



Low Impact Development
Consulting

Waste Management Plan

Apartment Development

1-5 Rainbow Road, Mittagong

Prepared for: TBG Constructions

Prepared by: PM – Low Impact Development Consulting

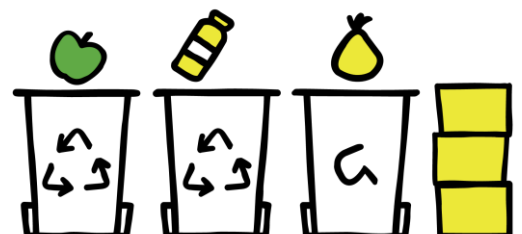
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Commercial waste calculations are based on rates provided by government organisations and adopted and used as an industry standard. Bin numbers and spatial requirements have been calculated in accordance with these guidelines. The end user requirements may vary from this depending on the business use, type and operational practice.

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 LID acknowledges and pays respect to the Australian Aboriginal and Torres Strait Islander people, to their ancestors and elders, past, present and emerging, as the traditional custodians of the lands upon which we work and live. We recognise Aboriginal and Torres Strait Islander people's deep cultural and spiritual relationships to the water, land and sea, and their rich contribution to society.

1 Waste Collection Summary

A private collection service is proposed to collect the following bins at the indicated frequency. The bins will be taken from the bin store via a mechanical tug and will be placed on the nature strip by the building management. The private waste contractor will collect the waste from the nature strip and the building management will return the bins back to the bin store.

Residential waste	Private Collection Service – collection from Rainbow Road	
Waste stream	No. of bins and capacity	Collection frequency
Landfill	3 x 1100L	Twice weekly
Co-mingled Recycling	3 x 1100L	Twice weekly
Food/garden organics	3 x 240L	Twice weekly
Hardwaste	On call collection	NA
E-waste	1 x 120L	Collected as often as required
Soft Plastic	1 x 120L	Collected as often as required

The approved Waste Management Plan (WMP) will be the model to be adopted for this development. Detailed design and as-built installation must incorporate the design proposed and approved under this WMP. Any revisions of the WMP or changes to the approved waste system of the development may require Council approval and may require a re-submitted Waste Management Plan. More detail is contained within this report.

2 Waste Management Plan

Low Impact Development (LID) Consulting was engaged by TBG Constructions to assess the proposed development at 1-5 Rainbow Road, Mittagong to provide a Waste Management Plan (as required by Statutory Planning).

A waste management analysis has been undertaken based on the following documents:

- Dept of Environment & Climate Change NSW's Better Practice Guide for Waste Management in Multi-unit Dwellings;

This report is based on the drawing sets:

- DA-03P to DA-12P, dated 15/12/2023, prepared by Coble Stephens Architects

2.1 Future Waste Streaming (NSW)

NSW will implement further waste and recycling system in all residential settings by 2030. This includes FOGO (Food and Garden Organic) and glass. As of now, six councils in the North East Waste region of NSW have FOGO services.

It is important that new developments look to incorporate space for these waste streams now in the planning phase. This development will provide FOGO bins at this stage.

2.2 Container deposit scheme

NSW has a container deposit scheme that will ensure more plastics, aluminium and glass containers are recycled effectively, with the expected benefit that waste generation rates will be reduced further beyond estimates here.

This allows residential to actively participate by taking their recyclables directly to an out let in exchange for a monetary refund.

More information can be found at www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn and <https://returnandearn.org.au>

2.3 Council Considerations

- Every rateable tenement is liable to pay for municipal charges irrespective of the level of collection services provided by Council
- Utilizing the Council collection service is not possible in this instance for general waste/recycling due to the large volume of residential waste generated exceeds the council standard bin allocation.
- In addition, since the Council collection service is not used for general waste and recycling, it cannot be used for green waste or hard waste collection.
- The private collection service is to occur on an alternate day to the Council service so that the services are not confused.

2.4 Proposed Development

Address: 1-5 Rainbow Road, Mittagong
Type: Multi-unit apartment development
Dwellings: 50 Apartments

Break up of units: 10 x 1 bed apartments
35 x 2 bed apartments
5 x 3 bed apartments

Planning 23/1070
Application No:

The proposed 3-storey development comprises of 50 units over a shared basement carpark. The main vehicular access into the basement carpark is from Rainbow Road. A shared bin store has been located in the basement opposite the central service core.

Space for the collection, separation and storage of waste and recyclables has been provided, including opportunities for other waste recovery as appropriate.

2.5 Proposed Residential Waste Solution

Site Layout: Refer to **Appendix 1** for Site Layout Plan
Collection Type: Private collection service to collect all waste streams
Collection Location: From the nature strip on Rainbow Road
Bin Store Location: Basement opposite central service.

Residential	Wingecaribbee Shire Council Waste generation rates			Proposed Shared Bin Solution		
	No. units	Allowances	Total estimated waste volume	No. of Bins	Bin Size	Collection Frequency
General Waste (landfill)	49	80L per dwelling per week for 1 bed unit, 100L per dwelling per week for 2 bed unit, 120L per dwelling per week for 3 bed unit	4900L of garbage	3	1100L	Twice weekly
Co-mingled Recycling		80L per dwelling per week for 1 bed unit, 100L per dwelling	4900L of recycling	3	1100L	Twice weekly

		per week for 2 bed unit, 120L per dwelling per week for 3 bed unit				
FOGO waste				3	240L	Twice weekly
Hard Waste				NA	NA	As often as required to maintain space
E-waste			N/A See Section 4.3.3 for E-Waste Recycling	1	120L	As often as required to maintain bins
Other items			1 bin per waste stream or a stack: - soft plastics - Batteries (recommended)	1	120L	As often as required to maintain bins

3 Waste Management Details

3.1 Management Responsibilities

The building management is responsible for all aspects of waste management including implementing adequate safe operating procedures. Items to be addressed in maintaining the system include:

- Building management is responsible for placing bins in the designated collection location before the allocated collection day/time. Bins are to be returned on the same day collections occur.
- The tenancy agreements are to outline a schedule of waste collection dates in accordance with the collection parameters outlined herein.
- Allocation of responsibility to the contractor to retrieve bins directly from the nature strip and return emptied bins at the time of collection. Responsibility should include ensuring the contractor collects any waste that spills from the bins during emptying.
- Cleaners & staff are responsible for placing waste in the appropriate colour coded bins in provided in work areas and then transferring them to corresponding bin in the bulk bin store to ensure all waste types are collected and recycled where possible.
- That bins and bins store areas are monitored regularly with bins rotated as required to ensure areas are fully operational with regular cleaning of the bins and bin store spaces and clean-up after collection if necessary.
- Provision of information to occupants with guides of how to using the various bin systems e.g. boxes to be flattened, containers for recycling washed, bins to not be over-full. See **Section 3.13** for further information about Signage, Education & Safety.
- Monitoring and feedback to occupants if the system is not working properly. Undertake a waste audit should it be suspected waste is not being placed in the correct bins.

3.2 Bin Store Area Design

The Bin store area design/location must include the following:

- A layout that allows access to all of the bins with adequate size to allow easy movement/transfer of the required number of bins. There is to be convenient access by residents and made easily accessible to people with limited mobility.
- Doors located in the allocated storage areas should be designed for easy access of larger bins sizes and hard waste.
- Space suitable for bin wash down is to be available in the development. If this is the bin store then the floor is to be graded to a waste outlet with a litter trap. Alternately, a private contractor can be arranged to swap dirty bins for clean ones on a regular basis.
- If a bin wash is installed, a water tap and hose installed in or near the bin wash areas and correct drainage to sewer (never direct waste to storm water drains) should be designed in accordance with the relevant EPA Bunding Guidelines. Drains to the sewer to be located undercover to prevent rainwater infiltration.
- Bin stores or bins should be vermin proof - particularly where food waste is included. Ensure bin lids are closed and lockable if needed or the bin store is an enclosed space and considered to be largely vermin proof.
- A waterproof power point in or near the bin store.

- Adequate mechanical or natural ventilation if not outdoors.
- Ensure adequate lighting is provided in accordance with National Construction Code (NCC) guidelines if to be accessed after hours.
- Space for a tug required by the building management.
- Meter boxes should not be included in bin store areas.

3.3 Bin Store Area Access

Access to the bin store area should allow for:

- Manoeuvrability within the bin store area is open.
- There is to be no significant step at any threshold between the bin store area and the point of collection.
- The ramp is a relatively moderate grade of 1:20 between the bin store area and the point of collection.

3.4 Bin Sizes

The following sizes are indicative bin sizes based on the Sustainability Victoria Better Practice Guide specified sizes (Appendix 9). These sizes are the size allowances required by most Councils in bin store areas. Allow 100mm between 4-wheel bins and 50mm between 2-wheel bins for movement.



Size	Width	Depth	Height	Footprint
120L	485mm	560mm	940mm	0.27m ²
240L	580mm	735mm	1080mm	0.43m ²
1100L	1370mm	1245mm	1470mm	1.71m ²



Standard bin colours (refer AS4123.7)

Garbage (landfill)	Red
Co-mingled recycling	Yellow
Green organics	Light Green
Battery	Purple
Soft Plastic	Light Blue
E-waste	Light Grey

* NOTE: size may vary between Councils and contract suppliers

3.5 Waste Vehicle Requirements

- Rainbow Road is a typical suburban street, and no vehicle size limitation should apply. The waste contractor will confirm if MRV or HRV vehicles are used for this site.
- The waste contractor will be responsible for retrieving, emptying and returning bins to/from the nature strip at the time of collection.

Vehicle	Typical size
Rear Loading	8.8m – 10m long x 2.6m wide truck – 4.0m head clearance (Medium Rigid Vehicles)
Side loading automated arm	Sizes vary from MRV to HRV
Front Fork Loading automated arm	10.4m – 12m long x 2.6m wide – 5.5m head clearance (Heavy Rigid Vehicles)
Rear Hook Loading (compactors)	9.7m long x 2.6m wide – 5.5m head clearance
NOTE: Larger vehicle may need to be assessed for clearances prior to entering the site.	

3.6 Collection Times

Collection times will be in arrangement with the building management.

Waste collection from private services are best suited on an alternate day to the Council service and completed at times of least interference/inconvenience to the local amenity and traffic conditions.

3.7 Internal Waste Management

- General landfill **garbage shall be placed in plastic bags** before placement into bins
- **Recycling materials are not to be bagged** and are to be placed loosely into the recycling bins. (Items in plastic bags in recycling bins are not recycled). Recyclable items in domestic bin collections include:
 - Rigid plastic containers
 - Paper, cardboard
 - Glass bottles and jars
 - Steel cans, aluminium cans and aluminium foil are among items that can be recycled.

But exclude:

- Plastic bags
- Garden hoses
- Rope (ropes and garden hoses can wrap around and damage equipment in the recycling plant).

To improve recycling:

- Empty containers and bottles of any leftover food or liquid. Ideally rinse them out.
- Don't put anything inside plastic bottles or containers
- Paper – if it can't be ripped, it can't be recycled due to the plastic coating.
- Check local waste collection / contractor requirements – some recycle all plastic resin codes, some are more restricted. Some want lids on bottles, some want them separate and in landfill.

3.8 Response to Increasing Waste

- The total waste capacity exceeds the required allowance calculation by rounding up to the nearest bin size so there is built in capacity should waste levels increase beyond estimates.
- A waste audit can be undertaken to understand the content of the waste bins. Audits provide feedback to clients of good or poor recycling practices. Images can be helpful to convey feedback.
- If landfill garbage bins consistently overflow, then residents, staff or cleaners are to be directed to educational material as to the appropriate streaming of waste including food and other recyclables.
- If recycling bins continue to overflow, residents, staff or cleaners should be reminded to crush and flatten all cardboard boxes before placing these in the recycling bin(s). It may also be appropriate to obtain an additional recycling bin.
- If recycling overflows residents could be notified of the closest return and earn recycling exchange locations.
- The last choice option is for more regular private collections to occur.

3.9 Reducing Odour

Odour from waste primarily emanates from bin store areas. Control of odour must occur in the bin store area with the provision of suitable natural or mechanical ventilation. If installed the mechanical ventilation system for the bin storage area must not cause a public health nuisance (noise and odour generation) and comply with EPA requirements and in accordance with the ventilation requirements of the Building Code of Australia and AS 1668.2.

- As the bin store is open to the car park if there is good ventilation of the carpark then the bin store should be suitably ventilated.
- The bin store area and bins are to be monitored and cleaned on a regular basis to remove sources of smells.

3.10 Noise management

Minimizing noise associated with waste movement and collections include:

- Locating bin stores and collection points at an appropriate distance from onsite occupants and adjoining residences;
- Collections occurring during the stipulated collection times restrict the hours of noise from collections.
- Collection vehicles should not break up bottles at the point of collection, only once off site. Compaction of waste should only be carried out whilst waste vehicles are on the move and off-site.

3.11 Traffic Management

- Traffic management along Rainbow Road will not be an issue with the quick emptying times with waste from only 3 bins being collected at any one time. The collection zone is also an appropriate distance from the intersection.

3.12 Litter Spread

- Litter spread is to be managed by ensuring bins are not overloaded, and lids are always closed.
- Litter spread is to be managed by the system of contractors collecting bins from within the property. As bins are not left outside overnight, the possibility of vandalism is removed.
- The private collection contractor's agreement should require their pickup of any waste that spills from the bins during collections.

3.13 Signage, Education & Safety

It will be the responsibility of Building Management to ensure all occupants have all of the material available to them and that they adhere to the required practices regarding waste management, sustainability and promoting waste minimisation.

- All education material will be in accordance with Council requirement or if this is not available, per signage on the following website:
<https://www.sustainability.vic.gov.au/recycling-and-reducing-waste/waste-systems-in-residential-commercial-and-industrial-buildings/waste-signage>
- Directional signage should be installed to direct occupants and bin collectors to the bin storage areas.
- The hard waste storage zone should also be signed.
- Instructional signage within shared communal bin stores is to indicate which bin is for landfill and which is for recyclables or other waste streams.



Figure 1. Simple, brightly coloured signs, such as those shown above, quickly communicate what items are acceptable for each bin.

- **A preliminary OHS risk assessment** has been included to identify potential OHS issues, however this risk assessment does not replace the need for the Owners Corporation and collection contractors to complete their own OHS assessment for the bin collection process. See **Appendix 2** for further detail.

4 Minimising Waste to landfill - Managing Waste Streams

4.1 Sustainability Initiatives

Residents are to be made aware of Sustainability NSW's recommendations for waste reduction.

www.dpie.nsw.gov.au/our-work/environment-energy-and-science/waste-and-sustainable-materials-strategy

A circular economy is a system where products and services are designed to be reused or ideally be regenerative i.e. to repair the environment. This differs from the predominantly linear model of "take, make and waste" that we have seen in the last few decades.

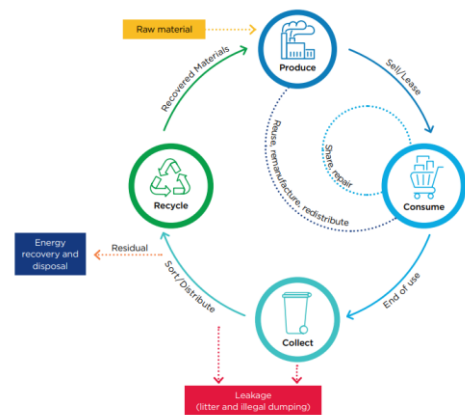
Food organics is an example of where waste can be regenerative. Food waste is now being actively used via composting to improve the quality of soils.

While occupants of buildings are generally limited in how they can impact on the design of products to make them re-useable, they can change their own and others behaviour to minimise waste.

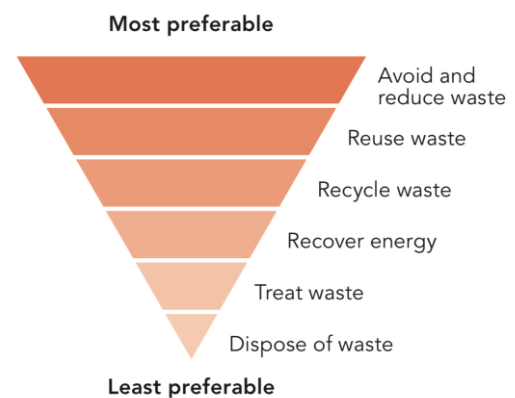
Where possible building occupants should practice the waste reduction hierarchy.

Avoidance of landfill waste by building occupants might involve

- Purchase only what you will consume
- Purchase items of quality that can be re-used, sold on donated or up-cycled.
- Use re-usable drink bottles, lunch containers, shopping bags
- Avoid single use plastics
- Compost anything that once was alive



Circular Economy



4.2 Separating & Streaming Food Waste

Food waste, when buried in landfill waste is starved of air and rots and producing methane; 26 times more damaging than carbon dioxide. Diverting food waste from landfill is not only a really effective way to reduce greenhouse gas emissions, but also a regenerative solution, creating rich, healthy soil.

The Better Practice Guidelines stipulates diverting food from landfill waste. This can be achieved in a number of ways including on site composting and/or FOGO collections for single residents or via dedicated food waste collections in larger multi-unit developments.

4.2.1 Inside Dwellings

- **Love Food Hate Waste** aims to raise awareness of avoidable food waste from NSW families. The average household in NSW loses over \$3,8000 a year from wasting food. [Home | Love Food Hate Waste \(nsw.gov.au\)](http://www.nsw.gov.au/love-food-hate-waste)



- **Multiple bins for waste streams** - In multi-unit developments streamed waste bins are to be included (perhaps included under the sink) in each dwelling. Bin types include garbage (Landfill) waste, Recycling, Organic Food Waste, Glass.



Pull-out kitchen streaming bins

Figure 2. – Bins for waste streaming

4.3 Other Waste Streaming Details

4.3.1 Green Garden Waste

- For garden areas a private maintenance contractor will be responsible for removing any green garden waste.
- Garden areas are recommended to be designed to encourage low maintenance gardens and an annual or bi-annual pruning. This service will need to be arranged by the building Management.

4.3.2 Hard Waste Collection

- Building management is to arrange hard rubbish collections as required.
- Residents should liaise with the building management to ensure hard waste collection occurs throughout the year. The building management is to ensure no hard waste is left kerbside.
- Hard rubbish items will be required to be stored within the allocated apartment storage lockers or within the dwelling.
- Hardwaste items can also be taken directly to the Council run local waste recovery centre.
- A private waste contractor can be engaged to collect all bulky hard waste and eWaste items at a frequency to maintain the storage space.

- **TerraCycle** is a national initiative where you can look up where to deposit non-recyclable waste such as contact lenses, coffee capsules, mailing satchels, toothbrushes & tubes.
<http://www.terracyclemap.com>
- Alternatively unwanted bulky items, clothes and other consumables can be donated to charities, sold on online or at second-hand local market places as is if in good condition. If repairs are required, seek out repair community centres for re-purposing. Search PlanetARK for a comprehensive listing to each council. <https://recyclingnearyou.com.au/councils/>

4.3.3 E-Waste Recycling

- Any item with a plug, battery or cord can be deposited at a designated e-waste drop-off point. Electronic waste includes old mobile phones, computers, audio devices, refrigerators and other white goods, hair dryers, TVs, heaters, and air-conditioners.
- A private commercial contractor must be engaged to collect these items.
- Other authorised electrical waste disposal locations can be found:
 - <https://wanless.com.au/waste-services/soft-plastic-recycling/>
 - <https://www.veolia.com/anz/our-services/our-services/recycling-waste-services/recycling/plastics/soft-plastics>
 - <https://www.cleanaway.com.au/waste/clear-plastic-and-polystyrene/>

4.3.4 Soft Plastic Recycling

- NSW as yet to set legislation to ban soft single use plastic but will in the future. There are a number of companies that already collect streamed soft plastics in NSW including:
 - <https://wanless.com.au/waste-services/soft-plastic-recycling/>
 - <https://www.veolia.com/anz/our-services/our-services/recycling-waste-services/recycling/plastics/soft-plastics>
 - <https://www.cleanaway.com.au/waste/clear-plastic-and-polystyrene/>

4.3.5 Other Recyclables

- Council recycling hubs recycle
 - batteries
 - light globes
 - printer cartridges
 - clothes.
- In addition Officeworks provide recycling drop-off points for:
 - printer cartridges
 - old IT equipment
 - mobile phones
 - pens and markers

- These items are to be recycled periodically as arranged by an interested tenant or the Owner's Corporation e.g. by the maintenance or gardening contractor.

4.3.6 NSW Return & Earn

- Bottles, cans and cartons make up a large proportion of the litter on our streets, beaches and green spaces. Tackling the problem costs NSW millions of dollars every year. Return and Earn is a way for us all to help solve the litter problem and be rewarded for our efforts.
- With a food based tenancy proposed within the building, a recycling bin can be swapped for a Return & Earn bin. There are many options for these containers to be deposited or collections. View the website for more information: <https://returnandearn.org.au>

5 Supplementary information

5.1 Waste Links

Wingecarribee Shire Council Waste Directory:

- <https://www.wsc.nsw.gov.au/Services/Waste-Recycling>

Waste collection companies in NSW:

- Suez (incl Sita) www.suez.com.au/en-au Ph: 1300 651 116
- Transpacific-Cleanaway - <https://www.cleanaway.com.au>, ph 13 13 39
- Waste Wise Environmental www.wastewise.com.au Ph: 0447 595 092 (Metro Sydney)
- JJ Richards & Sons www.jjrichards.com.au
- Veolia - <https://www.veolia.com/anz/>, Ph 132 955

5.2 Mechanical Tug and Bin Trolley Details

Multiple options exist for tugs that can move both two wheel and four wheel bins at the same time.

The Sitecraft Logistec tug here is a tug/trailer combined, that can tow 660L and 1100L bins while also moving 120L or 240L bins.



Alternatively, two-wheel bins can be loaded onto a trailer/dolly for transportation. Space is required for storage of the tug unit plus trailer, but bins can be stored on the tug/trailer while it is stored. Trailers can vary in size – allow space larger than the bin footprint.



Four-wheel bins can be towed directly by the tug and require less space as only the tug is required to be stored, not a trailer. Towing brackets and directional wheel locks are available from Sulo www.sulo.com.au and can readily be retrofitted to 660-1100L bins for towing. Towing brackets and wheel locks do not project outside of the bin footprint area.

Mechanical tug systems will usually cost in the range of \$10,000 - \$15,000, with trailer possibly extra. Tugs can be 1-1.5m long x 0.8m wide.



Suppliers include

- www.electrodrive.com.au
- <http://www.mastermover.com.au>
- www.sitecraft.net.au
- <http://www.hercules.com.au/index.php?tug2>.

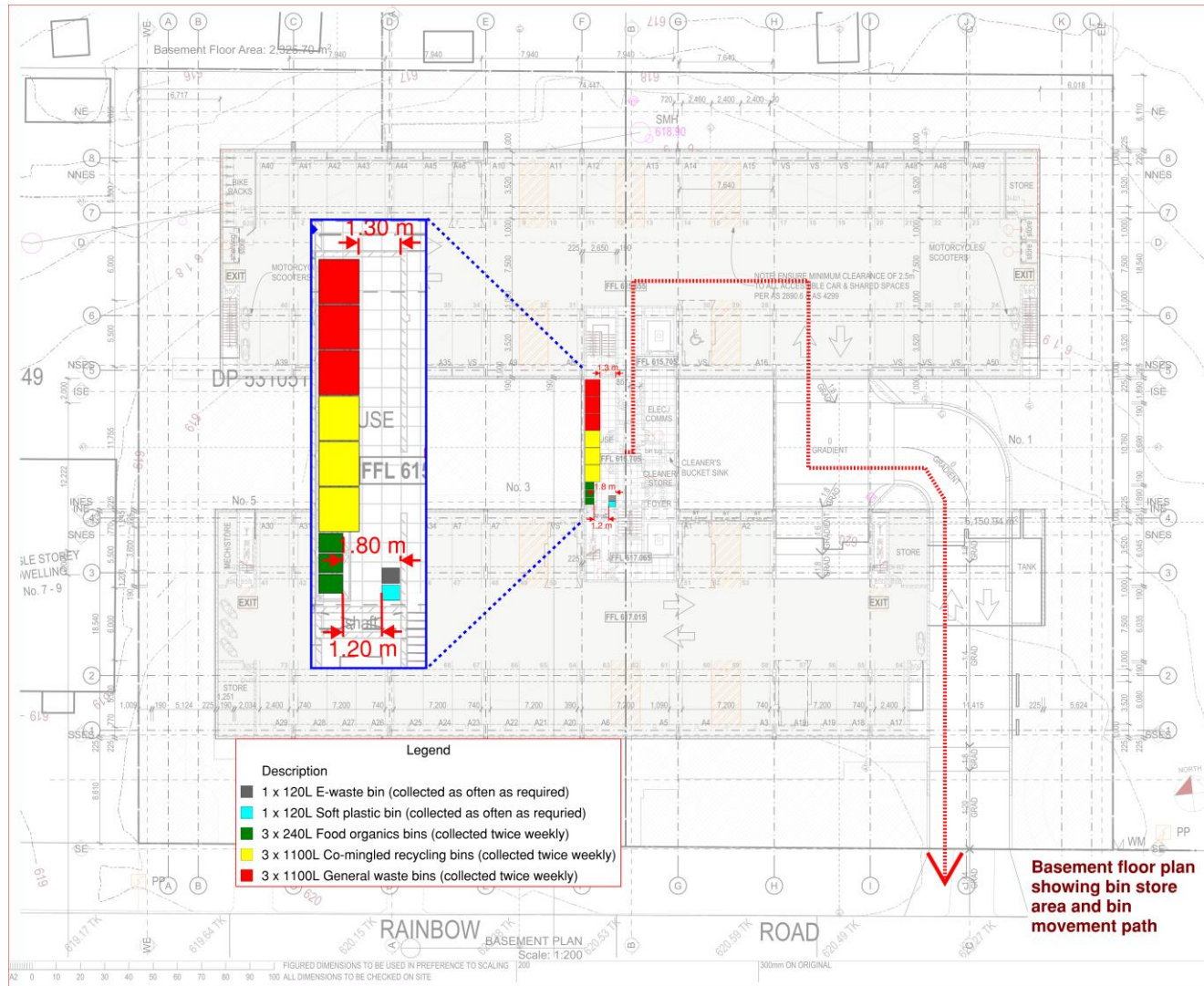
Manual wheelie bin handling trolleys provide assistance with the manual handling of 120L to 360L bins. Various models are available with standard manual trolley as well as an electric boosted trolley to carry up to four 2-wheelie bins. They should be included in case of a longer bin movement distance or for the less abled people to safely move the bins if required.

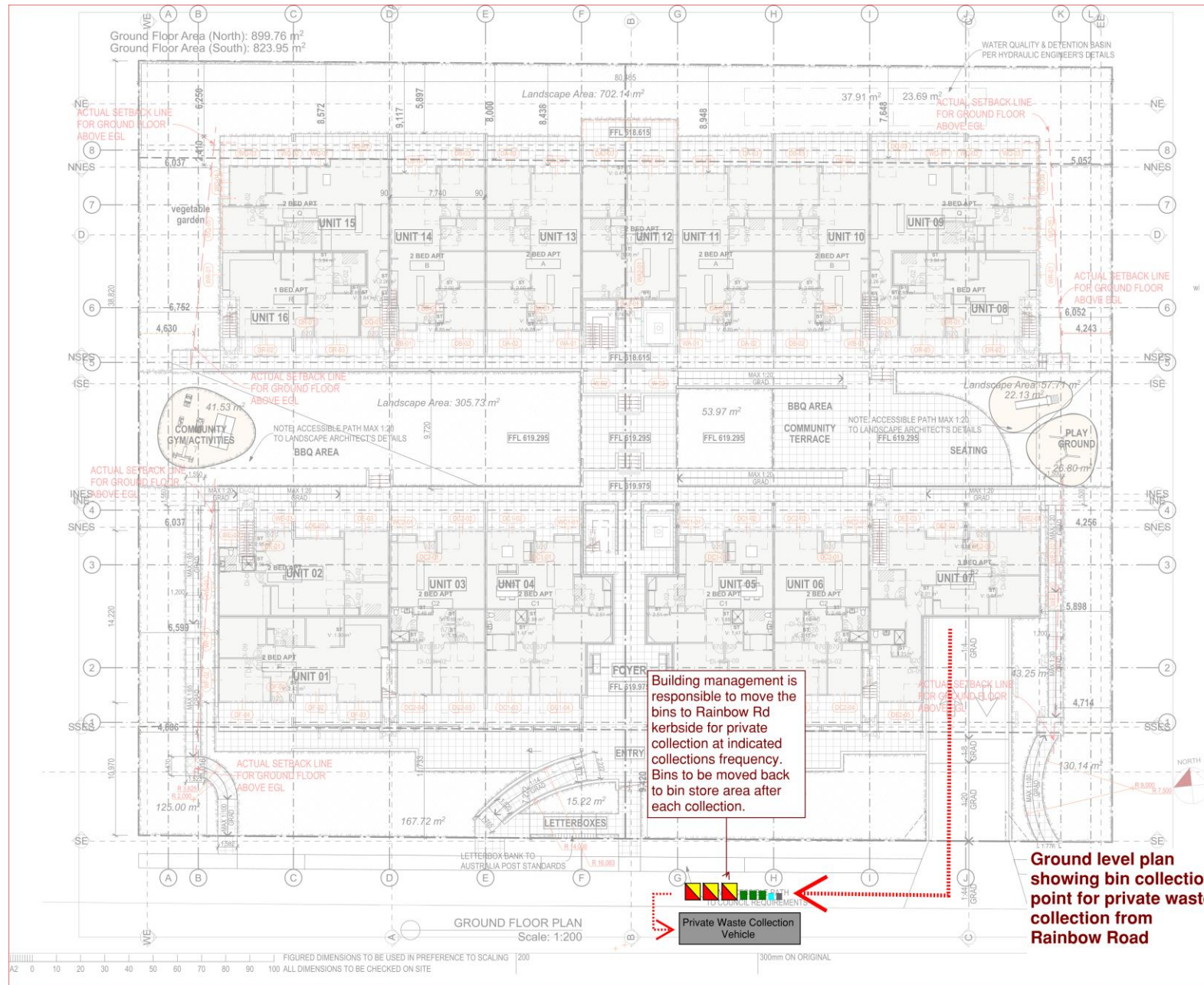
Suppliers include

- <https://www.materialshandling.com.au>
- <https://www.wheeliesafe.com.au/>



Appendix 1 - Bin Collection Plan





Ground level plan showing bin collection point for private waste collection from Rainbow Road

Appendix 2 - Preliminary Risk Review

Class 1 Risk = Potential to cause death or permanent injury.	Class 2 Risk = Potential to cause injury requiring medical attention.	Class 3 Risk = Potential to cause an injury treatable with first aid.
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Activity	Steps involved in completing activity & risk	Risk level	Risk mitigating measures	Implementation responsibility
Moving of bins from bin store up the ramp to the collection zone	Distance bins to be moved approx 110m including up ramp of less than 3600mm wide. It may be difficult for both the tug and bins and vehicles to be accommodated on the ramp at the same time. Risk of manual handling injuries if tug is not used and bins are fully laden with heavy waste. Risk of collision with cars on ramp, at restricted vision points at the top and bottom of the ramp, and shared roadway use in the lane.	2 1	Use a mechanical bin tug to reduce manual handling injuries. Install curved mirrors at the top and potentially bottom of the ramp to ensure drivers can see around corners and be aware when bin transfer operation occurring. Signage reminding drivers to be aware that bin transfers take place and drivers to take care. Owners Corporation to take feedback from bin transfer person if drivers are entering or exiting too fast.	Building Designer / Owners Corporation/ Building Management
Bin loading on street	Moving bins from temporary collection space to collection vehicle parked on street. Collection may occur at the rear of the truck.	1	Bin collection operator's own safety measures incl training	Bin collection operator

Activity	Steps involved in completing activity & risk	Risk level	Risk mitigating measures	Implementation responsibility
	Risk of being struck by passing vehicles if step outside the line of the width of the truck			
Note this assessment is for consideration during the design phase of the project. It is <u>not</u> to replace a risk assessment / Safe Work Method Statement being completed by the contractor and persons undertaking the waste removal process.				

Appendix 3 - Waste rates & calculations

Appendix 3 - Waste Generations Calculations 1-5 Rainbow Rd, Mittagong NSW



General Residential								
Residential type	No. units	Waste Generation Rates (L/unit per week)			Source	Waste Generated (L/Week)		
		Landfill	Recycling	Food Organics		Landfill	Recycling	Food Organics
1 Bedroom	10	80	80	25	NSW better practice guidelines	800	800	250
2 Bedroom	35	100	100	25	NSW better practice guidelines	3500	3500	875
3 Bedroom	5	120	120	50	NSW better practice guidelines	600	600	250
Total Litres per Week	50					4900	4900	1375
						<i>3 x 1100L bins collected twice weekly</i>	<i>3 x 1100L bins collected twice weekly</i>	<i>3 X 240L bins collected twice weekly</i>