiverter, and a 3 to 4 bin 660L linear track for both waste and recycling. The bin store must hold all the waste bins generated weekly, and allow enough room to clean and safely manoeuvre bins. A bin wash down area should be provided in this area

The areas allocated for residential waste rooms, bulky goods and storage / collection areas are detailed in Table 8: Waste Room Areas below. The areas provided are considered suitable for purpose.

Table 8: *Waste Room Areas*

Waste Room	Waste Room Type	Minimum m^2	Comment
B0.12 (Building West)	Chute Discharge	24	Includes 2 x Linear Track and Manoeuvring Space
B0.13 (Building North)	Chute Discharge	10	Rotation equipment not required for this room
B0.14 (Building East)	Chute Discharge	24	Includes 2 x Linear Track and Manoeuvring Space
B0.15 (Building South)	Chute Discharge	24	Includes 2 x Linear Track and Manoeuvring Space
Waste Storage Room	Storage	93	Based on separate collection days for waste and recycling
Retail Waste	Storage	35	Based on seven day per week retail operations
Waste Room	Waste Room Type	Minimum m^3	Comment
Bulky Goods	Storage	16	Use of centralised bulky goods store requires coordination with the building caretaker / management. Close proximity to the loading area offers the best solution for collections.

COLLECTION OF WASTE

RESIDENTIAL

All residential waste and recycling bins from each of the four (4) waste chute discharge rooms will be transferred to the waste storage room on level 00 situated beneath Building East. The waste storage room connects directly to the loading bay where it will be collected by Council. (See Appendix A.2 - Loading Dock / Waste Storage Room)

RETAIL

All retail waste and recycling will be stored in the retail waste room (see Appendix A.4 Retail Waste Room). Bins may be transferred to the loading area via the rear corridor, car park and ramps. Collections will be completed by private contractor. Subject to negotiations with the contractor and relevant safety assessments the bins will either be transferred to the loading area by the caretaker before or on the day of collection or serviced by the contractor on a “walk in - walk out” basis directly to and from the retail waste room.

COLLECTION AREA

The collection area has been reviewed by a traffic consultant including swept paths based on vehicle dimensions provided by Auburn City Council. This information and supporting drawings will be provided separate to this report.

The final number of truck movements will depend on management of waste contract; final configuration of waste and recycling arrangements therefore number of bin lifts and additional irregular truck movements for hard waste.

GARBAGE ROOMS

CONSTRUCTION REQUIREMENTS

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

- waste room floor to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- for residential: a hot and cold water facility with mixing facility and hose cock must be provided for washing the bins;
- for retail/commercial: a cold water facility with hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board. (Sydney Water);
- tap height of 1.6m;
- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets to be installed 1700mm above floor levels;
- the room must be mechanically ventilated;
- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- all personnel doors are hinged and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

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

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

VENTILATION

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

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

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

STORM WATER PREVENTION & LITTER REDUCTION

Building management shall be responsible for the following to minimise dispersion of site litter and prevent stormwater pollution to avoid impact to the environment and local amenity:

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

ADDITIONAL INFORMATION

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

LIMITATIONS

The purpose of this report is to document a Waste Management Plan as part of a development application and is supplied with the following conditions:

- drawings and information supplied by the project architect;
- 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 waste management;
- 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; and
- any manual handling equipment should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply.

USEFUL CONTACTS

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

Auburn Council Customer Service
Phone: 02 9375 1222 Email: auburncouncil@auburn.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

RELIVIT
Phone: 1300 247 732 Email: mailto:info@relivit.com.au

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

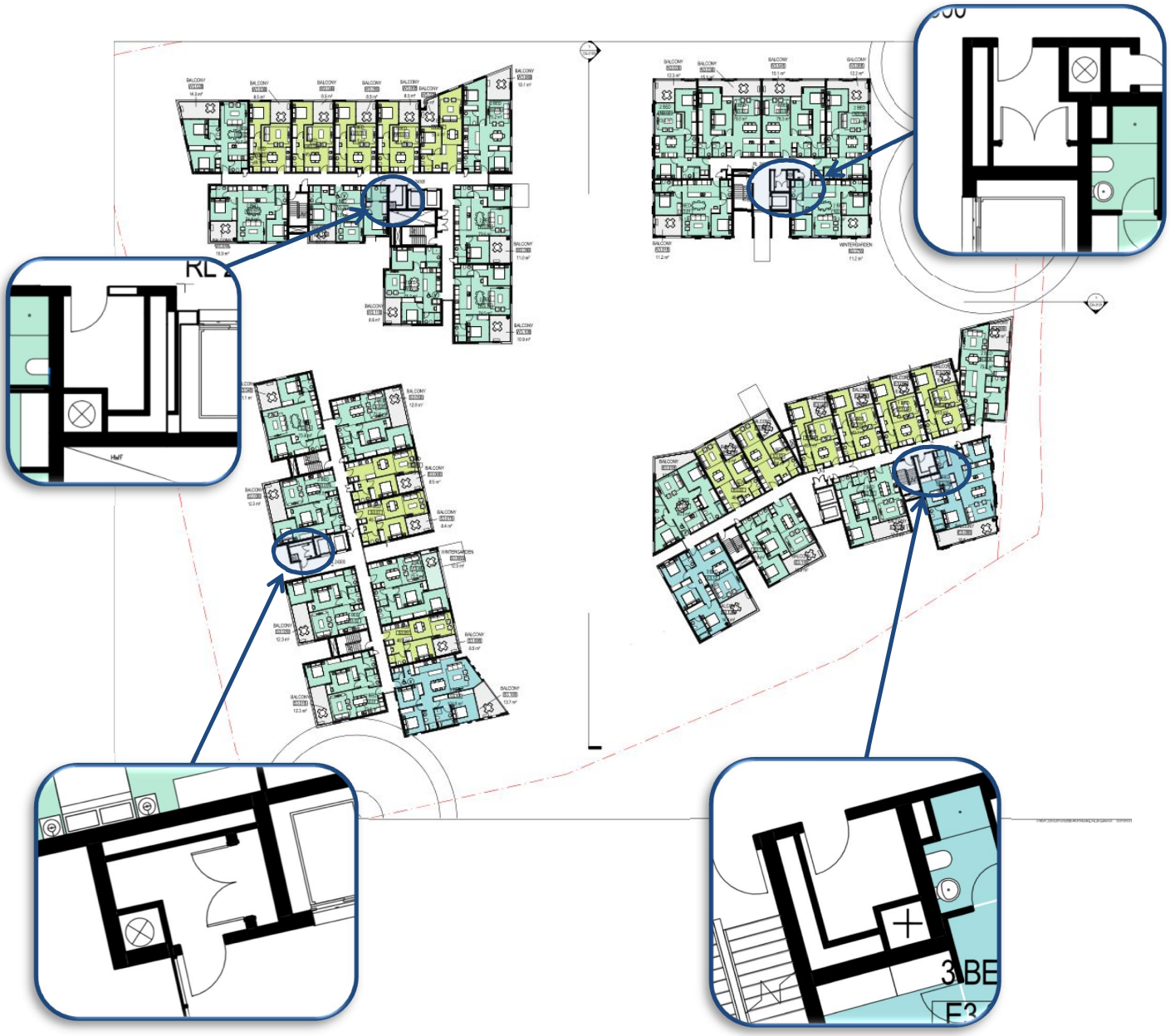
PURIFYING SOLUTIONS (Odour Control)
Phone: 1300 636 877 Email: sales@purifyingsolutions.com.au

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

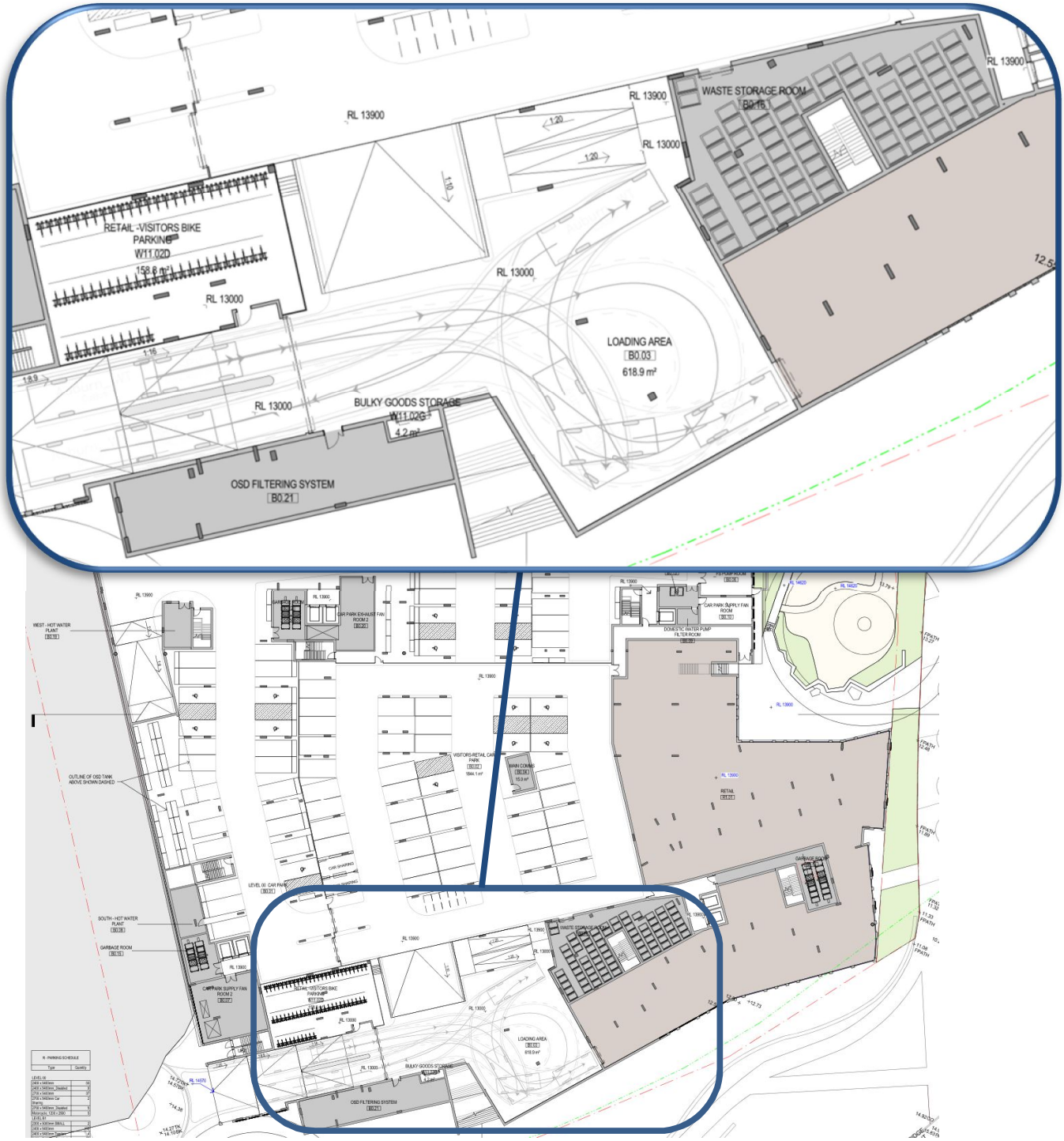
APPENDIX A DRAWING EXCERPTS

APPENDIX A.1 RESIDENTIAL LEVEL CHUTE ACCESS



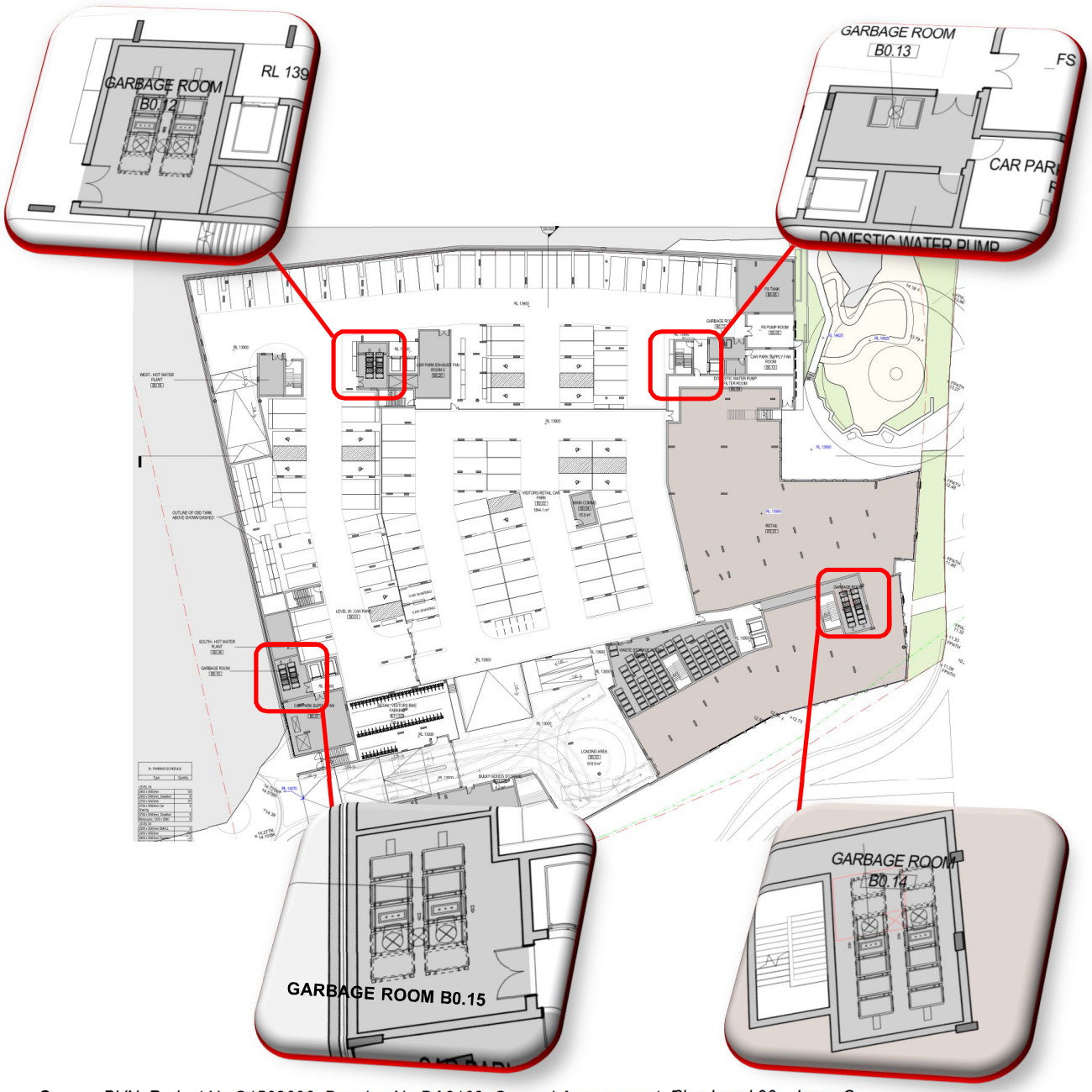
Source: BVN, Project No S1502006, Drawing No DA2106, General Arrangement, Plan Level 03 – Issue E

APPENDIX A.2 LOADING DOCK / WASTE STORAGE ROOM



Source: BVN, Project No S1502006, Drawing No DA2103, General Arrangement, Plan Level 00 – Issue C

APPENDIX A.3 WASTE ROOMS

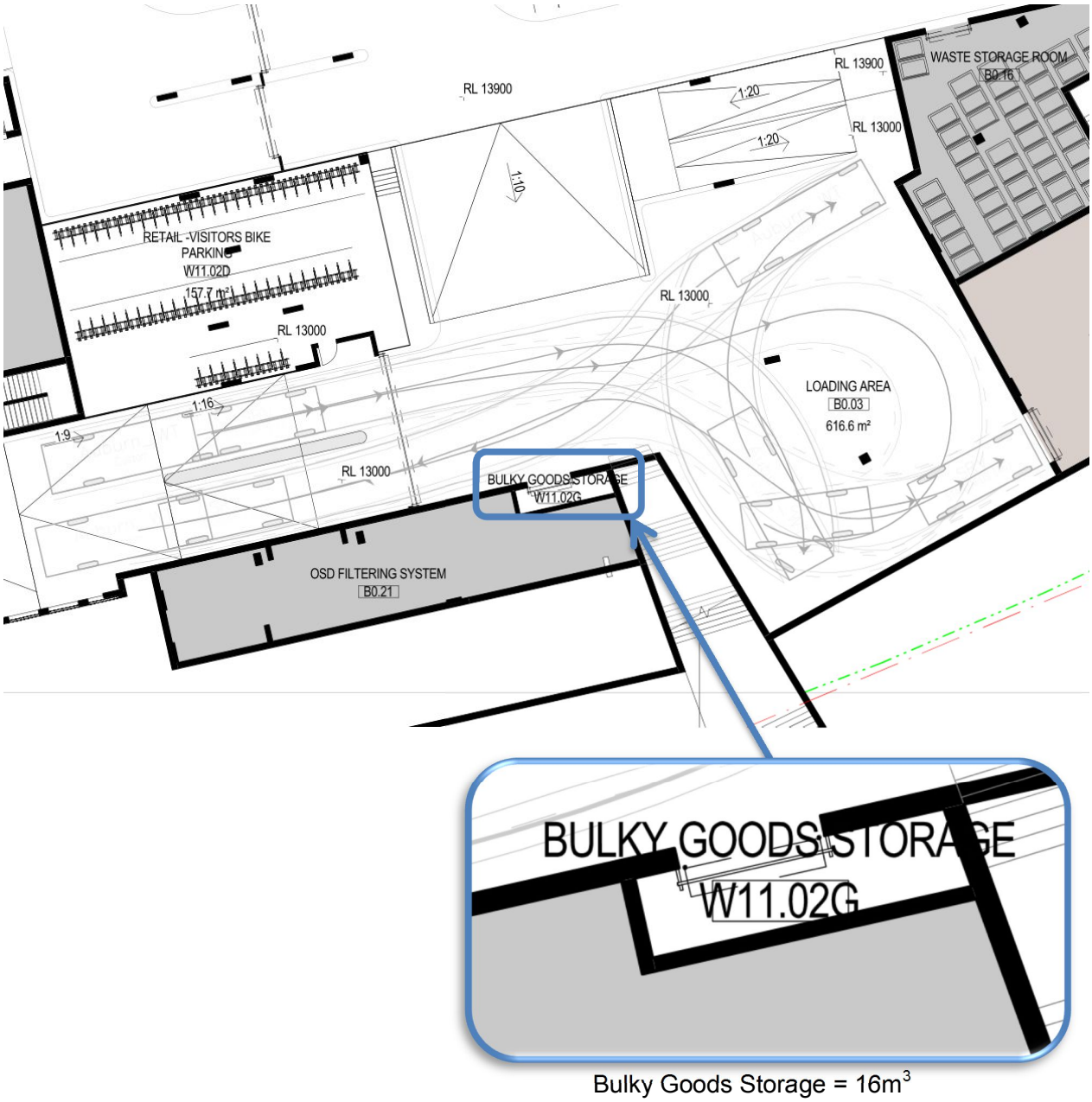


Source: BVN, Project No S1502006, Drawing No DA2103, General Arrangement, Plan Level 00 – Issue C

APPENDIX A.4 RETAIL WASTE ROOM

Source: BVN, Project No S1502006, 05/08/15 Level 00 BVN Sketch

APPENDIX A.5 BULKY GOODS STORAGE



Bulky Goods Storage = 16m^3

Source: BVN, Project No S1502006, 05/08/15 Level 00 BVN Sketch

APPENDIX B AUBURN CITY COUNCIL EQUIPMENT SPECIFICATIONS

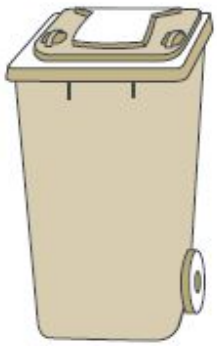
APPENDIX B.1 BIN DIMENSIONS

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

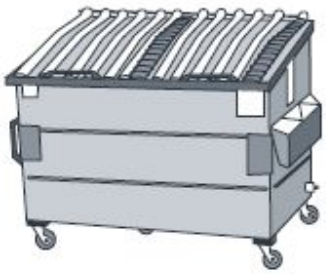
Mobile containers with a capacity from 500L to 1700L with four wheels

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

Bulk bins greater than 1700L capacity

The following bulk bin dimensions are a guide only and may differ slightly according to manufacturer.
Not all available bulk bin sizes are shown.



Bin Type	2.0 m³ Skip	3.0 m³ Skip	4.5 m³ Skip
Height	865 mm	1225 mm	1570 mm
Depth	1400 mm	1505 mm	1605 mm
Width	1830 mm	1805 mm	1805 mm

APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

WASTE SIGNS

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

SAFETY SIGNS

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

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

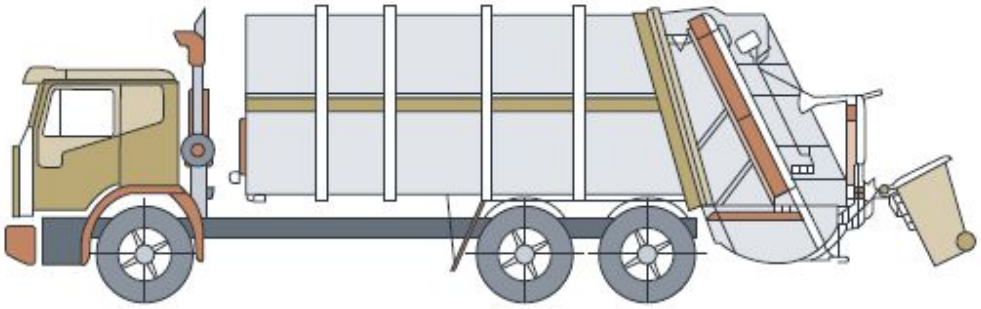
APPENDIX B.3 TYPICAL COLLECTION VEHICLE INFORMATION

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.

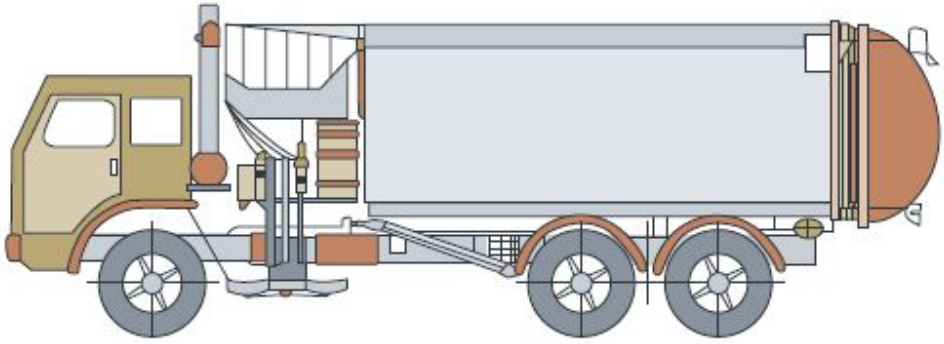


Rear loading collection vehicle

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.

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

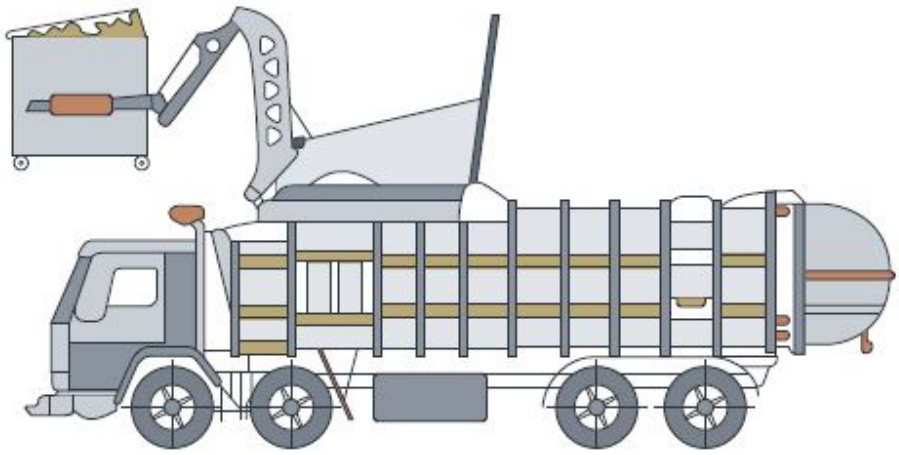
Side-loading collection vehicle



Side-loading collection vehicle	
Length overall	9.64m
Front overhang	1.51m
Wheelbase	5.20m
Rear overhang	2.93m
Turning circle kerb to kerb	17.86m
Turning circle wall to wall	20.56m
Front of vehicle to collection arm	3.8m
Maximum reach of side arm	3.0m
Travel height	3.63m
Clearance height for loading	3.9m

This is the most commonly used vehicle for domestic garbage and recycling collections. It is only suitable for collecting MGBs up to 360 litres in size.

Front-lift loading collection vehicle

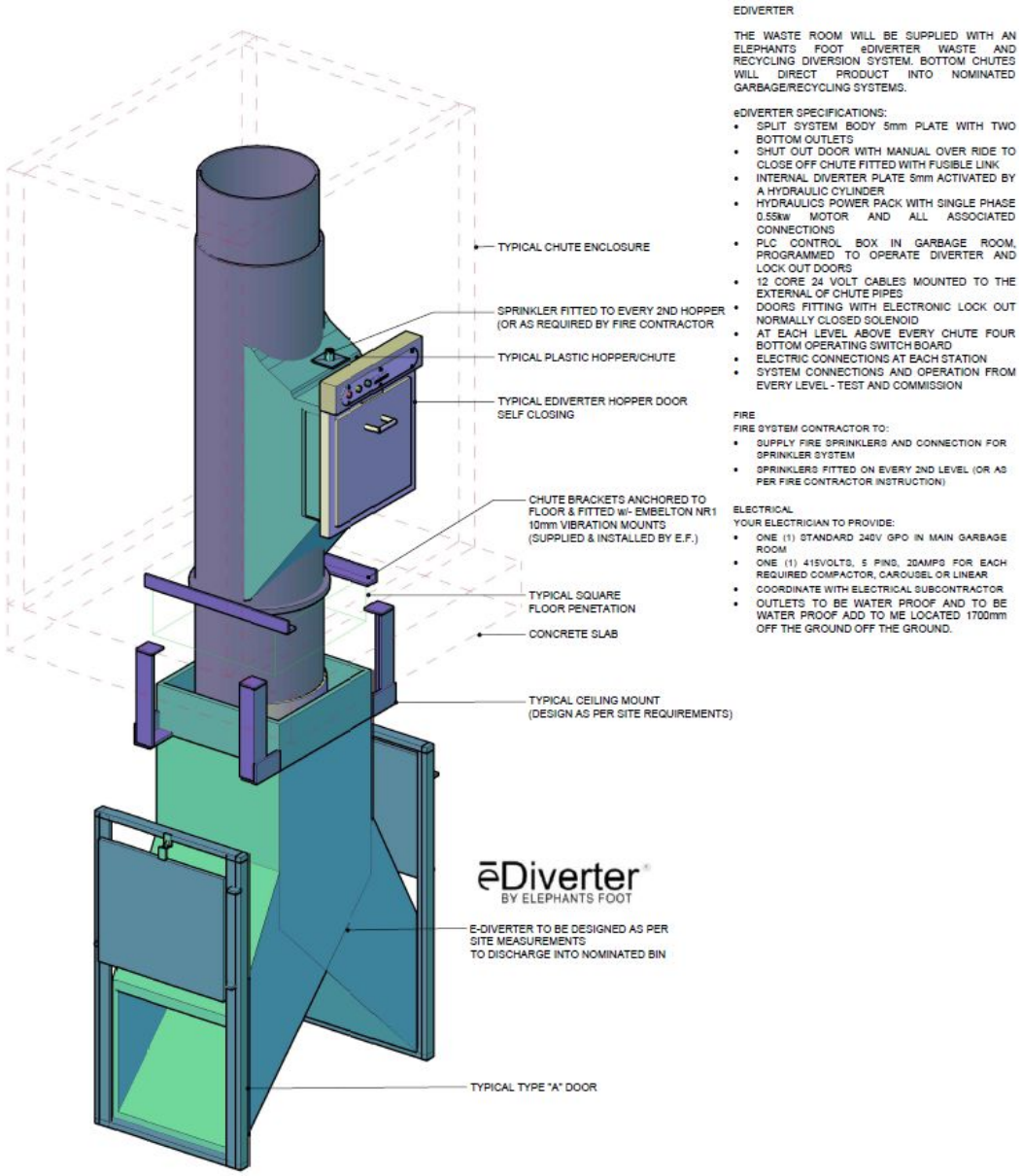


Front-lift loading collection vehicle	
Length overall	10.52m
Front overhang	1.51m
Wheelbase	5.84m
Rear overhang	3.17m
Turning circle kerb to kerb	22.10m
Turning circle wall to wall	23.66m
Travel height	3.82m
Clearance height for loading	6.1m

This is mainly used for collecting commercial and industrial waste, and is only suitable for bulk bins with front lift pockets (not MGBs).

APPENDIX C WASTE MANAGEMENT EQUIPMENT SPECIFICATIONS

APPENDIX C.1 TYPICAL eDIVERTER



TYPICAL EDIVERTER - PLASTIC CHUTE
scale NTS

EDIVERTER

THE WASTE ROOM WILL BE SUPPLIED WITH AN ELEPHANTS FOOT eDIVERTER WASTE AND RECYCLING DIVERSION SYSTEM. BOTTOM CHUTES WILL DIRECT PRODUCT INTO NOMINATED GARBAGE/RECYCLING SYSTEMS.

eDIVERTER SPECIFICATIONS:

- SPLIT SYSTEM BODY 5mm PLATE WITH TWO BOTTOM OUTLETS
- SHUT OUT DOOR WITH MANUAL OVER RIDE TO CLOSE OFF CHUTE FITTED WITH FUSIBLE LINK
- INTERNAL DIVERTER PLATE 5mm ACTIVATED BY A HYDRAULIC CYLINDER
- HYDRAULICS POWER PACK WITH SINGLE PHASE 0.55kw MOTOR AND ALL ASSOCIATED CONNECTIONS
- PLC CONTROL BOX IN GARBAGE ROOM, PROGRAMMED TO OPERATE DIVERTER AND LOCK OUT DOORS
- 12 CORE 24 VOLT CABLES MOUNTED TO THE EXTERNAL OF CHUTE PIPES
- DOORS FITTING WITH ELECTRONIC LOCK OUT NORMALLY CLOSED SOLENOID
- AT EACH LEVEL ABOVE EVERY CHUTE FOUR BOTTOM OPERATING SWITCH BOARD
- ELECTRIC CONNECTIONS AT EACH STATION
- SYSTEM CONNECTIONS AND OPERATION FROM EVERY LEVEL - TEST AND COMMISSION

FIRE

FIRE SYSTEM CONTRACTOR TO:

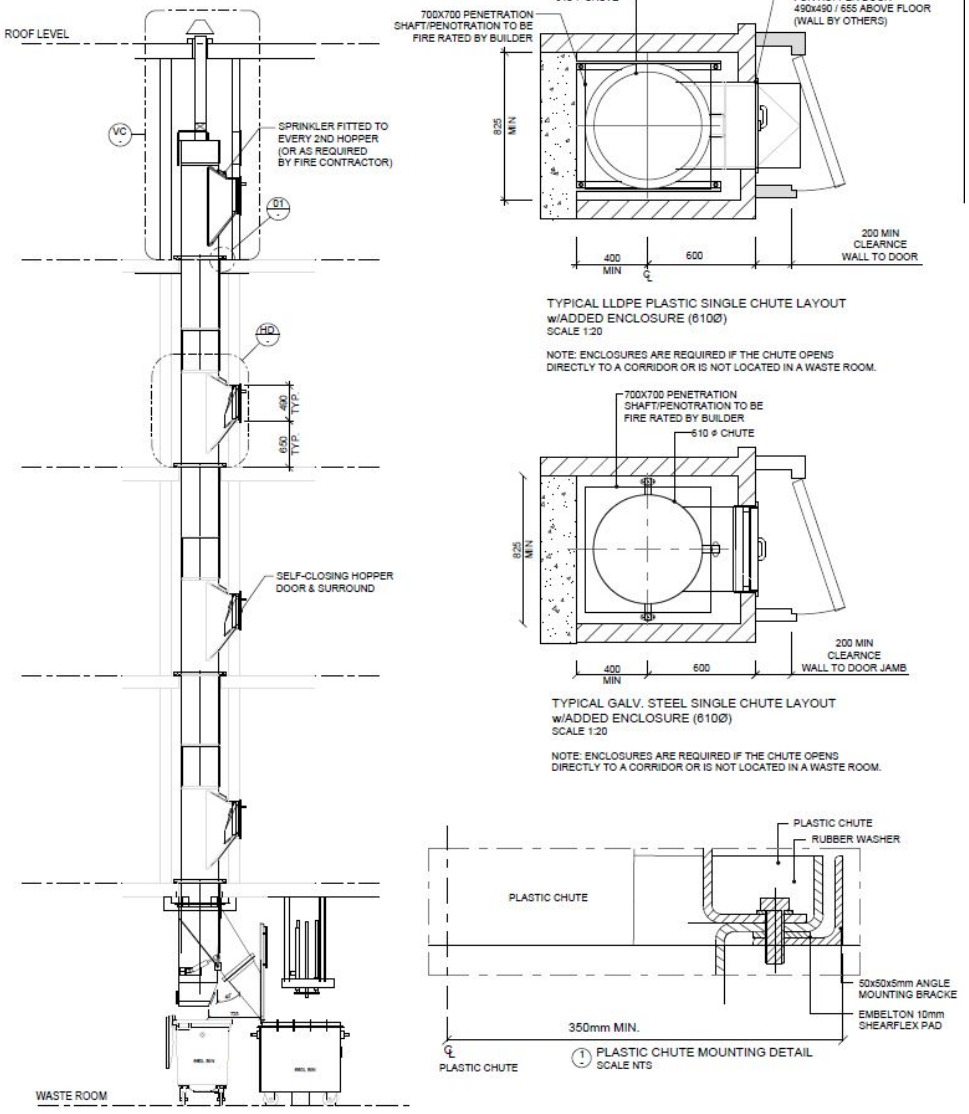
- SUPPLY FIRE SPRINKLERS AND CONNECTION FOR SPRINKLER SYSTEM
- SPRINKLERS FITTED ON EVERY 2ND LEVEL (OR AS PER FIRE CONTRACTOR INSTRUCTION)

ELECTRICAL

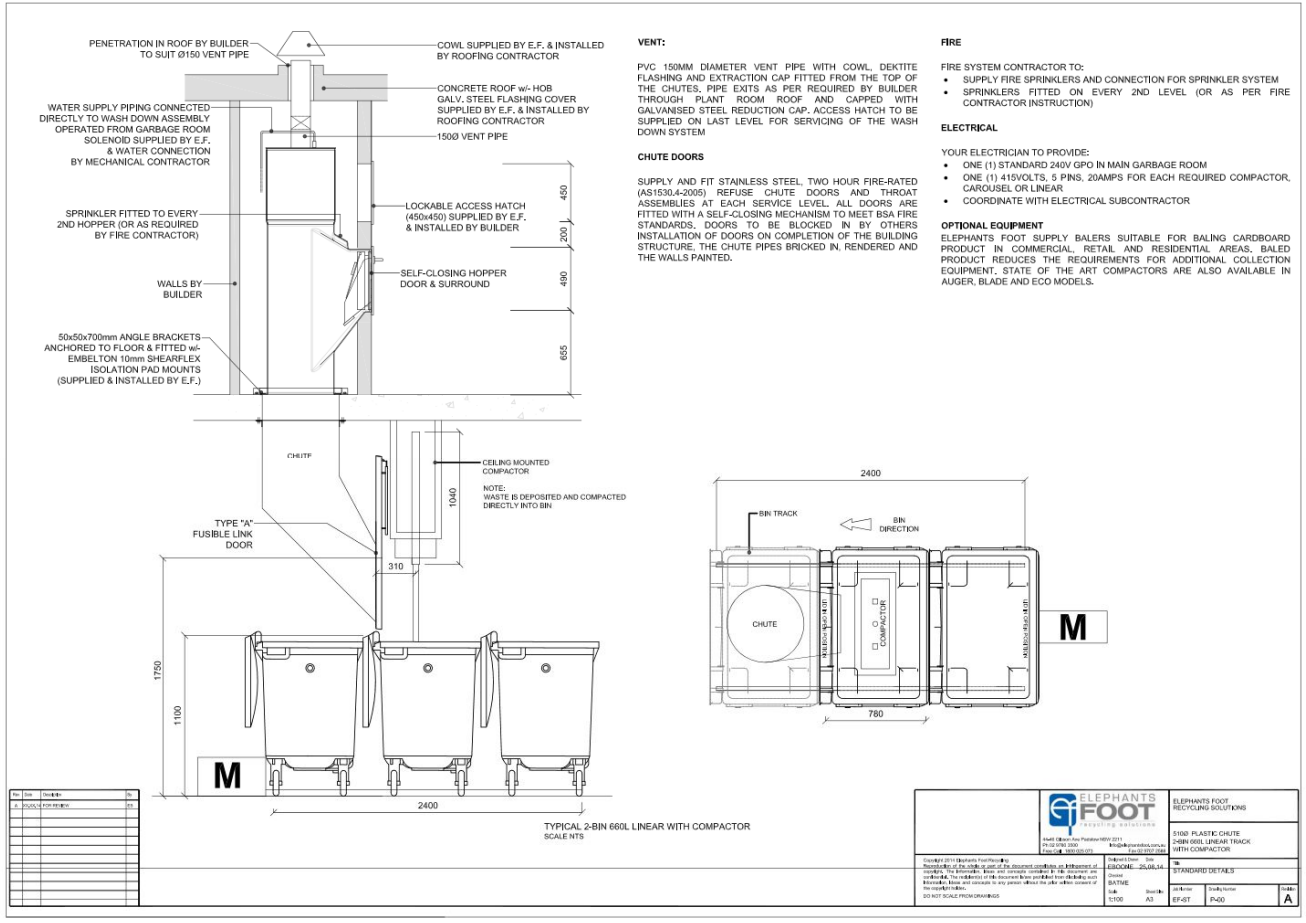
YOUR ELECTRICIAN TO PROVIDE:

- 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
- OUTLETS TO BE WATER PROOF AND TO BE WATER PROOF ADD TO ME LOCATED 1700mm OFF THE GROUND OFF THE GROUND.

APPENDIX C.2 TYPICAL CHUTE PLAN & ELEVATION



APPENDIX C.3 TYPICAL LINEAR SYSTEM TO SUIT 660L MGB's



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 E-DIVERTER HOPPER / ACCESS DOORS