CENTRAL VILLAGE, PHASE 2 STAGE 4, 5 AND 6

CANTERBURY TOWERS

FORTITUDE VALLEY

Project

WASTE MANAGEMENT PLAN

METRO PROPERTY DEVELOPMENT

Client

EMF GRIFFITHS
SUSTAINABILITY CONSULTANTS

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EXECUTIVE SUMMARY

This preliminary Waste Management Plan (WMP) has been developed in accordance with the Department of Environment and Climate Change document titled *Better Practice Guide for Waste Management in Multi-unit Dwellings*, as well as other relevant legislation and best practice guidelines and information received from Brisbane City Council.

Residential Waste

There will be one main residential waste storage area for the storage of full bins awaiting collection which will be taken from the following areas:-

- Stage 4 Refuse Room located on Podium 1.
- Stage 5 Refuse Room located on Basement 1.
- Stage 6 Refuse Room located on Podium 1.

Bins will be collected every two to three days by Brisbane City Councils waste contractor Sita.

General waste will be collected from Monday through to Sunday.

Commingle waste will be collected from Monday through to Friday.

The Residential Bin Store located adjacent to the loading dock on Podium 1 is sufficiently sized to store the following:-

- 5 x 1,100L general waste skips.
- 10 x 1,100L commingle skips.

On collection day, skips transferred from Stage 4 will be placed adjacent to the Residential Bin Store or Tenancy Bin Store to be emptied. The total number of skips stored adjacent to the Bin Stores on collection days are as follows:-

- 2 x 1,100L general waste skips.
- 4 x 1,100L commingle skips.

Bins will be transferred from the Refuse Rooms to the Residential Bin Store via a ride-on bin mover with an attached trailer.

Bin carousels with compactors are are proposed for Stage 4, Stage 5 and Stage 6 general waste. Bin carousels (without compactors) are proposed for Stage 4 and Stage 6 commingle waste.

No bin carousels are proposed for Stage 5 commingle waste.

Tenancy Waste

Tenancy Refuse Room 1 will store bins allocated to the Gym and Retail 1 tenancy. These bins will be transferred to the Tenancy Bin Store on Podium 1 on collection days with the aid of a ride-on bin mover.

Bins allocated to Retail 2 and Retail 3 tenancies will be permanently stored in the Tenancy Bin Store on Podium 1.

Tenants are responsible for transferring waste generated within the tenancies to bins allocated to them.

On bin collection days, the Tenancy Bin Store will contain the following bins ready for collection:-

- 4 x 360L general waste bins.
- 4 x 240L commingle bins.

Bins will be collected by Brisbane City Councils waste contractor Sita.

General waste will be collected up to three times per week from Monday through to Sunday.

Commingle waste will be collected up to twice per week from Monday through to Friday.

SECTION 1 INTRODUCTION

This report identifies and assesses the options for waste management for the proposed residential and retail development located on the corner of Water and Brunswick Street, Fortitude Valley.

Central Village Phase 2 consists of three Stages which rise from a central podium. Stage 4 consists of 28 levels and 311 apartments, Stage 5 consists of 8 levels and 59 apartments and Stage 6 consists of 20 levels and 196 apartments.

This Waste Management Plan (WMP) has been developed in accordance with the Department of Environment and Climate Change document titled *Better Practice Guide for Waste Management in Multi-unit Dwellings*, as well as other relevant legislation and best practice guidelines and information received from Brisbane City Council.

1.1 WASTE MANAGEMENT OBJECTIVES

The waste management objectives addressed within this report are:-

- Identify the waste types likely to be generated throughout the life of the development.
- Develop an integrated approach to waste management to provide consistency in service throughout the site.
- Provide advice of the waste storage rooms spatial and design requirements.
- Provide advice of the size and quantity of waste receptacles required.
- Provide advice of the waste chute spatial and design requirements.

1.2 WASTE MANAGEMENT CONSIDERATIONS

Items considered when developing this waste management plan are as follows:-

- Brisbane City Council waste generation rates.
- Brisbane City Council's general and commingle (paper, cardboard, steel cans, aluminium cans, plastic bottles and containers, glass bottles and jars) waste collection frequencies.
- Transfer frequencies of bins from the waste chute discharge room to the waste storage area.
- Manual manoeuvring of waste bins.

SECTION 2 OPERATIONAL WASTE MANAGEMENT

2.1 WASTE GENERATION RATES

The waste generation rates used to calculate the predicted volume of waste generated on site is based on information received from Brisbane City Council and the *Better Practice Guide for Waste Management in Multi-unit Dwellings* issued by the Department of Environment and Climate Change NSW.

The following table outlines the waste generation rates for both the residential and tenancy areas on site:-

Type of Premises	General Waste Generation Rate	Recycling Waste Generation Rate
Restaurants L / 100m^2 floor area / day	660	130
Retail less than 100m^2 floor area L / 100m^2 floor area / day	50	25
Retail greater than 100m^2 floor area L / 100m^2 floor area / day	50	50
Takeaway L / 100m^2 floor area / day	80	40
Offices (Managers Offices) L / 100m^2 floor area / day	40	80
Residential L / unit / week	100	60
Gym L / 100m^2 floor area / day	40	20

Table 1: Waste generation rates provided by Brisbane City Council and the *Better Practice Guide for Waste Management in Multi-unit Dwellings,* Department of Environment and Climate Change NSW.

2.2 WASTE COLLECTION FREQUENCIES

Brisbane City Council has engaged the waste contractor SITA to collect all general and commingle waste within the local government area. SITA offer the following waste collection frequencies:-

- General waste: seven days per week.
- Commingle waste: five days per week – Monday through to Friday.

Based on this information the following minimum collection frequencies are proposed:-

- General waste: every two to three days.
- Commingle waste: every two to three days.

2.3 PREDICTED WASTE GENERATION RATES ON SITE

In order to plan for the effective ongoing management of wastes, it is first necessary to conduct a hypothetical waste audit to identify the waste streams generated and their approximate daily volume.

It is from this hypothetical audit that the size and quantity of bins required and collection frequencies are determined.

The proposed compactors will reduce the volume of general waste by 3 to 1.

The predicted waste generation volumes are outlined in the following tables:-

Residential - Stage 4, 311 Units and Managers Office Predicted Waste Volumes	General Waste with Compactor	Commingle Waste
Day 1	1,565 L	3,169 L
Day 2	3,130 L	6,337 L
Day 3	4,694 L	9,506 L

Table 2: Residential - Stage 4 predicted waste volumes.

Residential - Stage 5, 59 Units Predicted Waste Volumes	General Waste with Compactor	Commingle Waste
Day 1	281 L	506 L
Day 2	562 L	1,011 L
Day 3	843 L	1,517 L

Table 3: Residential - Stage 5 predicted waste volumes.

Residential - Stage 6, 196 Units Predicted Waste Volumes	General Waste	Commingle Waste
Day 1	933 L	1,680 L
Day 2	1,867 L	3,360 L
Day 3	2,800 L	5,040 L

Table 4: Residential - Stage 6 predicted waste volumes.

Tenancies Predicted Waste Volumes per day	Floor Area m^2	General Waste	Commingle Waste
Retail 1 Podium 1 (Takeaway)	54	302 L	151 L
Retail 2 Podium 1 (Takeaway)	134	750 L	375 L
Retail 3 Podium 1 (Takeaway)	45	252 L	126 L
Gym Level 1	186	521 L	260 L

Table 5: Tenancies predicted waste volumes per day.

Due to the volume of waste generated in each residential area, it is proposed to utilise 1,100L skip bins for the residential waste to minimise the quantity of bins and reduce the spatial requirements for the waste refuse rooms and the time spent relocating bins from the waste chute discharge rooms to the waste storage room and vice versa.

It is proposed to use 360L general waste bins and 240L commingle waste bins for each tenancy.

2.4 WASTE MANAGEMENT AND BIN SIZES

This section outlines the size and quantity of bins required for each main area of the development, and the waste management strategy specific to that area.

Bin carousels are proposed for Stage 4, Stage 5 and Stage 6 Refuse Rooms. The bins carousels enable either two or four 1,100L bins to be filled before the attention of the building manager is required. Compactors (available for the general waste only) reduce the waste volume by 3:1, therefore delaying the need for the bins to be replaced.

Empty 1,100 skip bins will be stored in the Residential Bin Store and will replace full bins. Full bins will be transferred to the loading dock side of the Residential Bin Store.

Residential – Stage 4 Including Managers Offices

Residents in Stage 4 will dispose of their general and commingle waste in the waste chutes which are provided on each level.

General waste will discharge into one of four 1,100L skip bins located on a four bin comparator carousel.

Commingle waste will discharge into one of four 1,100L skip bins located on a separate four bin carousel.

A bin mover will be used to transfer the bins to the residential waste storage area.

Residential - Stage 4, 311 Units	Bin Size	Collection Frequency
General Waste	4 x 1,100L plus 1 x 1,100L spare bins	Every 2 to 3 days
Commingle Waste	9 x 1,100L plus 1 x 1,100L spare bins	Every 2 to 3 days

Table 6: Residential - Stage 4 bin sizes and collection frequency.

Residential – Stage 5

Similar to Stage 4, residents in Stage 5 will dispose of their general and commingle waste in the waste chutes which are provided on each level.

General waste will discharge directly into one of two 1,100L skip bins located on a two bin compactor carousel.

Commingle waste will discharge directly into a 1,100L skip bin.

A bin mover will be used to transfer the bins to the residential waste storage area.

Residential - Stage 5, 59 Units	Bin Size	Collection Frequency
General Waste	1 x 1,100L plus 1 x 1,100L spare bin	Every 2 to 3 days
Commingle Waste	1 x 1,100L plus 1 x 1,100L spare bin	Every 2 to 3 days

Table 7: Stage 5 bin sizes and collection frequency.

Residential – Stage 6

Residents in the Stage 6 tower will dispose of their general and commingle waste in the waste chutes which are provided on each level.

General waste will discharge into one of two 1,100L skip bins located on a two bin compactor carousel.

Commingle waste will discharge into one of two 1,100L skip bins located on a two bin carousel.

A bin mover will be used to transfer the bins to the residential waste storage area between collection days. On the day of bin collection, full bins on the carousels will be placed outside the Bin store rooms.

Residential - Stage 6, 196 Units	Bin Size	Collection Frequency
General Waste	2 x 1,100L Plus 1 x 1,100L spare bin	Every 3 days
Commingle Waste	4 x 1,100L plus 1 x 1,100L spare bins	Every 2 to 3 days

Table 8: Stage 6 bin sizes and collection frequency.

Additional Residential Waste Storage Areas for Consideration

Additional Residential waste storage areas for consideration are:-

- Caged area or room for the temporary storage of residential bulky waste items or electronic goods.
- Green waste bins.

Tenancies

Tenants will dispose of their waste directly into bins allocated to them which will be stored in one of two tenancy waste storage areas. Tenancy Refuse Room One is located on Level 1 for the use of Gym and Retail 1 Tenancies. The Tenancy Bin Store on Podium 1 will permanently house Retail 2 and Retail 3 bins. Bins from Retail 1 and Gym tenancies will be transferred to the Tenancy Bin Store prior to collection until the aid of bin mover.

Tenancies Predicted Waste Volumes per day	Waste Type	Bin Size	Collection Frequency
Retail 1 Level 1 (Takeaway)	General	1 x 360L	Weekly
	Commingle	1 x 240L	Weekly
Retail 2 Podium 1 (Takeaway)	General	1 x 360L	Three times per week
	Commingle	1 x 240L	Twice per week
Retail 3 Podium 1 (Takeaway)	General	1 x 360L	Weekly
	Commingle	1 x 240L	Weekly
Gym Level 1	General	1 x 360L	Twice per week
	Commingle	1 x 240L	Twice per week

Table 9: Tenancies bin sizes and collection frequency.

In the event that the waste generated by tenants contains 20% or more (by weight) of fish poultry or meat, the waste must be collected daily or refrigerated. In this instance the waste receptacles will reduce to 240L. The above scenario represents the worst case scenario in terms of spatial requirements.

Additional Tenant Waste Storage Areas for Consideration

Additional tenants waste storage areas for consideration are:-

- Recyclable electronic goods such as batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes, smoke detectors and other recyclable resources.
- Reusable items such as crates, pallets and kegs.
- Liquid wastes such as oils. The liquid waste storage area must be bunded and drained to a grease trap.

2.5 QUANTITY AND DIMENSIONS OF BINS

There are three main bin store rooms, one for the residential bins and two for the tenancy bins.

The bin sizes proposed for tenancies are 240L and 360L and 1,100L skip bins for the residential areas.

The dimensions of the proposed 240L – 360L bins and 1,100L skip bins are outlined in the below table.

Bin type	Height	Depth	Width
240 Litre Bin	1.08m	0.73m	0.55m
360 Litre Bin	1.10m	0.85m	0.65m
1,100 Litre Skip Bin	1.47m	1.245m	1.37m

Table 10: Waste receptacle dimensions.

There will be a total of ten general waste skips, of which a maximum of seven will be ready for collection at any one time. Five of the seven bins will be stored in the Residential Bin Store Room, the two bins transferred from Stage 4 Refuse Room on the collection day will be placed adjacent to the Bin Store Rooms prior to collection.

There will be a total of seventeen commingle waste skips of which a maximum of fourteen skips will be ready for collection at any one time, ten of the fourteen skips will be stored in the Residential Bin Store Room, the four skips transferred from Stage 4 Refuse Room on the collection day will be placed adjacent to the Residential Bin Store Room prior to collection.

The residential waste storage area is sized to store the following:-

- 5 x 1,100L general waste skips.

- 10 x 1,100L commingle skips.

On collection day, skips transferred from Stage 4 Refuse Room will be placed adjacent to the Bin Store Rooms:-

- 2 x 1,100L general waste skips.
- 4 x 1,100L commingle skips.

The Tenancy Bin Store is sized to store the following:-

- 4 x 360L general waste bins.
- 4 x 240L commingle bins.

2.6 WASTE STORAGE AREA DESIGN FOR UNITS

It is recommended that each unit will incorporate a storage space that is sized to store a minimum of two days worth of waste.

Over two days, units will generate approximately 29 litres of general waste and approximately 17 litres of commingled recyclable waste. Waste storage spaces should be sized to house waste receptacles.

The following table outlines the calculated waste generation rate for units.

Waste Stream	Allowance	Allowance for two days	Waste receptacle
Garbage	100L/unit/week	29L/unit/two days	≥30L general waste bin
Commingled recycling	60L/unit/week	17L/unit/two days	≥20L commingled recycling bin

Table 11: Unit waste generation rates.

2.7 SERVICE / GARBAGE CHUTE ROOMS AND WASTE STORAGE ROOMS

Residents will dispose of all general and commingle waste into the appropriate chute system.

Service and Garbage Chute Room Design

The design and construction of the waste storage areas are required to comply with the following conditions:-

- Each service room / temporary waste storage room must be well ventilated and well lit.
- The floors walls and ceilings of the service rooms must be finished smooth impervious materials that are capable of being easily cleaned.
- The service rooms must contain signage that describes the types of wastes that can be deposited into the garbage chute and the types of wastes which should be deposited into the commingle chute.
- The service openings must be fitted with a charging device between one (1) meter and one and a half (1.5) meters above floor level and have a cross-sectional area not more than half that of the garbage chute.
- The charging devices must be self closing and permit the free flow of garbage into the chute.

Waste Chute Requirements

The waste chute is to comply with the following requirements:-

- The chute must be cylindrical in shape with a minimum diameter of 500mm.
- The chute must be constructed of a non-corrosive, impervious and smooth metal.

- The chute must be vertical with no bends, off-sets or restrictions and all internal joints and seams finished to a smooth even surface to allow the free flow of garbage through the chute.
- Adequate isolation of the waste chute from the building structure must be provided to minimise vibrations associated with the operation of the chute.
- The waste chute must terminate in the waste room and discharge the garbage directly into the waste container / compactor in such a way that no spillage occurs.
- A cut-off device must be provided at or near the base of the chute to effectively close off the chute while the waste containers are being serviced or the compaction equipment is being maintained.
- The chute, charging devices and service openings must be capable of being easily cleaned.
- The chute must be ventilated so that air does not flow from the chute through any service opening and the flow of air through the chute does not impede the downward movement of garbage.
- The vent at the top of the chute must extend above the roof level and be fitted with a weather-proof cowl and wire mesh screen to prevent the entry of rainwater and birds.

Spatial requirements and layouts for each waste room are shown in Appendix A.

2.8 WASTE COLLECTION

A nominated person, will transfer full waste bins daily, or as required, from the waste refuse rooms to the Residential Bin Store with the aid of a ride on bin mover with an attached trailer.

On the day of waste collection, the waste collection trucks will drive into the loading dock on Podium 1 to empty the bins.

Residential Waste Storage Area

Full skips in Residential Bin Store will be taken to the truck to be emptied, the empty bins will then be placed on the opposite side of the Residential Bin Store ready to replace full bins located in the waste refuse rooms.

Tenancy Waste Storage Area

The Building Manager will move bins from Tenancy Refuse Room 1 on Level 1 to the Tenancy Bin Store on Podium 1 on designated bin collection days.

2.9 BIN MOVER

A bin mover is required to transfer bins to and from waste refuse rooms to the primary bin store room. A ride on bin mover with an attached trailer is proposed.

An example bin mover is a Cushman 5K tug and 2 x 1,100L bin aluminium trailer from Movexx Australia.

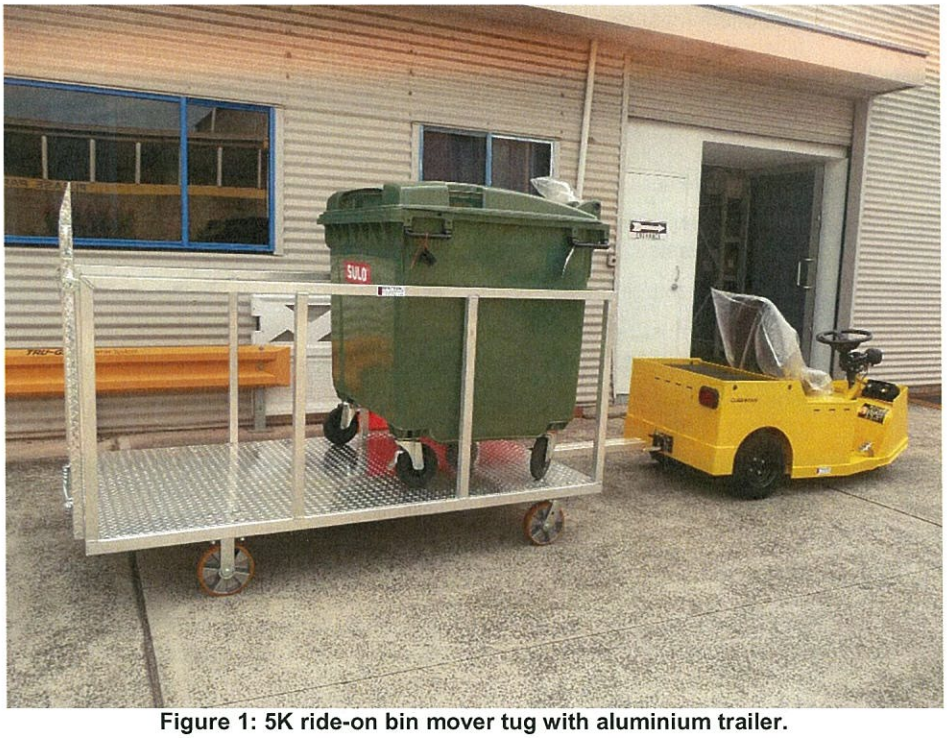


Figure 1: 5K ride-on bin mover tug with aluminium trailer.

Figure 2: Attachment between 5k ride-on tug and aluminium trailer.

The dimensions are:-

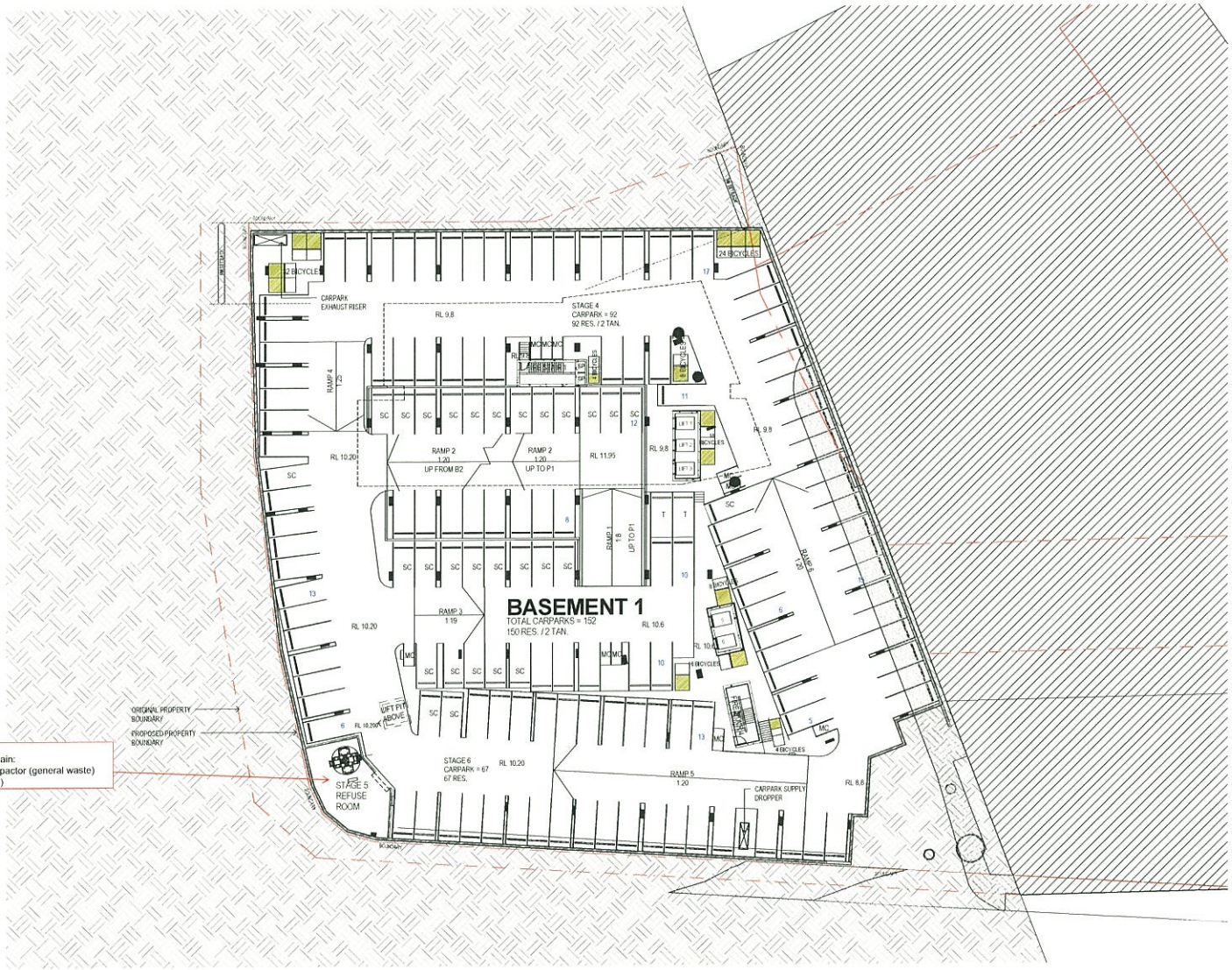
Bin type	Height	Depth	Length
Cushman 5K	0.94 m	0.88 m	1.93 m
Trailer	~1.6 m (with bin)	1.15 m	2.00 m
Overall Dimensions	~1.6 m	1.15 cm	3.93 m

Table 14: Bin mover tug and trailer dimensions.

Space will need to be allocated to store the bin mover and trailer.

APPENDIX A

WASTE STORAGE AREA LAYOUT



STAGE 5 REFUSE ROOM
Current design is sufficient to contain:
2 x 1,100L skip carousel with compactor (general waste)
1 x 1,100L skip (commingle waste)

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STAGES 4 & 5 - BASEMENT 1

CLIENT: METRO PROPERTY DEVELOPMENT
PROJECT: CENTRAL VILLAGE STAGE 4 AND 5
ADDRESS: CORNER OF WATER AND BRUNSWICK STREET

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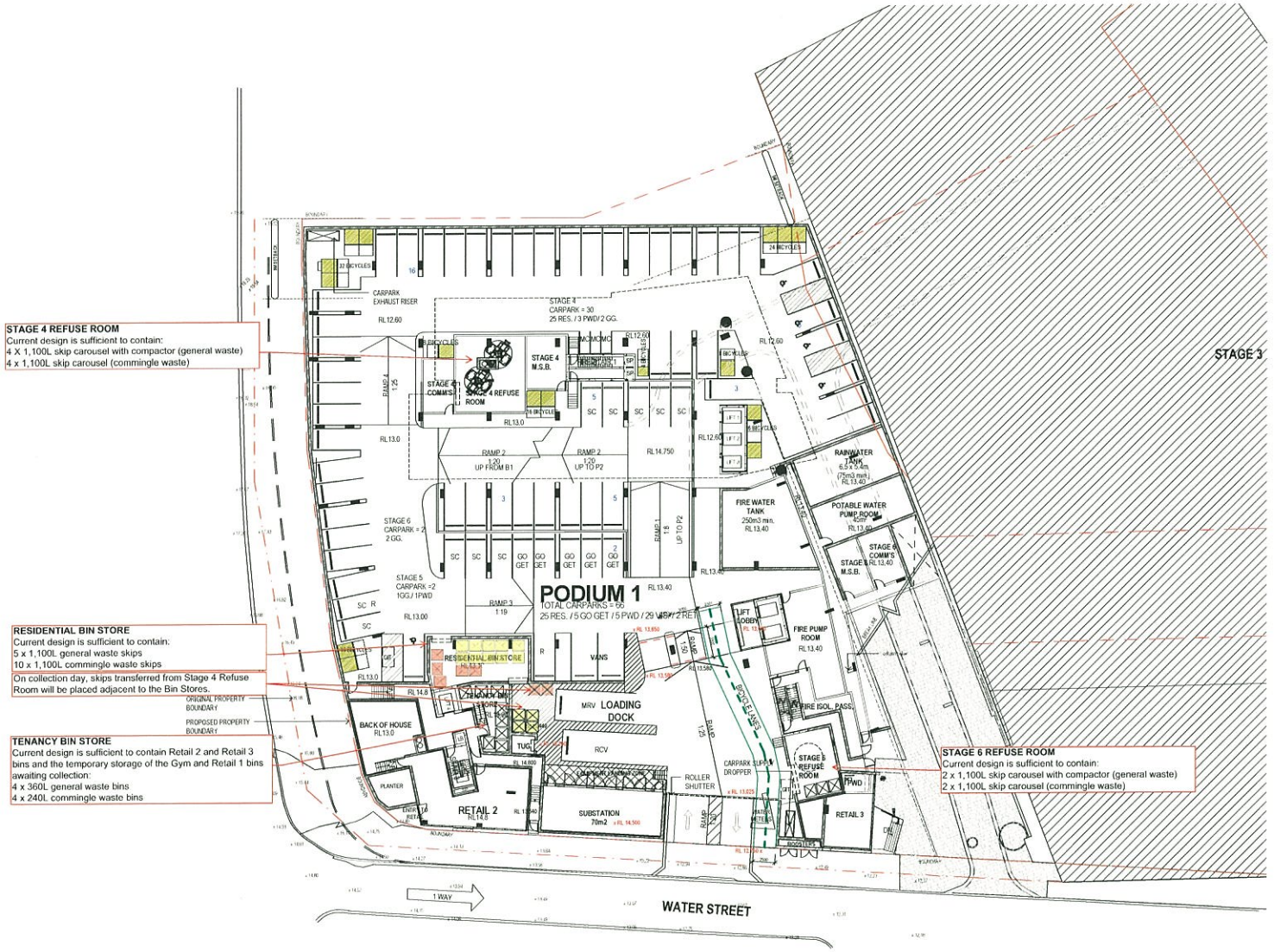
NORTH
PROJECT NO: 14037
PHASE: DA
DRAWING NUMBER: 20.02
REVISION: 11



STAGES 4 & 5 - PODIUM 1

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ADDRESS	CORNER OF WATER AND BRUNSWICK STREET
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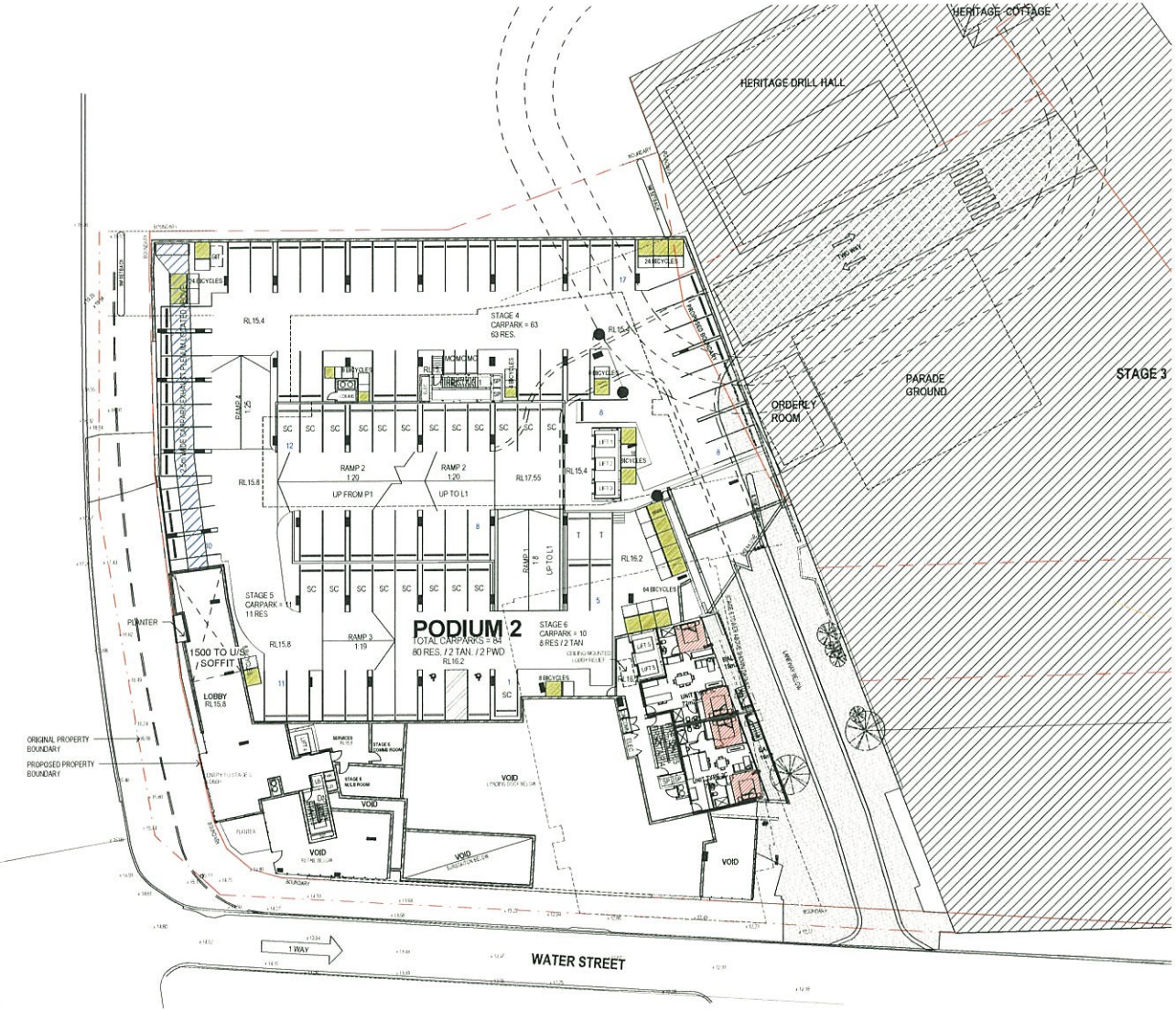

STAGES 4 & 5 - PODIUM 2

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PROJECT NO	14037
STAGE	DA
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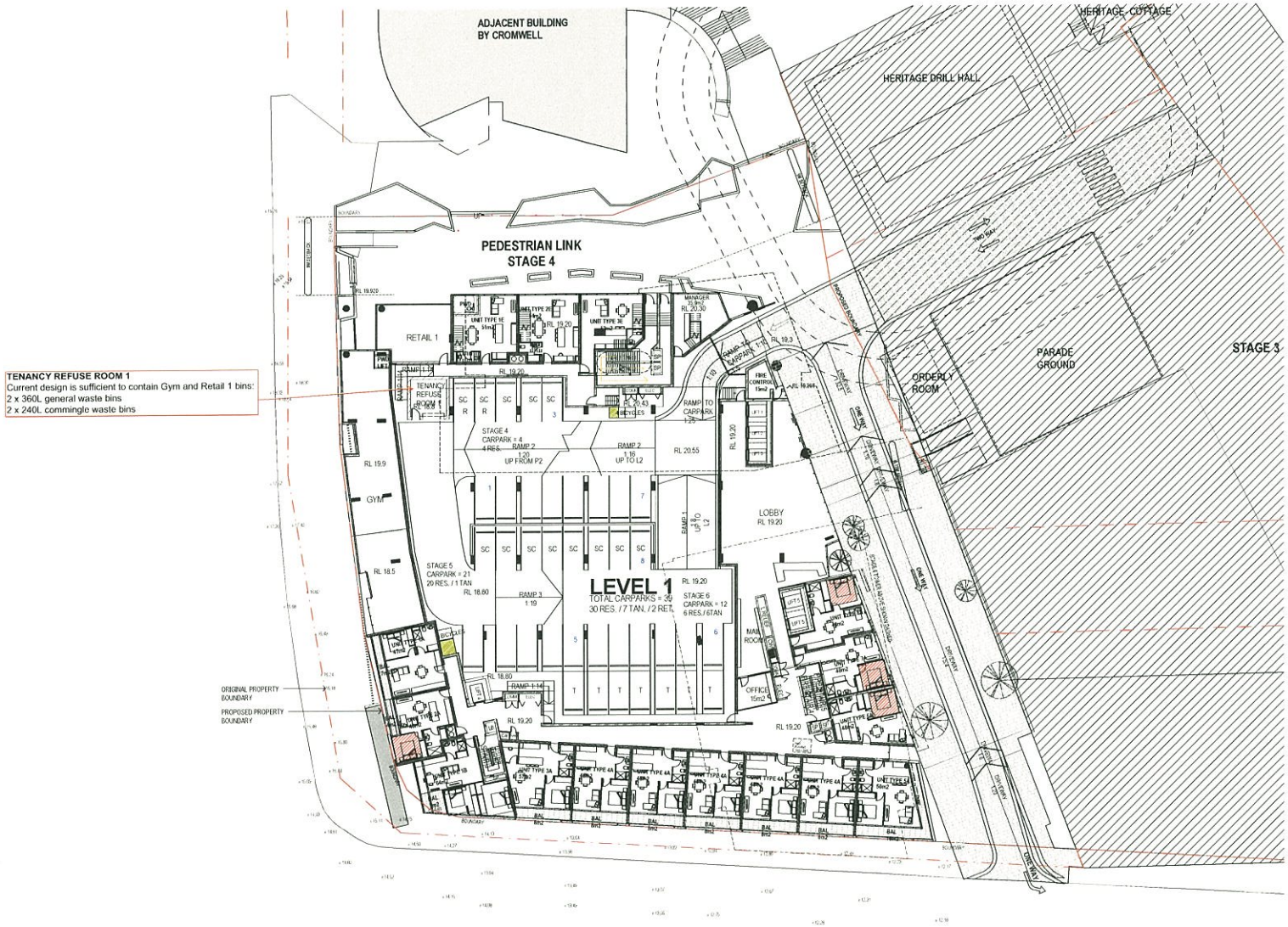
REVISION	11



TENANCY REFUSE ROOM 1
Current design is sufficient to contain Gym and Retail 1 bins:
2 x 360L general waste bins
2 x 240L commingle waste bins

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STAGES 4 & 5 - LEVEL 1

CLIENT: METRO PROPERTY DEVELOPMENT
PROJECT: CENTRAL VILLAGE STAGE 4 AND 5
ADDRESS: CORNER OF WATER AND BRUNSWICK STREET

SCALE: 1 250 [A1]
DATE: 19.05.15
NORTH

PROJECT No: 14037
PHASE: DA
DRAWING NUMBER: 20.05
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