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BaptistCare Macquarie Park Concept Master Plan

Mixed-use Development

OPERATIONAL WASTE MANAGEMENT PLAN

18/11/2022
Report No. 4473
Revision C

Client

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Architect

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T. McPherson	13-10-2022	T. McPherson	Draft
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TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
Chute	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Chute Discharge	The point at which refuse exits from the refuse chute
Chute Discharge Room	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
Collection Area/Point	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
DA	Development Application
DCP	Development Control Plan
EPA	Environmental Protection Authority
HRV	Heavy Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
L	Litre(s)
LEP	Local Environmental Plans guide planning decisions for local government areas
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that must be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
Mixed Use Development	A development comprised of two or more different uses
MUD	Multi-Unit Dwellings comprise of a development with more than one dwelling. This ranges from dual occupancies and attached dwellings to high-rise residential developments
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
MRV	Medium Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
Onsite Collection	When the collection vehicle enters the property and services the development within the property boundary from a designated loading area
Owners Corporation	An organisation or group of persons that is identified by a particular name and acts, or may act, as an entity

Service Bins	Bin set side to be placed under a chute while the remainder of the bins are being collected
WHS	Workplace Health and Safety
Wheel-in wheel-out service	A type of waste collection service offered by local councils where the council waste collection personnel enter the premises to collect the bins and returns them to the property

1.0 ACKNOWLEDGEMENT OF COUNTRY

We acknowledge Australia's First Nations People as the Traditional Custodians of this land. We pay respect to ancestors and Elders, past and present. We honour Aboriginal and Torres Strait Islander people and their connection to land, waters and seas, and their vital contribution to the vibrant nation that we share, Australia.

2.0 INTRODUCTION

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by the BaptistCare Macquarie Park Concept Master Plan development located at 157 Balaclava Road, Macquarie Park.

Waste management strategies and audits are required for new developments in order to support the design and sustainable performance of the building. It is EFC's belief that a successful waste management strategy contains three key objectives:

i. ***Promote responsible source separation*** to reduce the amount of waste that goes to landfill by implementing convenient and efficient waste management systems.

ii. ***Ensure adequate waste provisions and robust procedures*** that will cater for potential changes during the operational phase of the development.

iii. ***Comply*** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this operational waste management plan (OWMP) identifies the different waste streams likely to be generated during the operational phase of the development, as well as how the waste will be handled and disposed, details of bin sizes/quantities and waste rooms, descriptions of the proposed waste management equipment used, and information on waste collection points and frequencies.

It is essential that this OWMP is integrated into the overall management of the building and is clearly communicated to all relevant stakeholders.

2.1 SCOPE OF REPORT

This operational waste management plan (OWMP) only applies to the **operational** phase of the proposed development; therefore, the requirements outlined in this OWMP must be implemented during the operational phase of the site and may be subject to review upon further expansion of, and/or changes to the development.

2.2 REPORT CONDITIONS

The purpose of this report is to document an OWMP as part of a development application, which is supplied by EFC with the following limitations:

- Drawings, estimates and information contained in this OWMP have been prepared by analysing the information, plans and documents supplied by the client and third parties including Council and other government agencies. The assumptions based on the information contained in the OWMP is outside the control of EFC,
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building management's approach to educating residents and tenants regarding waste management operations and responsibilities,
- The building manager will adjust waste management operations as required based on actual waste volumes (e.g. if waste is greater than estimated) and increase the number of bins and collections accordingly,
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures,
- The report has been prepared with all due care; however, no assurance is made that the OWMP reflects the actual outcome of the proposed waste facilities, services, and operations, and EFC will not be liable for plans or results that are not suitable for purpose due to incorrect or unsuitable information or otherwise,
- EFC offer no warranty or representation of accuracy or reliability of the OWMP unless specifically stated,
- Any manual handling equipment recommended in this OWMP should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply,
- Design of waste management chute equipment and systems must be approved by the supplier,
- EFC cannot be held accountable for late changes to the design after the OWMP has been submitted to Council,
- EFC will provide specifications and recommendations on bin access and travel paths within the OWMP, however it is the architect's responsibility to ensure the architectural drawings meet these provisions,
- EFC are not required to provide information on collection vehicle swept paths, head heights, internal manoeuvring or loading requirements. It is assumed this information will be provided by a traffic consultant,
- Council are subject to changing waste and recycling policies and requirements at their own discretion.

This OWMP is only finalised once the Draft Watermark has been removed. If the Draft Watermark is present, the information in the OWMP is not confirmed.

3.0 LEGISLATION & GUIDANCE

Waste management and resource recovery regulation in Australia is administered by the Australian Constitution, Commonwealth laws, and international agreements. State and territory governments maintain primary responsibility for controlling development and regulating waste. The following legislation has been enacted in New South Wales and provides the lawful underpinnings of this OWMP.

- NSW Environmental Planning & Assessment Act 1979
- NSW Protection of the Environment Operations Act 1997
- NSW Waste Avoidance & Resource Recovery Act 2001

At the local level, councils or Local Government Areas (LGAs) require OWMPs to be included in new development applications. This OWMP is specifically required by:

- Ryde Development Control Plan 2014
- Ryde Local Environmental Plan 2014

The primary purpose of a development control plan (DCP) is to guide development according to the aims of the corresponding local environmental plan (LEP). The DCP must be read in conjunction with the provisions of the relevant LEP.
Information provided in this OWMP comes from a wide range of waste management guidance at the local, state, and federal levels. The primary sources of guidance include:

- Ryde Development Control Plan 2014; Chapter 7.2 – Waste Minimisation and Management
- NSW Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012
- NSW Better practice guide for resource recovery in residential developments 2019
- NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021
- NSW Waste Classification Guidelines 2014
- Australia's National Waste Policy 2018

3.1 COUNCIL OBJECTIVES

The City of Ryde values proper planning for waste minimisation and management with respect to all developments. A such, Council aims to:

- Ensure new developments and changes to existing developments are designed to maximise resource recovery (through waste avoidance, source separation and recycling).
- Encourage source separation of waste, reuse, and recycling by ensuring appropriate storage and collection facilities for waste, and quality design of waste facilities.
- Encourage techniques in demolition and construction which minimise waste generation, and which maximise the reuse and recycling of materials.
- Ensure that wastes are handled and stored appropriately in order to minimise risk to health and safety associated with handling and disposal of waste and recycles material and ensure optimum hygiene.
- Minimise adverse environmental and amenity impacts associated with waste management (including odour from waste and noise from collection activity).

4.0 DEVELOPMENT OVERVIEW

The proposed development falls under the LGA of Ryde City Council. This report has been prepared to accompany a State Significant Development Application (SSDA) for a Concept Master Plan for the site located at 157 Balaclava Road, Macquarie Park.

Specifically, consent is sought for the following in this Concept SSDA:

• A mixed-use development comprising a maximum GFA of 190,000m2 dedicated to a range of land uses including: – Student Housing;
– Seniors Housing;
– Build to Rent;
– Retail;
– Residential;
– Mixed uses including commercial and allied health; and
– A school.

• Maximum building heights and GFA for each development block;

• Public domain landscape concept, including parks, streets and pedestrian connections;

• Vehicular and intersection upgrades.

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings.

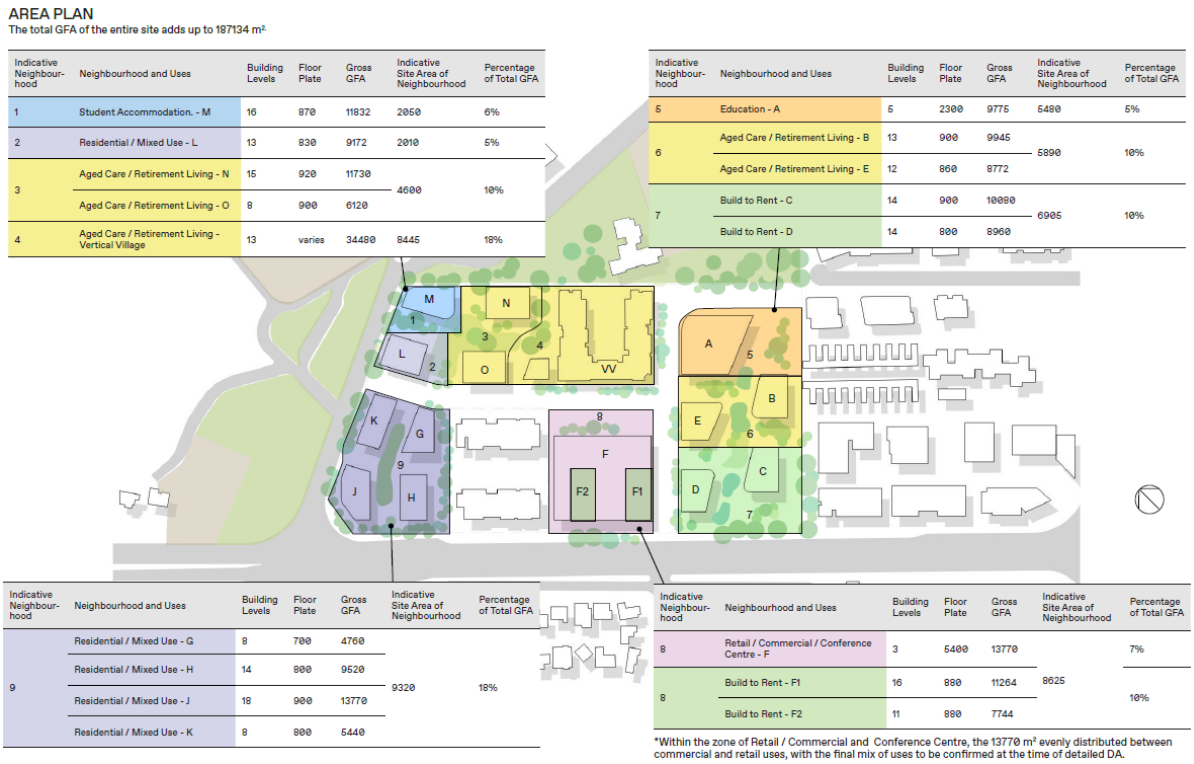
SEARS REQUIREMENTS		
Item	**Description of Requirement**	**Section Reference**
12. Waste	*-Identify, quantify, and classify the likely waste streams to be generated during operation.*	*Section 4.2, 5.0 and 7.0.*
	-Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	*Section 4.5, 5.2, 6.0, 7.3.*
	-Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.	*Section 4.6, 5.3, 7.4*

4.1 SITE LOCATION

The site is located at 157 Balaclava Road, Macquarie Park and is legally identified as Lot 60 in DP 1107965. The site is located near the corner of Herring Road and Epping Road within the City of Ryde Local Government Area (LGA). It is directly south of Macquarie University and in close proximity to Macquarie Shopping Centre. The surrounding area is characterised by a mix of commercial and education uses, as well as student accommodation and residential dwellings.

The site comprises a significant land holding with street frontages to Balaclava Road and Epping Road. It currently accommodates several low-medium density buildings that are connected via internal footpaths and lower order road networks. The total site area of the BaptistCare landholding is 63,871m2.

Figure 1: Site Location



BVN Architects.

This report has been prepared in response to the Secretary's Environmental Assessment Requirements (SEARS) dated 1st November 2022 for SSD-46561712. Specifically, this report has been prepared to respond to those SEARS summarised in the SEARS Requirement Table below.

4.2 RESIDENTIAL WASTE MANAGEMENT

The following section outlines best practice waste management for the residential component of the development, including waste generation estimates and waste disposal and collection procedures.

4.3 WASTE GENERATION ESTIMATES

The Ryde City Councils' *Development Control Plan 2014* has been referenced to calculate the total number of bins required for the residential units per superlot. Calculations are based on generic waste and recycling rates. Actual volumes of waste and recycling generated in operation differ according to the residents' actual waste management practices.

The following table shows the estimated volume (L) of general waste and recyclables generated by the residential component of the development.

Table 1: Estimated Waste and Recycling Volumes – Residential

Superlot #	Type of Dwelling	# Units	Waste Generation Rate (L/Unit/Week)	Generated Waste (L/Week)	Recycling Generation Rate (L/Unit/Week)	Generated Recyclables (L/Week)
2	Residential	102	120	12240	88	8976
4	VV	154	120	18480	89	13706
7	Built to Rent	116	120	13920	90	10440
8	Built to Rent	300	120	36000	91	27300
9	Built to Rent	171	120	20520	92	15732
10	Residential	372	120	44640	93	34596
TOTAL		**1215**		**145800**		**8976**

Bins and Collections	Waste Bin Size (L)		1100	Recycling Bin Size (L)		660
	Waste Collections/Week		3	Recycling Collections/Week		2
	Bins Per Collection (per LOT)	Superlot 2	**4**	Bins Per Collection	Superlot 2	**7**
		Superlot 4	**6**		Superlot 4	**11**
		Superlot 7	**5**		Superlot 7	**8**
		Superlot 8	**11**		Superlot 8	**21**
		Superlot 9	**7**		Superlot 9	**12**
		Superlot 10	**14**		Superlot 10	**27**

**Note: An additional 1100L MGB should be provided for each chute discharge for use during collection periods. These bins are not included in the above figures.*

4.4 OVERALL RESIDENTIAL BIN SUMMARY

Based on the estimated waste generated by the residential component of this development, the recommended bin quantities and collection frequencies are as follows:

General Waste: 47 x 1100L MGBs collected **3 x weekly**
Recycling: 86 x 660L MGBs collected **2 x weekly**

During operation, it is the responsibility of the building manager to monitor the number of bins required for the residential component. Waste and recycling volumes may change according to residents' attitudes to waste disposal and recycling, building occupancy levels or development's management. Any requirements for adjusting the capacity of the waste facilities can be achieved by changing the number of bins, the bin sizes or collection frequencies. Building management will be required to negotiate any changes to bins or collections with the collection service provider.

4.4.1 BIN SUMMARY PER LOT

The recommended bin quantities and collection frequencies for the residential units in each stage are as follows:

Please note: Calculations are based on the total number of units per lot and does not take into account variation in bin numbers due to building cores or service bins.

RESIDENTIAL BIN SUMMARY LOT 2
General Waste: 4 x 1100L MGBs collected **3 x weekly**
Recycling: 7 x 660L MGBs collected **2 x weekly**

RESIDENTIAL BIN SUMMARY LOT 4
General Waste: 6 x 1100L MGBs collected **3 x weekly**
Recycling: 11 x 660L MGBs collected **2 x weekly**

RESIDENTIAL BIN SUMMARY LOT 7
General Waste: 5 x 1100L MGBs collected **3 x weekly**
Recycling: 8 x 660L MGBs collected **2 x weekly**

RESIDENTIAL BIN SUMMARY LOT 8
General Waste: 11 x 1100L MGBs collected **3 x weekly**
Recycling: 21 x 660L MGBs collected **2 x weekly**

RESIDENTIAL BIN SUMMARY LOT 9
General Waste: 7 x 1100L MGBs collected **3 x weekly**
Recycling: 12 x 660L MGBs collected **2 x weekly**

RESIDENTIAL BIN SUMMARY LOT 10
General Waste: 14 x 1100L MGBs collected **3 x weekly**
Recycling: 27 x 660L MGBs collected **2 x weekly**

4.5 OVERALL RESIDENTIAL WASTE AND RECYCLING DISPOSAL PROCEEDURES

Each building core within each stage will be supplied with a dual chute system, comprising of a waste chute and a recycling chute with access provided on each residential level. The general waste will discharge from the waste chute into 1100L MGBs.

The commingled recycling stream will have 240L bins on each level, which will be transported to the chute discharge room via the lifts and decanted into a larger 660L MGB with the aid of a bin lifter.

A separate cupboard for the storage of these 240L MGBs for recycling will be provided next to each waste chute. Residents will be responsible for loosely placing their recyclables into the 240L MGBS. Recyclables must not be bagged.

Each chute discharge room must accommodate bins suitable for two days' storage capacity. Linear and or carousel tracks are required when more than one bin is required under the chute over a two-day period.

The building caretaker will monitor the bins under the chute and replace with empty bins as required. Full and spare bins for each building will be kept in the corresponding residential bin holding room/ collection area.

Refer to Council guidance for the types of materials accepted in the general waste and recycling streams.

4.6 WASTE COLLECTION PROCEDURES

Council will be engaged to collect all residential bins in accordance with council's collection schedule. This report assumes waste is collected 3 x weekly, and recycling collected 2 x weekly.

In addition to the individual chute discharge rooms, each lot will have a central collection room and adjacent loading bay, where Council will service the bin for that building or lot. This room will be provided on the ground level or basement 1 for each lot. Each collection room will have the capacity to store all of the required waste and recycling bins for the corresponding lot. It will be the caretaker's responsibility to transport all full waste and recycling bins from the individual chute discharge rooms to the collection room.

On collection days, a Council collection vehicle will enter each lot and pull into the designated loading bay. The driver will then service the bins directly from the collection room. Once the bins have been serviced, the caretaker will return them to resume operational use.

All collection vehicle access and clearances must be able to accommodate a 12.5m long HRV per AS2890.2-2002.

It is the responsibility of the caretaker to ensure that the loading area is clear of any vehicles or obstructions prior to waste collection. When waste collection is complete, the building caretaker will return the bins to their operational locations to resume use.

4.7 BULKY WASTE PROCEEDURES

Each lot will require an area to be made available for the storage of discarded residential bulky items (e.g., whitegoods, furniture, etc.). This room should be located within close proximity of the bin collection room and must have a minimum doorway width of 1500mm, with double door access to allow for easy movement of large waste items in and out of the room.

The bulky waste room as been calculated in accordance with The NSW EPA's '*Better Practice Guidelines for Resource Recovery in Residential Developments 2019*'. This requires 10m$_2$ for up to 40 units, and 2m$_2$ for every additional 10 units after that to the nearest whole number.

Based on this rate, the bulky waste room required for each lot is as follows;

Lot 2 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(62/10)*2 + 10 = 22.4m$_2$
bulky waste storage area: minimum 23m$_2$

Lot 4 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(114/10)*2 + 10 = 32.8m$_2$
bulky waste storage area: minimum 33m2

Lot 7 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(76/10)*2 + 10 = 25.2m$_2$
bulky waste storage area: minimum 26m2

Lot 8 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(260/10)*2 + 10 = 62m$_2$
bulky waste storage area: minimum 62m2

Lot 9 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(131/10)*2 + 10 = 36.2m$_2$
bulky waste storage area: minimum 37m2

Lot 9 – Bulky Waste Room Size
(Total number of units-40/10) *2m$_2$ = m$_2$ of bulky waste room
(332/10)*2 + 10 = 76.4m$_2$
bulky waste storage area: minimum 77m2

5.0 RESIDENTIAL CARE FACILITIES (RCF)

The NSW EPA's *Better practice guide for resource recovery in residential developments 2019* has been referenced to calculate the total number of bins required for the residential care facilities (RCF). Calculations are based on generic figures, and waste generation rates may differ according to the tenants' actual waste management practice.

The following table shows the estimated volume (L) of general waste and recyclables that will be generated by the aged care facility only. The residential component of waste and recycling estimations can be viewed on the previous section.

The following estimates are based on a seven-day operating week.

Superlot #	Tenancy Type	GFA m^2	Waste Generation Rate ($L/100m^2$/Day)	Generated Waste (L/Week)	Recycling Generation Rate ($L/100m^2$/Day)	Generated Recyclables (L/Week)
Superlot 3	RCF Beds	116	5	4060	1	812
	Kitchen	20	400	560	280	392
Superlot 4	RCF Beds	96	5	3360.0	1	672.0
	Kitchen	20	400	560.0	280	392.0
Superlot 7	RCF Beds	116	5	4060	1	812
	Kitchen	20	400	560	280	392
TOTAL RCF BEDS		**328**		**13160**		**3472**
Bins and Collections			Bin Size (L)	1100	Bin Size (L)	1100
			Collections/Week	2	Collections/Week	1
			Superlot 3	**3**	Superlot 3	**2**
			Superlot 4	**2**	Superlot 4	**2**
			Superlot 7	**3**	Superlot 7	**2**

5.1 OVERALL BIN SUMMARY

Based on the estimated waste generated by the residential care facilities (RCF) per superlot, the recommended bin quantities and collection frequencies are as follows:

General Waste: 8 x 1100L MGBs collected **2 x weekly**
Recycling: 6 x 1100L MGBs collected **1 x weekly**

Bin sizes, quantities, and/or collection frequencies may be modified by the building manager once the proposed development is operational. Building management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal peak periods such as public and school holidays should also be considered.

5.1.1 RESIDENTIAL CARE FACILITY BIN SUMMARY PER LOT

The recommended bin quantities and collection frequencies for the RCFs in each superlot are as follows:

Please note: Calculations are based on the total number of beds per lot and does not take into account variation in bin numbers due to building cores. This also assumes the retail components and residential components will manage their wastes separately within a different bin storage room and use a different service provider. In final, this is also recommended to segregate medical waste streams (including hazardous wastes, biological, and sharps) for unauthorised access.

RESIDENTIAL CARE FACILITY BIN SUMMARY LOT 3

General Waste: 3 x 1100L MGBs collected **2 x weekly**
Recycling: 2 x 1100L MGBs collected **1 x weekly**

RESIDENTIAL CARE FACILITY BIN SUMMARY LOT 4

General Waste: 2 x 1100L MGBs collected **2 x weekly**
Recycling: 2 x 1100L MGBs collected **1 x weekly**

RESIDENTIAL CARE FACILITY BIN SUMMARY LOT 7

General Waste: 3 x 1100L MGBs collected **2 x weekly**
Recycling: 2 x 1100L MGBs collected **1 x weekly**

5.2 RESIDENTIAL CARE WASTE DISPOSAL PROCEDURES

Each building or superlot will be provided with a RCF bin room located adjacent to the loading dock. These bin storage rooms will be accessible for all staff and cleaners for waste and recycling disposal. It is assumed that all the RCFs within each superlot will share the same collection service provider, separate from the other components of this development.

These rooms are known as RCF Bin Rooms within this report. Each RCF Bin Room will contain 1100L MGBs for waste and recycling, and additional space for problem wastes (such as biohazardous, sharps, and chemical collection receptacles).

The RCFs will be responsible for their back of house waste and recycling management during daily operations.

On completion of each trading day or as required, nominated staff, or contracted cleaners will transport all general waste and recyclables to the RCF Bin Room in their building and place into the appropriate collection bins.

5.3 RESIDENTIAL CARE FACILITY WASTE COLLECTION PROCEDURES

A private waste collection contractor will be engaged to service the RCF waste and recycling bins per an agreed schedule.

Collection frequencies that are used to size the non-residential bin rooms will be determined in the Operational Waste Management Plan for each stage. This report however assumes waste will be collected 2 x weekly for general waste, and 1 x weekly for recycling.

It is assumed the RCF bins will be located adjacent to the loading dock allowing for the collection vehicles to enter the site. The waste collection vehicle will park in the loading dock for each building, and the waste collection staff will collect the bins via a collect and return arrangement from the RCF bin room for each building and superlot.

6.0 MEDICAL WASTE MANAGEMENT CONSIDERATIONS

The aged care centre will generate medical waste in addition to general waste and recycling. Medical waste is any solid waste that that is hazardous or contains potentially infectious material generated from biological and medical sources and activities. Medical waste can include (but is not limited to) sharps, pharmaceutical waste, and clinical waste. The medical waste stream types and their management are further outlined in *APPENDIX C.1*.

It is the aged care operator's responsibility to determine the types of medical waste that would be generated by their operations and to arrange for the appropriate bins and collection services for the relevant medical waste types.

The aged care operator is also responsible for appointing a medical waste collection contractor prior to the operation of the site to provide and service the appropriate medical waste bins.

Medical waste must be managed and disposed of in accordance with the *Protection of the Environment Operations Act* 1997 and the *Protection of the Environment Operations (Waste) Regulation* 2005.

Please refer to the following table for storage and collection requirements for any medical waste streams to be generated by the site in operation.

Area	Location
Storage	According to best practice as detailed in Waste Management Association of Australia, Biohazardous Waste Industry Group, *Manual for the Management of Biohazardous Waste*, 6th edition 2010, storage can be in a dedicated and purpose-built room or dedicated storage area for mobile garbage bins back of house. The appropriate storage will depend on the type of medical waste, volumes and servicing processes. In accordance with NSW Health's *Clinical and Related Waste Management for Health Services* 2017, Health services must provide an enclosed structure such as a shed, garage, cage or fenced area or separate loading bay to store medical waste. The storage area for anatomical and/or clinical waste may require refrigeration to prevent decomposition of the waste, if this waste stream is not removed on a frequent basis. Any medical waste holding area must: • Be located away from food and clean storage areas, • Be inaccessible to the public, • Have a lockable door, • Have rigid impervious flooring, • Allow for regular cleaning, and • Prevent odour and vermin. An EPA licence may be required to store Hazardous Wastes.
Containers	All medical waste must be stored in the correct medical waste container with correct colour coding and labelling in accordance the *Australian Dangerous Goods Code Edition 7.3 (ADG Code).* All containers of medical waste to be stored in a secure location.
Spillages	Clean up facilities, spills kits, appropriate drainage and bunding should be provided within the Waste Storage Area. Ensure all necessary equipment required to clean and disinfect the area in case of accidental spillage is easily available and accessible. It is essential that personnel involved in spill management receive education and training in emergency

	procedures and handling requirements. Spill kits that have been used should be disposed of with the type of waste that has been cleaned up, eg used cytotoxic spill kits should be disposed of with cytotoxic waste.
Mixed waste	Any waste mixed with medical waste must be treated as medical waste
Sharps	Sharps containers should be placed within "arms reach" of where the sharps are generated. Full containers will be sealed and then transported utility rooms/ designated storage area to awaiting collection by contractors.
Collections	It is intended that as per normal practice for these types of facilities, that the appointed contractor will service the medical waste containers/bins from their operational location within the facility and replace them at the same time with empty containers/bins. Medical waste shall remain within the storage areas and only be moved during collections. Collections will be performed by a transporter licensed by the EPA to collect, transport and dispose of the medical waste stream accordingly.

6.1.1 MEDICAL WASTER ROOM REQUIREMENTS

If a medical waste room is provided with a development, the medical waste room should strive for best practice waste room storage as outlined in Waste Management Association of Australia, Biohazardous Waste Industry Group's *Manual for the Management of Biohazardous Waste*, 6th edition 2010, which is as follows

- Storage area base is an impervious surface surround by a bund appropriate to contain any spill
- All loading/unloading takes place within the bunded area in such a manner to ensure any spills are appropriately managed
- The base and walls of bunded areas are free of gaps or cracks
- Where vehicular access to the bunded area is required, bunds are constructed to prevent them from being damage by vehicles
- Signage is posted with the biohazard symbol and other labelling appropriate to the types of waste stored in that area
- The bunded area drains to a sump or sewer to collect spills and wash water.
- If any refrigerator facilities are provided, they shall be contained within a secure area.

6.1.2 MEDICAL WASTE COLLECTION PROCEEDURES

Medical waste is to be collected by an appointed contractor directly from operational locations within the facility. Containers/bins will be replaced at the time of servicing with empty containers/bins.

Medical waste shall remain within the storage areas and only be moved during collections. Collections will be performed by a transporter licensed by the EPA to collect, transport, and dispose of the medical waste stream accordingly.

Any dedicated medical waste rooms will be included within the footprint of the building and will be designed to meet best practice fit-out requirements as outlined in Waste Management Association of Australia, Biohazardous Waste Industry Group's *Manual for the Management of Biohazardous Waste*, 6th edition 2010.

7.0 NON-RESIDENTIAL WASTE MANAGEMENT

The following section outlines best practice waste management for the student accommodation, school, and retail components of the development, including waste generation estimates and waste disposal and collection procedures. The waste estimates are calculated as 'assumptions', and may change upon the lodgement of the subsequent detailed SSDAs.

7.1 WASTE GENERATION ESTIMATES

The NSW EPA's *Better practice guide for resource recovery in residential developments 2019* has been referenced to calculate the total number of bins required for the anticipated tenants. Calculations are based on generic figures, and waste generation rates may differ according to the tenants' actual waste management practice. The waste and recycling generation rates from the NSW EPA's *Better practice guide for resource recovery in residential developments 2019* have been adapted to reflect litres per 100m2 per day.

The following table shows the estimated volume (L) of general waste and recyclables that will be generated by the anticipated tenancy types.

The following estimates are based on a 5-day operating week for the school and commercial offices. The remaining tenancies are based on a 7-day operating week.

Table 2: Estimated Waste and Recycling Volumes – Student Accommodation (Superlot 1)

Type of Rate	# Occupants	Waste Generation Rate (L/unit/week)	Generated Waste (L/week)	Recycling Generation Rate (L/unit/week)	Total Commingled Recyclables (L/week)
Boarding/Guest House	473	40	18920	35	16555
TOTAL	**473**		**18920**		**16555**
Bins and Collections		Bin Size (L)	1100	Bin Size (L)	1100
		Collections/Week	3	Collections/Week	3.0
		Bins Per Day	2.5	Bins Per Day	2.2
		Bins Per Collection	**6**	Bins Per Collection	**5**

Table 3: Estimated Waste and Recycling Volumes – Retail (Superlot 7)

Tenancy Type	GFA m²	Waste Generation Rate (L/100m²/Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m²/Day)	Generated Recyclables (L/Week)
Offices	11016	10	5508.0	15	8262.0
Cafes	1377	100	9639.0	120	11566.8
Retail: Non-Food	1377	50	4819.5	100	9639.0
TOTALS	**13770**		**19967**		**29468**
Bins and Collections		Bin Size (L)	1100	Bin Size (L)	1100
		Bins/Week	18.2	Bins/Week	26.8
		Collections/Week	3	Collections/Week	3
		Total Bins	**7**	Total Bins	**9**

Table 4: Estimated Waste and Recyclable Options - School (Superlot 5)

Tenancy Type	# of Students	Waste Generation Rate (L/100m^2/Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m^2/Day)	Generated Recyclables (L/Week)	Generated Commingled Recyclables 1/3 (L/Week)	Generated Paper/cardboard Recyclables 2/3 (L/Week)
School	1000	3	15000	4	20000	6666.7	13333.3
Offices*	100	10	50	15	75	25.0	50.0
Canteen*	100	400	2000	280	1400	466.7	933.3
TOTALS	**1000**		**17050**		**21475**	**7158**	**14317**
Bin Option and Collections		Bin Size (L)	1100	Bin Size (L)	1100	1100	1100
		Bins/Week	15.5	Bins/Week	19.5	6.5	13.0
		Collections/Week	3	Collections/Week	3	3	4
		Total Bins	**6**	Total Bins	**7**	**3**	**4**

**Note: The* NSW EPA's *Better practice guide for resource recovery in residential developments 2019 has been anticipated to have excessive rates for general waste and recycling. The rates have been adjusted to convert the daily rate into a 'weekly rate', which will be presumed to reflect a more accurate estimation. Actual waste and recycling rates will be determined in the Development Application (DA) stage for this development on a separate report*

7.2 OVERALL NON-RESIDENTIAL BIN SUMMARY

Based on the estimated waste generated by the non-residential tenancies within each stage, the recommended bin quantities and collection frequencies are as follows. These figures assume all tenancies within the stage would share bins, bin room and collection service.

NON- RESIDENTIAL BIN SUMMARY (School Accommodation) ***Superlot 1***
General Waste: 6 x 1100L MGBs collected **3 x weekly**
Recycling: 5 x 1100L MGBs collected **3 x weekly**

NON-RESIDENTIAL BIN SUMMARY LOT 7 (Retail) ***Superlot 7***
General Waste: 7 x 1100L MGBs collected **3 x weekly**
Recycling: 9 x 1100L MGBs collected **3 x weekly**

NON-RESIDENTIAL BIN SUMMARY (School) - ***Superlot 5***
General Waste: 6 x 1100L MGBs collected **3 x weekly**
Commingled: 3 x 1100L MGBs collected **3 x weekly**
Paper/cardboard: 4 x 1100L MGBs collected **4 x weekly**

Bin sizes, quantities, and/or collection frequencies may be modified by the building manager once the proposed development is operational. Building management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal peak periods such as public and school holidays should also be considered.

7.3 WASTE DISPOSAL PROCEEDURES

Each building or superlot will be provided with an allocated bin room for that tenancy (E.g., School Bin Room/Area, Student accommodation Bin Room etc.) that is located adjacent to the loading dock and is accessible to all authorised tenants of that building or superlot.

It is assumed the anticipated tenancies will use separate waste collection and service providers. The non-residential tenancies will be responsible for their back of house waste and recycling management during daily operations.

On completion of each trading day or as required, nominated staff, or contracted cleaners will transport all general waste and recyclables to the allocated bin room in their building and place into the appropriate collection bins.

7.4 WASTE COLLECTION PROCEEDURES

A private waste collection contractor will be engaged to service the non-residential waste and recyclable bins per an agreed schedule.
Collection frequencies that are used to size the non-residential bin rooms will be accurately determined in the Operational Waste Management Plan for each stage for DA.
It is assumed the non-residential bins rooms will be located adjacent to the loading dock allowing for the collection vehicles to enter the site. The waste collection vehicle will park in the loading dock for each building and the waste collection staff will collect the bins via a collect and return arrangement from the non-residential bin room for each building.

7.5 OTHER WASTE MANAGEMENT CONSIDERATIONS

Based on the types of tenancies anticipated for this development, the following waste management practices are recommended.

7.5.1 KITCHEN, OFFICE TEA ROOMS AND FOOD PREPARATION AREAS

Any food preparation area, including kitchens and office tea rooms will be provided with dedicated source separation bins including a general waste bin and a recycling (commingled and paper/cardboard if expanding recyclables for source separation). Cleaners or nominated staff will be responsible for monitoring these bins and emptying them as required.

7.5.2 BATHROOMS

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

7.5.3 PRINTING & PHOTOCOPYING ROOMS

It is recommended that printing rooms and photocopying rooms are supplied with bins for the collection of paper, as well as separate receptacles for ink toner cartridges for recycling. The cleaners or nominated staff are responsible for monitoring these bins and ensuring the items are collected and recycled by an appropriate contractor.

7.5.4 LIQUID WASTE

Liquid wastes such cleaning products, chemicals, paints, and cooking oil, etc., will be stored in a secure space that is bunded and drained to a grease trap in accordance with State government authorities and legislation.

7.5.5 PROBLEM WASTE

The building manager is responsible for making arrangements for the disposal and recycling of problem waste streams with an appropriate contractor. Problem wastes cannot be placed in general waste as they can have adverse impacts to human health and the environment if disposed of in landfill. Retail and Commercial tenants will need to liaise with the building manager when disposing of problem waste streams.

Problem waste streams include:

- Chemical Waste
- Liquid wastes
- Toner cartridges
- Lightbulbs
- eWaste
- Batteries

8.0 STAKEHOLDER ROLES & RESPONSIBILITIES

The following table demonstrates the primary roles and responsibilities of the respective stakeholders:

Table 5: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata, Body Corporate or Management	• Ensure all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organise internal waste audits/visual assessments on a regular basis • Purchase any on-going waste management equipment or maintenance of equipment once building is operational; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Maintain and clean chute doors on each level; • Coordinate general waste and recycling collections; • Clean and transport bins as required; • Organise replacement or maintenance requirements for bins; • Organise, maintain and clean the waste holding area; • Organise bulky goods collection when required • Investigate and ensure prompt clean-up of illegally dumped waste materials. • Prevent storm water pollution by taking necessary precautions (secure bin rooms, prevent overfilling of bins) • Abide by all relevant WH&S legislation, regulations, and guidelines; • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Ensure site safety for residents, children, visitors, staff and contractors; and • Ensure effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Residents	• Dispose of all general waste and recycling in the allocated waste chutes and/or MGBs provided; • Ensure adequate separation of general waste and recycling; and • Comply with the provisions of Council and the OWMP.
Retail/Commercial Tenants	• Manage the back of house storage of generated waste and recycling during daily operation. • Correctly separate waste and recycling streams; bag general waste and ensure recyclables are not bagged. • Flatten cardboard within the recycling bin. • If required, arrange for storing used and unused cooking oil in a bunded area, • Organise grease interceptor trap servicing, • Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and • Ensure the suitable storage for chemicals, pesticides and cleaning products waste back of house.
Waste Collection Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers/residents regarding contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/ Landscaping Contractor	• Remove all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchase all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata or Body Corporate.

9.0 SOURCE SEPARATION

Better practice waste management includes the avoidance, reuse, and recovery of unwanted items, which can be achieved through source separation. The table below outlines what is typically included in various waste streams and how they can be managed. Refer to your local council for a list of accepted materials. Planet Ark can be accessed online to find other facilities that recover unwanted items.

Table 6: Operational Waste Streams

Waste Stream	Description	Typical Destination	Waste Stream Management
General Waste	The remaining portion of the waste stream that is not recovered for re-use, processing, or recycling. May include soft plastics, food scraps, polystyrene, etc.	Landfill	Waste should be bagged before placing in chutes, or in designated waste bins.
Recycling	A mixture of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (e.g., aluminium, glass, steel, hard plastics, cartons). Also included cardboard and paper products.	Resource Recovery Centre	Recycling must not be bagged, and instead should be placed loosely in the designated recycling bins. Bulky cardboard must not be placed in any chute. Cardboard should be flattened before placing in the designated cardboard bin.
Paper and Cardboard Recyclables	Cardboard and paper products are recyclable materials that can be re-processed into new products.	Resource Recovery Centre	Bulky cardboard must not be placed in any chute. Cardboard should be flattened before placing in the designated cardboard bin.
Commingled Recyclables	A mixture of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (e.g., aluminium, glass, steel, hard plastics, cartons).	Materials Recovery Facility (MRF)	Commingled recyclables must not be bagged, and instead should be placed loosely in the designated recycling bins.
Secure Documents	Secure documents are printed paper materials that contain sensitive information.	Recycling Facility	Secure documents are placed in allocated secure document bins. Private contractor removes bins from site.
Green Waste	Green waste consists of unwanted organic materials that are easily biodegradable and/or compostable (e.g., lawn clippings, branches)	Resource Recovery Centre	Landscape Maintenance Contractors will remove the green waste from site during scheduled maintenance. Green waste will be collected in council or private contractor bins and removed from site.
Food Waste	Food waste consists of unwanted or uneaten kitchen scraps that are easily compostable/biodegradable (e.g., vegetable peels, fruit rinds, coffee grounds).	Composting facility or Landfill	Food waste can be composted on-site, off-site, or else included in the general waste stream.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Building manager arranges collection for e-waste recycling as needed by residents. Commercial tenants arrange for recycling of their own e-waste.

Bulky Items	Items that are to too large to place into general rubbish collection. This includes disused and/or broken furniture, mattresses, white goods, etc.	Resource Recovery Centre or Landfill	Residents liaise with building manager to store in Bulky Goods Room. Building manager arranges with Council for removal. Commercial tenants are responsible for removal of their bulky items.
Sanitary Waste	Feminine hygiene waste generated from female bathrooms.	Incineration or Landfill	Sanitary bins are serviced by sanitary waste contractor.
Other	Other recyclable items that require special recovery may include ink cartridges, batteries, chemical waste, fluorescent tubes, etc.	Resource Recovery Facility	Building manager arranges collection by appropriate recycling services when required.

10.0 EDUCATION

Educational materials encouraging correct separation of general waste and recyclables must be provided to each resident and commercial/retail tenant. This should include the correct disposal process for bulky waste such as old furniture, large discarded items, and other materials including electronic and chemical wastes. It is recommended that the building caretaker provides information in multiple languages to support correct behaviours, and to minimise the possibility of chute blockages and contamination in communal waste bins.

Education and communication must be provided consistently on a regular basis to encourage behaviour change and account for transient building personnel such as new residents, tenants, or cleaning staff. It is also recommended that the owners' corporation website contain information for residents' referral regarding use of the chute. Information should include:

- Directions on using the chute doors;
- Descriptions of items accepted in the recycling and general waste streams (refer to Council guidance);
- How to dispose of bulky goods and any other items that are not general waste or recycling (refer to Council guidance);
- Residents' obligations to health and safety as well as building management; and
- How to prevent damage or blockages to the chute (example below).

To prevent damage or blockage to rubbish chute DO NOT dispose of any umbrellas, bedding, cigarettes, cartons, coat hangers, brooms, mops, large plastic wrappings from furniture, white goods, any sharp objects, hot liquid or ashes, oil, unwrapped vacuum dust, syringes, paint and solvents, car parts, bike parts, chemicals, corrosive and flammable items, soil, timber, furniture, bricks or other building materials down the chute.

11.0 WASTE ROOMS

The estimated areas and bin rooms for each stage will need to be determined in the Operational Waste Management Plan for each stage. The waste rooms can only be recommended once the distribution of units in each building core, location of loading areas and the non-residential tenancies have been confirmed.

All rooms for waste management must accommodate the required equipment, plus approximately 70% additional space for access and manoeuvrability of bins.

All doorways and passageways facilitating the movement of bins and/or bulky waste items must be at least 1500mm wide.

The following table provides further waste room requirements:

Table 7: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Chute Discharge Room	• Ceiling clearance height must be a minimum of 3000mm (3100mm with compactor) (subject to penetration location) • The chute penetration must have a minimum 500mm clearance of any service pipes or other overhead obstacles • All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room • 200mm clearance is required around compaction equipment • Where a chute offset is required, the angle of the offset must not exceed 40 degrees (subject to number of consecutive offset and/or up to 1500mm)
Residential Bin Holding Room and/or Bin Collection Area	• Bins must not be stacked in rows that are more than two bins deep
Bulky Goods Waste Storage Room	• May be a dedicated room or screened area within another waste room • Must be in close proximity to the collection area • Area must also be allocated for the segregation of e-waste, gas bottles, cardboard, etc. • Doorway should be a minimum of 1500mm wide
Non-Residential Bin Rooms	• In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin

12.0 BIN MOVEMENTS

The building caretaker is responsible for the transportation of bins as required from their designated operational locations to the bin holding room as required and returning them once emptied to resume operational use.

Transfer of bins should minimise manual handling where possible, as bins become heavy when full. The building manager must assess manual handling risks and provide any relevant documentation to key personal.

The routes along the bin moving path should;

- Allow for a continuous route that is wholly within the property boundary.
- Be free from obstruction and obstacles such as steps and kerbs.
- Be constructed of solid materials with a non-slip surface
- Be A minimum of 300mm wider than the largest bin used onsite.
- If bins are moved manually, the route must not exceed a grade of 1:14.
- If a bin moving device is used, the route cannot exceed the maximum operating grade of the device. This is typically a grade of 1:4, however this will vary depending on the model of bin moving device acquired for the site.

The developer is responsible for suppling all equipment required for moving bins this includes any bin lifters, bin moving devices and waste transfer bins. This equipment must be new and appropriate for the site. The developer should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations.

Once the site is operational (and the developers is no longer involved) the building proprietors/strata/body corporate will be responsible for maintaining, repairing and replacing waste management equipment.

13.0 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the *Ryde Development Control Plan 2014,* in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

The *NSW Better practice guide for resource recovery in residential developments (2019)* also states that better practice bin storage areas should achieve more than the minimum compliance requirements, which are as follows:

- Ensuring BCA compliance, including ventilation. Where required, ventilation system must comply with AS1668.4-2012 The use of ventilation and air conditioning in buildings.
- Ensuring storage areas are well lit (sensor lighting preferred) and have lighting available 24 hours a day.
- Provision of bin washing facilities, including taps for hot and cold water provided through a centralised mixing valve. The taps must be protected from bins and be located where they can be easily accessed even when the area is at bin capacity.
- Floor constructed of concrete at least 75mm thick.
- Floor graded so that any water is directed to a sewer authority approved drainage connection to ensure washing bins and/or waste storage areas do not discharge flow into the stormwater drain.
- Provision of smooth, cleanable and durable floor and wall surfaces that extend up the wall to a height equivalent to any bins held in the area.
- Ensuring ceilings are finished with a smooth-faced non-absorbent material capable of being cleaned.
- All surfaces (walls, ceiling and floors) finished in a light colour.

12.1 ADDITIONAL CONSIDERATIONS

- Waste room floor to be sealed with a two-pack epoxy;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- Tap height and light switch height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above finished floor level;
- Optional automatic odour and pest control system installed
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors must be used;
- All personnel doors are hinged, lockable and self-closing;
- Conform to the Building Code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured
- Waste and recycling rooms must have their own exhaust ventilation system either;
    - Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum. Mechanical exhaust systems shall comply with AS1668.4.2012 and not cause any inconvenience, noise or odour problem; or
    - Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area.

13.0 USEFUL CONTACTS

EFC does not warrant or make representation for goods or services provided by suppliers.

LOCAL COUNCIL

Ryde Customer Service	Ph: (02) 9952 8222	E: cityofryde@ryde.nsw.gov.au

PRIVATE WASTE COLLECTION PROVIDER

Capital City Waste Services	Ph: 02 9599 9999	E: service@ccws.net.au
Remondis	Ph: 02 9032 7100	
Suez Environmental	Ph: 13 13 35	
Wastewise NSW	Ph: 1300 550 408	E: admin@wastewise.com.au

BIN MOVING DEVICE SUPPLIERS

Electrodrive	Ph: 1800 333 002	E: sales@electrodrive.com.au
Sitecraft	Ph: 1300 363 152	E: sales@sitecraft.com.au
Spacepac	Ph: 1300 763 444	

ORGANIC DIGESTERS AND DEHYDRATORS

Closed Loop	Ph: 1300 762 166	
Orca		E: contact.australia@feedtheorca.com
Soil Food	Ph: 1300 556 628	
Waste Master	Ph: 1800 614 272	E: hello@wastemasterpacific.com.au

COOKING OIL CONTAINERS AND DISPOSAL

Auscol	Ph: 1800 629 476	E: sales@auscol.com

ODOUR CONTROL

EF Neutralizer	Ph: 1300 435 374	E: info@elephantsfoot.com.au

SOURCE SPERATION BINS

Source Separation Systems	Ph: 1300 739 913	E: info@sourceseparationsystems.com.au

MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

SULO	Ph: 1300 364 388	E: sales@sulo.com.au
OTTO Australia	Ph: 02 9153 6999	

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

Elephants Foot	Ph: 1800 025 073	E: info@elephantsfoot.com.au

APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 LOT STAGES

INDICATIVE STAGING DIAGRAMS

Stage 1 includes vertical village, and related road infrastructure upgrades, which will be lodged shortly after this masterplan SSDA.

Stage 2 consists of the superlots to the east and south of Stage 1.

Stage 3 and 4 will complete the street network and the building development to the west.

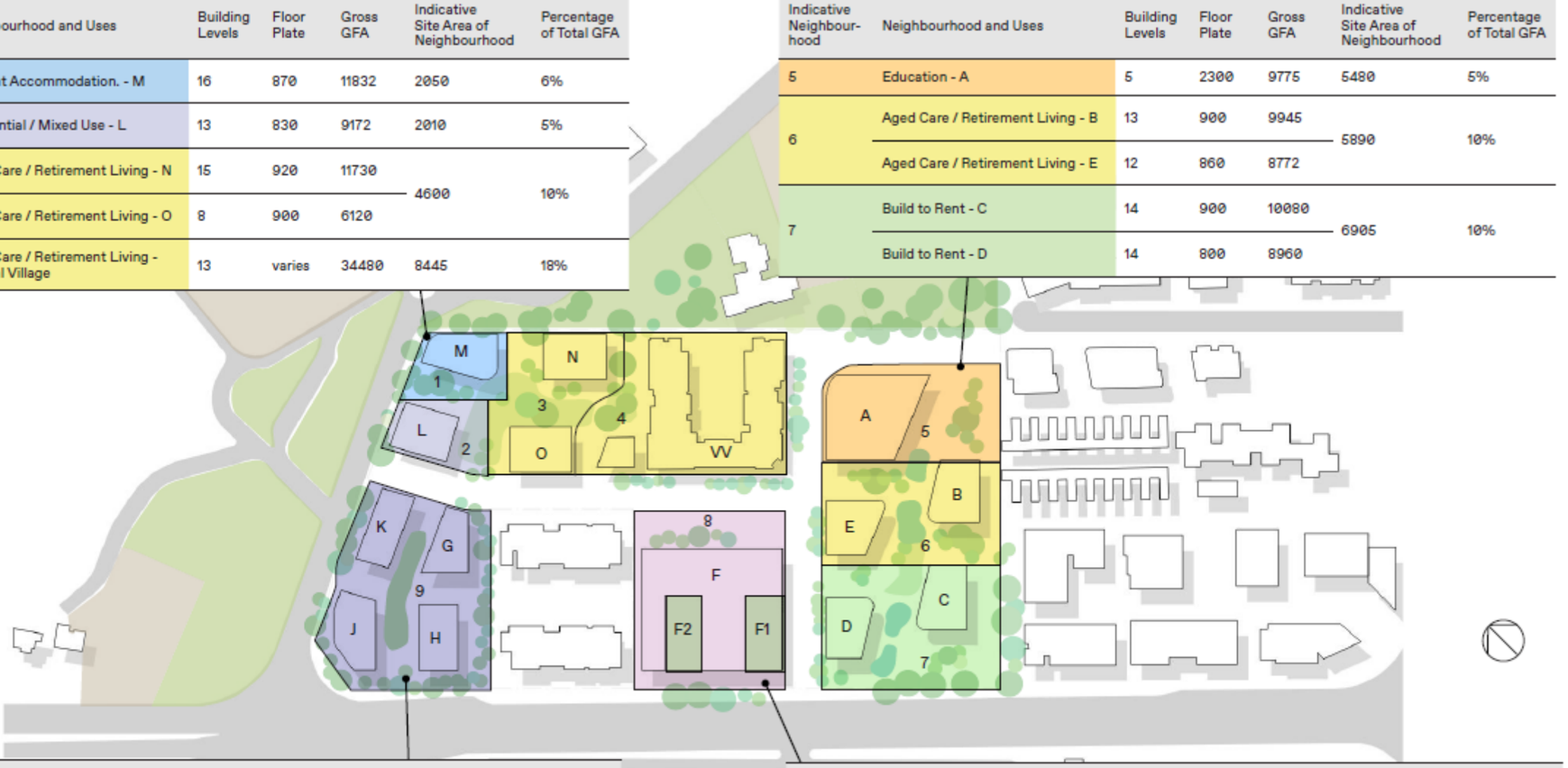
Source: BVN Architects, BaptistCare Macquarie Park Concept Masterplan, APPENDIX E – Urban Design Master Plan Design Report.

AREA PLAN

The total GFA of the entire site adds up to 187134 m².

Indicative Neighbour-hood	Neighbourhood and Uses	Building Levels	Floor Plate	Gross GFA	Indicative Site Area of Neighbourhood	Percentage of Total GFA
1	Student Accommodation. - M	16	870	11832	2050	6%
2	Residential / Mixed Use - L	13	830	9172	2010	5%
3	Aged Care / Retirement Living - N	15	920	11730	4600	10%
	Aged Care / Retirement Living - O	8	900	6120		
4	Aged Care / Retirement Living - Vertical Village	13	varies	34480	8445	18%

Indicative Neighbour-hood	Neighbourhood and Uses	Building Levels	Floor Plate	Gross GFA	Indicative Site Area of Neighbourhood	Percentage of Total GFA
5	Education - A	5	2300	9775	5480	5%
6	Aged Care / Retirement Living - B	13	900	9945	5890	10%
	Aged Care / Retirement Living - E	12	860	8772		
7	Build to Rent - C	14	900	10080	6905	10%
	Build to Rent - D	14	800	8960		



Indicative Neighbour-hood	Neighbourhood and Uses	Building Levels	Floor Plate	Gross GFA	Indicative Site Area of Neighbourhood	Percentage of Total GFA
9	Residential / Mixed Use - G	8	700	4760	9320	18%
	Residential / Mixed Use - H	14	800	9520		
	Residential / Mixed Use - J	18	900	13770		
	Residential / Mixed Use - K	8	800	5440		

Indicative Neighbour-hood	Neighbourhood and Uses	Building Levels	Floor Plate	Gross GFA	Indicative Site Area of Neighbourhood	Percentage of Total GFA
8	Retail / Commercial / Conference Centre - F	3	5400	13770	8625	7%
8	Build to Rent - F1	16	880	11264		10%
	Build to Rent - F2	11	880	7744		

*Within the zone of Retail / Commercial and Conference Centre, the 13770 m² evenly distributed between commercial and retail uses, with the final mix of uses to be confirmed at the time of detailed DA.

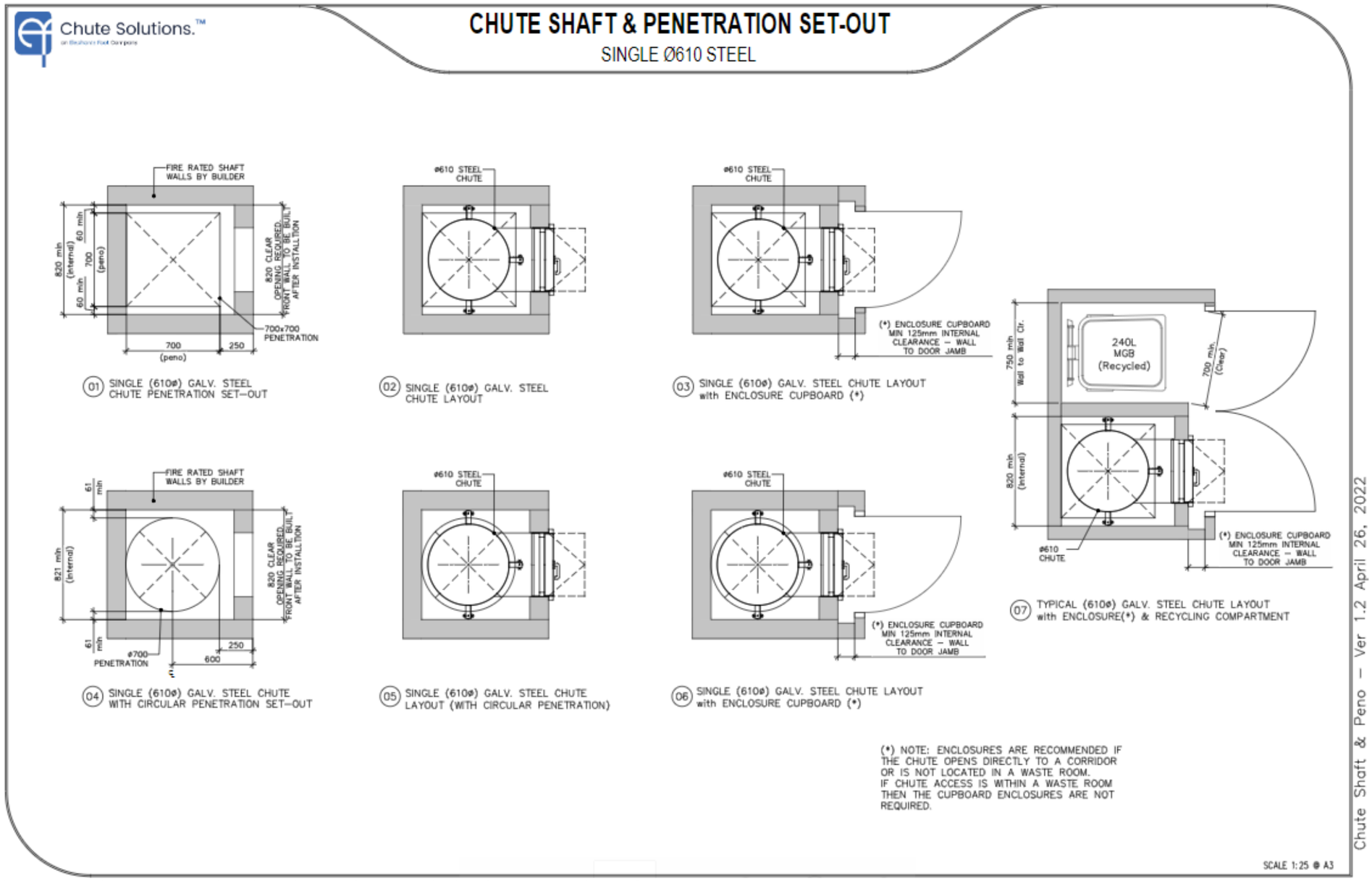
Source: BVN Architects, BaptistCare Macquarie Park Concept Masterplan, APPENDIX E – Urban Design Master Plan Design Report.

APPENDIX: A.3 TENANCY BREAKDOWN

Source: BVN Architects, BaptistCare Macquarie Park Concept Masterplan, APPENDIX E – Urban Design Master Plan Design Report.

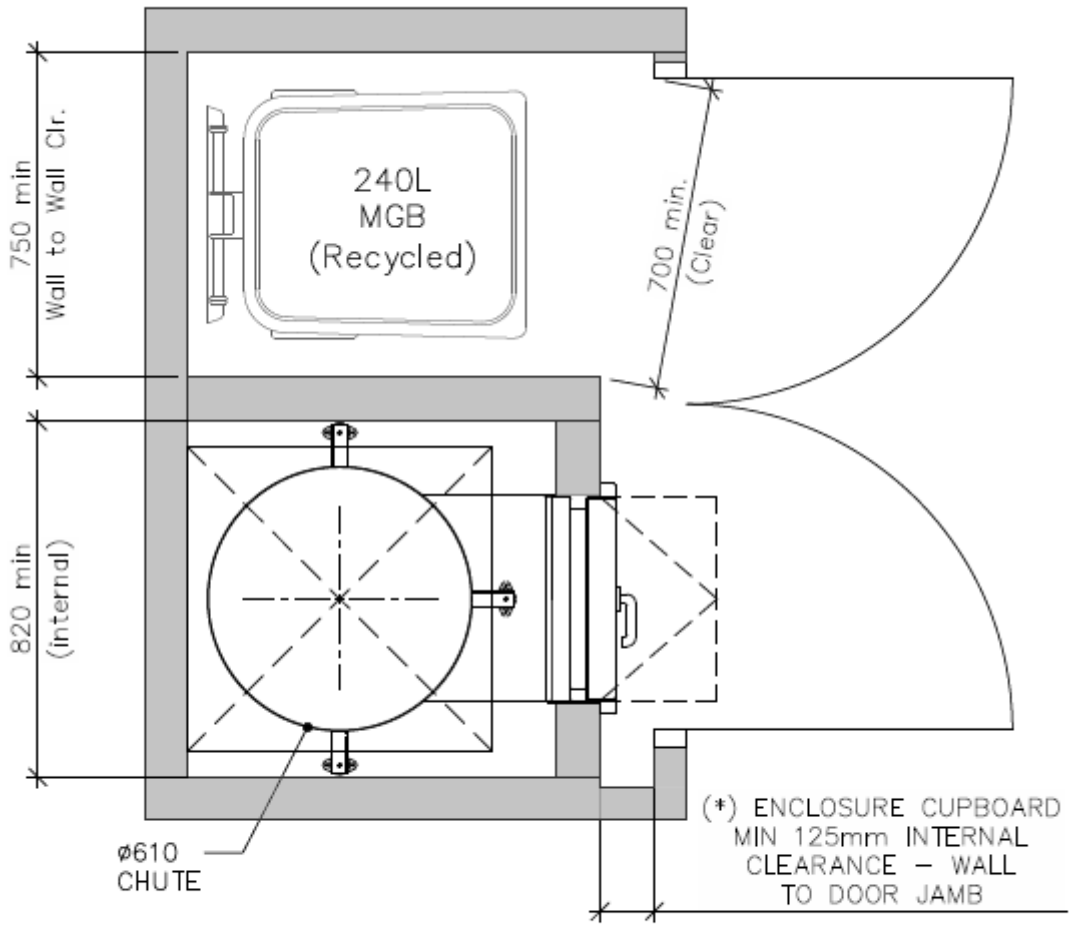
APPENDIX B: INSTALLATION EQUIPMENT

APPENDIX: B.1 TYPICAL SINGLE CHUTE SHAFT & PENETRATION LAYOUT



Please Note: This is an example only – please refer to supplier's information and specification.

APPENDIX: B.2 EXAMPLE RESIDENTIAL LEVEL RECYCLING BIN LAYOUT



07 TYPICAL (610ø) GALV. STEEL CHUTE LAYOUT
with ENCLOSURE(*) & RECYCLING COMPARTMENT

Please Note: This is an example only – please refer to supplier's information and specification

APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX: C.1 TYPICAL BIN SPECIFICATIONS

Mobile bins

Mobile bins come in a variety of sizes and are designed for lifting and emptying by purpose-built equipment.

Mobile bins with capacities of up to 1700L must comply with *AS4123.6-2006 Mobile waste containers* which specifies standard sizes and sets out the colour designations for the bodies and lids of mobile waste containers indicating the type of materials they are used to collect.

The most common bin sizes are provided below, although not all sizes are shown. The dimensions are a guide only and differ slightly between manufacturers. Some bins have flat or domed lids and are used with different lifting devices. Refer to *AS4123.6-2006* for further details.

Table G1.1: Average dimension ranges for two-wheel mobile bins

Wheelie bin

Bin capacity	80L	120L		140L		240L	360L
Height (mm)	870	940	1065	1080	1100		
Depth (mm)	530	530		540		735	820
Width (mm)	450	485		500		580	600
Approximate footprint (m^2)	0.24	0.26–0.33		0.27-0.33		0.41–0.43	0.49
Approximate weight (kg)	8.5	9.5		10.4		15.5	23
Approximate maximum load (kg)	32	48		56		96	Not known

Sources include Sulo, Single Waste, Cleanaway, SUEZ, just wheelie bins and Perth Waste for two-wheel mobile bins

Table G1.2: Average dimension ranges for four-wheel bulk bins

Dome or flat lid container

Bin capacity	660L	770L	1100L	1300L	1700L
Height (mm)	1250	1425	1470	1480	1470
Depth (mm)	850	1100	1245	1250	1250
Width (mm)	1370	1370	1370	1770	1770
Approx footprint (m^2)	0.86–1.16	1.51	1.33–1.74	2.21	2.21
Approx weight (kg)	45	Not known	65	Not known	Not known
Approx maximum load (kg)	310	Not known	440	Not known	Not known

Sources include Sulo, Signal Waste, Cleanaway, SUEZ, Just Wheelie Bins and Perth Waste

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX: C.2 SIGNAGE FOR WASTE AND RECYCLING BINS

Waste signs

Signs and educational materials perform several functions including:

- informing residents why it is important to recover resources and protect the environment
- providing clear instructions on how to use the bins and services provided
- alerting people to any dangers or hazards within the bin storage areas.

All waste, recycling and organic bins should be Australian Standard colours and clearly and correctly labelled, such as by a sticker on the lid and/or the body of the bin.

Communal bin storage areas should be clearly signposted with signs outlining how to correctly separate waste into the bins provided. The local council responsible for waste services may be a good source of signs and posters and can advise on what signs are suitable.

Information on who to contact to find out more about the recycling and/or other resource recovery services in the building should also be displayed in communal areas, such as on a noticeboard.

The Planet Ark website also has resources available free of charge for use by businesses and councils. These signs can be found at businessrecycling.com.au/research/signage.cfm

Figure I1.1: Examples of waste wall posters (EPA supplied)

Figure I1.2: Examples of bin lid stickers (EPA supplied)

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

Problem waste signs

The EPA has also produced a range of images and signs that can be used for problem wastes, such as fluoro globes and tubes, household and car batteries, e-waste and smoke detectors. To access these resources, contact the NSW EPA. Some examples are shown below.

Figure I2.1: Problem waste signs

Safety signs

The use of safety signs for waste resource recovery rooms must comply with *AS1319 Safety signs for occupational environments*. Safety signs must be used to regulate and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Suitable signs should be decided for each development as required.

Figure I3.1: Example safety signs

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX: C.3 TYPICAL COLLECTION VEHICLE INFORMATION

General

Appropriate heavy rigid vehicle standards should be incorporated into the road and street designs in new developments where onsite collections are proposed. Road and street designs must comply with relevant Acts, regulations, guidelines, and codes administered by Austroads, Standards Australia, NSW Roads and Maritime Services, WorkSafe NSW and any local council traffic requirements.

Applicants and building designers should consult with councils and other relevant authorities before designing new roads or streets and access points for waste collection vehicles to establish specific design requirements.

Table H4.1: Australian Standards for turning circles for medium and heavy rigid class vehicles

Vehicle class	Overall length (m)	Design width (m)	Design turning radius (m)	Swept circle (m)	Clearance (travel) height (m)
Medium rigid vehicle	8.80	2.5	10.0	21.6	4.5
Heavy rigid vehicle	12.5	2.5	12.5	27.8	4.5

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

Large collection vehicles

Waste collection vehicles may be side-loading, rear-loading, front-lift-loading, hook or crane lift trucks. Vehicle dimensions vary by collection service, manufacturer, make and model. It is not possible to provide definitive dimensions, so architects and developers should consult with the local council and/or contractors.

The following characteristics represent typical collection vehicles and are provided for guidance only. Reference to *AS2890.2 Parking facilities: off-street commercial vehicle facilities* for detailed requirements, including vehicle dimensions, is recommended.

Table B2.1: Collection vehicle dimensions

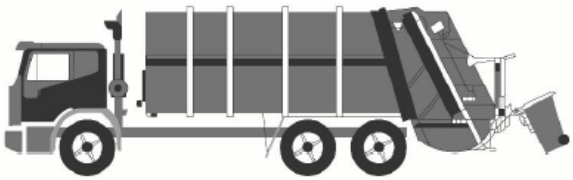
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0	13.0
Maximum payload (t)	10.0	10.8	11.0	14.5	9.5
Turning circle (m)	25.0	21.4	25.0	25.0	18

* The maximum reach of a side arm is 3 m.

Sources: JJ Richards, SUEZ, MacDonald Johnson, Cleanaway, Garwood, Ros Roca, Bingo and Edbro. Figures shown represent the maximum dimensions for each vehicle type.

Rear-loading collection vehicles

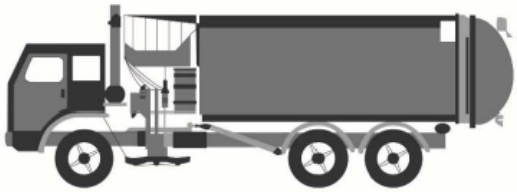
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



Rear-loading waste collection vehicle

Side-loading collection vehicles

This is the most commonly used vehicle for domestic waste, recycling and organics collections. It is only suitable for collecting mobile bins up to 360L in capacity.



Side-loading waste collection vehicle

Front-lift-loading collection vehicles

These vehicles are commonly used for collecting commercial and industrial waste. They can only collect specially designed front-lift bulk bins and not mobile bins.

Front-lift-loading waste collection vehicle

Small collection vehicles

Typically, councils and their contractors operate with large collection vehicles (heavy rigid class vehicles) because they carry greater payloads and allow for more cost-effective collection services. Some councils, or their contractors, may have smaller collection vehicles in their fleet. Early discussion with the council is important to confirm this, but it should not be assumed that the council will have access to small collection vehicles.

The waste management systems and the location of the collection point should always be designed so that the council can provide the standard domestic waste service.

Source: Better Practice Guide For Resource Recovery In Residential Developments 2019, NSW Environmental Protection Authority

APPENDIX: C.4 EXAMPLE BIN MOVER

Battery powered tug with a 1 or 2 tonne tow capacity

Features at a glance
One tonne (Evo 1T) or two tonne (Evo 2T) tow capacity
Auto latching hitch
Three speed motor with emergency stop

Typical applications

The Tug Evo is suitable for airports, factories, warehouses, apartment buildings or large facilities. This powered tug is also suitable for transporting medical carts around hospitals or moving heavy specialist equipment.

Features:

- 1 or 2 tonne tow capacity of inclines up to 6 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 5 km/h max speed
- 2 x 12V 42Ah MK-gel batteries with 24V smart charger.
- Powerful transaxle

Safety Features:

- Intuitive control with standard automatic safety brake, forward and reverse drive.
- Emergency stop button.

Emergency back-off button

Source: http://www.electrodrive.com.au/products/tugs/tug-evo.aspx

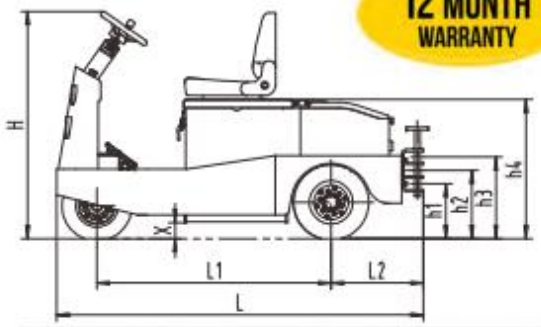
APPENDIX: C.5 EXAMPLE SEATED BIN MOVERS

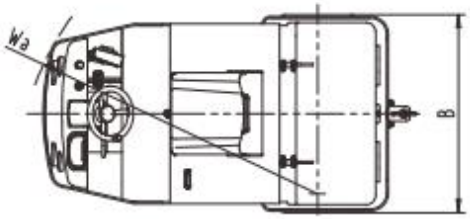
SITECRAFT
MATERIALS HANDLING EQUIPMENT
17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

- Towing capacities from 2000 kg to 6,000 kg
- **Full AC electric system** has a brake-releasing function, making the unit easy and effortless to operate; The maintenance-free motor completely solves the issues of DC motor carbon brush.
- Batteries located in the lowest part of frame ensures excellent stability
- Quick open back service cover for easy maintenance and part replacement
- CANbus technology reduces wiring complexity and increases reliability
- H type axle design provides excellent stability
- New high-range steering design; light steering and easy to maintain.
- New large-screen instrument display provides information clearly and directly to the operator.

12 MONTH WARRANTY





Model		ST-2000AC	ST-3000AC	ST-5000AC	ST-6000AC
Towing Capacity	Kg	2000	3000	5000	6000
Drawbar Centre Height	h1/h2/h3 mm	280/350/420	280/350/420	280/350/420	280/350/420
Motor	Kw / V	3Kw / 36V	3Kw / 36V	5Kw / 48V	5Kw / 48V
Total Size	L x B x H mm	1720 x 968 x 1270	1720 x 968 x 1270	1975 x 1100 x 1270	1975 x 1100 x 1270
Total Weight (With Batteries)	Kg	740	780	1240	1280
Wheel Size	Solid Rubber	15*4-8	15*4-8	15*4-8	15*4-8
Wheelbase	L1 mm	1055	1055	1280	1280
Rear Hanging Distance	L2 mm	382	382	500	500
Seat Height	h4 mm	910	910	910	910
Ground Clearance	X mm	90	90	90	90
Turning Radius	Wa mm	1500	1500	1650	1650
Maximum Speed	Km/h	10	8	14	12
Battery	V/Ah	36/200	36/250	48/360	48/400
Battery Weight	Kg	200	250	610	650
Charger	On-board V/Ah	36/30	36/30	48/50	48/50

SITECRAFT
MATERIALS HANDLING EQUIPMENT

17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

ST3000-AC tow tug complete with 6 x 250AH heavy duty batteries

Optional steel / aluminium trailers for moving waste bins, linen trolleys, food trolleys, delivery boxes, etc ...

Source: https://www.sitecraft.net.au/materials-handling/tow-tugs-powered-vehicles/electric-tow-vehicles/

APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX: D.1 EXAMPLE APARTMENT STYLE COMPOST BIN

Apartment Style Compost bin – available from hardware stores

Suitable for:

- Vegetables
- Coffee grounds and filters
- Tea and tea bags
- Crushed eggshells (but not eggs)
- Nutshells
- Houseplants
- Leaves
- Cardboard rolls, cereal
- Boxes, brown paper bags
- Clean paper
- Shredded newspaper
- Fireplace ashes
- Wood chips, sawdust,
- Toothpicks, burnt matches
- Cotton and wool rags
- Dryer and vacuum cleaner lint
- Hair and fur
- Hay and straw

APPENDIX: D.2 TYPICAL COOKING OIL CONTAINERS

Drums 205L

Pour in Bulk Tank

View Brochure

Oil Kaddy System

View Brochure

Eco Systems

Direct-Connect to Fryer

Source: http://www.auscol.com/services/collection-systems/

APPENDIX: D.3 TYPICAL SOURCE SEPARATION BINS

Source: https://www.sourceseparationsystems.com.au/

APPENDIX: D.4 MEDICAL WASTE STREAMS AND MANAGEMENT

The following are the various medical waste streams and their storage guidelines as detailed in NSW Health's *Clinical and Related Waste Management for Health Services* 2017.

Medical Waste Stream	Medical Waste Stream Description and Management	Container Example
Sharps Waste	Any clinical object capable of inflicting a penetrating injury which may or may not be contaminated with blood and or body substance. This includes needles, ampoules and any other sharp objects or instruments designed to perform penetrating procedures Sharps container should be located adjacent to the work area where sharps are used. When the sharps residue container is filled to the black line, the container should be sealed and labelled.	
Pharmaceutical Waste	Pharmaceutical waste refers to any waste pharmaceuticals or other chemical substances specified as regulated goods in the Poisons and Therapeutic Goods Act 2008. Includes any substance specified in a Schedule of the Poisons List under the Act, as well as any therapeutic good which is unscheduled. It also includes expired or discarded pharmaceuticals, filters or other material contaminated by pharmaceutical products. Pharmaceutical waste bins must be lockable	
Clinical Waste	Clinical waste with the potential to cause injury, infection or offence: • Unrecognisable human tissue (excluding hair, teeth, nails and anatomical waste) • Bulk blood or other body fluids (or body substances) • Material and equipment visibly stained by blood or body fluids (includes incontinence pads and disposable nappies that come from an infectious patient)[3] • Lab specimens, cultures or other waste from lab investigations • Waste from medical or veterinary research • Genetically Modified Organisms (GMOs) For incineration or autoclaving and shredding. Autoclave tape and bag indicators must be used to show autoclaving has been completed. Fluid may be able to be discharged into sewer depending on Liquid Trade Agreement between the health service and water utility All clinical waste once treated by a process	

	acceptable to NSW Health may be reclassified in accordance with the Waste Classification	
Cytotoxic Waste	Material contaminated with residues or preparations containing materials toxic or otherwise harmful to cells. This includes any residual cytotoxic drug or laboratory chemical and any discarded material or clinical waste associated with the preparation or administration or excretion of cytotoxic drugs May include Genetically Modified Organisms (GMOs) or tissues containing GMOs If Cytotoxic waste generated it must be placed within an approved purple cytotoxic bag or container. When this container is full, it is to be placed in a locked purple cytotoxic waste wheelie bin. Once the larger wheelie bin is full, its collection should be organized.	
Radioactive	Waste material, including sharps and clinical waste contaminated with a radioisotope which arises from the medical or research use of radionuclides, e.g. during nuclear medicine, radioimmunoassay and bacteriological procedures, and may be in solid, liquid or gaseous form, and which emits a level of radiation above the level set by regulatory authorities Radioactive material to be stored onsite in appropriate storage area until it decays to below the thresholds of a “radioactive substance” as defined under the Radiation Control Act and Regulation. Handling and storage to comply with a Radiation Management Plan in accordance with the Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (ARPANSA 2008)	
Anatomical Waste	Identifiable human body parts such as limbs, organs, placenta and recognisable or large pathological specimens resulting from investigation or treatment of a patient It does not include deceased bodies	

Please note: Containers shown above are examples only, please refer to supplier information.