PLANS AND DOCUMENTS referred to in the PDA **DEVELOPMENT APPROVAL**

Approval no: DEV2024/1524 Date: 31 January 2025





69 **Operational Waste Management Plan**

Proposed Multiple Dwelling Development

At Lot 1 Karakul Road, Hamilton

On Behalf of Brisbane Housing Company Limited





About TTM

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Revision Record

lssue No.	Author	Reviewed/Approved	Development Stage / Revision Description	Date
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1 Introduction

1.1. Background

TTM Consulting has been engaged by Brisbane Housing Company Limited (BHC) to prepare an Operational Waste Management Plan (OWMP) to support a proposed Social and Affordable Housing Development located at Lot 1 Karakul Road, Hamilton. It is understood this OWMP will accompany a Development Application submitted to Economic Development Queensland (EDQ).

1.2. Client Brief and Scope

The proposed development intends to build on BHC's extensive portfolio of social and affordable housing provided throughout the Brisbane City Council local government area. The waste management facilities provided on site are intended to limit the level of building management intervention required, this in turn supports the affordability of housing by reducing ongoing operational expense.

The content of this OWMP is intended to provide information on the typical movement of waste streams from generation to collection. Information on refuse management is given for each building (Building A to H) within the development.

Detailed information including 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 report relate to the operational phase of the development only. Additional requirements for refuse management during or after demolition or construction phases are not included and require a dedicated plan. The items covered within the OWMP are described in Table 1.1.

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 manoeuvring
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

Table 1.1: Scope Items



1.3. Site Analysis

The site is located at Lot 1 Karakul Road, Hamilton and is formally described as Lot 1 on SP337697 as depicted in Figure 1.1.

The site is located within the *Mixed use medium density sub area 3* of the Northshore Hamilton Priority Development Area (PDA).

The site has frontages on Macarthur Avenue, Barcham Road and Karakul Road with a proposed right of way easement with the adjoining Lot 5. All vehicular access for the site will occur via Karakul Road.



Figure 1.1: Site Location Source: Nearmap, Image Dated 20/02/2024



1.4. Site Statistics

The proposed development consists of 8 multiple dwelling buildings with connections between Buildings A – D and Buildings E – H.

Communal occupant amenity space is provided on the ground floor of Building D. The development also features a significant amount of communal open space.

A common basement is provided for the car and bike parking of all buildings.

Table 1.2 provides a summary of the development as context for the refuse volume information provided in Section 2.

Land Use	Number
Social Housing:	60 units (total)
• 1 Bedroom unit	38 units
• 2 Bedroom units	19 units
• 3 Bedroom units	3 units
Affordable Housing:	141 units (total)
• 1 Bedroom unit	82 units
• 2 Bedroom units	38 units
• 3 Bedroom units	21 units
Total	201 units (total)
• 1 Bedroom unit	120 units
• 2 Bedroom units	57 units
3 Bedroom units	24 units

Table 1.2: Development Summary



2 Regulatory Refuse Management Requirements

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

2.1. Regulatory and Governance Considerations

2.1.1. State Government Development Scheme

This plan has been prepared to align with the refuse requirements of the Northshore Hamilton PDA Development Scheme. TTM has referred to the requirements of Section 2.5.4.7 and Schedule 2 as these sections outline the waste management controls for all development within the PDA.

Whilst the application will be submitted to EDQ as a Development Application, it is noted that the site is located within the Brisbane City Council local government area. As such, where relevant this development has been designed to align with the respective provisions of the Brisbane City Council City Plan 2014 as outlined in Section 2.1.3.

Table 2.1 details the refuse management items addressed to align with the Northshore Hamilton PDA Development Scheme.

North	Northshore Hamilton PDA Development Scheme – October 2022				
Item	Requirement	Compliance / Comment			
Sectio	n 2.5.4.7 – Waste Management				
Develo	opment:				
(i)	Provides facilities for the safe and efficient removal of waste	Complies – Details throughout this OWMP.			
(ii)	Provides facilities for recycling, composting and waste reduction	Complies – Details throughout this OWMP.			
(iii)	Ensures that no liquid or solid wastes, other than stormwater, are discharged to neighbouring land or waters	Complies – Sewer connected drainage points in all refuse storage locations connected to sewer.			
(iv)	Ensures waste access and collection points and servicing areas for waste collection vehicles are appropriately designed to mitigate and manage acoustic and odour impacts	Complies – Located within fully enclosed dedicated rooms within building.			
(v)	Ensures waste management areas are designed to be integrated into part of the development, preferably within the building or specifically designed enclosed areas, and designed to avoid disruption to movement and circulation areas ensuring the safe, convenient, and prioritised movement of pedestrians, active transport users and private vehicles.	Complies – Storage located within fully enclosed rooms, not visible from the public realm.			

Table 2.1: OWMP Development Scheme Checklist



2.1.2. State Government Design Guidelines

As this development proposes the supply of affordable and social housing, TTM has referred to Queensland Government's Social Housing Design Guideline (SHDG) Toolkit Technical Summary Sheets March 2024 under *Bins*, as this section relates specifically to refuse requirements. Table 2.2 demonstrates the refuse management items addressed to align with the SHDG Toolkit.

Table 2.2: OWMP QLD Government Design Guidelines Checklist

Social	Social Housing Design Guideline Toolkit March 2024					
Item	Requirement	Compliance / Comment				
Bins –	Multi-unit developments					
(1)	Bin areas must be constructed in accordance with local council or waste collection services requirements.	Complies – See Table in <i>Appendix</i> A for compliance criteria addressed within this OWMP.				
(2)	Liaise with Council at design stage to determine operational requirements. e.g. maximum number of wheelie bins.	Refuse strategy generally in accordance with council planning scheme.				
(3)	 Bulk bins preferred, subject to considerations such as: a. Available collection services b. Availability of bins with easily operable lids in 900mm to 1100mm height zone (for use by residents of Platinum Level dwellings). c. Frequency of collection (Multiple weekly collection services preferred). 	Complies – 1.1m ³ bulk bins proposed. a. Complies – RCV loading immediately adjacent to temporary holding room. b. Complies – Option for 240L bins for platinum users, bin height 1060mm. c. Complies – 3 services per week proposed.				
(4)	Locate on screened, hardstand area and group wherever possible.	Complies – Located within dedicated room within building.				
(5)	Position away from private outdoor space, windows, pedestrian entries, including those of neighbours.	Complies – Storage located within fully enclosed room, not visible from the public realm.				
(6)	Locate under cover where possible, particularly if overlooked.	Complies – As above.				

2.1.3. Council's Refuse Planning Scheme

As this development is located within the Brisbane City Council (BCC) Local Government Area, and where specific design controls are not provided within the PDA Development Scheme or SHDG's, this plan has been prepared to generally align with BCC's refuse requirements of SC6.26 Refuse Planning Scheme Policy v29. Additionally, PO32 of the Multiple dwelling code and PO8 of the Infrastructure design code.

As this development is a residential site, TTM has referred to BCC requirements as outlined in the Refuse PSP under section 2, 3 and 4 as these sections are related to general requirements for all developments and specific controls for residential uses. Specific design details addressed to achieve compliance with BCC's Refuse PSP requirements is located in *Appendix A*.



2.2. Anticipated Refuse Volumes

The refuse generation rates used for the calculation of refuse produced have been applied based on rates recommended by Queensland Government's Social Housing Design Guideline Toolkit Technical Summary Sheets March 2024.

TTM note that these rates are standardised generation rates however, provide volume estimates comparable to generation of similar existing sites managed by the proposed operator. Site specific auditing is recommended once the site is operational and reaches a minimum 80% occupancy to establish actual refuse generation of this site and enable refinement of waste strategy and refuse equipment utilised.

A collection frequency of 3 times per week has been established for both general waste and commingled recycling in line with the service frequency expectations of the SHDGs. Additionally, the established frequency of collection aligns with BCC's 'Residential (on-site bulk) service frequency and compaction requirement' guidelines.

Table 2.3 outlines the refuse generation rates applied to total refuse volume calculations.

Refuse disposal points are consolidated into 3 separate points equally distributed across the development. One point is provided for Buildings A & B, one point for Buildings C & D and one point for Buildings E – H. Further details relating to disposal points are provided throughout later sections of this report.

Tables 2.4 – 2.6 outline the anticipated generation volumes for each disposal point.

Refuse Generation Rate	Measure	General Waste	Commingled Recycling			
1 Bedroom Units	L / Unit / Week	80	40			
2 Bedroom Units	L / Unit / Week	120	60			
3 Bedroom Units	L / Unit / Week	160	80			

Table 2.3: Social Housing Design Guideline Toolkit Refuse Generation Rates

Area Description	Measure	Quantity	General Waste L/Week	Commingle Recycling L/Week
Studio & 1 Bedroom Units	Unit	40	3,200	1,600
2 Bedroom Units	Unit	21	2,520	1,260
3 Bedroom Units	Unit	3	480	240
Total Weekly Volumes (L / We	eek)	6,200	3,100	
Volumes per Day (L / Day)		886	443	
Volumes per Collection (L / Collection)			2,657	1,329
	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
Collection and Equipment	Equipment Size		1100L	1100L
	Equipment Quantity Required		2.42	1.21
	Equipment Quantity Provided		3	2

Table 2.4: Refuse Calculations Buildings A & B



Table 2.5: Refuse Calculations Buildings C & D

Area Description	Measure	Quantity	General Waste L/Week	Commingle Recycling L/Week
2 Bedroom Units	Unit	19	2,280	1,140
3 Bedroom Units	Unit	25	4,000	2,000
Total Weekly Volumes (L / We	eek)		6,280	3,140
Volumes per Day (L / Day)		897	449	
Volumes per Collection (L / Collection)			2,691	1,346
	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
Collection and Equipment	Equipment Size		1100L	1100L
	Equipment Quantity Required		2.45	1.22
	Equipment Quantity Provided		3	2

Table 2.6: Refuse Calculations Buildings E – H

Area Description	Measure	Quantity	General Waste L/Week	Commingle Recycling L/Week
Studio & 1 Bedroom Units	Unit	56	4,480	2,240
2 Bedroom Units	Unit	37	4,440	2,220
Total Weekly Volumes (L / We	ek)		8,920	4,460
Volumes per Day (L / Day)		1,274	637	
Volumes per Collection (L / Collection)			3,823	1,911
	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
Collection and Equipment	Equipment Size		1100L	1100L
	Equipment Quantity Required		3.48	1.74
	Equipment Quantity Provided		4	2



2.3. Refuse Bin, Equipment Requirements and Specification

Table 2.7 and Table 2.8 outline the total number of bins and additional equipment required for the development based on the volume calculations above.

As actual refuse volumes may vary from assessment benchmarks, bin numbers and sizes may need to be altered to suit the building operation and occupant needs. This includes times where residents requiring additional accessibility considerations occupy the Platinum level units (refer to Section 3.1 for further details)

Table 2.7: Total Bin Requirements

Refuse Stream	Bin / Storage – Size or Type	Number Required
General Waste	1100L	10 + 3 1 to remain beneath each chute discharge during servicing
Commingled Recycling	1100L	6

Description	Quantity	Capability / Specification - See Appendix C for further details	
Single Refuse Chute	3 (1 per disposal point)	A single refuse chute for the disposal of general waste only. Disposal points provided on each habitable level. May be fitted with optional ceiling mounted compactor to reduce the total volume of general waste and bin quantity required.	
2 x 1100L Bin Linear Conveyor	3 (1 per disposal point)	Automates bin rotation beneath the chute discharge for general waste. Reduces the overall level of building management intervention required. Elephant's Foot 2 Bin Conveyor used for architectural design purposes. Model with equivalent capabilities may be installed.	
Bin Tug / Bin Towing Equipment	1	1 mechanical towing aide shared across the development site Used for the assisted transfer of bins to the servicing point. Bins may be 'daisy chained' together for the transport of multiple bins per trip.	
Refuse / Cleaner Trolleys	Optional	May be supplied to assist residents in transfer of refuse to the refuse room or from communal areas.	

Table 2.8: Additional Equipment



2.4. Refuse Disposal

The tables in this section summarise general recommended disposal arrangements for frequently generated and infrequently generated refuse for each development component. Section 2.4.1 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 2.4.2 describes the infrequently generated refuse streams that are generated in where minimal provision for storage can be easily managed by collection frequency and ad hoc storage arrangements.

2.4.1. Frequently Generated Refuse

Three disposal points are provided throughout the development for residents to access for the disposal of all refuse. The residents of Buildings A & B will utilise the chute adjoining lift core of Building A for the disposal of general waste of access the associated recycling room in the basement for the disposal of all recyclable materials.

The residents of Buildings C & D will utilise the chute adjoining lift core of Building D for the disposal of general waste of access the associated recycling room in the basement for the disposal of all recyclable materials.

The residents of Buildings E - H will utilise the chute adjoining lift core of Building E for the disposal of general waste of access the associated recycling room in the basement for the disposal of all recyclable materials.

Further details on frequently generated refuse disposal are provided in Table 2.9 and Table 2.10.

Table 2.9: Disposal of Frequently Generated Waste

Refuse Stream	Disposal Details
WASTE	
General Waste	Space for bins to store one day's worth of generated refuse will be provided in each residential apartment. Each day or as required, all refuse will be transferred by residents directly to the refuse chute adjoining each lift core for disposal into the appropriate bulk bin. Waste bins should be accompanied by a commingled recycling bin in order to facilitate separation of general waste and recycling. Waste bins should always be lined with bags and the bags double tied before removal. Operationally, bins used for general waste should be limited to 40L or less to reduce manual handling load in refuse transfer. Receptacles will be placed in all indoor communal areas where refuse will be generated such as the 'function room' and 'library' for collection and storage of at least one day of general waste. Bin quantities will be determined during the operational phase. A recycle bin will be positioned wherever a general waste bin is positioned to maximise recovery. Building management will assist with the disposal of all refuse generated in communal areas.
Organic (Food) Waste	Separating organic or food waste from general waste is recommended to reduce the total amount of general waste produced. Separation may be considered and begin at any stage during the operational phase of the development. While BCC does not currently offer a food organics collection service to multiple unit dwellings, commercial options are available at additional cost. Alternatively, domestic compositing equipment may be used for individual units or communally. Communal composting must be facilitated and managed by a building manager or caretaker to ensure correct usage. Where food waste is separated, caddy bins or bins less than 20L should be used in residential kitchens, for disposal of food waste. The bins are then transferred to the refuse room for collection. The content is then decanted in bulk bins or composting equipment provided. Transfer and collection should occur on a frequent basis to minimise odour amenity issues.



Refuse Stream	Disposal Details
RECYCLING	
Commingled, including glass aluminum steel cans tins cardboard semi rigid	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 bulk bins provided. 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). Receptacles will be placed in all communal areas where refuse will be generated for collection and storage of at least one day of commingled recycling. Bin quantities will be determined during the operational phase.
plastics	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 point. Storage space or dedicated bins within the units or refuse rooms can be provided.

2.4.2. Infrequent Waste

Table 2.11: Disposal of Infrequently Generated Waste

Refuse Stream	Disposal Details
Garden Organics refuse / Green Waste	Garden organic refuse also referred to as green waste will be produced from landscaped areas or potted plants around this development. Green waste is produced largely on a weather or seasonal dependent basis and based on plant selections. Green waste is usually removed by the designated maintenance contractor. Interim storage is not provided.
	The engaged contractor will be required to send this material to a composting or resource recovery facility rather than to a landfill.
	Alternatively, where onsite composting occurs, green waste may be combined with food waste for composting. Output product may be reused in site landscaping where appropriately matured or treated.
Hard Waste / Bulky Goods	Hard waste collections will be coordinated in similar manner to council's hard waste collection arrangements for residential uses, and hard waste / bulky goods moved to the loading or a designated area for removal prior to collection. When storing bulky goods in a loading area, it is recommended that items are placed on a pallet for efficient loading via a pallet jack or forklift onto the RCV.
Hazardous Waste (paints, batteries and cartridges)	Batteries are highly volatile and must be disposed of separately and never in the general waste or commingled recycling bins. TTM recommend a communal disposal point is provided by site management and located in the recycling rooms or main lobby.
Electronic Waste	Adequate area is available within each recycling room for the storage of electronic waste. Bins up to 1100L in size may be used. Electronic waste will be collected by private contractor where separated.
	It is expected that the building management assist residents with disposal of hazardous 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 and QLD government websites for further information.



2.5. Refuse Storage, Access and Rotation Requirements

All refuse will be disposed of into bins housed within the 3 disposal points that are provided throughout the development. Each disposal is located directly beneath the chute termination and adjoins each lift core on the basement level.

Each disposal point is separated into a chute discharge room and recycling room. The chute discharge rooms are designed to house the chute discharge equipment including bin rotation and compaction equipment if selected. Access to the chute discharge rooms will be restricted to building management and authorised personnel only.

The recycling rooms are sufficiently sized to house the recycling bins required for each disposal point based on the generation calculations above. All residents will have direct access to the recycling rooms for the disposal of all recyclable materials. TTM recommend that access to the recycling rooms is provided via key or fob. The location of the recycling rooms is provided for convenient disposal by all residents with access via the adjoining lifts.

It is anticipated the bin tug or towing equipment will be stored in the Building E-H recycling room. However, may be stored within any of the 3 disposal points as considered the most operationally convenient as determined by the building operator once operational.

Building management / caretaker will be responsible for the rotation of bins between storage points to ensure convenient access for all residents and maintain disposal capacity.

A secondary bin store, referred to as the bin holding area, is provided and will serve as the collection point; temporarily housing all bins immediately prior to collections.

The collecting contractor will access the central bin holding area for the retrieval of bins for servicing.

The bin storage areas are sufficiently sized to accommodate all of the bins and equipment required for the development as outlined in Table 2.7 and Table 2.8. Additionally, each recycling room is adequately sized to accommodate alternate combinations of bins to cater for Platinum unit tenants or where additional stream separation is provided.

Figure 2.1 to Figure 2.3 shows a potential configuration for each of the chute discharge and recycling rooms provided adjoining each core.

Figure 2.4 depicts the central bin holding area in context with the loading bay.





Figure 2.1: Potential Refuse Storage Area Layouts – Buildings A-B Source: Hayball, Project: BHC Northshore, Drawing: Basement Floor Plan, Drawing Number: DA01.02, Rev: 4



Figure 2.2: Potential Refuse Storage Area Layouts – Buildings C-D Source: Hayball, Project: BHC Northshore, Drawing: Basement Floor Plan, Drawing Number: DA01.02, Rev: 4





Figure 2.3: Potential Refuse Storage Area Layouts – Buildings E-H Source: Hayball, Project: BHC Northshore, Drawing: Basement Floor Plan, Drawing Number: DA01.02, Rev: 4





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Figure 2.4: Central Bin Holding and Servicing Area
Source: Hayball, Project: BHC Northshore, Drawing: Ground Floor Plan, Drawing Number: DA01.03, Rev: 5
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Table 2.12 outlines the refuse storage area design criteria addressed for each storge point in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

Table

able 2.12: Refuse Storage Area Design Requirements
Positioning Considerations
Positioned in immediate proximity or directly accessible to the designated loading point
Storage is provided conveniently accessible to residents for disposal.
Is in a purpose-built storage room which is designed to be unattractive to vermin and used solely for the storage of refuse leaving the site only.
Not located adjacent to or within any habitable portion of a building or place used in connection with food preparation (including food storage).
Is positioned away from entrances to shops or residential premises
Is over 5m from any door, window or fresh air intake within the development or any adjoining site.
Visual Amenity Considerations
Is enclosed on all sides except for the access points to ensure bins are not visible from a public place, neighbouring properties, passing vehicles or pedestrian traffic external to the site.
Is designed to minimise their visual impact on the surrounding areas.
Functional Design Considerations
Is of sufficient size to accommodate the bins with sufficient clearance around the combined bin area
Doors / shutters wide enough to allow for the easy removal of the largest container to be stored.
Permits unobstructed access for removal of the containers to the service point.
The height of the bin storage area allows for waste bins to be opened and closed.
Does not have any steps or lips where bins are required to be moved.
Adequate artificial lighting.
Be fire rated and ventilated in accordance with the National Construction Code – Building Code of Australia.
Bin Washing and Room Cleaning Considerations
A hose cock provided inside each room for cleaning bins and the enclosures.
The walls, ceilings, floors and equipment are to be designed and constructed of impervious material with a smooth finish to allow for easy cleaning.
The floors to be graded to fall to a drainage point.
Drainage points connected to sewer in accordance with trade waste requirements.
Roofed and designed to prevent entry by rainwater.



2.6. Refuse Transfer

Residents will transfer all recyclable materials vertically via the lifts and access the resident recycling room. Building management may consider providing refuse trolleys to assist in the manual transfer of bulky recyclable items. General waste will be transferred vertically via the single refuse chutes.

The building manager or caretaker will be responsible for the transfer of bins between the storage points to ensure all bins are presented to the central bin holding area prior to service and to maintain disposal capacity for residents. A bin tug or alternate suitable mechanical towing aide will be utilised for the transfer of bins from basement to ground level, via the driveway for service. Bins may be 'daisy chained' together for the transfer of multiple bins per trip.

The collecting contractor will collect all bins directly from the central bin holding area and manoeuvre to the RCV lifting mechanism and return after service.

Figure 2.5 illustrates a potential transfer path for the transfer of bins to ground level

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 premise		
Does not have any lips, stairs or steps for bins to be manoeuvred easily.		





Figure 2.5: Refuse Transfer Path

Source: Hayball, Project: BHC Northshore, Drawings: Basement & Ground Floor Plan, Drawing Numbers: DA01.02 & DA01.03, Rev: 4 & 5



2.7. RCV and Bin Servicing Arrangements

All refuse will be collected by rear loading RCV. The site has been designed to be serviceable by Council's appointed collections contractor. However, as a non-strata titled property, is typically classified as a commercial property from a council rates perspective and servicing may be undertaken by private waste collecting contractor.

All RCV's will enter the site via the driveway crossover provided on Karakul Road by performing a single reverse manoeuvre. RCV's will stand in the loading bay during service and exit the site in a forward gear onto Karakul Road once the collections service is complete.

Once the bins have been serviced, the contractor will return the bins to the central bin holding area where building management / caretaker will clean the bins as required and rotate bins between refuse storage areas for everyday use.

Figure 2.6 and Figure 2.7 demonstrates the ingress and egress RCV swept path manoeuvres for a 10.24m rear loading RCV as specified in BSD 3008. Further details on vehicle access and on-site manoeuvring can be found in the transport report submitted with the submission.

The bin servicing area 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.





Figure 2.6: RCV Ingress Swept Path





Figure 2.7: RCV Egress Swept Path



3 Recommended Operational Refuse Management

This section does not contain information relevant for building design assessment.

This section relates to the outcomes and waste management practices of the development during the operational phase as recommended by TTM. It is intended for use as a live document by the end user of the development to assist with the ongoing management of the development.

3.1 Recommended Waste Management for Platinum Level Units

The tenants of Platinum level units require additional design consideration in the relation to accessibility for refuse disposal, this also extends to waste management. As not all potential occupants of Platinum level units will have accessibility requirements, changes to the waste strategy may be implemented as part of an ongoing management process by BHC and building management.

All refuse chute hoppers will be installed to ensure the chute hopper handles are positioned comfortably within the wheelchair accessible height range.

To ensure bins are provided within the accessibility range for wheelchair users, building management will provide additional 240L bins for commingled recycling within the respective recycling room. Building management will also be responsible for ensuring these bins are utilised by Platinum level unit tenants only. Building management will install signage to deter other residents from using bins required for Platinum tenants. Physical means of restriction such as bin locks may also be considered.

Where only a small number of platinum level units are occupied by wheelchair users, building management may instead elect to handle the transfer of refuse from the unit to refuse room on behalf of the tenants.

3.2 Refuse Profile and Stream Separation

Refuse generated by multiple dwelling residential apartments includes a substantial volume of food waste. TTM recommend that food organic waste is separated from the general waste stream. Onsite compositing or organics processing equipment has been considered within the design and an area has been made available within the communal open space for the instigation of composting during the operational phase of the development. Where onsite composting or processing occurs, this must be undertaken through an onsite manager to ensure the correct use.

As servicing may be undertaken by a private collections contractor, TTM recommend where possible the commingled recycling stream is further separated into individual recyclable streams, such as cardboard. Single item recyclable streams offer a higher value recyclable product than achieved through commingled recycling due to material loss and contamination during the commingled recycling process.

TTM recommend that Container Deposit Scheme (CDS) receptacles are also available for resident use, this may provide additional revenue to the development or be donated to charity as a means of promoting buy in to the developments recycling initiatives.



3.2.1 Recommended Refuse Bins and Equipment

A reduced recovery rate is typically observed where equal access is not provided to all refuse streams. Where residents are required to manually transfer one or more streams further than another for disposal, an increased percentage of other streams will be lost to the more convenient disposal option. In this case, the general waste stream as chute disposal provides a more convenient disposal method than commingled recycling or other recommended streams that require manual transfer to the basement. As a result, a reduced uptake of further stream separation is anticipated.

Table 3.1 below outlines the number of bins and additional equipment that may be implemented where an additional level of sustainability and landfill diversion is sought. The recommended level of stream separation may be implemented at any stage during the occupational phase of the site.

These recommendations are provided to assist in the instigation of collection services and provided based on TTM's recommended stream separation.

Services may be provided utilising the refuse storage areas proposed within the development application.

Refuse Stream	Bin / Equipment - Type or Size	Bins Required	Storage Capacity Between Collections
General Waste	1100L	8 + 3 1 to remain beneath each chute discharge during servicing	3 Days
Commingled Recycling	1100L	4	7 Days
Cardboard	1100L	4	7 Days
CDS	240L	3	7 Days
E-waste (Excluding batteries)	1100L	3	Ad Hoc
Mixed Batteries	Countertop Receptacle	3	Ad Hoc

Table 3.1: Recommended Bin Requirements (Total)

Table 3.2 outlines the equipment processing capacity recommended where food organics composting is undertaken on site, processing capacity may be comprised of multiple processing modules.

Additionally, Table 3.2 provides a comparison in number of bins should standard commercial food organics collections be preferred. TTM recommend storage intervals no exceeding two days between services where food waste is separated to prevent potential odour amenity issues.

Table 3.2: Food Organics Processing Capacity

Refuse Stream	Processing Capacity Per Day (Total)			
Food Organics	129kg			
	Bin / Equipment - Type or Size	Bins Required	Storage Capacity Between Collections	
	240L	4	2 Days	



3.3. On-going Management

The tables below relate to a cycle of ongoing implementation, operation, review and amendment of the refuse strategy. These tables are intended to serve as a live document to be completed and updated during the operational phase of the development and therefore intentionally left blank.

Responsibilities will be assigned for all on-going refuse management related activities during the operation of the development. TTM recommend the appointment of dedicated personnel to champion refuse management and sustainability. The following lists (Table 3.3 to Table 3.5) are designed to help manage and assign responsibilities and monitor the refuse operations. On-going management of the refuse strategy will maintain efficient services, a safe environment and improve on sustainability outcomes.

3.3.1. Implementation Phase

Refuse management tasks during the implementation of the refuse strategy are required prior to and during the early stages of building occupancy. An opportunity to revisit these tasks is provided at set intervals with the review of the refuse strategy.

Task	Assigned	Remarks
Verify the as-built form of all refuse related areas. This task does not refer to building certification but is typically undertaken by a specialist waste consultant prior to building certification. This provides an opportunity to identify variances in building form versus design and recommend alternate or mitigating refuse management strategies. This task may also be required during significant building refits or renovation.		
Appoint personnel to oversee or undertake refuse management tasks. A building manager or caretaker is typically appointed undertakes most operational tasks, engaging contractors for specialist tasks.		
Conduct internal safety review. An internal safety review is required to be undertaken to identify potential hazards in the implementation of the refuse strategy and risk mitigation opportunities. This includes the use of any refuse management equipment installed, as well as refuse transfer paths		
Development of policy and procedures Must be undertaken after safety review and abide by all relevant occupational health and safety legislation, regulations and guidelines to ensure site safety for visitors, staff and contractors. Also includes assessment of any manual handling risks and preparation of a manual handling control plan for waste and bin transfers.		

Table 3.3: Implementation Checklist



Task	Assigned	Remarks
Engage refuse collection contractors. Either council's collections contractor or a private contractor must conduct a site visit for the purposes of risk assessing the site prior to conducting services. Contractors must ensure that a full risk assessment of equipment, surfaces and related gradients is complete and procedural documentation is provided to the appropriate personnel. RCV manoeuvrability testing and the establishment of service frequency and timing is also undertaken at this time.		
Install signage in all refuse disposal and storage points. Signage is required to be installed to educate building occupants on location of disposal and refuse storage points. Additionally, to identify the accepted items disposed of in each refuse. The installed signage should be colour coded in accordance with AS 4123.7 – 2006 Mobile waste containers. Examples of signage are provided in the appendices.		
Leasing Agreements All leasing contracts should contain clauses pertaining to waste management arrangements and use of any associated equipment.		
Education and Training. Provision of equipment manuals, induction, training, health and safety procedures, risk assessments and personal protective equipment (PPE) to all staff / contractors associated with all waste management activities in order to control hazards. The step is repeated through the operational phase of the development as required due to changes is users or personnel.		
Consider fit out and move-in refuse. Higher volumes of waste are generated during the initial occupant move-in or final fit out. This typically includes large volumes of cardboard. Additional bins or collections may be required. This also applies to high turnover events and refits or renovation.		
Baseline Refuse Auditing A baseline audit once the development reaches 80% occupancy undertaken by a specialist waste consultant is recommended to identify refuse volumes and stream composition. This information is then used to establish potential recoverable material percentage based on initial waste practices and set recycling rate targets.		



3.3.2. Occupation / Operational Phase

Refuse management tasks during the occupation or operational phase of the development relate to the day to day and business as usual operational tasks that must be undertaken to execute the refuse strategy.

	Table 3.4:	Occupation	/ Operation	Checklist
--	------------	------------	-------------	-----------

Task	Assigned	Remarks
Facilitate disposal from communal areas, public realm and tenancies. Appointed building manager / caretaker is required to transfer refuse generated in communal areas and the public realm to the refuse storage area for final disposal, this includes litter removal.		
Manage rotations of bins to ensure convenient access. Check bin fill levels and rotate / swap bins as required. Sufficient capacity must be provided for the disposal of all streams at all times including reduced personnel on site (such as weekends or public holidays). Where equal access to a refuse stream is not maintained, other streams may be contaminated leading lost resources.		
Manage bin transfers to temporary holding or agreed servicing point. Bins are required to be presented to the temporary holding or agreed servicing point prior to the scheduled service time and ensure the area is free from obstruction. Late bin placement or servicing obstruction may lead to missed bin services.		
 General cleaning. Regular cleaning and maintenance of all refuse management facilities is important to maintain a safe and hygienic environment for visitors, staff and contractors. General cleaning is required for 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 		
Perform spot checks on bin contents and refuse streams. Building management regularly check for correct bin use and stream contamination. Early intervention prevents the development of poor practice and lost resources. Feedback and education is provided to the relevant parties (see below).		
Ongoing education and communication. On-going education is important to ensure people continue to use the facilities as originally intended and to avoid ongoing contamination of recoverable refuse streams. Appointed personnel should be actively involved in education of occupants and encouraging participation in recycling activities. Widespread communication of the achievements of the refuse strategy and areas for improvement encourage participant buy-in.		



3.3.3. Review and Amendment Phase

The review and amendment refuse management tasks relate to tasks undertaken on a routine (e.g. quarterly, bi-annually or annually) or ad hoc basis. At the completion of the review and amendment phase, the cycle restarts with the implementation of the amended refuse strategy.

Tuble 5.5. Review and Ameriament encounse	Table 3.	5: Review	and Amen	dment	Checklist
---	----------	-----------	----------	-------	-----------

Task	Assigned	Remarks
Coordination of specialised cleaning contractors as required. Typical specialised cleaning services may include cleaning internal areas of compaction equipment (if selected); this reduces risk of blockage, odour and risk of fire.		
Maintenance and servicing of refuse management equipment as per schedule. Frequency depends on equipment, building operation and manufacturer specification. Routine maintenance reduces downtime and detrimental impact of unscheduled equipment breakdown.		
Coordination of specialised equipment contractors as required. May extend to ad hoc services requiring specialist equipment such as bulky / hard waste removal.		
Internal safety review. Routine safety reviews are required to identify changes to the site, work practices or legislation that may impact existing policies and procedures. Reviews should include visual inspection of equipment and user PPE. Any policy or procedure updates arising from a safety review must be immediately communicated.		
Audit operational refuse volumes and composition. As similarly undertaken at the beginning of occupancy a review by a specialist waste consultant is recommended to identify refuse volumes and stream composition. This information is then used to establish potential recoverable material percentage and identify opportunities for improvement in refuse strategy. Alternatively, an internal audit may be undertaken by visual inspection during on-site waste management handling activities. For example, cleaners may observe contents of waste receptacles when decanting caddies in larger bins and recording results, this method is less accurate than a comprehensive audit, however, give immediate indicative results and may be undertaken on an ongoing basis.		
Review bin quantities and refuse management equipment. Reviewing bin quantities and equipment is required ensure operational sustainability of refuse volumes and equipment remains fit for purpose. Consideration should be given where alternate equipment may provide improved outcomes. This review may form part of the external audit process (above) as recommendations made.		



Task	Assigned	Remarks
Review service frequency and methodology on 6 monthly intervals with collecting contractor.		
The service frequency and service methodology should be reviewed once development is fully occupied and on rolling 6 monthly basis to ensure the optimum cost efficiency in services provided and explore options for additional services.		
Any potential changes to the bin numbers or bin sizes should be made in liaison with the appointed contractor to confirm cost or contract implications.		
Review of recycling rate target to target continual improvement.		
Once benchmarked performance has been assessed against the existing targeted recycling rate a new target can be established that strives for continual improvement.		
Any changes in targeted recycling rates and the achievements of the refuse strategy should be widely communicated to all uses.		
Update and amend OWMP based on review outcomes.		
On completion of the refuse strategy review the OWMP should be updated to reflect refuse strategy amendments and to enable implantation of refuse strategy.		



Appendix A Council PSP Compliance Checklist



BCC S	C6.26 Refuse Planning Scheme Policy							
Item	Requirement	Compliance / Comment						
Sectio	Section 2 – General Requirements							
(1)	A written design proposal for waste collection is to be provided giving full details of the number of refuse bins and the storage and collection areas.	Details provided in this OWMP.						
(2)	The collection of refuse is to be considered during the planning phase of development. This includes the physical manoeuvring area for the refuse collection vehicle and the bin storage areas and collection points. Access for other road users including pedestrians, cyclists, motorists and other service providers (e.g. postal) is to be maintained.	Considerations provided within this OWMP.						
(3)	Uses with high trip-end densities provide a transport impact assessment report in accordance with the <u>Transport, access, parking and servicing planning scheme</u> <u>policy</u> with an assessment of refuse storage and collection included.	See Traffic Engineering documentation for details.						
(4)	 The waste collection system is to achieve the following outcomes: a. both the customer and service provider can access the bin storage area and collection point conveniently; b. the location, design and operation of the bin storage and collection system do not have unreasonable adverse acoustic, odour or visual impacts on the 	Complies Complies – Collection service will be undertaken wholly on						
	 development, surrounding properties or the streetscape; c. the supply and servicing of either mobile garbage bins or bulk bins or refuse compactors complies with the requirements of this planning scheme policy. 	site. Complies						
Sectio	n 3 - Access and Manoeuvrability							
(1)	If refuse collection is from an on-site bin storage area for multiple dwellings or from mobile garbage bins located throughout a development, the pavement/carriageway trafficked by the refuse collection vehicle is a minimum 6.5m wide.	Complies – 6.5m provided.						
(2)	For detached dwellings on rear lots, pavements/carriageways trafficked by a refuse collection vehicle have a minimum width of 5.5m.	N/A						
(3)	The pavement/carriageway has a minimum crossover width of 6.5m and is free from overhanging gardens or trees.	Complies						
(4)	If the collection point is at the kerbside of the internal private road, it is preferred that mobile garbage bins are placed in front of each dwelling. If there are short dead-end streets off the main internal circulating road, sufficient level areas are to be provided beside the main internal circulating road (near the intersection) for a collection point for the mobile garbage bins required for those dwellings.	N/A						
(5)	Turning and manoeuvring facilities for refuse collection vehicles are provided to meet design requirements for the vehicles identified in Table 3.	Complies – Refer Traffic Engineering documentation						
(6)	Subdivision layouts are to provide for the safe and efficient operation and manoeuvring of a side loading refuse collection vehicle. Layouts that require a refuse collection vehicle to reverse more than two truck lengths are to be avoided. If a temporary turnaround is provided, an easement in favour of BCC for this purpose will be required over any turning area located within private property. The temporary turnaround is to be constructed to a standard that is satisfactory to Council.	N/A						
(7)	Adequate lift clearances are provided to overhanging trees and wires in accordance with Table 3.	Complies						
(8)	 For MGB's, if it is necessary to wheel them to a collection point from a bin storage area: (a) the distance does not exceed 50m; (b) for a retirement facility, the distance does not to exceed 25m; (c) the mobile garbage bin transfer path is free of steps or other obstructions and does not exceed a 1:14 grade. 	N/A						



(9)	In instances where the gradient of the on-site manoeuvring area is greater than 5% (1:20), the pad that the collection vehicle will stand on while accessing refuse bins at the collection point, is to have a maximum gradient of 2% (1:50).	Complies – RCV will stand on a relatively flat grade for servicing.
Sectio	n 4 - Residential Refuse Collection	
(1)	Residential development is to provide sufficient capacity for 240L of refuse and 240L of recycling per dwelling, allowing for one collection per week.	Generation rates sourced from SHDG toolkit
(2)	Residential development is to utilise kerbside collection where the locations for both the bin storage area and kerbside collection point can be appropriately accommodated in accordance with section 4.1.	N/A – Greater than 10 dwellings.
(3)	 a) On-site collection of bulk bins is provided for development comprising greater than 10 dwellings. b) the development comprises greater than 10 dwellings; or where the road verge is not properly shaped to the standard 1:50 gradient and a minimum of 2.5m wide or where the longitudinal road gradient is greater than 1:10. 	Complies
(4)	Refuse and recycling collection for a mixed-use development ensures residential and commercial bins are stored separately with separate access to each.	N/A Residential site only.
Sectio	n 4.1 - Kerbside Collection (MGB's) – Greater than 10 dwellings, Kerbside collection is not pro	oposed
Sectio	n 4.2 – On-site Collection (Bulk Bins) – This section applies to Residential services	
(1)	In accordance with section 4, development will avoid adverse impacts to residents, pedestrians and roads users by limiting the number of collections required per week while ensuring sufficient refuse and recycling capacity is provided to meet the needs of residents. Table 1 provides details of bulk bin volumes and the number of standard 240L kerbside bins their capacity is equivalent to. These are to be used when identifying the required refuse arrangements.	Complies
(2)	The type of refuse service that is to be used (domestic or commercial) is identified, including whether the refuse collection vehicle is to be front loading, side loading or rear loading (sufficient height must be available).	Complies – Domestic refuse serviced by rear loading RCV.
(3)	A written design proposal for waste collection is to be provided, giving full details of the proposed system, bin sizes, number of bins, storage and collection areas, frequency of collection and the refuse collection vehicle size. Table 2 provides the dimensions and types of bulk bins.	Complies
(4)	The manoeuvring of the refuse collection vehicle is undertaken in a safe and efficient manner, without detrimental impacts to pedestrian amenity or safety, Council or private infrastructure or the function of the road network.	Complies
(5)	For multiple dwelling developments fronting a local, neighbourhood, district or suburban road, the RCV may enter the site in a reverse gear in a single movement. An onsite dedicated pedestrian route is provided and is separate from the required vehicle manoeuvring area to ensure pedestrian safety is protected. The pedestrian route is to provide access from the site's frontage to the development and will have a minimum width of 1.2m. The refuse collection vehicle is to leave the site in a forward gear.	Complies – Single reverse entry maneourve proposed.
(6)	For multiple dwellings developments fronting an arterial road, or where the refuse collection vehicle cannot reverse onto the site in a single movement, the refuse collection vehicle must enter and leave the site in a forward gear.	N/A
(7)	All entry and exit points are of a width and design that allows for sufficient ingress and egress for the refuse collection vehicle including a 6.5m crossover.	Complies
(8)	To maximise safety, the distance required for refuse collection vehicles to reverse on-site is minimised. Where on-site turnaround of the refuse vehicle cannot be achieved, the bin storage area and collection point is located within 30m of the street frontage.	Complies – Minimal reversing required.
(9)	Access for a refuse collection vehicle to the collection point is maintained at all times.	Complies - Loading in dedicated bay.



(10)	The required vertical and horizontal clearances are provided for the service to operate safely and efficiently. Operational clearance dimensions are shown in Table 3 for various types of collection arrangements.	Complies
(11)	Bulk bins of 1.1m ³ or less are positioned so that collection personnel do not have to move them more than 5m. If a gradient is evident, speed bumps are provided to stop bulk bins from rolling away from the collection point.	Temporary storage room located within 5m of RCV.
(12)	Bulk bins of 1.5m ³ or more are positioned so that front-lift refuse vehicles can drive directly to the container without relocating the bulk bin. If this cannot be achieved due to physical constraints, then the bulk bins are not moved more than 3m from the storage to the collection point.	N/A – 1.1m ³ bins proposed.
(13)	The storage areas for bulk bins are: (a) contained in an enclosure or room of sufficient size for the bulk bin quantity required; (b) easily accessible for residents and for the required servicing of bins; (c) screened from neighbouring properties for odour, amenity and noise; (d) protected from the environment; (e) provided with natural or temperature-controlled ventilation if in an enclosed room; (f) kept clear of obstructions, such as fixed bay separators, that impede the ability to change from existing bin sizes or which otherwise limit future refuse collection options; (g) kept clear of other amenities such as air-conditioning units, hot water systems or electrical hubs where located in a bin room.	Complies
(14)	If a refuse or recycling chute is provided: (a) it is to be constructed to allow refuse to fall into the centre of the bin; (b) it is to have a door / lid to ensure clean changeover of bins; (c) separate chutes and bulk bins are to be used for each waste stream; (d) the room containing the chute and bin or compactor excludes all but authorised personnel.	Complies
(15)	Environmental best practices may also include the installation of a trapped waste connection to the sewer system and providing a roof canopy over the designated storage area.	Complies
Sectio	n 5 – Non-Residential Refuse Collection – N/A Residential Site Only	



Appendix B Site Plans and Swept Path Analysis





Project Title

BHC Northshore Lot 1 Karakul Rd, Hamilton, QLD 4007



Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the precedence over scaled work. Work shall also conform to the required architectural services. © Copyright 2008 All rights reserved



HEDULE	MOTORBIKE	SCHEDULE
NO.	LEVEL	NO.
81	HALF BASEMENT	10
	TOTAL: 10	

NO.

2 DA06.02

DateDescription15.05.2024For Coordination Drawing Title Date Drawn By Author Canberra
 Level 5,
 Level 1,

 293 Queen Street,
 33 Allara Street,

 Brisbane Qld 4000
 Canberra ACT 2601

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 T +61 2 9660 9329
 Checker Checked By 31.05.2024 QS Issue BASEMENT FLOOR PL Date Printed 25/06/2024 9:42:53 AM 3 07.06.2024 For Coordination Scale 1 : 200@ A1 4 14.06.2024 For Coordination 5 21.06.2024 For Coordination

	Status	Project No	Drawing No	Revision
AN	DA	2714	DA01.02	5



Project Title

BHC Northshore





Melbourne	Sydney	Brisbane	Canberra	Drawn By	Author		Rev	Date	Description	Drawing Title
Level 1	Ground Floor	Level 5,	Level 1,	Checked By	Checker		1	15.05.2024	For Coordination	
250 Flinders Lane	11-17 Buckingham Street	293 Queen Street, Brisbane Old 4000	33 Allara Street, Capherra ACT 2601	Date Printed	25/06/2024 9·43·04 AM		2	31.05.2024	QS Issue	
T +61 3 9699 3644	T +61 2 9660 9329	T +61 7 3211 9821	T +61 2 9660 9329	Date Finited			3	07.06.2024	For Coordination	GROUND I LOOK I LAN
				Scale	As Indicated@ A1	0 1 2 2 5	4	14.06.2024	For Coordination	
ABN: 84006394261 N David Tordoff 8028 Fit	SW Nominated Architects:Ton	n Jordan 7521,Richard L	eonard 7522,				5	21.06.2024	For Coordination	
David Toldon 6026, nona roung 7014				m						

Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the precedence over scaled work. Work shall also conform to the required architectural services. © Copyright 2008 All rights reserved

Status	Project No	Drawing No	Revision
DA	2714	DA01.03	5



Project Title

BHC Northshore





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Ground Floor 11-17 Buckingham Street Surry Hills NSW 2010 T +61 2 9660 9329

Level 1 250 Flinders Lane Melbourne VIC 3000 T +61 3 9699 3644

Brisbane Canberra Level 5, 293 Queen Street, Brisbane Qld 4000 Level 1, 33 Allara Street, Canberra ACT 2601 T +61 7 3211 9821 T +61 2 9660 9329 m Jordan 7521,Richard Leonard 7522,	Drawn By Checked By Date Printed Scale	Author Checker 25/06/2024 9:43:14 AM As indicated@ A1	Rev 1 2 3 4 5	Date 15.05.2024 31.05.2024 07.06.2024 14.06.2024 21.06.2024	Description For Coordination QS Issue For Coordination For Coordination For Coordination For Coordination	Drawing Title LEVEL 1, 2 & 3 FLOOR (TYPICAL)
1 Jordan 7 52 1, Richard Leonard 7 522,			5	21.06.2024	For Coordination	

	Status	Project No	Drawing No	Revision
PLAN	DA	2714	DA01.04	5



REVERSE IN ENTRY MOVEMENT



	PROJECT NUMBER	ORIGINAL SIZE
ON	23BRT0694	A3
	DRAWING NUMBER	REVISION
	23BRT0694-02	А
:	DATE	SHEET
-	27 Jun 2024	1 OF 2



FORWARD OUT EXIT MOVEMENT



	PROJECT NUMBER	ORIGINAL SIZE
N	23BRT0694	A3
	DRAWING NUMBER	REVISION
	23BRT0694-02	А
	DATE	SHEET
-	27 Jun 2024	2 OF 2
	2, 341 2021	2012



Appendix C Systems and Specifications



C.1 Specified Refuse Management Equipment

The table below provides contextual examples of the specific equipment types specified in this OWMP and is not intended to provide an exhaustive list of all potential options of the required equipment.

Bin / Equipment Types	Waste Streams	Examples	Information
Residential unit bins	General waste and recycling		Various options and sizes. Built and standalone bin available. Examples: <u>https://www.bunnings.com.au</u>
Communal area bins	General waste, recycling, food waste, paper / cardboard		Various options and sizes available. To be supplied depending on preference and space available. Examples: <u>https://www.sourceseparation-</u> <u>systems.com.au-/product/multisort</u> <u>https://methodrecycling.com/au/</u>
240L bins (Platinum Unit Tenants)	General waste, paper, recycling, green waste		Dimensions approx. 740 x 580 x 1080mm (L x W x H) (dimensions may depend on contractor) Examples: <u>http://www.justwheeliebins.com.au</u> , <u>http://wheeliebinsonline.com.au</u>
1100L bins	General waste, recycling, paper / cardboard	SULO	Dimensions approx. 1070 x 1240 x 1330mm (L x W x H) (dimensions depend on contractor) Examples: <u>http://www.justwheeliebins.com.au,</u> <u>https://www.australianwaste</u> <u>management.com.au</u>
Single Refuse Chute System	General waste, recycling, food waste		Refuse disposal in multi-storey buildings through refuse chutes options include: single chute for waste only, or single chute with diverter system or dual chute for disposal of waste and recycling Examples: <u>https://www.wastech.com.au</u> /products/chutes <u>https://www.elephantsfoot.com.au</u> /products/chutes



Bin / Equipment Types	Waste Streams	Examples	Information
Linear Conveyor	General waste, recycling, food waste		Automated bin rotation (e.g. linear or carousel) to manage bin fill level and prevent overflow under chutes Example: <u>https://www.elephantsfoot.com.au</u> /products/compactors/carousel-linear <u>https://wastech.com.au</u>
Bin Tug / Bin Towing equipment	All Streams		Used to assist with the manual transfer of refuse. Includes the use of any container with capacity to carry 20kg or more, pushed or towed by mechanical or electrical self- propelling equipment. Examples: <u>http://ev.spacepac.com.au/</u> <u>categories/tugger</u> , <u>https://www.spacepac.com.au/</u> <u>product/wheelie-bin-aluminum-steel-trailers</u>
Chute Discharge Compaction (Optional)	General waste		Compactors designed for integration with the refuse chute to minimise the volume of general waste. Examples: <u>https://www.elephantsfoot.com.au</u> <u>/products/compactors/carousel-linear</u> <u>https://wastech.com.au</u>
Organics Household Composting, Worm Farm, Digesters (Optional)	Food waste / organics		Organics / food waste separation, composting and digesting; household-type and commercial grade equipment available. Examples Ecoguardians Soilfood <u>https://www.ecoguardians.com.au/soilfood- /soilfood</u> Urban Composter <u>https://www.urbancomposter</u> .com.au Worm Farm <u>https://wormsdownunder.com.au/products- /wormmod</u>
Refuse / Cleaners Trolleys (Optional)	All Streams		Assisted manual transfer of refuse Examples: <u>https://rubbermaidcommercial</u> .com.au/products/waste-management/mega- <u>brute</u> <u>https://www.materialshandling</u> .com.au/products/deluxe-compact-cleaning- carts



Bin / Equipment Types	Waste Streams	Examples	Information
Counter-top E-Waste Recycling (Optional)	Electronic Waste		Prepaid battery collection Example: <u>https://envirostream.com.au/product/prepaid-</u> <u>countertop-battery-recycling-box/</u> <u>https://www.ecoactiv.com.au/product/4l-</u> <u>battery-recycling-prepaid-service/</u> Toner cartridge collection <u>https://zerowasteboxes.terracycle.com.au-</u> /products/ink-and-toner-catridges-zero-waste- <u>boxes</u>



Appendix D Refuse Signage



D.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



D.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



WASTE



Appendix E 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 1.00m ³ to 4.50m ³ 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	m²	Square metre(s) related to refuse areas.
Ton	Т	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.