Trinity Grammar School
119 Prospect Rd Summer Hill 2130
School Renewal Development

OPERATIONAL WASTE MANAGEMENT PLAN

4/02/2020
Report No. 100388
Revision D

Client

Bloompark Consulting
Level 2 Suite 2.04 41 McLaren St North Sydney
https://www.bloompark.com.au/
T 02 9957 1473 •

Architect

PMDL
17/124 Walker St North Sydney
pmdl.com.au
T 02 8458 5500 • **E** sydney@pmdl.com.au

ELEPHANTS FOOT RECYCLING SOLUTIONS • ABN 70 001 378 294
44-46 Gibson Ave Padstow NSW 2211
www.elephantsfoot.com.au

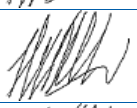
T +612 9780 3500 • **F** +612 9707 2588
E info@elephantsfoot.com.au

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	11/11/2019	H Wilkes	A Armstrong	Draft	
B	18/12/2019	H Wilkes	A Armstrong	Amendment	
C	31/01/2020	H Wilkes	A Armstrong	Amendment	
D	4/02/2020	H Wilkes	A Armstrong	Final	

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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 the operational management of waste generated by Trinity Grammar School. .

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 falls under the LGA of Strathfield Council. The development will consist of the construction of new school facilities in the existing campus of Trinity Grammar School. The works will increase the student capacity of the school from 1680 students to 2100 students.

The proposed development seeks detailed built form approval of new teaching and educational facilities, as detailed below:

- New five (5) storey building at the heart of the Campus to accommodate contemporary, flexible teaching and learning spaces;
- Improve movement and flow for students, with better east-west and north-south links across the school grounds and between levels, including more accessible connections between the Junior School, ovals and car park, and providing strong visual and physical connections;
- Renewal and Refurbishment of existing teaching and learning facilities;
- Reconfiguration and connection of underground car park improve traffic flow for the school drop-off and pick-up zone and improve the safety of boys and visitors who enter the school grounds as pedestrians from Victoria Street;
- New multipurpose pavilion between Ovals 1 and 3 containing a championship size basketball court with practice overlay, spectator seating and amenities;
- Demolition of school-owned residences at 46, 48, 50 and 52 Seaview Street, improving the existing service, maintenance and delivery facilities;
- Improvement and extension to Junior School outdoor teaching, assembly and recreational area.

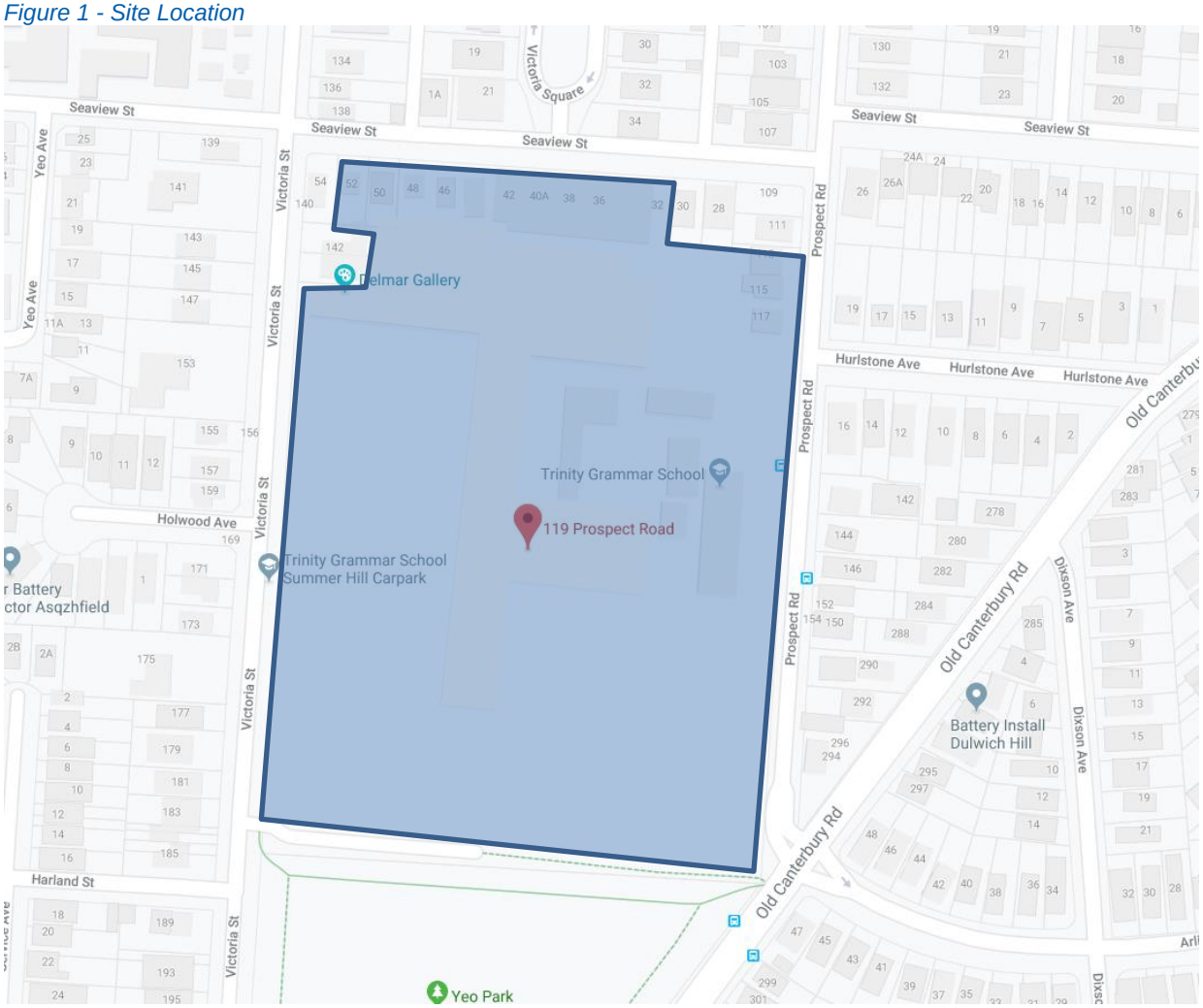
The new building will utilise the waste facilities, waste strategy and waste collection services currently implemented at the Trinity Grammar School Summer Hill Campus. It is understood that the collection and bin storage areas will be revised as apart of the renewal works.

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 119 Prospect Rd Summer Hill NSW, as shown in Figure.1. The site has frontages to Victoria St, Seaview St, Prospect rd and Yeo Park.

Figure 1 - Site Location



INNER WEST COUNCIL (ASHFIELD COUNCIL)

The development is within Inner West Council's jurisdiction. Inner West Council is the amalgamation of Ashfield Council, Leichhardt Municipal Council and Marrickville Council. At time of writing this waste management plan, the waste services and associated policies operate under the original council divisions.

Therefore, the residential garbage and recycling will be guided by the services and acceptance criteria of the Ashfield Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Ashfield Council's *Comprehensive Inner West DCP 2016 for Ashbury Ashfield, Croydon, Croydon park, Haberfield, Hurlstone Park and Summer Hill,* Council Advices, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

Space: Ensure area are provided for efficient storage and collection of waste and recycling matched to the type and scale of development.

Access: Ensure both users and service providers can access waste and recycling storage safely and conveniently

Safety: Include safe practices in the design for storage, handling and collections of waste and recycling.

Amenity: Manage the noise, odour and hygiene issues relating to waste and limit the impacts on local areas. And;
Ensure that waste and recycling storage areas are effectively integrated into a development and visually unobtrusive.

Management: Clarify the roles for provision of waste management in developments and demarcate service provisions

Servicing: Minimise collection vehicle movements by balancing provision of adequate storage capacity and collection frequency. And;
Minimise reliance on public kerbside and impacts on the public domain from waste and recycling collection.

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 Inner West 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
School 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.
School Management or Groundskeeper	• Ensuring effective signage, communication and education is provided to students, staff 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 students, visitors, staff 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 the general and recycled waste holding area; • 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.
Cleaners, Staff and Students	• 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.
Private Waste Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to School Caretaker in regards to contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Grounds Keepers and 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

The school 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 student and staff member to ensure the correct disposal of waste, including bulky goods (old furniture, large discarded items, etc.)

SIGNAGE

The school management and the grounds caretaker are 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.

SCHOOL 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 school. For full calculations 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 table shows the estimated volume (L) of garbage and recycling generated by the school in operation.

Table 2: Calculated Waste Generation

# Students	Garbage Generation Rate (L/students/week)	Generated Garbage (L/week)
2100	39.3	82530
TOTAL		**82530**

Table 3: Calculated Recycling (Paper & Cardboard) Generation

# Students	Paper & Cardboard Recycling Generation Rate (L/students/week)	Generated Paper & Cardboard Recycling (L/week)
2100	4	8400
TOTAL		**8400**

Table 4: Calculated Recycling (Co-Mingled) Generation

# Students	Co-Mingled Recycling Generation Rate (L/students/week)	Generated Co-Mingled Recycling (L/week)
2100	2.1	4410
TOTAL		**4410**

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: 54 x 240L MGBs collected daily (5 times weekly)
General Waste: 5 x 120L MGBs collected daily (5 times weekly)
General Waste: 1 x 3m^3 bulk bins collected daily (5 times weekly)

Cardboard/Paper: 6 x 120L MGBs collected once weekly
Cardboard/Paper: 2 x 3m^3 bulk bins collected twice weekly

Commingled Recyclables: 19 x 240L MGBs collected once weekly

It is the responsibility of the building manager to monitor the number of bins required for the building. Waste volumes may change according to the development's management, and attitudes to waste disposal and recycling. The bin numbers, sizes and collection frequencies may need to be altered to suit the building operation. Seasonal periods i.e. public and school holidays should also be considered.

WASTE MANAGEMENT STRATEGY

The new school facilities will share waste and recycling areas, bins and collections services with the existing site.

Suitably labelled waste and recycling bins will be placed throughout the school for the collection of waste and recycling generated in each space. Garbage and recycling receptacles should be provided in convenient locations and areas of high waste generation.

The students, staff and visitors will be responsible for placing their waste and recycling into the correct receptacle. The fullness of the bins will be monitored by cleaners and the school caretaker.

For general waste, the school campus currently has 78x 240L MGBs placed around the school in key locations. At the end of each day, cleaners or school caretakers empty the receptacles for general waste and combine the waste so that full bins are awaiting collection. A additional set of bins are kept on site for the to replace the bins waiting to be collected. A private contractor currently collects the general waste bins daily. The number of bins placed around the school is at the school management's discretion and can be adjusted at any time, without effecting the number of bins to be collected.

For paper and cardboard recycling, the school campus currently has 6x 120L MGBs and 2x $3m^3$ bulk bins. At the end of each day, cleaners will empty any receptacles containing paper or cardboard recycling into the appropriate bins. A private contractor is engaged to collect the paper and cardboard recycling bins once weekly.

For co-mingled recycling, the school campus will have 19x 240L MGBs for co-mingle recycling placed in appropriate locations. At the end of each day, cleaners will empty any receptacles containing co-mingled recycling into the appropriate bins. A private contractor is engaged to collect the co-mingled recycling bins once weekly.

It is the responsibility of the school caretaker to monitor the number of bins required for the school campuses. Any requirements for adjusting the capacity of the waste facilities can be achieve by changing the number of bins, the bin sizes or collection frequencies. School management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal fluctuations i.e. school holidays should also be considered.

BATHROOMS

Washroom facilities should be supplied with collection bins for paper towels (if used). The cleaners will empty the washroom bins as required.

Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

CAFETERIA

The cafeteria 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 staff or cleaners will transport their garbage and recycling to the waste areas and place garbage and recycling into the appropriate collection bins.

A high density of waste and recycling bins should be placed around the cafeteria dining areas as this area will be a hotspot for waste and recycling generation.

SOURCE SEPARATION

GENERAL WASTE (GARBAGE) AND RECYCLING

Garbage and recycling bins will be located around the school where considered appropriate. It is recommended that bins are placed in areas of high waste generation and in convenient locations. Recycling must not be bagged.

BULKY WASTE AND RE- USEABLE ITEMS

School Management is responsible for managing bulky waste. Staff should contact the School Caretaker when there is furniture or other large items that are broken or no longer required. Reusable furniture should be labelled and kept in storage or donated to a charitable organisation. Non – reusable furniture will be removed from the school grounds and disposed of at an appropriate recycling facility.

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 school caretaker when disposing of specialised waste streams.

Specialised waste streams include:

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

MOVEMENT AND TRANSPORTATION OF BINS

The cleaners are responsible for the transportation of bins from their designated operational locations to the collection area when full and returning them once emptied to resume operational use.

Transfer of waste and all bin movements should require minimal manual handling. The school management must assess manual handling risks. If required the school management should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations.

WASTE ROOM AREAS

The bins within the waste room should be arranged so that all bins can be accessed within the room at collection times. It is recommended that bins are stored in rows of 2 with a bin width in-between.

The areas allocated for waste storage and collection are detailed in Table 5 below. The areas provided are estimates only. Final areas will depend upon room and bin layouts.

Table 5: Waste Room Areas

Level	Waste Room Type	Equipment	Allocated Area (m^2)
B1	Waste Room	General Waste: 54 x 240L MGBs General Waste: 5 x 120L MGBs General Waste: 1 x 3m3 bulk bins Cardboard/Paper: 6 x 120L MGBs Cardboard/Paper: 2 x 3m3 bulk bins Commingled Recyclables: 19 x 240L MGBs	99

COLLECTION OF WASTE

As apart of the renewal works, the bin storage and collection area will be relocated to the underground carpark/basement level

Each day, prior to collections, the school caretaker will ensure that all bins are present and ready to be collected.

The private contractor will enter the site from Victoria St and park in the loading bay on the Basement Level.

The waste collection staff will collect the bins directly from the waste room.

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 building in a forward direction. The final number of truck collection will depend on management of waste contract.

USEFUL CONTACTS

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

INNER WEST COUNCIL CUSTOMER SERVICE
Phone: (02) 9392 5000 Email: council@innerwest.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

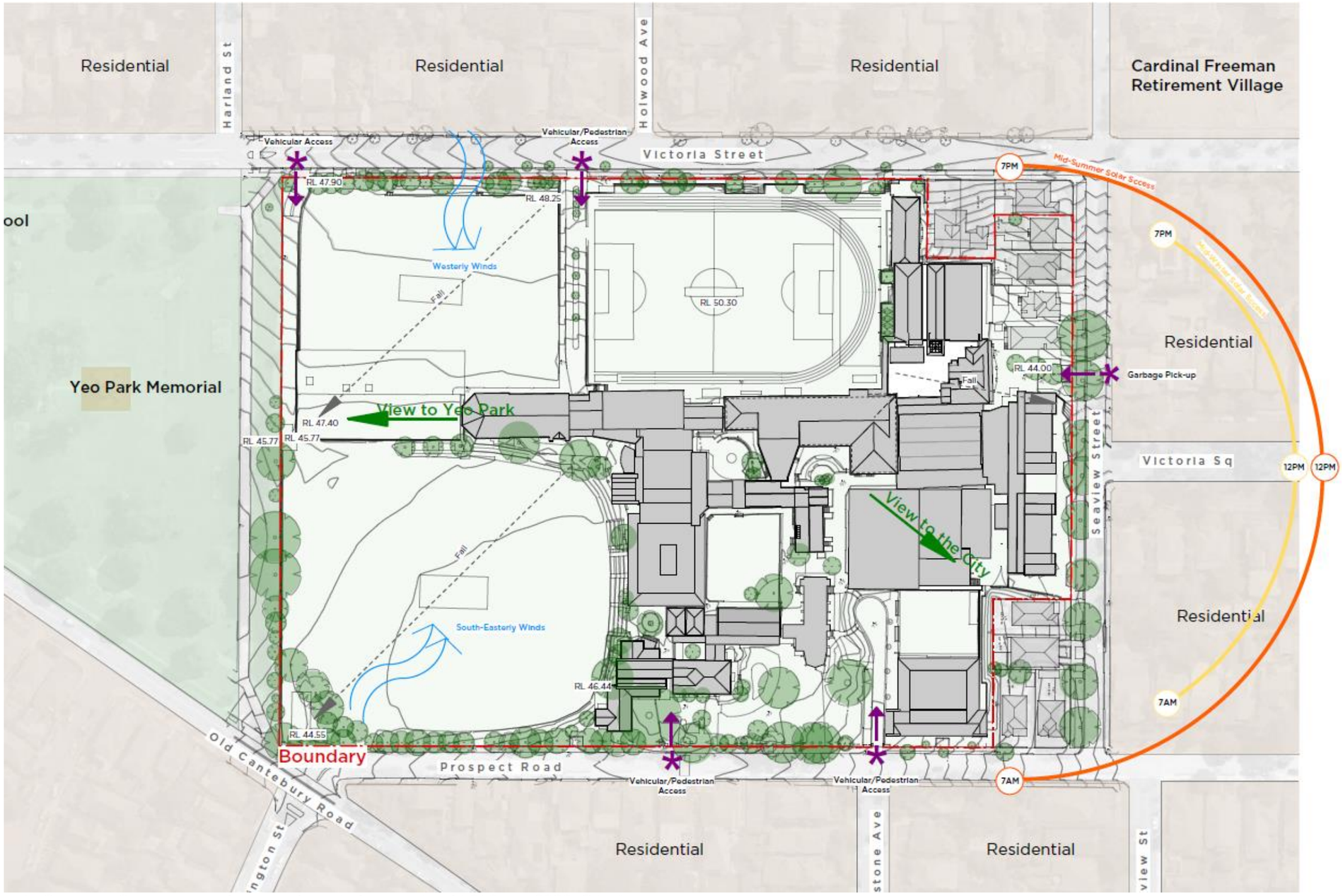
AUSCOL (Recyling Oils & Animal Fats)
Phone: 1800 629 476

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

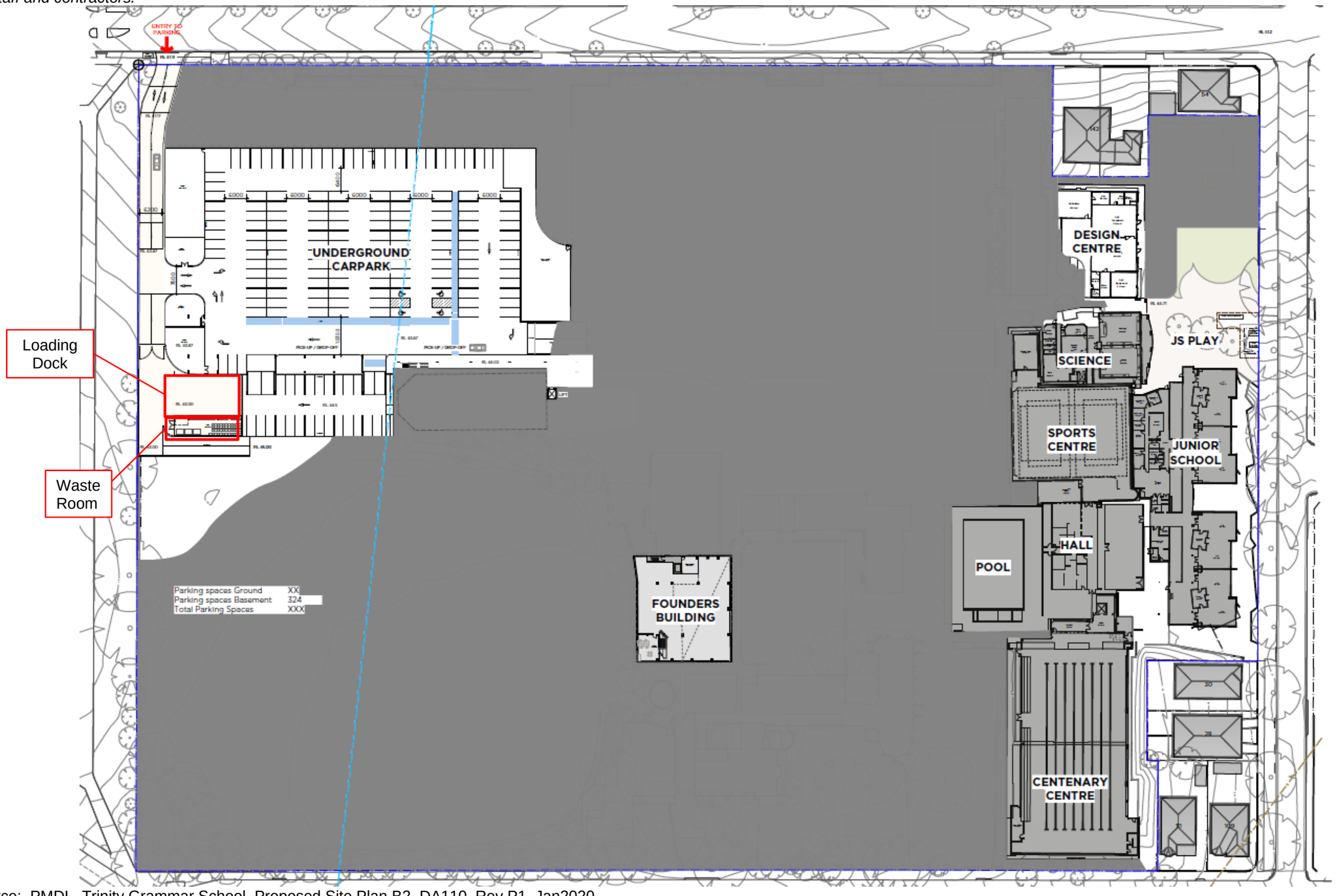
APPENDIX A.1 SITE PLAN



Source: PMDL, Trinity Grammar School – The Renewal Project, Drawing No DA010, Jan2020, Site Analysis

APPENDIX A.2 BIN COLLECTION AREA

Please note: It is recommended that doorways to the waste room and the positioning of the bins within the waste room are reviewed during the post SSDA Phase to ensure efficient and safe access to the waste room for staff and contractors.



Source: PMDL, Trinity Grammar School, Proposed Site Plan B2, DA110, Rev P1, Jan2020

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 Existing Site

The existing school has capacity for 1680 students.

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

- 40x 240L bins for general waste collected daily (5 times weekly)
- 5x 120L bins for general waste collected daily (5 times weekly)
- 1x 3m^3 Bulk Bin for general waste collected daily (5 times weekly)
- 5x 240L bins for recycling (co-mingled) collected once weekly
- 6x 120L bins for recycling (cardboard & paper) collected once weekly
- 2x 3m^3 Bulk Bin for recycling (cardboard & paper) collected weekly

Converting Data to Volume (litres per week)

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

Waste stream	Number of Bins	Bin Size (L)	Collection Frequency (per week)	Volume (litres per week)	Total Volume Per Week
General Waste	40	240	5	48000	66000
	5	120	5	3000	
	1	3000	5	15000	
Recycling (cardboard & paper)	2	3000	1	3000	3720
	6	120	1	720	
Recycling (co-mingled)	15	240	1	3600	3600

Converting Data to a Waste Generation Rate:

Formula:
Total Volume Per Week / Number of Student = waste generation per student per week

Waste stream	Volume (litres per week)	Waste Generation Rate (per student/ week)
General Waste	66000	39.3
Recycling (paper and cardboard)	3720	4
Recycling (co-mingled)	3600	2.1

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

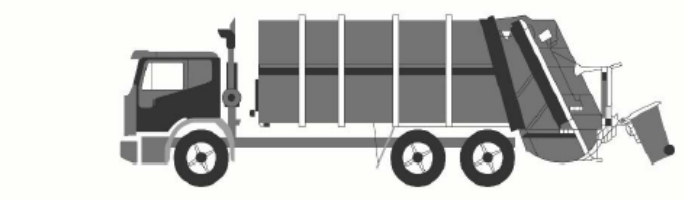
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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

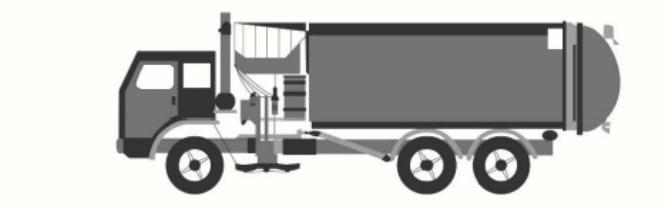
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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)