WASTE MANAGEMENT PLAN

PREPARED FOR
INTEGRATED PROJECT SERVICES PTY LTD

ON BEHALF OF
TONY OWEN PARTNERS

MIXED DEVELOPMENT
1 VILLAWOOD PLACE
VILLAWOOD NSW 2163

APRIL 2015

ELEPHANTS FOOT WASTE COMPACTORS PTY LTD **ABN** 70 001 378 294
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ABOUT ELEPHANTS FOOT

Elephants Foot Recycling Solutions is a family owned Australian company whose philosophy is providing quality recycling and waste solutions through product innovation. We are Australia's leading supplier of garbage, recycling and laundry chute systems and recycling equipment.

Our team of experts has been proudly assisting architects, builders and developers with advice on how best to solve waste management and odour issues in dwellings since 1976. We have a long history of completed projects within the Australian building environment. Recent major projects completed include:

- Karimbla Constructions – Meriton Infinity, Herschel Street Brisbane Qld
  Won the International Property Award for 'Best Residential High-Rise Development' Australia in 2014
- Laing O'Rourke – M&A, McLachlan & Ann Streets, Brisbane Qld
- Dyldam – 15 Young Street, Carlingford NSW
- Hickory Developments – Ilk Apartments, 227 Toorak Road, South Yarra VIC
- Equiset – 27 Little Collins Street, Melbourne VIC

Elephants Foot also provides waste management planning services; recent plans include:

- Meriton – 94-100 Dalmeny Avenue, Rosebery NSW
- Fife Capital – 38-48 York Street & 379-385 George Street, Sydney NSW
- Dyldam – KOI, Parramatta NSW
- Mirvac – Green Square, Site 5A and 5B, NSW
- Bao Jia Developments – 300 George Street, Brisbane Qld

REVISIONS

Revision	Copy No.	Date	Prepared by	Reviewed by	Approved by	Remarks
A	1	Aug-14	N Beattie	E Saidi	E Saidi	Planning Phase
B	1	Sep-14	N Beattie	E Saidi	E Saidi	Amendment
C	1	Oct-14	N Beattie	E Saidi	E Saidi	Amendment
D	1	Apr-15	S Kenny	N Beattie	E Saidi	Amendment
E	1	Apr-15	S Kenny	N Beattie	E Saidi	Final for DA Submission

Authorised By:
Date: 06 April 2015

DISTRIBUTION LIST

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EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the mixed development located at 1 Villawood Place, Villawood NSW 2163.

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 encouraging 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.

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

To assist in clean and well-segregated material, building management can work proactively with residents in the following way:

Building management should also ensure their communications achieve a regular and consistent message.

By-laws: the resident's by-laws should include a requirement to actively participate in recycling/ diversion initiatives implemented within the residential buildings.

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INTRODUCTION

The following waste management plan pertains to the proposed mixed use development located at 1 Villawood Place, Villawood NSW 2163. This waste management plan is an operational waste management plan and will address the phases of the completed development.

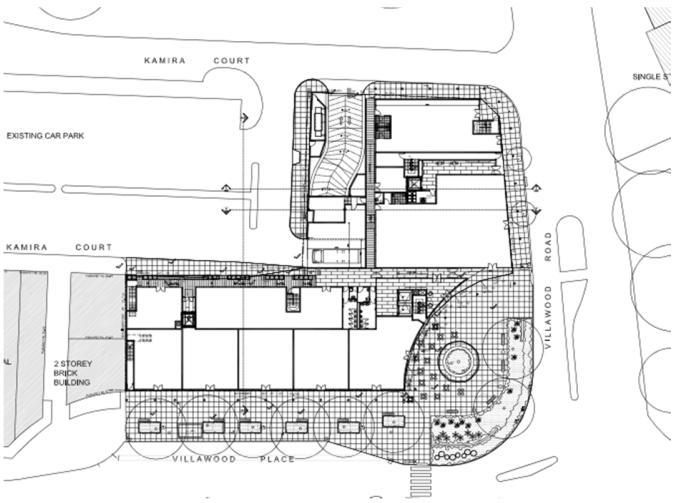
Each section of this development has been examined individually within this report however; the waste management process must be effectively coordinated between all sections for the system to work. All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings.

For the purpose of this report the proposed development will consist of construction of residential units and additional retail space (see overall plan below)

- One 8 level building (including ground floor) with three basement levels
- 119 residential units in total over 7 levels (see mix below)
- 184.4sqm Community Room
- 1,140.0sqm of Retail Tenancy on the ground floor

Unit Type	Number of Units	%
1 Bed	12	10%
2 Bed	95	80%
3 Bed	12	10%
Total	**119**	**100%**

All waste facilities and equipment are to be designed and constructed to be in compliance with Fairfield City Council DCP, Australian Standards and statutory requirements.



Excerpt: Tony Owen Partners, Drawing No. A050, Rev A Overall Plan

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GENERATED WASTE VOLUMES

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

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.

WASTE DEFINITION

Garbage:	all domestic waste (except recyclables and green waste)
Recycling:	glass bottles and jars – PET, HDPE and PVC plastics; aluminium, aerosol and steel cans; milk and just 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 prunings, plants and flowers, and weeds.

Note: Mobile garbage bin – MGB;
Litre – L *(See Appendix 2 – Waste Equipment)*

BUILDING MANAGER/ WASTE CARETAKER

All equipment movements in the room are managed by the building manager/ cleaners at all times. No tenants will be allowed to transport waste or recyclables from the waste room; tenants will only transport their waste to the room allocated.
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 will depend 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
- Provide to staff/contractors equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities.

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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

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident to ensure correct use of the chute and to ensure an understanding of the chute's use. 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 contamination in the collection MGB as well as chute blockages. *(See Appendix 1 – Signage)*

It is also recommended that the development's website (if available) 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 *place 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 all retail and commercial operations contain direction on waste management services and expectations.

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RESIDENTIAL

WASTE GENERATION

Using council's waste generation rates, the total waste generated by the development can be calculated as follows:

Waste: 80L/unit/week
Recycling: 40L/unit/week

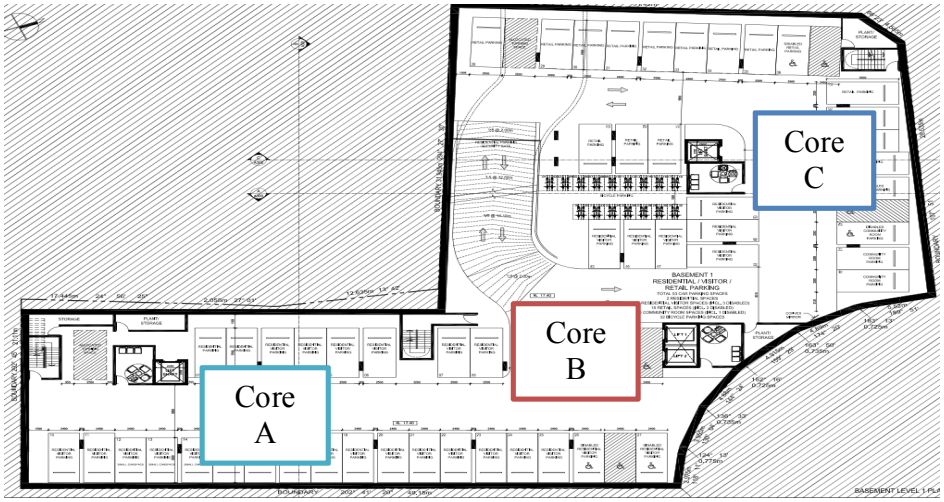
Building	Units	Waste (L)	Recycling (L)	Waste Bins 660L	Recycling Bins 240L
Core A	**35**	**2800**	**1400**	**5**	**7**
Core B	**42**	**3360**	**1680**	**5**	**7**
Core C	**42**	**3360**	**1680**	**5**	**7**
Total	**119**	**9520**	**4760**	**15**	**21**

Bin Summary

Waste 15 x 660L MGB Serviced Weekly
Recycling 21 x 240L MGB serviced Weekly

The below assumptions have been taken into consideration for the calculation of these figures:

- Garbage is compacted (2:1);
- Recycling is not compacted;
- 2 x 240L MGB are located in the waste compartment on each residential level
- Number of bins have been rounded up and evenly distributed for best operational outcome of each building core; and
- Garbage bin numbers based on weekly collections / recycling weekly collections
- Exchange bins will be required for recycling



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WASTE MANAGEMENT

For residential flat buildings or 4 storeys or more, consideration must be given to the convenient transportation of waste and recycling from the various floors to the central waste and recycling room/area. Such transportation system may include a passenger or goods lift, or a garbage chute system.

As per the drawings (See Appendix 4 – Typical Residential Level Waste Rooms), there are 3 single waste chutes servicing each level across 3 building cores with waste falling into a compactor carousel located in the waste room for each core in the basement 1 level. Recycling bins will be situated in the waste compartment on each residential level for collection of recyclable items and will be exchanged with empty recycling bins on a regular basis

WASTE HANDLING

All residents will be supplied with a collection area in each unit (generally in the kitchen, under bench) to deposit waste and separate and collect compost and recyclable material suitable for one day's storage. Residents should wrap or bag their waste before depositing into the waste chute.

Recycling must be sorted prior to being emptied into the recycling bins. Bagging or wrapping of recyclables is not permitted. It is expected that residents will present clean and sorted recycling items.

Residents have access to the waste compartments housing a waste chute door and recycling bins servicing each residential level of the building with waste discharging into a bottom chute located in the waste room in basement 1 level (See Appendix 5 – Residential garbage rooms with carousels).

The residential level waste compartments will house 2 x recycling bins.(1 x Live bin and 1 x Secondary bin) Full live recycling bins will be transferred by the nominated waste caretaker to the basement 1 level waste rooms via the lifts whilst the secondary bins shall remain in the compartments as live bins for continued use by the residents. Once the full bins are emptied they will be returned to the waste compartments as secondary bins.

The nominated waste caretaker will also be required to check the 660L MGB collecting waste from each chute, and replace empty 660L MGB under each chute operation. All full waste and recycling bins will then be transferred by the nominated waste caretaker to the residential garbage room on the ground floor using a bin tug system (Appendix 8 – Typical Bin Tug). The bins will be transferred to the top of the vehicle ramp (during off peak hours) and then to the garbage room via the ground floor service corridor designed to width specifications (See Appendix 6 garbage collection room's ground level and Appendix 9 Bin Transfer Path). A storage area has been set aside for permanent storage of the bin tug system (See Appendix 10 – Bin Tug Storage)

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CARDBOARD

Cardboard should not be placed down the chute, as it may cause blockages. Cardboard should be flattened by residents and stored in the waste compartment on each residential level, or deposited in a nominated area within the basement.

Alternatively, a cardboard baler can be supplied to effectively manage cardboard waste. Recyclers may collect bales at no cost or offer a product rebate if the generation rate is sufficient. Removal of cardboard from the waste stream may reduce recycling bin numbers.

GREEN WASTE

There will be minimal green waste generated by the building. Any green waste will be collected and removed from site by the maintenance contractor.

COMPOSTING

Consideration should be given to providing space for individual home unit worm farms or small compost bins on the balconies. *(see Appendix 2 – Waste Management Equipment)*

COMMON AREAS

The retail and common areas on Podium levels, circulation areas and outdoor terraces will be supplied with suitably branded waste and recycling bins. Building management will monitor use and ensure bins are exchanged and cleaned. *(See Appendix 2 – Waste Equipment Specifications)*

BULKY GOODS

Disposal of bulky goods shall be organised with the assistance of the building caretaker. Residents will coordinate their requirements with building management. *(*See Appendix 6 garbage collection room's ground level)

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. (See Useful Contacts)

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OTHER WASTE STREAMS

For developments comprising 30 or more dwellings, a separate room or undercover caged area of a minimum 5m² must be provided for the temporary storage of bulky discarded items such as furniture and white goods. This area should be located adjacent to waste storage areas and must be sign marked appropriately.

Large metal items or other recycling items not suitable for the recycling bins may be taken to Councils Recycling Drop Off Centre. No household garbage is accepted. This centre is only for Fairfield City residents (proof of residency is required upon entry to the centre). Location details below:

Where: Corner of Davis Road and Widemere Road, Wetherill Park
Open: Saturdays, 8.30am to 3.30pm

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.

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WASTE ROOM AREAS

The waste storage area must be as close as practicable to the collection point and be within 15 metres from the street kerb or collection / loading bay.

Each garbage room will need to hold all the bins generated weekly, and allow enough room to clean and safely manoeuvre bins (stacking of bins is not permitted). The minimum recommended space for each garbage room is as per the below table.

Table 2 – Storage Areas (sqm)

Building	Area required
Residential Garbage Room - Core A (B1)	22sqm (Carousel + Spare Bins)
Residential Garbage Room - Core B (B1)	22sqm (Carousel + Spare Bins)
Residential Garbage Room - Core C (B1)	22sqm (Carousel + Spare Bins)
Residential Garbage Store – (Ground)	22sqm
Retail Garbage Store	22sqm

COLLECTION OF WASTE

The path for wheeling bins between the waste and recycling storage room/area and the vehicle collection point must be free of steps and kerbs and, in the case of residential development, of a gradient of less than 14:1, and for all other development types, of a grade to the satisfaction of Council. All passageways must be at least 1 metre wide to permit easy access for servicing.

All access and egress details including a swept path analysis for all vehicle movements on site will be provided by the traffic consultant's report.
Where collection vehicles are required to drive into a property to collect waste and recycling, adequate access must be provided for the users, waste collection staff and collection vehicles, and:

- The site must be designed to allow collection vehicles to enter and exit the property in a forward direction, with minimal need for reversing and to be operated with adequate clearances; and
- The access and manoeuvring space are to be suitable for the collection vehicle in terms of pavement strength, spatial design, access width and clearances. Appendix C Collection Vehicles and Appendix D Vehicle access/Turning Circles under the *Better Practice Guide for Waste Management in Multi-Unit Dwellings*, DECC 2008 are to be used as a guide.

NB: The development has a residential garbage room which connects directly to the loading area. (See Appendix 7 – Loading Area)

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WASTE CHUTES

The waste and recycling chutes for the residential areas are supplied in either 510mm galvanised steel or 510mm recycled LLDPE polyethylene plastic with 2-hour fire rated doors.

Galvanised steel chutes and polyethylene chute hoppers are wrapped with 50mm poly-wool R1.3 noise insulation foil to assist in noise reduction.

Penetrations on each building level at vertically perpendicular points with minimum penetration dimensions 600mm x 600mm (square or round) are required to accommodate the chute installation.

Vents and wash down systems are provided for the chute.

All chutes must be installed without offsets to achieve best operational outcome for all buildings. Stainless steel, two-hour fire-rated (AS1530.4-2005) refuse chute doors are to be provided at each service level. All doors are fitted with a self-closing mechanism to meet BSA fire standards.

The discharge chute must be fitted with a fire damper so the chute can be closed during servicing and changeover of bins.

It is a Council requirement that chutes are installed without offsets to achieve the best operational outcome for the building. *(See Appendix 3 – Typical chute section)*

EQUIPMENT SUMMARY

Chutes:

Three (3) required in galvanised steel or LDPE plastic.

Equipment:

Three(3) x (3 or 4) - bin carousel compactor suitable for 660L MGBs.

One(1) bin tug and/or bin trailer for transferal of full 660L and 240L MGB's

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RETAIL WASTE

As the retail tenancies are unknown at this time, Council's waste generation rates have been used to approximate the total waste generated by retail areas (weekly) calculated as per the following table. Note: A private waste services provider/s will be contracted to collected waste and recycling on a scheduled basis or as negotiated.

WASTE GENERATION RATE

Type	Waste	Recycling
Retail < 100m2	50L/100sqm floor space/day	25L/100sqm floor space/day
Retail > 100m2	50L/100sqm floor space/day	50L/100sqm floor space/day
Cafe	80L/100m2/day	40L/100m2/day

Table 1 – Retail/Commercial Waste Generation

Retail	Area (m^2)	Waste (L)	Recycling (L)	Waste 1100L MGB's	Recycling 660L MGB's
01	342	1197	1197	1.1	1.81
02	134	469	469	0.4	0.71
03	106	371	371	0.3	0.56
04	106	371	371	0.3	0.56
05	108	378	378	0.3	0.57
06	95	333	166	0.3	0.25
07	64	224	112	0.2	0.17
08	185	648	648	0.6	0.98
Total		3990	3712	4	6

RETAIL/COMMERCIAL BIN REQUIREMENTS:

Waste: 4 x 1100L MGB serviced weekly or 2 x 1100L MGB serviced twice/week
Recycling (commingled): 6 x 660L MGB serviced weekly or 3 x 1100L MGB serviced twice/week

**Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities can be changed and service frequency increased/decreased. Also, recyclable can either commingled or split into bins for separate recycling streams.*

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RETAIL WASTE OPERATIONS

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 and waste and recycling will be removed by the appointed waste caretaker to the garbage and recycling MGB located in the retail bin store. Bins/receptacles will be emptied into the appropriate MGB by the building management/cleaners.
- 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 cooking oil in a bunded area and for its collection by a recycler
- Dry basket arresters need to be provided to the floor wastes in ANY food preparation and waste storage areas.
- All flattened cardboard will be collected, flattened and removed to the waste room

Disposal of hard, electronic, liquid waste and any detox (paint/chemicals) etc shall be organised with the assistance of the building management or cleaners.

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PREVENTION OF STORMWATER POLLUTION AND 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:

- Promoting adequate waste disposal into the bins
- Securing all bin rooms (whilst affording access to staff/contractors)
- Prevent overfilling of bins, keep all bin lids closed and bungs leak-free
- Taking action to prevent dumping or unauthorised use of waste areas
- Require collection contractor/s to clean-up any spillage that may occur when clearing bins

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.

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.

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GARBAGE ROOM CONSTRUCTION REQUIREMENTS

The garbage rooms will be required to contain the following facilities to minimise odours, 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 surfaces are flat and even
- All corners coved and sealed 100 mm up, this is to eliminate build-up of dirt
- A hot and cold water facility provided for washing the bins
- Drain to sewer in accordance with Water Management Authority
- 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 (sensors recommended)
- Optional automatic odour and pest control system installed to eliminate all pest types. This process generally takes place at building handover – building management make the decision to install.
- All personnel doors are hinged and self-closing
- Appropriate signage prominently displayed on walls and above all bins clearly stating what type of waste or recyclable is to be placed in the bin underneath
- Building management/caretaker is responsible for waste room signage and further education after building handover
- Waste collection area must hold all bins – bin movements should be with ease of access
- Waste chute doors must contain operational stickers
- 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
- Childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

The building manager/caretaker is responsible for waste room signage. Appropriate signage including any safety 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 levels will be labelled with a sign stating '*GARBAGE ONLY IN THE CHUTE'.* Separate signage will direct chute operations and encouraging occupants to recycle and minimise their waste.

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Offices in Victoria & Queensland - Toll Free 1800 025 073

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.
- Any manual handling equipment should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply.

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USEFUL CONTACTS

Fairfield City Council
Phone: (02) 9725 0222

SULO MGB (MGB, Public Place bins, tugs and bin hitches)
Phone: 1300 364 388

RUD (Public place bins, recycling bins)
Phone: 07 3712 8000
Info@rud.com.au

VISY RECYCLING (All recycling including glass)
Phone: 1300 368 479 (Australia)

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 (1300 ODOURS)
sales@purifyingsolutions.com.au

ELECTRODRIVE (Bin tug)
Freecall: 1800 333 002
Email: nsw@electrodrive.com.au

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

Elephants Foot Recycling Solutions (Chutes, compactor and eDiverter systems)
Natalie Beattie
44 – 46 Gibson Avenue
Padstow NSW 2211
Free call: 1800 025 073
Email: Natalie@elephantsfoot.com.au

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APPENDIX 1 STANDARD SIGNAGE 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 Climate Change NSW

Example wall posters

Example bin lid stickers

SAFETY SIGNS

The design and use of safety signs for waste rooms and enclosures should comply with AS 1319 Safety signs for the occupational environment. Safety signs should be used to regulate and control safety related to behaviours, 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 services provided.

Examples of Australian Standards:

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

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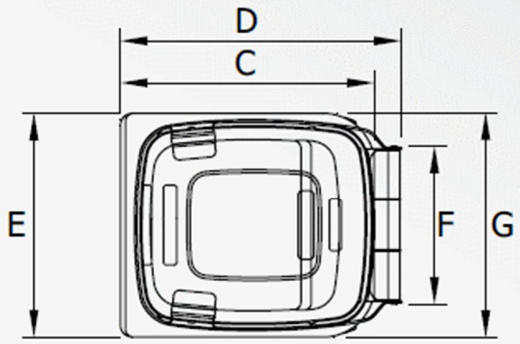
APPENDIX 2 WASTE EQUIPMENT

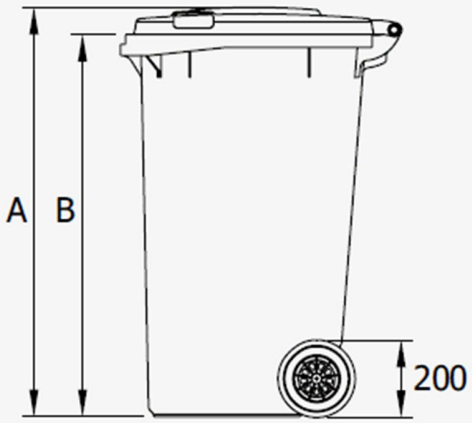
Dimensions - Weights - Standards

Nominal volume:	240 litres
Net weight:	approx 13 kg
Max load:	96 kg
Permitted total weight:	110 kg

A	1060 mm	D	730 mm	G	550 mm
B	990mm	E	585 mm		
C	660 mm	F	400 mm		

Measurements to be used as a guide only – variations will occur





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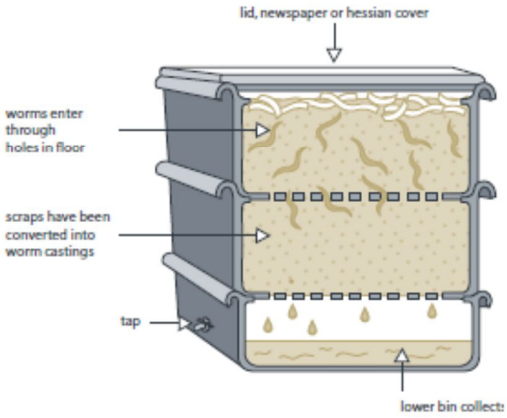
Waste Management Equipment

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.

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

Apartment Style Compost bin – available from hardware stores

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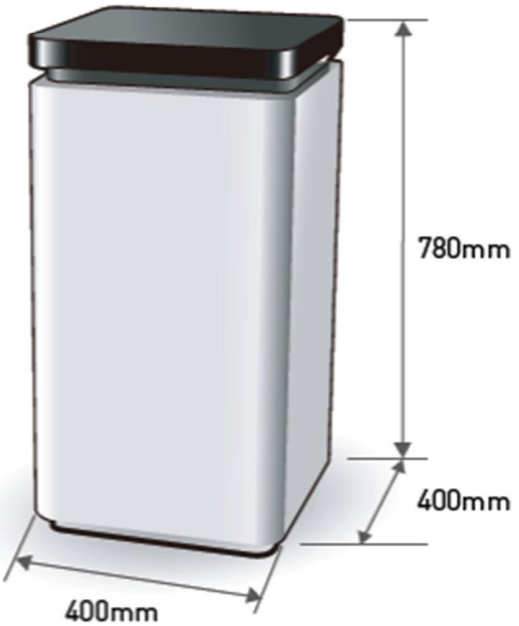
Decomposition Method	Aerobic fermentation by microorganisms
Decomposition Capacity	2 metric tonnes per year** (4 kg per day**)
Rating	220–240 V 50/60 Hz – 1.1 A
Decomposition Time	24 hrs
Operating Temperature	0ºC and 40ºC***
Deodorisation Method	Nano-Filter system
Maximum Power	210 W
Weight	21 kgs
External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

* Excludes scallop and oysters shells and large bones.
** Food Waste Handling Capacity – based on an optimal operating environment.
***Ambient temperature range of area where unit may be installed.



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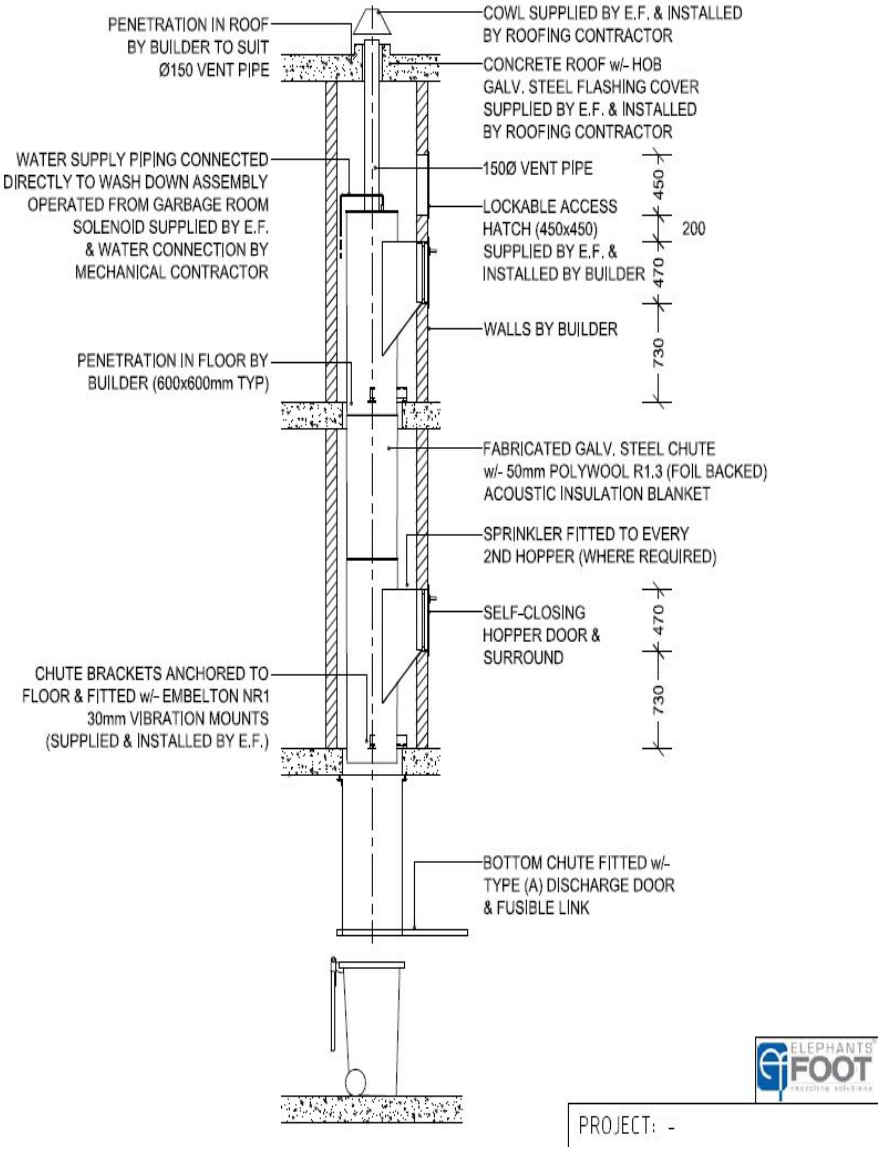
APPENDIX 3 TYPICAL WASTE CHUTE SECTION



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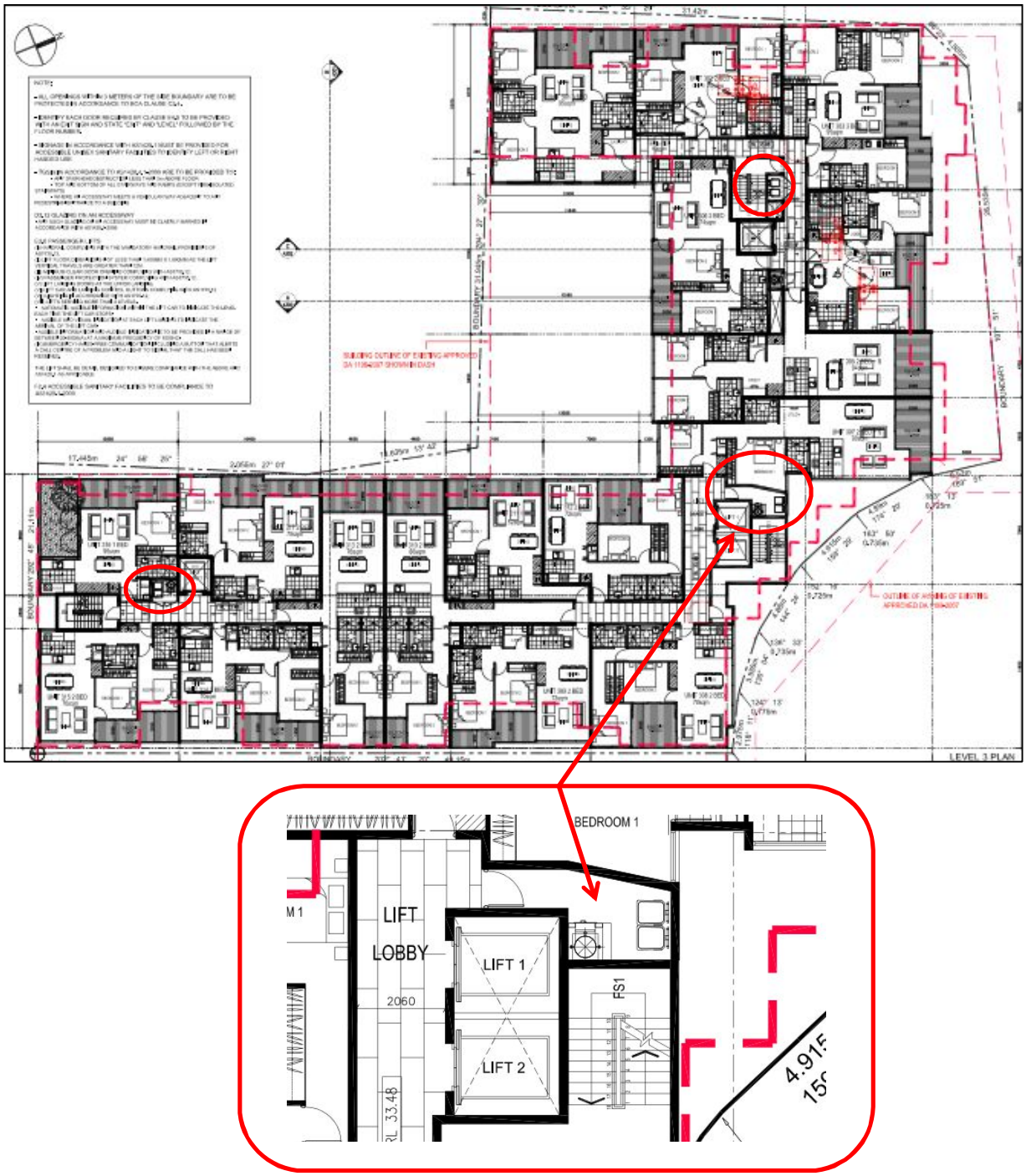
APPENDIX 4 TYPICAL RESIDENTIAL LEVEL WASTE ROOM



Excerpt: Tony Owen Partners, Project 923, Drawing No. A106, Rev A, Level 3 Plan (DA Submission)

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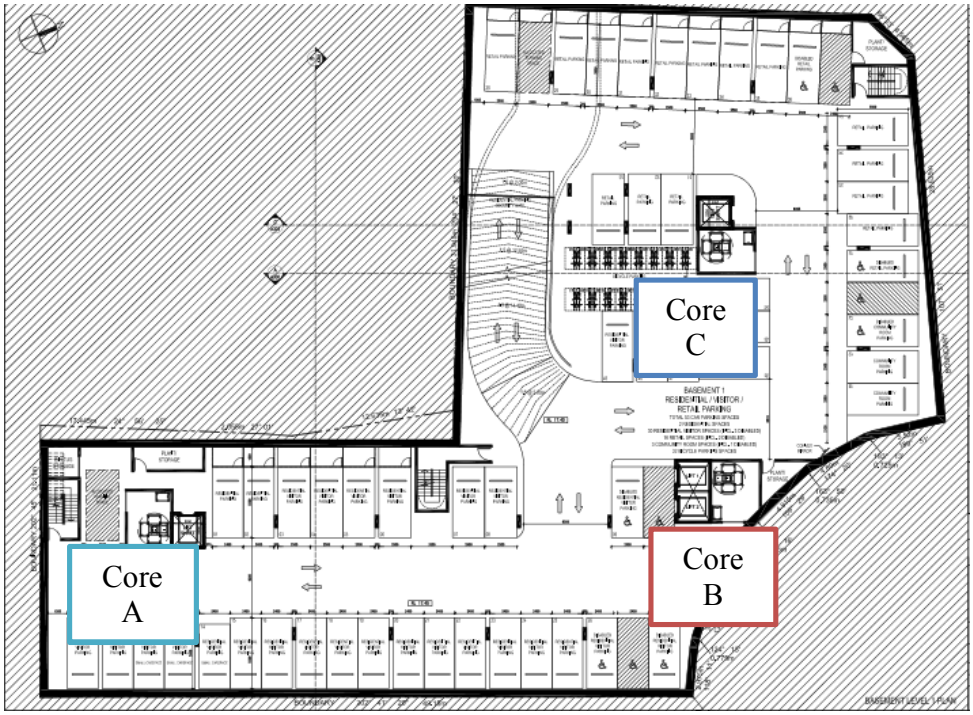
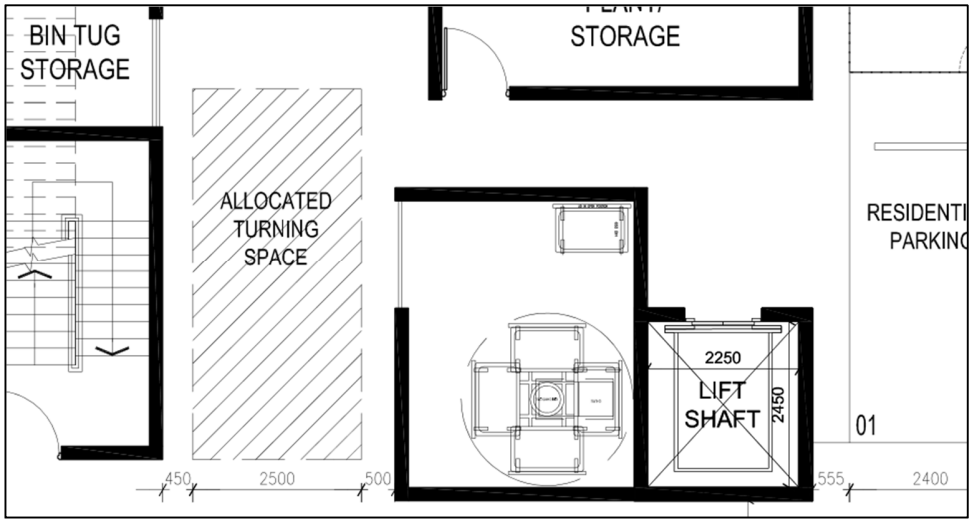
APPENDIX 5 – RESIDENTIAL GARBAGE ROOMS WITH CAROUSELS



Excerpt: Tony Owen Partners, Project 923, Drawing No. A102, Rev A, Basement Level 1 Plan (DA Submission)



Core A

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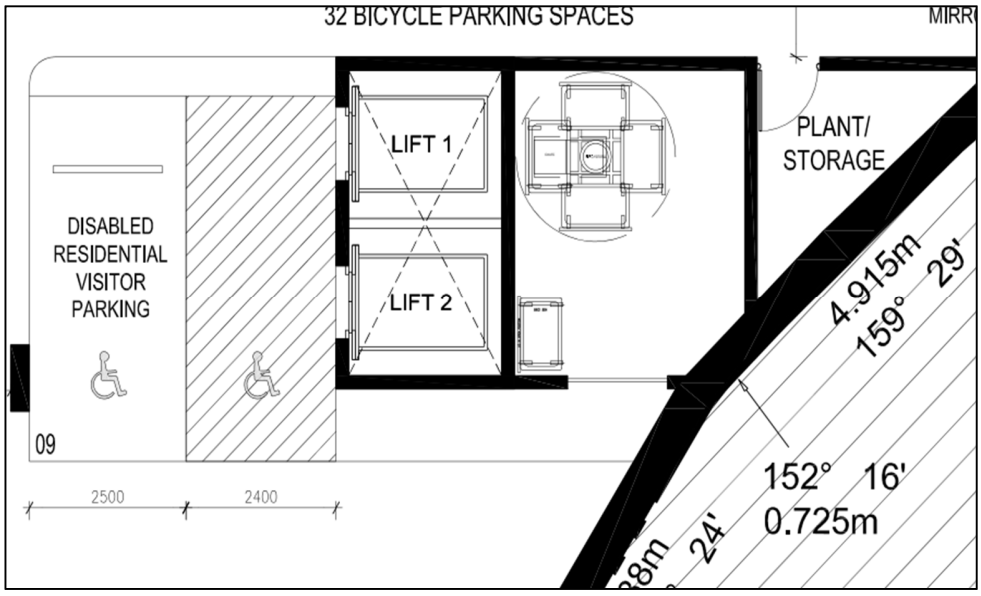
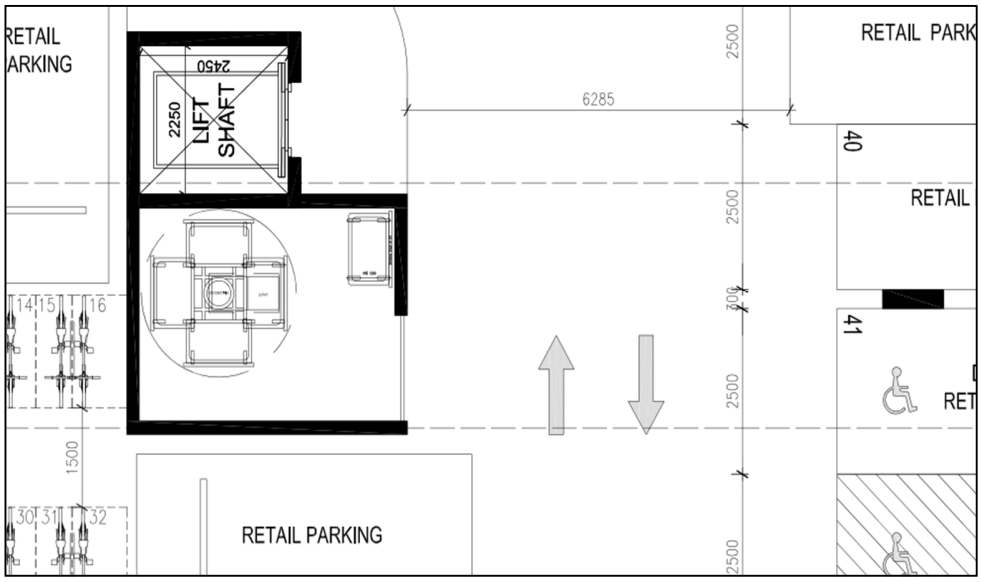


Core B



Core C

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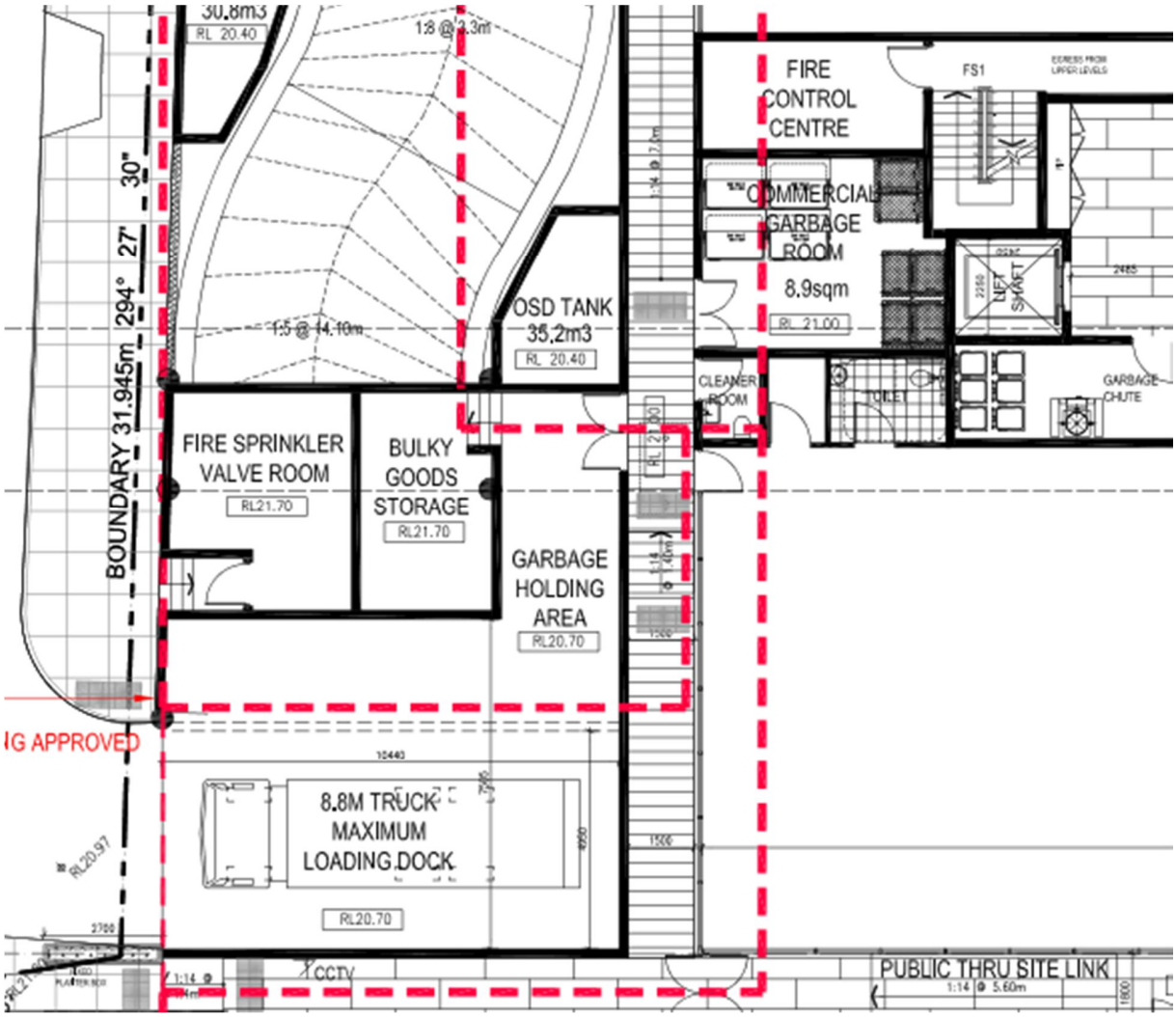
APPENDIX 6 - GARBAGE COLLECTION ROOMS (GROUND LEVEL)



Excerpt: Tony Owen Partners, Project No 923, Drawing No. A103, Rev A - Ground Floor Plan (DA Submission)

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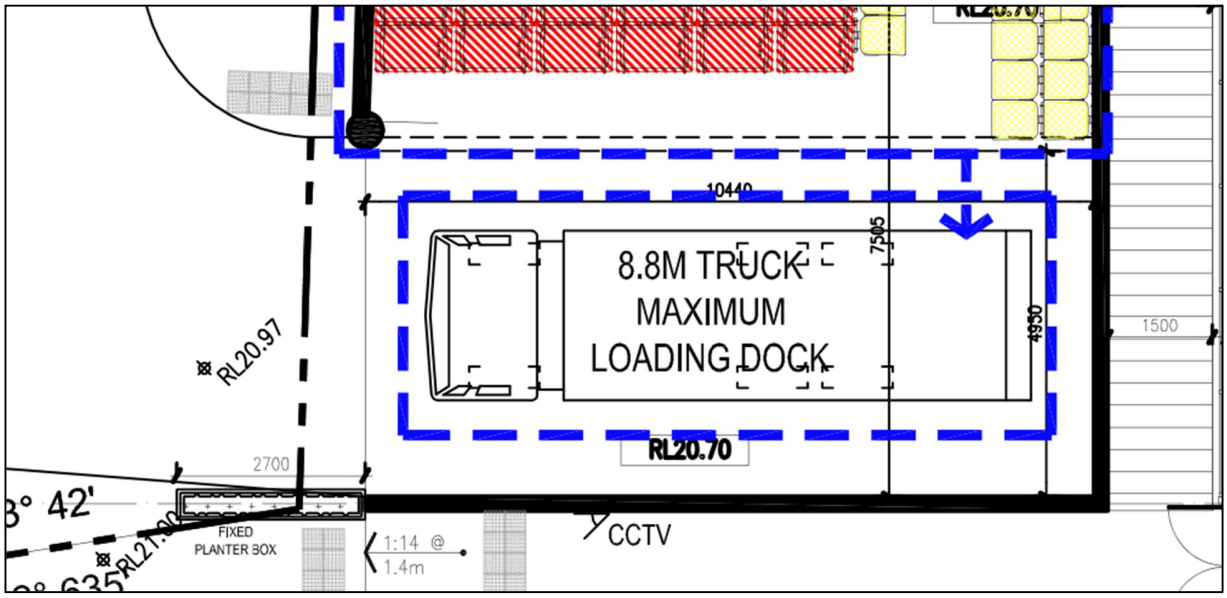
APPENDIX 7 – LOADING AREA



Excerpt: Tony Owen Partners, Project No 923, Drawing No. A410, Rev A - Waste Management Plan (DA Submission)

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Appendix 8 – Typical Bin Tug

Tugs: pedestrian

Incliner Tug

Caution: beware of floors that are greasy or wet. Spilt petrol is a particular hazard.

The full advertised catalogue towing capacity of 1 tonne assumes an incline of 8° and a friction coefficient of 0.5 (i.e a dry surface such as concrete or bitumen). If the floor surface is slippery then the advertised towing capacity will reduce.

The Incliner Tug is the perfect tug for towing on ramps and slopes:

- 1 tonne tow capacity of inclines up to 8 degrees
- 500kg tow capacity if inclines up to 14 degrees

Towing on ramps will require a site assessment and trial.
A Sales professional from our team will calculate the amount of ballast required to safely tow your load in the specific environment.
A rough guide of towing capacity and factors is given on page 56.

Typical applications:

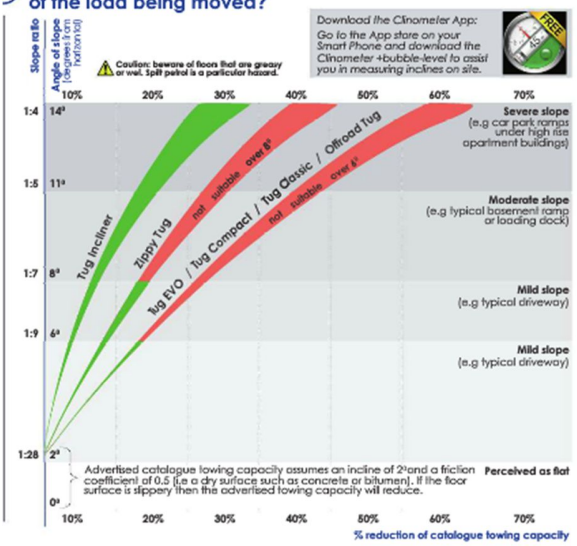
- High rise building & apartment basements
- Large factories & warehouses with sloped ground
- Caravan parks & other large outdoor areas

Features

- CE Compliant
- 4.5 Km per hr max speed
- 2 x 80 amp batteries. Includes charger.
- Powerful Transaxle
- Hitch to suit 660ltr bins

56

What is the weight and incline of the load being moved?



http://www.envirocatalogue.com.au/fallshaw/catalogue/files/assets/basic-html/page57.html

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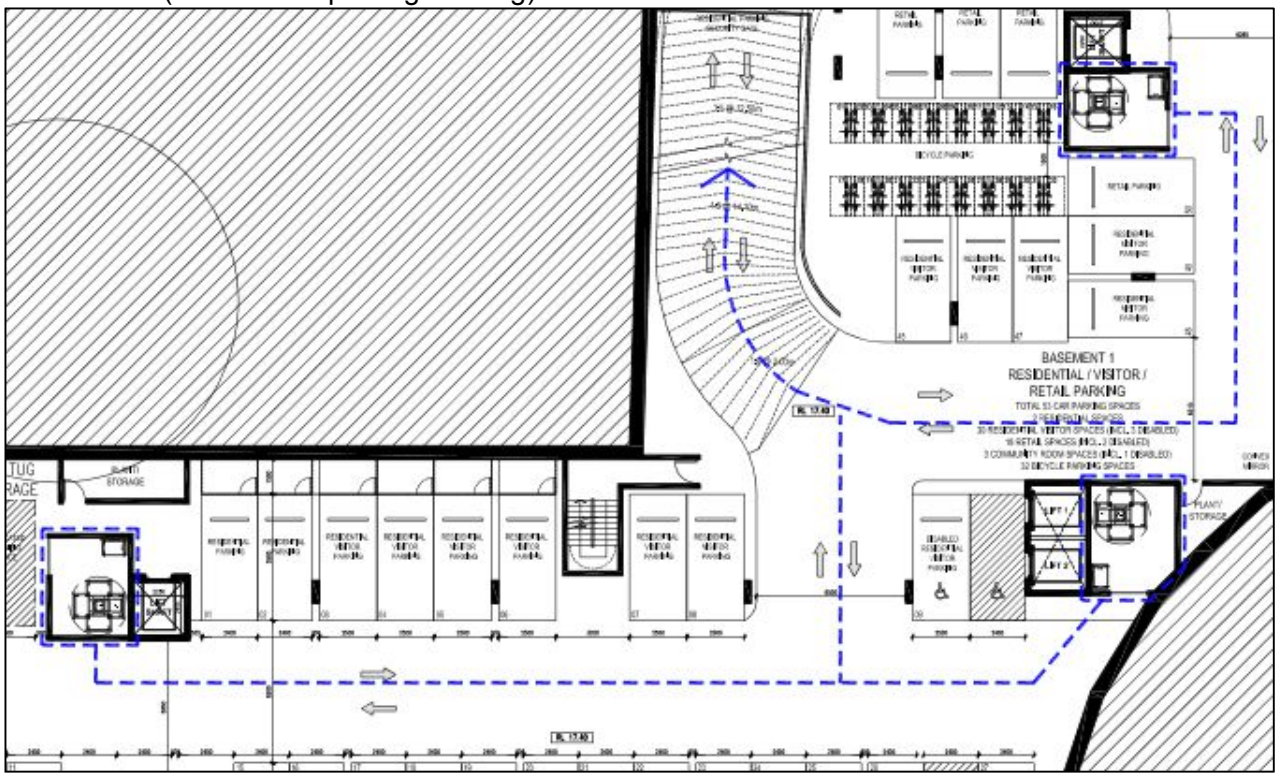
APPENDIX 9 - BIN TRANSFER PATH

Basement 1 (Bins to Ramp using Bin Tug)



Excerpt: Tony Owen Partners, Project No 923, Drawing No. A410, Rev A - Waste Management Plan (DA Submission)

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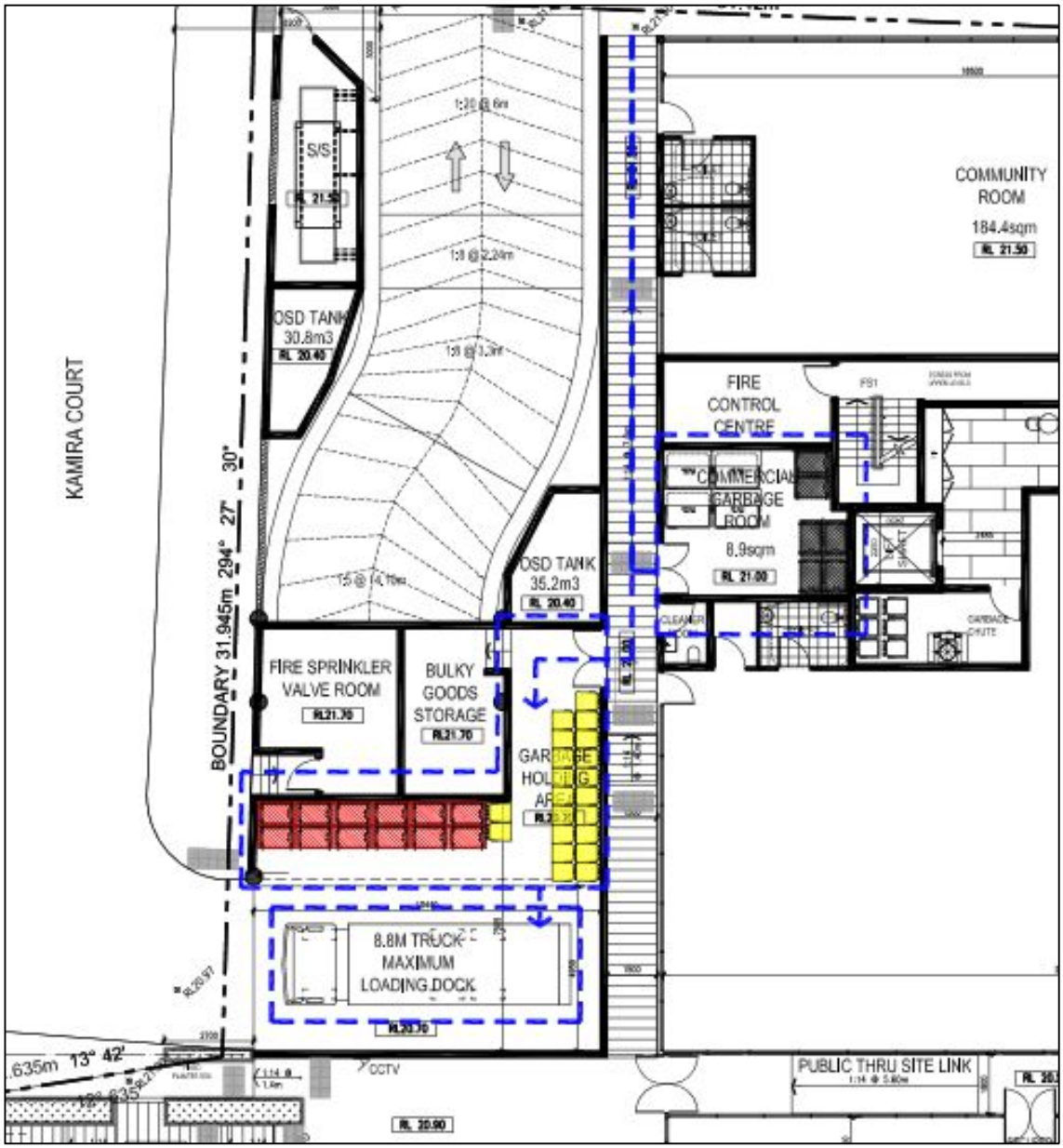
Ground Floor (Bins from Ramp to Residential Garbage Holding Area via Service Corridor)



Excerpt: Tony Owen Partners, Project No 923, Drawing No. A410, Rev A - Waste Management Plan (DA Submission)

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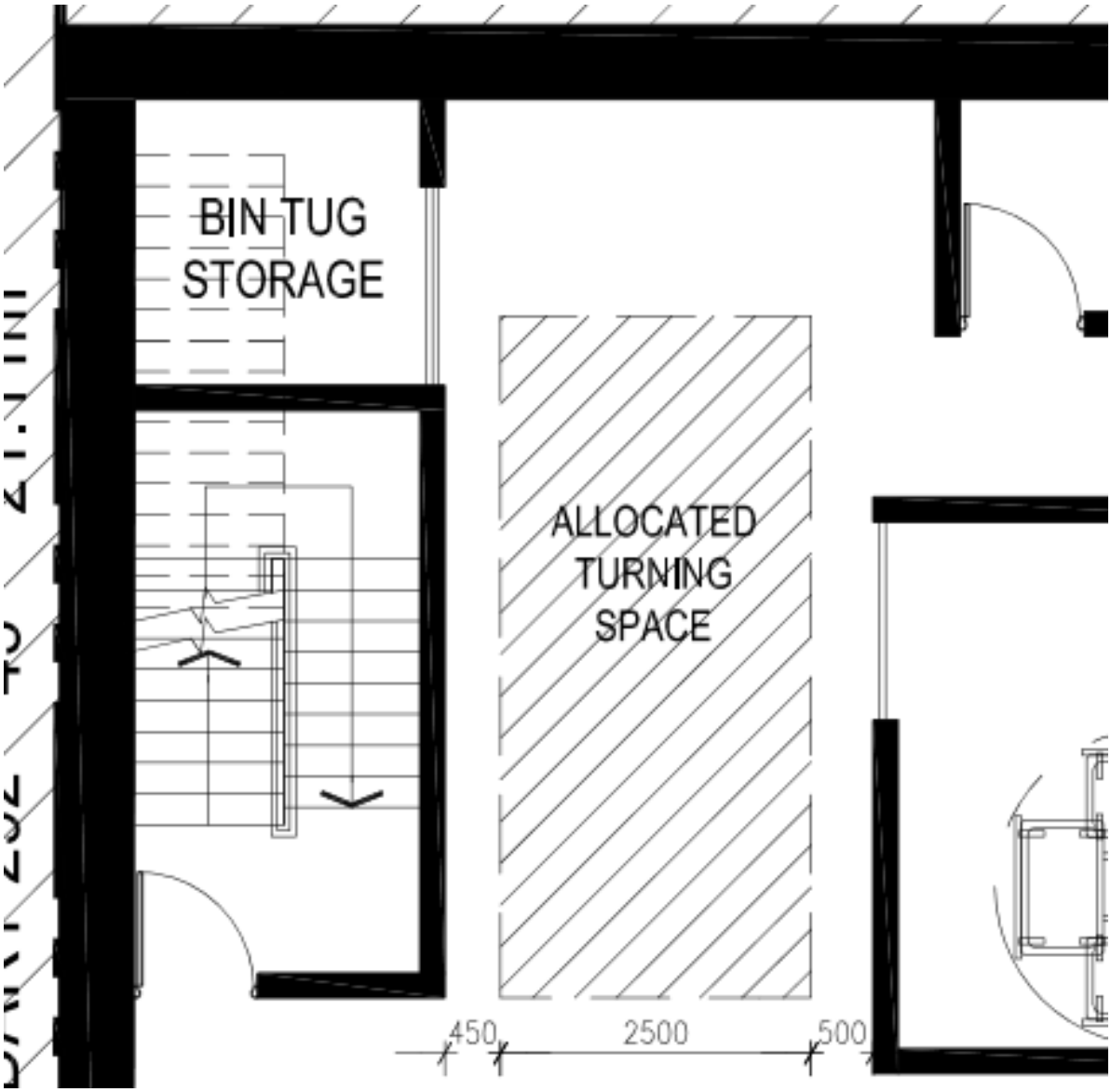
APPENDIX 10 - BIN TUG STORAGE



Excerpt: Tony Owen Partners, Project 923, Drawing No. A102, Rev A, Basement Level 1 Plan (DA Submission)

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