



40 The Retreat Bringelly NSW 2556

Operational Waste Management Plan

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1. Introduction

This Operational Waste Management Plan (OWMP) has been prepared by Foresight Environmental on behalf of **SCG Developments** to support a State Significant Development Application (SSDA). The plan details the way in which the proposed mixed-use development at 40 The Retreat, Bringelly (the Site) will manage the waste and recycling generated from the ongoing use of the development in accordance with the following guidelines:

- Western Sydney Aerotropolis Development Control Plan 2022 (The DCP)
- Better Practice Guide for Resource Recovery in Residential Developments 2019
- Better Buildings Partnership Operational Waste Guidelines

2. Overview of Proposed Development

2.1 Site Description

The Site is located at 40 The Retreat, Bringelly. It is legally described as Lot 272 DP 803167 and is owned by SCG Developments Pty Ltd. The Site is located in the Liverpool Local Government Area (LGA) within the Western Sydney Aerotropolis (Aerotropolis). Specifically, the Site is located in the Aerotropolis Core Precinct.

2.2 Development Description

This State Significant Development Application seeks consent for the detailed design and delivery (including construction and use) of a new mixed use residential development, to be developed in two (2) stages. Specifically, development consent is sought for:

2.2.1. Stage 1

- Overall site clearing and preparation works, including demolition of all existing development on the Site.
- The redevelopment of the northern portion of the Site, comprising:
 - Temporary Site access to the northern portion of the Site from The Retreat.
 - Temporary bin enclosure adjacent the temporary access.
 - Excavation works and construction of a shared two (2) storey basement to a maximum depth of RL 60.60, with capacity for 311 vehicle car spaces.
 - Construction of three (3) individual mixed-use buildings, comprising:
 - Maximum building heights between 30.4m and 39.8m.
 - A total Gross Floor Area (**GFA**) of 26,204 sqm, comprising 25,744 sqm of residential GFA, 248 sqm of non-residential GFA and 212 sqm of retail GFA, distributed across the three buildings.
 - 254 residential units, distributed across the three buildings.
 - Associated landscaping, communal open space and embellishment works.
 - Delivery and augmentation of services.

2.2.2. Stage 2

- The redevelopment of the southern portion of the Site, comprising:
 - Removal of the Stage 1 temporary access from The Retreat.
 - Connection and access of the Stage 1 basement to the western boundary (to become a future Collector Road).
 - Excavation works and construction of a shared three (3) storey basement to a depth of RL 56.35, with capacity for 336 vehicle car spaces.
 - Site and basement access from the western boundary (to become a future Collector Road).
 - Construction of three (3) individual mixed-use buildings, comprising:
 - Maximum building heights between 23.8m and 39.9m.
 - A total Gross Floor Area (**GFA**) of 29,126 sqm, comprising 28,540 sqm of residential GFA, 212 sqm of retail GFA and 374 sqm of non-residential GFA, distributed across the three buildings.
 - 279 residential units, distributed across the three buildings.
 - Associated landscaping, communal open space and embellishment works; and
 - Delivery and augmentation of services.

A detailed description of the proposed development is detailed in Section 3.0 of the Environmental Impact Statement prepared by Ethos Urban.

Figure 1: Site location in context



3. Operational Usage

The table below shows the development area profile - a residential premises with a small retail allocation. Table 1 breaks down the areas by Gross Floor Area (GFA), which include the waste generating areas that have been used to estimate a waste profile for the development.

The usage breakdown by area is as follows:

Table 1 - Area breakdown by usage

AREA	GFA (m ²)	No.	ASSUMED USAGE
Retail	424	-	All food and beverage
Residential	54,284	533	Mix of 1, 2 & 3 BR
Buildings	-	6	A, B, C, D, E, F
Non-Residential	622	-	Gym, Wellness, etc
TOTAL	55,330	-	

4. Assessment Requirements

In accordance with section 4.39 of the *Environmental Planning & Assessment Act 1979* (EP&A Act), Secretary’s Environmental Assessment Requirements (SEARs) for SSD-65729209 were issued on 18 January 2024. This report has been prepared to respond to the relevant issued SEARs, as set out in the table below.

Table 2 - SEARS: Industry specific requirements for Mixed-use Residential Facilities

SSD-65729209: SEARS KEY ISSUES AND DOCUMENTATION	
17. Waste Management Plan	LOCATION IN REPORT
<ul style="list-style-type: none"> Identify, quantify, and classify the likely waste streams to be generated during construction and operation. 	<ul style="list-style-type: none"> Section 6
<ul style="list-style-type: none"> Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. 	<ul style="list-style-type: none"> Section 7, 8 & 9
<ul style="list-style-type: none"> Identify appropriate servicing arrangements for the site. 	<ul style="list-style-type: none"> Section 10

5. Mitigation Measures

A range of issues have been identified and addressed throughout the report, to ensure that once operational, the development runs as environmentally efficiently and safely as possible. The table below lists a summary of the main potential impacts and their mitigation measures that are detailed throughout the report.

Table 3 - Summary of mitigation measures

POTENTIAL IMPACTS	MITIGATION MEASURES
All waste going to landfill - Retail	<ul style="list-style-type: none"> Stream separation; general waste, mixed recycling, organics.
Transfer or waste - Retail	<ul style="list-style-type: none"> Each retail tenancy has separate/own waste room within tenancy to eliminate need for travel. Each retail tenancy has separate/own waste room within tenancy with direct access to the adjacent road making for safe and convenient collection by waste contractor.
All waste going to landfill - Residential	<ul style="list-style-type: none"> Stream separation; general waste, mixed recycling, organics. Mixed Recycling and organics bins on each residential level. Waste rooms made to size to accommodate number of streams/bins needed.
	<ul style="list-style-type: none"> Waste chutes on each residential level.
Linear track in waste room potential hazard to residents	<ul style="list-style-type: none"> Residents not permitted in waste rooms with linear track without facilities management/staff. Bulky waste rooms made with separate entrances to minimise need for use of waste room by residents.
Transfer of waste - Residential	<ul style="list-style-type: none"> Waste only to be transferred (to waste holding areas, prior to collection) by appointed, qualified staff on approved equipment.

6. Operational Waste Generation Estimate

Based on the estimated waste profile and in line with industry-leading best practice, the following streams are recommended to be implemented throughout the facility for everyday operational waste:

- Mixed Recycling (plastics, glass, aluminium, steel)
- Cardboard and Paper Recycling
- Food Waste (Organics)
- General Waste
- Cooking Oil

In addition to the above “common” streams, the following streams are likely to be generated in a more ad-hoc manner during ongoing operation:

- E-waste
- Battery recycling
- Toner cartridge recycling
- Lamps and globes

6.1 Retail Waste

Based on the information provided regarding the proposed development and the intended uses of all workspaces and food service areas, a retail waste estimate has been derived using Foresight Environmental’s extensive database of ongoing operational waste data from similar developments ¹

The following table details the estimated waste profile and generation rates for the common waste streams from the retail operations of the facility.

6.1.1. Stage 1 & 2

There are two retail tenancies in the development, 212m² each (see Section 8.1, Figures 2 & 3), with the north retail to be completed in Stage 1, and the south retail in Stage 2. As they are both the same size and thus expected to generate the same amount of waste across the common streams, the estimates in Table 4 are per retail tenancy.

¹ [Foresight Environmental currently reports the ongoing operational waste data for over 7million m² of Australian A and B grade commercial/retail/industrial/mixed use property. This extensive database provides the most current and detailed information on real-world waste generation performance and trends available and enables very accurate modelling for prospective property developments](#)

Table 4 - Retail Waste: Each

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
General Waste	18	171	126	1,199
Organics	22	78	153	545
Cardboard	8	221	54	1,548
Mixed Recycling	7	117	49	820
TOTAL	55	588	382	4,113

6.2 Residential Waste

Based on the information provided regarding the proposed development and the intended uses of all workspaces and food service areas, a retail waste estimate has been derived using Foresight Environmental's extensive database of ongoing operational waste data from similar developments and the *Better practice guide for resource recovery in residential developments*.

In accordance with the DCP, collection of food waste (organics) is required. Currently, there is no specific council appointed/created to set guidelines for specific waste generation rates and collection frequencies, so the below references to food waste (organics) remain high level and they will change as further information becomes available.

The DCP suggests that waste estimates from the *Better practice guide for resource recovery in residential developments* is used, which provides the following:

Table 5 - 1 Bedroom waste generation rates

STREAM	1 BEDROOM L/WEEK/UNIT	2 BEDROOM L/WEEK/UNIT	3+ BEDROOM L/WEEK/UNIT
General Waste	80	100	120
Mixed Recycling	80	100	120
Organics	25	25	50

Table 6 - Breakdown of units per building: Stage 1

BUILDING	UNITS
A	91
B	101
C	62
TOTAL	254

Table 7 - Breakdown of units per building: Stage 2

BUILDING	UNITS
D	44
E	107
F	128
TOTAL	279

The following tables detail the estimated waste profile and generation rates for the common waste streams from the residential operations of the facility upon completion of Stage 1 and Stage 2.

6.2.1. Residential Waste - Stage 1

Table 8 - Waste generation estimates: Stage 1

BUILDING	WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
A	General Waste	142	1,351	993	9,460
	Mixed Recycling	81	1,351	568	9,460
	Organics	112	400	784	2,800
TOTAL		335	3,102	2,345	21,720
B	General Waste	145	1,383	1,016	9,680
	Mixed Recycling	97	1,383	682	9,680
	Organics	110	393	770	2,750
TOTAL		352	3,159	2,468	22,110
C	General Waste	95	906	666	6,340
	Mixed Recycling	54	906	380	6,340
	Organics	81	289	567	2,025
TOTAL		230	2,101	1,613	14,705

Table 9 - Amenities: Stage 1

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
General Waste	12	17	86	117
Mixed Recycling	5	11	32	76
TOTAL	17	28	118	193

6.2.2. Residential Waste - Stage 2

The following tables detail the estimated waste profile and generation rates for the common waste streams from the residential operations of the facility upon completion of Stage 2.

Table 10 - Waste generation estimates: Stage 2

BUILDING	WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
D	General Waste	65	617	454	4,320
	Mixed Recycling	37	617	259	4,320
	Organics	52	186	364	1,300
TOTAL		154	1,420	1,077	9,940
E	General Waste	150	1,426	1,048	9,980
	Mixed Recycling	86	1,426	599	9,980
	Organics	113	404	791	2,825
TOTAL		349	3,256	2,438	22,785
F	General Waste	197	1,871	1,376	13,100
	Mixed Recycling	112	1,871	786	13,100
	Organics	148	529	1,036	3,700
TOTAL		457	4,271	3,198	29,900

Table 11 - Amenities: Stage 2

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
General Waste	13	17	88	120
Mixed Recycling	5	11	33	78
TOTAL	18	28	121	197

6.2.3. Residential Waste - Total

The following tables detail the total estimated waste profile and generation rates for the common waste streams from the residential operations of the facility upon completion of the development.

Table 12 - Residential General Waste: Total

BUILDING	WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
A	General Waste	142	1,351	993	9,460
B		145	1,383	1,016	9,680
C		95	906	666	6,340
D		65	617	454	4,320
E		150	1,426	1,048	9,980
F		197	1,871	1,376	13,100
Amenities		25	34	174	237
TOTAL		818	7,588	5,726	53,117

Table 13 - Residential Mixed Recycling: Total

BUILDING	WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
A	Mixed Recycling	22	360	151	2,520
B		97	1,383	682	9,680
C		54	906	380	6,340
D		37	617	259	4,320
E		86	1,426	599	9,980
F		112	1,871	786	13,100
Amenities		10	22	65	154
TOTAL		418	6,585	2,922	46,094

Table 14 - Residential Organics: Total

BUILDING	WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK
A	Organics	112	400	784	2,800
B		110	393	770	2,750
C		81	289	567	2,025
D		52	186	364	1,300
E		113	404	791	2,825
F		148	529	1,036	3,700
TOTAL		616	2,200	4,312	15,400

7. Waste Management Systems

Based on the waste estimate for the development, as profiled above in Section 6, the following section details the recommended bin systems and collection frequency to effectively manage the projected waste profile.

The systems and collection frequency demonstrate capable capacity for the projected waste generation. Strata management will monitor the systems and increase/adapt accordingly as occupancy increases in consultation with the appointed cleaning and waste contractors. See Appendix 1 for MGB bin specifications.

7.1 Retail - Stage 1 & 2

Both retail tenancies waste storage areas are 12m², which is adequate space to house the recommended equipment (Table 15). As they are both the same size and thus expected to generate the same amount of waste across the common streams, the recommended equipment and collection frequency will be the same for each retail tenancy.

Table 15 - Recommended equipment and indicative collection frequency: Stage 1 & 2

Waste Stream	Bin Type	Size (m ³)	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m ²	Total footprint m ²
General Waste	MGB	0.66	1	2	1,320	1,744	0.98	0.98
Organics	MGB	0.12	3	2	720	545	0.27	0.81
Paper/Cardboard	MGB	0.66	2	2	2,640	1,548	0.98	1.96
Mixed Recycling	MGB	0.66	1	2	1,320	820	0.98	0.98
TOTAL					6,000	4,658		4.73
Including 50% additional space for circulation								7.10

7.2 Residential - Stage 1

7.2.1. General Waste

The table below details the waste estimates for general waste and the spatial requirements needed for each buildings waste storage room during Stage 1.

Table 16 - General waste recommended equipment and collection frequency: Stage 1

Waste Room - A1 & A2	Bin Type	Size m ³	No. of Bins	No. of Spare Bins	Weekly Clearance Frequency	Weekly Capacity (L)	Estimated Volume/ Week (L)	Footprint per Bin m ²	Total Footprint m ²
General Waste	MGB	0.66	1	1	2	1,320	4,730	0.98	1.98
Bin Wash									4.00
Bulky Waste									7.00
Linear Track		0.66	3*		2	3,960			10.00
TOTAL			4	1		5,280	4,730		22.98
Including 50% additional space for manoeuvring									34.47
Spatial provision in design - A1									48.00
Spatial provision in design - A2									46.00
Waste Room - B1, B2									
General Waste	MGB	0.66	1	1	2	1,320	4,840	0.98	1.98
Bin Wash									4.00
Bulky Waste									6.00
Linear Track		0.66	3*			3,960			10.00
TOTAL			4	1		5,280	4,840		21.95
Including 50% additional space for manoeuvring									32.97
Spatial provision in design - B1 & 2									46.00
Waste Room - C									
General Waste	MGB	0.66	2	1	2	2,640	6,340	0.98	2.96
Bin Wash									4.00
Bulky Waste									6.00
Linear Track		0.66	3*			3,960			10.00
TOTAL			5	1		6,600	6,340		22.96
Including 50% additional space for manoeuvring									34.44
Spatial provision in design - C									46.00

*3 bins will be on the linear track at all times, so this bin footprint has been absorbed into the total linear track footprint so as not to be included twice in the overall footprint

7.2.2. Mixed Recycling

The table below details the waste estimates for mixed recycling and the spatial requirements needed. Two mixed recycling bins per floor per core will allow for ample space in the 240L bins for residential waste.

Table 17 - Recommended equipment and collection frequency for mixed recycling Stream: Stage 1

Building	Bin Type	Size m ³	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m ²	Total footprint m ²
A	MGB	0.24	32	2	15,360	9,460	0.43	13.76
B	MGB	0.24	44	2	21,120	9,680	0.43	18.92
C	MGB	0.24	18	2	8,640	6,340	0.43	7.74
TOTAL			94		45,120	25,480		40.42

7.2.3. Organics

The table below details the waste estimates for organics and the spatial requirements needed. One organics bin per floor per core collected twice a week will allow for ample space in the 120L bins for residential waste. These estimates and collection frequencies will need to be confirmed once detailed Council rates and collections known.

Table 18 - Recommended equipment and collection frequency for Organics Stream: Stage 1

Building	Bin Type	Size m ³	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m ²	Total footprint m ²
A	MGB	0.12	16	2	3,840	2,800	0.27	4.32
B	MGB	0.12	22	2	5,280	2,750	0.27	5.94
C	MGB	0.12	9	2	2,160	2,025	0.27	2.43
TOTAL			47		11,280	7,575		12.69

7.3 Residential - Stage 2

7.3.1. General Waste

The table below details the waste estimates for general waste and the spatial requirements needed for each buildings waste storage room during Stage 2

Table 19 - General waste recommended equipment and collection frequency: Stage 2

Waste Room - D	Bin Type	Size m ³	No. of Bins	No. of Spare Bins	Weekly Clearance Frequency	Weekly Capacity (L)	Estimated Volume/ Week (L)	Footprint per Bin m ²	Total Footprint m ²
General Waste	MGB	0.66	1	1	2	1,320	4,320	0.98	1.98
Bin Wash									4.00
Bulky Waste									8.00
Linear Track		0.66	3*			3,960			10.00
TOTAL			4	1		5,280	4,320		23.98
Including 50% additional space for manoeuvring									35.97
Spatial provision in design									47.00
Waste Room - E1, E2									
General Waste	MGB	0.66	1	1	2	1320	4990	0.98	1.98
Bin Wash									4.00
Bulky Waste									6.00
Linear Track		0.66	3*		2	3,960			10.00
TOTAL			4	1		5,280	4,990		21.98
Including 50% additional space for manoeuvring									32.97
Spatial provision in design - E1 & E2									45.00
Waste Room - F1, F2									
General Waste	MGB	0.66	2	1	2	2,640	6,550	0.98	2.96
Bin Wash									4.00
Bulky Waste									6.00
Linear Track		0.66	3*			3,960			10.00
TOTAL			5	1		6,600	6,550		22.96
Including 50% additional space for manoeuvring									34.44
Spatial provision in design - F1									46.00
Spatial provision in design - F2									47.00

7.3.2. Mixed Recycling

The table below details the waste estimates for mixed recycling and the spatial requirements needed for Stage 2. Two mixed recycling bins per floor per core will allow for ample space in the 240L bins for residential waste.

Table 20 - Recommended equipment and collection frequency for mixed recycling Stream: Stage 2

Building	Bin Type	Size m ³	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m ²	Total footprint m ²
D	MGB	0.24	16	2	7,680	4,320	0.43	6.88
E	MGB	0.24	44	2	21,120	9,980	0.43	18.92
F	MGB	0.24	44	2	21,120	13,100	0.43	18.92
TOTAL			92		49,920	27,400		44.72

7.3.3. Organics

Table 21 - Recommended equipment and collection frequency for Organics stream: Stage 2

Building	Bin Type	Size m ³	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m ²	Total footprint m ²
D	MGB	0.12	8	2	1,920	1,300	0.27	2.16
E	MGB	0.12	23	2	5,520	2,825	0.27	6.21
F	MGB	0.12	22	2	5,280	3,700	0.27	5.94
TOTAL			47		11,280	7,575		14.31

7.4 Residential - Total

The tables below show the total bins (general waste, mixed recycling, and organics) that will be taken to the north and south WHAs once the project is complete and operational. The estimates show that these holding areas are adequately sized to house the bins prior to collection.

Table 22 - Total bins in Waste Holding Area per collection - North

Waste Stream	Buildings	Size m ³	Total No. of Bins	Footprint per Bin m ²	Total Footprint m ²
General Waste	A1, A2, B1, B2, C	0.66	26	0.98	25.48
Mixed Recycling		0.24	100	0.43	43.00
Organics		0.12	47	0.12	12.69
TOTAL					81.17
Including 50% additional space for manoeuvring					121.76
Current Size of North Waste Holding Area					123.00

Table 23 - Total bins in Waste Holding Area per collection - South

Waste Stream	Buildings	Size m ³	Total No. of Bins	Footprint per Bin m ²	Total Footprint m ²
General Waste	D, E1, E2, F1, F2	0.66	27	0.98	26.46
Mixed Recycling		0.24	92	0.43	39.56
Organics		0.12	53	0.12	14.31
TOTAL					80.33
Including 50% additional space for manoeuvring					120.5
Current Size of South Waste Holding Area					121.00

7.5 Amenities Waste

Waste generated from these areas will be taken down to their corresponding waste room – for example, the Gym on the GF is in Building D, so cleaners will take the lifts down to the Building D waste room on the Lower Ground. As the waste generation estimates are minimal for these areas and the basement waste areas more than adequate, they have been absorbed into the residential waste figures.

8. Waste and Recycling Storage Areas

The areas detailed in Section 7 above indicate the total footprint and spatial requirements for the main waste storage areas, and the following section details the waste and recycling storage areas that will house this waste. Each component will have its own dedicated waste storage room for the collection and storage of waste and recycling, retail and residential, which are detailed below. Each waste storage room will have allocated space for bulky waste and a bin wash area.

Upon completion of the development, there will be two separate basement areas (north and south), housing the ten waste storage rooms (north - A1, A2, B1, B2, and C and south - D, E1, E2, F1, and F2). Each of these basement areas will contain a central waste holding area (WHA) where the general waste, mixed recycling, and organics will be brought prior to collection.

8.1 Retail - Stages 1 & 2

Upon completion of the project, there will be two retail tenancies, each with their own waste storage areas (Figures 2 and 3). Section 10.1 below details how waste will be managed during Stage 1, and Section 10.2 below details how retail waste will be managed upon completion of the development.

Figure 2: Retail waste storage area (north, Stage 1)

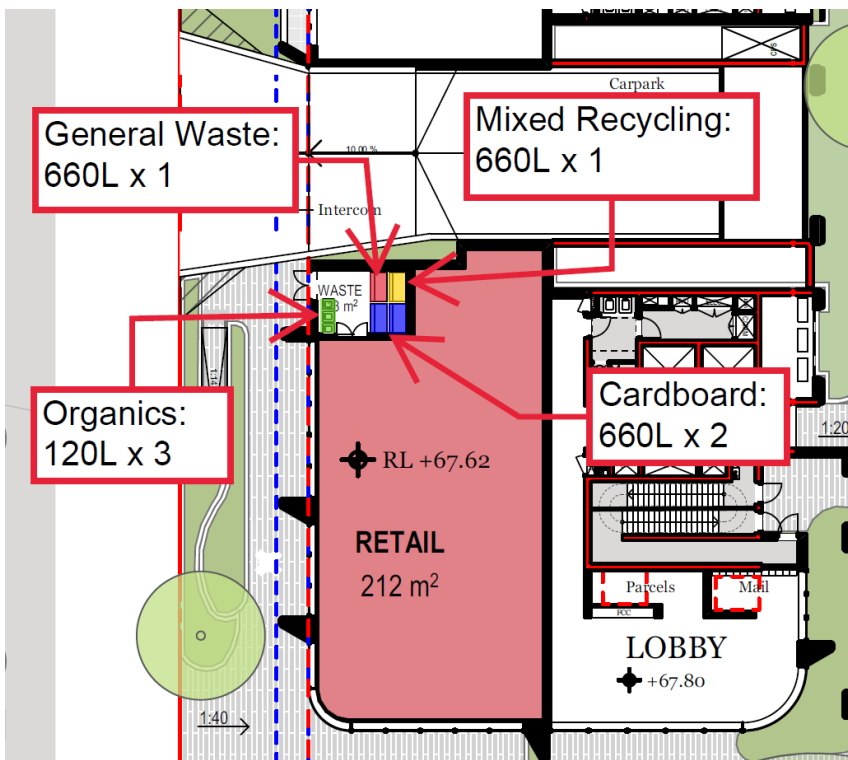
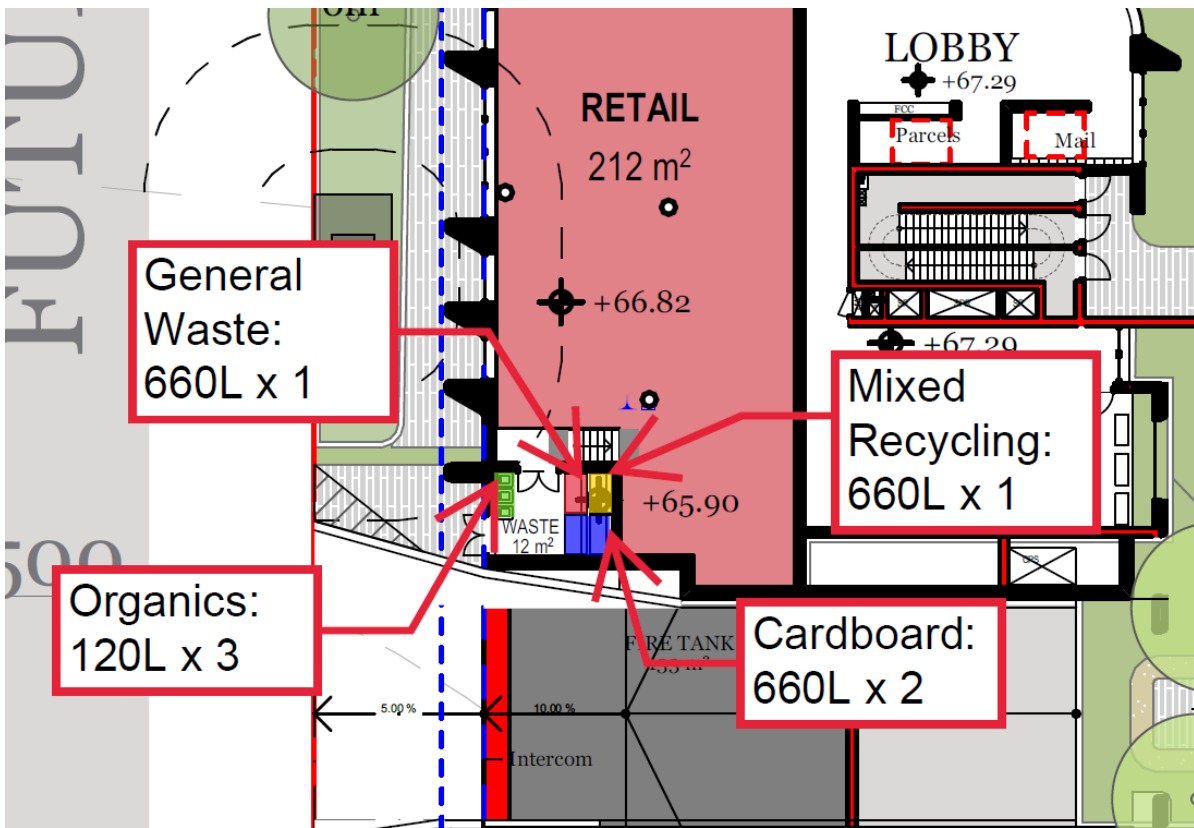


Figure 3: Retail waste storage area (south, Stage 2)



8.2 Residential - Stage 1

8.2.1. General Waste

General waste will travel down a waste chute from each floor (Figure 4), and empty into the corresponding waste room (Figure 5). Each waste chute will empty into a 660L bin on a linear track system (see Appendix 2 for chute and linear track specifications). Once this bin is full, an empty bin will take its place. Each waste room needs between 5 and 6 x 660L bins collected twice a week, and an additional spare 660L bin. For safety reasons, residents will not be permitted to enter the waste rooms with the linear track, or if absolutely necessary, they must be accompanied by a member of facilities management.

There are five waste storage rooms to service the three buildings in this stage: A1, A2, B1, B2, and C. Prior to collection, all the waste from the five waste storage rooms will be transferred the waste holding area (WHA) for collection by the waste contractor (see Section 10 for detailed collection information).

Figure 4: Example of garbage room a typical floor

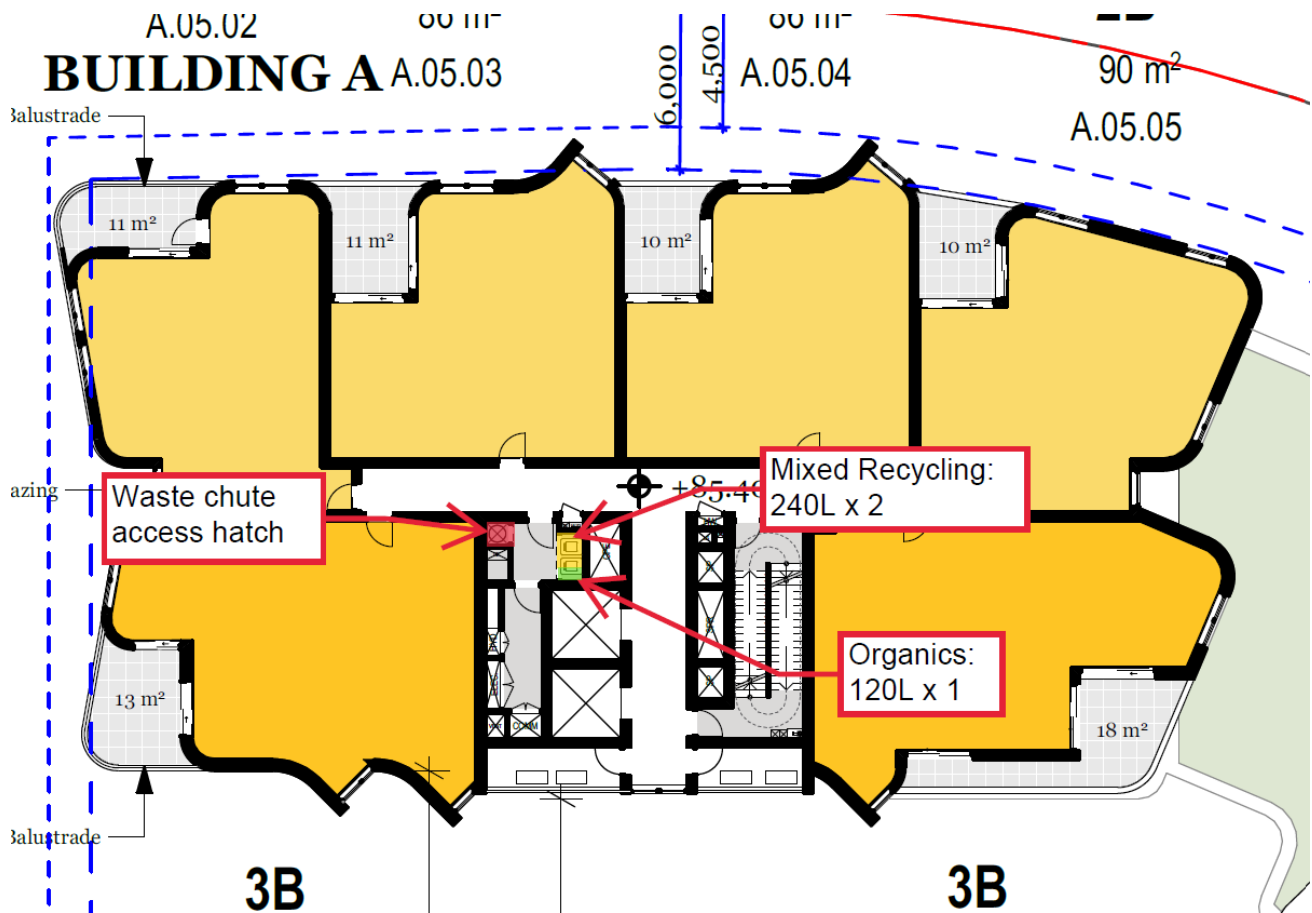


Figure 5 below shows a detailed close-up of the location and layout of a typical waste storage room - A1 in the Stage 1 Basement. The location of the remaining waste rooms in this Stage are shown in less detail in Figure 6 (the internal layout of each is very similar).

Waste will be discharged from a hopper into the 660L bin/s on the linear track. Automated operation means that the systems use linear motion to automatically change bins when full. Once all the bins are filled, a light will illuminate signifying that the bins are ready for withdrawal. When the three from the track are full, they will be replaced with the remaining two and when all five are full, they can be taken to the WHA for collection.

Figure 5: Detailed Layout of Waste Room in Stage 1 Basement (A1)

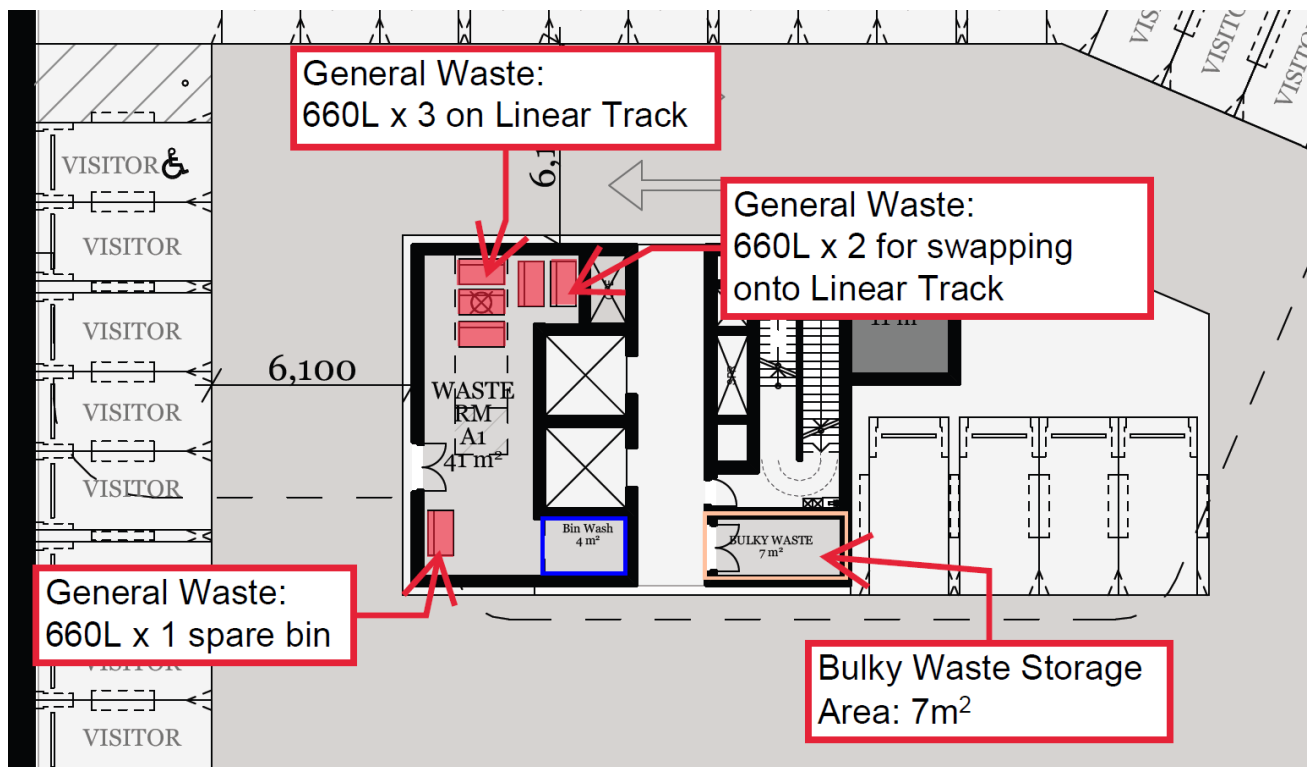
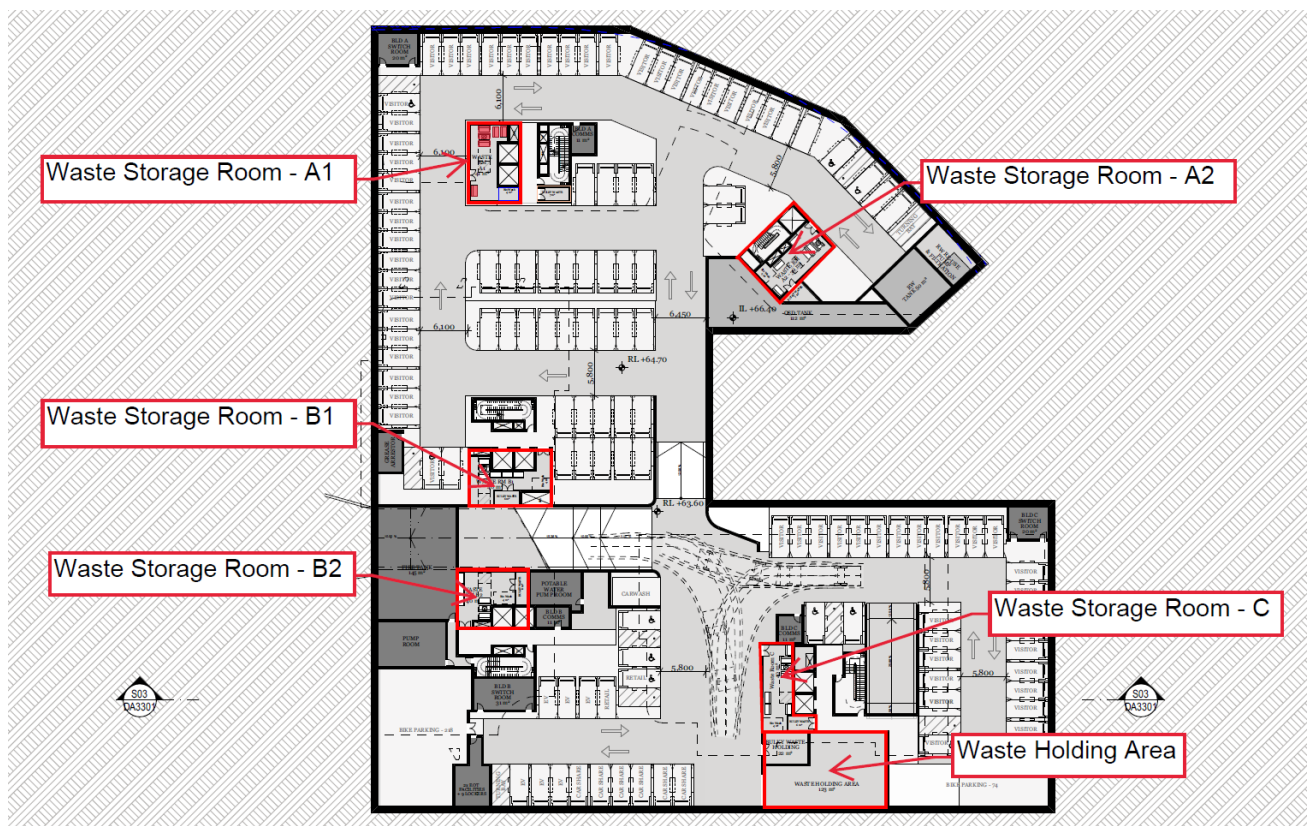


Figure 6: All waste rooms in Stage 1 Basement (A1, A2, B1, B2, and C and waste holding area)



8.2.2. Mixed Recycling

The total mixed recycling bins as detailed in Section 7.2.2, Table 17, will be taken from the floors above directly down to the north WHA (Figure 6), twice per week. Figure 4 above shows 2 x 240L mixed recycling bins in context on one of the residential floors.

8.2.3. Organics

The total organics bins as detailed in Section 7.2.3, Table 18, will be taken from the floors above directly down to the north WHA (Figure 6), twice per week. Figure 4 above shows 1 x 120L organics bins in context on one of the residential floors.

8.2.4. Bulky Waste Storage

Each waste storage room has a dedicated space for bulky waste storage for residents. This is to be collected on an ad hoc basis. See Figure 5 above for an example of a bulky waste storage area in one of the waste storage rooms.

8.3 Residential – Stage 2

8.3.1. General Waste

Figure 7 below shows a detailed close-up of the location and layout of a typical waste storage room – E1 on the Lower Ground. The location of the remaining waste rooms in this stage are shown in less detail in Figures 8 and 9 (the internal layout of each is very similar).

Figure 7: Detailed Waste Room Stage 2

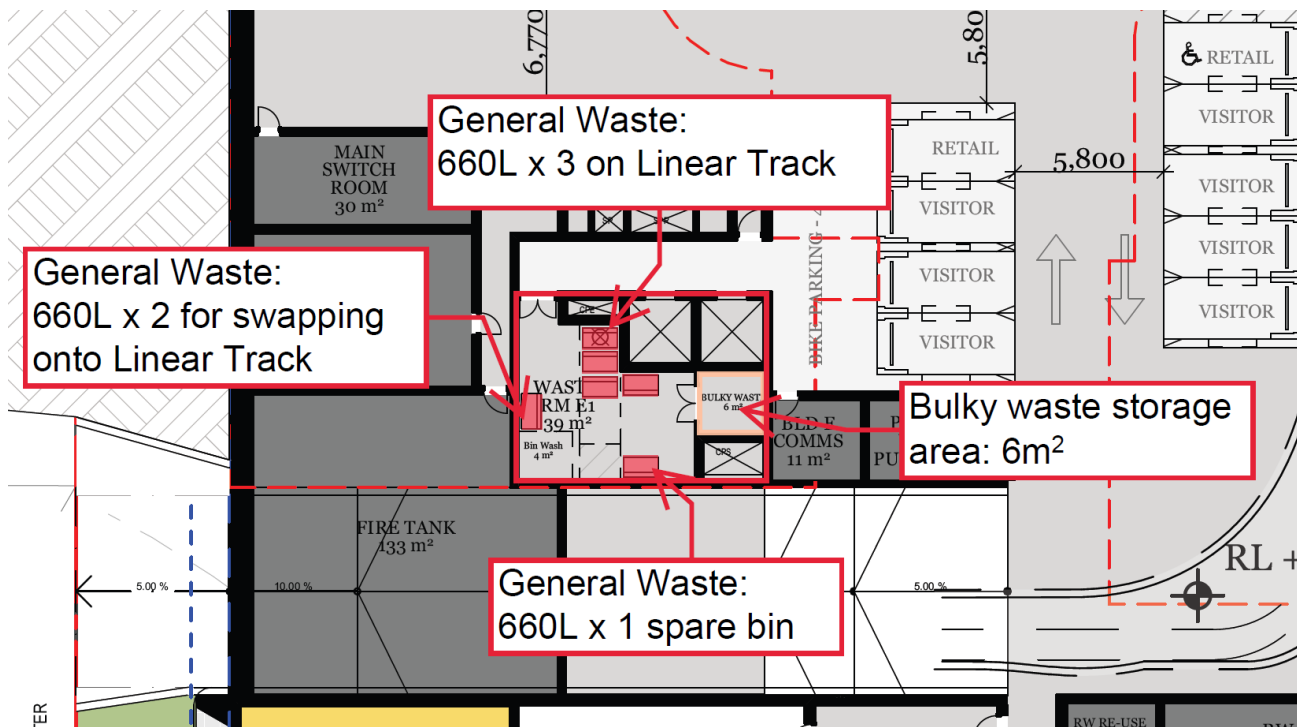


Figure 8: Waste rooms in Stage 2 Ground Floor (D, and E1 and waste holding area)

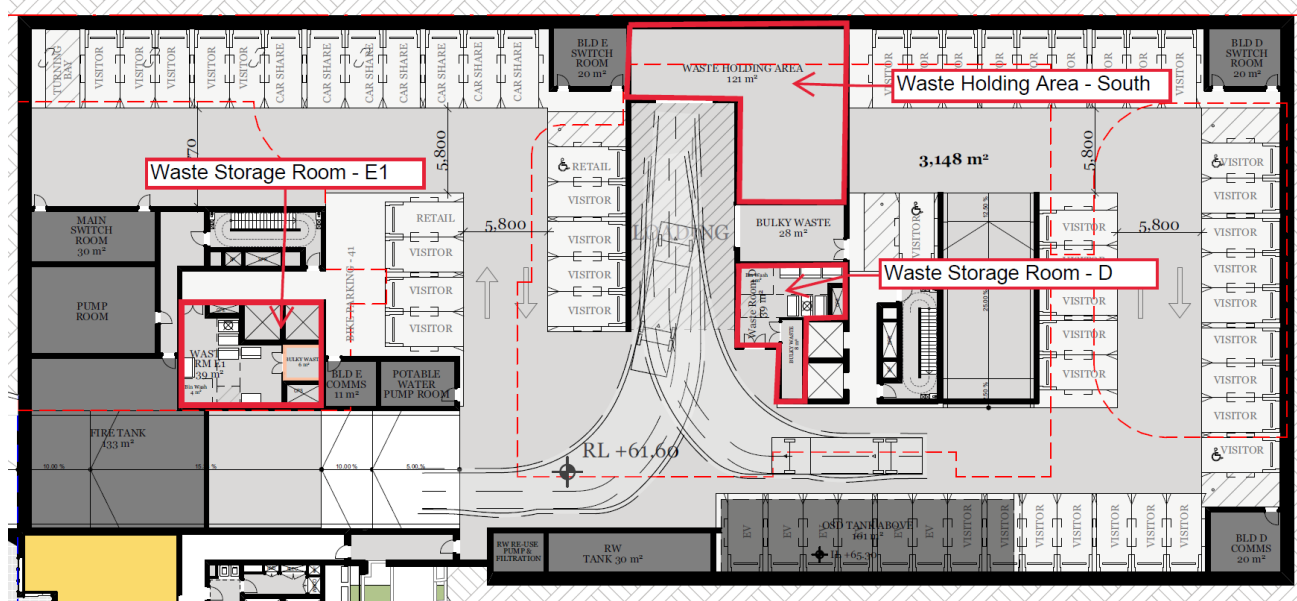
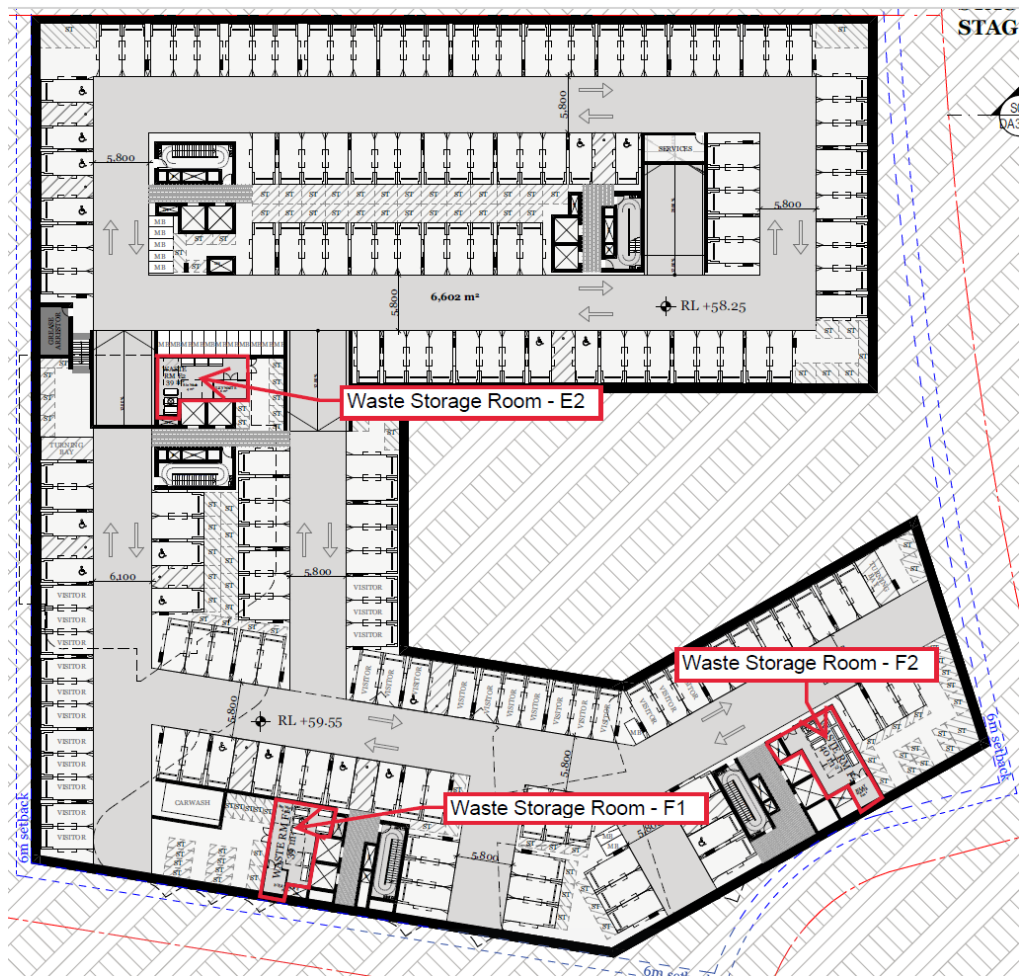


Figure 9: All waste rooms in Stage 2 Basement 01 (E2, F1, and F2)



8.3.2. Mixed Recycling

The total mixed recycling bins as detailed in Section 7.3.2, Table 20 will be taken from the floors above directly down to the south WHA (Figure 8), twice per week. Figure 4 above shows 2 x 240L mixed recycling bins in context on one of the residential floors.

8.3.3. Organics

The total organics bins as detailed in Section 7.3.3, Table 21 will be taken from the floors above directly down to the south WHA (Figure 8), twice per week. Figure 4 above shows 1 x 120L organics bin in context on one of the residential floors.

8.3.4. Bulky Waste Storage

Each waste storage room has a dedicated space for bulky waste storage for residents. This is to be collected on an ad hoc basis. See Figure 5 above for an example of a bulky waste storage area in one of the waste storage rooms.

8.4 Waste Room Amenity

The main waste and recycling storage room will have the following features:

- Ventilation: The bin storage rooms will be mechanically exhausted in accordance with AS 1668.2-2002
- Vermin and Odour Prevention:
 - Opening will be vermin proof
 - Cleaners are to ensure that bin lids are closed when unattended
- Doors: The room will be fitted with a close fitting self-closing door that is openable from inside the room without the use of a key. The doors will be finished with a smooth faced impervious material that is capable of being easily cleaned.
- Noise: Noise will not be an issue due to the location of the waste storage room away from public lower ground floor.
- Floor: Structural concrete slab with smooth epoxy topping finish with coved wall and floor junctions. Graded drains to approved sewer connections - fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation.
- Walls: Brick work/concrete block or similar finished in a light coloured, washable paint.
- Ceiling: Structural concrete slab finished with a rigid, smooth faced impermeable material capable of being easily cleaned.
- Lighting: Base building lighting with switches inside and outside waste room (sensors may also be used).
- Water Supply: cold tap and hose connection servicing graded bin wash areas
- Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see section on signage below).

8.5 Signage

All waste and recycling streams will be differentiated with clear signage on all bins and on walls within the waste storage area. Below are examples of signage that will be used on bins, in waste storage areas, and retail back of house areas.

Figure 10: Stream appropriate signage



9. Onsite Management Protocols

9.1 Retail Back of House

Retailers are responsible for separating and managing their waste and recycling streams within their retail tenancy. There is an expectation that retail operators will make spatial provisions for the implementation of appropriate bin systems in their BOH areas to maximise diversion from landfill through the recommended streams.

The preferred bins to be implemented in all retail tenancies are 60 or 90L multi-sort bins (retailer preference) - these bins can then be transferred to the central waste management areas on a bin trolley designed for these bins. The following figures provide examples of multi-sort bins and the trolley.

Figure 11: Multi-sort bins for retail BOH areas



Figure 12: Multi-sort bin trolley for retailer movement to waste area (reference only, not a requirement)



9.2 Waste Streams

9.2.1. Primary Waste Streams

Table 24 - Primary streams acceptance criteria

WASTE STREAM	ACCEPTABLE ITEMS	NOT ACCEPTABLE ITEMS
Mixed Recycling	Empty glass, aluminium, plastic, steel bottles/cans/containers	All other items
Cardboard & Paper	Office Paper, Envelopes, Manilla Folders, Newspapers, Magazines, Cardboard	Plastic bags, food, waxed cardboard, polystyrene, food-soiled cardboard
Organics	Food Scraps, Coffee Grounds, tea bags, flowers, herbs & garden trimmings.	Plastic including straws, butter sachets, Australian certified compostable packaging (AS 4736), cling wrap, meat packaging. Biodegradable bags, polystyrene cups, grease trap waste, aluminium foil, coated cardboard, metal, tin, glass, paper hand towel
General Waste	Putrescible waste (non-hazardous)	Hazardous materials such as batteries, E-waste and liquids

9.2.2. Additional Waste Streams

Table 25 - Management Protocol for additional streams

WASTE STREAM	MANAGEMENT PROTOCOL
Paper hand towel recycling	<p>In an effort to reduce waste generation volumes, a paper hand towel free system in bathrooms should be considered. Replacing hand towels with a system such as the 'Airblade' produced by Dyson ² or the "Jet Towel" produced by Mitsubishi Electric ³ may prove to be more environmentally (and economically) efficient than a paper hand towel system.</p> <p>If a paper hand towel system is chosen, then it should be confirmed with the appointed waste contractor which recycling stream is most appropriate for this material.</p>

² Information gathered from <http://www.dysonairblade.com.au/>

³ Information gathered from <http://www.mitsubishielectric.com/bu/handdryer/products/index.html>

10. Collection

This section, with the figures below shows how the appointed waste contractors can access the site and collect all streams for both retail and residential. Waste collection points have been designed to be integrated within the development so as not to be visible by the public and to minimise noise for both occupants and neighbours.

10.1 Retail - Stage 1

Stage 1 retail waste will need to be transferred from the waste storage area to the temporary bin collection area (Figure 13 & 14). Prior to collection, retail staff will transfer bins to the B2 waste storage room, where they will then be taken up to the temporary waste storage area with the residential bins on collection days. After collection, empty bins will be returned to the B2 waste storage room and retail staff will collect and return them to the retail waste storage area. This arrangement is purely temporary until the future road is operational. Refer to Section 10.2 below for Stage 2 Retail - how waste will be managed during ongoing operations.

Figure 13: Retail waste travel path Retail Level - Stage 1

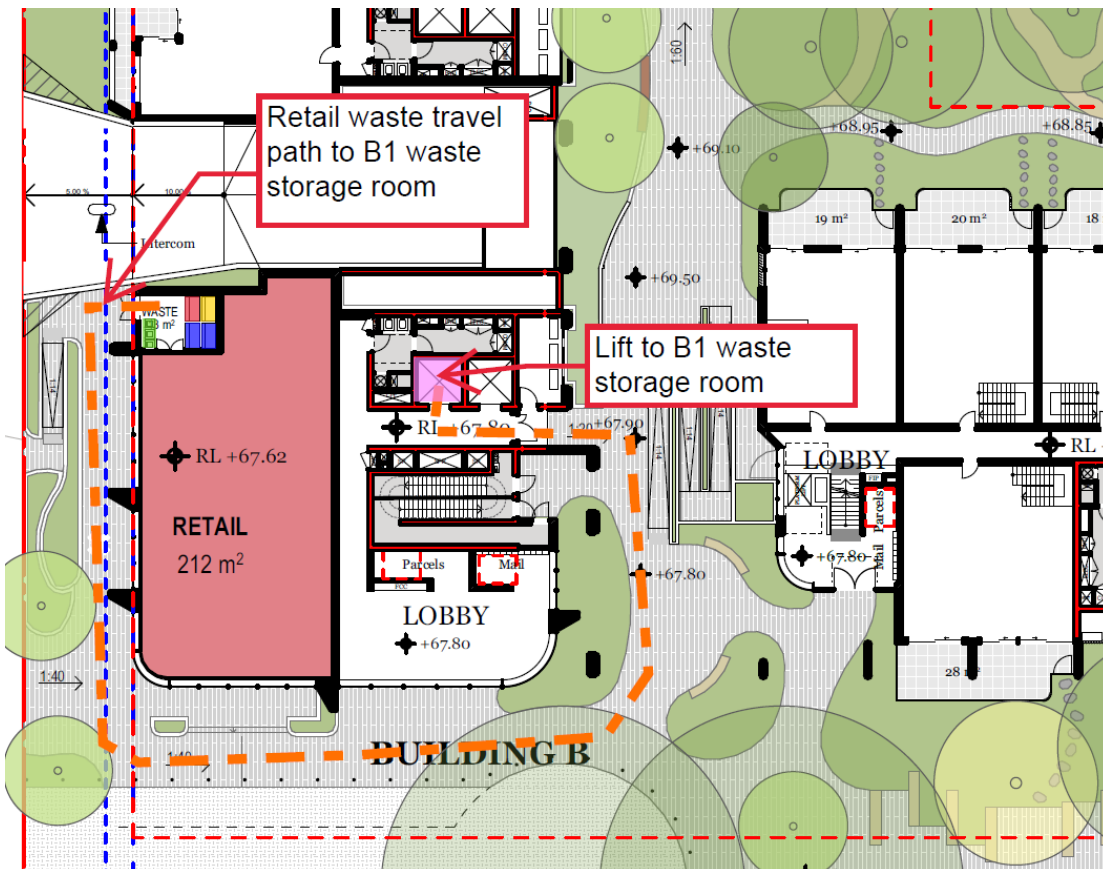
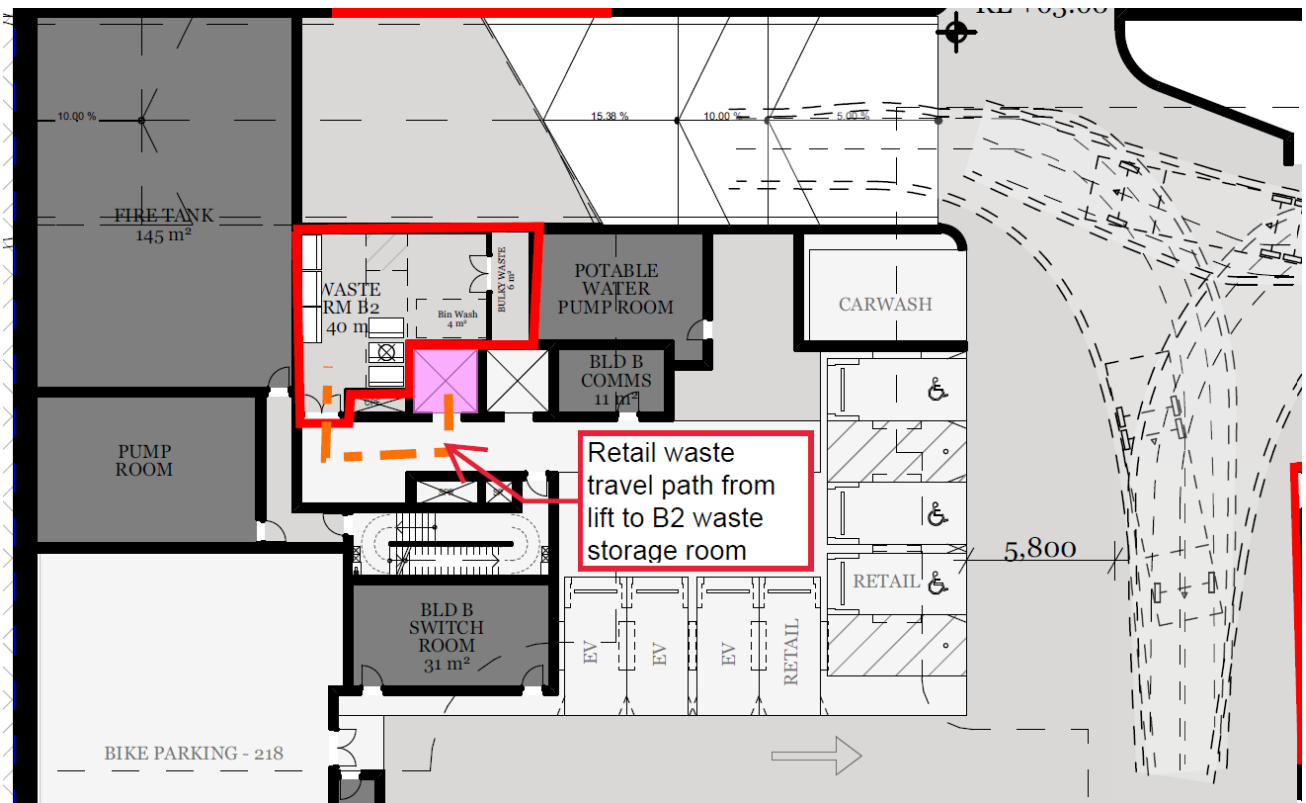


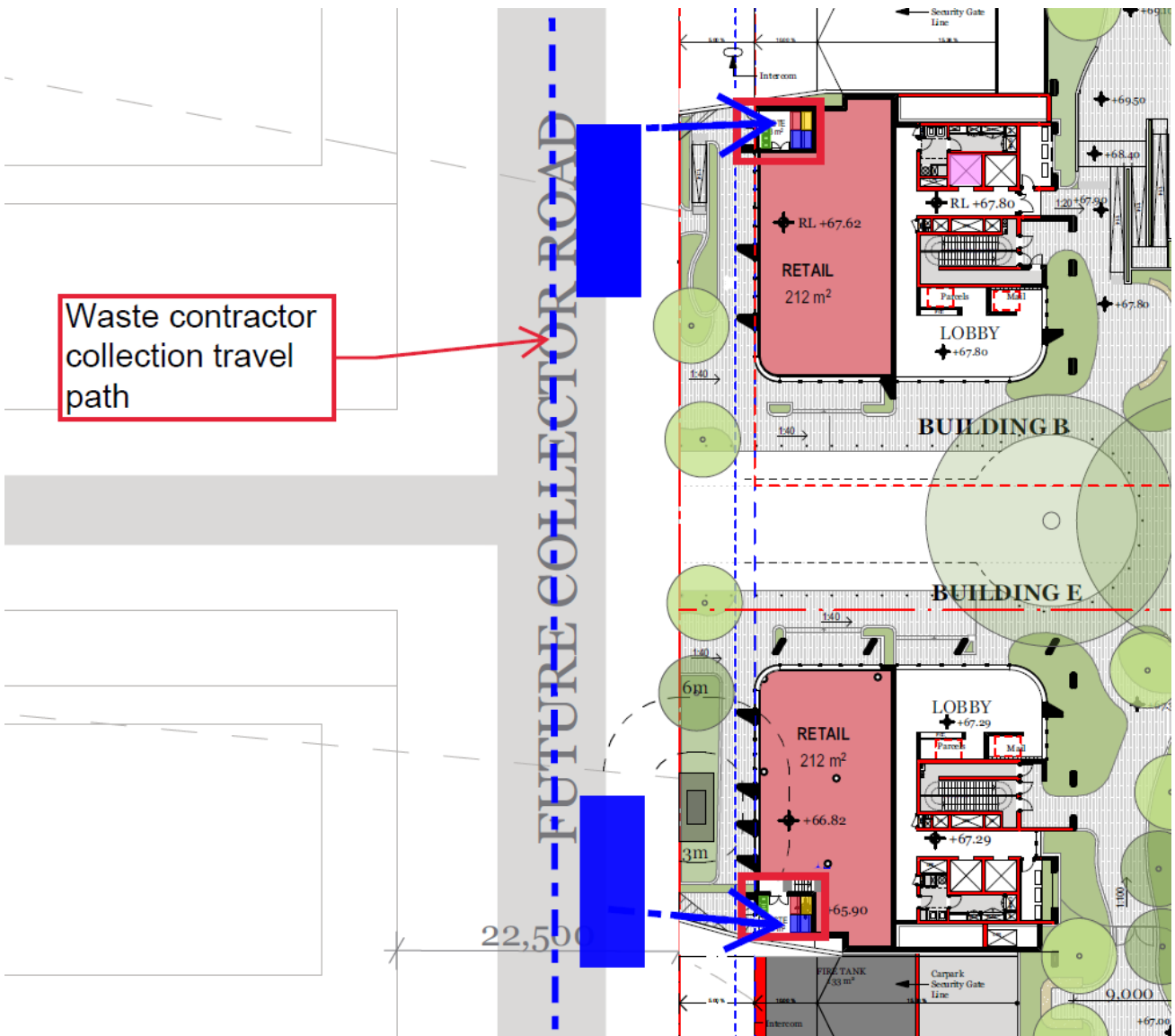
Figure 14: Retail waste travel path Lower Ground Level (B2 waste storage room) - Stage 1



10.2 Retail - Stage 2

Upon completion of the project and once operational, retail waste will be collected by a waste contractor medium rigid vehicle (MRV) directly from both retail tenancies waste storage rooms, which can be accessed from the future main road (Figure 15).

Figure 15: MRV waste collection access and collection point

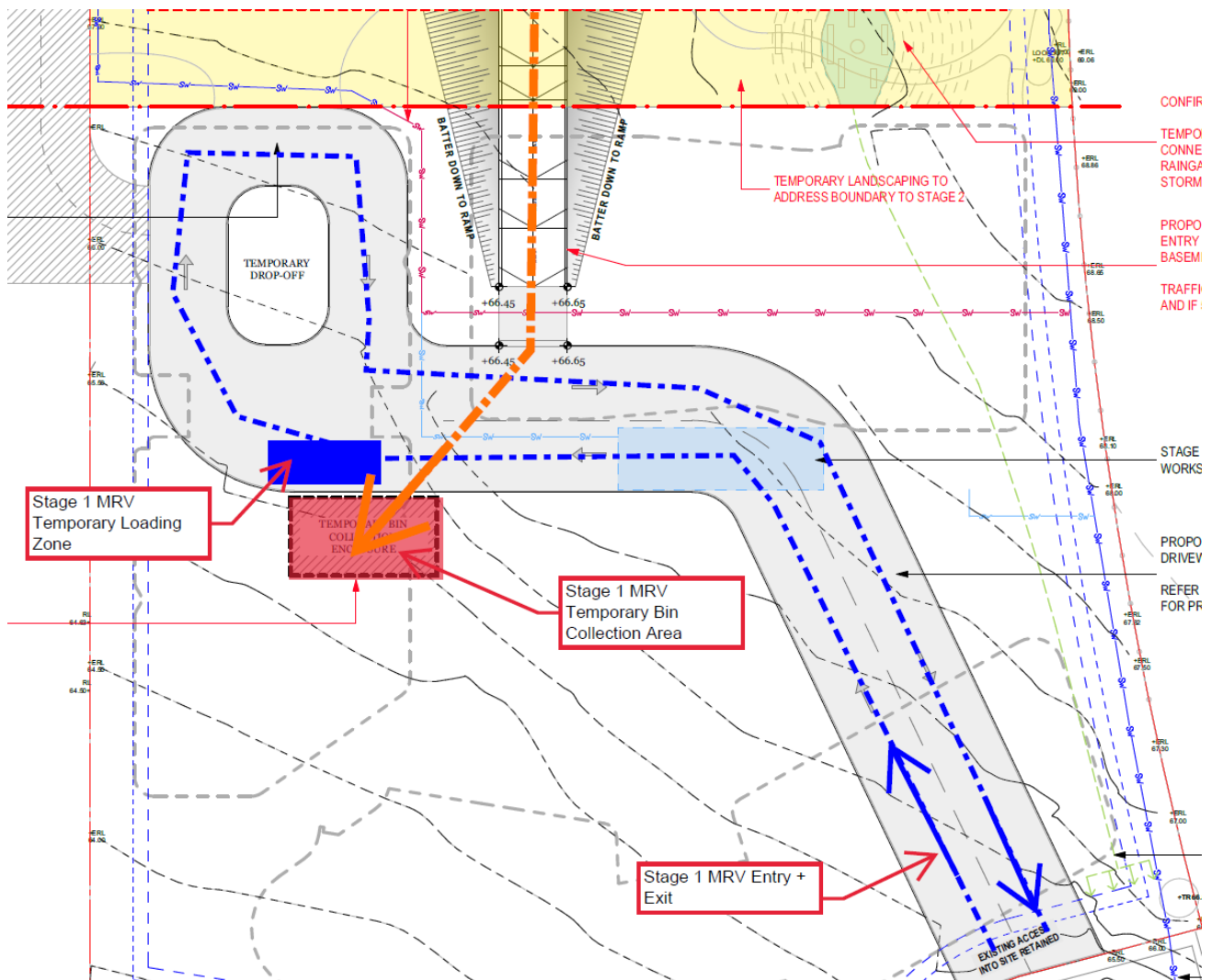


10.3 Residential - Stage 1

Prior to collection, the total general waste and mixed recycling bins from the WHA will need to be transferred to the temporary bin collection area on street level (Figure 16). A tug vehicle with a trailer that can pull multiple bins will be needed, and the number of transfers/trips from the WHA will depend on how many bins can be moved at once (See Appendix 3 for tug vehicle image and specifications). Figure 16 below shows the waste travel path from the Stage 1 WHA.

The appointed Council waste contractor will be able to access the site from 'The Retreat' cul de sac road, and then drive forwards into the development and to the temporary bin collection point. The MRV will stop here temporarily to empty all bins and return empty bins to the collection point. Strata management/cleaners will then return empty bins to the WHA using the tug vehicle.

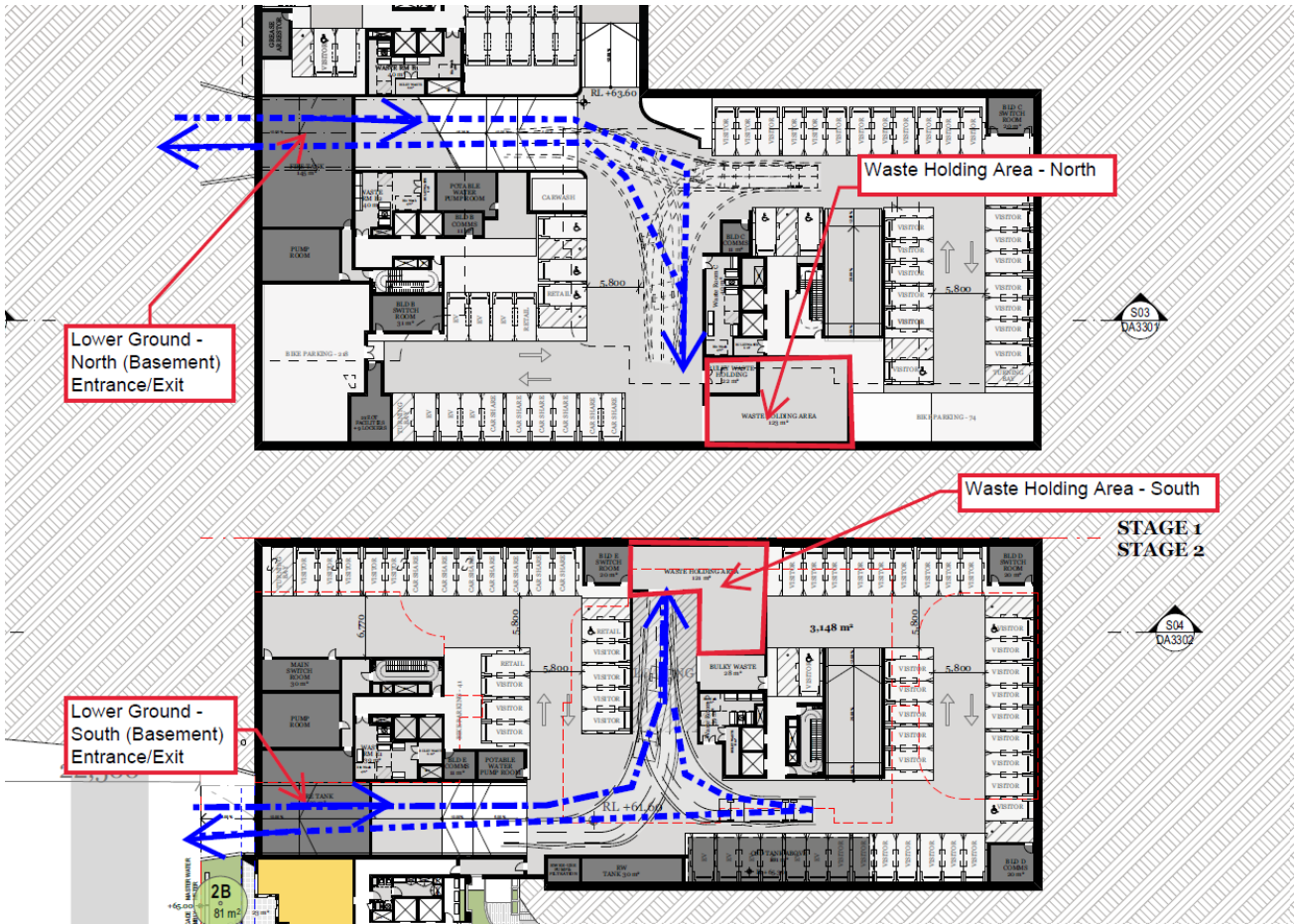
Figure 16: MRV waste collection access and collection point



10.4 Residential - Stage 2

Upon completion of the project and once operational, all residential waste will be collected from the WHAs within the basements.

Figure 17: MRV Travel paths to WHAs in Lower Ground (Basement)



10.5 Waste truck collection specifications

Waste truck specifications will vary slightly between waste contractors (Council and private) however, as a guide, all streams and bins recommended in this report for retail (private) and residential (Council) waste would typically be collected by a similar (or smaller) MRV rear lift waste truck. Figure 18 provides the indicative dimensions of MRV waste trucks used for rear lift MGB collections and Figure 19 provides indicative dimensions of a smaller rear-lift waste truck.

Figure 18: Medium rear-lift commercial waste truck specifications

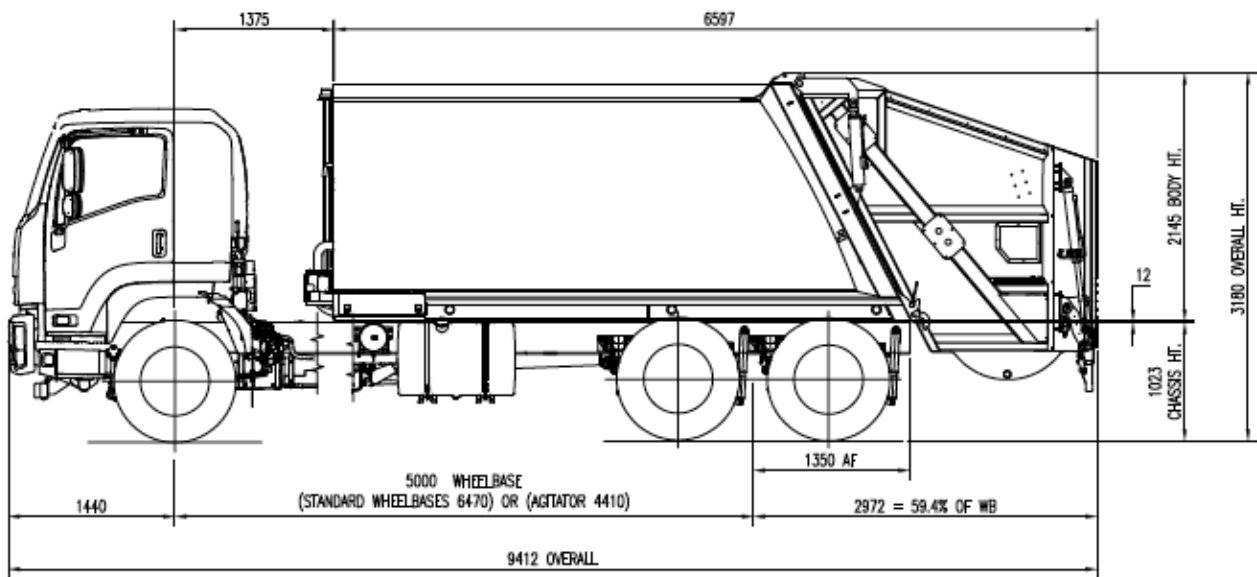
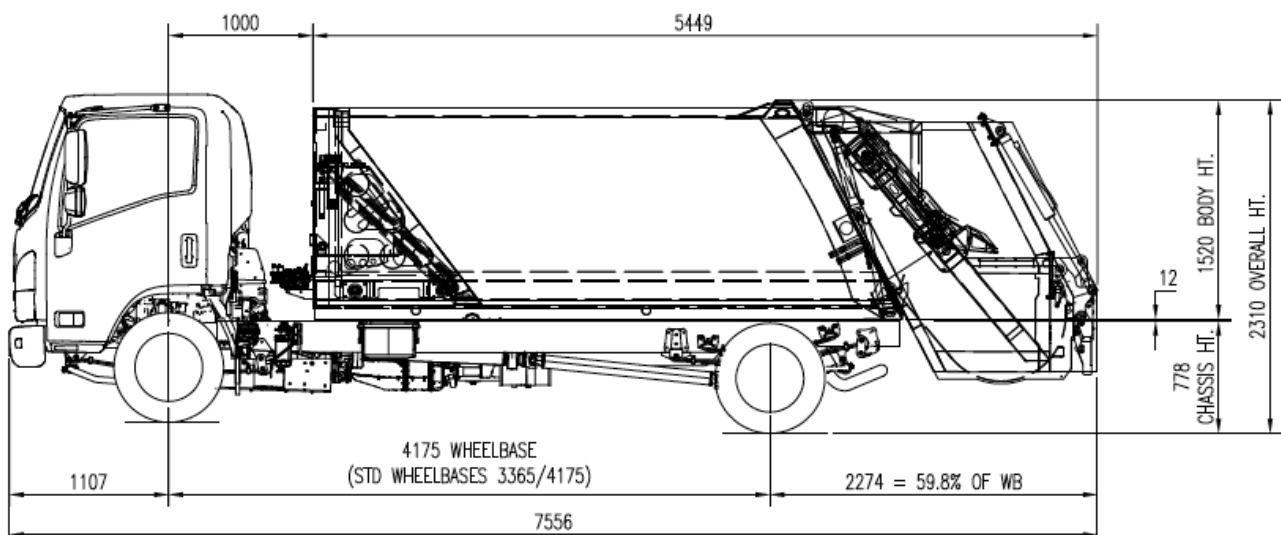


Figure 19: Small rear-lift commercial waste truck specifications



11. Operational Monitoring and Performance

11.1 Recycling Performance and Targets

Based on the theoretical waste estimate, between 60 - 80% of the total waste profile could be diverted from landfill assuming effective primary separation of recyclables.

An achievable target should be set which allows for progressive improvements to be made to the waste program each year. By addressing the “low hanging fruit” first and then expanding the program to address the recycling streams which are typically more challenging to implement and represent a smaller portion of the total waste stream, building management will be able to build momentum amongst tenants and the recycling program will have a greater chance of sustainable success.

Table 26 - Achievable target progression

	Year 1	Year 2	Year 3	Year 4
Recovery Target	50%	60%	65%	70%
Continual progression through monitoring - feedback - education loop				

These targets are provided as a conservative guide which should be reviewed and adjusted in light of actual onsite practices once operational as greater diversion opportunities may be available to building management.

11.2 Review Process

Waste minimization programs require periodic review to ensure that the waste management plan is being adhered to, and to identify any new waste minimisation opportunities - a review of the efficacy of the waste management plan should be undertaken every 12 months.

Third party companies can provide waste audit services, or an internal audit review can be undertaken - in both cases waste contractor data should be reviewed to determine that all waste and recyclables are being separated effectively in accordance with the waste management plan, and that waste and recyclables are being taken to the appropriate facilities.

Other points to consider in monitoring and review:

- All products that are of concern in relation to the waste being generated will be replaced where possible for products that are less wasteful and more environmentally friendly.
- All waste bins will be inspected on a weekly basis to ensure that they are maintained in a clean, and appropriate condition appropriate for their use and containment of their specific waste. They will also need to be monitored regularly to ensure that cross- contamination does not occur or is kept as minimal as possible.
- Facilities management will continue to review the types of materials produced and where possible change the site design and operation to minimize any products that go to landfill.

Reduction, then reuse and recycling of waste products is the highest priority.

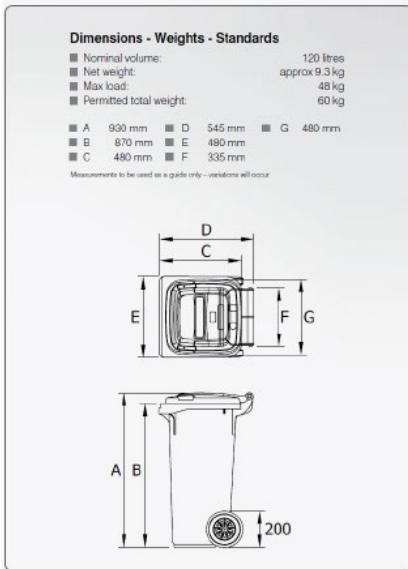
12. Conclusion

The details of this waste management plan confirm that the waste facilities and operational strategy for 40 The Retreat, Bringelly, Sydney adequately cater for the asset's operational waste management requirements and are in line with the Western Sydney Aerotropolis DCP 2022.

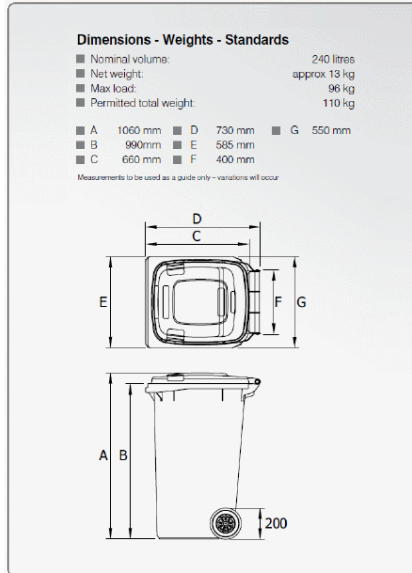
Appendix

Appendix 1 MGB Bin Specifications

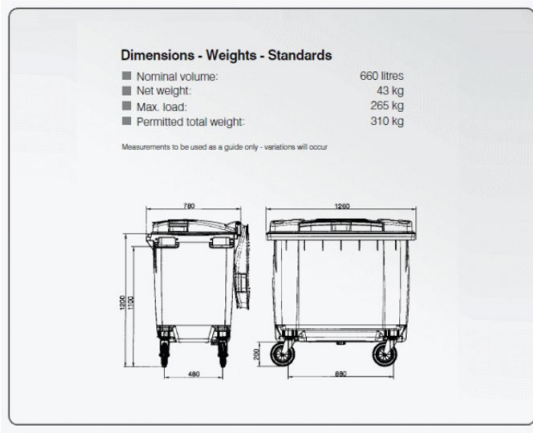
120L MGB



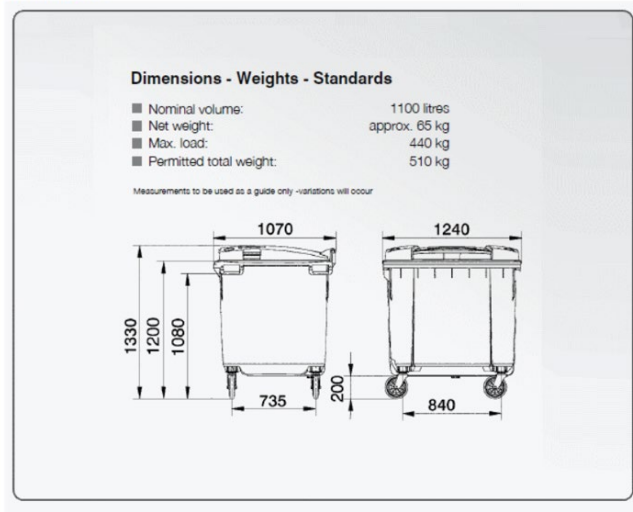
240L MGB



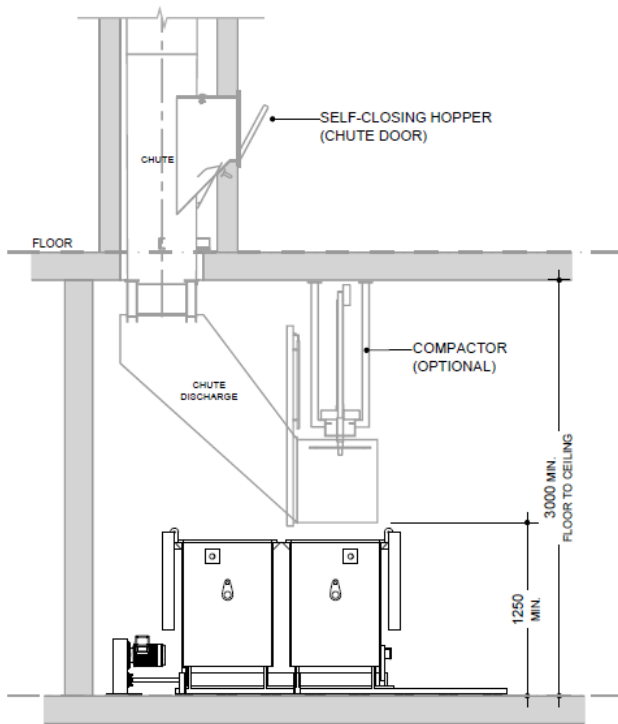
660L MGB



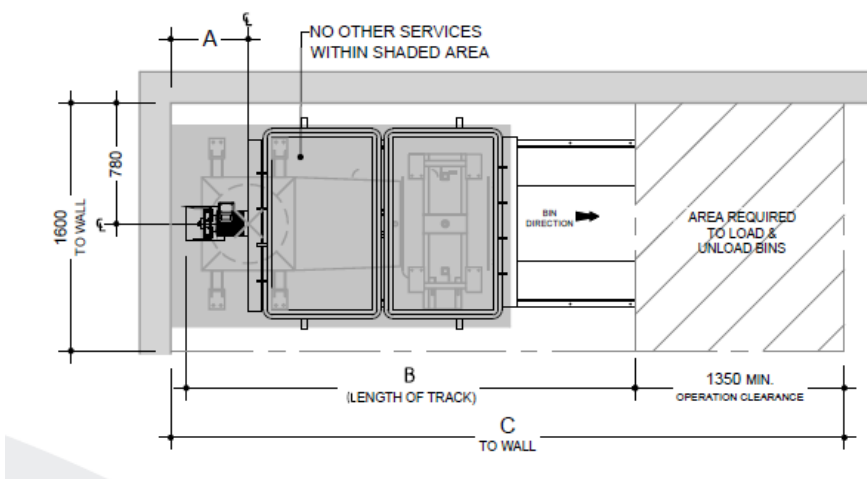
1100L MGB



Appendix 2 Bin Chute and Linear Track Specifications



No. of Bins	A	B	C
3	1450mm	4650mm	6050mm



Appendix 3 Bin Tug Specifications

Taylor-Dunn SS546-36 Volt GT

- Hybrid with Heavy Duty Running Gear (B2-48)
- SS546-36 Volt GT's design allows you to convert the vehicle from personnel carrier to burden carrier in a matter of seconds. This vehicle can carry up to 270 Kg of load and tow 2267 Kg.
- It's all welded steel unitized body and frame is built to last for years of use, with standard front bumper and an automotive steering wheel.
- Modularized control system design provides ease of maintenance on all electrical systems. Geared steering, 14.5 kph speed, and on-board charger provide safety, efficiency and convenience during daily operation.



Indicative picture

Product:	SS546-36-volt GT
Dimension:	760mm Width x 2256 mm Length
Turning Radius:	2060 mm
Wheel:	4-Wheel
Speed (Unloaded):	14.5 Kph
Unit Weight:	432 Kg
Load Capacity:	272 Kg
Tow Capacity:	2267Kg :Tow hitch 16 mm Drop pin
Traction Voltage:	36 Volts
Battery Type:	217 Amp Hour Battery, 6 Each
Drive:	GT Drive, Automotive Type Differential 30:1 Ratio
Motor:	4.5 Hp Intermittent (1.5 hp @ 60 min. rating)
Controller:	SEM Controller
Charger:	Signet Built-In, 36 Volt, , with Interlock
Brakes:	Auto Adjust Mechanical Disc on rear wheels, with Foot Operated Parking Brake
Tires:	4.80 x 8, Load Range B
Frame:	All Welded Steel, Unitized Body, 16 Gauge Diamond Plate
Deck:	760 Width mm x 750 mm Length
Steering:	Geared Steering, Steering Wheel
Instrumentation:	Electric Horn, Battery Status Indicator, Key Lock
Lights:	Headlight, Tail Light, Brake Light
Seats:	Convertible Seat Back, Black Vinyl with Driver's Seat Electrical Interlock
Colour:	Safety Orange - Other colours available POA

