

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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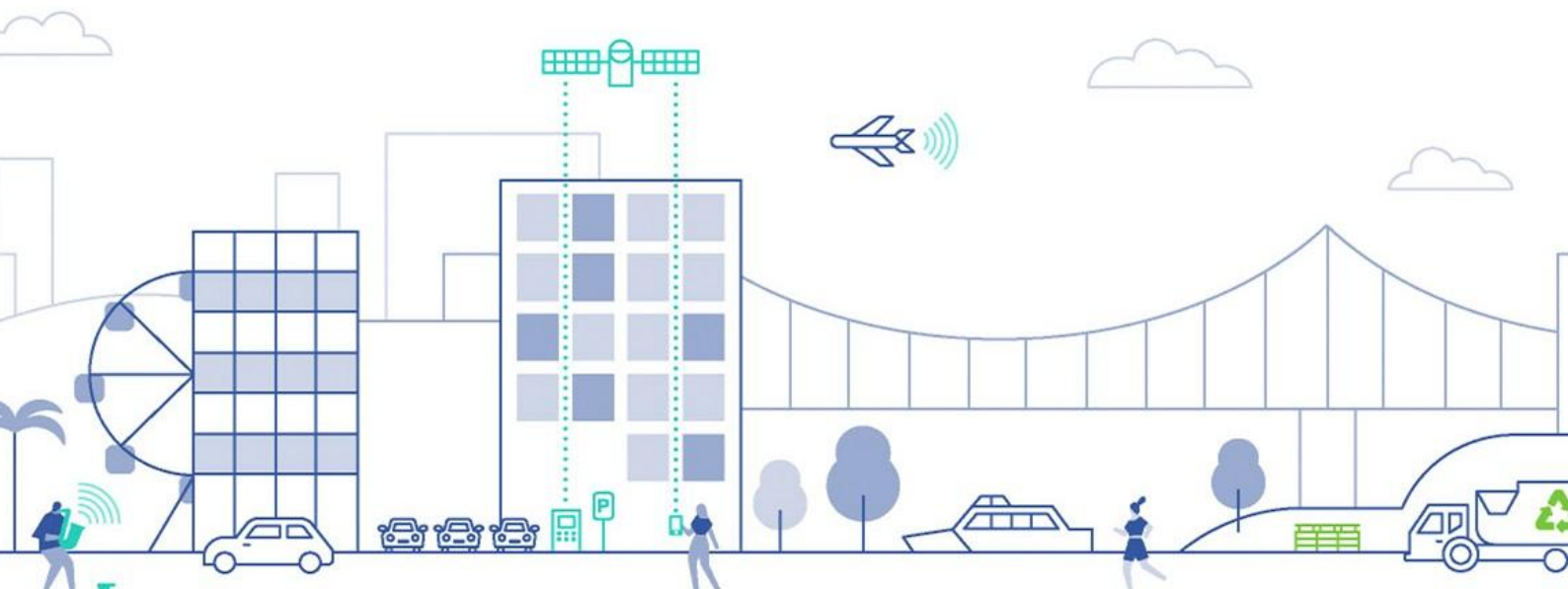


Operational Waste Management Plan

Proposed Mixed-use Development

At Lot 18B, 260 Macarthur Avenue, Hamilton

On Behalf of Silverstone Developments





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Revision Record

Issue No.	Author	Reviewed/Approved	Development Stage / Revision Description	Date
1.	N. Lee	S. Kenny	Schematic Design – Draft	25/02/2025
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1 Introduction

1.1. Background

Colliers International Engineering & Design (TTMC) has been engaged by Silverstone Developments to prepare an Operational Waste Management Plan (OWMP) to support a proposed mixed-use development located at Lot 18B, 260 Macarthur Avenue, Hamilton. It is understood this OWMP will accompany a change application for an approved Development Application by Economic Development Queensland (EDQ), approval reference DEV2025/1602.

The changes to the scheme and this OWMP are primarily contained in Section 2 and relate to an amendment of residential yield and the addition of non-residential uses. The revised yield is detailed in Section 1.4.

1.2. Client Brief and Scope

The proposed development seeks to address planning assessment benchmarks in providing a deemed to satisfy waste management strategy. Additionally, a strategy that is as convenient as possible for residents, tenancy staff and servicing contractors while minimising ongoing building management intervention.

The content of this OWMP is intended to provide information on the typical movement of waste streams from generation to collection. Refuse management information is provided for all uses across both buildings 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.

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 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

1.3. Site Analysis

The site is located at 260 Macarthur Avenue, Hamilton and is formally described as Lot 6 on SP 326594 as depicted in Figure 1.1.

The site is located within the *Mixed-use high-density sub area 4* of the Northshore Hamilton Priority Development Area (PDA).

The site has frontages on Macarthur Avenue, Barcham Road and Karakul Road with a proposed volumetric easement to the east of the development site. All service vehicular access for the site will occur via Barcham Road.

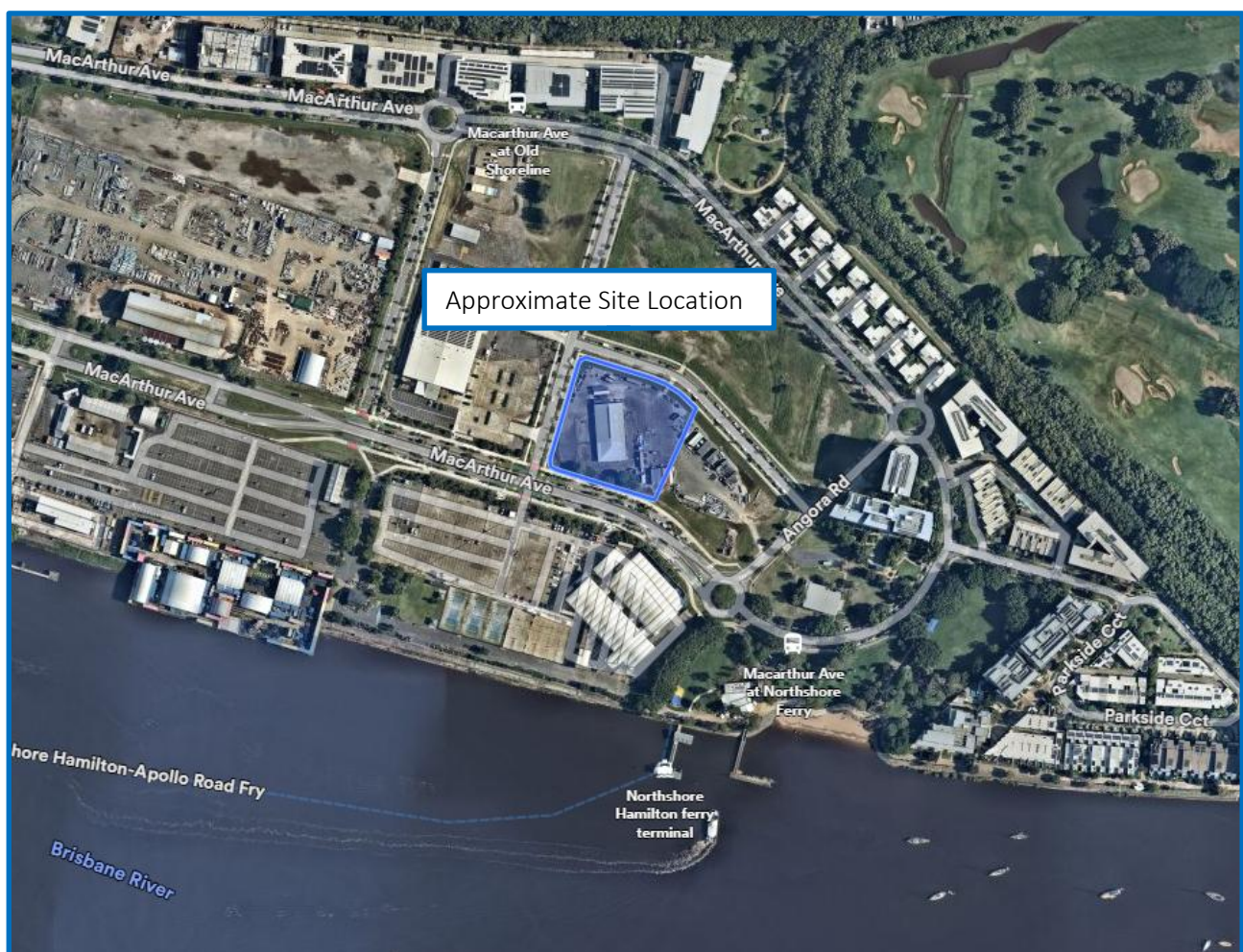


Figure 1.1: Site Location

Source: Nearmap, Image Dated 08/12/2024

1.4. Site Statistics

The proposed residential-led mixed-use development comprises two buildings situated above a common podium and basement, which accommodate car and bicycle parking for both buildings. The ground floor of the shared podium features various non-residential tenancies. Podium sleeve apartments are located on both podium Ground Level and Level 1.

The buildings are referred to as Building 1, located at the geographic south of the site and Building 2, located to the geographic north of the site.

The tenancy and use mix of the non-residential tenancies is based on the targeted tenancy mix identified by the client and detailed in Section 2.2.2, for complete details on non-residential tenancy uses subject to this application refer to the submitted town planning documentation.

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

AREA SUMMARY			
SITE AREA		6623	
GFA ABOVE GROUND		29791.4	
PLOT RATIO		4.50	
TOTAL NLA		596.1	
TOTAL INDOOR AMENITIES		371.8	
TOTAL OUTDOOR AMENITIES		2533.3	
TOTAL CARSPACES		470	
TOTAL BIKE SPACES		276	

LEVEL	TYPE	AREA PER LEVEL			PODIUM			BUILDING 1			BUILDING 2			TOTAL APARTMENTS			TOTAL
		Gross Floor Area (GFA)	PRIVATE OPEN SPACE (POS)	Net Letting Area (NLA)	1B	2B	3B	1B	2B	3B	1B	2B	3B	1B	2B	3B	
		sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	sqm	
Basement 01	CAR PARKING	-	-	-													
Ground Level	RESIDENTIAL / RETAIL	748.5	114	596.1		5		0	0	0	0	0	0	0	5	0	5
Level 01	RESIDENTIAL	1087.8	256			10		0	0	0	0	0	0	0	10	0	10
Level 02	RESIDENTIAL	2120.1	465.5					1	3	6	4	0	6	5	3	12	20
Level 03	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 04	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 05	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 06	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 07	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 08	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 09	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 10	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 11	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 12	RESIDENTIAL	2144.5	369.4					1	3	6	2	2	6	3	5	12	20
Level 13 / Building 2	RESIDENTIAL / COMMUNAL / PLANT	1097.5	226.3					1	3	6	0	0	0	1	3	6	10
Roof-top	RESIDENTIAL	1097.5	226.3					1	3	6	0	0	0	1	3	6	10
Level 14	RESIDENTIAL	1097.5	226.3					1	3	6	0	0	0	1	3	6	10
Level 15	RESIDENTIAL	1097.5	226.3					1	3	6	0	0	0	1	3	6	10
Level 16	RESIDENTIAL	1097.5	226.3					1	3	6	0	0	0	1	3	6	10
Building 1 Roof-top	COMMUNAL / PLANT	114.9						0	0	0	0	0	0	0	0	0	0
Totals		29791.4		596.1	0	15	0	15	45	90	24	20	68	32	80	156	275

Mix Breakdown			
1B	2B	3B	TOTAL
39	80	156	275
14%	29%	57%	

Figure 1.2: Development Summary Extract

Source: Plus Studio, Project: Site 18 Hamilton, Drawing: 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. Colliers has referred to the requirements of Section 2.5.5.4 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 2.1.2.

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

Table 2.1: OWMP Development Scheme Checklist

Northshore Hamilton PDA Development Scheme – November 2025		
Item	Requirement	Compliance / Comment
Section 2.5.5.4 – Waste Management		
Development:		
(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 will be provided in all refuse storage locations.
(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 – Shared loading point with storage located within fully enclosed dedicated rooms within both buildings.
(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, integrated into buildings, not visible from the public realm.

2.1.2. 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, this plan has been prepared to generally align with BCC's refuse requirements of SC6.26 Refuse Planning Scheme Policy (PSP) v31 as the version relevant at the time of the original submission. Note v36 of the Refuse PSP does not contain any changes of relevance to this OWMP.

Additionally, AO2 / PO2, AO63.1, AO63.2 / PO63 of the Centre or mixed use code and AO8.1, AO8.2 / PO8 of the Infrastructure design code.

Colliers has referred to BCC's 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 volumes utilised for the calculation of the required residential refuse storage areas are based on Brisbane City Council's standard rated entitlement. The entitlement is unchanged from the freestanding dwelling rate regardless of dwelling size. The rated entitlement applied to refuse calculations below is a requirement for development consent and not reflective of actual refuse generation.

Similarly, the refuse volumes utilised for the calculation of the required non-residential refuse storage areas are based on the rates prescribed by Brisbane City Council. As a retail centre a mixture of generation rates have been applied in line with the targeted tenancy schedule identified by the client. Refer to Figure 2.1.

A 7-day trading week has been assumed for all non-residential tenancies.

Table 2.2 outlines the standard refuse generation rates applied to the calculations in Table 2.3, Table 2.4 and Table 2.5.

Table 2.2: Refuse Generation Rates

Generation Rate	Applied To	Measure	General Waste	Recycling	Days of Operation
Residential	All Residential Units	L / Unit / Week	240	240	N/A
Food and Drink Outlet (if less than 150 m ²)	All Food and Beverage Tenancies	L/100m ² /Day	300	200	7
Hairdresser/Barber	Barber Tenancy	L/100m ² /Day	60	60	7
Retail (non-food)	Liquor Store Tenancy	L/100m ² /Day	25	200	7
Specialised Grocer	Greengrocer Tenancy	L/100m ² /Day	240	120	7

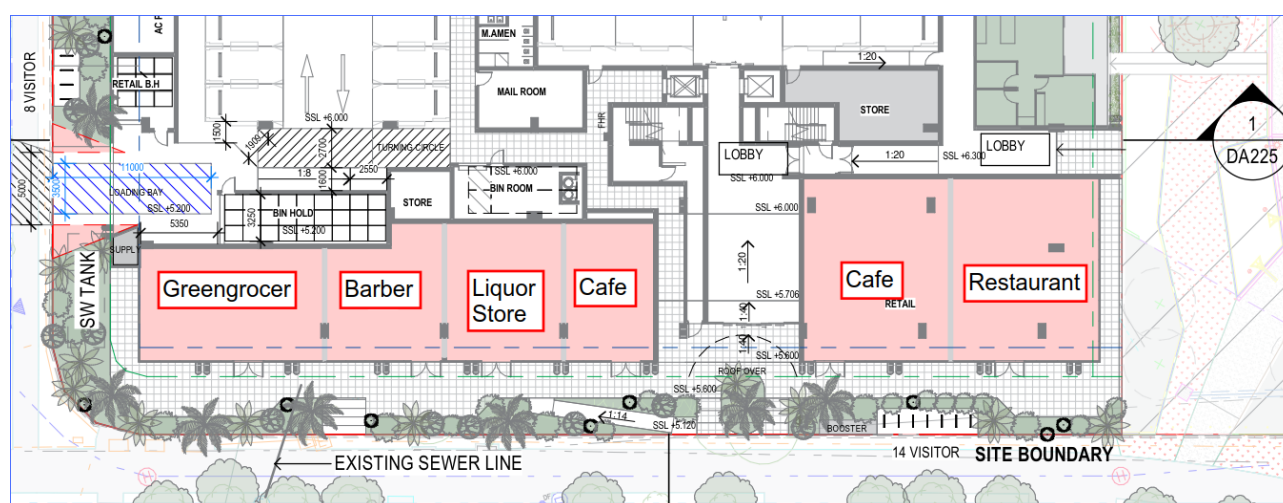


Figure 2.1: Targeted Tenancy Breakdown

Source: Plus Studio, Project: Site 18 Hamilton, Drawing: Overall Floor Plans – Ground

2.2.1. Residential Refuse Calculations

A residential collection frequency of 3 times per week has been established for both general waste and commingled recycling in line with comparable developments within the broader BCC area and as approved by BCC.

Table 2.3 and Table 2.4 outline the refuse generation volumes for each building which form the basis for waste storage area design and sizing.

Note for the purposes of the calculations below, the podium sleeve apartments have been attributed to Building 1.

Table 2.3: Refuse Calculations Building 1

Area Description	Measure	Quantity	General Waste L/Week	Commingled Recycling L/Week
Residential Apartments	Unit	165	39,600	39,600
Total Weekly Volumes Compacted (L / Week)			13,200*	N/A
Volumes per Day (L / Day)			1,886*	5,657
Volumes per Collection (L / Collection)			4,400*	13,200
Collection and Equipment Details	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
	Equipment Size		1,100L	1,100L
	Equipment Quantity Required		4.00	12.00
	Equipment Quantity Provided		4 + 1	12 + 1

*Compaction ratio of 3:1 used for calculation purposes

Table 2.4: Refuse Calculations Building 2

Area Description	Measure	Quantity	General Waste L/Week	Commingled Recycling L/Week
Residential Apartments	Unit	110	26,400	26,400
Total Weekly Volumes Compacted (L / Week)			8,800*	N/A
Volumes per Day (L / Day)			1,257*	3,771
Volumes per Collection (L / Collection)			2,933*	8,800
Collection and Equipment Details	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
	Equipment Size		1,100L	1,100L
	Equipment Quantity Required		2.67	8.00
	Equipment Quantity Provided		3 + 1	8 + 1

*Compaction ratio of 3:1 used for calculation purposes

2.2.2. Non-residential Refuse Calculations

A non-residential collection frequency of 3 times per week has been established for both general waste and commingled recycling. This represents the maximum permissible service frequency for non-residential uses within a 'Mixed use' zone, as specified in Table 2 – Non-Residential Service Frequency Requirements of the Refuse Planning Scheme Policy (PSP).

Table 2.5: Non-residential refuse calculations

Area Description	Measure	Quantity*	General Waste L/Week	Commingled Recycling L/Week
Greengrocer	GFA (m ²)	99	1,660	830
Barber	GFA (m ²)	69	288	288
Liquor Store	GFA (m ²)	77	134	1,070
Café (western tenancy)	GFA (m ²)	59	1,229	819
Café (eastern tenancy)	GFA (m ²)	126	2,645	1,763
Restaurant	GFA (m ²)	129	2,713	1,809
Total Weekly Volumes (L / Week)			8,668	6,579
Volumes per Day (L / Day)			1,734	1,316
Volumes per Collection (L / Collection)			5,201	3,948
Collection and Equipment Details	Collections per Week		3	3
	Storage Capacity		3 Days	3 Days
	Equipment Size		1,100L	1,100L
	Equipment Quantity Required		4.73	3.59
	Equipment Quantity Provided		5	4

*Approximate individual tenancy GFA based on measurements of architectural drawings. Minor discrepancies in the exact area of each tenancy possible.

2.3. Refuse Bin, Equipment Requirements and Specification

Table 2.6 and Table 2.7 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 or over time according to evolving waste streams and occupant cohort, bin numbers and sizes may need to be altered to suit the building operation and occupant needs.

Table 2.6: Combined Total Bin Requirements

Component	Refuse Stream	Bin / Storage – Size or Type	Number Required
Residential	General Waste	1,100L	7 + 2 1 to remain beneath the chute discharge of each building during servicing
	Commingled Recycling	1,100L	20 + 2 1 to remain beneath the chute discharge of each building during servicing
Non-residential	General Waste	1,100L	5
	Commingled Recycling	1,100L	4

Table 2.7: Additional Equipment

Component	Description	Quantity	Capability / Specification - See <i>Appendix A</i> for further details
Residential	Individual unit bins - Stream separated receptacles	550	A minimum of 1 receptacle for each stream is required in each unit.
	Dual Refuse Chutes	2 (1 per building)	Co-located refuse chutes for the disposal for general waste and commingled recycling. Disposal points provided on each habitable level. One chute system in each tower. Colliers recommends a 600mm chute diameter for commingled recycling applications.
	Integrated Chute Discharge Compactor	2 (1 per building)	For use with general waste only. Will have a capacity to achieve an average compaction ratio of 3:1. <i>Elephant's Foot Ceiling Mounted Chute Compactor used for architectural design purposes. Model with equivalent capabilities may be installed.</i>
	2-Bin 1,100L Linear Bin Rotation System	2 (Building 2)	Automates bin rotation beneath the chute discharge for both general waste and commingled recycling in each building. Reduces the overall level of building management intervention required. <i>Elephant's Foot 2 Bin Conveyor used for architectural design purposes. Model with equivalent capabilities may be installed.</i>
	3-Bin 1,100L Linear Bin Rotation System	2 (Building 1)	Automates bin rotation beneath the chute discharge for both general waste and commingled recycling in each building. Reduces the overall level of building management intervention required. <i>Elephant's Foot 3 Bin Conveyor used for architectural design purposes. Model with equivalent capabilities may be installed.</i>
Non-residential	Individual stream receptacles	TBD	Receptacles for the immediate disposal of refuse into separate streams. Typically, bins typically up to 60L in volume placed BoH in central bin stations. Further details in Section 2.4.1.
	Used cooking oil storage	TBD (If required)	Required where food and beverage tenancies utilise fry vat equipment. Portable storage tank stored BOH of each relevant tenancy.

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 relatively low volumes, and where minimal provision for storage can be easily managed by collection frequency and ad hoc storage arrangements.

2.4.1. Frequently Generated Refuse

Table 2.8: Disposal of Frequently Generated Waste

Refuse Stream	Disposal Details
WASTE	
General Waste	Residential Space for bins to store one day's worth of generated refuse will be provided in each residential apartment. Each day or as required, general waste will be transferred by residents to the general waste side of the dual chute access hoppers on each habitable residential level in each building. The refuse chute will discharge directly into the bulk bins stored in the chute discharge room. The chute hopper doors will be colour-coded for easy identification and to support the separation of refuse streams. Instructions on the use of the chute system and accepted items in each stream will be required to be included in the resident apartment manual. Ground floor residents will directly access the nearest refuse room for the disposal of all refuse. Waste bins should always be lined with bags and the bags tied before removal. Operationally, bins used for general waste should be limited to 30L or less and not exceed the dimensions of the chute hoppers. Bins are typically positioned in a cupboard beneath the kitchen sink. Waste bins should be accompanied by a commingled recycling bin in order to facilitate separation of general waste and recycling. Receptacles will be placed in all communal areas where refuse will be generated such as the common amenity podium 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 disposal of all refuse generated in communal areas. Food and Beverage Tenancies Café / restaurant waste will be captured by bins typically ranging in size from 30L to 90L that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the cafe or restaurant operators. All waste bins should be lined with bags and the bags tied before removal. After each service or between peak operating periods, waste will be transferred by staff to the non-residential refuse room and placed / decanted into (bulk) bins. Carts or trolleys may be used for transfer if required, e.g. to transport multiple bags or types of refuse at the same time. Retail and Barber General waste from non-food retail outlets should be disposed in small (generally up to 60L) bins located within the building as required, e.g. in staff rooms, offices etc. After each service 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. Greengrocer For general waste, bins of at least 60L capacity should be located in staff areas. Larger bins can 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. Depending on the operational requirements of the store, general waste from convenience stores may contain food waste. If large quantities are produced, organic material should be collected separately as per Organics (Food) Waste section. After each day of operation or between peak operating periods, waste will be transferred by staff / cleaners to the non-residential refuse room and placed / decanted into (bulk) bins.

Table 2.9: Disposal of Frequently Generated Recoverable Material

Refuse Stream	Disposal Details
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 for either the residential or non-residential components. While BCC does not currently offer a food organics collection service to multiple unit dwellings, commercial options are available at additional cost. Alternatively, domestic composting 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 (in residential kitchens) or bins less than 60L (in commercial kitchens) should be used in, for disposal of food waste. The bins are then transferred to the respective 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.
RECYCLING	
Commingled, including • glass • aluminium • steel cans • tins • cardboard • semi rigid plastics	Residential 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 recycling chute hopper of the dual refuse chutes on each habitable level. The refuse chute will discharge directly into the appropriate bulk bin stored in the chute discharge room in each building. The chute hopper doors will be colour-coded for easy identification and to support the separation of refuse streams. Instructions on the use of the chute system and accepted items in each stream will be required to be included in the resident manual. Ground floor residents will directly access the nearest residential refuse room for the disposal of all refuse. Residents will access the central refuse storage room directly for disposal of all oversized recyclable materials, lifts will be utilised for vertical transfer. 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. Food and Beverage Café / restaurant recycling will be captured by bins typically ranging in size from 30L to 120L that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the cafe operators. After each service or between peak operating periods, recycling materials will be transferred by staff to the refuse room and placed into comingled recycling (bulk) bins. Carts or trolleys may be used for transfer if required, e.g. to transport multiple bags or types of refuse at the same time. Items for recycling must not be bagged and disposed in loose form. Retail and Barber There will be receptacles within the retail outlet for collection and storage of at least one day of recycling. Recycling bins are typically placed next to the general waste bin. Recycling bins will usually be used for all recycling materials (comingled recycling). However, cardboard, paper, plastics, glass etc. can be collection separately if required. Items for recycling must not be bagged and disposed in loose form. Recyclable materials should be carried /transported from the individual receptacles within the premises to the bin in the refuse room by staff. 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. If common recycling bins are placed on each level, staff are required to transport the recycling material to the bulk bins in the refuse room.

Refuse Stream	Disposal Details
	Greengrocer There will be receptacles within the staff and public areas of the shop 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 (comingled recycling). However, depending on the operational requirement of the store, large amounts of cardboard and plastic packaging material (e.g. 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. Recyclable materials should be carried / transported from the individual receptacles within the premises to the bin in the refuse room by staff. 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 point. Storage space or dedicated bins within the units or refuse rooms can be provided.

2.4.2. Infrequent Waste

Table 2.10: 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 pasteurised as outlined in <i>AS 4454-2003 Composts, soil conditioners and mulches</i>.
Hard Waste / Bulky Goods	Residential Hard waste collections will be coordinated in line with BCC'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. Non-residential The non-residential tenancies will utilise the bulk bins provided for bulky waste disposal or make other coordinated collection arrangements where items are unsuitable for bulk bin disposal or where significant volumes are generated such as during tenancy refits.
Hazardous Waste - Batteries	Batteries are highly volatile and must be disposed of separately and never in the general waste or comingled recycling bins. Colliers recommend a communal disposal point is provided by site management and located in the main lobby of each building or alternate easily accessible location for use by residents with a secondary disposal point within the non-residential bin store for tenancy staff use.
Hazardous Waste (paints, chemicals) Electronic Waste	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 stored within bins housed within dedicated refuse storage areas. All refuse storage and servicing areas are provided on Ground Level.

2.5.1. Residential refuse storage areas

A chute discharge room is provided directly beneath the chute termination in each building. The chute discharge rooms are designed to house the chute discharge equipment including bin rotation and compaction equipment required for each building as detailed in Table 2.7. The chute discharge in Building 2 will be separated by an internal partition. The internal partition may be constructed of either solid wall, chain mesh or equivalent. This partition is to provide an accessible location for the residents of ground floor units to dispose of refuse.

Access to the chute discharge rooms will be restricted to building management or approved personnel only via the restricted distribution of keys / fobs and signage. Colliers recommend that a lock-out function be installed on the chute hopper doors where the chute hopper door cannot be accessed when the chute discharge room doors are opened. Installing a chute lock-out function assists in reducing potential for injury to the building manager / cleaners by unexpected falling objects.

A secondary bin store is provided in Building 1, referred to as the 'Bin Hold' room on architectural drawings provides the storage of the combined total of all residential bins required for both buildings between services and will also serve as the collection point. The secondary bin store is located at the same grade as the loading bay.

The use and distribution of bins between the 2 buildings will be managed by building management as required. 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.

Residents from the levels above ground in both buildings will also access the secondary bin stores for the disposal all refuse materials not suitable for chute disposal.

The collecting contractor will access the Bin Hold for the retrieval of bins for collections servicing.

The Bin Hold is sufficiently sized to accommodate all of the bins required for the development as outlined Table 2.6. The broader loading bay area is also sufficiently sized to temporarily hold at least 9 x 1,100L bins and represents one row of bins from the Bin Hold. This additional space within the loading bay will be used for the manoeuvring and temporary storage of bins during collections removing the need for additional space within the Bin Hold.

Figure 2.2 illustrates both the configuration for each of the chute discharge rooms as well as the general loading bay area with bins removed from the Bin Hold and temporarily held in the loading bay.

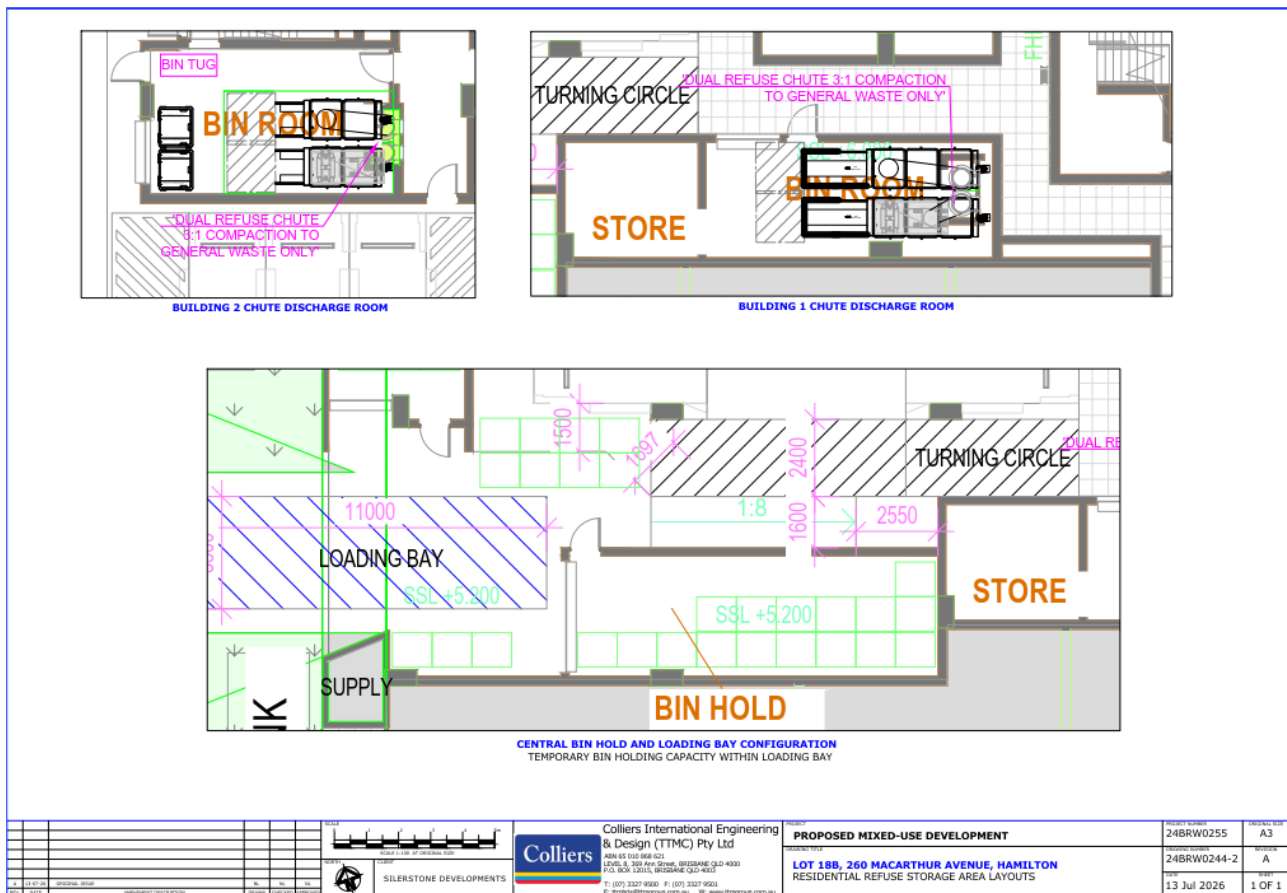


Figure 2.2: Residential refuse storage area layouts

2.5.2. Non-residential refuse storage areas

A consolidated waste storage strategy is proposed where all non-residential tenancies within the development share the use of the communal bins provided within a single storage area for optimal efficiency in servicing cost and to control the number of RCV movements within the shared loading area.

The non-residential room is provided separately to the residential refuse storage room and also directly adjoining the RCV loading area. The non-residential refuse room, as the 'retail B.H' on architectural drawings will store all refuse generated by the non-residential uses. The storage room is sufficiently sized to accommodate all recommended bins, as described in Table 2.6. As with the residential Bin Hold, the generous space within the loading bay will be utilised for the manoeuvring and rotation of bins.

Access to the chute discharge rooms will be restricted to building management and staff personnel only via the restricted distribution of keys / fobs and signage.

The collecting contractor will access the non-residential refuse room for the retrieval of bins for collections servicing.

Figure 2.3 depicts the configuration of the non-residential bin storage room in context of the loading bay.

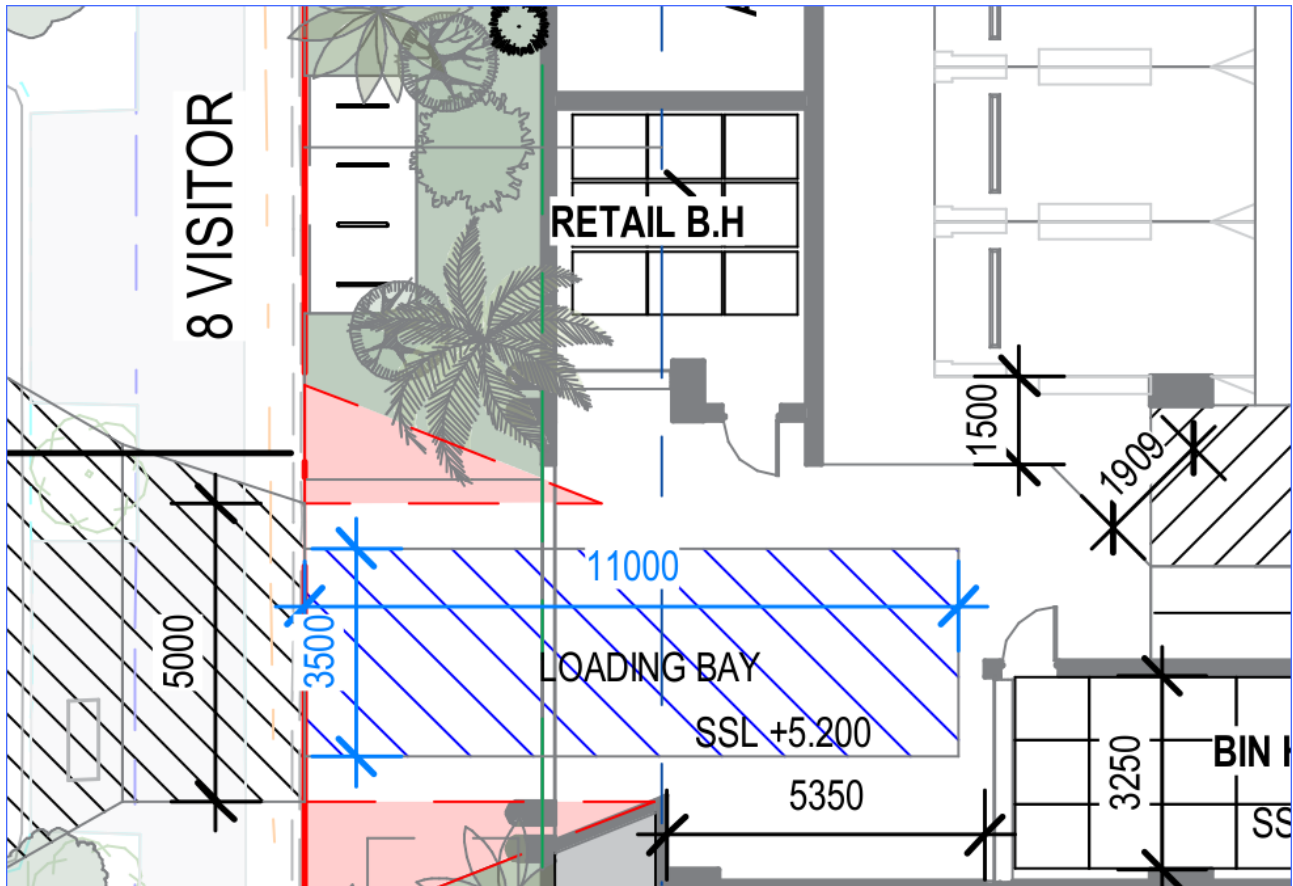


Figure 2.3: Non-residential refuse storage room

Source: Plus Studio, Project: Site 18 Hamilton, Drawing: Overall Floor Plans – Ground

2.5.3. Refuse storage areas requirements

Table 2.11 outlines the refuse storage area design criteria addressed for each storage area in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

Table 2.11: Refuse Storage Area Design Requirements

Positioning Considerations
Positioned in immediate proximity or directly accessible to the designated loading point
Storage provided is conveniently accessible to residents and staff for disposal or accessed via chutes (residents only).
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.
Coved at the intersection with the walls with coving integral to the floor.
The floors to be graded to fall to a drainage point.
Roofed and designed to prevent entry by rainwater.

2.6. Refuse Transfer

2.6.1. Residential refuse transfer

Residents on all levels above ground will transfer all refuse vertically via the dual refuse chutes. For items unsuitable for chute disposal, residents will have direct access to the Building 2 refuse room or Bin Hold for disposal of waste items into the relevant bulk bins. The lifts will be utilised for the transfer of items not suitable for chute disposal.

Ground floor residents will directly access the Building 2 refuse room or Bin Hold for the disposal of all refuse materials.

A building manager or caretaker will be responsible for the transfer of bins between the storage points to maintain disposal capacity beneath the chute discharges including the allocation of bins between buildings. Additionally, to ensure all bins are presented to the 'bin hold' in Building 1 prior to service. A bin tug will be utilised for the movement of bins across the carpark and ramp to the loading bay.

The collecting contractor will collect all bins directly from the 'bin hold' in Building 1 adjoining the loading bay, manoeuvre to the RCV lifting mechanism and return bins to the room after service. As highlighted in Section 2.5.1, the general loading bay area will be utilised for the rotation and manoeuvring of bins.

Figure 2.4 demonstrates possible refuse transfer paths for ground level residents as well as the bin carting route by building management.

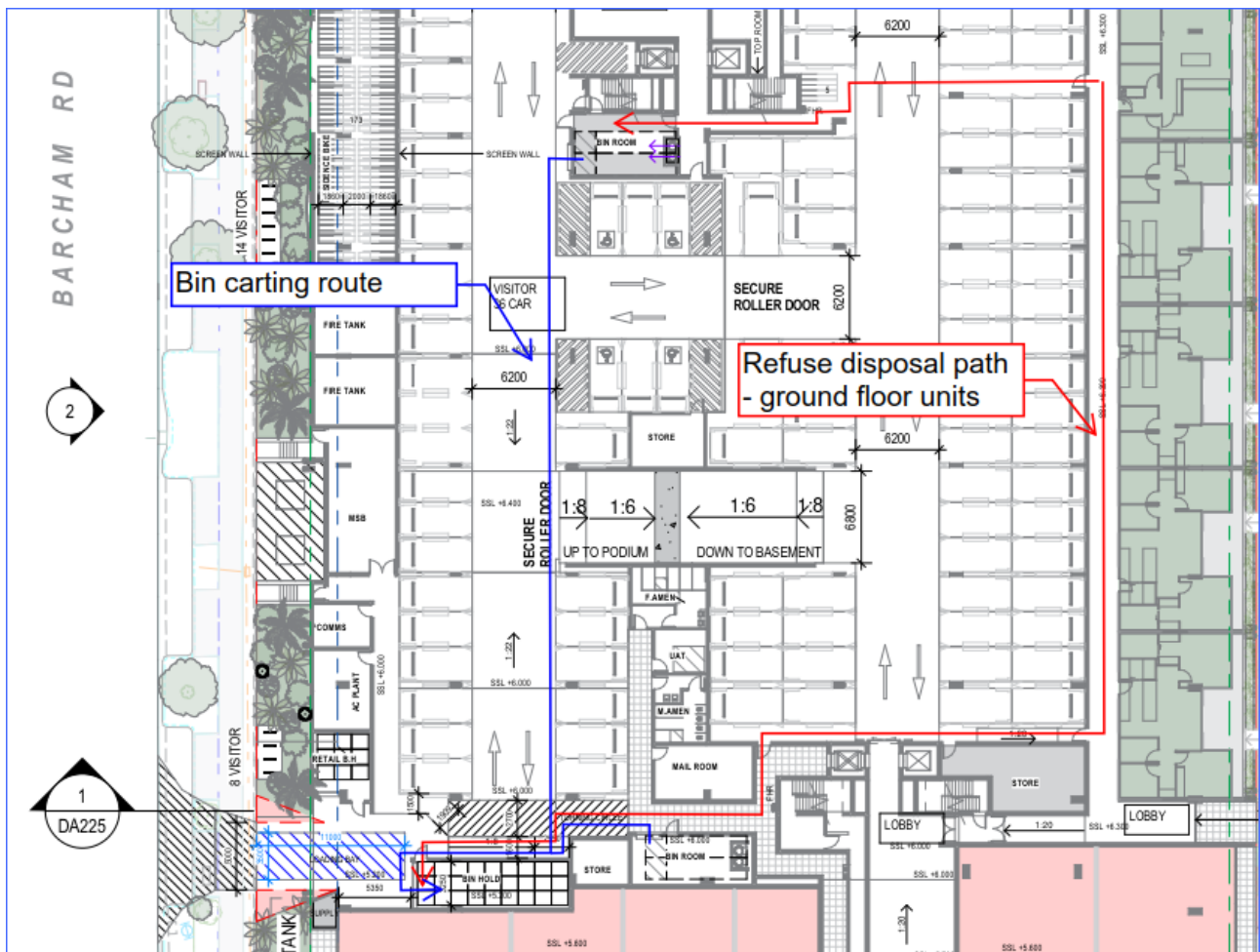


Figure 2.4: Ground level residential refuse transfer path

Source: Plus Studio, Project: Site 18 Hamilton, Drawing: Overall Floor Plans – Ground

2.6.2. Non-residential refuse transfer

Tenancy staff members will be responsible for transferring refuse from individual receptacles to the non-residential refuse room.

The collecting contractor will collect all bins directly from the residential refuse room adjoining the loading bay, manoeuvre to the RCV lifting mechanism and return bins to the room after service.

Figure 2.5 demonstrates the non-residential refuse transfer path.

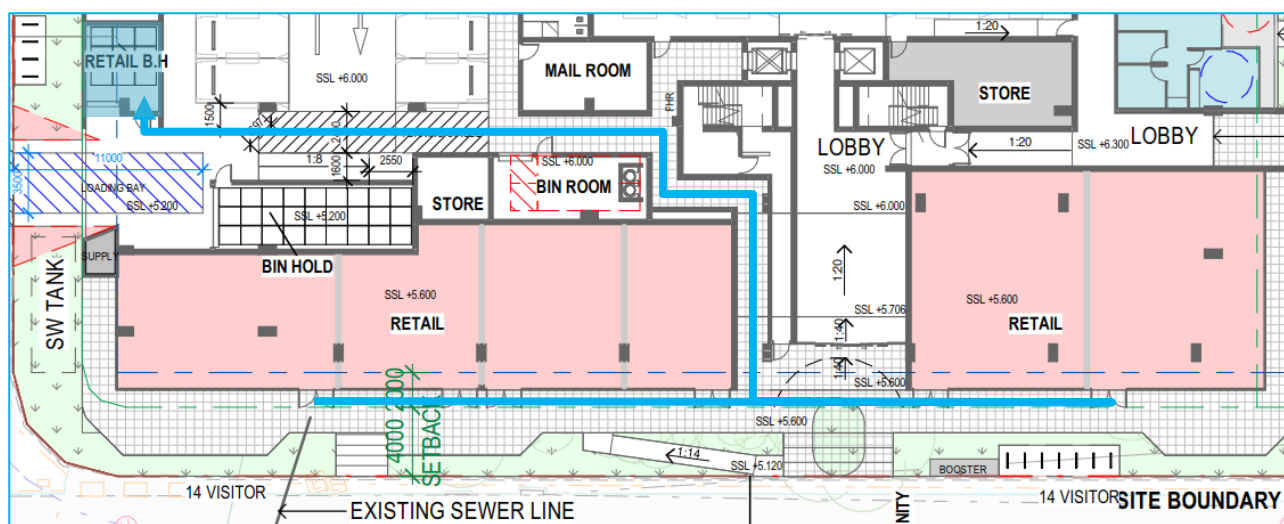


Figure 2.5: Non-residential refuse transfer path

Source: Plus Studio, Project: Site 18 Hamilton, Drawing: Overall Floor Plans – Ground

2.6.3. Refuse transfer path requirements

Table 2.12 demonstrates the criteria addressed in the design of the refuse transfer path for disposal and bin carting.

Table 2.12: Refuse Transfer Path Design

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.

2.7. RCV and Bin Servicing Arrangements

The refuse collection methodology is consistent for both residential and non-residential uses; all refuse will be collected by rear loading RCV with reverse entry and forward exit manoeuvres proposed.

Council's appointed collecting contractor will be responsible for the collection of all residential refuse. A private collections contractor will be appointed for the collection of all non-residential refuse.

All RCV's enter site via the driveway crossover on Barcham Road by performing a single reverse manoeuvre into the loading bay in Building 1. Once the collections service is complete, RCV's will exit site onto Barcham Road in a forward gear.

Once the bins have been serviced, they will be returned to their respective refuse storage areas where building management staff / cleaners will clean the bins as required and rotate bins between refuse storage areas for everyday use.

Figure 2.6 demonstrates the ingress and egress RCV swept path manoeuvres for a 10.235m rear loading RCV. Further details on vehicle access and on-site manoeuvring can be found in the transport report submitted with the submission.

Table 2.13 demonstrates the features of the bin servicing area.

Table 2.13: Service Area Design

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.

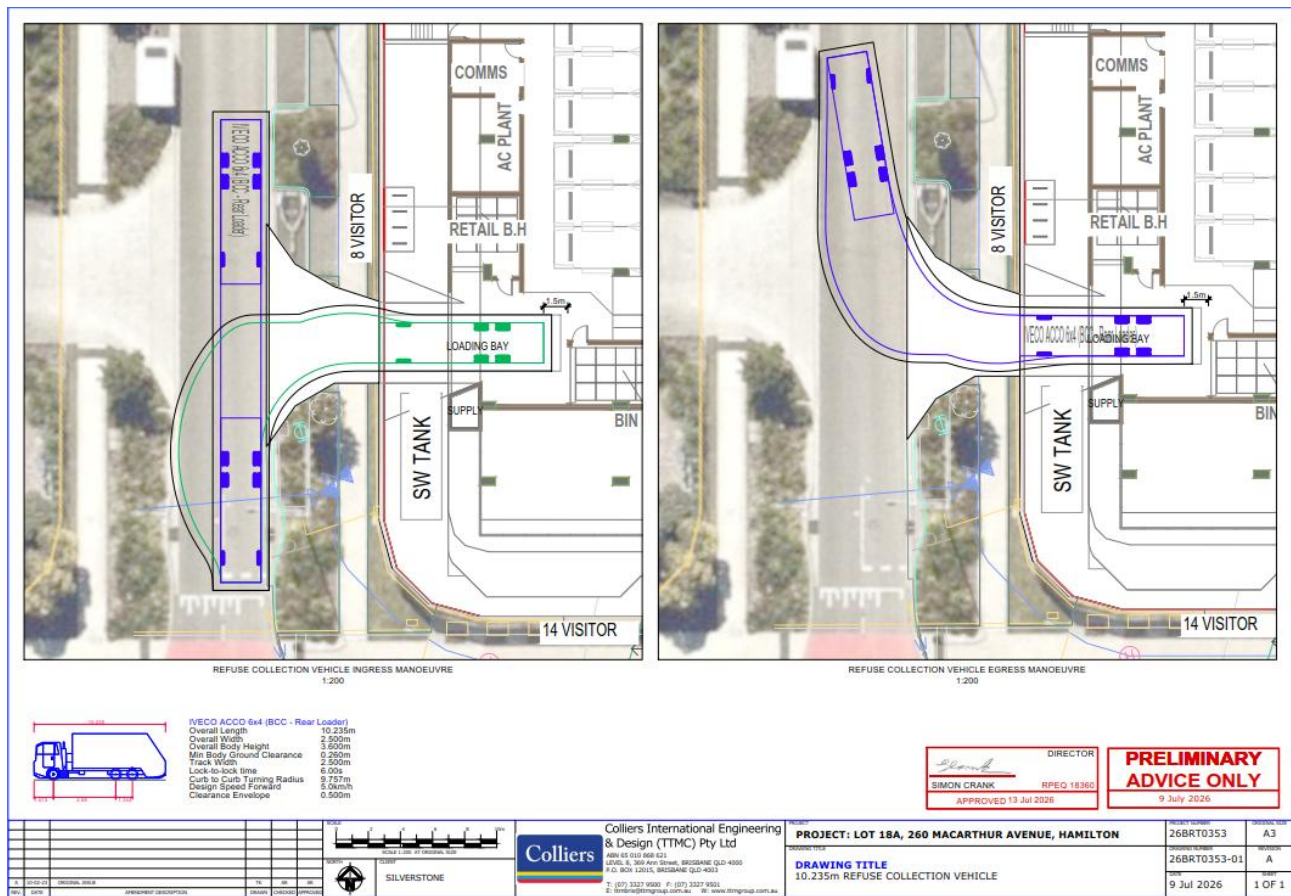


Figure 2.6: RCV Swept Path

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 Colliers. 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. Anticipated Residential Refuse Volumes

Colliers have worked extensively with operating mixed-use developments within the Brisbane local government area. This includes establishing typical volumes of refuse generated through volumetric assessment. Colliers have established a flat generation rate applicable to developments containing mixed unit sizes. This rate is used to provide more accurate recommendations relating to anticipated bin numbers and building management intervention through bin rotations beneath the refuse chute.

It should be noted that the recommendations and comments in this section are based on the maximum aggregate audit results of operational sites completed by Colliers and do not factor in potential demographic or socio-economic factors and therefore not site specific however, give an estimation of likely waste generation. Site specific auditing is recommended to establish actual generation and composition of refuse for this site. Site specific auditing allows refinement of the overall refuse strategy.

3.1.1. Refuse Profile and Stream Separation

Refuse generated by mixed-use developments including multiple dwelling residential apartments and food and beverage tenancies includes a substantial volume of food waste. Colliers recommend that food organic waste is separated from the general waste stream. Onsite composting or organics processing equipment should be considered within the final design and an area should be 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.

Alternatively, commercial collections may be undertaken by the development at an additional cost. BCC do not provide rating concessions for initiatives to reduce waste. Where commercial collections are undertaken this is an additional waste expense over BCC's waste rating charge.

Colliers recommend that Container Deposit Scheme (CDS) receptacles are also available for resident use, this may provide additional revenue to the development (such as social club funds) or be donated to charity. Single item recyclable streams as captured by CDS offer a higher value recyclable product than achieved through commingled recycling.

Similarly, consideration should be given to the separation of bulky cardboard. Oversized cardboard is a leading cause of blockages in recycling chute applications.

3.1.2. Recommended Refuse Bins and Equipment

Table 3.1 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 Collier's recommended stream separation.

Additional services may be provided utilising the resident accessible bin rooms in each building as proposed within the development application, with disposal facilitated through building management.

Table 3.1: Recommended Bin Requirements (Total)

Refuse Stream	Bin / Equipment - Type or Size	Bins Required	Storage Capacity Between Collections	Component
General Waste	1,100L	5 + 2 1 to remain beneath each chute discharge during servicing	3 Days	Residential and non-residential
Commingled Recycling	1,100L	10 + 2 1 to remain beneath each chute discharge during servicing	3 Days	Residential and non-residential
CDS	240L	6	7 Days	Residential & non-residential
Bulky Cardboard	1,100L	2	3 Days	Residential & non-residential
E-waste (Excluding batteries)	1,100L	1	Ad Hoc	Residential
Mixed Batteries	Countertop Receptacle	2	Ad Hoc	Residential

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 for residential units. Colliers 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	231kg		
	Bin / Equipment - Type or Size	Bins Required	Storage Capacity Between Collections
	240L	7 (4 in Building 1 & 2 in Building 3)	2 Days

3.2. 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. Colliers 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.

3.2.1. 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.

Table 3.3: Implementation Checklist

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 or facilities manager is typically appointed and 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.		

Task	Assigned	Remarks
Engage refuse collection contractors. Council's collections 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 stream. The installed signage should be colour coded in accordance with <i>AS 4123.7 – 2006 Mobile waste containers</i> . Examples of signage are provided in the appendices.		
Body Corporate / Leasing Agreements All body corporate or 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 in 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.		

3.2.2. 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 and public realm. 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 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.		

3.2.3. 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.

Table 3.5: Review and Amendment 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.		
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.		
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.		
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

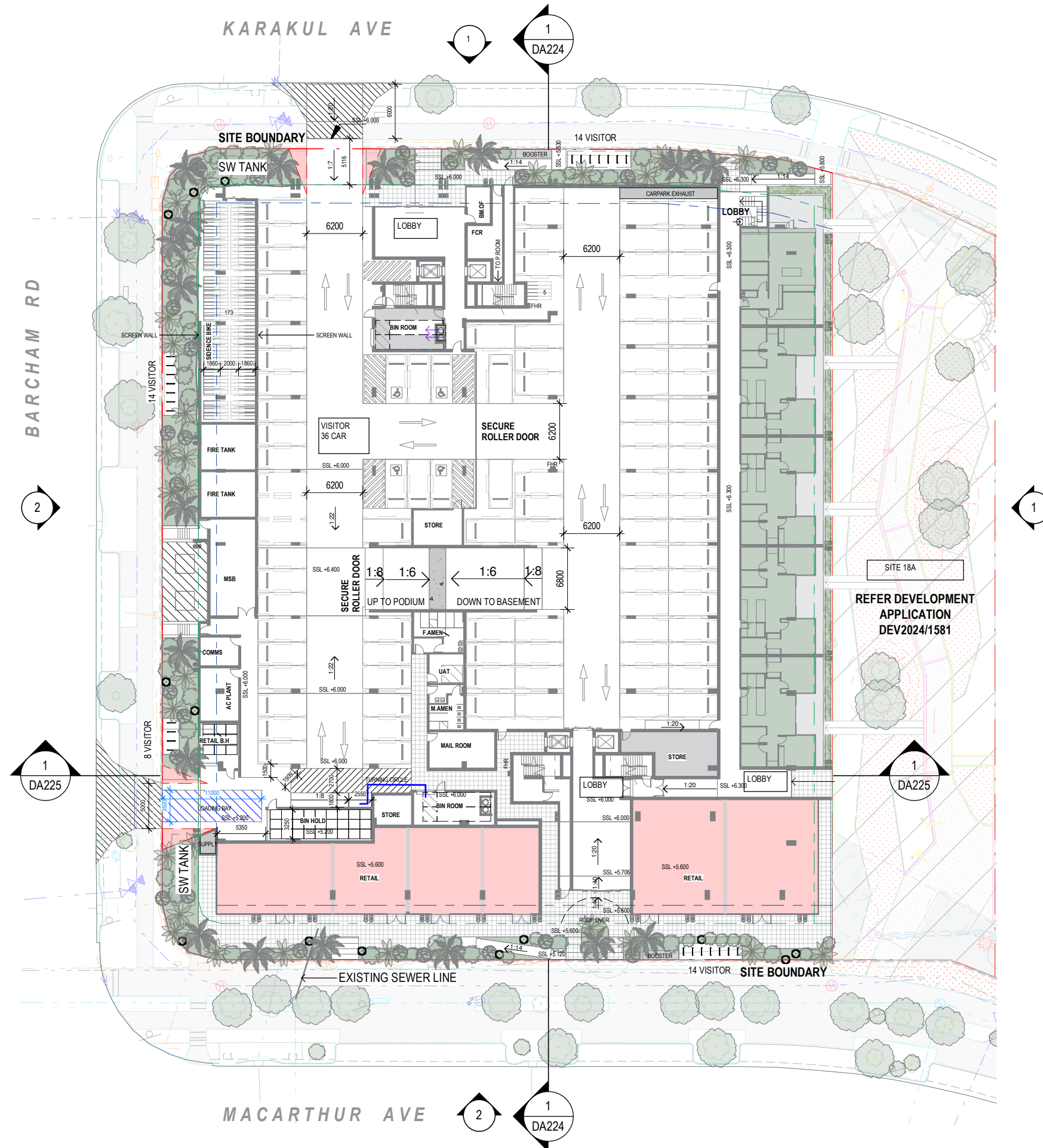
BCC SC6.26 Refuse Planning Scheme Policy		
Item	Requirement	Compliance / Comment
Section 2 – General Requirements		
(1)	A written design proposal for waste collection is to be provided giving full details of the proposed solution, bin sizes, number of bins and the storage and collection areas, frequency of collection and the refuse collection vehicle size. Table 1 provides the dimensions and types of bins. Table 3 provides the specifications and types of collection vehicles.	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)	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).	Domestic refuse collected by rear loading RCV. 3.6m available.
(4)	Uses with high trip-end densities provide a transport impact assessment report in accordance with the Transport, access, parking and servicing planning scheme policy with an assessment of refuse storage and collection included.	See Transport Engineering documentation for details.
(5)	Where a Refuse Collection Vehicle (RCV) is required to manoeuvre from an on-site position, allow an additional 500mm clearance for vehicle turning dimensions (swept paths) and servicing. Three clear swept path lines must be demonstrated for the RCV, namely wheel path, vehicle body path and 500mm clearance path.	See Transport Engineering documentation for details.
(6)	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 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.	Complies Complies – Collection service will be undertaken wholly on site. Complies
Section 3 - Access and Manoeuvrability		
(1)	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.	See Transport Engineering documentation for details.
(2)	For multiple dwelling development accessed via a local, neighbourhood, district or suburban road, the refuse collection vehicle may enter the site in a reverse gear in a single movement.	Complies
(3)	For multiple dwellings development accessed via 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
(4)	For development (other than a multiple dwelling) accessed via an arterial, suburban, district or minor road adjacent to an intersection with a major road, the refuse collection vehicle must enter and leave the site in a forward gear.	N/A
(5)	Where refuse collection is from an on-site position, the area trafficked by the refuse collection vehicle must comply with requirements under the Transport, access, parking and servicing planning scheme policy including a minimum aisle/carriageway width of 6.5m wide.	Single lane driveway to loading bay. 5m wide.
(6)	For detached dwellings on rear lots, pavements/carriageways trafficked by a refuse collection vehicle have a minimum width of 5.5m.	N/A

Section 3 - Access and Manoeuvrability - Continued		
(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 minimum 6.5m crossover which is free from overhead projections inclusive of gardens or trees.	Single lane driveway to loading bay. 5m wide.
(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 20m of the street frontage.	Complies – Minimal reversing required.
(9)	Turnaround facilities for a refuse collection vehicle exist or are provided for where involving staged subdivision developments or where development is located on a no through road. Turning and manoeuvring facilities for refuse collection vehicles are provided to meet design requirements for the vehicles identified in Table 3.	N/A
(10)	Subdivision layouts are to provide for the safe and efficient operation and manoeuvring of a side-lift loading refuse collection vehicle. Layouts that require a refuse collection vehicle to reverse more than 20m are to be avoided. Where the provided transport network results in a stub road for a proposed future road connection, interim turnaround facilities must be provided in compliance with the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.	N/A
(11)	Adequate lift clearances are provided to overhanging trees and wires in accordance with Table 3.	Complies – 3.6m provided
(12)	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
(13)	Access for a refuse collection vehicle to the collection point is maintained at all times.	Servicing occurs in shared loading bay.
(14)	Where non-residential development is proposing to use an alternative design vehicle other than those named in Table 3, written confirmation from the proposed licensed waste collection contractor giving full details of the bin size and the refuse collection vehicle size must be provided.	N/A
(15)	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
Section 4 - Residential Refuse Collection		
(1)	Residential development must be serviced by Council or their appointed collection contractor.	Complies
(2)	Residential development is to provide sufficient capacity for 240L of refuse and 240 or 360L of recycling per dwelling, allowing for one collection per week.	Servicing 3 times per week is proposed.
(3)	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.	Greater than 10 dwellings kerbside collection not proposed.
(4)	On-site collection must be provided for in the following cases: a. the development cannot accommodate external (fronting public road) kerbside collection; or b. the development comprises greater than 10 dwellings; or c. 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
(5)	Refuse and recycling collection for a mixed use development ensures residential and commercial bins are stored separately with separate access to each.	Complies
Section 4.1 - Kerbside Collection (MGB's) – N/A Greater than 10 dwellings, kerbside collection not proposed		

Section 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 providing sufficient capacity to achieve one collection per week while ensuring sufficient refuse and recycling capacity is provided to meet the needs of residents.	Complies
(2)	An on-site 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.	Complies
(3)	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.	Refuse storage immediately adjoins servicing area.
(4)	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 area to the collection point.	N/A – 1.1m ³ bins proposed.
(5)	The storage areas for bulk bins are: a. contained in a roofed and wholly screened 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 to mitigate odour, amenity and noise; d. of a design to mitigate the harbourage of vermin or attraction of scavenging animals; e. provided with natural or temperature-controlled ventilation if in an enclosed room; f. of a design which maintains a minimum internal vertical clearance of 2.1m; g. 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; h. are not to contain other amenities such as air-conditioning compressors, hot water systems or electrical hubs.	Complies
(6)	Best practice may include allowing additional space for the storage of extra containers to separately store either organic waste or other recyclables in the future.	Adequate space provided.
(7)	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. the chute room must be of suitable size to allow for an additional bin/s to remain under the chute discharge/s at all times; d. separate chutes and bulk bins are to be used for each waste stream; e. the room containing the chute and bin or compactor excludes all but authorised personnel; f. design best practice may include developments greater than 15m (3 storeys) in height utilising twin chutes or single chute dual stream technology with openings on each residential floor to enable chute disposal of both refuse and recycling.	Complies
(8)	Environmental best practices may also include the installation of a trapped waste connection to the sewer system.	Complies
Section 5 – Non-Residential Refuse Collection – N/A Residential Development Only		

Appendix B Site Plans, Drawings and Swept Path Analysis

OVERALL FLOOR PLANS - GROUND

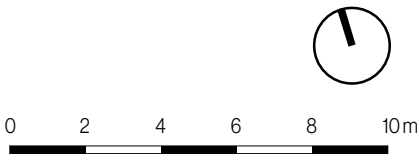


OVERALL FLOOR PLANS - LEVEL 01

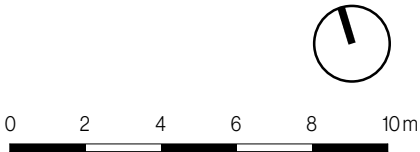
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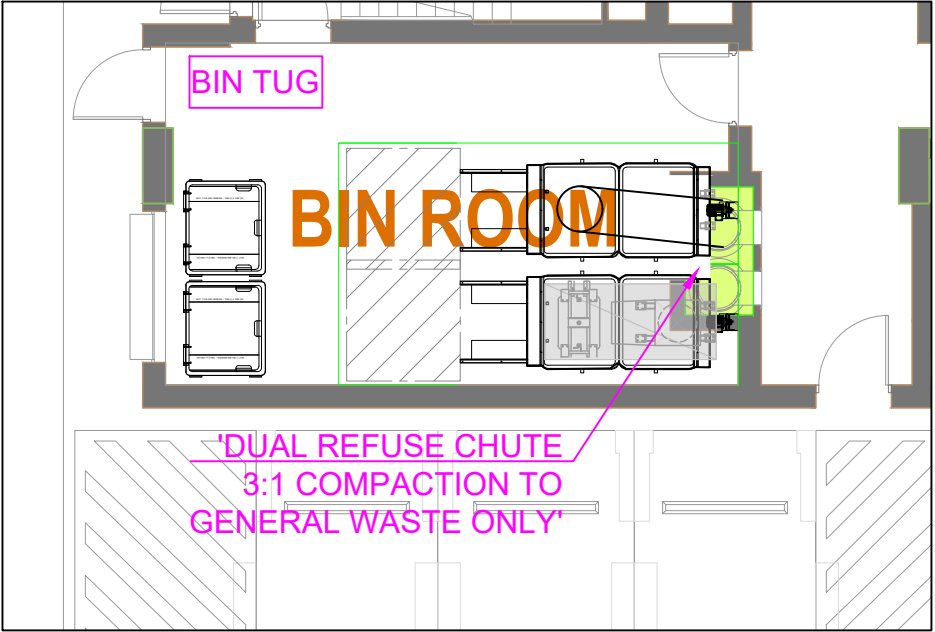
THE DRAWINGS

PLUS STUDIO

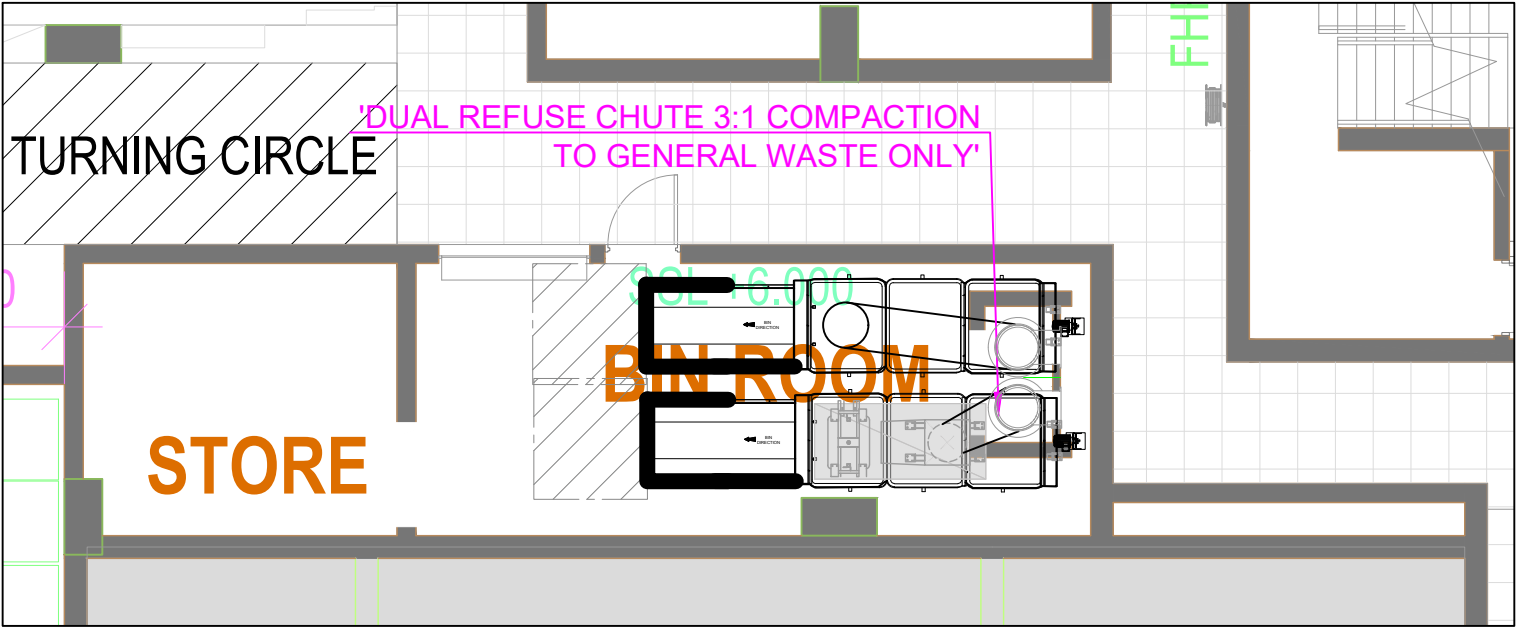


OVERALL FLOOR PLANS - LEVEL 04-12 TYPICAL

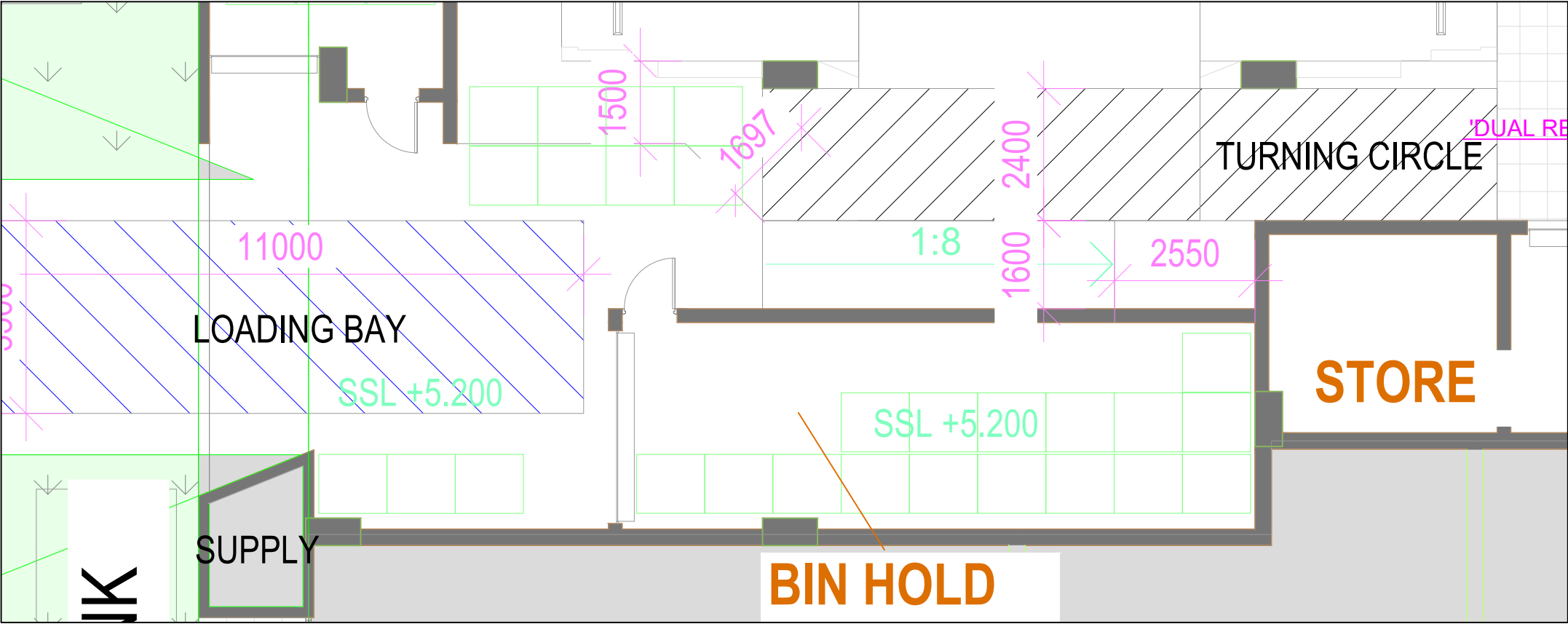




BUILDING 2 CHUTE DISCHARGE ROOM



BUILDING 1 CHUTE DISCHARGE ROOM



CENTRAL BIN HOLD AND LOADING BAY CONFIGURATION
TEMPORARY BIN HOLDING CAPACITY WITHIN LOADING BAY

A	13-07-26	ORIGINAL ISSUE	NL	NL	NL
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED

SCALE 1:100 AT ORIGINAL SIZE

NORTH

CLIENT

SILERSTONE DEVELOPMENTS

Colliers International Engineering & Design (TTMC) Pty Ltd

ABN 65 010 868 621
LEVEL 8, 369 Ann Street, BRISBANE QLD 4000
P.O. BOX 12015, BRISBANE QLD 4003

T: (07) 3327 9500 F: (07) 3327 9501
E: ttmbri@ttmgroup.com.au W: www.ttmgroup.com.au

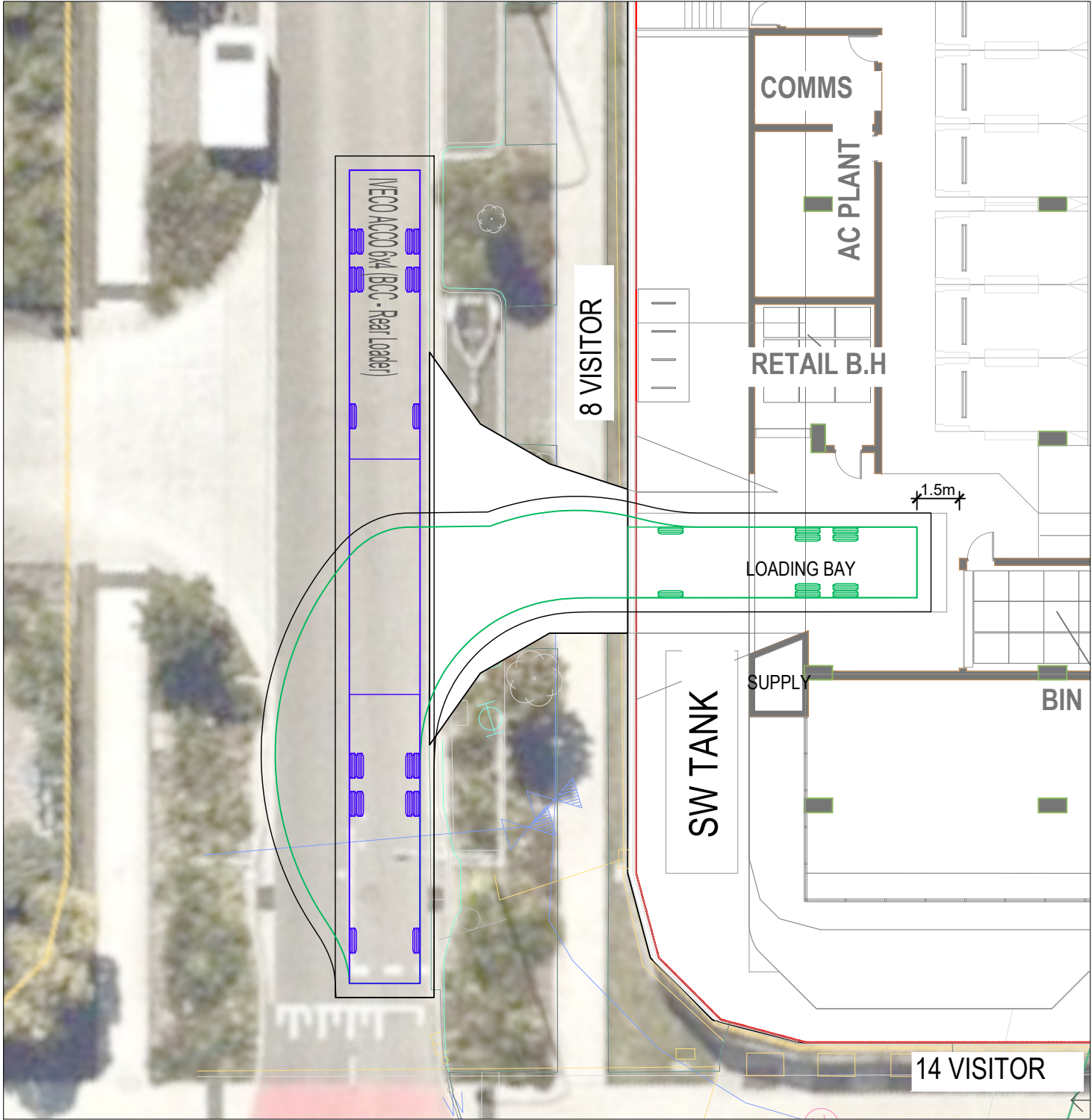
PROJECT

PROPOSED MIXED-USE DEVELOPMENT

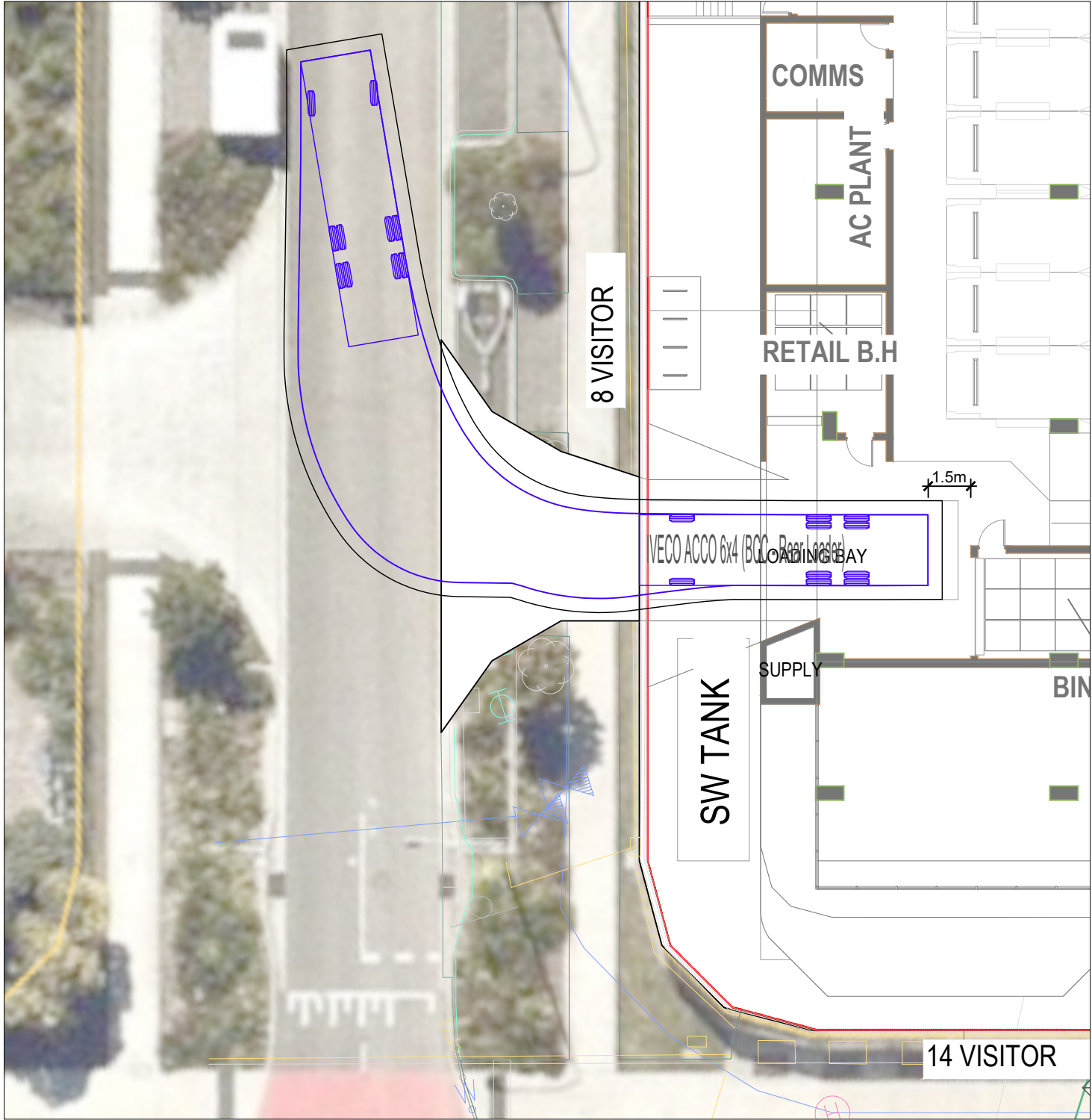
DRAWING TITLE

LOT 18B, 260 MACARTHUR AVENUE, HAMILTON
RESIDENTIAL REFUSE STORAGE AREA LAYOUTS

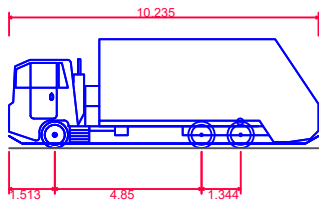
PROJECT NUMBER	24BRW0255	ORIGINAL SIZE	A3
DRAWING NUMBER	24BRW0244-2	REVISION	A
DATE	13 Jul 2026	SHEET	1 OF 1



REFUSE COLLECTION VEHICLE INGRESS MANOEUVRE
1:200



REFUSE COLLECTION VEHICLE EGRESS MANOEUVRE
1:200

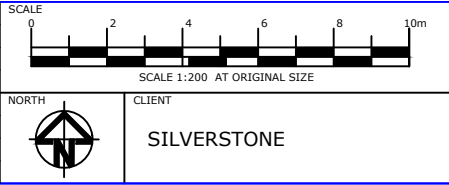


IVECO ACCO 6x4 (BCC - Rear Loader)
Overall Length 10.235m
Overall Width 2.500m
Overall Body Height 3.600m
Min Body Ground Clearance 0.260m
Track Width 2.500m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 9.757m
Design Speed Forward 5.0km/h
Clearance Envelope 0.500m

Simon Crank DIRECTOR
SIMON CRANK RPEQ 18360
APPROVED 13 Jul 2026

**PRELIMINARY
ADVICE ONLY**
9 July 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	10-02-23	ORIGINAL ISSUE	TK	AR	AR



Colliers
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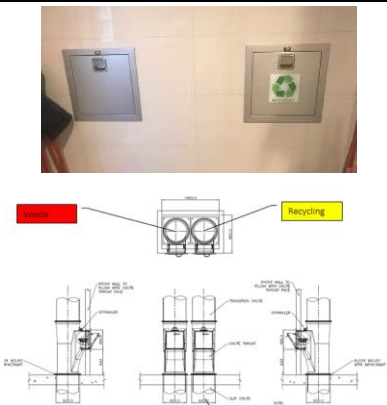
PROJECT PROJECT: LOT 18A, 260 MACARTHUR AVENUE, HAMILTON	PROJECT NUMBER 26BRT0353
DRAWING TITLE DRAWING TITLE 10.235m REFUSE COLLECTION VEHICLE	DRAWING NUMBER 26BRT0353-01
	DATE 9 Jul 2026

ORIGINAL SIZE A3	REVISION A
SHEET 1 OF 1	

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: https://www.bunnings.com.au
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: https://www.sourceseparation-systems.com.au-/product/multisort https://methodrecycling.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.australianwastemanagement.com.au
Dual 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: https://www.wastech.com.au/products/chutes https://www.elephantsfoot.com.au/products/chutes
Linear Bin Rotation System	General waste, recycling, food waste		Automated bin rotation (e.g. linear or carousel) to manage bin fill level and prevent overflow under chutes Example: https://www.elephantsfoot.com.au/products/compactors/carousel-linear https://wastech.com.au

Bin / Equipment Types	Waste Streams	Examples	Information
Chute Discharge Compaction	General waste		Compactors designed for integration with the refuse chute to minimise the volume of general waste. Examples: https://www.elephantsfoot.com.au/products/compactors/carousel-linear https://wastech.com.au
240L bins (Optional)	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
Refuse / Cleaners Trolleys (Optional)	All Streams		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
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 https://www.ecoguardians.com.au/soilfood-soilfood Urban Composter https://www.urbancomposter.com.au Worm Farm https://wormsdownunder.com.au/products-wormmod
Counter-top E-Waste Recycling (Optional)	Electronic Waste		Prepaid battery collection Example: https://envirostream.com.au/product/prepaid-countertop-battery-recycling-box/ https://www.ecoactiv.com.au/product/4l-battery-recycling-prepaid-service/ Toner cartridge collection https://zerowasteboxes.terracycle.com.au/products/ink-and-toner-cartridges-zero-waste-boxes

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



Example Facility Signage



Example Safety Signage



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 Trolley		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.