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Concord High School
5 Stanley St Concord
OPERATIONAL WASTE MANAGEMENT PLAN

19/06/2023
Report No. 4893
Revision G

Client

NSW Department of Education
https://education.nsw.gov.au/

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GLOSSARY OF ABBREVIATIONS AND 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
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
Collection Area/Point	The identified position or area where general waste or recyclables are 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
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
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
SRV	Small Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
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 ACKNOWLEDGEMENT OF COUNTRY

Elephants Foot Consulting acknowledges that every project we work on takes place on First Peoples Land. We recognise Aboriginal and Torres Strait Islander People as Traditional Custodians of this land. We pay respect to ancestors and Elders, past and present.

2 INTRODUCTION

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by Concord High School.

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.

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. A construction and demolition WMP will need to be provided separately.

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 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 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 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:

- The City of Canada Bay Development Control Plan 2022
- Canada Bay Local Environmental Plan 2013

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:

- Operational information from Concord High School from March 2023
- NSW Department of Education *Educational Facilities Standards and Guidelines Requirement DG02 (2.7.2)*
- 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

4 DEVELOPMENT OVERVIEW

The proposed development falls under the LGA of City of Canada Bay Council. The development will consist of the construction of new school facilities in the existing campus of Concord High School. The works will increase the student capacity of the school from 1335 students to 1360 students.

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

- 32 new General Learning Spaces (GLS) to be built and 7 new Specialist Teaching Spaces;
- Construction of 3 Support Learning Spaces;
- Standardised learning hubs, amenities, and storage as according to the Hub type;
- New school hall, administration and staff areas;
- Extension of the library;
- 15 existing DTS to be removed;
- Infrastructure upgrades such as like kiss and drop facilities, car park, outdoor play and landscaping;
- Essential upgrades to existing infrastructure such as electrical, ICT and fire services; and
- Minor light refurbishment of existing teaching spaces.

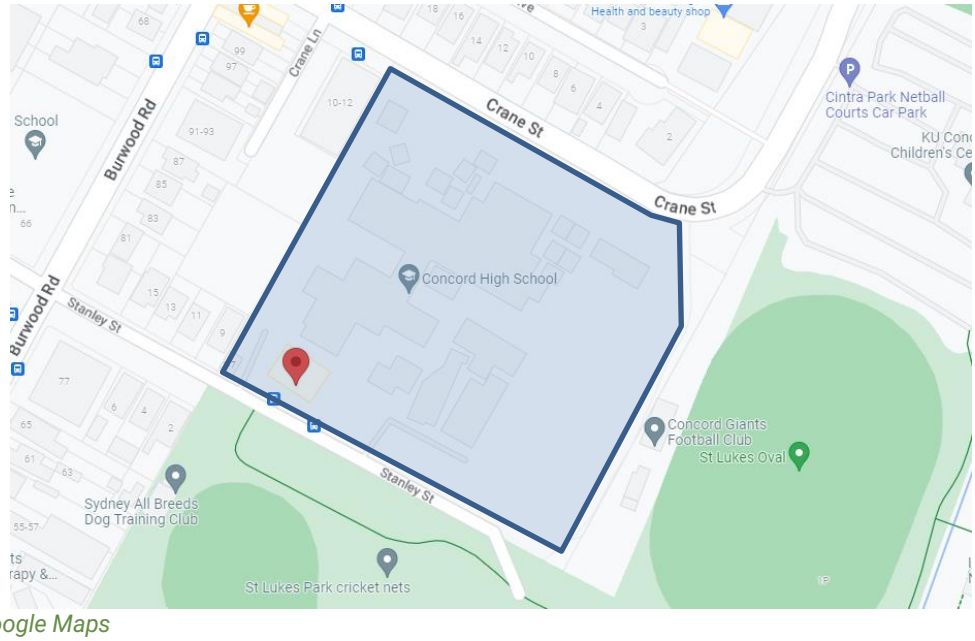
The new buildings will utilise the waste facilities, waste strategy and waste collection services currently implemented at the Concord High School. It is understood that the collection and bin storage areas will be revised as a part of the renewal works.

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

4.1 SITE LOCATION

The site is located at 5 Stanley St Concord, as shown in Figure.1 (boundaries are indicative only). The site has frontages to Crane St and Stanley St.

Figure 1. Site Location



Source: Google Maps

5 WASTE MANAGEMENT

The following section outlines best practice waste management for the school, including waste generation estimates and waste disposal and collection procedures.

5.1 WASTE GENERATION ESTIMATES

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.

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

Table 1: Estimated Waste Volumes

#Student	**General Waste Generation Rate** (L/student/week)	**Generated General Waste** (L/week)
1360	9.89	13450.4
TOTAL		**13450.4**
Bins and Collections	General Waste Bin Size (L)	1100
	General Waste Bins per Week	12.23
	General Waste Collections per Week	3
	Total General Waste Bins Required for Collection	**5**

Table 2: Estimated Recycling Volumes

#Student	**Paper/ Cardboard Recycling Generation Rate** (L/student/week)	**Generated Cardboard Recycling** (L/week)	**Refundable Container Generation Rate** (L/student/week)	**Generated Recycling** (L/week)
1360	16.18	22004.8	0.9	1224
TOTAL		**22004.8**		**1224**
Bins and Collections	Paper/ Cardboard Recycling Bin Size (L)	240	Refundable Container Bin Size (L)	240
	Paper/ Cardboard Recycling Bins per Week	91.69	Refundable Container Bins per Week	5.10
	Paper/ Cardboard Recycling Collections per Week	3	Refundable Container Collections per Week	1
	Total Paper/ Cardboard Recycling Bins Required for Collection	**31**	Total Refundable Container Bins Required for Collection	**6**

Table 3: Estimated Confidential Paper Destruction Volumes

#Student	Confidential Paper Destruction Generation Rate (L/student/week)	Generated Confidential Paper Destruction Generation (L/week)
1360	0.045	61.2
TOTAL		**61.2**
Bins and Collections	Confidential Paper Destruction Bin Size (L)	240
	Confidential Paper Destruction Bins per Week	0.26
	Confidential Paper Destruction Collections	Monthly
	Total Confidential Paper Destruction Bins Required for Collection	**1**

5.2 BIN SUMMARY

The estimates above reflect the total volumes of waste and recycling and the bins required to handle these volumes between collections.

The recommended bin quantities and collection frequencies are as follows:

General Waste: 5 x 1100L MGBs collected **3 x weekly**

Cardboard/Paper Recyclables: 31 x 240L MGBs collected **3 x weekly**

Refundable Containers: 6 x 240L MGBs collected **as required (approx. once weekly)**

Confidential Paper Destruction: 1 x 240L MGBs collected **as required (approx. once monthly)**

During operation, bin sizes, quantities, and/or collection frequencies may be modified by the building manager. Building management will be required to negotiate any changes to bins or collections with the collection service provider. Seasonal peak periods such as school terms should also be considered.

The general waste and general recycling can be further divided into more specific waste and recycling streams to increase recovery. The general waste stream can be separated into landfill waste, food waste and soft plastics recycling. It is recommended that the further separation of waste streams is conducted once the site is operational to best reflect the operations of the site and the proportion of each waste stream generated. It is recommended that annual waste audits are conducted to help understand the composition and total volumes of each waste stream generated during operation.

5.3 WASTE DISPOSAL PROCEDURES

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

The Bin Area for the schools will be located on the ground level and contains the bins for collection.

The groundskeeper, waste collection staff and cleaners will be the only personnel with access to the waste storage areas. All transportation of waste and recycling must be co-ordinated with the groundskeeper or cleaners.

Suitably labelled waste and recycling 240L Bins in size will be placed in each room and throughout the campus grounds. 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 source separation bins will be monitored by the groundskeeper and cleaners.

The cleaners will circulate throughout the campus after hours and transport the waste to the Bin Area and decant the smaller bins into the bulk bins. A bin lifter is recommended to aid the decanting of the bins.

Paper/cardboard recycling bins will stay in their operational locations until their collection. On the afternoon of their collection the cleaners or groundskeeper will transport the bins to the Bin Area to await collection. After servicing, the staff will return the bins to their operational locations around the school.

5.4 WASTE COLLECTION PROCEDURES

A private contractor will be engaged to collect the school's bins to and agreed schedule. This report assumes waste and paper/cardboard recycling is collected three times weekly, refundable container are collected once weekly and confidential papers are collected once a month. These collection frequencies are consistent with the existing operations of the school.

Each collection 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 Crane St and park adjacent to the Bin Area. .

The waste collection staff will collect the bins directly from the Bin Area.

Once servicing of bins is completed, the collection vehicle will leave the site onto Crane St

5.5 OTHER WASTE MANAGEMENT CONSIDERATIONS

The following waste management practices are recommended.

5.5.1 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.

5.5.2 CANTEEN

The canteen 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 canteen dining areas as this area will be a hotspot for waste and recycling generation.

5.5.3 LIQUID WASTE

Liquid wastes such as 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.

5.5.4 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. School staff 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

5.5.5 FUTURE WASTE AND RECYCLING STREAM SEPARATION

To design the Bin Storage Area and waste facilities in the site, all possible waste and recycling streams have been grouped together into ‘general waste’ and ‘general recycling’. This is to ensure the waste facilities have adequate capacity to manage total volumes of waste and recycling streams, regardless of the management of waste and recycling during operation.

Once the school is operational, the school management can choose to separate the general recycling stream and the general waste stream into more specific recyclable waste streams. This allows the site’s waste management system to have greater potential to divert waste from landfill and contribute to wider environmental sustainability.

The more waste streams that are separated, the more complex the waste management strategy becomes. In turn, it is likely to increase operational cost, manual input of building caretaker and cleaners as well as the level of engagement required by all stakeholders involved in waste management. Therefore, it is recommended that the decision to separate and manage any additional waste streams comes from the school management, once the school is operational, and is directed by the operational experience and needs of the school.

As identified in NSW Department of Education *Educational Facilities Standards and Guidelines Requirement DG02 (2.7.2)* the waste streams that can be managed at schools are as follows;

- Food Organics and Garden Organics
- Co-Mingled Container Recycling
- Paper & Cardboard Recycling
- Container Deposit Scheme Recycling
- Soft Plastic Recycling
- General Waste
- Other waste streams such as batteries, e-waste, coffee cups

The school management can choose which waste streams are handled in the waste management strategy at any time by assessing the composition of waste and recycling generated in operation as well as the costs/benefits at that time.

The successful separation of the waste streams is significantly impacted by the behaviours of the waste generators and the key personnel who look after the waste management systems. At this site, most of the waste generators will be high school aged children/teenagers. The managers of the waste system will be the building manager and grounds keeper.

The following are the key responsibilities required for successful ongoing source separation. These responsibilities should be taken into consideration when assessing whether to introduce the separation and management of more waste streams.

Responsibilities of the waste stream generator:

- Correctly identify the waste type.
- Place the waste item into the correct bin.
- Pending on waste item, partially dismantle waste item into different stream types (e.g. empty food waste into organics, lid into recycling and main container into landfill)

Responsibilities of the key staff managing the waste systems:

- Provide source separation bins in convenient locations.
- Monitor contamination of waste streams.
- Organise contracts with collection and recycling services of all waste streams.
- Educate waste stream generators on a ongoing basis
- Provide signage on all bins.
- Monitor and correct any issues.

If the management of any additional waste stream is introduced during operation, the school management would be responsible for setting up and maintaining the waste stream management procedures. Including;

- The provision of appropriate source separation bins around the campus.
- The update all waste related signage and waste management education material.
- The introduction of the collection bins of the waste stream in the Bin Storage Area.
- The reduction to the number of bins(or size of bins) for the general waste or general recycling stream being diverted.
- Engaging a specialist contractor to collect the bins and recycle the waste stream.
- Ensuring the collection timetables minimise conflicts with the loading area.
- Educating all staff and students on the new procedures, including which items are accepted in each bin.

Separation of food waste and soft plastic recycling streams will reduce the volume of general waste. Therefore, it is assumed that the number of general waste bins would go down by the corresponding number of food waste bins and or/soft plastic bins.

Separation of co-mingled recycling, paper & cardboard recycling and items refundable under the container deposit scheme will reduce the volume of general recycling. Therefore, it is assumed that the number of general recycling bins would go down by the corresponding number of co-mingled, paper & cardboard and refundable container bins introduced.

In addition, as identified in NSW Department of Education's *Educational Facilities Standards and Guidelines Requirement DG02 (2.7.2),* during operation the school management can implement measures to reduce the volumes of waste generated by;

- Examining all processes to determine where wastes are produced and to devise measure for waste prevention or reduction.
- Devising ways of recycling waste with students so they too can share in the savings (for example rewards for students who reduce waste).
- Partnering with other organisations to assist with waste minimisation.
- Keep track of changes and improvements
- Reusing drums, cartridges and containers where possible
- Selling or donating usable waste materials to other organisations.

6 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 4: Stakeholder Roles and Responsibilities

Roles	Responsibilities
School Management	• Ensuring that all waste service providers submit regular (i.e 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 storage area, 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.
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.

7 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 5: 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 the 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. Cardboard should be flattened before placing in the designated cardboard bin.
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.
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	A location should be dedicated to the storage of e-waste. When a suitable amount has been accumulated, the Grounds Keeper or school management is responsible for arranging the collection of e-waste with an appropriate recycling service.
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	A location should be dedicated to the storage of bulky waste. When a suitable amount has been accumulated, the Grounds Keeper or school management is responsible for arranging the collection of bulky waste with an appropriate recycling service.
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	Grounds Keeper or school management arranges collection by appropriate recycling services when required.

8 EDUCATION

The school management is responsible for creating and implementing the waste management education process.

Educational material encouraging the correct separation of garbage and recycling items must be provided to each staff member, cleaners and students to ensure the correct disposal of waste and minimise the possibility of contamination in the waste and recycling bins.

It is recommended that the school investigates programs to teach students about recycling and resource recovery. These programs can be implemented into the operation of the school to reduce overall waste generation.

8.1 SIGNAGE

Signage and education are essential components to support best practice waste management including resource recovery, source separation, and diversion of waste from landfill.

Signage should include:

- Clear and correctly labelled waste and recycling bins,
- Instructions for separating and disposing of waste items. Different languages should be considered,
- Locations of, and directions to, the waste storage areas with directional signs, arrows, or lines,
- The identification of all hazards or potential dangers associated with the waste facilities, and
- Emergency contact information should there be issues with the waste systems or services in the building.

The building manager is responsible for waste room signage including safety signage. 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 each bin.

All signage should conform to the relevant Australian Standards.

8.2 POLLUTION PREVENTION

Building management shall be responsible for the following to minimise dispersion of site litter and prevent stormwater pollution to avoid impact to the environment and local amenity:

- Promoting adequate waste disposal into the bins
- Securing all bin rooms (whilst affording access to staff/contractors)
- Prevent overfilling of bins, keep all bin lids closed and bungs leak-free
- Taking action to prevent dumping or unauthorised use of waste areas
- Require collection contractor/s to clean up any spillage when clearing bins

9 BIN MOVING PATHS

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. Typically waste and recycling is transported using trollies containing other cleaning equipment.

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 personnel.

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.

Bin moving devices maybe needed to aid the movement of waste and recycling over longer distances.

10 WASTE ROOMS

The areas allocated for waste management are detailed in the table below, and are estimates only. Final areas will depend on room and bin layouts.

To design the school's Bin Storage Area, all possible waste and recycling streams have been grouped together into 'general waste' and 'general recycling', as detailed in the table below. This is to ensure the waste facilities have adequate capacity to manage total volumes of waste and recycling streams, regardless of the management of waste and recycling during operation. At Any time during the operation of the school, at the school management's discretion, the waste streams separated from the 'general waste' or 'general recycling streams can be adjusted General waste and general recycling can be separated into any of the following waste streams;

General Waste:

- Food waste and Garden Organics
- Soft Plastic Recycling
- Waste (landfill disposal only)

General Recycling:

- Paper/Cardboard Recycling
- Co-Mingled Recycling
- Refundable Container Recycling

As further separation of waste streams will reduce the volume of general waste or general recycling, it is assumed that the number of general waste bins or general recycling bins would

go down by the corresponding number of bins. Thus, the space within Bin Storage Area required to store the bins should remain consistent.

Table 6: Waste Room Areas

Level	Waste Room Type	Equipment	Estimated Area Required (m^2)
G	Bin Area (collection point)	5x 1100L MGBs (waste) 6x 240L MGBs (refundable containers) 1x 240L MGBs (confidential paper destruction) Bin lifter (recommended)	>25
G	Hard Stand Area for Recycling Collection	31x 240L MGBs (paper/cardboard recycling)	>25

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 80% of bin GFA factored in for manoeuvrability.

In addition, all passageways facilitating the movement of bins and/or bulky waste items must be at least 1600mm wide.

The following table provides further waste room requirements.

Table 7: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Bin Area	• In order to ensure staff safety, all bins should be arranged so they can be accessed without moving another bin • Doorway should be a minimum of 1600mm • Must be in close proximity to the collection point

11 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the *City of Canada Bay Development Control Plan 2022,* 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.

11.1 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.

12 USEFUL CONTACTS

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

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	
Green Eco Technologies	Ph: 1800 614 272	E: equires@greenecotec.com

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

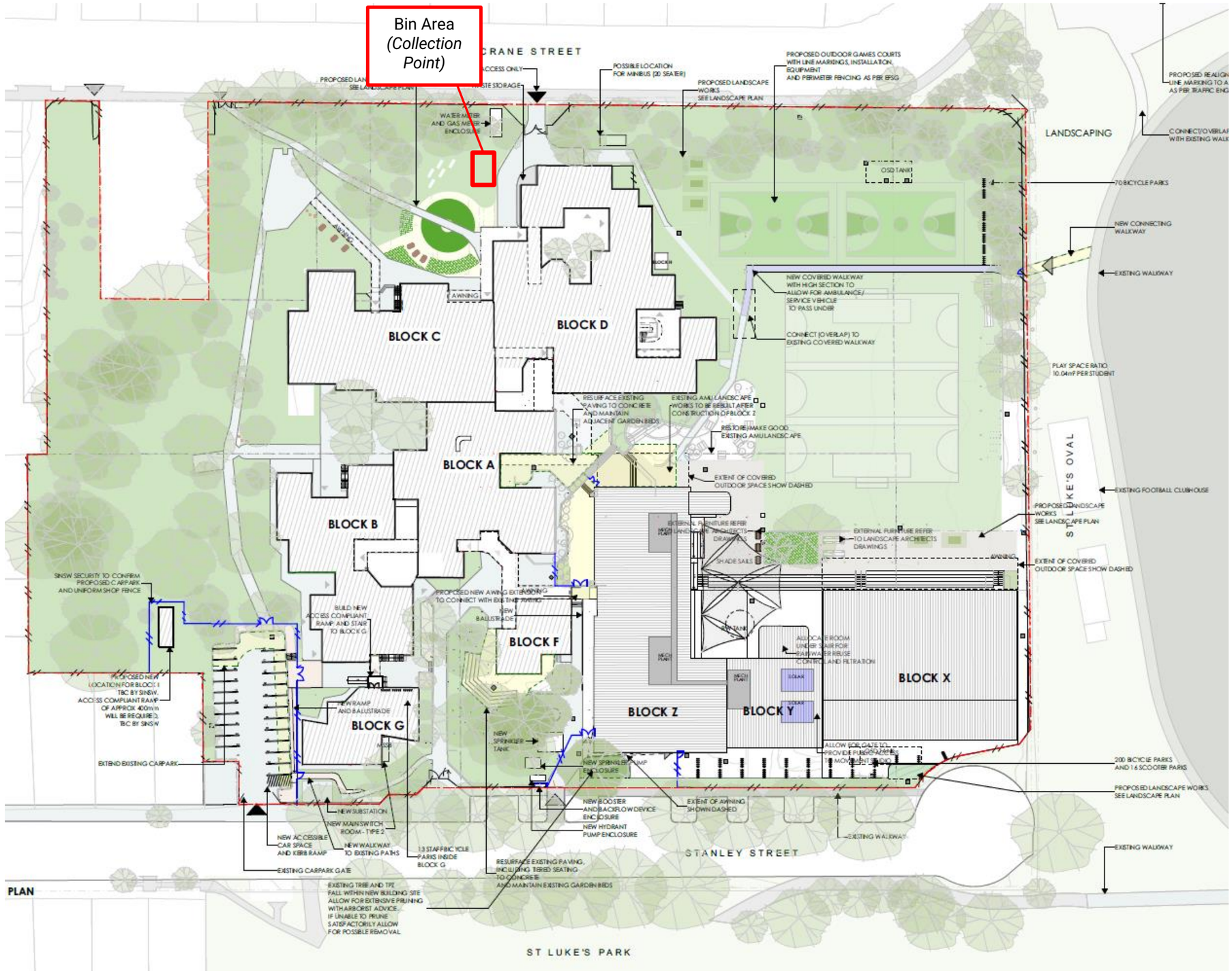
SULO	Ph: 1300 364 388	E: sales@sulo.com.au
OTTO Australia	Ph: 02 9153 6999	

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

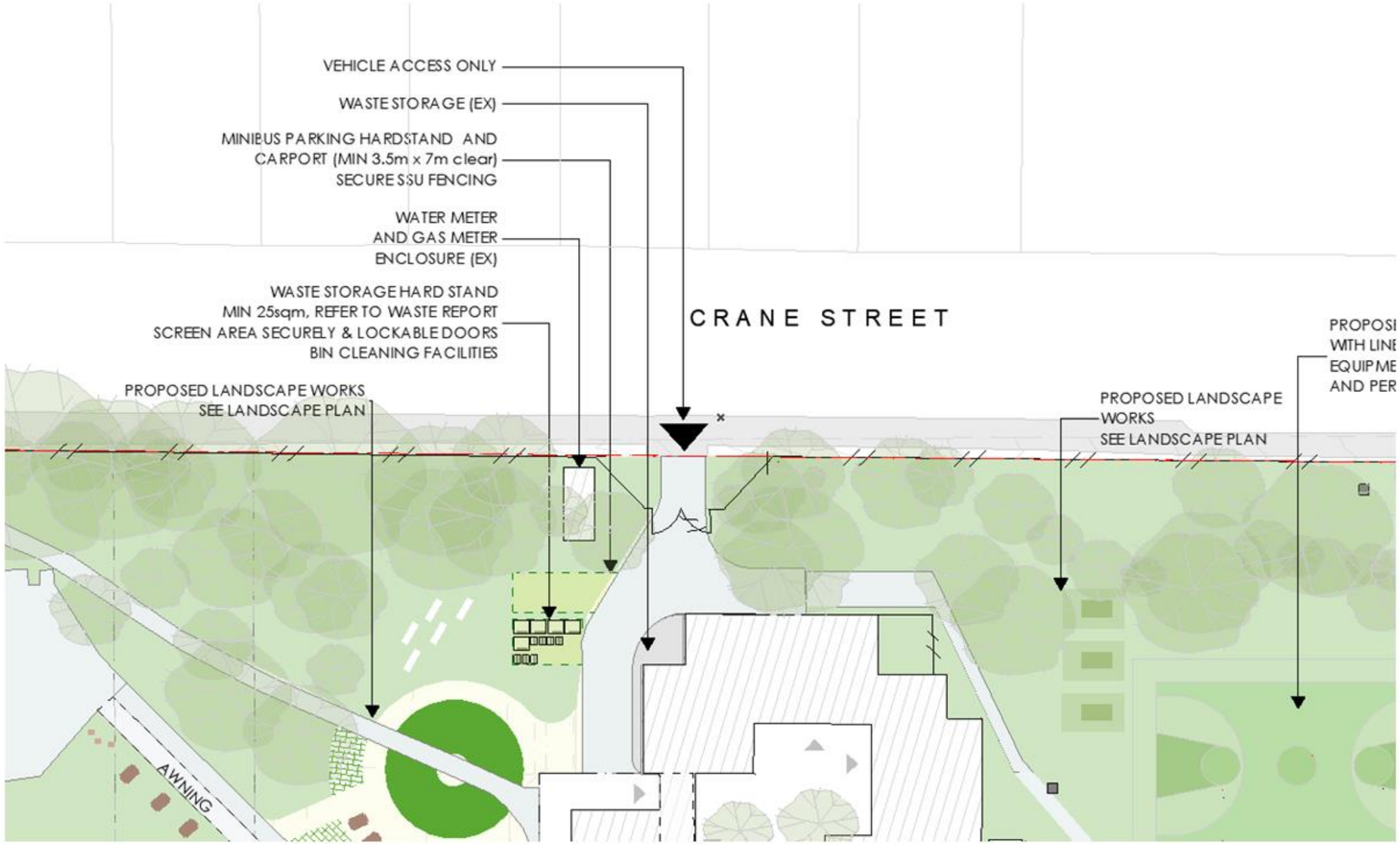
Elephants Foot	Ph: 1800 025 073	E: info@elephantsfoot.com.au

APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 SITE PLAN – WASTE AREAS



Source: JDH Architects, Concord High School, Drawing No CHS-JDH-0013-ZZ-XX-DR-A-S3, Rev P14, March2023 – Proposed Site Plan



Source: JDH Architects, Concord High School

APPENDIX B: GENERATION RATE CACLUATIONS

APPENDIX: B.1 CALCULATIONS FOR WASTE GENERATION RATES FOR OPERATIONS

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 1335 students.

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

- 32x 240L bins for general waste decanted into bulk bins for collection
- 4x 1100L bins for general waste collected 3 times weekly
- 30x 240L bins for Paper & Carboard Recycling collected 3 times weekly
- 5x 240L bins for Refundable Container Recycling collected when full (assumed once weekly)
- 1x 240L MGBs for Confidential Documents collected as needed (assumed. once per month)

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 (L per week)
General Waste	4	1100	3	13 200
Paper & Cardboard Recycling	30	240	3	21600
Refundable Container Recycling	5	240	1	1200
Confidential Documents	1	240	0.25	61.1

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 (L/per student/ week)
General Waste	13 200	9.9
Paper & Cardboard Recycling	21600	16.2
Refundable Container Recycling	1200	0.9
Confidential Documents	61.1	0.045

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

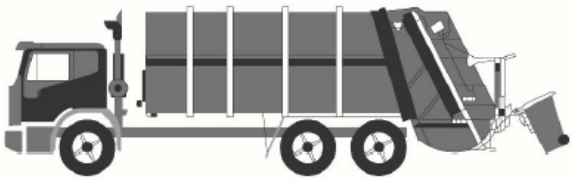
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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

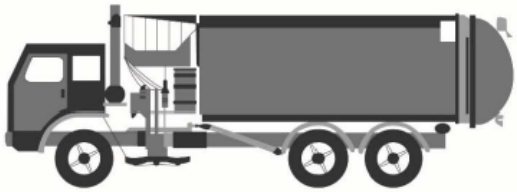
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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 LIFTER FOR 240L MGBS

Dumpmaster®

Model	Tip Height	Capacity	Power	Height	Length	Width	Weight	IP Rating	Safety Performance Level
DM0700*	700mm	**250kg**	**Battery** | solar | 1-phase mains | 3-phase mains | compressed air	1770mm	**1170mm**	**964mm**	~185kg	**IP56** | IP66 | IP69K	**ISO13849-1 | AS/NZS4024 Performance Level c** | Performance Level d | Performance Level e
DM1200	1200mm			2260mm			~205kg		
DM1500	**1500mm**			**2560mm**			**~215kg**		
DM1800	**1800mm**			**2860mm**			**~225kg**		
DM2100	2100mm			3160mm			~235kg		
DM-CUSTOM	xxxx mm	Enquire with Simpro via sales@simpro.world or +64 9 634 7445, or view options online at https://simpro.world/bin-lifters/dumpmaster							

Standard specifications are printed in **bold**. See page 18 for options and accessories.

*Dockmaster variant, with safety legs and other features to allow operating from elevated platforms.

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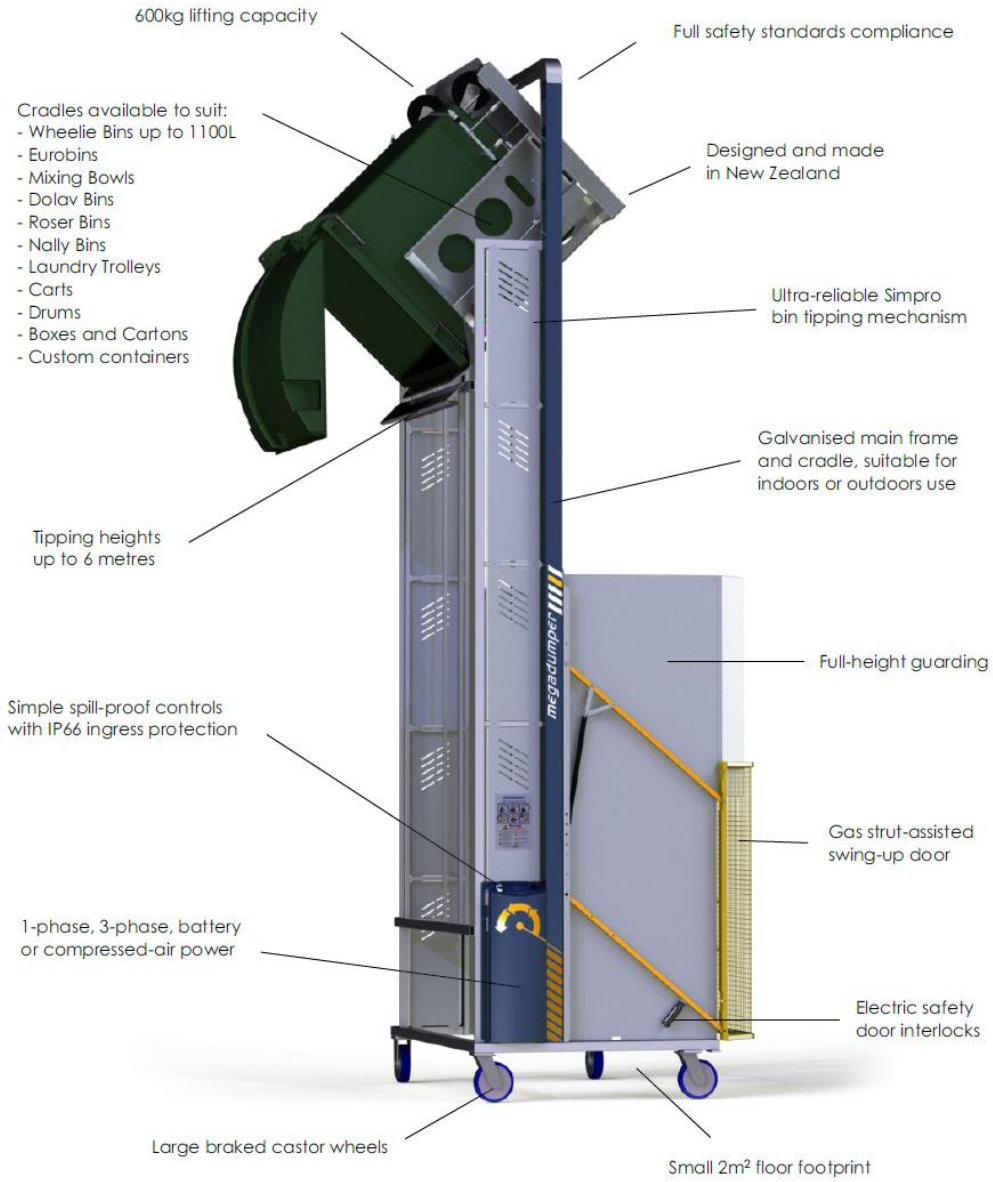
MegaDumper®



Model	Tip Height	Capacity	Power	Height	Length	Width	Weight	IP Rating	Safety Performance Level
MD600B1500	**1500mm**	**600kg (up to 660L bin)**	**3-phase mains** | 1-phase mains | compressed-air | battery | solar	3155mm	1342mm	1874mm	~350kg	**IP56** | IP66 | IP69K	**ISO13849-1 | AS/NZS4024 Performance Level c** | Performance Level d | Performance Level e
MD600E1500		**600kg (up to 1100L bin)**		3240mm	1592mm		~400kg		
MD600B1800	**1800mm**	**600kg (up to 660L bin)**		3455mm	1342mm		~375kg		
MD600E1800		**600kg (up to 1100L bin)**		3540mm	1592mm		~430kg		
MD-CUSTOM	xxxx mm	Enquire with Simpro via sales@simpro.world or +64 9 634 7445, or view options online at https://simpro.world/bin-lifters/megadumper							

Standard specifications are printed in **bold**. See page 18 for options and accessories.

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Contact Elephants Foot Equipment for more information
https://www.elephantsfoot.com.au/equipment/