# Jordan Springs Retirement Apartments – Stage 2

Retirement Development

# OPERATIONAL WASTE MANAGEMENT PLAN

3/06/2020
Report No. SO134
Revision E

Client

## Lendlease

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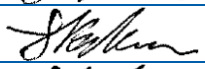
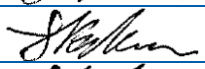
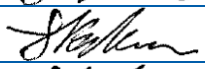
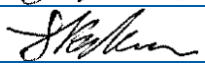
# SCOPE

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 | 14/11/2019 | J Parker | A Armstrong | Draft |  |
| B | 19/11/2019 | J Parker | A Armstrong | Final |  |
| C | 25/05/2020 | J Parker | A Armstrong | Amendment |  |
| D | 2/06/2020 | J Parker | A Armstrong | Amendment |  |
| E | 3/06/2020 | J Parker | A Armstrong | Amendment |  |

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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 |
| *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 |
| *Refuse* | Material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items |
| *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 |

# LIST OF TABLES

# INTRODUCTION

EFRS has been tasked to prepare the following waste management plan for Lendlease for the operational management of waste generated by Stage 2 of the Jordan Springs Retirement Apartments development.

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 integral to the overall management of the building and clearly communicated to all relevant stakeholders.

## DEVELOPMENT SUMMARY

The proposed development falls under the LGA of Penrith City Council. The subject site is located on Jordan Springs Boulevard, Jordan Springs 2747 on Lot 1, DP1248137.

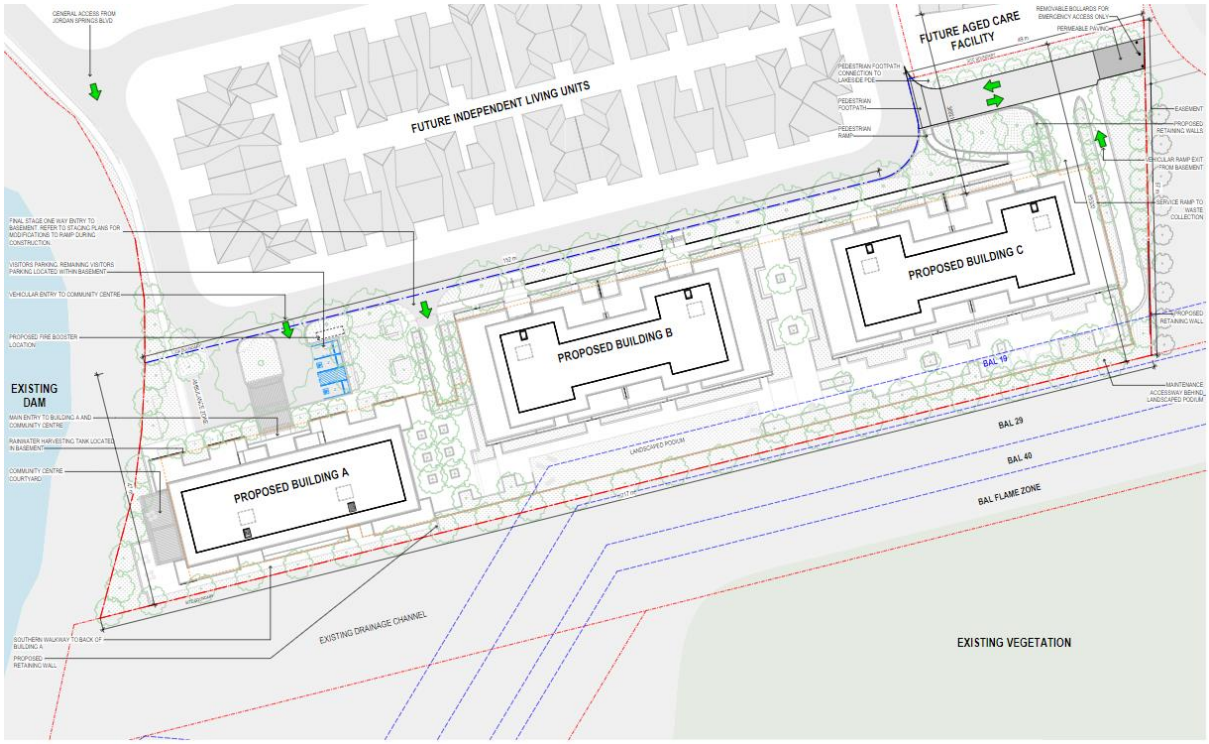
The site has approval for a staged concept development comprising Stage 1 works involving the construction of 51 ILUs (Independent Living Units), civil and landscape works and Stage 2 Concept development for future ILAs (Independent Living Apartments).

This DA concerns the Stage 2 development and is proposing 139 ILAs across 3 x 6 storey buildings.

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 on Jordan Springs Boulevard, Jordan Springs, as shown below. The site has fronts onto a new internal road, with vehicular access to this road via Jordan Springs Boulevard.




*Source: Lendlease – Site Plan*

# PENRITH CITY COUNCIL

The garbage and recycling will be guided by the services and acceptance criteria of the Penrith City Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Penrith Council's *Penrith Development Control Plan 2014, Residential Flat Building Waste Management Guidelines,* Australian Standards and statutory requirements.

## COUNCIL OBJECTIVES

- To facilitate sustainable waste management within the City of Penrith in accordance with the principles of Ecologically Sustainable Development;
- To manage waste in accordance with the 'Waste Hierarchy' to:
    - Avoid producing waste in the first place;
    - Minimise the amount of waste produced;
    - Re-use items as many times as possible to minimise waste;
    - Recycle once re-use options have been exhausted; and
    - Dispose of what is left, as a last resort, in a responsible way to appropriate waste disposal facilities;
- To assist in achieving Federal and State Government waste minimisation targets as set out in the *Waste Avoidance and Resource Recovery Act 2001* and *NSW Waste*
- *Avoidance and Resource Recovery Strategy 2007*;
- To minimise the overall environmental impacts of waste by:
    - Encouraging development that facilitates ongoing waste avoidance and complements waste services;
    - Requiring on-site source separation and other design and siting standards which assist waste collection and management services;
    - Encouraging building designs and construction techniques that minimise waste generation;
    - Maximising opportunities to reuse and recycle building and construction materials as well as other wastes in the ongoing use of a premise; and
    - Reducing the demand for waste disposal.

## 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, waste storage facilities, 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 Penrith 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;<br>• Organising internal waste audits/visual assessments on a regular basis; and<br>• 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;<br>• Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities;<br>• Ensuring site safety for residents, children, visitors, staff and contractors;<br>• Abiding by all relevant EH&S legislation, regulations, and guidelines;<br>• Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers;<br>• Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins)<br>• If a blockage is evident, building management or cleaning staff must immediately take steps to identify the level concerned and clear the blockage<br>• General maintenance and cleaning of waste facilities;<br>• Cleaning and transporting of bins as required;<br>• Organising, maintaining and cleaning the general and recycled waste holding area;<br>• Organising both garbage and recycled waste pick-ups as required;<br>• Organising replacement or maintenance requirements for bins;<br>• Organising bulky goods collection when required; and<br>• Investigating and ensuring prompt clean-up of illegally dumped waste materials. |
| Residents/Tenants | • Dispose of all garbage and recycling in the bins provided;<br>• Ensure adequate separation of garbage and recycling; and<br>• Compliance with the provisions of Council and the WMP. |
| Private Waste Contractor | • Provide a reliable and appropriate waste collection service;<br>• Provide feedback to building managers/residents in regards to contamination of recyclables; and<br>• 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 resident 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.

It is also recommended that the owners' corporation website contain information for residents to refer to. Information should include:

- recycling and garbage descriptions (Council provides comprehensive information);
- how to dispose of bulky goods and any other items that are not garbage or recycling;
- residents' obligations to WHS and building management; and

## LIMITATIONS

The purpose of this report is to document a Waste Management Plan (WMP) as part of a development application and is supplied by Elephants Foot Recycling Solutions (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 equipment and systems must be approved by the supplier.

# INDEPENDENT LIVING APARTMENTS WASTE MANAGEMENT

Penrith City Council's *Waste Management Guidelines* have been referenced to calculate the total number of bins required for the Independent Living Apartments (ILAs). Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practice.

## ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the residential component of the development.

*Table 2: Calculated Waste Generation – ILAs*

| Building/ Core | # Units | Garbage Generation Rate (L/unit/w eek) | | Generated Garbage (L/w eek) | Recycling Generation Rate (L/unit/w eek) | | Generated Recycling (L/w eek) |
|---|---|---|---|---|---|---|---|
| Building A | 36 | 60 | | 2160 | 60 | | 2160 |
| Building B | 52 | 60 | | 3120 | 60 | | 3120 |
| Building C | 51 | 60 | | 3060 | 60 | | 3060 |
| **TOTAL** | **139** | | | **8340** | | | **8340** |
| Collections | | Garbage Bin Size (L) | | 1100 | Recycling Bin Size (L) | | 1100 |
| | | Garbage Bins per Day | | 1 | Recycling Bins per Day | | 1 |
| | | Garbage Collections per Week | | 1 | Recycling Collections per Week | | 1 |
| | | Total Garbage Bins Required | | 8 | Total Recycling Bins Required | | 8 |
| Equipment | | Number of Waste Bins Per Core | Building A | 2 | Number of Recycling Bins Per Core | Building A | 2 |
| | | | Building B | 3 | | Building B | 3 |
| | | | Building C | 3 | | Building C | 3 |

## HOUSEHOLD WASTE

Garbage and recycling are each to be disposed of into 1100L bins, located in the basement level waste rooms for each building. Residents will be required to access the waste room via the elevators and deposit waste into the corresponding bin themselves. Neither waste stream is to be compacted.

Use of 1100L bins 1100L bins has been approved as part of the ILU DA. DA18/0678. This is in-line with the arrangements for other similar developments run by the same operator.

Upon completion of Stage 2 of the development, full waste and recycling bins from Buildings A and B will be transferred to the collection area in Building C for servicing by private waste contractor.

During Stage 1 of the development (when only Building A is completed), bins will need to be collected directly from Building A.

## COMMON AREAS

The lobbies, amenities and circulation areas will be supplied with suitably branded waste and recycling bins where considered appropriate. These areas generate minimal waste, however garbage and recycling receptacles should be provided and located in convenient locations.

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.

# 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 residential 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)

Residents will be supplied with a collection area in each unit to deposit garbage and collect recyclable material suitable for one day's storage. This is typically located generally in the kitchen, under bench or similar alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

## RECYCLING

Residents will be supplied with a collection area in each unit (generally in the kitchen, under bench or similar alternate area) to deposit garbage and collect recyclable material suitable for one day's storage. All garbage should be bagged.

***Recycling must not be bagged***. It is recommended that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation.

## GREEN WASTE

Green waste is not typically generated from developments such as this other than from surrounding building landscaped areas and is removed by the designated maintenance contractor. In the event that green waste is produced i.e trimming of indoor or balcony plants then this may be disposed of via coordination with building management. Very small quantities may be disposed of via the general waste stream.

## ELECTRONIC WASTE

Electrical waste (e.g. fluorescent tubing, batteries, laptops etc.) can potentially contaminate soil and surrounding water bodies if not disposed correctly. These items must not be placed in standard garbage and recycling bins. Disposal or recycling of electronic waste will be organised with the assistance of the building caretaker. These items must not be placed in garbage or recycling bins due to safety and environmental factors. Residents and/or the building manager may choose to contact Council to find out about new/existing strategies for the disposal/collection of electronic waste.

## CHEMICAL WASTE

Chemical wastes (e.g. cleaning chemicals, paints, oils solvents) pose detrimental effects to human health and the environment and should be disposed of to a suitable licensed disposal facility. No liquid wastes or wash down waters should be disposed of via the storm water drainage system. Household Chemical CleanOut events are held at various locations throughout NSW on specified dates throughout the year. Locations and dates are subject to change; hence it is recommended that the building caretaker confirm these details with their local Council.

## ORGANIC WASTE AND COMPOSTING

Recycling organic waste, such as food scraps and garden materials, dramatically reduces the quantity of waste being diverted to land fill and thus reduces residents' ecological footprint.

Compost material can also be returned to the soil as a rich fertilizer and improve plant growth and the overall health of surrounding vegetation. It is recommended that a space for composting and worm farming is made available for all residents in a communal facility or in small private courtyards (*see APPENDIX C.1*). Composting facilities are to be sited on an unpaved area with soil depth of at least 300mm. Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems (*see APPENDIX C.2 and APPENDIX C.3)*.

## BULKY GOODS

A designated bulky goods collection room is not required as this does not apply to the Seniors SEPP. Notwithstanding, the collection of bulky goods will be managed by Village Management, who will arrange collections during operating hours.

## FACILITIES

The theatre and dining facilities will only be used intermittently as per advice from the operator. The dining room does not provide meals daily as would be the case in an aged care facility. As residential apartments have their own kitchen and dining facilities, the dining room will be used to host morning teas for smaller groups and small functions (bingo, happy hour, cards, craft etc). Large functions of 160 people will be hosted 3-4 times per year. For the large functions, the kitchens will be used to serve only with no cooking taking place onsite. This means that waste will be minimal as professional caterers will be used for the larger functions. Caterers will remove their own waste when they leave the site.

The operator has advised that across their 72 villages, the dining and activity spaces contain 20L bins distributed periodically as required. With this in mind, waste rooms to support the intermittent use of the areas will not be warranted. Based on similar developments, it is estimated that 2 x 20L bins would be sufficient for this purpose. Due to this being such a minimal amount of waste, it is deemed acceptable for this to be deposited into the bins allocated for the Independent Living Apartments.

# MOVEMENT AND TRANSPORTATION OF BINS

The facility manager/waste caretaker is responsible for the transportation of bins from the waste rooms for Buildings A and B to the collection area at Building C prior to scheduled collection times, and returning them once emptied to resume operational use.

During Stage 1 of the development (when only Building A is completed), bins will need to be collected directly from Building A. At this stage they will need to be transferred to the ground level for collection.

Transfer of waste and all bin movements require minimal manual handling; the operator must assess manual handling risks and provide any relevant documentation to building management.

If required, the developer should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations. Examples of motorised bin moving equipment can be found in APPENDIX B.4 and APPENDIX B.5.

Bins may have to be fitted with hitches to enable the simultaneous transportation of multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.

# COLLECTION OF WASTE

## STAGE 1

A temporary waste collection strategy will be required at this site following completion of Building A, until such time as the permanent collection area at Building C has been completed. It must be stressed that once Buildings B and C have been completed, the temporary waste collection strategy at Building A will become redundant.

The basement level waste room at Building A will be required to accommodate 2 x 1100L bins for garbage and 2 x 1100L bins for comingled recycling. These are deemed to be sufficient to service the operational requirements of this building and therefore of Stage 1 of the development.

Full-time maintenance staff will be employed at Stage 1 and will be responsible for transferring the 4 x 1100L bins to the temporary holding area at the kerbside, returning bins to the waste room immediately following collections. This is intended to reduce the amount of time bins are at the kerbside as much as is reasonably possible. The transfer of bins is to occur via the vehicle ramp. It is recommended that a suitable bin moving device is utilised when transferring the bins.

Bins will be serviced by a private waste contractor at Stage 1.

## STAGE 2

All waste generated by the development will be collected by private waste contractor to an agreed schedule (for the purpose of calculating bin numbers, this report assumes that all garbage and recycling will be collected on a weekly basis).

Prior to servicing, the facility manager/caretaker will be responsible for transferring full waste and recycling bins from Buildings A and B to the collection area in Building C. It is recommended that a bin moving device be used to aid in the transfer of bins.

The contractor's waste vehicle will access the site via the new road off Jordan Springs Boulevard and reverse into the waste vehicle service bay. Collection staff will then service the bins directly from the main waste room.

Once servicing is complete, the vehicle will leave the site via the same route and in a forward-facing direction. The facility manager/caretaker will then be responsible for returning bins to their respective waste rooms to resume operational use.

## COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant as part of the *Traffic Impact Assessment* developed for this site.

# INSTALLATION EQUIPMENT AND DESIGN

## EQUIPMENT SUMMARY

*Table 3: Equipment Summary*

| Component | Part | Qty | Notes |
|---|---|---|---|
| Equipment | Suitable Bin Moving Equipment | N/A | Optional (See APPENDIX B.4 & APPENDIX B.5 for Typical Bin Movers) |

## WASTE ROOM AREAS

The areas allocated for waste storage and collections are detailed in Table 4 below. The areas provided are estimates only. Final areas will depend upon room and bin layouts.

*Table 4: Waste Room Areas*

| Level | Waste Room Type | Equipment | Allocated Area ($m^2$) |
|---|---|---|---|
| B1 | Building A Waste Room | 2 x 1100L MGBs (Garbage)<br>2 x 1100L MGBs (Recycling) | 12 |
| | Building B Waste Room | 3 x 1100L MGBs (Garbage)<br>3 x 1100L MGBs (Recycling) | 16 |
| | Building C Waste Room/Collection Area | 8 x 1100L MGBs (Garbage)<br>8 x 1100L MGBs (Recycling) | 40 |

## GARBAGE ROOMS

### CONSTRUCTION REQUIREMENTS

The garbage room will be required to contain the following facilities to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room floor to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners covered and sealed 100mm up, this is to eliminate build-up of dirt;
- a hot and cold water facility with mixing facility and hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board. (Sydney Water);
- tap 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;
- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- if 660L or 1100L bins are utilised, 2 x 820mm (minimum) door leafs must be used;
- all personnel doors are hinged, lockable and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured

### SIGNAGE

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

### VENTILATION

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; 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.

**PENRITH COUNCIL CUSTOMER SERVICE**
Phone: 02 4732 7777 Email: council@penrithcity.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 9359 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

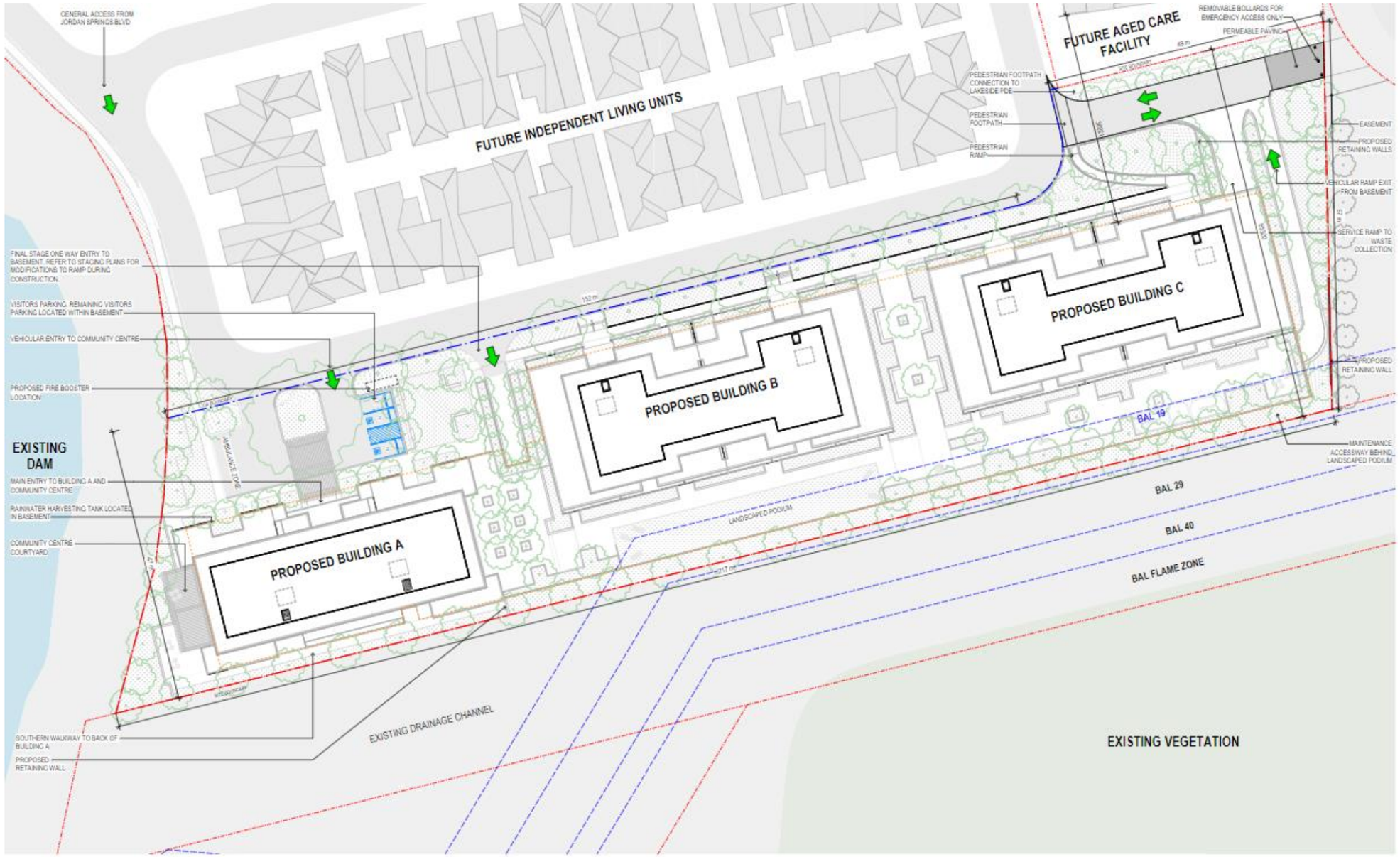
**KOMPACT EQUIPMENT** (Equipment & Servicing Provider)
Phone: 1300 566 722 Email: info@kompactequipment.com.au

**ELEPHANTS FOOT RECYCLING SOLUTIONS** (Chutes, Compactors & eDiverter Systems)
44 – 46 Gibson Avenue
Padstow NSW 2211
Phone: 1300 434 374 Email: wmp@elephantsfoot.com.au

# APPENDICES

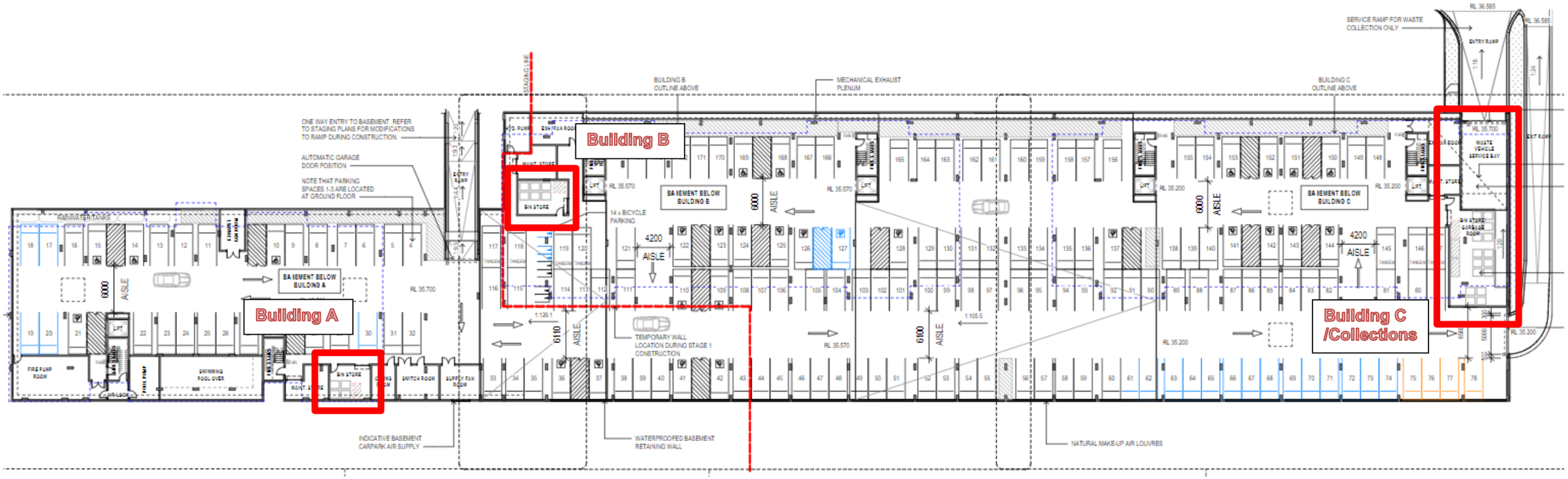
## APPENDIX A ARCHITECTURAL DRAWING EXCERPTS

### APPENDIX A.1 SITE PLAN



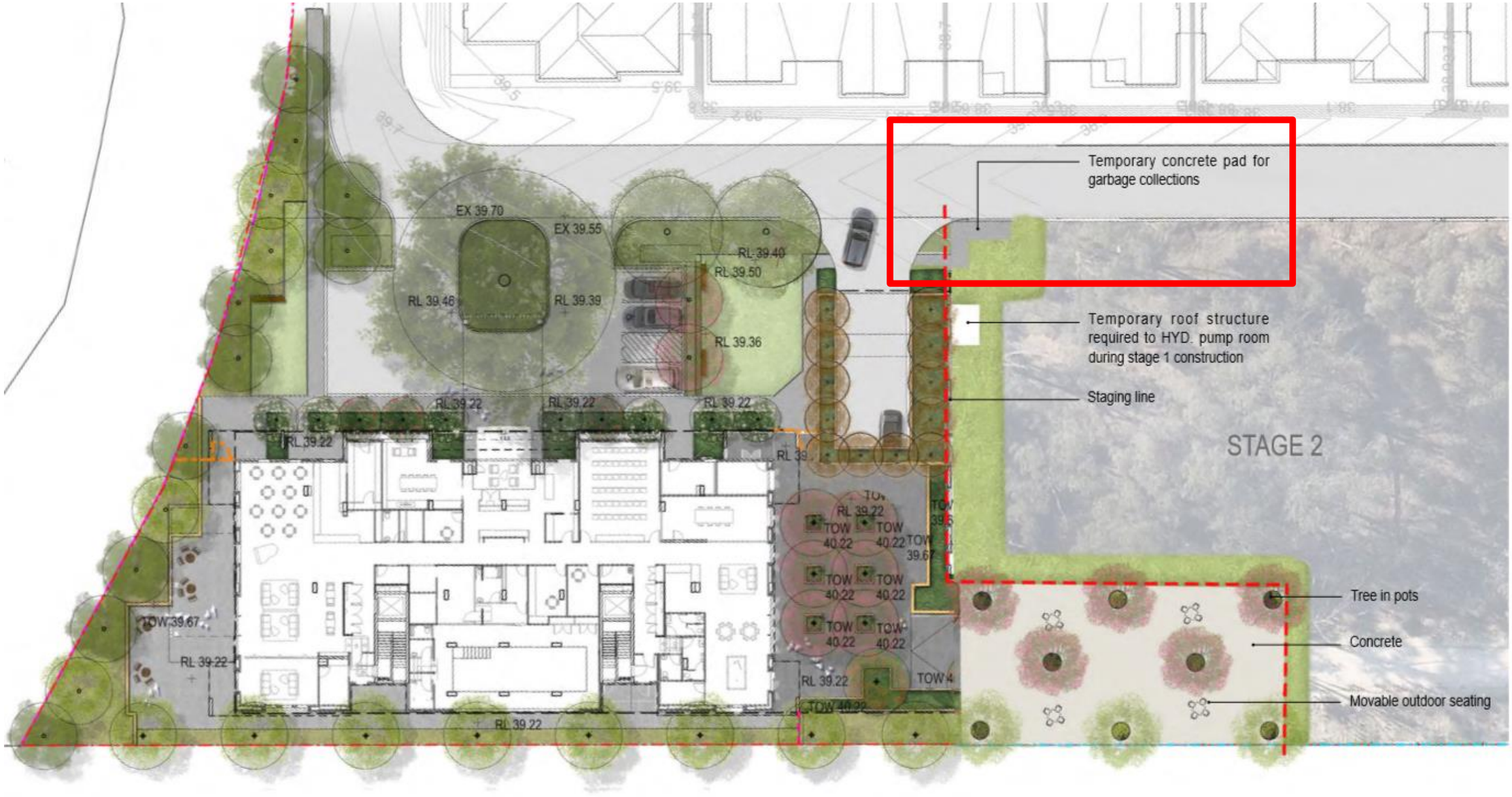

*Source: Lendlease, Drawing No. DA_0_00004, Rev2 – Site Plan*

## APPENDIX A.2 WASTE ROOMS/COLLECTION AREA




*Source: Lendlease, Drawing No. DA_0_10101, Rev2 – Overall Plan Basement*

## APPENDIX A.3 STAGE 1 COLLECTION AREA




*Source: Clouston Associates – Stage 1 Plan and Temporary Landscape*

# APPENDIX B PRIMARY WASTE MANAGEMENT PROVISIONS

## APPENDIX B.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) | 1m³ | 1.5m³ | 2m³ | 3m³ | 4.5m³ | 6m³ |
|---|---|---|---|---|---|---|
| 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 B.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 B.3 TYPICAL PENRITH CITY COUNCIL COLLECTION VEHICLE

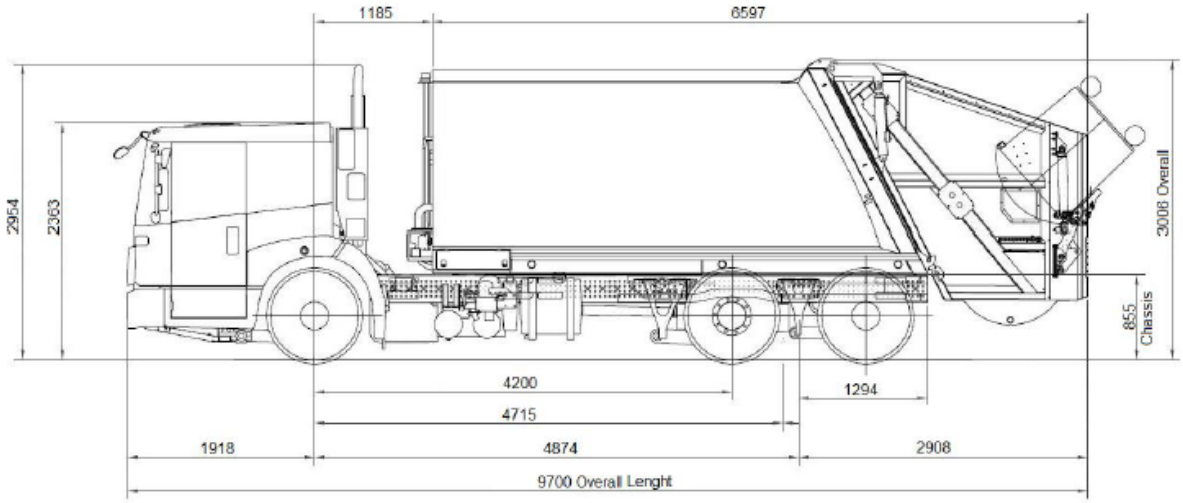
### DESIGN SPECIFICATIONS REAR LOAD WASTE COLLECTION VEHICLES

The following dimensions are provided for a standard heavy rigid vehicle as identified in Australian Standard 2890.2:

**Low Entry Heavy Rigid Waste Collection Vehicle**

| Vehicle Classifications | Heavy Rigid Vehicle Dimensions |
|---|---|
| Overall Length (m) | 9.7 |
| Operational Length (m) | 11.7 |
| Design Width (m) | 2.8 |
| Design Height (m) | 3.1 |
| Swept Circle (m) | 17.0 |
| Clearance (travel height) (m) | 3.5 |
| Roadway/ramp grade (max) | 1:6.5 (15.4%) |
| Rate of change of grade (max) | 1:12 (8.3%) in 4.0m of travel |
| Gross Weight (max tonnes) | 28.0 |
| Front Chassis Clearance | 13° |
| Rear Chassis Clearance | 16° |

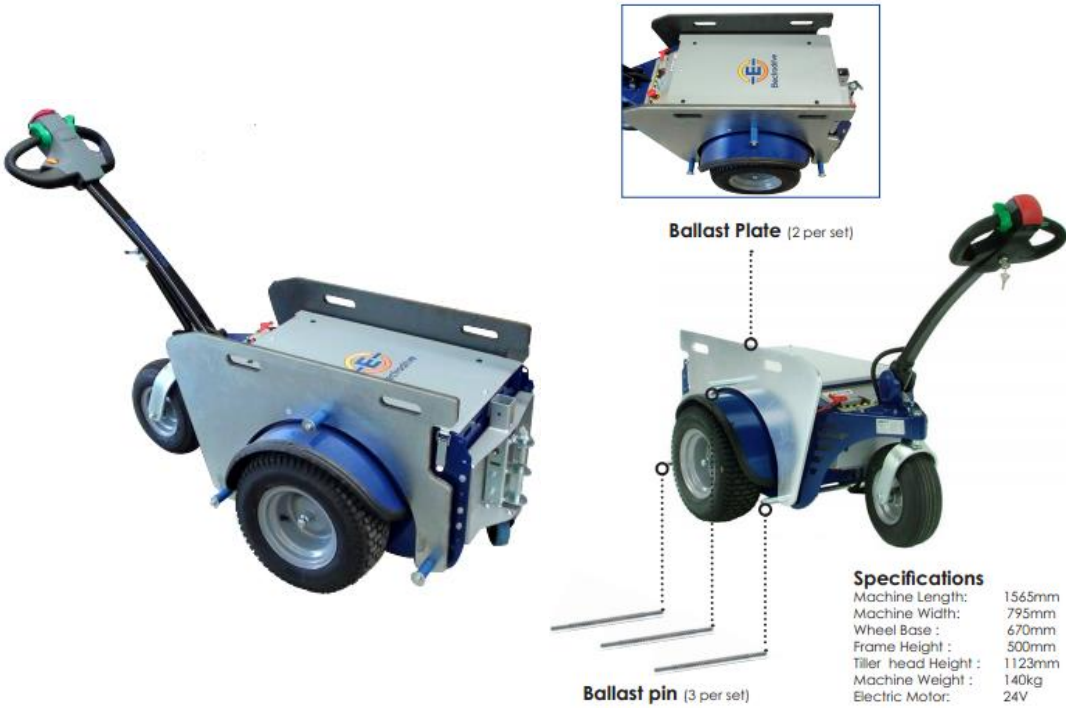
**Standard dimensions in accordance with AS 2890.2**




**9.7m Heavy Rigid Rear Load Waste Collection Vehicle specifications**

*Source: Penrith City Council Waste Management Guidelines*

## APPENDIX B.4 TYPICAL MOTORISED BIN TUG




Typical applications:

- Move trolleys, waste bin trailers and 660/1100L bins up and down a ramp incline.
- Quiet, smooth operation with zero emissions and simple to use, no driver's licence required
- Suitable for:
    - High rise building & apartment basements
    - Large factories & warehouse with sloped ground
    - Caravan parks & other large outdoor areas

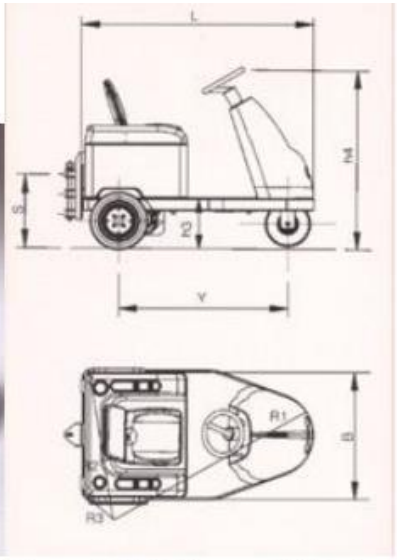
Features:

- 1 tonne tow capacity of inclines up to 8 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 4.5 km/h max speed
- 2 x 80amp batteries – includes charger
- Powerful transaxle
- Hitch to suit 660L bins

Safety Features:

- Intuitive paddle lever control
- Stops and repels the unit if activated when reversing.
- Site assessment recommended to assess ramp incline steepness *(See Useful Contacts)*

## APPENDIX B.5 TYPICAL SEATED BIN MOVER

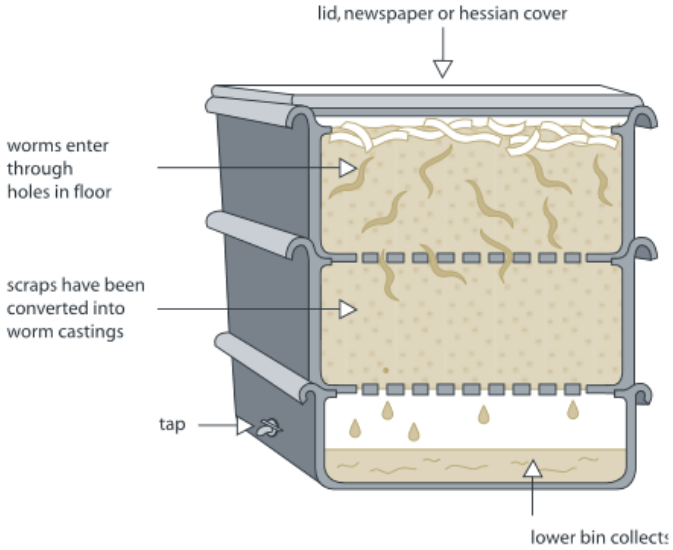




| | | UNIT M. | BULL 2 | BULL 4 |
|---|---|---|---|---|
| Manufacturer | DEC | | | |
| Model | BULL | | | |
| Platform loading cap. | Nominal capacity | kg | ----- | ----- |
| Pull capacity | Pull nominal capacity | kg | 2000 | 4000 |
| Power type | Electric - endotermic | | electric | electric |
| Controltype | Standing / seated thiller / steer | | seated / steer | seated / steer |
| Tyres | Pn=pneum. Se=superelastic | | Pn | Pn |
| Wheels | N. front/rear - x drive | n. | 1/2X | 1/2X |
| Platform dimensions | L x B (lengh x width) | mm | ----- | ----- |
| Platform hight | h6 = unload clearence | mm | ----- | ----- |
| Overal dimensions | L = lenght<br>B = width<br>h1 = foot leve<br>h3 = Seat height<br>h4 = Steer height | mm<br>mm<br>mm<br>mm<br>mm | 1500<br>900<br>1820<br>310<br>1250 | 1600<br>930<br>1960<br>340<br>1330 |
| Turning radius | R1 = front min. external<br>R2 = rear min. external<br>R3 = front min. internal | mm<br>mm<br>mm | 1400<br>1000<br>400 | 1500<br>1000<br>400 |
| Aisle width | A = 180° turn | mm | 2200 | 2300 |
| Tow hook height | s = center from ground | mm | 220-350-490 | 240-380-520 |

# APPENDIX C SECONDARY WASTE MANAGEMENT PROVISIONS

## APPENDIX C.1 TYPICAL WORM FARM SPECIFICATIONS

### Worm farms




Space requirements for a typical worm farm for an average household:

Height – 300mm per level

Width – 600mm

Length – 900mm

There are many worm farm arrangements. The above dimensions are indicative only.

*SOURCE: Department of Environment and Climate Change NSW 2008, Better Practice Guide for Waste Management in Multi-Unit Dwellings*

## APPENDIX C.2 TYPICAL APARTMENT STYLE COMPOST BINS

Apartment Style Compost bin – available from hardware stores

Suitable for:

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

## APPENDIX C.3 ELECTRIC ORGANIC COMPOST BIN

CLOSED LOOP
LOVE WHAT YOU DO
CLO'ey

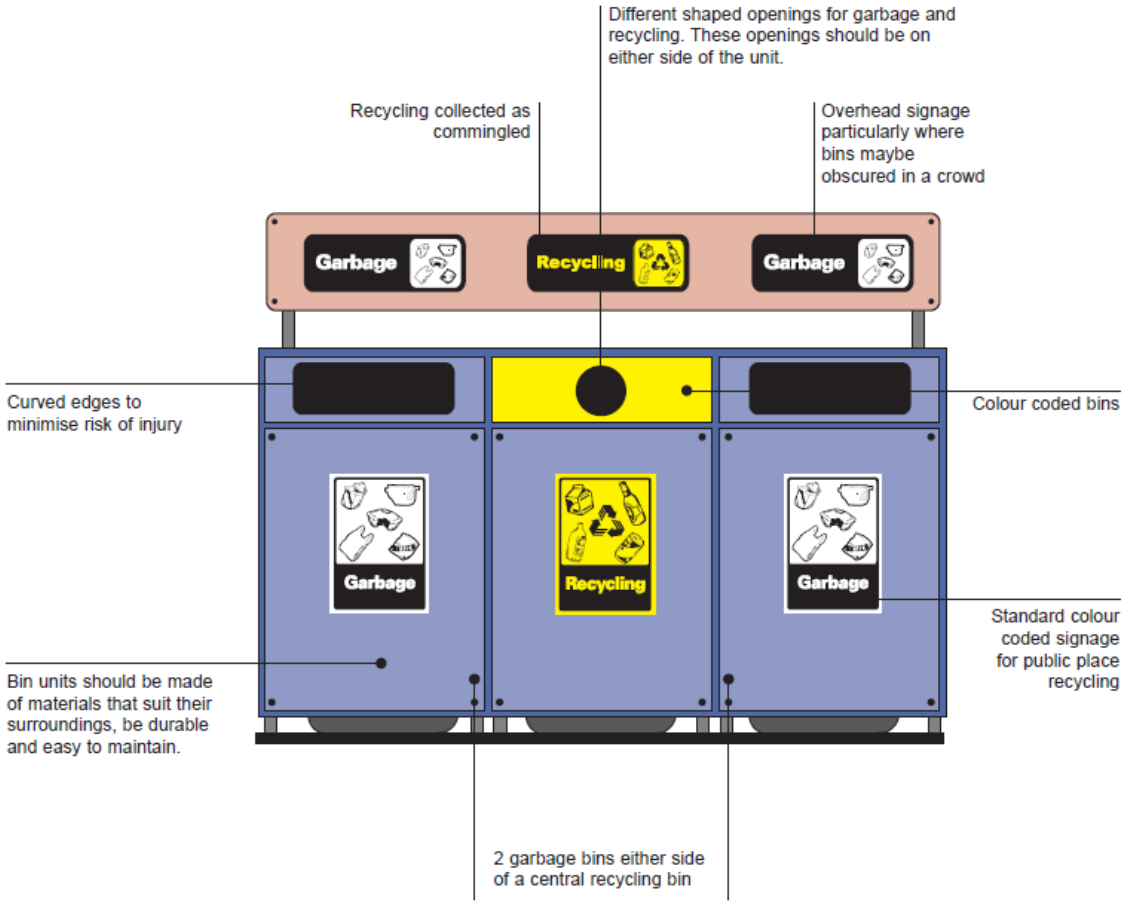

### Product Specifications

| | |
|---|---|
| Decomposition Method | Fermentation by microorganisms |
| Decomposition Capacity | 2 metric tonnes per year*<br>(4 kg per day*) |
| Rating | 220–240 V 50/60 Hz – 1.1 A |
| Decomposition Time | 24 hrs |
| Operating Temperature | 0C and 40C.** |
| Deodorisation Method | Nano-Filter system |
| Maximum Power | 210 W |
| Power Usage | Average 1 kwh per day |
| Weight | 21 kgs |
| External Dimensions | w 400 mm<br>d 400 mm<br>h 780 mm |

* Food Waste Handling Capacity – based on an optimal operating environment.
** Ambient temperature range of area where unit may be installed.

*SOURCE: Closed Loop Domestic Composter – See Useful Contacts*
http://www.closedloop.com.au/domestic-composter

## APPENDIX C.4 TYPICAL PUBLIC PLACE WASTE BINS




Source: *Department of Environment and Conservation (NSW) Better Practice Guide for Public Place Recycling 2005*