Operational Waste Management Plan

Proposed Commercial Development – Ramsgate Beach Hotel

At 277 The Grande Parade, Ramsgate

On Behalf of Bronxx

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Revision Record

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Executive Summary

This document is an Operational Waste Management Plan (OWMP) developed for a proposed commercial development to be located at 277 The Grand Parade, Ramsgate.

The purpose of the OWMP is to provide compliance and design information relating to the handling, storage, and collection of refuse within the proposed development. Compliance relates to alignment with the relevant sections of Bayside Council's Development Control Plan specifically relating to the Rockdale Technical Specification Waste Minimisation and Management. The content of the OWMP is written with the purpose of providing a guide for the design, construction and operational phases of the development and therefore may be updated to include detailed information as required for each phase.

A summary of the proposed development and waste management processes are outlined below:

- Proposed equipment:

Residential	Bin Requirements	Services Per Week
General Waste	3 x 1100L bins	1 Services per week
Commingled Recycling	3 x 1100L bins	1 Services per week

Commercial	Bin Requirements	Services Per Week
General Waste	3 x 1100L bins	7 Services per week
Food / Organic Waste	1 x 6000L Pulpmaster System	3 Services per week
Commingled Recycling	6 x 1100L bins	3 Services per week
Cardboard / General Paper	3 x Bales on Pallet	3 Services per week
Soft Plastics	2 x 1100L bins	3 Services per week Ad-hoc service (based on soft plastic output per tenancy)
Cooking Oil *(if required)*	4 x Bunded Pallet + Oil Drum	Ad-Hoc

- Refuse collection:
  - Refuse will be collected by Council for the residential portion and private contractor for the commercial aspect.
  - Residential collection is based on a collection frequency of 1 collection per week.
  - Commercial Refuse collection is based on a maximum of 1 day of storage between collections for general waste and commingle recycling which equates to 7 services per week.
  - Food Organics collection is based on 2 days storage which equates to 3 services per week. TTM recommends a maximum of 2 days storage where food waste is generated.

- All refuse collections occur in the loading area on the Ground Level, this level is accessible via the loading dock driveway entrance off Ramsgate Road. The refuse collection vehicles will drive forwards into the site and utilise the on-site turntable to turn around and exit the site in a forward gear once the collection service has been performed.

- Refuse storage:
  - Residential refuse will be stored in bins located in the refuse room located on basement 3 level and presented within the loading dock for collection.
  - Commercial refuse will be stored in bins located in the refuse storage area on Ground Level. A sufficient supply of bins will be placed in the ground level refuse storage area to service the retail / commercial tenancies.

- Refuse transfer:
  - Building Management Staff / Cleaners will transfer the bins from the refuse storage room on basement 3 for residential and ground level for commercial to the holding area on or before collection using the service lifts provided.
  - The contractors will collect the required bins from the holding area and return them after servicing the bins.
  - The bins stored in the Ground Level refuse storage area will be collected directly from the storage area by the collection contractor and returned after servicing.

- Refuse disposal:
  - Each residential unit will be equipped with bins for the storage of approximately 1 days' worth of refuse, once full or as required, residents will manually dispose of their refuse items into the stream separated bins provided in the bin room on basement 3. The lifts should be used to assist in the transfer of refuse materials from each floor to basement 3.
  - All commercial and retail tenancies will be equipped with back-of-house bins for general waste, separated recyclables and food waste for immediate disposal of separated refuse streams. Bins will be stored in centralised stations within tenancies to encourage stream separation in waste generating areas with bins provided for each refuse stream that is anticipated to be generated. Bins will be colour coded in alignment with AS 4123.7-2006 Mobile Waste Containers and station layout will focus on ensuring minimal effort to recycle is required. During the day or as required staff or cleaners will transfer the refuse materials to the refuse room for disposal into the appropriate bins or equipment.

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1 Introduction

1.1. Background

TTM Consulting has been engaged by Bronxx to prepare an OWMP to support the proposed commercial development located at 277 The Grand Parade, Ramsgate. It is understood that a development application will be lodged with Bayside Council.

1.2. Scope

The content of this OWMP is intended to provide information in reverse order to the typical movement of waste streams from disposal to collection. The reverse order provides context for refuse collection, storage and transfer. Information on refuse disposal and collection points is given for each use within the development.

The items covered within the OWMP are described in Table 1.1. The key information for Bayside Council approval can be found in Section 2.

Table 1.1: Scope Items

Item	Description
Refuse streams	Identification of refuse streams & anticipated development refuse volumes likely to be produced
Refuse separation	Recommendations for appropriate segregation methods for each refuse stream
Refuse collections	Assessment of refuse collection vehicle (RCV) access and maneuvering
Refuse storage	Detailed analysis of refuse storage facilities and design
Refuse transfer	Assessment of refuse transfer between refuse storage and collections areas
Refuse disposal	Recommendations for refuse disposal within the development
Refuse management equipment	Identification of recommended and optional refuse management systems and equipment
Refuse management operations	Recommendations for operational efficiency and ongoing management, including refuse minimisation, tenant education and safety
Building design	Recommendations for design of refuse management facilities

Detailed information including refuse calculations, site plans and drawings, recommended refuse management equipment and system specifications, common refuse signage as well as a list of terms and abbreviations are provided in the appendices.

The recommendations in this OWMP relate to the operational phase of the development. Additional requirements for refuse management during or after demolition or construction phases are not included and require a dedicated plan.

The provisions outlined in this OWMP are considered appropriate for this type of development. It is noted that the refuse rooms are suitably sized to accommodate the refuse generated and number of bins proposed based on standard storage and collection methods. The refuse rooms will also accommodate all options for alternate equipment and disposal methods.

1.3. Regulatory Considerations

1.3.1. Council's Refuse Planning Scheme

The plan satisfies Bayside Council's requirements by providing the following information:

- Type and quantity of refuse materials to be generated during the occupancy of the proposed site.
- Refuse collection, storage, transfer and disposal arrangements during occupancy of the completed development.
- Recommended operational requirements for the operational phase of the development, and design requirements for the building and refuse management facilities.

As this development is a mixed-use site, TTM has referred to Bayside Council's requirements as outlined in the Rockdale Technical Specification Waste Minimisation and Management sections 1, 3.2 and 3.3 (Commercial, Mixed use and Industrial Developments).

Table 1.2: OWMP Compliance Checklist

Rockdale Technical Specification Waste Minimisation and Management		
Item	Requirement	Compliance / Comment
Section 3.2 Residential Flat Buildings		
(1)	Development must include a communal waste/ recycling storage room with sufficient on-site space to store and manoeuvre councils' garbage and recycling bins.	Complies – Basement 3
(2)	Waste/recycling storage room must be designed in accordance with the Better Practice Guide for Waste Management in Multi-Unit Dwellings published by DECCW, and must be constructed in accordance with the requirements of the Building Code of Australia (BCA)	Complies
(3)	Generally, Waste/recycling storage areas are to be located near the front boundary of the property, level with an adjacent to driveways providing that the adverse impact on streetscape is minimal	Complies - Bin room located in basement and loading dock.
(4)	For large scale developments, the design and location of waste storage areas/facilities must be such that they are integrated into the design of the overall development and compliment the design of both the development and the surrounding streetscape. Such rooms should be located behind the front building line, and wherever possible, be in a basement location within the main building envelope.	Complies – Basement 3 bin room and loading dock storage.
(5)	The design and location of waste storage areas/facilities must be such that they have minimal negative impacts on residential amenity of any dwellings on the site and neighbouring properties with respect to noise and odours.	Complies – Rooms provided in basement 3 and loading dock
(6)	Waste management systems must be designed to maximise source separation and recovery of recyclables. Systems must be operated to prevent potential risk or injury or illness associated with the collection, storage and disposal of wastes.	Complies
(7)	A dedicated room or caged area should be provided for the temporary storage of discarded bulk items which are awaiting removal. The storage area must be readily accessible to all residents and must be located close to the main waste storage room or area.	Complies – Space available within basement 3 bin room
(8)	Developments containing four or more storeys should be provided with a suitable system for the transportation of waste and recyclables from each storey to waste storage/collection areas.	Manual disposal method proposed
(9)	Garbage chutes must be designed in accordance with Appendix E Garbage chutes, the BCA and Better Practice Guide for Waste Management in Multi-Unit Dwellings	N/A

(10)	Each service room and storage area must be located for convenient access by users and must be will ventilated and well lit.	Complies
(11)	Where site characteristics , number of bins and length of street frontage allow, bins may be collected from a kerbside location. All bins will be taken to the kerb by Council's Waste Contractor or Building Management of the development, provided that waste/recycling storage areas are easily accessible and located within 20m of the front boundary, they are returned to the bin area by the contractor following collection.	N/A
(12)	If it is impractical to locate waste/recycling storage areas in an easily accessible location and within 20m of the front boundary of the property, the bins will not be presented to the kerb by Council's Waste Contractor; and must be the responsibility of the Owners Corporation to do so.	Complies – Onsite storage and collection point provided
(13)	In instances where kerbside bin collection is not appropriate, bins must be collected onsite. Bins that are collected onsite are to be collected either from their usual storage point or from an onsite temporary holding area located inside the property and within 20m of the front boundary and close to a property entrance.	Complies – Onsite collection proposed.
(14)	Where bins cannot be collected from a kerbside location or from a temporary holding area located immediately inside the property boundary, the development must be designed to allow for on-site access by garbage collection vehicles.	Complies
(15)	Should a collection vehicle be required to enter a property, access driveways and internal roads must be designed in accordance with Australian Standard 2890.2 Parking Facilities – Off-street Commercial Vehicle Facilities – 2002	Complies
(16)	The Gradient of waste/recycling storage room floors and the gradient of any associated access ramps must be sufficiently level so that access for the purpose of emptying containers can occur in accordance with WorkCover NSW Occupational Health and Safety requirements	Complies – minimal gradient present. Grade flat
(17)	If Council waste collectors and/or waste collection vehicles are required to enter a site for the purpose of emptying bins, then site specific arrangements must be in place.	Complies
(18)	If bins need to be removed from normal storage areas to a different location for collection purposes, it is the responsibility of agents of the owners' corporation to move the bins to the collection point no earlier than the evening before collection day and then return the bins to their storage area no later than the evening of collection day.	Complies – details of transfer provided within the OWMP
(19)	Access to cold water supply must be available for the cleaning of bins and the waste storage areas. Storage areas should be constructed and designed to be weather proof and easy to clean, with wastewater discharge to sewer.	Complies
(20)	Agens of the owners' corporation must take responsibility for the management of waste and recycling materials generated upon the site. Arrangements must be in place in regards to the management , maintenance and cleaning of all waste/recycling management facilities.	Complies
Section 3.3 – Commercial, Mixed-use and Industrial Developments		
(1)	Development must include a designated on-site waste/recycling storage area or room(s) designed and constructed in accordance with the requirements of the *Building Code of Australia.*	Complies – Details throughout this OWMP
(2)	The waste/recycling storage room/area must be able to accommodate bins that are of sufficient volume to contain the quantity of waste generated (at the rate described in **Appendix B** Waste/Recycling Generation Rates) between collections	Complies – Refer to sectrion 2 for detail.
(3)	The type and volume of containers used to hold waste and recyclable material must be compatible with the collection practices of Council's or the nominated waste contractor.	Complies – Commercial contractor engagement hasn't been completed at this stage as this site is undergoing development assessment.

(4)	The size and layout of the waste/recycling storage room/area must be capable of accommodating reasonable future changes in use of the development.	Complies – Refer to section 2 for detail.
(5)	The development must be designed to allow access by collection vehicles used by the nominated waste contractor. Wherever possible, the site must be configured to allow collection vehicle to enter and exit in a forward direction so that collection vehicles do not impede general access to, from and within the site. Access driveways to be used by collection vehicles must be of sufficient strength to support such vehicles.	Complies – RCV will use Loading Dock with specific Loading dock driveway. Turntable will be installed.
(6)	The Gradient of waste/recycling storage area floors and the gradient of any associated access ramps must be sufficiently level so that access for the purpose of emptying containers can occur in accordance with WorkCover NSW Occupational Health and Safety Requirements.	Complies – Floors and largely flat and only graded for the purposes of drainage.
(7)	Servicing arrangements for the emptying of bins must be compatible with the operation of any other loading/unloading facilities on-site.	Complies - 1 LRV Loading dock is provided with vehicle wait area provided on ramp
(8)	Waste should be separated into at least 4 streams: paper/cardboard, recyclables, general waste and industrial process types wastes; if applicable.	Complies – 6 streams are proposed.
(9)	Waste/recycling storage areas must be integrated into the design of the overall development. Materials and finishes that are visible from outside should be similar in style and quality to the external materials used in the rest of the development.	Complies – See architectural plans
(10)	Waste/recycling storage areas must have a smooth, durable floor and must be enclosed with durable walls/fences that extend to the height of any containers which are kept within.	Complies
(11)	Where possible, waste/recycling containers must be collected from a rear lane access point. Consideration must be given to the time of day at which containers are collected so as to minimize adverse impacts upon pedestrian movements, traffic and residential amenity of any dwellings on the site and neighboring properties.	Complies – Collection takes place within the building area.
(12)	Mixed-use development must observe any requirements at Section 3.2 Residential Flat Building where relevant.	N/A – Commercial site only.
(13)	Mixed-Use development must incorporate separate and self-contained waste management systems, including separate waste/recycling storage rooms/areas, for the residential and the non-residential component. Commercial tenants must be prevented (via signage and other means), from using the residential waste/recycling bins and vice versa.	N/A – Commercial Site only
(14)	There must be convenient access from each tenancy to the waste/recycling storage room(s) or area(s). There must be step-free access between the point at which bins are collected/emptied and the waste/recycling storage room(s) or area(s).	Complies – BOH travel paths provided and service lift.
(15)	Depending on the size and type of the development, it may be necessary to include a separate Wate/recycling storage room/area for each tenancy.	Complies – Two storage rooms are provided.
(16)	All commercial tenants must keep written evidence on site of a valid contract with a licensed waste contractor for the regular collection and disposal of the waste and recyclables that are generated on site.	N/A – To be managed as condition of ongoing management
(17)	Between collection periods, all waste/recyclable materials generated on site must be kept in enclosed bins with securely fitting lids so the contents are not able to leak or overflow. Bins must be stored in the designated waste/recycling storage room(s) or area(s).	Complies – AS 4123.7-2006 Mobile Waste Containers compliant bins will be used.
(18)	Arrangements must be in all parts of the development for the separation of recyclable materials from general waste. Arrangements must be in all parts of the development for	Complies – Goods Lift to be installed.

	the movement of recyclable materials and general waste to the main waste/recycling storage room/area. For multiple story buildings, this might involve the use of a goods lift.	
(19)	The waste/recycling storage room/area must provide separate containers for the separation of recyclable materials from the general waste. Stand and consistent signage on how to use the waste management facilities should be clearly displayed.	Complies
(20)	Waste management facilities must be suitably enclosed, covered and maintained so as to prevent polluted wastewater runoff entering the stormwater system.	Complies – Storage areas located within building.
(21)	Premises that discharge trade wastewater must do so only in accordance with a written agreement from the local sewer authority. In the Sydney Metropolitan Area (SMA) this is Sydney Water. Sydney Water defines trade wastewater as "any liquid, and any substance contained in it, which may be produced at the premises in an industrial and commercial activity, but does not include domestic wastewater (e.g. From hand-basins, showers and toilets)."	Complies – Will be supplied as part of development.
(22)	Premises which generate at least 50 litres per day of meat, seafood or poultry waste must have that waste collected on a daily basis or must store that waste in a dedicated and refrigerated waste storage area until collection.	Complies – Daily collection proposed
(23)	Arrangements must be in place regarding the regular maintenance and cleaning of waste management facilities. Tenants and cleaners must be aware of their obligations in regard these matters.	Complies – Arrangements specified in this OWMP.
(24)	Vermin must be prevented from entering the waste/recycling storage area	Complies
(25)	Waste/recycling storage areas must be serviced by hot and cold water provided through a centralised mixing valve. The hose cock must be protected from the waste containers and must be located in a position that is readily accessible when the area is filled with waste containers.	Complies – Details in section 2
(26)	Any garbage chutes must be designed in accordance with the requirements of **Appendix E** Garbage Chutes, the *Building Cod of Australia* and *Better Practice Guide for Waste Management in Multi-Unit Dwellings*. Garbage chutes are not suitable for recyclable materials and must be clearly labelled to discourage improper use.	N/A – No Refuse chutes will be installed.
(27)	Development that relates to production, storage and disposal of industrial and hazardous wastes as defined by the *Protection of the Environment Operations Act 1997* must comply with relevant laws and protocols and observe the guidelines provided by the Department of Environment, Climate Change and Water (DECCW), website www.environment.nsw.gov.au	N/A – Applies to Residential Services Only.
(28)	Doors/gates to waste/recycling storage areas must be durable. There must be a sign adjacent to the door/gate that indicates that the door/gate is to remain closed when not in use. All doors/gates are to be openable from both inside and outside the storage area and must be wide enough to allow for the easy passage of waste/recycling Containers. Arrangements must be in place so that the waste/recycling storage area is not accessible by the general public.	Complies – Doors fit for purpose with locks installed.

1.4. Site Location

The site is located at 277 The Grand Parade, Ramsgate, as shown in Figure 1.1. The property is described as Lot and DP 6 11037, 8 11037 and 8 D 10747. The site is located on the western side of The Grand Parade. All vehicular access will be from Ramsgate Road.

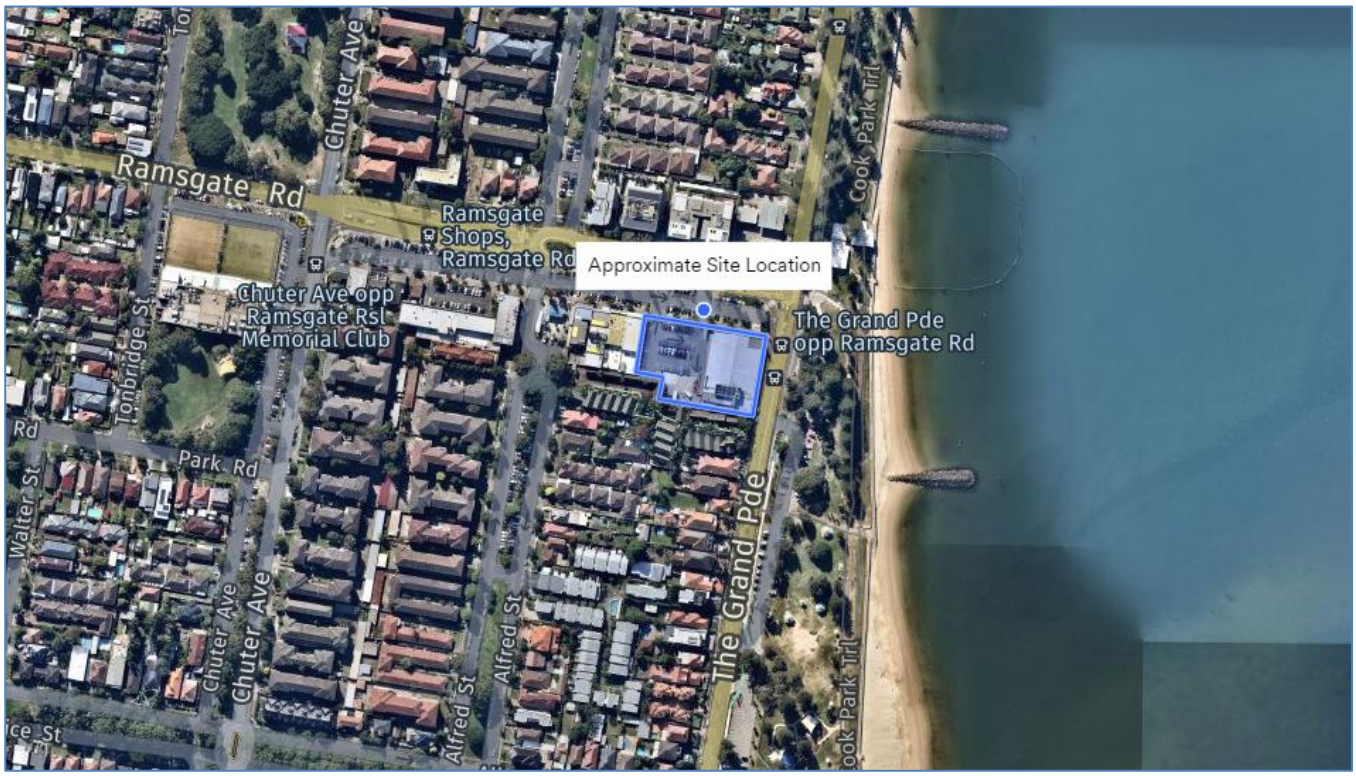


Figure 1.1: Site Location (Source: Nearmap)

1.5. Development Summary

The proposed development is a 10-storey building comprising of 3 basement levels of parking, ground floor of Supermarket and Retail outlets, level 1 bar and restaurant and level 2 - 5 residential units with the roof level above. Table 1.3 provides a summary of the development in relation to refuse generating areas for use with the refuse calculations provided in Section 2.1

Table 1.3: Development Summary

Level	Description	Measure *
Ground	Supermarket	2,307m^2 GFA
	Retail 1	104m^2 GFA
	Retail 2	550m^2 GFA
Levels 1 - 5	Residential Apartments	50 Units

* Areas relevant for refuse calculations only.

2 Refuse Management

This section provides the detailed refuse calculations and describes the arrangements for the collection, storage, transfer and disposal of refuse within the development. This includes associated bin quantities, storage capacities, equipment details, collection frequencies and site access details.

2.1. Refuse Calculations

The generation rates used for the calculation of commercial refuse produced have been applied based on rates recommended by Bayside Council in the Rockdale Technical Specification Waste Minimisation and Management to achieve compliance. Table 2.3 includes only GFA's of refuse generating areas.

Table 2.1: Bayside Council Provided Generation Rates

Type	Measure	General Waste	Combined Recycling	Days of Operation
Supermarket	L / 100m^2 / Day	240	250	7
Restaurant	L / 100m^2 / Day	667	133	7
Residential Units	L / Unit / Week	60	60	N/A

Table 2.2: Compaction and reduction rates applied

Refuse Stream	Compaction / Reduction rate
General Waste	3:1
Food Organics	70%
Paper/Cardboard	5:1

Table 2.3: Residential Refuse Calculations

Description	Quantity	Measure	General Waste L/Week	Comingle Recycling L/Week
Residential Apartments	50	Units	3,000	3,000
Total Weekly Volumes (L / Week)			**3,000**	**3,000**
Volumes per Collection (L / Collection)			**3,000**	**3,000**
Collection and Equipment Details		Collections per Week	1	1
		Storage Capacity	7 Days	7 Days
		Equipment Size	1100L	1100L
		Equipment Quantity Required	3	3

Table 2.4: Commercial Refuse Calculations

Level	Description	Area	Measure	General Waste L/Week	Food Waste L/Week	Comingle Recycling L/Week	Paper/ Cardboard L/Week	Soft Plastic L/Week
Ground	Super-market	2,307	GFA (m^2)	27,130	11,627	11,627	27,130	1,938
	Retail 1	104	GFA (m^2)	3,399	1,457	436	533	243
	Retail 2	550	GFA (m^2)	17,976	7,704	2,304	2,816	1,284
Total Weekly Volumes (L / Week)				**68,960**	**26,391**	**16,768**	**32,702**	**4,543**
Total Compacted/Reduced Weekly Volumes (L / Week)				**22,987**	**7,917**	**N/A**	**6,540**	**N/A**
Volumes per Day (L / Day)				**3,284**	**1,131**	**2,395**	**934**	**649**
Volumes per Collection (L / Collection)				**3,284**	**3,393**	**7,186**	**2,803**	**1,514**
Collection and Equipment Details	Collections per Week			7	3	3	3	2
	Storage Capacity			1 Days	3 Days	3 Days	3 Days	4 Days
	Equipment Size			1100L	6000L Pulp-master	1100L	Bales	1100L
	Equipment Quantity Required			3	1	7	3	2

2.2. Refuse Bins and Equipment Requirements

Table 2.5 and Table 2.6 below outlines the number of bins and additional equipment required for the development. As waste volumes may vary according to the development occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. The table shows the maximum number of bins and equipment expected.

Table 2.5: Bin Requirements

Component	Refuse Stream	Bin / Equipment - Type or Size	Bins Required
Residential	General Waste	1100L	3
	Recycling	1100L	3
Commercial	General Waste	1100L	3
	Food Waste	6000L Pulpmaster system with Hercules bin lifter unit	1
	Commingled Recycling	1100L	7
	Cardboard / General Paper	Bales	3
	Soft Plastics	1100L	2 or (1 bin per refuse storage room)

Table 2.6: Additional Equipment

Component	Description	Quantity	Notes
Commercial	1100L Bin press	3	See Appendix B.2 and B.3.
	Cardboard Baler	2	See Appendix B.2 and B.3. Soft Plastics may be baled also if sufficient quantity produced.
	Refuse / Cleaner Trolleys	TBD	See Appendix B.2 and B.3.
	Cooking Oil	4	Bunded Pallet and Drum (Optional Collection Tank)
	Caddy Bins	TBD	Centralised bin stations in each tenancy with bins for each refuse stream provided.

2.3. Refuse Room Requirements

All refuse will be stored within the refuse rooms located on ground level and level one for everyday use. Bins will be presented from the level one refuse room within the holding area on ground level for collection.

The refuse room is sufficiently sized to accommodate all of the bins and equipment required in provided in Table 2.5 and Table 2.6 . Figure 2.1 below shows a potential configuration for the refuse room. The configuration and size of the refuse room is provided to ensure the majority of bins are accessible or easily rotated.

The refuse area also has the following features in order to minimise odours, prevent vermin, protect surrounding areas, and make it a user-friendly and safe area:

- Doors wide enough to allow for the easy removal of the largest container to be stored and of a suitably durable material and suitably locked to prevent public access
- Adequate artificial lighting.
- Not located adjacent to or within any habitable portion of a building or place used in connection with food preparation (including food storage).
- Permits unobstructed access for removal of the containers to the service point.
- Does not have any steps or lips.
- Is enclosed on all sides except for the gated entrance to ensure bins are not visible from a public place, neighbouring properties, passing vehicles or pedestrian traffic external to the site.
- Is of sufficient size to accommodate the bins with sufficient clearance around the combined bin area.
- Is positioned away from entrances to shops or residential premises.
- The height of the bin storage area allows for waste bins to be opened and closed.
- The floors to be at the graded at the minimum level to fall to a drainage point.
- Drainage points connected to sewer in accordance with trade waste requirements.
- A hose cock provided through a hot and cold central mixer inside the rooms for cleaning bins and the rooms. Protected from the waste containers and located in a position that is readily accessible when the area is filled with waste containers.
- The walls, ceilings, floors and equipment are to be designed and constructed of impervious durable material with a smooth finish to allow for easy cleaning.
- Refuse room finishes are of a similar quality to those found on the exterior of the building.
- Is designed to minimise their visual impact on the surrounding areas.
- Is naturally or mechanically ventilated.

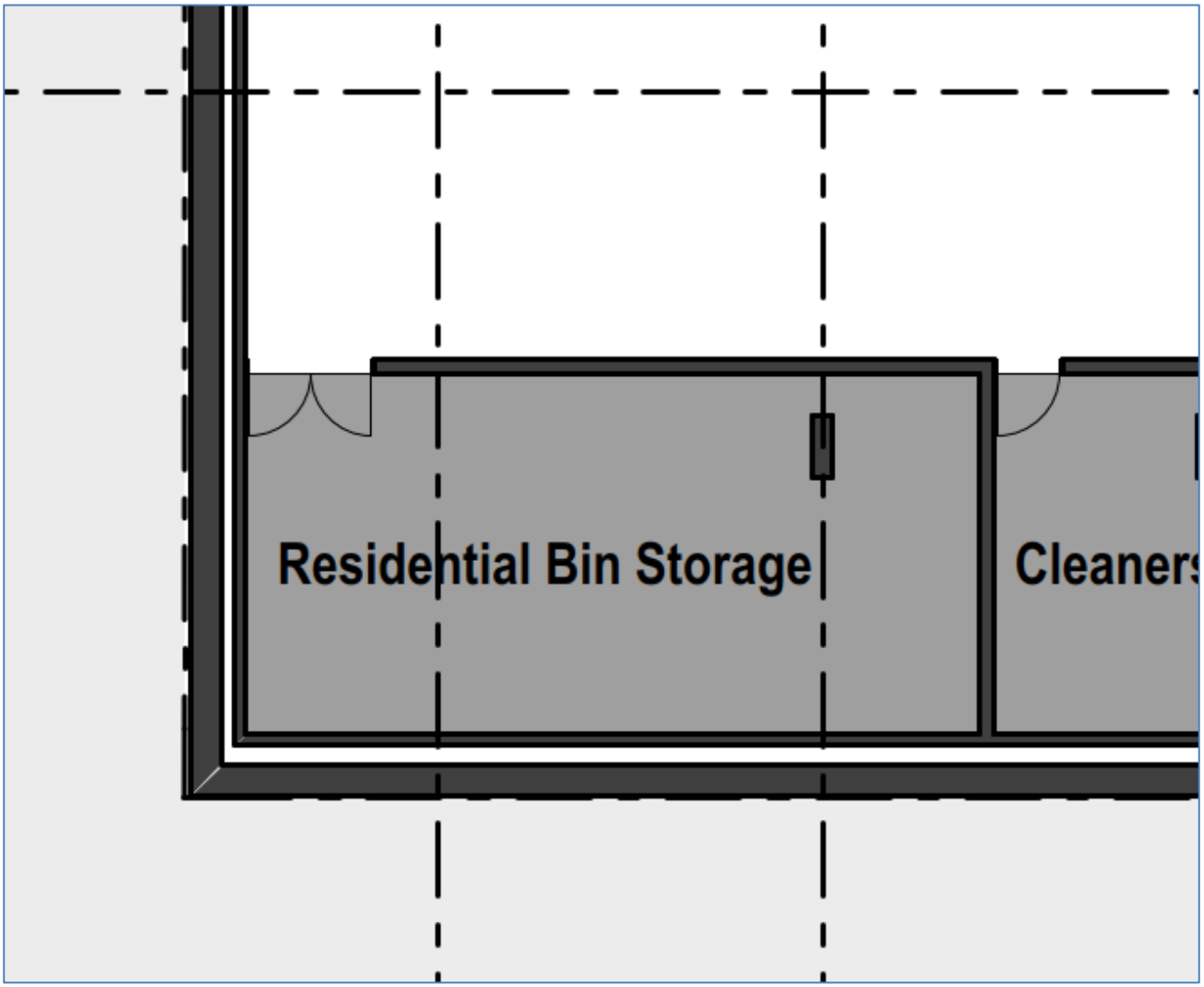


Figure 2.1: Residential Refuse Room Layout

Source: FJC Studio, Project: 277 The Grand Parade, Sheet: 2017, Rev: 02, Date:08/09/2024, Plan: Basement 3

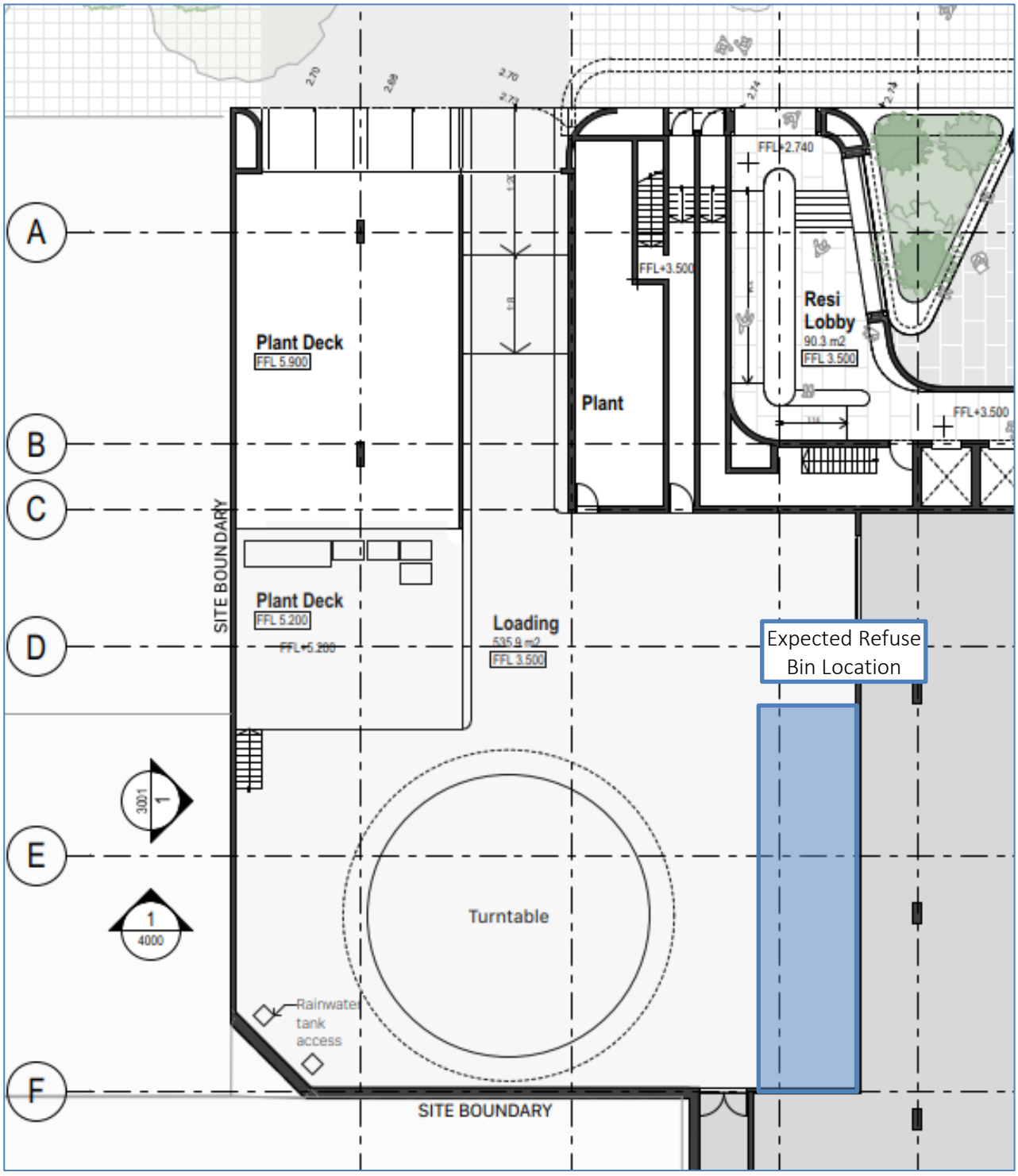


Figure 2.2: Loading Dock Layout

Source: FJC Studio, Project: 277 The Grand Parade, Sheet: 2017, Rev: 02, Date:08/09/2024, Plan: Ground Floor

2.4. Refuse Transfer

Prior to the collection service, building management staff / cleaners will be required to transfer the bins from both the basement 3 bin room to the holding area for collection by the contractor.

Minimal transfer will be required for the collection contractor as the bin presentation point is located adjacent to the loading dock.

The refuse transfer path has been designed to allow for:

- The bins to be transferred via hard stand pathway.
- Allows bins to be easily manoeuvred.
- Does not impede traffic flow.
- Does not extend through any habitable parts of a building or food premises.
- Does not have any lips, stairs or steps for bins to be manoeuvred easily.

2.5. RCV Arrangements and Bin Servicing Areas

RCV's will enter the site from the loading dock driveway crossover provided on the Ramsgate Road frontage, utilise the turntable provided to turn around and exit the site in a forward direction once the collection has been performed.

All refuse will be collected directly from the temporary holding area adjacent to the loading bays. Once the bins have been serviced, they will be returned to the holding area where building management staff / cleaners will return the bins to the bin room for use.

The type of vehicles allocated, and demand will be subject to final design and potential selection of volume reduction equipment. The collection days and frequency form a part of the contract between building management and the preferred contractor and is agreed to based on both the building and contractors' business requirements. The turntable provided accommodates an LRV sized RCV, this vehicle is readily available across the waste collection industry.

As the development is currently at the assessment process no contract has been entered into. Any contractor letter request from Council should be conditioned to be provided prior to the commencement of operation at the construction finalisation stage.

Further details on vehicle access and on-site manoeuvring can be found in the traffic report.

The bin servicing area / loading bay has been designed with the following features:

- Has sufficient access and clearance for the waste and recycling collection vehicles to service the bins, including no overhead obstructions.
- Allows bins to be serviced safely while minimising the impediment to vehicle movements during servicing.
- Is clearly separated from car parking bays, footpaths and pedestrian access.
- Is devoid of stairs, lips or ramps and allows bins to be manoeuvred easily.
- Does not block the entry and exit to the property.
- Is not adjacent to a kitchen or eating area for public use.
- Is over 5m from any door, window or fresh air intake within the development or any adjoining site.
- Is screened sufficiently to minimise the view of bins from neighbouring properties or passing vehicles and pedestrian traffic external to the site.
- Is positioned away from entrances to shops or residential premises.

3 Recommended Operational Requirements

3.1. Refuse Disposal

The tables in this section summarise general recommended disposal arrangements for frequently generated and infrequently generated refuse for each use within the development. Section 3.1.2 describes the frequently generated refuse streams that are generated in high volumes for any given period and require significant capacity for storage prior to collections. Section 3.1.3 describes the infrequently generated refuse streams that are generated in relatively low volumes, and where minimal provision for storage can be easily managed by collection frequency.

3.1.1. Residential Refuse

Bins will be provided for each residency to store at least one days' worth of generated refuse. Each day or as required, all refuse will be transferred by residents to the bins located within the bin room on basement 3. Bins should also be placed in communal areas with Building management to assist with the disposal of waste from communal areas. Further details are provided in Table 3.1.

Table 3.1: Disposal of Residential Waste

Refuse Stream	Disposal Details
WASTE	
General Waste	Waste bins should always be lined with bags and the bags tied before removal. Operationally, general waste should weigh approximately 3 kg or less. **Residential Tenancies** Residents will have receptacles within their individual units for collection and storage of at least one day of general waste. Bins are typically placed under the kitchen sink and accompanied by a commingled recycling bin in order to facilitate separation of general waste and recycling. **Communal Spaces** General waste from the communal spaces (e.g. recreational areas) may include small quantities of food waste, food packaging, drink bottles etc. General waste bins of an appropriate size to accommodate at least one day of waste should be located within the respective areas. Additional bins may be provided for special events.
RECYCLING	
Commercial Comingled, including • glass • aluminum • steel cans • tins • cardboard • semi rigid plastics	Items for recycling must not be bagged and disposed in loose form. This can be done by decanting the materials from the individual receptacles into the bins provided in the chute access room. Residents will liaise with building management for the disposal of oversized recyclables not suitable for the 240L bins. Residents will have receptacles within their individual units for collection and storage of at least one day of recycling. Recycling bins are typically placed under the kitchen sink next to the general waste bin. Recycling bins will usually be used for all recycling materials (commingled recycling). However, residents are encouraged to make use of the container refund scheme and separate eligible containers from the commingled recycling material (see below).
	Occupants should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams, and send back to a return points. Storage space or dedicated bins within the units or refuse rooms can be provided. For the proposed developments, consideration should be given to placement of a reverse vending machine on site for disposal.

3.1.2. Commercial Refuse

All commercial and retail tenancies will be equipped with back-of-house bins for general waste, separated recyclables and food waste for immediate disposal of separated refuse streams. Bins will be stored in centralised stations within tenancies to encourage stream separation in waste generating areas with bins provided for each refuse stream that is anticipated to be generated. Bins will be colour coded in alignment with AS 4123.7-2006 Mobile Waste Containers and station layout will focus on ensuring minimal effort to recycle is required. During the day or as required staff or cleaners will transfer the refuse materials to the refuse room for disposal into the appropriate bins or equipment.

Further details are provided in Table 3.2.

Table 3.2: Disposal of Commercial Waste

Refuse Stream	Disposal Details
WASTE	
General Waste	Depending on the type of operations of the individual tenancies, different wastes may be produced. Waste bins should always be lined with bags and the bags tied before removal. Waste bins should be accompanied by a recycling bin in order to facilitate separation of general waste and recycling. Retail / Food and Beverage Tenancies General waste from food and beverage outlets such as restaurants, takeaways, cafés will be captured by bins typically ranging in size from 30L to 80L that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the café or restaurant operators. Supermarkets **Disposal** General waste from supermarkets typically contains large amounts of food waste which should be collected separately as per Organics (Food) Waste section. For general waste, bins of at least 60 L capacity should located in staff rooms or pantry areas. Larger bins an also be placed in areas accessible to the public, e.g. near entrance and exit doors. Waste bins should be accompanied by a recycling bin in order to facilitate separation of general waste and recycling. Waste bins should always be lined with bags and the bags tied before removal. **Transfer** After each day of operation or between peak operating periods, waste will be transferred by staff / cleaners to the refuse room and placed / decanted into (bulk) bins. Carts or trolleys may be used for transfer if required.
Organic (Food) Waste	Separating organic or food waste from general waste is recommended to reduce the total amount of general waste produced. 120L bins can be used in retail and food and beverage outlets, commercial offices or public accessible hotel amenity should consider benchtop style bin, for disposal of food waste if required. The bins are then transferred to the refuse room for collection. Smaller bins of 120L or 60L caddy bins can be used and the content decanted into the bins provided within the refuse room. A purpose-built trolley should be used to transfer caddy bins.
Cooking Oil Waste	Waste oils should be disposed separately from general waste if large quantities are produced (e.g. in food and beverage outlets). All waste liquids / oils (e.g. from commercial kitchens) should be separated and stored in clearly labelled containers. Typically, waste oils are removed during delivery of new oils by the supplying contractor. Bunded areas or bunded plastic pallets should be supplied for the storage of liquid waste / oils and stored in a levelled area (e.g. refuse room). Bunded pallets can be stored indoors or purpose built for outdoors. They should be routinely inspected to ensure maintenance of their integrity. Each pallet should be capable of storing of at least one-third of its contents if there is a leak.
RECYCLING	

Refuse Stream	Disposal Details
Commercial Commingled, including • glass • aluminum • steel cans • tins • cardboard • semi rigid plastics	Depending on the type of operations of the individual tenancies, different recycling materials may be produced. Items for recycling must not be bagged and disposed in loose form. This can be done by decanting the materials from the individual receptacles into a larger container / bin on a trolley for transport to the refuse room. Retail / Food and Beverage Tenancies Commingled recycling from food and beverage outlets such as restaurants, takeaways, cafés can be captured by bins up to 120L that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the café or restaurant operators. Supermarkets **Disposal** There will be receptacles within the staff and public areas of the supermarket for collection and storage of at least one day of recycling. Recycling bins are typically placed next to the general waste bins. Recycling bins will usually be used for all recycling materials (commingled recycling). However, supermarkets typically produce large amounts of cardboard and plastic packaging material (from deliveries) which should be removed near the loading dock or delivery area before going into the shop (refer to Cardboard and Plastic section). Other recyclable materials can be collected separately if large amounts are produced depending on the operational requirements of the shop, e.g. paper, plastics, glass. **Transfer** Recyclable materials should be carried / transported from the individual receptacles within the premises to the (bulk) bin in the refuse room by staff / cleaners. This can be done by decanting the materials from the individual receptacles into a larger container / bin on a trolley for transport to the refuse room. Items for recycling must not be bagged and disposed in loose form.
	Container deposit / refund schemes are currently in place in Queensland. Various models exist including bottle return facilities and (automated) reverse vending machines. Occupants should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams, and send back to a return points. Storage space or dedicated bins within the units or refuse rooms can be provided. For the proposed developments, consideration should be given to placement of a reverse vending machine on site for disposal.
Cardboard	Supermarkets Typically, supermarkets collect packaging material (e.g. cardboard, plastic film) separately from commingled recyclables, especially if large quantities are produced. Materials must be stored individually (and baled individually if applicable). **Disposal** Large cardboard boxes and plastic film or packaging is typically removed from the refuse stream prior to going into the shop. This involves decanting at the loading dock and providing trolleys or stackable containers for use in transporting the decanted goods to each level. Staff / cleaners should flatten cardboard boxes in order to save space. **Transfer** Most bulky cardboard and large quantities of plastic film should be removed near the loading dock near the (bulk) bins. Transfer within the building is often not required. Otherwise, trolleys / carts should be used for transport of this material. Front-lift (bulk) bins with wire panels that allow contamination checks are used widely for cardboard.

3.1.3. Infrequent Waste

Table 3.3: Disposal of Infrequently Generated Waste

Refuse Stream	Disposal Details
Green Waste	Green waste is produced in low quantities from this type of development, from surrounding landscaped areas or potted plants. Green waste is usually removed by the designated maintenance contractor. The engaged contractor will be required to send this material to a composting or resource recovery facility rather than to a landfill if locally available.
Hard Waste / Bulky Goods	Hard waste may be stored in a designated room which should be located on the loading dock level. Alternatively, collections can be coordinated, and hard waste / bulky goods moved to the loading dock or a designated area for removal prior to collection. When storing bulky goods in a loading dock, it is recommended that items are placed on a pallet for easy loading via a pallet jack or forklift onto the RCV.
Hazardous Waste (paints, batteries and cartridges) Electronic Waste	Where applicable, occupants usually make their own arrangements for the disposal of specialized or hazardous waste and electronic waste such as recycling of toner cartridges and batteries. Please refer to local and state government websites for disposal options. It is an expectation that the building management assist with disposal of hazardous, electronic or liquid waste and any paint or chemicals as required and requested. Hazardous waste must be handled with due care, separated and securely stored for collection by a specialist waste contractor. Please refer to local government websites for further information.

3.2. On-going Management

Responsibilities have to be assigned for all on-going refuse management operations. This is generally done by a building manager, staff and / or cleaners. The following lists (Table 3.4 to Table 3.10) are designed to help managing responsibilities and monitor the refuse operations in order to maintain efficient services and a safe environment.

Table 3.4: General Refuse Management Checklist

Objectives	Checked	Remarks
Organising of weekly pick-ups for all refuse streams.		Liaise with private contractors and Bayside Council as required.
Managing daily bin transfers between refuse storage / collection areas if required.		
Check bin fill levels and rotate / swap bins as required		

3.2.1. Safety

Transferring refuse bins and using refuse management equipment are considered hazardous tasks. Therefore, contractors must ensure that a full risk assessment of equipment, surfaces and related gradients is complete. The contractor must provide procedural documentation to appropriate personnel prior to delivery of equipment and occupancy of the development.

Table 3.5: Safety Checklist

Objectives	Checked	Remarks
Abiding by all relevant occupational health and safety legislation, regulations and guidelines to ensure site safety for residents, visitors, staff and contractors.		
Assessment of any manual handling risks and preparation of a manual handling control plan for waste and bin transfers.		
Provision of equipment manuals, training, health and safety procedures, risk assessments and personal protective equipment to staff / contractors in order to control hazards associated with all waste management activities.		

3.2.2. Signage

All receptacles, bins and other refuse management equipment will have adequate signage. Signage installed will be colour coded in alignment with AS 4123.7-2006 Mobile Waste Containers. Standard signage will be provided in and around waste collection and storage areas (see Appendix C).

Table 3.6: Signage Checklist

Objectives	Checked	Remarks
Ensuring compliance of signage with government local council regulations.		Refer to AS 4123.7-2006 Mobile Waste Containers
Ensuring that labelling on bins, refuse room etc. is appropriate and clear and easy to read and updated if required.		
Ensuring sufficient signage is provided advising users to keep doors to refuse rooms and bins closed at all times to discourage vermin.		

3.2.3. Cleaning and Maintenance

Regular cleaning and maintenance of all refuse management facilities is important to maintain a safe and hygienic environment for residents, visitors, staff and contractors.

Table 3.7: Cleaning and Maintenance Checklist

Objectives	Checked	Remarks
General cleaning of all refuse holding and transfer areas including • Refuse bins, rooms and storage areas • Refuse transfer areas including lifts and staircases • Any other refuse management equipment		Frequency depends on refuse generation and building operation.
Coordination of specialised cleaning contractors as required.		
Maintenance and servicing of refuse management equipment as per schedule.		Frequency depends on equipment and building operation.
Coordination of specialised equipment contractors as required.		

3.2.4. Refuse Minimisation

Refuse minimisation is an important part of any site operation. At a minimum, the following should be implemented. Additional refuse minimisation options can be found in Appendix B.

Refuse minimisation requires regular reviewing to ensure operational sustainability of refuse volumes, equipment and economic feasibility. It is recommended that refuse weights and movements are noted and reviewed. An external review is usually conducted 12 to 18 months after the implementation of the plan.

Table 3.8: Refuse Minimisation Checklist

Objectives	Checked	Remarks
Regular review of material quantities to avoid over-ordering.		
Consideration of secondary and recycled materials where possible.		
Encouraging refuse minimisation through education and signage (see below).		
Reduce refuse through continuous monitoring and review (see below).		

3.2.5. Education and Communication

On-going education is important to ensure people continue to use the facilities as originally intended. All body corporate and leasing contracts should contain clauses pertaining to waste management arrangements and use of any associated equipment.

Table 3.9: Education and Communication Checklist

Objectives	Checked	Remarks
Communication of refuse management arrangements to residents, staff and contractors as required.		
Consideration of promotional opportunities for any successes e.g. awards programs.		

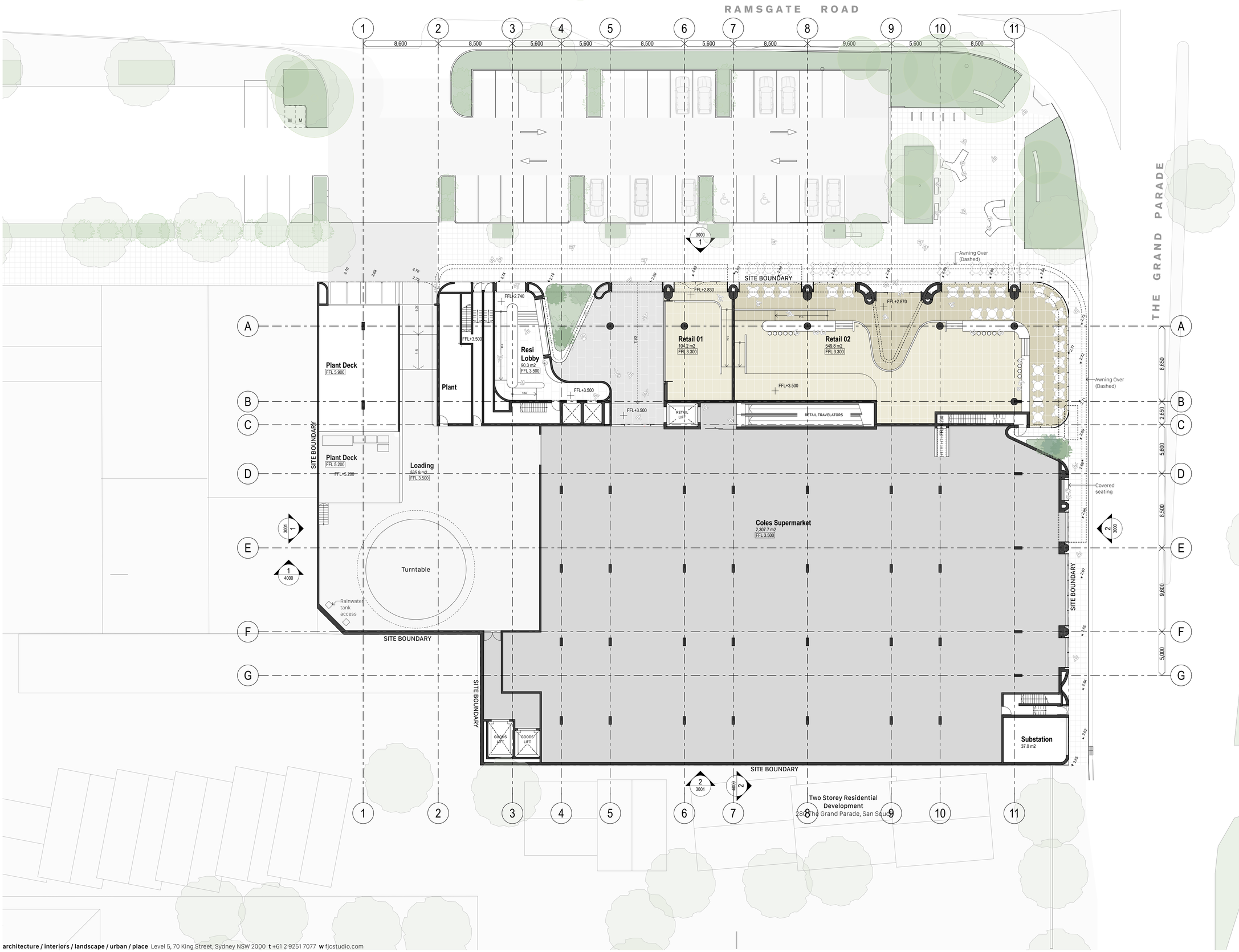
3.2.6. Monitoring and Review

Regular monitoring and inspections of waste and related equipment and facilities from the development should be conducted by building management or designated staff for maintenance and sustainability.

Table 3.10: Monitoring and Review Checklist

Objectives	Checked	Remarks
Continual monitoring of equipment uses and scheduling to ensure best operational outcomes.		
Regular review of refuse management equipment and facilities such as bin volumes, refuse storage capacities and stormwater management arrangements.		

Appendix A Site Plans and Drawings



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General notes

- All dimensions and existing conditions shall be checked and verified by the contractor before proceeding with the work.
- All levels relative to 'Australian Height Datum'.
- Do not scale drawings.
- Use figured dimensions only.

Legend

Rev	Date	Description	By	Chk
02	8/9/2024	DA Submission - SECPP	KT	
01	1/8/2024	DRP Meeting	KT	

277 The Grand Parade Ramsgate
Australia
277 The Grand Parade Ramsgate
Sydney NSW 2217

General Arrangement Plans
GF Ground Floor Plan

Scale
1:200 @ A1

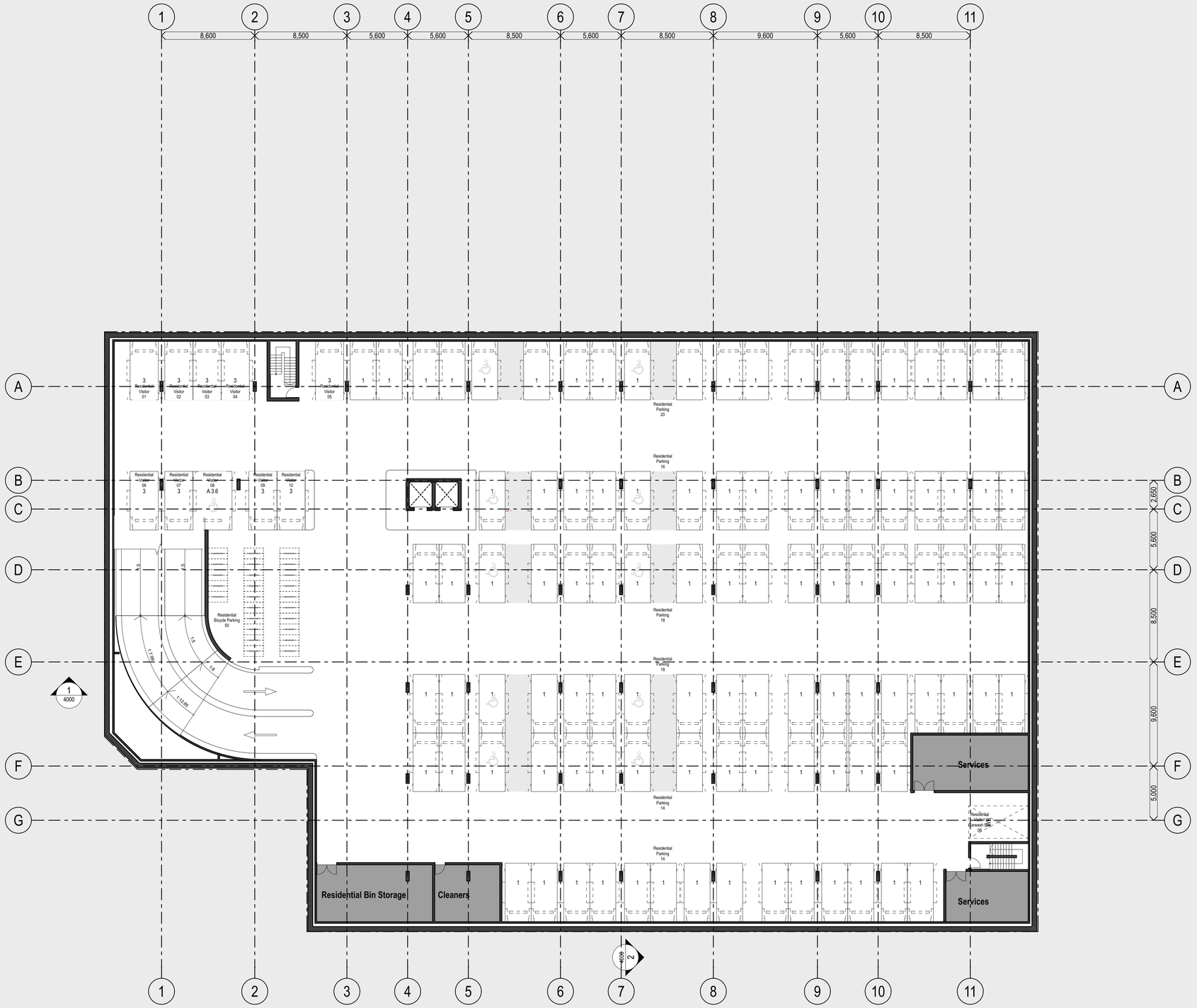
Project Code
BRAM

First Issued
1/8/2024

Sheet No.
2000

Rev
02

architecture / interiors / landscape / urban / place Level 5, 70 King Street, Sydney NSW 2000 **t** +61 2 9251 7077 **w** fjcstudio.com



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277 The Grand Parade Ramsgate
Australia
277 The Grand Parade Ramsgate
Sydney NSW 2217

General Arrangement Plans
B3 Basement 3 Floor Plan

Scale
1:200 @ A1

Project Code
BRAM

First Issued
1/8/2024

Sheet No.
2017

Rev
02

Appendix B Systems and Specifications

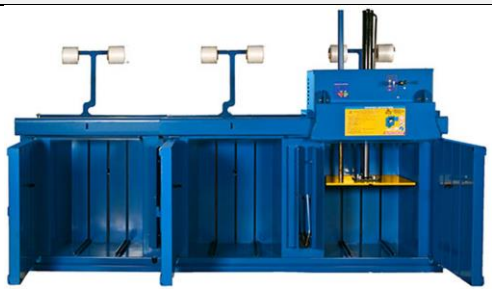
B.1 Typical Refuse Bins

Bin Types	Waste Streams	Examples	Information
Back-of-house bin stations	General waste, recycling, food waste, paper / cardboard		Various options and sizes available. Tenant to supply depending on preference and space available. Example: 60L multisort bins https://www.sourceseparationsystems.com.au/product/multisort
Caddy Bins	Food Waste		Example: https://pulpmaster.com.au/pulpmaster-caddy-system
240L bins	General waste, paper, recycling, green waste		Dimensions approx. 740 x 580 x 1080mm (L x W x H) (dimensions may depend on contractor) Examples: http://www.justwheeliebins.com.au, http://wheeliebinsonline.com.au
1100L bins	General waste, recycling, paper / cardboard		Dimensions approx. 1070 x 1240 x 1330mm (L x W x H) (dimensions depend on contractor) Examples: http://www.justwheeliebins.com.au, https://www.australianwaste management.com.au

B.2 Typical Refuse Management Equipment

Systems	Waste Streams	Examples	Information
Organics Household Composting, Worm Farm, Digesters	Food waste / organics		Organics / food waste separation, composting and digesting; household-type and commercial grade equipment available Examples Urban Composter https://www.urbancomposter.com.au Closed Loop https://closedloop.com.au/upcycling-products ORCA https://www.feedtheorca.com
Food Waste Processing, Storage and Disposal	Food waste / organics		Volume reduction and organics / food waste recycling through food waste separation and macerating Examples: Pulpmaster Food Processing and Storage https://pulpmaster.com.au Under-sink food waste macerators and disposers https://www.insinkerator.com.au (household type macerators) https://insinkerator.emerson.com (commercial-grade macerators)
Cooking oil storage and recycling	Used cooking oil		Cooking oil recycling Example: https://www.cookers.com.au Cooking oil delivery, used oil collection and provision of required equipment

Systems	Waste Streams	Examples	Information
Bunded pallets	Liquid Waste		Spill containment, e.g. for waste cooking oil containers Example: https://www.tradeenviro.com.au/bunded-pallets https://www.materialshandling.com.au/products/bunded-pallet
Compactors / bin presses	General waste		Volume reduction through refuse compaction Examples: Stationary compactor, range between 10000L to 35000L https://www.wastech.com.au/products/compactors Litter bin compactor https://www.solarbins.com.au/features/big-belly-solar-bin Under-chute compactor https://www.wastech.com.au/products/chutes/ecopac-compactor Bin press https://wasteinitiatives.com.au/products/waste-compactors
Balers	Paper / cardboard, plastics		Volume reduction of paper, cardboard, plastics by compaction (baling) Examples: https://www.miltek.com.au/balers-and-compactors https://www.wastech.com.au/products/balers https://wasteinitiatives.com.au/product/vertical-balers/wastepac-60

Systems	Waste Streams	Examples	Information
			
Trolleys	General waste, recycling, food waste, paper / cardboard	   	Assisted manual transfer of refuse Examples: https://rubbermaidcommercial.com.au/products/waste-management/mega-brute https://www.materialshandling.com.au/products/deluxe-compact-cleaning-carts

B.3 Refuse Transfer and Disposal Methods

Method	Examples	Description
Manual transfer / disposal	   	**Manual transfer** is simply the process of physically carrying waste bags, food waste receptacles or recycling boxes and crates without assistance. From a safety perspective, this is acceptable for small quantities and initial disposal into refuse chutes, refuse compartments or, in the case of ground level activities, directly into the refuse storage room. • **Waste** material should be bagged prior to any transfer from apartments, suites, offices, back-of-house areas etc. to waste storage compartments or rooms. • **Food waste** should be placed in receptacles such as a caddy style bin or bucket which will not allow leakage during transfer. • **Recycling** material should be placed in boxes or crates prior to transfer. • **Cardboard and paper** items can be placed within another cardboard box for transfer. Examples: https://www.alamy.com
Assisted manual transfer		**Assisted manual transfer** includes the use of any wheeled container, wheelie bin or trolley with a capacity to carry refuse items with a combined weight of 20kg and above. The equipment bares the weight of the material, but it still requires physical force and or balance to move the bin or trolley. From a safety perspective, this type of equipment should be a minimum requirement for transfer of material greater than 20kg and when transferring between individual levels to the refuse storage room or loading areas. Use of enclosed or caged equipment will also eliminate 'litter or leakage trails' which can occur when using open or unsealed equipment. Examples: http://www.justwheeliebins.com.au, https://rubbermaidcommercial.com.au, https://www.materialshandling.com.au
Assisted transfer	  	**Assisted transfer** includes the use of any container with capacity to carry 20kg or more, pushed or towed by mechanical or electrical self-propelling equipment. Examples: http://ev.spacepac.com.au/categories/tugger, https://www.spacepac.com.au/product/wheelie-bin-aluminum-steel-trailers

B.4 Refuse Minimisation Options

Refuse Minimisation Options – Waste

Systems	Description
Food rescue	OzHarvest and Second Bite are food rescue organisations working throughout Australia. The organisation collects surplus foods from businesses (including Woolworths, Coles, Goodman Fielder and other smaller companies) and redistributes the foods to welfare agencies. They provide regular scheduled collections or ad-hoc / on call collections, and they have refrigerated vehicles. Other accepted items include fresh fruit and vegetables, tinned goods, cold meats and deli items, and readymade meals (which will only be accepted frozen). Where food rescue organisations are available, consideration may be given to suitable space for the temporary storage of food stuffs, including dry storage and the placement of a small fridge if cold room space is not available. There is no associated collections cost. Hence, it can be considered a zero-cost option for disposal of what would otherwise be food waste, and it supports the community at the same time.   Sources: www.ozharvest.org, www.secondbite.org
Composting	Food waste composing is an option of reducing the amount of general waste going to landfill where organic waste can create methane gas due to anaerobic digestion, which contributes to global warming. Systems of different scales exist from small benchtop composters for individual households or apartments to commercial size systems. Examples are shown below. The process usually involves breaking down organic food scraps through natural processes. This includes systems such as worm farms or composters where microbes break down the food waste, with or without the aid of compost additives. The composted products are rich in nutrients and good bacteria, and they can be added to flower bed or gardens. Most food wastes and other organic (garden) material can be composted including meat, fish, vegetables, fruit, dairy, coffee or wilted flowers. However, large bones, excessive liquids such as cooking oil or seafood shells should not be placed in the composers.  Sources: https://www.urbancomposter.com.au, https://closedloop.com.au/upcycling-products, https://www.feedtheorca.com
Food waste separation and collection	When considering separation of organic food waste, the handling and potential for volume reduction should also be considered. As an example, the **Pulpmaster** system can be used to reduce the stored volume of food waste produced, and to prepare the material for re-use. Typically, the system is placed in proximity to sink areas in the kitchen, particularly where food preparation waste or plate scrapings can be easily disposed. This provides a fully sealed transfer system for storage and collection. Pulping systems can also be placed back-of-house spaces for

Systems	Description
	restaurants and cafes or placed within a refuse room for centralisation to multiple users. Pulped food waste is pumped into holding tanks for storage and collection via a 50mm pipe and collected by a liquid vacuum tanker. The images below provide visual context of the connection from pulping machine to storage tank and the option for decanting 120L bins into the machine via a bin lifter and auger feed. The tank may be up to 20m away from the pulping machine. The distance is increased when including vertical drops from upper levels of the building. The storage tank may be up to 30m from a loading area, with the only requirement being a service pipe with camlock end connection placed within proximity of the loading area. Collections are completed by a vacuum tanker which may range in size depending on the size of the storage tanks and the distance of the tank from the loading area.      Source: http://pulpmaster.com.au
Waste Conversion	Converting waste by reducing its volume and weight means less material to be disposed of, which results in fewer refuse collection vehicle kilometres. This allows cost savings in logistics and has a positive environmental effect due to less fuel used per amount of waste to be disposed. As an example, OMPECO provide a solution for converting general and medical waste into a sterilised, dehydrated ground material as shown below. The process involves loading the sterilisation chamber with waste material and crushing / shredding of the material by rotors to produce a fine ground. During the process, the material is heated by friction to 100˚C which causes the moisture in the waste material to evaporate. After evaporation, the material is heated further to sterilisation or pasteurisation. The ground material is then cooled down to be unloaded from the converter. The final product has excellent long-term handling and storage properties, the it has up to 80% less volume and 50% less weight than the original waste material. It can be used in waste to energy systems as it is comparatively dry with a high calorific value.    Source: http://www.ompeco.com/italian/language/en/home-2/#
Waste compaction	Various compaction equipment exists for reducing the volume of (general) waste. As a result, less bins and / or fewer bin collections and service vehicle trips are required, which helps to reduce costs and environmental impact.

Systems	Description
	Examples of typical waste compaction equipment include the following: • Under chute compactors can be installed in developments with waste chutes. This allows to compact waste material before it is discharged from the chute into the waste bins. • Bin presses can be used to annually compress waste material in bins of different sizes. • For public spaces, litter bins are available with a built-in compaction mechanism that reduces the volume of waste material in the bins. An innovative example is the solar compactor shown below. Energy produced by a solar panel on top of the bin is used to operate a fill level sensor and automated internal compaction mechanism, allowing up to eight times more waste to be stored in the bin before collection is required. In addition, notification about the fill level of the bins can be sent out in order to monitor bins and manage collection frequencies.  Sources: https://www.wastech.com.au/products/compactors, https://www.wastech.com.au/products/chutes/ecopac-compactor, https://wasteinitiatives.com.au/products/waste-compactors, https://www.solarbins.com.au/features/big-belly-solar-bin
Charity donations	A good way of minimising waste is to reuse items that are still good to use. Several charity organisations exist that accept items such clothing, shoes, bedding, books, toys, furniture, kitchenware and other household items. The donated items must not be torn, damaged or broken. Electrical appliances such as white goods are usually not accepted. Common organisations operating in Australia include Saint Vincent de Paul Society (Vinnies) and Lifeline (see images below). Items can be placed into the organisations' charity / donation bins located in various public spaces such as near community or shopping areas. Alternatively, they can be dropped off at the organisations' shops during opening hours. Refer to https://www.lifeline.org.au or https://www.vinnies.org.au for further information. For larger developments and precincts where large amounts of donation items can be expected, the placement of charity bins within the development should be taken into consideration.   Sources: https://www.vinnies.org.au, https://lifelinesouthcoast.org.au

Refuse Minimisation Options – Recycling

Systems	Description
Container deposit schemes	Container deposit / refund schemes are currently in place in several states in Australia. Various models exist including bottle return facilities and (automated) reverse vending machines. Residents, tenants, staff and cleaners should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams, and return them to one of the return points. Storage space or dedicated bins within tenancies, apartments or communal areas should be provided. For larger developments or precincts where large amounts of empty containers are expected, consideration may be given to an on-site return point. The return points should be located near recycling bins so that cardboard boxes or plastic bags that have been used to transfer the empty containers to the return point can be disposed appropriately. This can prevent cluttering of the area around the return point. The images below show a typical return point and containers that commonly qualify for a deposit refund.    Sources: https://returnandearn.org.au, https://envirobank.com.au/bottle-and-can-recycling-queensland, https://www.containersforchange.com.au/how-it-works
Glass crushing	Bottle crushers can reduce back-of-house and refuse room storage volumes by up to 80%. The machines are quiet and efficient. The inclusion of a glass crusher may either be designed into bar or kitchen areas, placed in back-of-house areas, or a machine may take the place of an existing recycling bin within a refuse storage room. Scanners are also being developed for these machines for scanning of bottles prior to crushing to align with government bottle return schemes. The images below show a typical setting of a glass crusher in a bar.    Sources: http://www.insideenterprises.com.au/bottlecycler/index.html, http://www.bottlecycler.com

B.5 Refuse Management Equipment Suppliers

Waste Management Equipment	Balers	Compactors	Shredders	Glass Crushers	Chutes	Bin Tugs / Trailers	Trolleys / Manual Handling Equipment	Bin Lifters / Tippers	Bin Rotation	Weighing Systems	Spill Containment, Spill Response, Absorbents, Drain Protection	Food Waste Management / Vacuum Systems, Pulping, Digestors	Composting	Waste Cooking Oil Systems	Smoking Management	Bins (General), Bin Stands	Bin Cleaning Equipment	Sorting Equipment
Elephants Foot Recycling Solutions http://www.elephantsfoot.com.au	✓	✓		✓	✓			✓	✓	✓								
Waste Initiatives https://wasteinitiatives.com.au	✓	✓	✓	✓														✓
Wastech http://wastech.com.au	✓	✓	✓		✓			✓										
Pakmor http://pakmor.com.au	✓	✓	✓					✓		✓								
Miltek http://www.miltek.com.au	✓	✓																
BottleCycler http://www.bottlecycler.com				✓														
Materials Handling https://www.materialshandling.com.au						✓	✓	✓			✓					✓	✓	
Spacepac http://ev.spacepac.com.au						✓	✓											
Spacepac Solutions http://www.spacepac.com.au						✓	✓								✓	✓		
Draffin https://draffin.com.au								✓							✓	✓		
Electrodrive / Lift Master http://www.electrodrive.com.au						✓		✓										
Absorbenviro http://www.absorbenviro.com.au											✓							
Trade Environmental http://www.tradeenviro.com.au											✓							
Spillstationaustralia www.spillstation.com.au											✓							

Waste Management Equipment	Balers	Compactors	Shredders	Glass Crushers	Chutes	Bin Tugs / Trailers	Trolleys / Manual Handling Equipment	Bin Lifters / Tippers	Bin Rotation	Weighing Systems	Spill Containment, Spill Response, Absorbents, Drain Protection	Food Waste Management / Vacuum Systems, Pulping, Digestors	Composting	Waste Cooking Oil Systems	Smoking Management	Bins (General), Bin Stands	Bin Cleaning Equipment	Sorting Equipment
Pulpmaster http://pulpmaster.com.au												✓						
Australian Vacuum Systems http://www.australianvacuumsystems.com.au												✓						
Meiko https://www.meiko.com.au												✓						
Closed Loop Organics https://closedloop.com.au/upcycling-products,													✓					
Compost Revolution https://compostrevolution.com.au													✓					
Urban Composter https://www.urbancomposter.com.au													✓					
ORCA Digester https://www.feedtheorca.com													✓					
Cookers https://www.cookers.com.au														✓				
Rubbermaid https://rubbermaidcommercial.com.au/products/waste-management							✓				✓				✓	✓		
Sulo http://www.sulo.com.au							✓						✓			✓		
Australian Waste Management https://www.australianwastemanagement.com.au/products								✓								✓		

B.6 Refuse Management Service Providers

Specialist Waste Services	Food Waste	Waste Cooking Oil	Hazardous Waste	Liquid Waste	Electronic Waste	Industrial Waste	Construction & Demolition Waste	Waste Water	Secure Document Destruction
Cleanaway * https://www.cleanaway.com.au		✓	✓				✓	✓	
JJ Richards * https://www.jjrichards.com.au		✓	✓	✓		✓	✓	✓	
Veolia * https://www.veolia.com/anz			✓	✓	✓		✓	✓	✓
Suez * https://www.suez.com.au				✓	✓		✓	✓	
SecondBite https://www.secondbite.org	✓								
OZ Harvest https://www.ozharvest.org	✓								
Cookers https://www.cookers.com.au		✓							
ToxFree https://www.toxfree.com.au			✓		✓	✓			
AceWaste https://www.acewaste.com.au			✓			✓			

Appendix C Refuse Signage

C.1 Refuse Signage

Waste signage guideline are provided by the Queensland government: https://www.qld.gov.au/environment/pollution/management/waste/recovery/recycling/signage.

General Refuse Signage

Other Refuse Signage

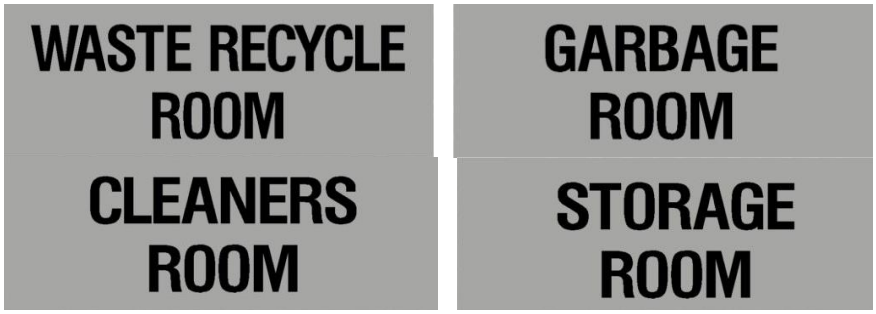
Colour coding as per AS 4123.7-2006

Mixed (Commingled) Recycling	*PMS 108*
General waste (landfill)	*PMS 032C*
Organics	*PMS 15-0343*
Paper and cardboard recycling	*PMS Process Blue C*
Soft Plastics	*PMS 1655*
Used Cooking Oil	*Grey*

C.2 Other Refuse, Facility and Safety Signage

Various signage including refuse area, safety and facility signage should be arranged through certified signage providers. Example signs can be found at http://www.signblitz.com.au, https://www.wayout.com.au or https://www.smartsign.com.

Example Refuse Room Signage



Example Facility Signage

Example Safety Signage

Appendix D Terms and Abbreviations

In this OWMP, a term or abbreviation has the following meaning unless indicated otherwise:

TERM	ABBREVIATION	DEFINITION
Equipment		
Bin (Refuse Bin)		A plastic or steel container for disposal and temporary storage of waste or recycling items. Various types and sizes exist for different items and purposes. Examples include residential unit bins, bulk bins, MGB, steely bins and specialised for medical waste or cigarette butts.
Bin Storage Area		An enclosed area designated for storing on-site refuse bins or a refuse compactor within the property.
Bulk Bin		A galvanized or steel bin receptacle that is greater than 360L in capacity generally ranging from 1.00m³ to 4.50m³ used for the storage of refuse that is used for on-site refuse collection.
Bulk Mobile Garbage Bin	Bulk MGB	A plastic (polypropylene) receptacle that is greater than 360L in capacity generally ranging from 660L to 1100L used for the storage of refuse.
Collection Point		An identified position where refuse bins are stored for collection and emptying. The collection point can also be the bin storage area.
Compactor		A receptacle that provides for the mechanical compaction and temporary storage of refuse. It allows to reduce bin numbers and collection frequency.
Composter		A container or machine used for composting specific food scraps and/or organic materials.
Food Waste Recycling System		Defined as a vacuum or pump-based system for shredding, macerating or pulping of food waste. The food waste is transferred through pressure (service) pipes to sealed liquid storage tanks.
Green Waste		All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers.
Liquid Waste		Non-hazardous liquid waste generated by commercial premises should be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste).
Mobile Garbage Bin	MGB	A plastic (polypropylene) bin or bins used for the temporary storage of refuse that is up to 360L in capacity and may be used in kerbside refuse collection or on-site collection.
Putrescible Waste		Putrescible waste is the component of the waste stream liable to become putrid and usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
Recycling		Recycling contains all material suitable for re-manufacture or re-use, e.g. glass bottles and jars; plastics such as PET, HDPE and PVC; aluminium aerosol and steel cans and lids; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines.
Refuse		Refuse is material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items.
Refuse Storage Room		An area identified for storing on-site MGBs or Bulk Bins within the property.
Refuse Tolley		A cart on wheels that can be used to collect smaller quantities of refuse from different areas or rooms of a building or site, and wheel the collected refuse to a (bulk) bin storage area where it is disposed. Refuse trolleys are commonly used in hotels or offices.
Regulated Waste		Regulated waste is waste prescribed under legislation as regulated waste.

TERM	ABBREVIATION	DEFINITION
Transfer (Manual Transfer)		Manual transfer means physical transfer of refuse material and associated bulk bins or trolleys without assistance.
Waste		Waste is referred to as refuse material with the exclusion of recycling, green waste, hazardous waste, special waste, liquid waste and restricted solid waste.
Waste (General Waste)		General waste is generally referred to as material free of any actual or apparent contamination such as pathological / infectious, radioactive materials and / or hazardous chemical. Reporting use is for material considered to be free of food waste.
Wheelie Bin		A MGB of up to 360L, usually with 2 wheels for easy transfer. A common type is a 240L wheelie bin used for kerbside collection in many residential areas.
Measures		
Cubic Metre	m^3	Volume in cubic metre(s) related to refuse management equipment.
Ground Floor Area	GFA	The GFA of all storeys of a building is measured from the outside of the external walls or the centre of a common wall. It is commonly measured in square metres.
Kilogram	kg	Kilogram(s) related to refuse weight.
Litre	L	Litre(s) related to refuse volumes.
Square Metre	m^2	Square metre(s) related to refuse areas.
Ton	T	Ton(s) related to refuse weight.
Collection Vehicles		
Body Truck		A conventional heavy vehicle with a covered loading area. It is generally not specifically designed for emptying the content of bins into the truck during refuse collections, but can be used to carry entire (full) bins for servicing by bin swap-over.
Refuse Collection Vehicle	RCV	A vehicle specifically designed for collecting and emptying refuse bins and refuse compactors.
Rear-End-Loading Refuse Collection Vehicle	REL RCV	A truck specially designed to collect municipal solid waste and recycling, typically 240L wheelie bins to 1100L bulk bins, from rear loading mechanism and haul the collected waste to a solid waste treatment facility.
Tank Truck		An RCV that is specifically designed to collect liquid wastes such as waste cooking oil and food waste pulp. The waste is typically pumped from a waste storage tank into the truck via a hose. Liquid waste management equipment is often provided by the contractor who collects the waste and operates the truck.