



JOSHUA FARKASH & ASSOCIATES PTY LTD

Level 4
432 Kent Street
Sydney NSW 2000
t: (02) 9254 5195
f: (02) 9254 5196
e: architects@jofarkash.com.au

A.C.N 660 645 056
A.B.N 19 060 645 056

WASTE MANAGEMENT PLAN (APRIL 2015)

FOR

RESIDENTIAL DEVELOPMENT COMPRISING 110 APARTMENTS

AT

5-15 RYNAN AVENUE, EDMONDSON PARK.

FOR

KMT Constructions Pty Ltd, Trading as Ozbuild Constructions



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1 EXECUTIVE SUMMARY

This waste management plan covers both waste management during the **construction phase** and the **ongoing management of waste** generated by the residential development located at 5 Rynan Avenue, Edmondson Park NSW.

The development consists of 3 apartment buildings comprising 82 units with three street frontages.

2 CONSTRUCTION PHASE

2.1 WASTE MANAGEMENT METHODOLOGY DURING CONSTRUCTION

2.1.1 PURPOSE

To ensure that resources are conserved and waste is processed responsibly by minimising waste generation and maximising recycling of materials.

2.1.2 SCOPE

To address the waste management procedures for the deconstruction and construction activities to be undertaken during the proposed re-development of 5 Rynan Avenue, Edmondson Park.

2.1.3 MAJOR MEASURES

a. Materials Selection & Ordering

- Selection of all materials will be undertaken by architectural designers;
- Materials requirements are to be accurately calculated to minimize waste from over ordering;
- Materials ordering process is to aim at minimisation of materials packaging;
- Material Safety Data Sheets (MSDS) are to accompany all materials delivered to site, where required, to ensure that safe handling and storage procedures are implemented.

b. Waste Recycling

- Waste generation from construction activities on site will be minimized, reused or recycled where applicable;
- Recyclable materials are to be specified wherever practical;
- Dedicated and secure containers will be provided on site by an approved waste handling company for non-recyclable waste;
- Where practical, dedicated and secure recycling containers will be provided on site by an approved waste handling company, manufactures, or specialist recycling organizations for the following materials:
 - Steel
 - Paper/Cardboard
 - Glass
 - Concrete/Brick/General Rubbish
 - Plasterboard

2.1.4 WASTE MANAGEMENT PRINCIPALS

2.1.4.1 EDUCATION / TRAINING / AWARENESS

Awareness and knowledge of the Waste Management Plan (WMP)

Avoid -reuse -recycle -dispose

KMT Constructions Pty Ltd is aiming to reduce the amount of waste to land fill by adopting the waste management hierarchy of *avoid > reuse > recycle > dispose* in the excavation and construction processes. The following document outlines waste management procedures to be carried out to assist in reducing waste.

The first step to ensure that all people involved are aware of the WMP and understand the importance. It is therefore necessary for architects, interior designers, site managers, foreman, leading hands and labours working for KMT Constructions are prepared to assist in managing waste minimisation.

2.1.4.2 Induction's

To achieve the awareness of the WMP to all persons on site including KMT Constructions employees and subcontractors, the WMP procedures will be incorporated into the site specific induction which all workers on the site must undertake prior to their commencement on site. KMT Constructions employees will undertake a specific induction outlining their duties in enforcing WMP procedures are complied with by subcontractors.

2.1.4.3 Procedures of WMP

The following approach will be adopted for waste management planning:

- Issue this WMP to Architects, Interior Designers & Site management to establish the awareness by all parties for construction waste and ongoing waste management of the building;
- Create an induction to be incorporated in the site specific induction;
- Include condition in Sub-contracts for compliance with this WMP;
- Engage a suitable waste removal contractor;
- Obtain Work Method Statements (WMS) from sub-contractors which are to include compliance with WMP
- KMT Constructions to supply adequate bins and removal methods;
- KMT Constructions site team to monitor and ensure compliance with WMP by sub-contractors;
- Monitor feedback reports from waste removal contractor;
- Upon completion remove all bins and temporary signage from site.

2.1.4.4 Incentives / repercussions

Incentives to be provided to KMT Constructions employees and sub-contractors to achieve best practices in waste management. The following to be implemented:

Provide site barbecues if waste targets are achieved;

If employees refuse to co-operate with the WMP they will be removed from the site.

2.1.4.5 ESTIMATE OF WASTE QUANTITIES

MATERIALS ON SITE			DESTINATION		
	Estimated		Reuse and Recycling		Disposal
Type of materials	Vol. (m3)	Weight (t)	ONSITE Proposed methods	OFF SITE Proposed Methods	Contractor / Landfill Site
CONCRETE Excess Slurry	4	4		Waste Removal Contractor &/or crushing plant	Contractor / Landfill Site or re-use as hardcore
TIMBER Formwork Architraves / skirting Flooring/Doors Joinery units	2.59 9 1.5 1.5	 5 1 5 .5	Small pieces used as required on the job.	Wood Chip clean material Wood Chip clean material Wood Chip clean material Waste Removal Contractor &/ Return to supplier	Nil Nil Nil General waste
BRICKS	19	23		Crushing Plant / or return to supplier	Nil
STEEL Reinforcement Plumbing Door frames Ducting General	2.5 2.5 1 2.5 4	10 2 .5 .7 8	Stockpile decent lengths on site – reuse off cuts in hobs & at junctions Keep on site for design changes	Small lengths to be recycled. Left over – recycled If unused Return to supplier, Recycle	Nil
PLASTERBOARD Ceilings / walls	2.5	4	Large off cuts reused in small spaces	Recycling plant	Nil
TILES	1.5	2.5	Keep excess tiles for body corporate for repairs in years to come.	Return undamaged tiles to supplier and Damaged tiles to Crushing plant	Nil
GENERAL WASTE	70	60		Sort (Waste Contractor)	General waste – Sort by Waste Contractor for recycling
GRANITE / STONE / PAVERS	5	8		Crushing Plant	Nil
GLASS	1.5	2		Return to window / balustrade supplier or Recycle	Nil
GREEN WASTE - LANDSCAPE	7	2.5		Mulching	Nil

POLYSTYRENE / PVC	6.5	.7			To be recycled at Key Plastics
CARDBOARD / PAPER	5	2.5		Recycle – Australian paper manufactures	Nil

2.1.5 WASTE REMOVAL PROCEDURE

2.1.5.1 Excavation Phase

During the Excavation phase all fill will be disposed to an appropriate site considering the classification of the material. All excavated waste shall be validated and classified prior to any material being removed from site. All material to be removed from the site shall be transported in a safe and environmentally friendly manner.

2.1.5.2 Structure Phase

Throughout the erection of the structure, bins (2m³) will be used for the collection of waste. These bins when full will be emptied into larger bins (4m³, 9m³ & 15m³) by the tower crane or Manitou. Once the larger bins are full they will be lifted via the tower crane to waste removal trucks in approved loading zones.

During construction of the structure 4m³, 9m³ & 15m³ bins will be located on the lower areas of the site wherever possible. The locations of the bins may alter as the job progresses.

2.1.5.3 Finishes Phase

During the finishes phases small (1m³) bins on wheels will be used to wheel around the levels and pick up waste. These bins when full will be wheeled out on to the crane loading platform / or to hoist areas and transported to the location of the larger bins. Waste will be brought down builders lifts once they are operational where they will be emptied into the larger bins.

In all cases material will be sorted at the waste contractor's depot in order to salvage any recyclable material.

2.1.5.4 Records / Waste monitoring / Feedback

Excavation contractor will submit records of all waste and fill removed from the site stating the type, quantity and location disposed. Waste contractor is to submit to site reports also detailing the type and quantity of waste removed in skips from site on a fortnightly basis. This information will be directed to site so that it can be monitored to ensure minimum landfill. Further measures may need to be taken by management to achieve higher recycling rates.

The selected waste contractor will provide KMT Constructions Pty Ltd with a monthly report detailing the amount of waste received and the details of those products recycled, thus enabling an appraisal of the waste management plan and improvements if required. These reports will be forwarded to council upon request.

3 WASTE MANAGEMENT DURING IN-USE PHASE

Table 1 – Residential Unit Mix

Building B&C	Apartment Mix	Building D	Apartment Mix
1 Bed	20	1 Bed	4
2 Bed	48	2 Bed	21
3 Bed	14	3 Bed	3
Total	82	Total	28

3.1 OVERVIEW

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 applicable 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.

To assist in providing clean and well-segregated waste material, it is essential that this waste management plan is integral into the overall management of the building and clearly communicated to residents and tenants.

3.2 CITY OF LIVERPOOL COUNCIL

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

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

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

COUNCIL OBJECTIVES

- avoid waste through design and ordering correct materials
- encourage improved environmental outcomes through increased source separation of materials
- ensure more efficient management of waste and recyclable materials
- maximise reuse and recycling of building construction materials, household generated waste and commercial waste

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 practices 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 practices;

-Ecologically sustainable development (ESD) – promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;

-Hygiene – ensure health and amenity for residents, visitors and workers in the city of Liverpool;

-Noise minimization – minimize noise during use by residents and collection of waste and recyclables.

3.3 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.

3.4 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 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's, plants and flowers, and weeds.

3.5 BUILDING MANAGER / CARETAKER

All equipment movements in the room are managed by the building manager/ caretaker 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:

- Organizing, 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
- Organizing 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.

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. 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.

3.6 EDUCATION

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident. 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.

It is expected that leasing arrangements with commercial operations contain direction on waste management services and expectations.

4 WASTE MANAGEMENT – IN-USE PHASE

4.1 WASTE GENERATION

Liverpool Council's Domestic Waste Management Policy Using council's waste generation rates, the total waste generated by the development can be calculated as follows:

4.1.1.1 For units 1 to 110

Waste: 80 litres (L) per unit/week Recycling: 40 litres (L) per unit/week
MGB – Mobile Garbage Bin (Refer Appendix 2- Waste Management Equipment)

4.1.1.2 Waste:

Building B & C 82 units @ 80L/unit = 6,560 L
Building D 28 units @ 80L/unit = 2240 L

4.1.1.3 Recycling:

Building B & C 82 units @ 40L/unit = 3,280 L
Building D 28 units @ 40L/unit = 1120 L

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

4.1.1.4 Green Waste:

Building B & C Green Waste 2x240L bins i.e. 1 per 25 apartments (in Basement 1 Garbage Room)
Building D Green Waste 2x240L bins i.e. 1 per 25 apartments (in Basement 1 Garbage Room)

4.1.1.5 Waste:

Building B & C Putrescable waste.
82 units @ 80L/unit = 6,560 L (collected weekly)
Building D Putrescable waste.
28 units @ 80L/unit = 2240 L (collected weekly)

4.1.1.6 Recycling:

Building B & C 82 units @ 40L/unit = 3,280 L (collected weekly)
Building D 28 units @ 40L/unit = 1,120 L (collected weekly)

4.2 RESIDENTIAL BIN SUMMARY

Total number of bins provided

Building B/C i.e. units 1 to 82:	Waste	28 x 240 L bins (collected weekly)
	Recycling	14 x 240 L bins (collected weekly)
	Green	2 x 240 L bins (collected weekly)
Buildings D i.e. units 1 to 28:	Waste	10 x 240 L bins (collected weekly)
	Recycling	5 x 240 L bins (collected weekly)
	Green	2 x 240 L bins (collected weekly)

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

- Recycling is not compacted;
- Number of bins have been rounded up for best operational outcome; and
- Garbage bin numbers based on waste/recycling collected weekly

4.3 RESIDENTIAL WASTE MANAGEMENT SYSTEM

As per drawings, there is a Garbage room servicing located in the basement level. Recycling bins will be provided in the same room.

4.4 WASTE HANDLING

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

Recycling must be sorted prior to being emptied into the recycling bins located in to the bin storage room. Recycling must not be bagged. It is also expected that residents will place clean recycling items in the collection bins.

4.4.1 GREEN WASTE

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

4.4.2 CARDBOARD

Cardboard should be flattened by residents and deposited in a nominated area within the basement. It is recommended that building management ensure this facility is available on initial occupation of the building to ensure furniture and large cardboard boxes disposal.

4.4.3 COMMON AREAS

The communal courtyard will be supplied with suitably branded waste and recycling bins where required. The Basement washroom facilities should be supplied with collection bins for paper towels (if used). Building management will monitor use and ensure bins are exchanged and cleaned. (*See Appendix 2 – Waste Equipment Specifications*)

4.4.4 OTHER WASTE STREAMS

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

It is recommended that donations to charitable organisations be encouraged. Clean, sound furniture and household goods etc. are highly sought after to provide for the disadvantaged. Donations will be arranged with the assistance of the building manager/caretaker. (*See Useful Contacts*)

4.4.5 WASTE ROOM AREA

The garbage room will need to hold all the waste bins generated weekly, and allow enough room to clean and manoeuvre bins. The waste room will store empty bins waiting for residential waste.

4.5 WASTE MANAGEMENT

4.5.1 GARBAGE WASTE & RECYCLABLE

Bins will have to be managed by the caretaker by rotating the bins around the waste room and ensuring empty ones are readily available to dispose of residential waste.

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.

4.5.2 COLLECTION OF WASTE

It will be the caretaker's responsibility to have the correct bins ready and placed for quick collection according to council's collection schedule.

On collection days garbage bins from the garbage room will be taken to the bin storage area on ground level (adjacent driveway.)

Access to the loading bay / collection point is off from Road 01. The roadway used by the waste collection vehicle is designed as per standards to MRV waste collection vehicle. (*Refer Appendix 4 - Typical Collection vehicle*)

Note: Garbage and recycling collections may take place at different times depending on the service provider; therefore access should not be restricted at any time.

As the bin transfer gradient from basement level is 1:4 maximum a tractor mower adapted to this role will be used to haul bins to street level.

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.

4.5.3 GARBAGE ROOM

As stated, there are two garbage rooms in Building B & C for each 41 units and one for Building D 28 units.

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

- Garbage room floor to be sealed with a two pack epoxy
- Garbage 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
- Any waste water discharge from bin washing must be trained to sewer in accordance with the relevant water board (Liverpool 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
- Light switch installed at height of 1.6m
- Garbage rooms must be well lit (sensor lighting 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
- Garbage 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

A similar standard of construction applies to the temporary bins holding area.

4.5.4 SIGNAGE

The building manager/caretaker is responsible for Garbage room signage. Appropriate signage must be prominently displayed on walls and above all bins, clearly stating what type of Garbage or recyclables is to be placed in the bin underneath. *(See Appendix 3 – Signage communal Garbage rooms and noticeboards)*

4.5.5 VENTILATION

Garbage 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.

4.5.6 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 Garbage 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 Garbage areas
- ensure collection contractors clean-up any spillage that may occur when clearing bins

4.6 ADDITIONAL INFORMATION

Transfer of Garbage 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.

5 LIMITATIONS

The purpose of this report is to document a Garbage 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 Garbage generated will be dependent on the occupancy rate of the building/s and Garbage generation intensity as well as the building managements approach to Garbage management.
- The building manager will make adjustments as required based on actual Garbage volumes (if Garbage 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.

6 USEFUL CONTACTS

City of Liverpool Council GPO BOX 1591
Liverpool NSW 2001
Customer Service: 02 9265 9333
Email: council@cityofliverpool.nsw.gov.au

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 Garbage Services Provider) Phone: 13 73 73

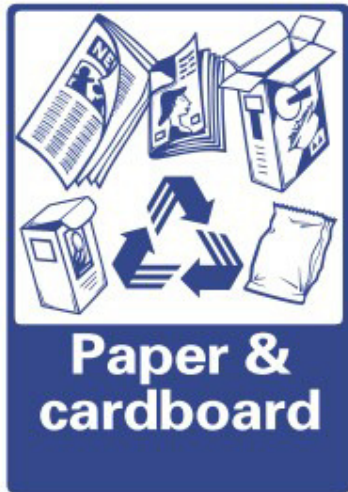
SITA ENVIRONMENTAL (Private Garbage Services Provider) Phone: 13 13 35
National Association of Charitable Recycling Organisations Inc. (NACRO) Phone: 03 9429 9884
Email: information@nacro.org.au

Purifying Solutions (odour control) Phone: 1300 636 877 (1300 ODOURS)
sales@purifyingsolutions.com.au

Note: These contacts are just references. The author of this document does not warrant or make representation for goods or services provided by suppliers.

Timothy Shiu
B. Arch.(UNSW)
Registered Architect (NSW) 5669

7 APPENDIX 1 – STANDARD SIGNAGE FOR GARBAGE AND RECYCLING BINS



MIXED CONTAINERS

For more information, call The City on 1300 651 301

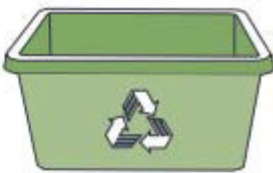
• No Plastic Bags • Please remove any solid food or liquids



8 APPENDIX 2 – GARBAGE MANAGEMENT EQUIPMENT

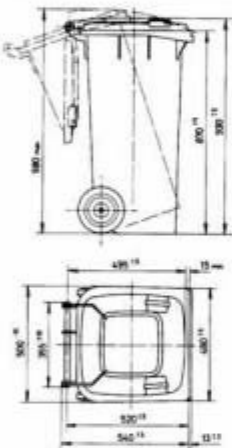
Crates

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

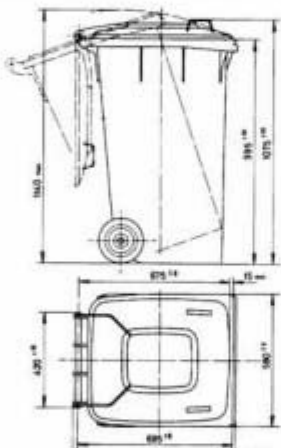


Mobile Garbage Bins (MGBs)

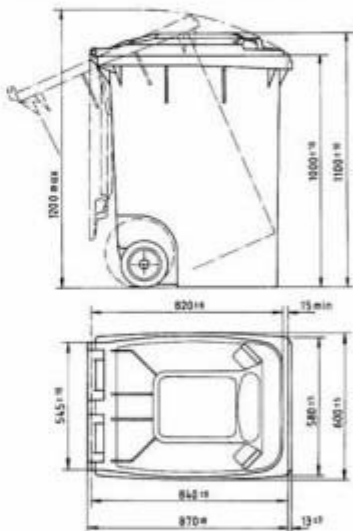
Bin Type	120L MGB	140L MGB	240L MGB	1000L MGB
Height	940 mm	1065 mm	1080 mm	1350 mm
Length	560 mm	540 mm	735 mm	1160 mm
Width	485 mm	500 mm	580 mm	1360 mm



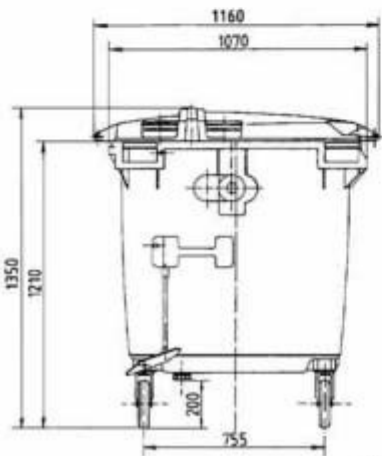
120 Litre



240 Litre

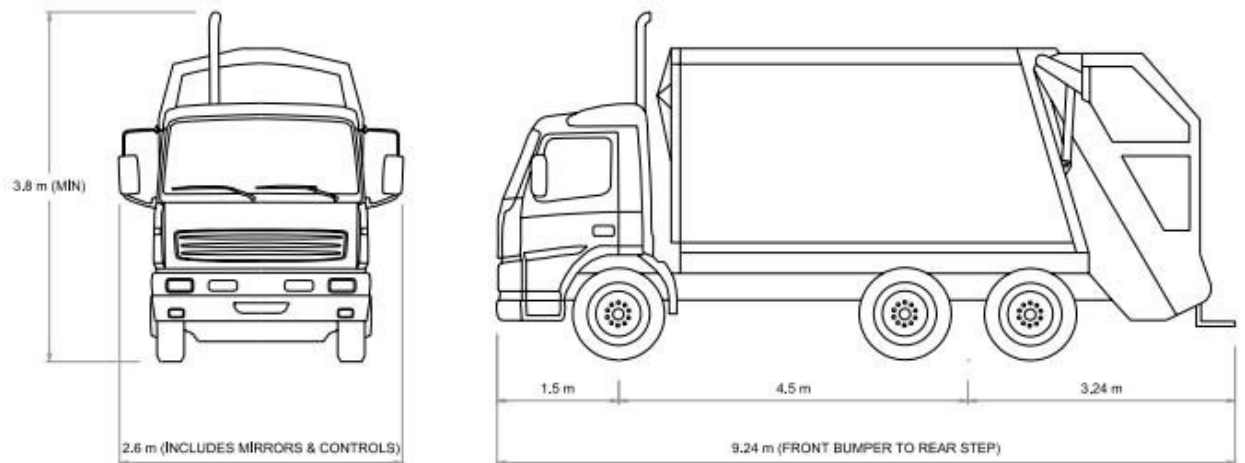


360 Litre



1000 Litre

9 APPENDIX 4 – TYPICAL COLLECTION VEHICLE



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