Liverpool Civic Place
52 Scott Street, Liverpool NSW
Commercial Development

OPERATIONAL WASTE MANAGEMENT PLAN

24/09/2020
Report No. SO648
Revision F

Prepared for

Liverpool City Council

Architect

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REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description
A	23/07/2020	W. Brunson	A. Armstrong	Draft
B	29/07/2020	W. Brunson	A. Armstrong	Amendment
C	10/09/2020	W. Brunson	A. Armstrong	Amendment
D	11/09/2020	W. Brunson	A. Armstrong	Final
E	22/09/2020	W. Brunson	A. Armstrong	Amendment
F	24/09/2020	W. Brunson	A. Armstrong	Amendment

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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
Chute	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Chute Discharge	The point at which refuse exits from the refuse chute
Chute Discharge Room	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
Collection Area/Point	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
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
MUD	Multi-Unit Dwellings comprise of a development with more than one dwelling. This ranges from dual occupancies and attached dwellings to high-rise residential developments
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
MRV	Medium Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
Onsite Collection	When the collection vehicle enters the property and services the development within the property boundary from a designated loading area

Owners Corporation	An organisation or group of persons that is identified by a particular name and acts, or may act, as an entity
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
SRV	Small Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities

1.0 INTRODUCTION

Elephants Foot Recycling Solutions (EFRS) has been engaged to prepare the following waste management plan for the Liverpool Civic Place development located at 52 Scott Street, Liverpool NSW.

This development is designed to achieve a 5-star Green Star rating under Design and As Built V1.2, and all disciplines have been coordinated to meet these targets. This report has been prepared to demonstrate how the site has met the credit criteria for Credit 8B Operational Waste, Prescriptive Pathways: Facilities.

Waste management strategies and audits are required for new developments in order to support the design and sustainable performance of 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. ***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.

1.1 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 be provided in a separate report.

1.2 REPORT CONDITIONS

The purpose of this report is to document an OWMP as part of a development application, which is supplied by EFRS 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 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 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 EFRS will not be liable for plans or results that are not suitable for purpose due to incorrect or unsuitable information or otherwise,
- EFRS offer no warranty or representation of accuracy or reliability of the OWMP unless specifically stated,
- Any manual handling equipment recommended in this OWMP should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply,
- Design of waste management chute equipment and systems must be approved by the supplier,
- EFRS cannot be held accountable for late changes to the design after the OWMP has been submitted to Council,
- EFRS 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,
- EFRS 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.

2.0 LEGISLATION & GUIDANCE

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

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

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

- Liverpool Development Control Plan 2008, 2019
- Liverpool Local Environmental Plan 2008

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:

- Liverpool Development Control Plan 2008, 2019
- 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

2.1 COUNCIL OBJECTIVES

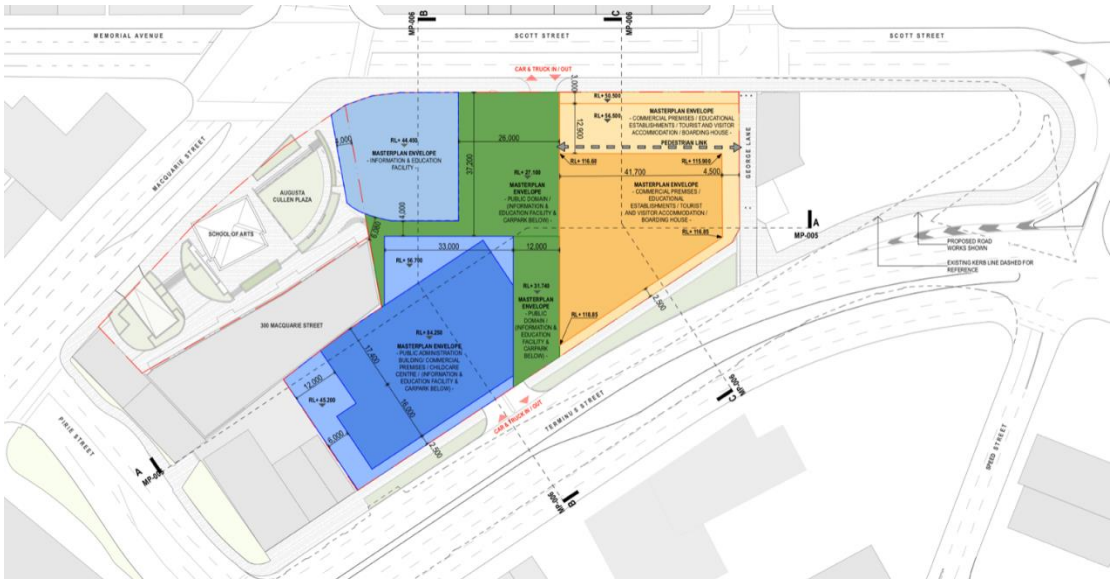
Liverpool City Council recognises the potential environmental and human health impacts associated with waste generation, storage and disposal. To mitigate these impacts, Council aims to:

- Minimise disposal of waste to landfill and recover resources to minimise depletion of natural resources.
- Ensure waste management for the end use of the development is designed to provide satisfactory amenity for occupants and provide appropriately designed collection systems.
- Minimise ongoing waste to landfill and maximise recycling of ongoing waste.

3.0 DEVELOPMENT OVERVIEW

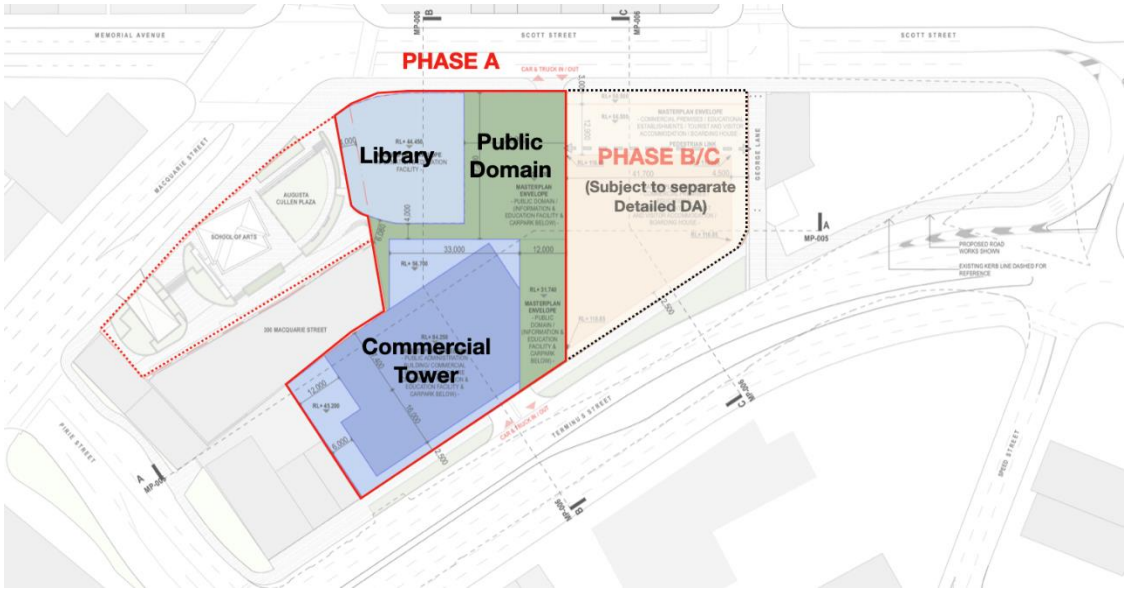
This Operational Waste Management Plan is submitted to Liverpool City Council (Council) on behalf of Built Development Group in support of a Stage 2 Development Application (DA) for Phase A of the Liverpool Civic Place development located at 52 Scott Street, Liverpool.
It follows the approval of a Concept Proposal / Stage 1 DA (DA-585/2019) for the broader Liverpool Civic Place master plan that has determined land uses, building envelopes, public domain and a multi-level common basement across the site. The full Liverpool Civic Place site, subject to the Concept Proposal / Stage 1 DA approval is illustrated at **Figure 1**, however the scope of this Stage 2 DA is limited to Phase A, as illustrated at **Figure 2**. Phase B and Phase C will be subject to future Stage 2 DA(s).

Figure 1 Liverpool Civic Place Master Plan Site



Source: FJMT

Figure 2 Liverpool Civic Place Stage 1 site (subject site)



Source: FJMT

This Stage 2 DA seeks approval for:

- Construction and use of a six (6) storey information and education facility (public library);
- Construction and use of a fourteen (14) storey mixed use building comprising:
  - Eight (8) storeys of public administration building floor space to be occupied by Liverpool City Council;
  - Four (4) storeys of commercial premises (office) floor space;
  - Single storey above ground child care centre on Level 6; and
  - Single storey of rooftop plant.
- Partial construction and use of the overall site's common basement;
- Landscaping and public domain works including:
  - an internal shared road connecting to Scott Street with basement access;
  - a public plaza fronting Scott Street; and
  - an elevated pocket park fronting Terminus Street.
- Extension and augmentation of services and infrastructure as required.

This DA reflects the staged planning approval pathway for the Liverpool Civic Place redevelopment which has included two previously approved DAs, as outlined below:

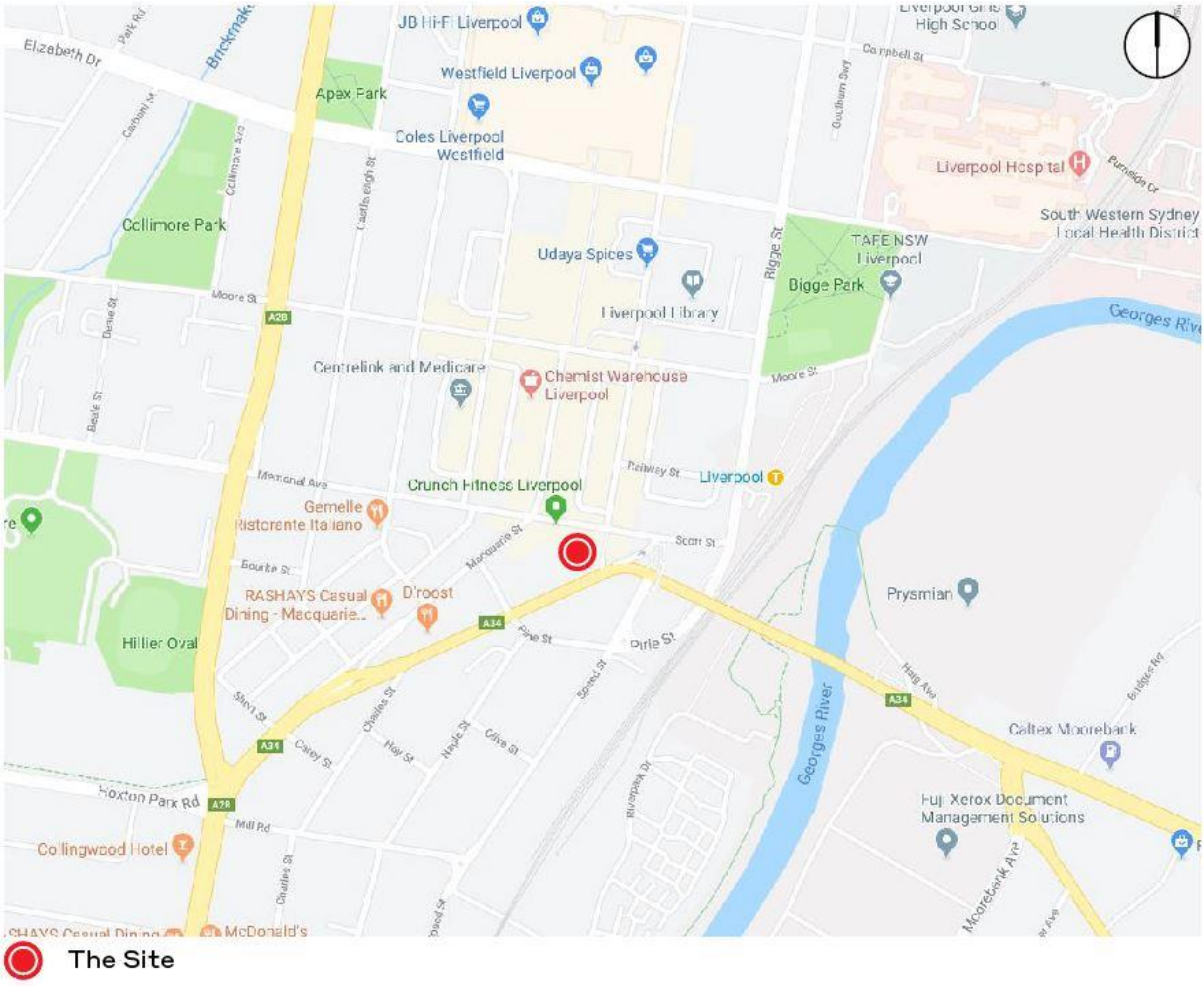
Concept DA DA-585/2019:
The planning approval pathway for the Liverpool Civic Place development commenced in in 2019, with the submission of a Concept Proposal / Stage 1 DA for the Liverpool Civic Place master plan. On 31 August 2020, the Concept Proposal / Stage 1 DA (DA-585/2019) was approved by the Sydney Western City Planning Panel. The Concept Proposal / Stage 1 DA consent sets out the future development concept of the site, including the approved land uses, building envelopes, an expanse of public domain and a common basement. The Concept Proposal / Stage 1 DA did not approve any physical works.

Early Works DA DA-906/2019:
Development Application DA-906/2019 was approved by the Sydney Western City Planning Panel on 29 June 2020. The development consent relates to demolition of all structures, select tree removal and bulk earthworks including shoring through the use of piles. Early works commenced on site in September 2020 and are scheduled for completion in August 2021.

3.1 SITE LOCATION

The site is located at 52 Scott Street, Liverpool within the Liverpool City Council Local Government Area (LGA) as illustrated at **Figure 3**. The site is located at the southern fringe of the Liverpool CBD. The site is approximately 300m south west of the Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated at **Figure 3**.

Figure 3. Site Location - Map



The Site

Source: Google Maps & Ethos Urban

4.0 GREEN STAR

The development has been designed to achieve a 5-star Green Star rating under the Green Star Design and As Built V1.2 tool (excepting the library component). Under Credit 8 Operational Waste, the development has chosen option 8B Prescriptive Pathways: Facilities.

The waste management provisions within the development have been designed to achieve best practice waste management outcomes during operation. These provisions are in place to collect and separate distinct waste streams that are also accessible for collection by the relevant waste contractor. The additional waste stream that has been selected for diversion is food waste.

4.1 CREDIT 8B OPERATIONAL WASTE CRITERIA ASSESSMENT

This OWMP outlines the waste management design requirements and facilities within the building. Table 1 provides a review of green star credit 8B (Green Star Design and As Built 1.2) criteria as discussed in this report.

Table 1. Green Star Assessment

Requirements of Credit 8B Prescriptive Pathways	Operational Waste Management Plan Response
8B.1 Separation of Waste Streams Collection Bins or storage containers shall be provided for building occupants to use to allow for separation of all applicable waste streams. The following waste streams must be provided with separate bins or containers: • General waste going to landfill. • Recycling streams to be collected by the building's waste collection service, including paper and cardboard, glass, and plastic. These streams may be collected in separate bins or in the same bin where commingled recycling is available. Commingled recycling is permissible to the extent that is accepted by the waste collection service. For example, if glass and plastic are collected as commingled recycling, then paper and cardboard are still required to have a separate recycling bin or container. And; • At least one other waste stream This waste stream should further reduce waste being sent to landfill. This may include collecting any of the following waste types: organic, e-waste, batteries, etc. These bin or containers must be clearly marked for each stream to allow for the separation of the applicable waste streams. Bins or containers must be evenly distributed throughout the building.	Section 5 identifies the waste streams and discusses their management to ensure separation. Appendices D.1 & D.3 identify examples of the source separation bins to be implemented within the building. Appendix C.1 identifies examples of collection bins to be implemented within the waste room. Section 8.1 outlines significance of including proper signage.
8B.2 Separation of Waste Streams A dedicated area for the storage and collection of the applicable waste streams shall be provided. The storage area must be sized to accommodate all bins or containers, for all applicable waste streams, for at least one collection cycle. The calculations use to demonstrate that an area provided is adequately sized to handle the recyclable waste streams specified must be based on: • Waste generated by the project; and • Collection frequency for each waste stream.	Section 5.1 discusses the calculation for bin quantities and sizes required for waste room based on waste generation volumes and collection frequencies. Section 9.0 discusses the waste room configuration and sizing.

The calculation for waste generation rates must be based on figures outlined within third-party best practice guidelines.	Appendix A.1 identifies waste room location, equipment configuration and the location of the loading area.
8B.3 Access to Waste Storage Area Access to waste collection areas must adhere to best practices, as outlined within third-party best practice guidelines, in order for this requirement to be met.	Section 5.4 discusses the access for waste collection. Appendix A.1 shows the bin moving route between the waste room and loading bay. Please note: the loading bay and waste collection vehicle access has been assessed by the Traffic Consultant. For further information regarding waste collection vehicle access to the site, please refer to the Traffic Report.

5.0 COMMERCIAL AND RETAIL WASTE MANAGEMENT

The following section outlines best practice waste management for the commercial and retail components of the development, including waste generation estimates and waste disposal and collection procedures. Floor areas are advised by the client, based on architectural plans.

5.1 WASTE GENERATION ESTIMATES

The proposed development has selected food waste as the additional segregated waste stream in line with Green Star Credit 8B. Since the City of Sydney Guidelines for Waste Management in New Developments incorporates food waste estimates, the waste generation rates from this guideline have been applied.

The following table shows the estimated volume (L) of general waste and recyclables that will be generated by the commercial and retail tenants. Calculations are based on generic figures, and waste generation rates may differ according to the tenants' actual waste management practice.

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

The waste generation volumes are based on the following assumed operational schedules:

- Office spaces are assumed to operate 5 days per week
- The café/restaurant is assumed to operate 6 days per week
- The kitchen/function room is assumed to operate once per week
- The library is assumed to operate 7 days per week
- The plaza is assumed to operate once per week for community events
- The childcare centre is assumed to operate 5 days per week

Table 2. Estimated Waste and Recycling Volumes

Tenancy Type	NLA m^2	Waste Generation Rate (L/100m^2/Day)	Generated Waste (L/Week)	Compacted Waste 2:1 (L/Week)	Recycling Generation Rate (L/100m^2/Day)	Generated Recyclables (L/Week)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)	Food Waste Generation Rate (L/100m^2/Day)	Generated Food Waste (L/Week)
Office Space	13391.0	15	10043.3	5021.6	25	16738.8	11159.2	5579.6	5	3347.8
Restaurant/ eating	50.0	100	300.0	150.0	500	1500.0	1000.0	500.0	100	300.0
Kitchen/ Function	345.0	100	345.0	172.5	120	414.0	276.0	138.0	100	345.0
Library	4017.0	20	5623.8	2811.9	50	14059.5	9373.0	4686.5	5	1406.0
Plaza	1200.0	20	240.0	120.0	50	600.0	400.0	200.0	5	60.0
Childcare	780.0	50	1950.0	975.0	50	1950.0	1300.0	650.0	15	585.0
TOTALS	**19783**		**18502**	**9251.0**		**35262**	**23508**	**11754**		**6044**
Collections		Bin Size (L)	1100	1100	Bin Size (L)	1100	1100	1100	Bin Size (L)	-
		Bins/Day	2.4	1.2	Bins/Day	4.6	3.1	1.5	Bins/Day	-
		Collections/Wk	3	3	Collections/Wk	3	3	3	Collections/Wk	-
		Total Bins	**5.6**	**2.8**	Total Bins	**10.7**	**7.1**	**3.6**	Total Bins	**-**

5.2 BIN SUMMARY

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

General Waste: 6 x 1100L MGBs collected **3 x weekly**

Recycled Cardboard/Paper: 8 x 1100L MGBs collected **3 x weekly**

Commingled Recyclables: 4 x 1100L MGBs collected **3 x weekly**

Food Waste: Decanted into the on-site food waste processer and **serviced as needed**

*Note that it is optional to provide a single-bin compactor unit (APPENDIX B.3), in which case general waste would be compacted at 2:1, and would require 3 x 1100L MGBs collected 3 x weekly.

EFRS recommends these bins/sizes/collection frequencies and/or equipment for best practice waste management at this site, however EFRS also acknowledges there are a range of other suitable options that may alter waste room requirements (e.g. floor area, accessibility, head height, etc.).

5.3 WASTE DISPOSAL PROCEDURES

Commercial and retail tenants will be responsible for the storage and maintenance of general waste, paper/cardboard, commingled recyclables, and food waste bins back of house. All general waste bins should be paired with an appropriate recycling and/or food waste bin in convenient locations. Staff tea rooms and kitchens, for example, should be provided with general waste, commingled recycling, and food waste bins. Print rooms should be provided with at least paper recycling bins.

On completion of each trading day or as required, nominated staff or contracted cleaners will transport all general waste and recyclables to the Waste Room on the upper ground floor and place into the designated bin. Food scraps will be decanted into the food waste processing unit (see APPENDIX A.1). Waste will not be compacted, and recyclables are not baled.

If tenants choose to store waste and recyclables in 120L-240L MGBs back of house, then a bin-lifter would be recommended in the Waste Room to decant into the larger 1100L MGBs.

5.4 WASTE COLLECTION PROCEDURES

It will be the responsibility of the building caretaker to engage a private waste collection contractor to service the commercial/retail bins on a regular basis.

On the day of collection, a rear-load vehicle will enter the site from Terminus Street and park in the loading bay on the upper ground level. The driver will service the bins from the Waste Room. Once servicing is complete, the collection vehicle will reverse and exit the site in a forward direction onto Terminus Street (see APPENDIX A.2).

Quantities, sizes, and servicing of bins may be modified according to actual waste generation rates by the tenants.

5.5 OTHER WASTE MANAGEMENT CONSIDERATIONS

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

5.5.1 KITCHEN, OFFICE TEA ROOMS AND FOOD PREPARATION AREAS

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

5.5.2 BATHROOMS

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

5.5.3 PRINTING & PHOTOCOPYING ROOMS

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

5.5.4 FOOD WASTE

During daily operations staff will be responsible for the collection of food waste back of house. At the end of the day, nominated staff or cleaners will bring the food waste bins to the central food waste area for collection. The building management will be responsible for organising a food waste collection service through a private contractor.

5.5.5 BULKY WASTE

Commercial and retail tenants are responsible for the storage of bulky items back of house. Tenants can liaise with the building manager to engage a private contractor for the removal of unwanted bulky items. It is recommended that

5.5.6 LIQUID WASTE

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

5.5.7 PROBLEM WASTE

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

Problem waste streams include:

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

6.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 3. Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata or Management	• Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organising internal waste audits/visual assessments on a regular basis; and • Managing any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Coordinating general waste and recycling collections; • Cleaning and transporting bins as required; • Organising replacement or maintenance requirements for bins; • Organising, maintaining and cleaning the waste holding area; • Organising bulky goods collection when required • Investigating and ensuring prompt clean-up of illegally dumped waste materials. • Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) • Abiding by all relevant WH&S legislation, regulations, and guidelines; • Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assessing any manual handling risks and preparing a manual handling control plan for waste and bin transfers; • Ensuring site safety for children, visitors, staff and contractors; and • Ensuring effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Retail/ Commercial Tenants	• Managing the back of house storage of generated waste and recycling during daily operation. • Correctly separating waste and recycling streams. Including bagging general waste and ensuring recyclables are not bagged. • Flattening cardboard within the recycling bin. • If required, making arrangements for storing used and unused cooking oil in a bunded storage area, • Organizing grease interceptor trap servicing, • Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and • Ensuring the suitable storage for chemicals, pesticides and cleaning products waste back of house.
Waste Collection Contractor	• Provide a reliable and appropriate waste collection service; • Provide feedback to building managers regarding 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.

7.0 SOURCE SEPARATION

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

Table 4: 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 designated waste bins.
Paper and Cardboard Recyclables	Cardboard and paper products are recyclable materials that can be re-processed into new products.	Resource Recovery Centre	Cardboard/paper should be flattened before placing in the designated cardboard/paper bin.
Commingled Recyclables	A mixture of items that are commonly recycled usually segregated through a MRF. Typically include food and beverage containers (e.g. aluminium, glass, steel, hard plastics, cartons).	Materials Recovery Facility (MRF)	Commingled recyclables must not be bagged, and instead should be placed loosely in designated recycling bins.
Secure Documents	Secure documents are printed paper materials that contain sensitive information.	Recycling Facility	Secure documents are placed in allocated secure document bins. Private contractor removes bins from site.
Green Waste	Green waste consists of unwanted organic materials that are easily biodegradable and/or compostable (e.g. lawn clippings, branches)	Resource Recovery Centre	Green waste will be collected in private contractor bins and removed from site.
Food Waste	Food waste consists of unwanted or uneaten kitchen scraps that are easily compostable/biodegradable (e.g. vegetable peels, fruit rinds, coffee grounds).	Composting facility or Landfill	Food waste will be collected or processed on-site will be removed by a private collection contractor.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Commercial tenants liaise with building manager to arrange for recycling of their own e-waste.
Bulky Items	Items that are to too large to place into general rubbish collection. This includes disused and/or broken furniture, mattresses, white goods, etc.	Resource Recovery Centre or Landfill	Commercial tenants will liaise with building manager for the removal of bulky items.
Sanitary Waste	Feminine hygiene waste generated from female bathrooms.	Incineration or Landfill	Sanitary bins are serviced by sanitary waste contractor.
Other	Other recyclable items that require special recovery may include ink cartridges, batteries, chemical waste, fluorescent tubes, etc.	Resource Recovery Facility	Building manager arranges collection by appropriate recycling services when required.

8.0 EDUCATION

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

Education and communication must be provided consistently on a regular basis to encourage behaviour change and account for transient building personnel such as new tenants or cleaning staff. Information should include:

- Descriptions of items accepted in the recycling and general waste streams (refer to Council guidance);
- How to dispose of bulky goods and any other items that are not general waste or recycling (refer to Council guidance) and;
- Tenants' obligations to health and safety as well as building management.

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 (see APPENDIX C.2). Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in 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

9.0 WASTE ROOMS

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

Table 5. Waste Room Areas

Level	Waste Room Type	Bins/Equipment	Estimated Area Required (m^2)	Actual Area Provided (m^2)
Upper Ground	Waste Room	6 x 1100L MGBs for general waste 8 x 1100L MGBs for paper/cardboard recyclables 4 x 1100L MGB commingled recyclables Food waste processor Bin lifter Single bin compactor (optional)	65	65

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 50%-60% of bin area factored in for manoeuvrability.

All doorways and passageways should be wide enough to easily facilitate the movement of bins and/or bulky waste items (e.g. 1500mm). If a food waste processor is used, there must be a minimum doorway of 1500 to install the unit.

9.1 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in Council's DCP 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.

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

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 AS1668.4.2012 and not cause any inconvenience, noise or odour problem.

USEFUL CONTACTS

LOCAL COUNCIL

Liverpool Customer Service	Ph: 1300 36 2170	E: lcc@liverpool.nsw.gov.au

PRIVATE WASTE COLLECTION PROVIDER

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

BIN MOVING DEVICE SUPPLIERS

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

ORGANIC DIGESTERS AND DEHYDRATORS

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

COOKING OIL CONTAINERS AND DISPOSAL

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

ODOUR CONTROL

Purifying Solutions	Ph: 1300 636 877	E: sales@purifyingsolutions.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

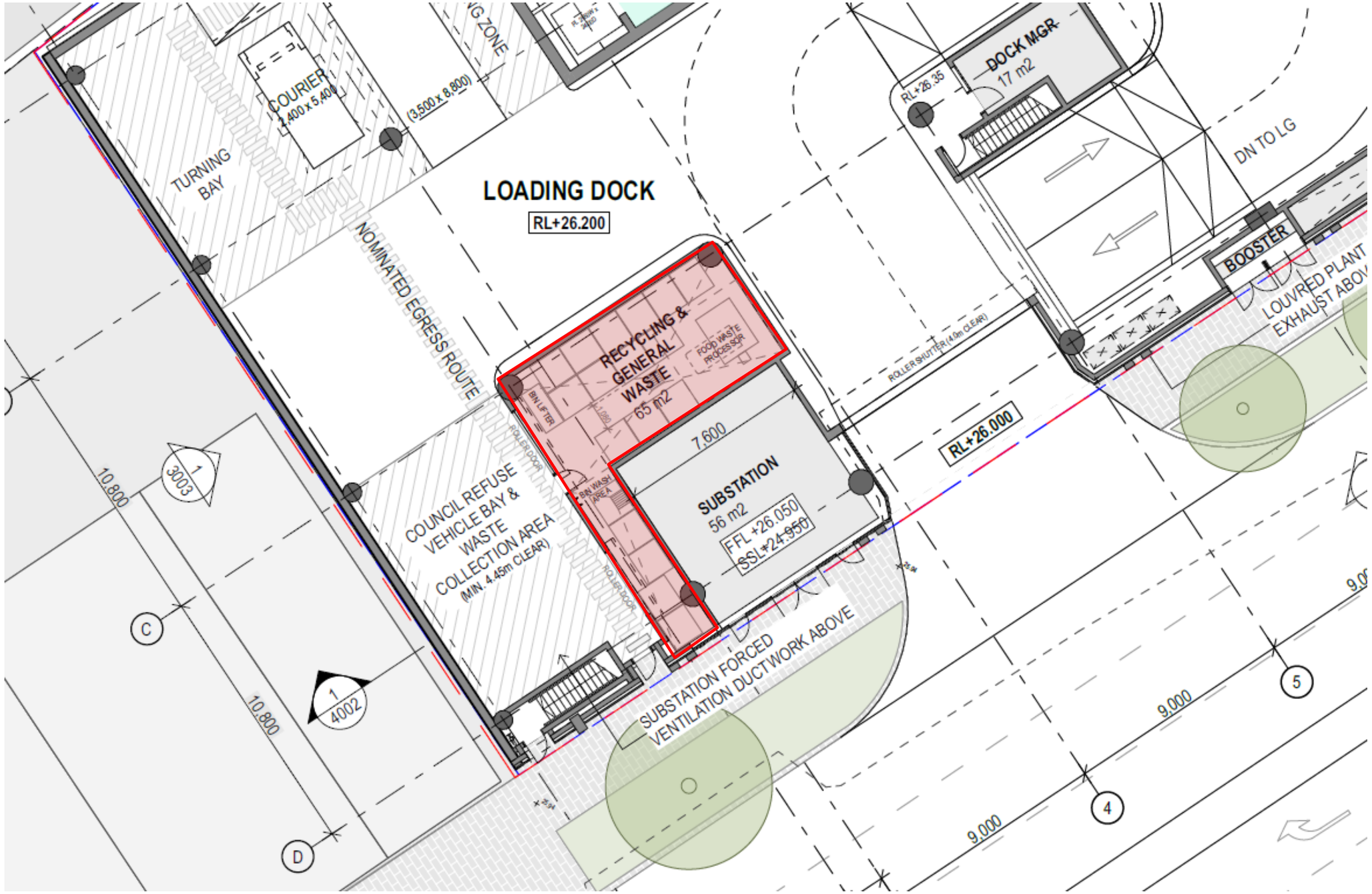
Elephants Foot Recycling Solutions	Ph: 1800 025 073	E: info@elephantsfoot.com.au

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

APPENDIX A: ARCHITECTURAL PLANS

APPENDIX A.1 UPPER GROUND FLOOR PLAN

Drawing No. SD-AR-20UG, Rev. E, 28/8/2020

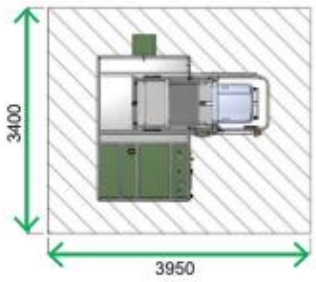


APPENDIX B: EXAMPLE EQUIPMENT

APPENDIX B.1 EXAMPLE FOOD WASTE PROCESSER

Front View Hatch fully opened and bin lifter presented

Side View Hatch fully opened



Plan View of required working area

Dimensions (L, W, H)	2500 x 2705 x 2484	mm
Working Area	3400 x 3950	mm
Machine Weight	2200	kgs
Maximum Drum Capacity	550	kgs
Total Loaded Weight	2750	kgs
Minimum Operating Area Requirement	3400 x 3950	mm
Power Supply	3-Phase 400 V +/- 10% @ 32 amps 5 pin plug – 3 phase plus neutral earth	
IP Rating	54	
Noise Level	<85	dBA
Air Outlet	100mm ID	mm
Comms Requirement	3G SIM Network (optional)	

Machine Specifications

Specifications, appearance and equipment are subject to change without notice by reason of improvement. Hazard prevention measures have been removed from the photos featured in this document.

To ensure safe operation, please consult the operator's manual before use.

This is an example of the WasteMaster400. Refer to supplier's information and specification.

APPENDIX B.2 EXAMPLE BIN LIFTER

120-240 Litre Binlifter

The single bin lifter is designed to safely empty wheelie bins into large dumpsters and compactors. With easy operating push button instructions, the bin lifter is complemented by a safety cage.

Features	120-240 litre bin lifter
Lifting capacity	140 kg
Bin compatibility	120 & 240 litre bins
Operation method	Automatic
Hydraulic	yes
Dimensions	850mm (W) x 1800mm (L)
Safety	Safety cage & control box
Emergency stop	yes
Tipping height	1350mm variable
Clearance	2650mm
Suitability in tipping into	bins , dumpsters and compactors
Power	240 volt, 10amp
Can it be customised?	yes
Weighing & data capture	no

This is an example only. Refer to supplier's information and specification.

APPENDIX B.3 EXAMPLE SINGLE BIN COMPACTOR

ELEPHANTS FOOT recycling solutions

WHEELIE BIN COMPACTOR

FEATURES & BENEFITS
Power supply: 240 Volt standard power point required
No installation required
12 Months warranty - Reliable after sales service
Fully automatic operations
Plug into a standard power point
Complies with Australian safety standard
Compaction ratio 2:1 upto 5:1

MACHINE TYPE	120 - 240LITRE	660LITRE
BIN CAPACITY	240ltrs	660ltrs
MACHINE SIZE	W900 x D850 x H2400mm	W1500 x D1100 x H2850mm
DAILY CAPACITY	Up to 20 bins	Up to 20 bins
POWER	240 volts	240 volts

This is an example only. Refer to supplier's information and specification.

APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX C.1 TYPICAL BIN SPECIFICATIONS

Mobile bins

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

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

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

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

Wheelie bin

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

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

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

Dome or flat lid container

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

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

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

APPENDIX C.2 SIGNAGE FOR WASTE & 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

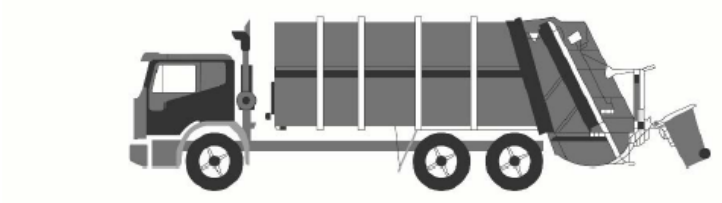
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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

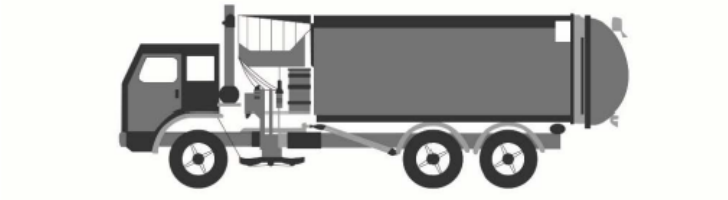
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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 D: SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX D.1. SAMPLE FOOD WASTE CONTAINER

Apartment Style Compost bin – available from hardware stores

Suitable for:

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

APPENDIX D.2 TYPICAL COOKING OIL CONTAINERS

Drums 205L

Pour in Bulk Tank

View Brochure

Oil Kaddy System

View Brochure

Eco Systems

Direct-Connect to Fryer

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

APPENDIX D.3 TYPICAL BOH BINS FOR RETAIL/COMMERCIAL USE

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