



Low Impact Development
Consulting

Waste Management Plan

Multiunit Development (low rise)

3-4 Llanfoyst Street, Randwick NSW 2031

Prepared for: Orosi Architecture

Prepared by: PM– Low Impact Development Consulting

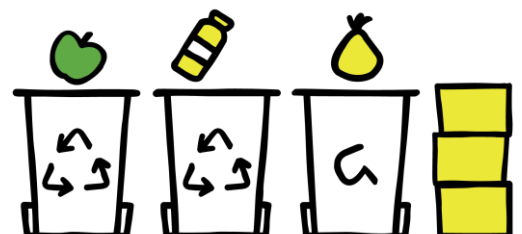
Date: 28/11/2023

e: info@lidconsulting.com.au

p: 03 9016 9486

a: Suite 7, 252 St Georges Rd, Fitzroy North Vic 3068

w: www.lidconsulting.com.au



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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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1 Waste Collection Summary

The Council kerbside collection service is proposed to collect all waste in accordance with Randwick City Council's waste policy guidelines. The Owner's Corporation is responsible for all aspects of waste management including, managing and maintain all waste streams.

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.



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.

2 Waste Management Plan

Low Impact Development (LID) Consulting was engaged by Orosi Architecture to assess the proposed development at 3-4 Llanfoyst Street, Randwick NSW 2031 to provide a Waste Management Plan (as required by Statutory Planning).

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

- NSW EPA's Better Practice Guide for Resource recovery in Residential Developments 2012;
- Randwick City Council's Waste management Guidelines for Proposed Developments;
- Randwick City Council's DCP 2013 – Part B6.

This report is based on the drawings prepared by Orosi Architecture and received by LID Consulting 31/01/2024.

2.1 Council Considerations

- Utilizing the Council collection is the preferred option for future residents as the cost is included in the council rates.
- The site is located within a court bowl. A road side collection is still viable option with the requirement for 300mm spacing between bins with bins to be placed on the straight sections of Llanfoyst Street.
- While a waste chute has been included within Council's waste policy guidelines for medium rise developments, in this instance only 4 levels are proposed. It is reasonable that residents take their own waste directly to the shared bin store as they exit the premises.

2.2 Standard Residential Collection Options

Randwick City Council's standard residential Bin Collection Options:

- 140L or 240L garbage bins collected weekly;
- 240L co-mingled recycling bins fortnightly;
- 240L FOGO bins (Organics) fortnightly (optional);
- 2m3 hardwaste collected 8 times per year (1No. scheduled service + 7 booked) including e-Waste

Council will collect these allowances from all rateable properties, but will not collect above these volumes if the site generates higher levels of waste or non-approved waste types.

2.3 Proposed Development

Address:	3-4 Llanfoyst Street, Randwick NSW 2031
Type:	Multi-unit development
Units	11 Units
Break up of units:	8 x 3bed units 3 x 1bed units

The proposed development is a 4 level development comprising 11 units and car parking levels /ground/basement. A shared bin arrangement is proposed with the waste bin room located at ground level. Access to the street nature strip for council collection is via the foyer/pedestrian entry of the development.

Space for the collection, separation and storage of waste and recyclables has been provided, including opportunities for on-site management of food waste as appropriate.

2.4 Proposed Residential Waste Solution

Site Layout: Refer to **Appendix 1** for Site Layout Plan

Collection Type: Council collection service to collect all waste streams

Collection Location: From the Kerbside on Llanfoyst Street

Bin Store Location: Shared bin store at Basement Level

Residential	Randwick City 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)	11	120L per dwelling per week	1320L total per week	6	240L	Once weekly
Co-mingled Recycling		60L per dwelling per week	1320L of recycling per fortnight	6	240L	Fortnightly
Garden / FOGO waste		60L per dwelling per week	1320L of garden organics per fortnight	6	240L	On the alternate fortnight
Hard Waste		NA		2m ² space provided within the bin store area	NA	7 x booked annually + 1 scheduled
E-waste		N/A See Section 4.3.3 for E-Waste Recycling		NA	NA	Included in Hard waste collections

NOTE: Streaming of waste into dedicated bins is encouraged where possible. The type of recycling bins nominated above may be swapped to suit the type of recyclable commercial waste generated (while not altering the number of bins overall). Possible additional waste streams include:

- hard
- soft plastics
- Cardboard / paper

2.5 Ongoing Responsibilities

The management and maintenance of the waste system will be the responsibility of the Owner's Corporation. Items to be addressed in maintaining the system include:

- The tenancy agreements are to outline a schedule of waste collection dates in accordance with the collection parameters outlined herein.
- Individual occupants are responsible for placing their waste in the appropriate colour coded bin to ensure all waste types are collected and recycled where possible.
- Owners Corporation is responsible for placing bins in the designated collection location on the night before the allocated collection day. Bins are to be returned on the same day collection occurs.
- That bins and bins stores 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.
- Management and coordination with council for hard waste collection.
- Managing communal composting areas (if applicable).
- Provision of information to residents 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 3.9** for further information about Signage, Education & Safety.
- Monitoring and feedback to residents 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 Waste Management Details

3.1 General Management

- The Owner's Corporation is responsible for placing bins in the designated collection. Bins are to be returned on the same day as collection occurs.
- The Owner's Corporation is responsible for all aspects of waste management including placing bins out for collection and returning & maintain bins.
- Individual occupants are responsible for placing their waste in the appropriate colour coded bins to ensure all waste types are collected and recycled where possible.

3.2 Bin Store Design

Bin Store Design 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, hard waste, for durability and to blend in with the development.
- 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 must be vermin proof - particularly where food waste is included. (The bin store is inside the building and considered to be largely vermin proof).
- A waterproof power point in or near the bin store.
- Adequate mechanical or natural ventilation.
- Ensure adequate lighting is provided in accordance with National Construction Code (NCC) guidelines.
- Space for a tug or bin lifter if required by the waste contractor(s) / facility management.
- Meter boxes should not be included in bin store areas.

3.3 Bin Store Access

- There is to be no significant step at any threshold between the bin store area and the point of collection.

3.4 Bin Sizes



Size	Width	Depth	Height
80L	450mm	530mm	800mm
120L	485mm	560mm	930mm
240L	580mm	735mm	1100mm
360L	600mm	885mm	1100mm
660L	1370mm	850mm	1215mm
1100L	1370mm	1245mm	1300mm



Standard bin colours (refer AS4123.7)

Garbage (landfill)	Red
Co-mingled recycling	Yellow
Green organics	Light Green
Glass	Light Blue
E-waste	Light Grey

* NOTE: size may vary between Councils and contract suppliers

3.5 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.
 - Leave lids on everything
 - Don't squash plastic bottles or containers or put anything inside
 - Paper – if it can't be ripped, it can't be recycled due to the plastic coating.

3.6 Response to Increasing Waste

- There is capacity in the bins for additional landfill waste or recycling due to rates estimating 5.5 landfill and 5.5 recycling bins be required, while 6 bins of each have been allowed for.
- A waste audit can be undertaken to understand the content of the waste bins and provide images and feedback to clients of good or poor recycling practices.
- If garbage bins consistently overflow, then residents 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 should be reminded to crush and flatten all cardboard boxes and plastic containers before placing these in the recycling bin(s). It may also be appropriate to obtain an additional recycling bin.

3.7 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.

- The bin store area and bins are to be monitored and cleaned on a regular basis to remove sources of smells.

3.8 Litter Spread

- Litter spread is to be managed by ensuring garbage and recycling bins are not overloaded, and lids are always closed.
- The Owner's Corporation should pickup of any waste that spills from the bins during collections.

3.9 Signage, Education & Safety

It will be the responsibility of the Owner's Corporation 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 requirements.
- 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 garbage and which is for recyclables (or food waste/organics) and also include what items can be included in garbage and recycling bins, and items that need to be disposed of via other services.



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.
- A sign will be placed on the garbage bin that soft plastics can be recycled at any location identified on the Redcycle website <http://www.redcycle.net.au/where-to-redcycle/>



Figure 2. A quick guide to some most commonly recycled Soft Plastic item

4 Managing Waste Streams

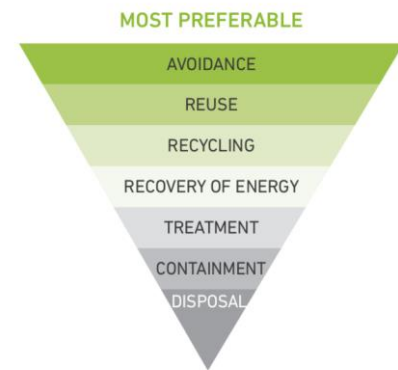
4.1 Sustainability Initiatives

Residents / Occupants are to be made aware of EPA's recommendations for waste reduction.

Where possible they should practice the waste reduction hierarchy identified in the Environmental Protection Act 1970;

The first step to reducing waste, particularly food waste is to avoid and minimise waste from occurring in the first instance. Changing purchasing habits and implementing waste avoidance include:

- Purchase only what you will consume
- Use re-usable drink bottles, lunch containers, shopping bags
- Avoid single use plastics
- Compost anything that once was alive
- Meal plan, shop seasonally, shop locally



4.2 Separating & Streaming Food Waste

In Randwick, food and garden organics make up approximately 40 per cent of household garbage with food. 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 residents or via dedicated food waste collections in larger multi-unit developments.

4.2.1 Inside Dwellings

- **Kitchen Caddies** - Separation of garbage and recycling initially occurs in each residence. For single residence, Council's who have introduced separate food waste collections (FOGO bins) may also supply kitchen caddies for each residence as part of the service.
- 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 etc.
- **Bokashi bins** <http://www.bokashi.com.au/> are an effective way of reducing waste volumes and breaking down food waste for apartment dwellers. Food scraps are placed in bokashi bins with an accelerator mix added. The volume of waste food is reduced, and the waste in the bin is already on the path to being composted. Bokashi bins can be emptied into compost bins so providing a compost bin on site and having a garden also helps. Bokashi bins are also available from <http://www.eco-organics.com.au/about-us.htm>



Kitchen Caddy – supplied by council



Apartment Bokashi bin



Pull-out kitchen streaming bins

Figure 3. – Different bins for waste streaming

Tips for FOGO

- Place all food waste direct into Council provided FOGO bins
- Keep the wheelie bin in a shady spot
- Use paper towel to line the bottom of plastic bags to soak up any moisture that can cause the liner to break down quicker than normal
- Double wrap meat, bones and unwanted pet food (with newspaper or paper towel) before placing in your caddy
- Line the organics bin with newspaper to aid cleaning
- Wrap fish and seafood waste (in newspaper or paper towel) and place in your freezer until your next collection is due
- Sprinkle vinegar, baking soda, charcoal or eucalyptus oil in your organics bin to combat odours
- A mix of garden and food waste helps keep bin odours under control
- Purchase a Bin Kill tag that can be attached to the inside of your organics bin. The tag emits a vapour that kills flies and maggots. The product is available from Bunnings, Coles or Woolworths supermarkets.

4.2.2 On-site Composting

In the garden – private or communal

- Aerobic **green cone bio-digester designer compost** is a landscape option for some households, including multi-unit developments to divert a larger range of food waste (including bread, dairy, meat and small bones). Refer to <https://www.treehugger.com/lawn-garden/green-cone-solar-food-digester-will-reduce-90-food-waste-your-backyard.html> for more info.
- Alternatively the new **Subpod in-ground composting/worm farm unit** www.subpod.com that composts fast, and ensures worms don't die off as they can often in unshaded above-ground worm farms.
- **Compost bins and worm farms** are great way for residents to re-use kitchen waste and turn it into compost for their garden. Many Councils provide discounted packages for worm farms, compost bins and bokashi bins with free delivery. **Join the Compost Revolution** <https://compostrevolution.com.au> provides up to a 80% discount on a number of composting bins and worm farms. It also has a range of tutorials on how to use them. Co-designed with councils, the Compost Revolution is a multi-award-winning program that educates and equips residents to cut their waste in half.



Figure 4. Green cone bio-digester



Figure 5. Subpod in-ground compost unit



Figure 6. Green cone bio-digester

4.3 Other Waste Streaming Details

4.3.1 Organic Waste

- Council currently collects combined food organics and green organics (FOGO) fortnightly from the kerbside. Residents can utilise this service to manage all organic (food & garden) waste from within their own tenement.
- For common areas a private maintenance contractor will be responsible for removing any green garden waste and can also by arrangement, remove green waste from private spaces if required.
- Common area gardens 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 owners corporation.

4.3.2 Hard Waste Collection

- The Owner's Corporation will arrange hard rubbish collections waste build up between standard collections. Alternately, items can be taken directly to the Council run local waste recovery centre.
- Residents should liaise with the Owner's Corporation to ensure hard waste collection occurs throughout the year. The Owner's Corporations is to ensure no hard waste is left kerbside for longer than the week before an organised collection date.
- It should be well communicated to residents that they can request an additional hard rubbish collection with appropriate details provided to contact the Owner's corporation.
- 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/>
- Local information regarding the disposal and recycling of common household items for each Council can be found at:
- <https://www.sustainability.vic.gov.au/You-and-your-home/Waste-and-recycling/Council-waste-and-recycling-services>
- www.recyclingnearyou.com.au



- In addition suppliers such as **Ecycle** <http://www.ecyclesolutions.net.au> will deliver whitegoods and either collect clean polystyrene from retailers or take polystyrene away after delivery.
- **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.

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.
- These items can be placed within the hardwaste collections. Alternately, individual residents can take items to the Randwick Recycling Centre.
- 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 Other Recyclables

- One container with drawers or a number of small stackable plastic crates with minimum footprint 500x500mm is to be supplied to the development to collect recyclables such as:
 - batteries
 - light globes
 - printer cartridges
 - clothes.
- 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.
- Note: over 1000 locations state-wide, Officeworks provide recycling drop-off points for printer cartridges, old IT equipment, and mobile phones.

4.3.5 Soft Plastic Recycling

- Eliminating or reducing the use of single-use plastics can greatly reduce waste volumes both in residential and commercial settings. This includes straws, plastic bags and plastic wraps. Many private waste contractors can commercially collect soft Plastic.
- **Coles and Woolworths** both offer plastic bag and soft plastic recycling. Residents can place all plastics in one plastic bag and add it to the recycling bin at the supermarket for collection. Any location identified on the Redcycle website <http://www.redcycle.net.au/where-to-redcycle/>.

5 Supplementary information

5.1 Waste Links

Randwick City Council Recycling Directory:

<https://www.randwick.nsw.gov.au/services/rubbish-and-recycling/recycling-centre>

Waste collection companies in NSW:

- Sita – Suez <http://www.sita.com.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 (Sydney)
- JJ Richards & Sons www.jjrichards.com.au
- Veolia - <https://www.veolia.com/anz/>, Ph 132 955

5.2 Mechanical Tug Details

Where mechanical tugs are recommended, the following details will assist.

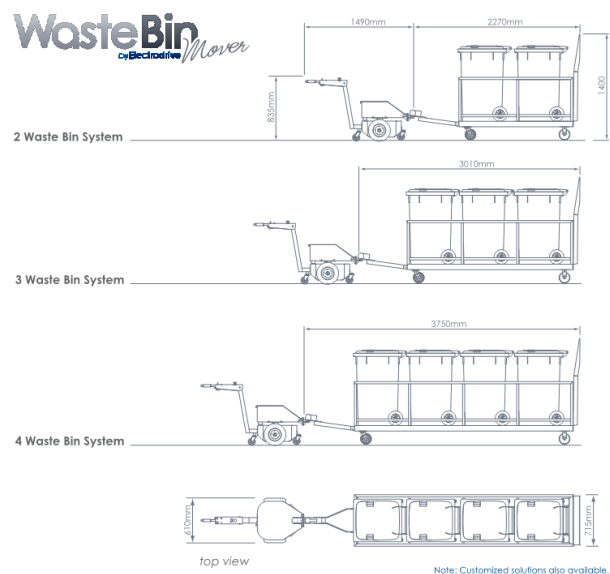
Suppliers include

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

Two-wheel bins are usually loaded onto a trailer/dolly for transportation. Space is required for storage of the tug unit plus trailer. Tugs can be 1.5m long x 0.8m wide. Trailers can vary in size – allow space larger than the bin footprint.

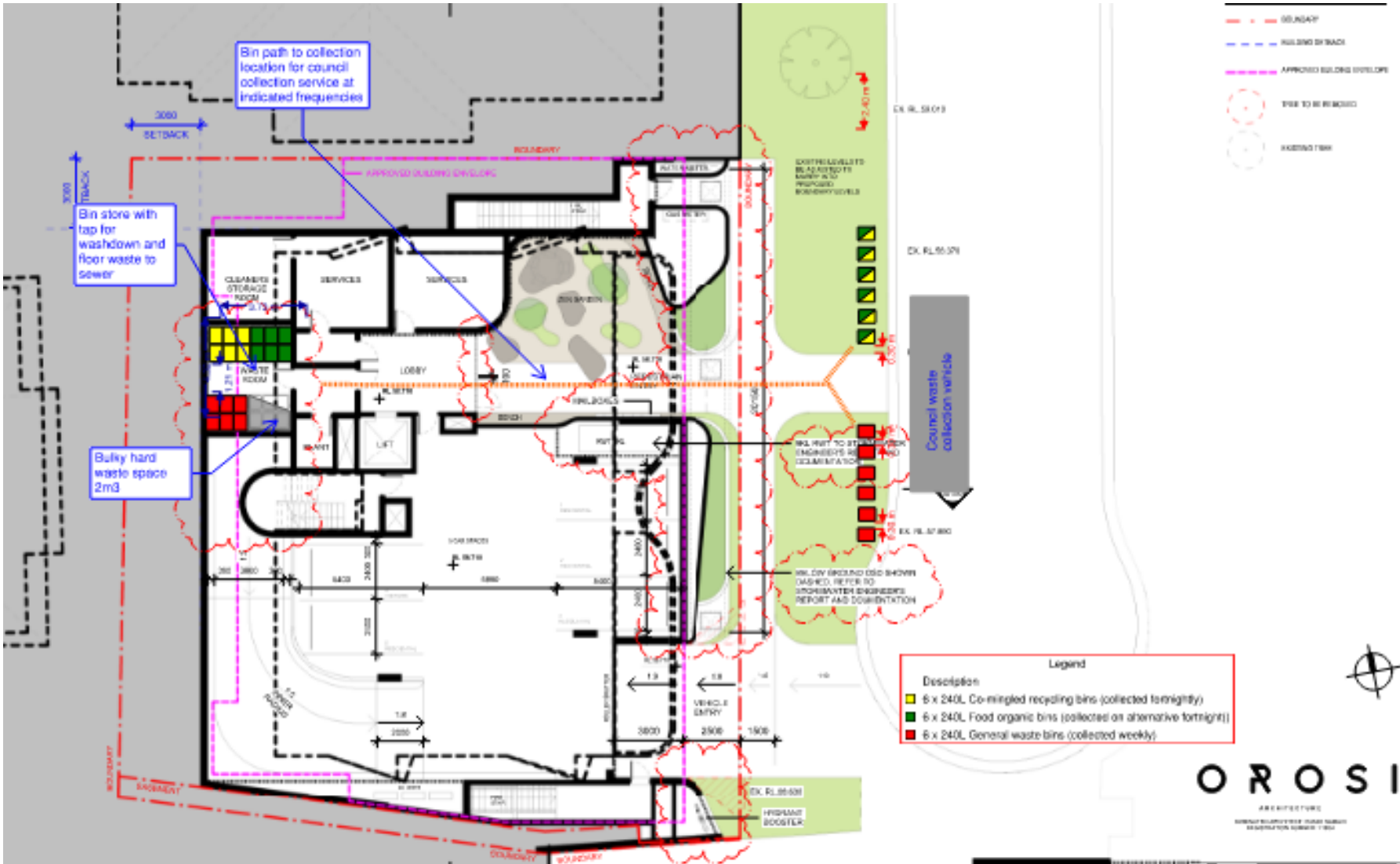


Sitecraft Logistec bin mover



Mechanical tug systems will usually cost in the range of \$10,000 - \$15,000, with trailer possibly extra.

Appendix 1 - Bin Collection Plan



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 to the collection zone	Distance bins to be moved approx 30m Risk of manual handling injuries if bins are fully laden with heavy waste.	2	Use max bin sizes of 240L or a mechanical bin tug to reduce manual handling injuries.	Building Designer / Owners Corporation
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. Risk of being struck by passing vehicles if step outside the line of the width of the truck	1	Bin collection operator's own safety measures incl training	Bin collection operator

