



Low Impact Development
Consulting

Waste Management Plan & Operations Guide

Mixed use Development

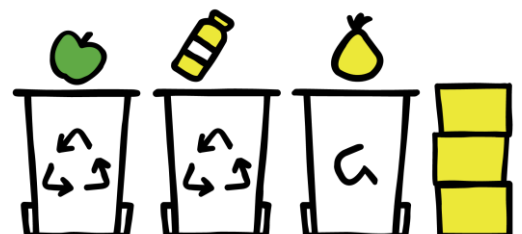
6 Cross St, Footscray

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1.0	18/07/2022	For issue	Rev. 1 June 2022	AV
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The content of this document represents the entirety of work output or recommendations offered by LID Consulting for this particular project. This content supersedes all other verbal discussions undertaken by LID Consulting representatives in relation to this project.

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 Summary

1.1 Proposed Development

Address:	6 Cross St, Footscray
Type:	Mixed use development
Dwellings:	109 Apartments
Break up of units:	30 x 1 bed apartments 73 x 2 bed apartments 6 x 3 bed apartments

The proposed 9-storey development comprises of 109 units, takeaway, food and drink, grocery, gym and office facilities over 2 levels of shared basement carpark. The main vehicular access into the basement carpark is from Hocking Street. Shared residential bin stores have been located in the basement adjoining the central service core of each building with separate landfill and recycling chutes accessible from each level of the building directing waste into the appropriate bins. A shared commercial bin store for takeaway, F&B and grocery has been located in the ground floor adjoining the loading bay and a shared commercial bin store for office and gym has been located in the ground floor at the back of the loading bay adjoining the central core services for building A.

1.2 Waste Collection Summary

A private collection service is proposed to collect the following bins at the indicated frequency. The bins will be collected from within the bin store area.

Residential waste	Private Collection Service – collection from loading bay	
Waste streams	No. of bins and capacity	Collection frequency
Co-mingled Recycling	3 x 1100L	3 times weekly
Glass	5 x 240L	3 times weekly
Landfill	3 x 1100L	3 times weekly
Organic Food Waste	6 x 240L	3 times weekly
Hardwaste	2m ² providing within each bin room	Bi-annual collections
E-waste	To be excluded from landfill waste. 1 x 240L bin to be provided at the central bin location	Regular collections arranged as often as required to empty the shared tub/bin.
Clothes / Charity bin	1 x 240L	When full, the Owner's Corporation is to arrange collection.

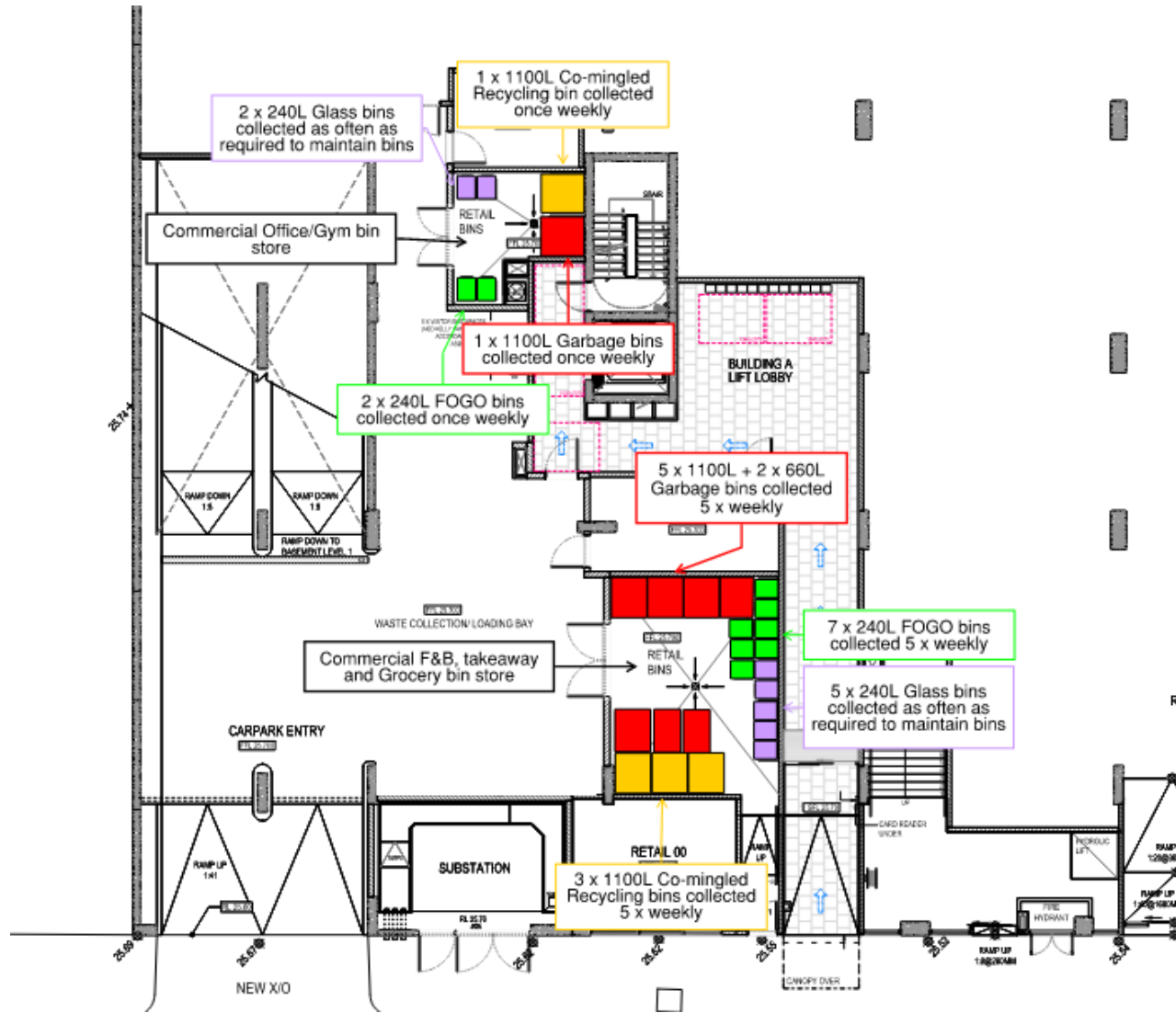
Commercial Waste Retail 00-05 Private Collection Service – collection from bin store		
Waste streams	No. of bins and capacity	Collection frequency
Co-mingled Recycling	3 x 1100L	5 times weekly
Glass	5 x 240L	As often as required to maintain bins
Organic Food Waste	7 x 240L	5 times weekly
Landfill	2 x 1100L + 2 x 660L	5 times weekly

Commercial Waste Office & Gym Private Collection Service – collection from bin store		
Waste streams	No. of bins and capacity	Collection frequency
Co-mingled Recycling	1 x 1100L	Once weekly
Glass	2 x 240L	As often as required to maintain bins
Organic Food Waste	2 x 240L	Once weekly
Landfill	1 x 1100L	Once weekly

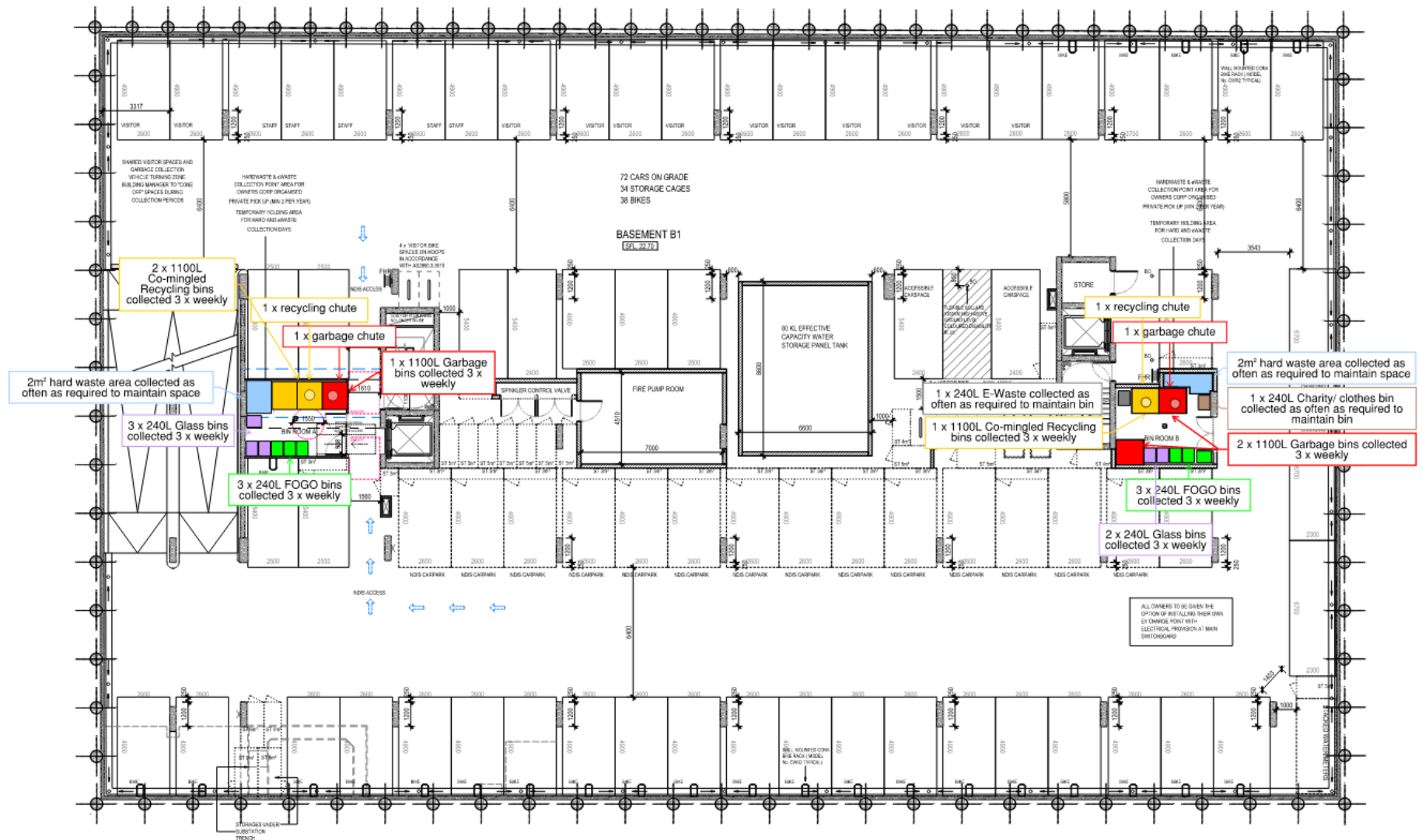
The approved Waste Management Plan (WMP) will be the model to be adopted for this development. Detailed design and as-built installation must incorporate the design proposed and approved under this WMP. Any revisions of the WMP or changes to the approved waste system of the development may require Council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

1.3 Bin Store(s) & Collection Plan

Commercial Bin stores



Residential Bin Stores



2 Waste Management Plan

Low Impact Development (LID) Consulting was engaged by [Cross Street Footscray Pty Ltd](#) to assess the proposed development at 6 Cross St, Footscray to provide a Waste Management Plan (as required by Statutory Planning).

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

- a) Sustainability Victoria Better Practice Guide for Waste Management and Recycling in Multi-Unit Developments 2018;
- b) Maribyrnong Council planning scheme clauses 15.02-1S and 58.06-3 addressing Standard D23; and

This report is based on the drawing sets:

- [TP01-10 Rev G dated 05.07.24](#) prepared by Artisan Architects

2.1 Future 4-bin System

Victoria will implement a 4-bin colour coded waste and recycling system in all residential settings by 2027. As the 79 different councils work towards this, some will roll out this scheme sooner than others. Generally, all new developments will look to incorporate space for these waste streams now in the planning phase. **Non-residential developments are also to implement these waste streams to ensure as much waste to landfill is diverted into recycling streams.**

Municipalities will have different percentages of glass and food volumes within each general waste and recycling streams. Bin numbers may need to be adjusted during the first 6-12 months of occupation to ensure appropriate streaming can occur.

In the meantime, if separate glass collections are not possible, these bins may be temporarily swapped for co-mingled recycling bins. More information can be found at <https://www.vic.gov.au/four-bin-waste-and-recycling-system>



2.2 Council Considerations

The following issues / constraints were key consideration in preparing this waste collection strategy:

- a) Utilizing the Council collection is the preferred option for future residents as the cost is included in the council rates.
- b) Every rateable tenement is liable to pay for municipal charges irrespective of the level of collection services provided by Council
- c) For a development of more than 10 apartments, council requires a private waste collection service. The development will not be serviced by council's general waste, recycling, hard waste or green waste collections.

- d) Utilizing the Council collection service is not possible in this instance for general waste/recycling due to the large volume of bins to be placed on the kerbside for collection and requirement for bins to be placed in one row all 300mm apart. There is insufficient space on the nature strip. The volume of both. Residential and commercial waste generated also exceeds the council standard bin allocation for each tenement.
- e) 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.
- f) The private collection service is to occur on an alternate day to the Council service so that the services are not confused.
- g) Onsite collection is the most feasible option with a waste truck able to enter and exit the site in a forward direction using the loading bay.

2.3 Proposed Residential Waste Solution

- Site Layout:** Refer Bin Store & Collection Plan – [Section 1.3](#).
- Waste Streaming:** Within each unit – include 5-7Lt food waste caddy as well as recycling, glass & landfill bins – Refer [Section 3.8](#) below.
- Collection Type:** Private collection service to collect all waste streams.
- Collection Location:** From within the property, on loading bay
- Bin Store Location:** Refer Bin Store & Collection Plan - [Section 1.3](#).

Residential	Maribyrnong Council Waste generation rates		Proposed Shared Bin Solution		
	No. units	Total estimated weekly waste volume	No. of Bins	Bin Size	Collection Frequency
Co-mingled Recycling	109	7294L of recycling	3	1100L	3 times weekly
FOGO / Garden waste		3647L of food & garden organics	6	240L	3 times weekly
Future Glass ¹		3126L of glass	5	240L	3 times weekly
Landfill Waste		6773L landfill waste	3	1100L	3 times weekly
Hard Waste		See Section 2.11 & Appendix 4 for Bulky Hardwaste Collections & Recycling. 4m ² provided (2m ² per bin store)	NA	NA	2 x annually
E-waste		See Section 2.9 & Appendix 4 for E-Waste Collections & Recycling.	1	240L	As per Hard waste
Clothes / Charity Bin		See Section 3.7.3 & Appendix 4 for E-Waste Collections & Recycling.	1	240L	As often as required to

¹ The Age (2019), <https://www.theage.com.au/national/victoria/victorians-to-get-cash-for-bottles-scheme-20200224-p543ms.htm>

					maintain bins
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2.4 Proposed Commercial Waste Solution

Tenancy/space	Area
F&D (retail 02 & 05)	458m ²
Grocery (retail 01)	868m ²
Take away food/coffee (retail 00, 03, 04)	258m ²
Office	1076m ²
Gym/Wellness centre	1147m ²

Site Layout: Refer Bin Store & Collection Plan - **Section 1.3.**

Collection Type: Private collection service to collect all waste streams.

Collection Location: From within the bins store on loading bay.

Bin Store Location: Refer Bin Store & Collection Plan - **Section 1.3.**

Commercial Takeaway, F&D & Grocery	Private collection service		Proposed solution		
	Allowances	Total estimated waste volume	No. of Bins	Bin Size	Collection Frequency
Co-mingled Recycling	Refer Appendix 2 - Waste rates & Calculation	12765L of recycling	3	1100L	5 times weekly
Organic Food Waste		8419L of FOGO	7	240L	5 times weekly
Glass		5471L of glass	5	240L	As often as required to maintain bin
Landfill		33677L to landfill	5 2	1100L 660L	5 times weekly

Commercial Office & Gym	Private collection service		Proposed solution		
	Allowances	Total estimated waste volume	No. of Bins	Bin Size	Collection Frequency
Co-mingled Recycling	Refer Appendix 2 - Waste rates & Calculation	939L of recycling	1	1100L	Once weekly
Organic Food Waste		268L of FOGO	2	240L	Once weekly
Glass		402L of glass	2	240L	As often as required to maintain bin
Landfill		1073L to landfill	1	1100L	Once weekly

2.5 Food Waste Collections

The Better Practice Guidelines² stipulates diverting food from landfill waste. This can be achieved in a number of ways including on site composting or treatment – refer **Section 3.7.3 & Appendix 4** below.

a) In this instance a private collection service is to be engaged to collect FOGO / food waste.

Commercial collection of dedicated food waste is provided by a number of private waste collection contractors for larger multi-unit, mixed-use and commercial developments. **An organics food collection service is recommended for this type of development.**

- b) Food waste collections should occur a minimum 2-3 times per week (depending on the temperature of the bins) to avoid a build-up of odour and unwanted mess.
- c) Consideration should also be given to end of trip / processing of this waste by the engaged waste contractor to ensure this waste stream is appropriately treated and does not end up in landfill.
- d) Some current contractors using smaller waste collection vehicles that also collect organics include:
 - o Waste Ninja – 120 & 240L bins <https://www.wasteninja.com.au>
 - o Waste Wise Environmental www.wastewise.com.au
 - o Speedie Waste <http://www.speediewaste.com.au/index.php>
- e) Other current contractors that also collect organics include:
 - o Sita – 1.5m³, 3m³ & 4.5m³ bin options (via Cleanaway) <http://www.sita.com.au/commercial-solutions/resource-recovery-recycling/organic-material/>
 - o KS Environmental – 120L bins (inner metro only) <https://ksenvironmental.com.au/services/recycling-services/food-organics/>
 - o Veolia – using 1.5m³ bins only (front lift) <https://www.veolia.com/anz/our-services/our-services/recycling-waste-services/recycling/organics>

2.6 Glass Collections

Space for additional glass bins is to be provided in all residential and commercial developments in line with Victoria's future 4-bin system. These bins are to be maximum 80L due to the potential weight of full bins. Each council will review the frequency of residential collections, most likely monthly.

For larger commercial developments that generate large volumes of glass, such as hospitality venues, a glass rusher may be a feasible option. Refer to **Appendix 5** Below.

2.7 Green Garden Waste

Green garden waste does not apply to this development as there is only a small garden area.

² Better Practice Guide for Waste Management and Recycling in Multi-unit Developments (Sustainability Victoria, 2019)

- a) 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.

2.8 Bulky Hard Waste Collection

In the first instance, unwanted bulky items, clothes and other consumables should be donated to charities, sold on online or at second-hand market places if in good condition. If repairs are required, seek out repair community centres for re-purposing – Refer **Appendix 4** for more details.

For residential developments with over 50 apartments, at least one charity bin is required.

- a) The Owners Corporation to arrange hard rubbish and eWaste collections as required, minimum 2 collections per year by a private waste contractor.
- b) Hard rubbish items will be required to be stored within the allocated apartment storage lockers or within the dwelling. Additionally, 4m² have been provided in the residential bin stores.
- c) Hardwaste items can also be taken directly to the Council run local waste recovery centre.
- d) 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

2.9 E-Waste Recycling

- a) As of 1st July 2019, there has been a ban on e-waste sent to landfill in Victoria. Any item with a plug, battery or cord can no longer be placed in kerbside bins and instead must 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.
- b) Between collections, authorised electrical waste disposal locations can be found:
 - o Most council depots collect e-waste
 - o Officeworks collects e-waste



- o <https://recyclingnearyou.com.au/electrical>
- o <https://www.sustainability.vic.gov.au/Campaigns/eWaste/Where-do-I-take-ewaste>

3 Waste Management Details

3.1 Waste Streaming & Contamination

Managing waste contamination requires the correct separation of products that are recycled differently. This is called waste streaming. Correct streaming requires consideration by stakeholders that generate, dispose of or manage waste.

Good waste streaming reduces contamination to ensure more effective recycling. Refer **Appendix 4** for Better Practice Waste Management links.

3.2 Management Responsibilities

The building management is responsible for all aspects of waste management including implementing adequate safe operating procedures. Items to be addressed by Building Management include:

- a) Requesting a copy of the endorsed Waste Management Plan from Council if the developer has failed to provide the WMP to them.
- b) Ensuring minimal contamination occurs between waste streams to maximise recycling. This is to be achieved by:
 - o Providing separate bins for each waste stream (including recycling, glass, food organics & landfill) in all units and work areas for staff and residents to appropriately stream waste. See **Section 4.2.1**.
 - o Routine inspection of bins in shared bin stores to ensure their appropriate use.
 - o Providing information to occupants and staff 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.
 - o Providing feedback to occupants and staff if the system is not working properly. Undertaking a waste audit should it be suspected waste is not being placed in the correct bins.
- c) Ensuring all occupants and staff are aware of their responsibility with regard to waste & bin management.
- d) The 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.
- e) The Building Management is responsible in providing access for the waste contractor to enter the site and bin store on the day(s) of collection.
- f) Allocation of responsibility to the contractor to retrieve commercial bins directly from the bin store area 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.
- g) Cleaners & staff are responsible for placing waste in the appropriate colour coded commercial 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.

- h) 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.

3.3 Individual Occupants Responsibilities

The tenants and occupants are responsible for their own waste. Items to be addressed in maintaining the system include:

- a) Individual occupants are responsible for placing their waste in the appropriate colour coded bins / chute. This is to ensure all waste types are collected and recycled where possible and contamination of waste streams is minimised. All organic food waste, cardboard, bulky hard waste items and e-waste items are to be taken directly to the bins stores (& not placed in chutes).
- b) Management and coordination building management bulky hard waste, eWaste and other waste collections.
- c) **Ensuring landfill placed in plastic bags** before placement into bins
- d) **Ensuring recycling materials are not 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:
 - o Rigid plastic containers
 - o Paper, cardboard
 - o Glass bottles and jars
 - o Steel cans, aluminium cans and aluminium foil are among items that can be recycled.But exclude:
 - o Soft plastic bags
- e) **To improve recycling:**
 - o Empty containers and bottles of any leftover food or liquid. Ideally rinse them out.
 - o Don't put anything inside plastic bottles or containers
 - o Paper – if it can't be ripped, it can't be recycled due to the plastic coating.
 - o 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.

3.4 What Goes in Each Bin

This information can be found at:

<https://www.banyule.vic.gov.au/Waste-environment/Waste-recycling/What-to-put-in-your-bins>

3.5 Occupational Health & Safety

A preliminary OHS risk assessment has been included to identify potential OHS issues, however this risk assessment does not replace the need for the Management and collection contractors to complete their own OHS assessment for the bin collection process. See **Appendix 1** for further detail.

3.6 Bin Store Area Design

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

- a) Doors located in the allocated storage areas should be designed for easy access of larger bins sizes and hard waste.
- b) 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.
- c) 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.
- d) 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.
- e) A waterproof power point in or near the bin store.
- f) Adequate mechanical or natural ventilation if not outdoors.
- g) Ensure adequate lighting is provided in accordance with National Construction Code (NCC) guidelines if to be accessed after hours.
- h) Space for a tug or bin lifter if required by the waste contractor(s) / facility management.
- i) Meter boxes should not be included in bin store areas.

3.7 Bin Store Area Access

A layout that allows access to all of the bins with adequate size to allow easy movement/transfer of the required number of bins.

- a) Manoeuvrability within the bin store area is open, with 1m minimum to walk between bins.
- b) There is to be no significant step at any threshold between the bin store area and the point of collection.

3.8 Bin Types & Bin Sizes

3.8.1 Mobile Wheelie Bins (MGBs)

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
240L	580mm	735mm	1080mm	0.43m ²
660L	1370mm	850mm	1250mm	1.16m ²
1100L	1370mm	1245mm	1470mm	1.71m ²



Standard bin colours (refer AS4123.7)

Landfill	Red
Co-mingled recycling	Yellow
Green organics	Light Green
Glass	Purple
Paper and cardboard	Light Blue
E-waste	Light Grey

* NOTE: size may vary between Councils and contract suppliers

3.8.2 Internal Bins – Residential

In multi-unit developments streamed waste bins are to be included in each dwelling (perhaps under the kitchen sink). Bin types are to include Co-mingled Recycling, Organic Food Waste, Glass and Landfill (general) waste.

Where food and garden organic waste can be composted onsite, Bokashi Bins or Urban Composters used in the kitchen can speed up this process. Residents should check with their local council as to any discounts available for garden composting units and worm farms. See **Appendix 4** for more details.



Kitchen Caddy



Pull-out kitchen bins to be supplied in each unit for better waste separation. This encourages better recycling practices.

3.8.3 Internal Bins – Commercial

Correct streaming in commercial developments requires consideration by staff, cleaners and visitors. It needs to be clear for all users as to where and how they dispose of their waste.

- Correct streaming in these areas in the first instance reduces contamination to ensure more effective recycling occurs.
- Separation of landfill and recyclables is to initially occur in all work areas, communal spaces and kitchenettes and then in bin stores. For this reason, the development will include streamed waste bins on each floor or work area. Cleaners and/or staff would then transfer already streamed waste to the corresponding bin in the main storage area.

- c) Commercial waste is to be transferred to the shared bulk bin store with minimal manual handling. The tenancy is to include a trolley to cart bags of waste or wheeled bins to transfer waste.



Examples of streamed commercial waste bins. Larger sizes may be required to suit development



Example of trolley used for moving commercial waste to bulk bin storage location



Example of smaller 60L wheeled bins allow for easier transfer of waste

All bins are to be placed alongside each other to ensure recycling is easy.

3.9 Signage, Education & Safety

It will be the responsibility of the Building Management to ensure all staff, cleaners and 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.

- a) 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>
- b) Directional signage should be installed to direct occupants and bin collectors to the bin storage areas.
- c) Instructional signage within shared communal bin stores is to indicate which bin is for landfill and which is for recyclables or other waste streams.



Simple, brightly coloured signs to quickly communicate what items are acceptable for each bin.

3.10 Waste Vehicle Requirements

- a) The same contractor will be used for residential and non-residential waste collection.
- b) A 6.4m rear mini loader waste vehicle only is to enter the site from Hocking Street travel down the vehicular ramp into the loading bay to collect bins from the commercial Bin Store.
- c) For the residential waste collection, the waste collection vehicle will travel down to the basement, and the turning around of the waste collection vehicle using the two car parking spaces located at the north eastern corner of the building (opposite the ramp down) on basement level one. These spaces are allocated to visitors (of the commercial uses) and the waste collection vehicle will nose into these spaces to enable it to reverse back along the aisle and pick up waste from the two bin rooms on this level.
- d) The waste contractor will be responsible for retrieving, emptying and returning commercial bins to/from the bin store at the time of collection.
- e) The waste vehicle is to turn & exit up the same ramp exiting back onto Hocking Street in a forward direction.
- f) The Building Management is responsible for ensuring the waste contractor has access to the site and bin store on the days of collection. If there is a security code or key required for access, the contractor should be provided with these so they may access the bin store on the specified collection days.

Vehicle	Typical size
Rear mini loader	6.4m long x 2.35m wide truck (basement collections) – 2.2m head clearance (Small Rigid Vehicles)

NOTE: Larger vehicles may need to be assessed for clearances prior to entering the site.

3.11 Traffic Management

- a) Traffic management along Hocking St should not be an issue with collection occurring within the property boundary.
- b) Appropriate engineering standards will need to be addressed in the detailed design stage to ensure adequate pavement depths and clearance height.
- c) The two car parking spaces used by the waste collection vehicle to turn will be kept clear of cars during early morning waste collection times. These spaces are visitor spaces (for commercial uses) and garbage collection will be arranged by the building manager to take place in the early morning. The building manager will "cone off" those 2 spaces for the period prior to the garbage truck arrivals (on the few days that garbage collection takes place).

3.12 Collection Times

Collection times will be in coordination with the building management.

Collection times: Domestic waste – bin collection shall be in accordance with Council and EPA Noise Control Guidelines Publication 1254, which state:

- Collections occurring more than once a week are to be restricted to the hours 7 am — 6 pm Monday to Saturday

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.

Collection times: Commercial waste – bin collection shall be in accordance with Council and EPA Noise Control Guidelines Publication 1254, which state:

- Collections occurring more than once a week are to be restricted to the hours 7 am — 8 pm Monday to Saturday, and 9am – 8am Sunday and public holidays.

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.

3.13 Noise management

Minimizing noise associated with waste movement and collections include:

- a) Locating bin stores and collection points at an appropriate distance from both onsite occupants and adjoining residences;
- b) Minimising the need for the waste vehicle to reverse;
- c) Collections occurring during the stipulated collection times restrict the hours of noise from collections.
- d) 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.
- e) Insulating waste chutes.

3.14 Response to Increasing Waste

- a) 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.
- b) In addition, the commercial waste calculation rates are based on the higher waste generation rates for restaurants. Retail or café spaces are likely to generate less waste so may require less frequent collections or smaller bins.
- c) 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.
- d) If landfill bins consistently overflow, then residents, staff and cleaners are to be directed to educational material as to the appropriate streaming of waste including food and other recyclables. (see **Section 4** and
- e) **Hard plastic** containers not collected in comingled recycling coded 1-7 (excluding polystyrene) can generally be recycled. This should be checked with each council or private collection contractor. I.e toys, tubs etc
- f) Soft Plastic Recycling below).
- g) If recycling bins continue to overflow residents, staff and 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.
- h) The bin store area has spare space to accommodate additional bins if required.

- i) The last choice option is for more regular collections to occur.

3.15 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.

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

3.16 Litter Spread

- a) Litter spread is to be managed by ensuring bins are not overloaded, and lids are always closed.
- b) 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.
- c) The private collection contractor's agreement should require their pickup of any waste that spills from the bins during collections.

4 Minimising Waste to Landfill

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.

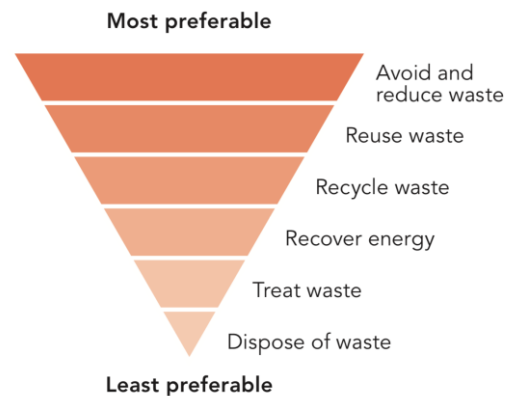
Where possible building occupants should practice the waste reduction hierarchy identified in the Victorian Environmental Protection Act 2017.

Avoidance of landfill waste by building occupants might involve

- a) Purchase only what you will consume
- b) Purchase items of quality that can be re-used, sold on donated or up-cycled.



- c) Use re-usable drink bottles, lunch containers, shopping bags
- d) Avoid single use plastics
- e) Compost anything that once was alive



The 2025 National Packaging Targets are supported by Australian industry and government to deliver a new and sustainable approach to packaging. They apply to all packaging that is made, used and sold in Australia.

The 2025 Targets are:

- 100% reusable, recyclable or compostable packaging.
- 70% of plastic packaging being recycled or composted.
- 50% of average recycled content included in packaging (revised from 30% in 2020).
- The phase out of problematic and unnecessary single-use plastics packaging.

In March 2020, The Australian Packaging Covenant Organisation (APCO) also released a series of material-specific sub-targets relating to the uptake of recycled content in packaging

The Australian Packaging Covenant Organisation (APCO) is a not for profit organisation leading the development of a circular economy for packaging in Australia.³

5 Supplementary information

5.1 Council Recycling Centre

City of Maribyrnong Council Waste Directory:

- <https://www.maribyrnong.vic.gov.au/Residents/Bins-and-recycling>

5.2 Waste Contractors

Waste collection companies in Victoria:

- Waste Wise Environmental www.wastewise.com.au (Melb, Geelong, Ballarat)
- CSC Waste <https://cscwaste.com.au/> (Melb only at 08/2021)
- Waste Ninja <https://www.wasteninja.com.au>
- Kartaway <http://www.kartaway.com.au/melbourne/index.html>
- iDump Waste Management www.idump.com.au
- Easy Waste - <http://www.easywaste.com.au>

³ <https://apco.org.au/national-packaging-targets>

- Citywide www.citywide.com.au
- JJ Richards & Sons www.jjrichards.com.au (Australia wide – depots per <https://www.jjrichards.com.au/contact/>)
- Suez (incl Sita) – www.suez.com.au/en-au ph 13 13 35
- KS Environmental - <https://ksenvironmental.com.au/> (Melbourne only)
- Transpacific-Cleanaway - <https://www.cleanaway.com.au>, ph 13 13 39
- Veolia - <https://www.veolia.com/en>

5.3 Other Useful Links

- Sustainability Victoria <https://www.sustainability.vic.gov.au>
- PlanetARK <https://recyclingnearyou.com.au>
- Redcycle <https://redcycle.net.au>
- Sustainable Procurement Guide (for Commonwealth entities) <https://www.awe.gov.au/sites/default/files/documents/sustainable-procurement-guide.pdf>
- Wastech www.wastech.com.au

Appendix 1 - 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.
---------------------------------------------------------------------	------------------------------------------------------------------------------	------------------------------------------------------------------------------

Activity	Steps involved in completing activity & risk	Risk level	Risk mitigating measures	Implementation responsibility
Moving of bins from bin store to collection space	Risk of manual handling injuries	2	Use max bin sizes of 1100L The bin transfer grade should not exceed 1:14 The travel path is to be kept free of all obstacles including loose gravel or dirt, steps, kerbs, speed bumps, berms, sills or ramps. Ensure all access points have suitably wide doorways and circulation areas.	Building Designer / Building Management
Vehicle comes on site for collection	Large vehicle entering site, and reversing before exiting site. Major risk is hitting young children, the elderly or unaware people, particularly when reversing,	1	Vehicle driver entering site is to survey the area for activity. If there is no activity near reversing location, driver to execute reverse move immediately before the situation can change. If there is activity, the driver should ensure the person/persons moving in the area are aware of the pending reversing action, and have time to stay away from the reversing zone or ensure children are away from the reversing zone. Reversing should be at very slow speed. There should be no/few children/elderly people in the carpark area. Reversing buzzers to be applied to all trucks.	Waste collection contractor / Building Management
Emptying apartment waste and recycling in chutes	Resident takes dual waste and recycling bins to waste/recycling chute rooms on each level. Risk of hands in chutes, dropping watches, rings etc in chutes.	3	Signage to ensure hands don't go into chutes. Chute installed to safety standards and manufacturers recommendations.	Developer / Builder

Activity	Steps involved in completing activity & risk	Risk level	Risk mitigating measures	Implementation responsibility
<p>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.</p>				

Appendix 2 - Waste rates & calculations

Residential

Base Calculations								
Residential type	No. units	Waste Generation Rates (L/unit per week)		Source	Waste Generated (L/Week)			
		Landfill	Recycling		Landfill	Recycling		
1 bed Apt	30	80	80	SV Better Practice Guide	2400	2400		
2 bed Apt	73	100	100	SV Better Practice Guide	7300	7300		
3 bed Apt	6	120	120	SV Better Practice Guide	720	720		
Total Litres per Week	109				10420	10420		
Streamed Waste Calculations								
Residential type	No. units	Waste Generation Rates (L/unit per week)		Source	Waste Generated (L/Week)		Waste Generated (L/Week)	
		Landfill	Recycling		Landfill (65% of total)	Recycling (70% of total)	Glass (30% of recycling)	Food (35% of garbage)
1 bed Apt	30	80	80		1560	1680	720	840
2 bed Apt	73	100	100		4745	5110	2190	2555
3 bed Apt	6	120	120		468	504	216	252
Total Litres per Week	109				6773	7294	3126	3647

Commercial

Base Calculations							
Commercial Tenancy Type	AREA (m2)	Days open	Waste Generation Rates (L/100m2/day)		Source	Waste Generated (L/Week)	
			Landfill	Recycling		Landfill	Recycling
F&D (retail 02 & 05)	458	7	660	200	SV Better Practice Guide	21160	6412
Grocery (retail 01)	868	7	300	150	SV Better Practice Guide	18228	9114
Take away food/coffee (retail 00, 03, 04)	258	7	150	150	SV Better Practice Guide	2709	2709
Total Litres per Week	1584					42097	18235

Streamed Waste Calculations

Commercial Tenancy Type	Waste Generation		Waste Generated (L/Week)			
	Landfill	Recycling	Landfill (80% of total)	Recycling (70% of total)	Glass (30% of recycling)	Food (20% of garbage)
Total Waste Allowance	42097	18235	33677	12765	5471	8419
Total Litres per Week			33677	12765	5471	8419

Base Calculations							
Commercial Tenancy Type	AREA (m2)	Days open	Waste Generation Rates (L/100m2/day)		Source	Waste Generated (L/Week)	
			Landfill	Recycling		Landfill	Recycling
Office	1076	5	10	10	SV Better Practice Guide	538	538
Gym/Wellness	1147	7	10	10	SV Better Practice Guide	803	803
Total Litres per Week	2223					1341	1341

Streamed Waste Calculations

Commercial Tenancy Type	Waste Generation		Waste Generated (L/Week)			
	Landfill	Recycling	Landfill (80% of total)	Recycling (70% of total)	Glass (30% of recycling)	Food (20% of garbage)
Total Waste Allowance	1341	1341	1073	939	402	268
Total Litres per Week			1073	939	402	268

Appendix 3 - Swept Path diagrams/analysis

Appendix 4 - Better Practice Waste Recycling

Below is a range of practical information and resources to better manage &/or divert many waste types from landfill into recycling streams.

Food Organics & Garden Organics

Tips for FOGO

- 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.

Commercial Food waste

There are a number of onsite treatment and diversion options to remove food waste from landfill.

a) Onsite Options for Organics Treatment

On site food and organic waste treatment/pre-processing systems can reduce the footprint area of a bin store by reducing the number of bins required, and can reduce waste collection frequency when food or organics waste can be diverted to these units.

These units reduce food scraps to 90% of their original volume in 24 hours, through heat and agitation, and the by-product is a compost material. These units take all kinds of food ie fruit, vegetables, meat, fish, eggshells so sorting is not an issue. These units prevent generation of the greenhouse gas methane (methane is 25 times more detrimental than carbon dioxide) which otherwise is generated when organic wastes decompose anaerobically in landfills. The suppliers usually can provide Green-house gas cost v benefit assessments of their units. These systems are increasingly being introduced around Melbourne.

- **WasteMaster** is an Australian technology which converts putrescible waste to a concentrated residue within 24 hours. <https://www.greenecotec.com>
- **Closed Loop Organics** provide CLO'ey bins of different capacity and rental servicing costs. More information available at: <http://www.closedloop.com.au/domestic-composter>
- Other systems such as **PulpMaster, EcoGuardians (Gaia system) or Biobin** generally provide systems that dehydrate or mash up food waste to reduce total volumes, but operate slightly differently to the above two systems.

b) Surplus food donation

There are organisations that collect surplus food for human consumption. Collectors that provide this service within Melbourne include:



SecondBite - SecondBite redistributes surplus fresh food to community food programs around Australia. Food is donated by farmers, wholesalers, markets, supermarkets, caterers and events. This high-quality surplus food is redistributed to community food programs that support people who are homeless, women and families in crisis, youth at risk, indigenous communities, asylum seekers and new arrivals. Contact: Emily Wild Community, Volunteer and Office Manager emily@secondbite.org



FareShare - FareShare, is a not-for-profit organisation, rescuing food to fight hunger. It collects quality food that would otherwise be wasted from Melbourne businesses such as food wholesalers, retailers and caterers. Volunteers in FareShare's kitchen use this food to prepare healthy, nutritious meals that they distribute to over 100 charities providing emergency food relief for the hungry and homeless. Phone: 03 9428 0044 Email: kath.cotter@fareshare.net.au



OzHarvest is the first perishable food rescue organisation in Australia collecting quality excess food from commercial outlets and delivering it, direct and free of charge, to 600 charities providing much needed assistance to vulnerable men, women and children. www.ozharvest.org, Ph: 03 9999 5070 melbourne.info@ozharvest.org



FoodBank - Foodbank is Australia's largest food relief organisation, operating on a scale that makes it crucial to the work of the front line charities who are feeding vulnerable Australians. Foodbank provides more than 70% of the food rescued for food relief organisations nation-wide. <https://www.foodbank.org.au> PH: 03 9362 8300 info@foodbankvictoria.org.au

Plastics, Glass & Aluminium

Victoria Container Deposit Scheme

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

This scheme will be implemented by 2023 and will allow everyone to actively participate by taking his or her recyclables directly to an out let in exchange for a monetary refund.

More information can be found at <https://www.vic.gov.au/container-deposit-scheme>

The VIC Bag ban

As of 1st November 2019 there is a ban on lightweight plastic shopping bags. All retailers including restaurants are not permitted to provide or use these plastic bags.

- a) The ban applies to all lightweight plastic shopping bags that have a thickness of 35 microns or less at any part of the bag, including degradable, biodegradable and compostable bags.
- b) EPA Victoria is managing compliance monitoring and reports of suspected banned bags. Further information can be found at: <https://vicbagban.com.au> & <https://www.sustainability.vic.gov.au/PlasticBags>

Hard Plastics

Hard plastic containers not collected in comingled recycling coded 1-7 (excluding polystyrene) can generally be recycled. This should be checked with each council or private collection contractor. ie toys, tubs etc

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.

- a) **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/> .
- b) **Reground** <https://www.reground.com.au/> collect soft plastics and coffee grounds. They provide bags or bins, into which soft plastics or coffee grounds are separately emptied. Reground replace bins and/ or bags on a consistent regular basis, depending on how fast they fill up. They then collect the resource and take them to community gardens and home gardeners or local plastics recyclers who put the waste to positive use.
- c) Other commercial waste contractors may also be able to collect streamered soft plastics depending on your location.

o

Polystyrene

Expanded Polystyrene (EPS) is a problematic material that takes hundreds of years to breakdown in landfill. Despite 98% of the plastic packaging being air, EPS takes up large amounts of space in landfills where it can easily be blown away and enter our natural environment.

For residents, polystyrene can be collected separately and taken to the nearest local recovery centre that recycles this waste. These centres can be found at:

<https://recyclingnearyou.com.au/polystyrene/MelbourneVIC>

For commercial businesses, private collections should be arranged to collect and recycle this product. The following links may assist further:

- o <http://epsa.org.au/about-us/collection-centres/victoria/>

- o <https://www.inspiredwastesolutions.com.au/polystyrene-recycling-melbourne/>
- o <https://www.foamex.com.au/news/polystyrene-recycling-what-you-can-do>

Hospitality & Packaging

Hospitality Waste Reduction

- Responsible Cafes is an organisation that provides educational material for the hospitality section. Their website contains various resources, waste education and lists responsible cafes participating in the scheme. See <https://responsiblecafes.org>
- Reducing takeaway food container waste - The website Trashless Takeaway www.trashlesstakeaway.com.au lists restaurants around Australia that allow you to bring your own container to pick up your takeaway food, enabling a reduction in use of recyclable or compostable (only in some commercial composters) food containers.
- Yume work with leading food suppliers to ship surplus stock, that may otherwise have been wasted, to smart hospitality and retail businesses. Stock may be considered surplus for a number of reasons: a supplier may have a cancelled or placed an incorrect order, there may be no space for new stock, or a product might be close to code. This can leave primary producers, wholesalers, distributors and manufacturers with tonnes of surplus food and a lack of time or the contacts to re-sell it. Yume provides the network to sell this surplus stock. See <https://yumefood.com.au/>

Packaging and food waste

One of the biggest problems causing failed recycling is the difficulty in avoiding contamination of potentially recyclable waste streams. Most waste streams are recyclable if they are separate and treated in their own way. However, when they are mixed together, they often deliver a contaminated co-mingled stream that cannot be recycled e.g. when a recyclable plastic bottle is included with compostable food waste, or a soft plastic bag goes into recycling bins. The entire contaminated load ends often ends up in landfill.

A solution can involve very careful selection of packaging. To simplify recycling, it is easier to minimise the number of waste streams people have to separate and provide clear advice on what items go into each bin.

Where food is consumed on site, to ensure food waste can be composted effectively, plates, bowls, cups, cutlery, straws, should not go into food waste bins, unless these items are domestically or commercially compostable.

Commercial composting is undertaken at higher temperatures than domestic composting. Items that are specified as commercially compostable will not compost in a domestic compost bin.

Check with each packaging supplier and also the waste contractor to ensure parties definitions of compostable align. Further, if lids are provided with compostable bases, check that they too are compostable.

Some very established compostable packaging suppliers still



sell their food packaging with recyclable lids that will contaminate a compostable food waste load.

The image here is of sugarcane clamshell packaging sold with sugarcane and PET lid options. Sugarcane clamshells are plastic-free packaging that are made from reclaimed and rapidly renewable sugarcane pulp. They are certified home (domestic type) compostable but if purchased with PET lids the PET lids will contaminate the food composting load. Purchasing the sugarcane lids would remove the risk of contamination of the compostable food waste load.



As an alternative to lids, home compostable cling wrap can be used. An Australian company Great Wrap is now producing home compostable cling wrap for foods made from food waste rather than bioplastics developed from specifically grown plants. See <https://www.greatwrap.co/>

Recycling Take Away Coffee Cups

There are a number of companies that now provide take away coffee cups that can be recycled. These includes (but not limited to) <https://www.detpak.com/recycleme/> and <https://www.simplycups.com.au>.

These services will provide all of the resources required for customers to use & store cups and lids as well as collect waste on a regular basis.



Other Items and Textiles

Other Unwanted Items

Unwanted items, clothes and other consumables can be donated to charities, sold on online or at second-hand local market places if in good condition. If repairs are required, seek out repair community centres for re-purposing.

- c) **PlanetARK** for a comprehensive listing to each council. <https://recyclingnearyou.com.au/councils/>
- d) 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.
- e) **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>



Colgate Oral Care Recycling Program

Recycle your oral care through this program.



- f) **Toys for Joy** recycle any brand of pre-loved toys for free with partners Big W & Terracycle. These are for toys that cannot otherwise be donated such as broken parts or just worn out.

This avoids more toys in landfill. There are drop off points Australia wide at Big W stores.
<https://www.bigw.com.au/toys-for-joy>

Clothes Recycling

Textile recyclers are available Australia wide for public and commercial donators including:

- o <https://scrg.com.au>
- o <https://texrecaus.com>
- o <https://upparel.com.au/toesox-australia/>.

For larger multi-unit developments, a dedicated clothes / textiles bin is to be provided either from a recognised charity or a dedicated collection bin located permanently on site -

<https://www.bremco.com.au/charity-donation-bin-bmp065/>

Appendix 5 - Equipment

Business Recycling Equipment Catalogue

70% or more of general waste placed in commercial Landfill Bins can be recycled or diverted. The quantity and type of waste will vary from business to business. Planet Arc has developed the following catalogue for businesses to access to encourage recycling where possible.

<https://equipment.businessrecycling.com.au>.

Further links and information of commonly used equipment to aid easy waste management is provided below.

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 above 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/>



Waste Chutes and carousels/linear systems

Waste chutes can be either single chutes for landfill waste only (with associated recycling bins on each floor beside the landfill chute), dual chutes for landfill and recycling or a shared single chute with electronic controlled diverter unit that nominates which bin the landfill or recycling will fall into in the bin store.

Some concerns exist in relation to cardboard and glass containers being placed down chutes. Large cardboard boxes may cause blockages in waste chutes and glass containers may break up at the base of the chute. Providing a separate 120L/240L recycling bin on each residential level to place larger items (such as pizza boxes) or in case of chute failure will assist in better waste management practices.

Carousels or linear systems can be provided to automatically rotate the bins when they become full. Chute, carousel and compactor suppliers include:

- d) Wastech <http://wastech.com.au/products-and-services/>
- e) Elephants foot <http://www.elephantsfoot.com.au/products/chutes/waste-and-recycling-diverter>
- f) ASI JD MacDonald <https://www.jdmacdonald.com.au/product/rotobin-rb/>
(This system accommodates 240L / 360L size bins).

Chute and bin room odour control products/services include:

- g) Garbage doctor http://www.garbagedoctor.com.au/garbage_odour_control_systems.html
- h) Purifying Solutions http://www.purifyingsolutions.com.au/garbage_chute_cleaning.html
- i) ASI MacDonald <https://www.jdmacdonald.com.au/product/garbage-chute-gc1/>