St Johns of God Richmond Hospital

177 Grose Vale rd North Richmond NSW

Private Hospital Development

OPERATIONAL WASTE MANAGEMENT PLAN

30/09/2020
Report No. SO435
Revision F

Client

St John of God Care Inc

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SCOPE

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

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. It is EFRS's understanding that a construction and demolition WMP will be completed by a separate party appointed by the developer, and submitted separately to this report. Typically, the head contractor of the site will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description	Signed
A	7/02/2020	H Wilkes	A Armstrong	Draft	
B	13/02/2020	H Wilkes	A Armstrong	Amendment	
C	18/02/2020	H Wilkes	A Armstrong	Amendment	
D	26/02/2020	H Wilkes	A Armstrong	Final	
E	29/09/2020	H Wilkes	A Armstrong	Updated plans	
F	30/09/2020	H Wilkes	A Armstrong	Updated plans	

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GLOSSARY OF TERMS

TERM	DESCRIPTION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
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 garbage or recyclables are actually loaded onto the collection vehicle
Compactor	A machine for compressing waste into disposable or reusable containers
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
Garbage	All domestic waste (Except recyclables and green waste)
Green Waste	All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers
Hopper	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
L	Litre(s)
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
LRV	Large rigid vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle (HRV)
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
Putrescible Waste	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
Recycling	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines
SRV	Small rigid vehicle as in AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities, generally incorporating a body width of 2.33

INTRODUCTION

Elephants Foot Recycling Solutions (EFRS) has been engaged to prepare the following waste management plan for St John of God Care Inc for the operational management of waste generated by the facilities at 177 Grose Vale rd North Richmond NSW.

Waste management strategies and auditing are a requirement for new developments to provide support for the building design, and promote strong sustainability outcomes for the building. It is EFRS'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. ***Compliance*** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this WMP identifies the different waste streams likely to be generated during the operational phase of the development. Associated information includes: how the waste will be handled and disposed of, 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 waste management plan is integrated into the overall management of the building and clearly communicated to all relevant stakeholders.

REPORT CONDITIONS

The purpose of this report is to document a Waste Management Plan (WMP) as part of a development application and is supplied by EFRS with the following limitations:

- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by the client, and third parties including Council and government information. The assumptions based on the information contained in the WMP is outside the control of EFRS;
- 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 managements approach to educating residents and tenants regarding waste management operations and responsibilities;
- The building manager will make adjustments as required based on actual waste volumes (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 or representation is made that the WMP reflects the actual outcome and EFRS will not be liable to you for plans or outcomes that are not suitable for your purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFRS offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Any manual handling equipment recommended 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.
- EFRS cannot be held accountable for late changes to the design after the WMP has been submitted to Council.
- EFRS will provide specifications and recommendations on bin access and travel paths within the WMP, however it is the architect's responsibility to ensure the architectural drawings meet these provisions.
- EFRS are not required to provide information on collection vehicle head heights, internal manoeuvring and loading requirements. These variables are considered to be within the applicable Traffic Consultants domain.
- Council are subject to changing waste and recycling policies and requirements at their own discretion.

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

DEVELOPMENT SUMMARY

The proposed development is an extension of the currently operating St John of God Richmond Hospital.

St John of God Richmond Hospital is a private psychiatric hospital which specialises in general psychiatry, depression, anxiety, addiction, post-traumatic stress disorder and substance misuse.

The completed facility will have a GFA of 10 237m^2 and will consist of:

- 112 patient rooms
- Therapy Facilities
- Staff and Administration Facilities
- Hospital Kitchen
- Café
- Pharmacy
- Health and Wellness Centre

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

SITE LOCATION

The site is located at 177 Grose Vale Rd North Richmond, as shown in Figure.1. The site has frontages to Grose Vale Rd with vehicle access via Grose Vale Rd.

Figure 1 - Site Location

HAWKESBURY CITY COUNCIL

The garbage and recycling will be guided by the services and acceptance criteria of the Hawkesbury City Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Hawkesbury City Council's *Hawkesbury Development Control Plan 2002,* Australian Standards and statutory requirements.

The development must also comply with statutory requirements including New South Wales Department of Health *Clinical and Related Waste Management for Health Services – Policy Directive 2017.*

COUNCIL REQUIREMENTS

Access – Ensure waste systems are easy to use and collection vehicles are able to access buildings to safely remove waste and recycling;

Safety – Ensure safe practises for storage, handling and collection of waste and recycling;

Pollution Prevention – Prevent stormwater pollution that may occur as a result of poor waste storage and management practises;

Noise Minimisation – Provide acoustic insulation to the waste service facilities or residential units adjacent to or above chutes, waste storage facilities, chute discharge, waste compaction equipment and waste collection vehicle access points;

Ecologically Sustainable Development (ESD) – Promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;

Hygiene – Ensure health and amenity for residents, visitors and workers in the Hawkesbury City Council.

STAKEHOLDER ROLES AND RESPONSIBILITIES

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

Table 1: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/Management	• Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organising internal waste audits/visual assessments on a regular basis; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager/Waste Caretaker	• Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; • Ensuring site safety for patients, staff, visitors and contractors; • Abiding by all relevant OH&S legislation, regulations, and guidelines; • Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • Cleaning and transporting of bins as required; • Organising, maintaining and cleaning waste holding areas; • Organising both garbage and recycled waste pick-ups as required; • Organising replacement or maintenance requirements for bins; • Organising bulky goods collection when required; and • Investigating and ensuring prompt clean-up of illegally dumped waste materials.
Staff and Patients	• Dispose of all garbage and recycling in the allocated MGBs provided; • Ensure adequate separation of garbage and recycling; and • Compliance with the provisions of Council and the WMP.
Waste Collection Contractors	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers in regards to contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/Landscaping Contractor	• Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Building Contractors	• Removing all construction related waste offsite in a manner that meets all authority requirements.

EDUCATION

Building management is responsible for creating and managing the waste management education process.

Educational material encouraging the correct separation of garbage and recycling items must be provided to each staff member to ensure the correct disposal of waste, including bulky goods (old furniture, large discarded items, etc.) It is recommended that information is provided in multiple languages to support correct practises and minimise the possibility of contamination in the collective waste bins.

SIGNAGE

The building manager is responsible for waste room signage including safety signage (*see APPENDIX C.2*). Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in the bin underneath.

WASTE MANAGEMENT

The data regarding the waste generated weekly at the currently operating site has been used to calculate the number of bins required for the upgraded development. For full calculation please see APPENDIX B. Calculations are based on circumstantial figures; waste generation may differ according to the waste management practice of the site in operation.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following tables shows the estimated volume (L) of garbage, co-mingled recycling, paper & cardboard recycling, organic waste and confidential waste generated by the development.

Table 2: Calculated Waste Generation – Private Hospital

Type	No. Paitent Rooms	Garbage Generation Rate (L/paitent room/week)	Generated Garbage (L/week)
	112	87.5	9800
TOTAL	**112**		**9800**
Collections & Equipment	Bin Size (L)		1100
	Garbage Bins Per Week		9
	Collections per Week		1
	Total Waste Bins Required		9

Table 3: Calculated Paper and Cardboard Recycling Generation – Private Hospital

Type	No. Paitent Rooms	Paper & Cardbaord Recycling Generation Rate (L/paitent room/week)	Generated Paper & Cardbaord Recycling (L/week)
	112	50	5600
TOTAL	**112**		**5600**
Collections & Equipment	Bin Size (L)		1100
	Garbage Bins Per Week		6
	Collections per Week		1
	Total Waste Bins Required		6

Table 4: Calculated Co-Mingled Recycling Generation – Private Hospital

Type	No. Paitent Rooms	Co-Mingled Recycling Generation Rate (L/paitent room/week)	Generated Co-Mingled Recycling (L/week)
	112	12.9	1440
TOTAL	**112**		**1440**
Collections & Equipment	Bin Size (L)		240
	Garbage Bins Per Week		6
	Collections per Week		1
	Total Waste Bins Required		6

Table 5: Calculated Organics Waste Generation – Private Hospital

Type	No. Paitent Rooms	Organic Waste Generation Rate (L/paitent room/week)	Generated Organic Waste (L/week)
	112	8.2	918.4
TOTAL	**112**		**918.4**
Collections & Equipment	Bin Size (L)		120
	Garbage Bins Per Week		8
	Collections per Week		1
	Total Waste Bins Required		8

Table 6: Calculated Confidential Document Waste Generation – Private Hospital

Type	No. Paitent Rooms	Confirdential Documents Generation Rate (L/paitent room/week)	Generated Confidential Documents (L/week)
	112	4.8	537.6
TOTAL	**112**		**537.6**
Collections & Equipment	Bin Size (L)		240
	Collections		monthly
	Total Waste Bins Required		9

Please note: It is the responsibility of the building manager to monitor the number of bins required for the development. As waste volumes may change according to the site's management, practices and attitudes to waste disposal and recycling. Bin numbers, collection frequencies and sizes may need to be altered to suit the building operation.

PRIVATE HOSPITAL WASTE MANAGEMENT

TREATMENT FACILITIES, PATIENTS ROOMS AND PATIENT FACILITIES

Suitably labelled waste and recycling bins will be placed in patient rooms, patient facilities including dining areas and treatment facilities where considered appropriate.

Garbage and recycling receptacles should be provided and located in convenient locations and in areas that are likely to have high rates of waste generation, like tea facilities and communal areas.

At the end of the day, cleaners will circulate around the site and perform cleaning tasks, generally vacuuming and cleaning toilets. The cleaners will also collect the bins from their operational location, transport the waste and recycling to the waste room on ground level and empty the bins into the appropriate bin.

OFFICES, FUNCTION ROOMS AND STAFF SPACES

Typically, bins for general waste and recycling are positioned next to each desk or in each room where considered appropriate. At the end of the day or as required, the cleaners or housekeeping will collect the bins from their operational location and empty the bins into the appropriate bin in the waste room.

Waste and recycling bins should also be placed at any staff tea points.

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.

KITCHEN AND CAFÉ

The kitchen and café staff will be responsible for their own storage of garbage and recycling back of house (BOH) during daily operations. On completion of each day or as required, nominated kitchen staff will transport their garbage and recycling to the waste room on ground level and place each waste stream into the appropriate collection bins.

Food handling for food prepared, served and consumed on site will produce a typical waste composition of food scraps from plates, packaging waste and some plastics.

Cardboard is a major component of the waste generated by kitchens. All cardboard should be flattened (to save bin space), placed in and collected from bulk bins. Whilst cardboard is bulky, it is generally lightweight however it can be contaminated with food or liquid which makes it unsuitable for recycling.

To ensure the proper management and disposal of waste, kitchen staff must be made aware of the following practices:

- All garbage should be bagged and garbage bins should be plastic lined;
- Bagging of recyclables is not permitted;
- The arrangements for storing used and unused cooking oil in a bunded storage area;
- The operator will organise grease interceptor trap servicing; and
- Dry basket arrestors need to be provided to the floor wastes in the food preparation and waste storage areas,

SOURCE SEPARATION

Waste avoidance, recovery and reuse of discarded materials and responsible management of hazardous waste are all crucial elements of sustainable development. Effective waste management practices in developments significantly improve environmental, social, and economic outcomes on both a local and regional scale and should be integrated into the waste management processes.

GENERAL WASTE (GARBAGE)

General waste is any waste that will be disposed of in landfill. It should only consist of items that are not or cannot be recycled and are not hazardous.

General waste bin will be placed around the facility for collection of general waste. These bins will be emptied into the collection bins in the waste room by the cleaners or housekeeping staff. Bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

CO-MINGLED RECYCLING

Recycling refers to waste items that can be recovered and reprocessed into new products. This includes paper, cardboard, aluminium cans, glass, PET bottles, liquid paperboard and HDPE containers.

Recycling bins will be placed around the facility adjacent to the general waste bins for collection of co-mingled recycling. These bins will be emptied into the collection bins in the waste room by the cleaners or housekeeping staff.

Co-mingled recycling must not be bagged. Plastic bags are a contaminate to co-mingle recycling and may cause the whole co-mingled recycling load to be rejected by the waste processing facility.

PAPER AND CARDBOARD RECYCLING

Recycling bins for paper and cardboard recycling will be placed around the facility adjacent to the general waste bins for collection of recyclable paper and cardboard items. Cardboard should be flattened to save space within the bins.

These bins will be emptied into the collection bins in the waste room by the cleaners or housekeeping staff.

CONFIDENTIAL WASTE (SECURE DESTRUCTION BINS)

Confidential waste refers to documents with sensitive, personal or confidential information that require disposal via secure destruction.

The storage and destruction of confidential waste must be done in accordance with Commonwealth of Australia's *Privacy Act 1988*.

Building management will be responsible for providing enough confidential waste bins for the facility and for arranging the private contractor to service and appropriately dispose of confidential waste.

ORGANICS WASTE

Organic waste will primarily be generated from the kitchen areas, scraps from meal, tea bags, and coffee grounds.

An organic bin will be included in kitchen, food preparation areas and tea rooms. These bins will be emptied by contract cleaners as they circulate round the workplace after standard business hours. The cleaners will transport the organic waste to the to the organic waste bins in the waste room.

BULKY GOODS

Bulky waste refers to large waste items such as furniture and white goods. The bulky goods will be managed by the building manager. The bulky goods waste stream is generated in frequently when an item becomes broken or no longer needed. The building manger will be responsible for removing and disposing of the bulky waste items in an appropriate manor as required.

For bulky goods in good condition, items should be donated to charitable organisations or sold to office furniture retailers for refurbishing.

Broken bulky goods that are beyond repair can be deconstructed and separated into material stream such as plastics, metal, fabric and timber to be either recovers or disposed of in landfill.

MANAGEMENT OF SPECIALITY WASTE STREAMS

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

Specialised waste streams include:

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

CLINICAL WASTE

As this health care facility will specialise on mental health treatment, the clinical waste will primarily consist of pharmaceutical waste and sharps waste. It is the building management's responsibility to ensure all clinical waste is managed in compliance to the *Clinical and Related Waste Management for Health Services – Policy Directive 2017.*

Clinical and related waste must be efficiently segregated from general and recyclable waste at the time and place of generation. Clinical waste products should be bagged, packaged or placed in containers as appropriate.

Segregation is required to ensure subsequent safe management and must be maintained during handling, interim transport, storage and final disposal.

Manual handling of clinical waste must be in accordance with standard safe work practices and personal contact must be minimised through appropriate containment.

Management of pharmaceuticals and chemical waste must prevent access by unauthorised person during handling, interim transport, storage and final disposal.

Containers of healthcare waste must be correctly colour coded and labelled in accordance with AS/NZS 3816.

PHARMACEUTICAL WASTE

Pharmaceutical waste includes expired, unused, spilt and contaminated pharmaceutical products, drugs and vaccines. Discarded items used in the handling of pharmaceuticals like bottles, vials and connecting tubing are also classified as pharmaceutical waste.

Pharmaceutical waste must be disposed of in a specialised bin and disposed of by an authorised contractor.

Building management will be responsible for providing enough pharmaceutical bins for the facility and for arranging the private contractor to service the pharmaceutical bins.

Pharmaceutical bins will be serviced from their operational location by an appropriate contractor.

Figure 2: Typical Pharmaceutical Waste Bin

Pharmaceutical Waste 20L - SteriHealth labelling (for incineration)	I-11160	Orange	Orange (solid)	

Source: Sterihealth, http://www.sterihealth.com.au/products/pails-waste-bins

SHARPS WASTE

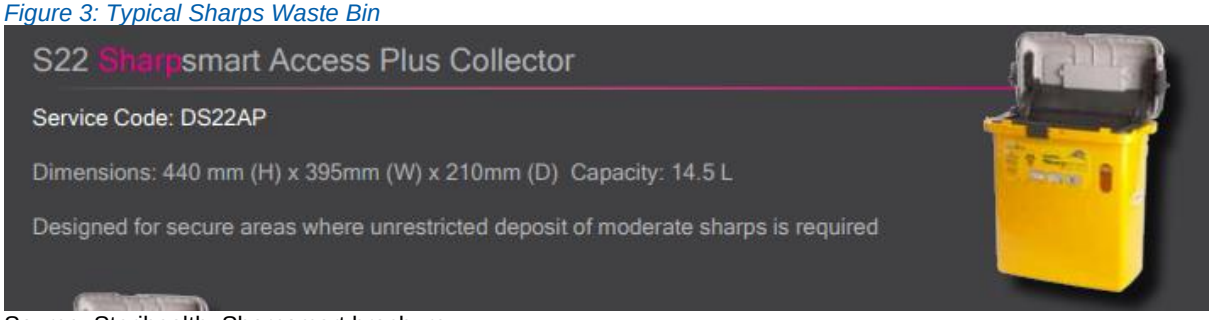
Sharps waste refers to objects or devices having sharp points or protuberances or cutting edges, capable of penetrating the skin or the container in which it is discarded. Examples of this are needles, lancets and scalpel blades. All glass used in clinical procedures e.g. vials, ampoules whether broken or unbroken, contaminated or not is best disposed as sharps.

Syringes without needles, swab sticks, plastic forceps and drip chambers can also be disposed of as sharps waste to reduce risk of injury, particularly if waste bags are manually handled.

Any sharp waste must be disposed of into sharp waste bins. Building management will be responsible for providing enough sharps bins for the facility and for arranging the private contractor to service the sharps bins.

Sharp bins will be serviced from their operational location by an appropriate contractor.

Figure 3: Typical Sharps Waste Bin



Source: Sterihealth, Sharpsmart brochure
http://www.sterihealth.com.au/sites/sterihealth.com.au/files/fck_images/file/Sharpsmart%20Accessories%20version%20SEPT%202010%20for%20web.pdf

MOVEMENT AND TRANSPORTATION OF BINS

The cleaners and kitchen staff will be responsible for the transportation of bins from their designated operational locations to the waste room and returning them once emptied to resume operational use.

Transfer of wastes and all bin movements should minimise manual handling. The building manager must assess manual handling risks and provide any relevant documentation to key personnel.

COLLECTION OF WASTE

Private contractors will be engaged to collect the waste, co-mingled recycling, paper and cardboard recycling, confidential waste and organics waste from the site to an agreed schedule. This report assumes that the site will maintain once weekly collections for the waste, co-mingled recycling, paper and cardboard recycling, organic waste streams and as required collections (monthly) for the confidential waste.

The waste collection vehicle will enter the site Grose Vale Rd and park in the designated loading area at the west end of the Xavier Building. The bins will be collected directly from the Waste Room.

The pharmaceutical waste bins and sharps waste bins will be collected by an appropriate contractor to an agreed schedule. These bins will be collected directly from their operational location.

The sanitary waste bins will be collected directly from their operational locations by an appropriate contractor.

COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant to confirm the swept paths, load requirements and clearances for waste collections. It must be ensured that that the collection vehicle (and other trucks if required) can enter and exit the site in a forward direction. The final number of truck collections will depend on management of waste contract.

WASTE ROOM AREAS

It is recommended that all of the bins in the waste room must be arranged so that all bins are accessible at all times. This is to ensure the safety of staff accessing the waste room to place waste and recycling items into the bins.

The areas allocated for waste room and collection areas are detailed in Table 7 below.

Table 7: Waste Room Areas

Level	Waste Room Type	Equipment	Estimated Area (m^2)
B	Waste Room (collection area)	9x 1100L MGBs (Waste) 6x 1100L MGBs (Recycling – Paper and Cardboard) 6x 240L MGBs (Recycling – Comingled) 8x 120L MGBs (organic) 9x 240L MGB (confidential documents)	>60

CONSTRUCTION REQUIREMENTS

Waste rooms construction must comply with the minimum standards as outlined in the *Hawkesbury Development Control Plan 2002* 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* 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.

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 floor levels;
- The room must be mechanically ventilated;
- Optional automatic odour and pest control system installed
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors should 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

VENTILATION

Bin enclosures 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; or
- Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

Mechanical exhaust systems shall comply with AS1668 and not cause any inconvenience, noise or odour problem.

USEFUL CONTACTS

Elephants Foot Recycling Solutions does not warrant or make representation for goods or services provided by suppliers.

HAWKESBURY CITY COUNCIL CUSTOMER SERVICE
Phone: (02) 4560 4444
Email: council@hawkesbury.nsw.gov.au

SULO MGB (MGB, Public Place Bins, Tugs and Bin Hitches)
Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)=
Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)
Phone: 1800 333 002 Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)
Phone: 07 3712 8000 Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES (Private Waste Services Provider)
Phone: 02 9399 9999

REMONDIS (Private Waste Services Provider)
Phone: 13 73 73

SITA ENVIRONMENTAL (Private Waste Services Provider)
Phone: 13 13 35

NATIONAL ASSOCIATION OF CHARITABLE RECYCLING ORGANISATIONS INC. (NACRO)
Phone: 03 9429 9884 Email: information@nacro.org.au

PURIFYING SOLUTIONS (Odour Control)
Phone: 1300 636 877 Email: sales@purifyingsolutions.com.au

MOVEXX (Bin Movers)
Phone: 1300 763 444

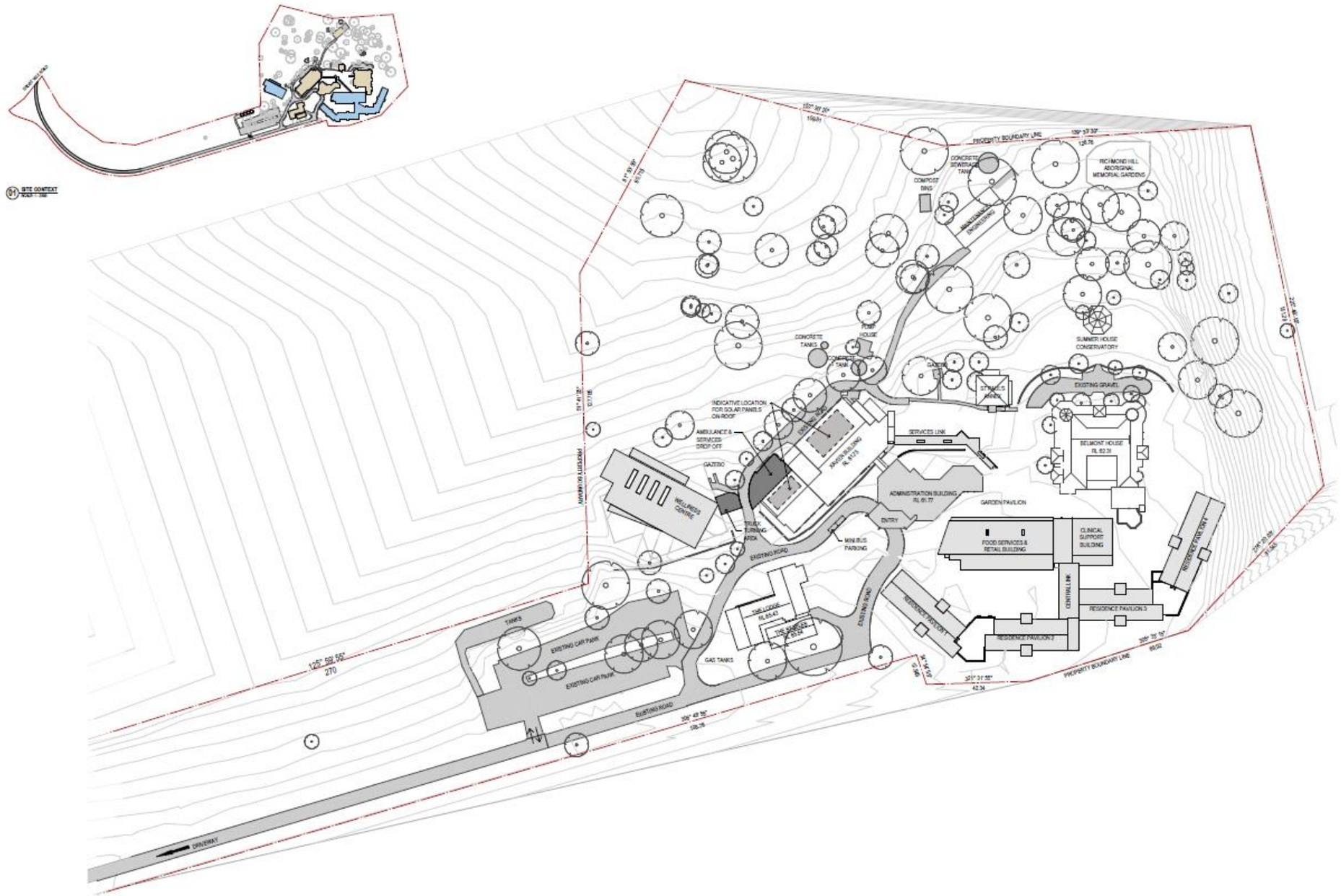
AUSCOL (Recyling Oils & Animal Fats)
Phone: 1800 629 476

ELEPHANTS FOOT RECYCLING SOLUTIONS (Chutes, Compactors and eDiverter Systems)
44 – 46 Gibson Avenue
Padstow NSW 2211
Free call: 1800 025 073 Email: info@elephantsfoot.com.au

APPENDICES

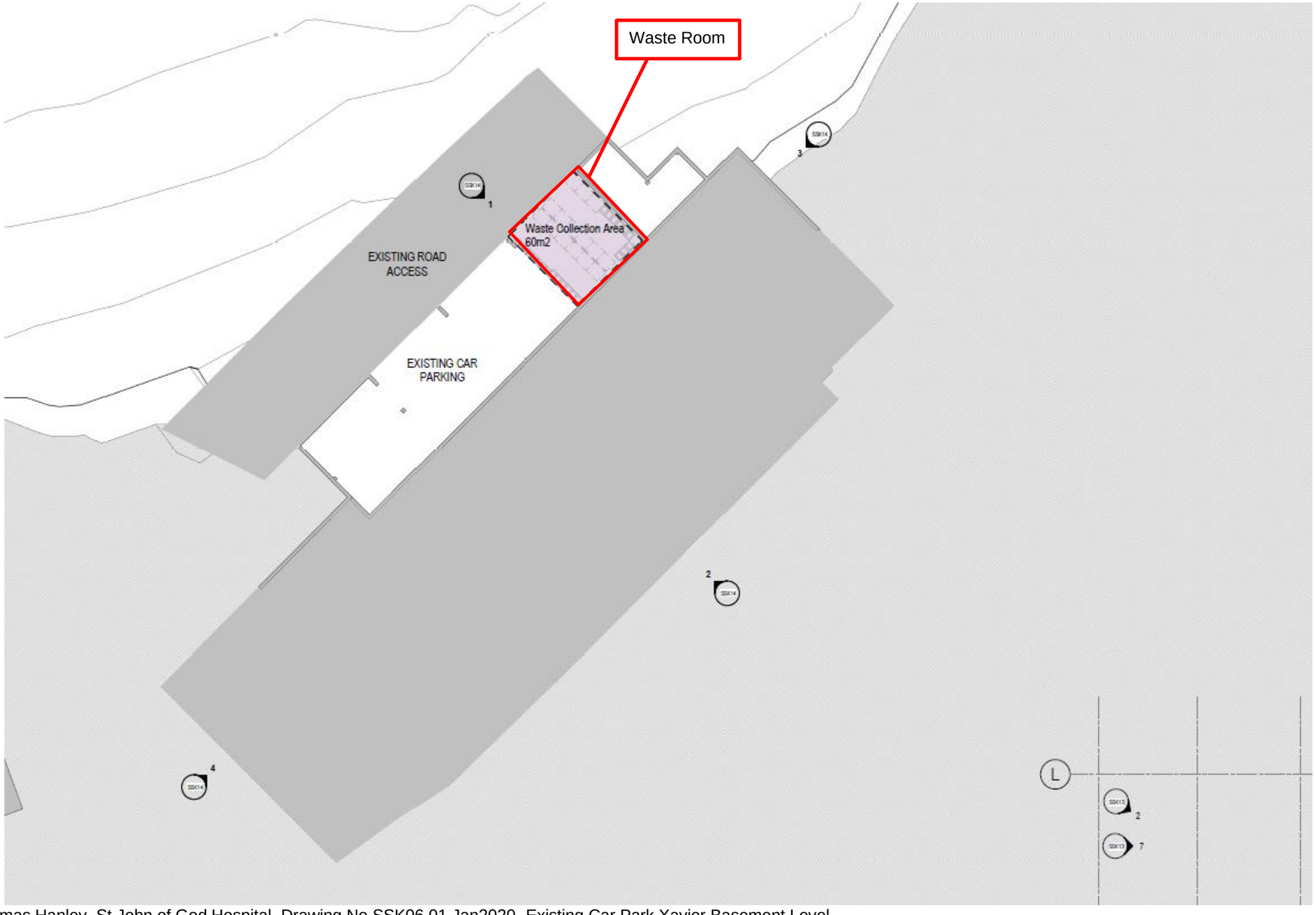
APPENDIX A ARCHITECTURAL DRAWING EXCERPTS

APPENDIX A.1 SITE PLAN



Source: Silver Thomas Hanley, St John Of God Richmond Hospital, Drawing No SSK03 – Proposed Site Plan

APPENDIX A.2 GROUND LEVEL – WASTE FACILITIES AND COLLECTION AREA



Excerpt: Silver Thomas Hanley, St John of God Hospital, Drawing No SSK06.01 Jan2020- Existing Car Park Xavier Basement Level

APPENDIX B CALCULATIONS FOR WASTE GENERATION RATES

The waste generation rates use to project the volume of each waste stream generated by the expanded site has been based on the number of bins and collections for the currently operating facility. The process to convert the data from the current site to a waste generation rate is outlined below.

Bin Numbers and Collection Frequency Data of Current Site

The currently operational site has a GFA of 9614m^2 and has 88 patient rooms.

Elephants Foot has been informed that bins and collection frequencies for the current site is as follows.

- 7 x 1100L general waste bins once weekly
- 4 x 1100L paper and cardboard recycling bins collected once weekly
- 6 x 240L mixed recycling bins collected once weekly
- 7 x 240L confidential waste bin collected monthly or on request
- 6 x 120L organic bins collected once weekly
- 20x 1.4L sharps bins collected monthly
- 60x 20L sanitary bins collected monthly

Converting Data to Volume (litres per week)

Formula:
Number of bins x bin size x collection frequency = Volume of waste generated per week

Please note, these calculations have only apply to the waste stream stored in mobile garbage bins.

Waste stream	Number of Bins	Bin Size (L)	Collection Frequency (per week)	Volume (litres per week)
General Waste	7	1100	1	7700
Recycling – Paper & Cardboard	4	1100	1	4400
Recycling – Co-Mingled	6	240	1	1440
Confidential (secure bins)	7	240	0.25 (monthly collections)	420
Organic Bins	6	120	1	720

Converting Data to a Waste Generation Rate:

Formula:
Volume / (GFA of current facility/ 100) = waste generation per 100m^2 per week

Waste stream	Volume (litres per week)	Waste Generation Rate (per Patient Room/ week)
General Waste	87.5	655.74
Recycling – Paper & Cardboard	50	245.90
Recycling – Co-Mingled	12.9	
Confidential (secure bins)	4.8	
Organic Bins	8.2	8.20

APPENDIX C PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX C.1 TYPICAL BIN SPECIFICATIONS

The most common bin sizes are provided below, although not all sizes are shown. These dimensions are a guide only and differ slightly between manufacturers.

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

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

Average dimension ranges for bulk bins over 1700L in capacity

Bulk bins greater than 1700L

Bin capacity)	1m^3	1.5m^3	2m^3	3m^3	4.5m^3	6m^3
Height (mm)	1000	910–1250	865–1000	1020–1580	1440–2014	1650
Depth (mm)	1000	905–1000	1300–1400	1470–1700	1605–1900	1900
Width (mm)	1400	1805–2010	1830–2000	1400–2010	1800–2010	2000
Approximate footprint (m^2)	1.4	1.63–2.01	2.4–2.8	2.1–3.4	2.9–3.8	3.8

Sources include TORO Waste Equipment, SUEZ, Signal Waste, Perth Waste and ACT Industrial

Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)

APPENDIX C.2 SIGNAGE FOR WASTE & RECYCLING BINS

Waste Signs

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the EPA (Environmental Protection Authority).

Examples of waste wall posters (EPA supplied)

Examples of bin lid stickers (EPA supplied)

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.

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.

Example safety signs

Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)

APPENDIX C.3 TYPICAL COLLECTION VEHICLE INFORMATION

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

Collection vehicles

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

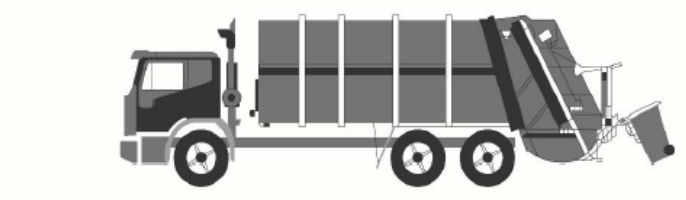
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0	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

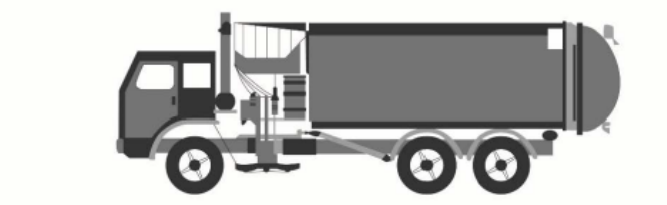
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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

Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)