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469-483 Balmain Road, Lilyfield NSW 2040

Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

30/11/2023
Report No. 4590
Revision G

Client

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REVISION REFERENCE

Revision	Date	Prepared by	Description
A	14/02/2023	D Trinder	Draft
B	07/03/2023	D Trinder	Amendment
C	31/03/2023	D Trinder	Amendment
D	26/04/2023	D Trinder	Final
E	11/05/2023	D Trinder	Updated Plans
F	18/05/2023	D Trinder	Amendment
G	30/11/2023	D Trinder	Addendum

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
Bin-carting Route	Travel route for transferring bins from the storage area to a nominated collection point
Collection Area/Point	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
Compactor	A machine for compressing waste into disposable or reusable containers
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
DA	Development Application
DCP	Development Control Plan
EPA	Environmental Protection Authority
HRV	Heavy Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
L	Litre(s)
LEP	Local Environmental Plans guide planning decisions for local government areas
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that must be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
Mixed Use Development	A development comprised of two or more different uses
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
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

1.0 ACKNOWLEDGEMENT OF COUNTRY

We acknowledge Australia's First Nations People as the Traditional Custodians of this land. We pay respect to ancestors and Elders, past and present. We honour Aboriginal and Torres Strait Islander people and their connection to land, waters and seas, and their vital contribution to the vibrant nation that we share, Australia.

2.0 INTRODUCTION

Waste management strategies and audits are required for new developments to support the design and sustainable performance of the building. It is EFC's belief that a successful waste management strategy contains three key objectives:

i. ***Promote responsible source separation*** to reduce the amount of waste that goes to landfill by implementing convenient and efficient waste management systems.

ii. ***Ensure adequate waste provisions and robust procedures*** that will cater for potential changes during the operational phase of the development.

iii. ***Comply*** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this operational waste management plan (OWMP) identifies the different waste streams likely to be generated during the operational phase of the development, as well as how the waste will be handled and disposed, details of bin sizes/quantities and waste rooms, descriptions of the proposed waste management equipment used, and information on waste collection points and frequencies.

It is essential that this OWMP is integrated into the overall management of the building and is clearly communicated to all relevant stakeholders.

2.1 SCOPE OF REPORT

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

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. A construction and demolition WMP has been provided separately by EFC.

2.2 REPORT CONDITIONS

The purpose of this report is to document an OWMP as part of a development application, which is supplied by EFC with the following limitations:

- Drawings, estimates, and information contained in this OWMP have been prepared by analysing the information, plans and documents supplied by the client and third parties including Council and other government agencies. The assumptions based on the information contained in the OWMP is outside the control of EFC,
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building management's approach to educating residents and tenants regarding waste management operations and responsibilities,
- The building manager will adjust waste management operations as required based on actual waste volumes (e.g., if waste is greater than estimated) and increase the number of bins and collections accordingly,
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures,
- The report has been prepared with all due care; however, no assurance is made that the OWMP reflects the actual outcome of the proposed waste facilities, services, and operations, and EFC will not be liable for plans or results that are not suitable for purpose due to incorrect or unsuitable information or otherwise,
- EFC offer no warranty or representation of accuracy or reliability of the OWMP unless specifically stated,
- Any manual handling equipment recommended in this OWMP should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply,
- Design of waste management chute equipment and systems must be approved by the supplier,
- EFC cannot be held accountable for late changes to the design after the OWMP has been submitted to Council,
- EFC will provide specifications and recommendations on bin access and travel paths within the OWMP; however it is the architect's responsibility to ensure the architectural drawings meet these provisions,
- EFC are not required to provide information on collection vehicle swept paths, head heights, internal manoeuvring or loading requirements. It is assumed this information will be provided by a traffic consultant,
- Council is subject to changing waste and recycling policies and requirements at their own discretion.

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

3.0 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:

- Leichhardt Development Control Plan 2013
- Leichhardt Draft Site Specific DCP for Balmain Road Lilyfield 2022
- Leichhardt Local Environmental Plan 2013

The primary purpose of a development control plan (DCP) is to guide development according to the aims of the corresponding local environmental plan (LEP). The DCP must be read in conjunction with the provisions of the relevant LEP.

Information provided in this OWMP comes from a wide range of waste management guidance at the local, state, and federal levels. The primary sources of guidance include:

- Leichhardt Draft Site Specific DCP for Balmain Road Lilyfield 2022
- 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

3.1 COUNCIL OBJECTIVES

Inner West Council considers waste management to be highly important for the protection and enhancement of both the natural and built environments. Council's objectives specific to this site, per the Site-Specific Development Control Plan May 2022, aim to:

- Provide adequate on-site provision for the temporary storage and disposal of waste, food waste, and recyclable materials.
- Ensure opportunities for source separation and recovery of recyclables are maximised and incorporated into the development.
- Minimise risk to health and safety associated with handling and disposal of waste and recyclable material and the potential for adverse environmental impacts associated with waste management.
- Minimise the overall impacts of waste and recycling management.
- Reduce waste and maximise recycling.

4.0 DEVELOPMENT OVERVIEW

4.1 CONTEXT

Elephants Foot Consulting (EFC) has been engaged to prepare the following waste management plan for the operational management of waste generated by the mixed use development located at 469-483 Balmain Road, Lilyfield NSW 2040. It is to accompany a Concept Proposal and Detailed Development Application (DA).

The DA comprises the following elements:

- Concept Proposal (pursuant to Section 4.23 of the *Environmental Planning and Assessment Act 1979* and in satisfaction of Clause 6.25(4) of the *Inner West Local Environmental Plan 2022 [IWLEP 2022])* including:
    - Land uses consistent with those permitted under the IWLEP 2022, including for 'residential flat buildings' and 'light industries'.
    - Maximum building envelope
    - Design principles and controls that address each of the requirements set out under Clause 6.25(4) or the IWLEP 2022.
- Detailed Development Application comprising:
    - Partial demolition of existing buildings and structure within the site
    - Site preparation works, including termination or relocation of site services and infrastructure, remediation, tree removal and the erection of site protection fencing.
    - Construction and use of a new development comprising residential apartment buildings and light industries, including adaptive reuse of existing buildings and erection of new buildings, for:
        - 6,000m^2 of light industrial uses, at least 1,200m^2 of which would be used for light industries associated with creative purposes.
        - 89 residential apartments, of which 5 would be used for the purpose of affordable housing.
    - Basement car parking for 158 vehicles for staff and residents, and a new loading dock for employment uses.
    - Public domain, communal open space, landscaping and tree planting.
    - Publicly accessible through-site links, and footpath widening to Balmain Road and Alberto Street.

The employment uses nominated within this report are indicative and for assessment purposes only. The uses are permissible within the site's E4 General Industrial Zone and under Clause 6.25 in Inner West Local Environmental Plan 2022, including at least 1,200m2 of which is being set aside for creative purposes. Consent under this application is only sought for 'cold-shell' approval of each tenancy, with separate applications being pursued in the future for specific uses and fit-outs (refer to the Statement of Environmental Effects for further details).

4.2 PROJECT DESCRIPTION

The proposed development falls under the LGA of Inner West Council, and consists of:

- Partial demolition of existing buildings and structures within the site
- Site preparation works, including termination or relocation of site services and infrastructure, remediation, tree removal and the erection of site protection fencing
- Construction and use of a new development comprising residential flat buildings and light industries, including adaptive reuse of existing buildings and erection of new buildings, for:
    - Six (6) buildings of various levels, 6 storeys being the tallest
        - 90 residential units in total
        - 19 light industrial/creative tenancies with a total GFA of 6,000 m^2
- Basement car parking for staff and residents, and a new loading dock
- Public domain, communal open space, landscaping and tree planting
- Publicly accessible through-site links, and footpath widening to Balmain Road and Alberto Street

Fitout and use of the employment tenancies and business identification signage would be the subject of separate future DAs where required.

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

4.3 SITE LOCATION

The site is legally described as Lot 2 DP101583 and is located at 469-483 Balmain Road, Lilyfield NSW 2040, as shown in Figure.1 (boundaries are indicative only). The site is bound by Balmain Road to the north west, Cecily Street to the north east, Alberto Street to the south west and Fred Street to the south east (no through road at both ends). It is surrounded by a mixture of residential development interspersed with industrial and light industrial buildings, particularly along Fred Street (north of Cecily Street), Fred Lane and Balmain Road. Vehicular access to the site is via Alberto Street.

Figure 1: Site Location

Source: Google Maps

5.0 RESIDENTIAL WASTE MANAGEMENT

The following section outlines best practice waste management for the residential component of the development, including waste generation estimates and waste disposal and collection procedures.

5.1 WASTE GENERATION ESTIMATES

The NSW EPA's *Better practice guide for resource recovery in residential developments 2019* has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic waste and recycling rates. Actual volumes of waste and recycling generated in operation differ according to the residents' actual waste management practices.

The following table shows the estimated volume (L) of general waste and recyclables generated by the residential component of the development.

Table 1: Estimated Waste and Recycling Volumes – Building A

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
1 Bed	11	80	880	80	880
2 Bed	12	100	1200	100	1200
3 Bed	3	120	360	120	360
TOTAL	**26**		**2440**		**2440**
Bins and Collections		General Waste Bin Size (L)	660	Recycling Bin Size (L)	240
		General Waste Bins per Week	3.7	Recycling Bins per Week	10.2
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	4	Total Recycling Bins Required for Collection	11

Table 2: Estimated Waste and Recycling Volumes – Building B

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
1 Bed	10	80	800	80	800
2 Bed	12	100	1200	100	1200
3 Bed	4	120	480	120	480
TOTAL	**26**		**2480**		**2480**
Bins and Collections		General Waste Bin Size (L)	660	Recycling Bin Size (L)	240
		General Waste Bins per Week	3.8	Recycling Bins per Week	10.3
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	4	Total Recycling Bins Required for Collection	11

Table 3: Estimated Waste and Recycling Volumes – Building C

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
1 Bed	2	80	160	80	160
2 Bed	15	100	1500	100	1500
3 Bed	3	120	360	120	360
TOTAL	**20**		**2020**		**2020**
Bins and Collections		General Waste Bin Size (L)	660	Recycling Bin Size (L)	240
		General Waste Bins per Week	3.1	Recycling Bins per Week	8.4
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	4	Total Recycling Bins Required for Collection	9

Table 4: Estimated Waste and Recycling Volumes – Building D

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
2 Bed	1	100	100	100	100
3 Bed	5	120	600	120	600
TOTAL	**1**		**700**		**700**
Bins and Collections		General Waste Bin Size (L)	240	Recycling Bin Size (L)	240
		General Waste Bins per Week	2.9	Recycling Bins per Week	2.9
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	3	Total Recycling Bins Required for Collection	3

Table 5: Estimated Waste and Recycling Volumes – Building E

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
3 Bed	6	120	720	120	720
TOTAL	**6**		**720**		**720**
Bins and Collections		General Waste Bin Size (L)	240	Recycling Bin Size (L)	240
		General Waste Bins per Week	3.0	Recycling Bins per Week	3.0
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	3	Total Recycling Bins Required for Collection	3

Table 6: Estimated Waste and Recycling Volumes – Building F

# Beds	# Units	General Waste Generation Rate (L/unit/week)	Generated General Waste (L/week)	Recycling Generation Rate (L/unit/week)	Generated Recycling (L/week)
3 Bed	6	120	720	120	720
TOTAL	**6**		**720**		**720**
Bins and Collections		General Waste Bin Size (L)	240	Recycling Bin Size (L)	240
		General Waste Bins per Week	3.0	Recycling Bins per Week	3.0
		General Waste Collections per Week	1	Recycling Collections per Week	1
		Total General Waste Bins Required for Collection	3	Total Recycling Bins Required for Collection	3

5.2 BIN SUMMARY

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

General Waste: 12 x 660L MGBs collected **1 x weekly**

Recycling: 49 x 240L MGBs collected **1 x weekly**

During operation, it is the responsibility of the building manager to maintain the number of bins required for the residential component. Waste and recycling volumes may change according to residents' attitudes to waste disposal and recycling, building occupancy levels or development's management. Any requirements for adjusting the capacity of the waste facilities can be achieved by changing the number of bins, the bin sizes or collection frequencies. Building management will be required to negotiate any changes to bins or collections with the collection service provider.

5.3 WASTE DISPOSAL PROCEDURES

5.3.1 BUILDINGS A, B, C

Residents will be provided with a communal waste room on Basement Level 2 (see APPENDIX A.1) containing 660L MGBs for waste and 240L MGBs for recycling. Residents will be responsible for walking their waste and recycling to the communal waste room and placing their waste and recycling into the correct bin.

5.3.2 BUILDINGS D, E, F

Residents will be provided with communal waste rooms on Basement Level 2 containing 240L MGBs for waste and recycling. The residents will be responsible for walking their waste and recycling to the communal waste rooms and placing their waste and recycling into the correct bins.

Refer to Council guidance for the types of materials accepted in the general waste and recycling streams.

5.3.3 COMMON AREAS

Residential common areas such as lobbies, circulation areas and communal open spaces will be supplied with suitably branded waste and recycling bins where considered appropriate. General waste and recycling receptacles should be placed in convenient locations. The building manager will monitor the fullness of these bins and empty into the main collection bins as required.

5.4 WASTE COLLECTION PROCEDURES

Council will be engaged to collect the residential waste and recycling in accordance with Council's collection schedule. This report assumes waste and recycling will be collected once weekly.

On the nominated waste collection day, the building caretaker will be responsible for transporting the 660L and 240L MGBs to the residential waste room off the loading bay located on Basement Level 1. Transportation will be assisted by the goods lift provided (see APPENDIX A.2).

On the nominated recycling collection day, the building caretaker will be responsible for transporting the 240L MGBs to the loading bay located on Basement Level 1. Transportation will be assisted by the goods lift provided (see APPENDIX A.2).

To service the bins, a Council collection vehicle will enter the site from Alberto Street and park in the loading bay on Basement Level 1 (see APPENDIX A.2). The building caretaker will provide the driver with access to the waste collection room. Once the bins are serviced, the collection vehicle will exit the site onto Alberto Street in a forward direction.

All access and clearances to the waste collection room must be able to accommodate a 12.5m long HRV per AS2890.2-2002.

It is the responsibility of the caretaker to ensure that the loading area is clear of any vehicles or obstructions prior to waste collection. When waste collection is complete, the building caretaker will return the bins to resume operational use.

5.5 BULKY WASTE PROCEDURES

An area will be made available for the storage of discarded residential bulky items (e.g., whitegoods, furniture, etc.). This room should be located within close proximity of the garbage and recycling bin collection room and must have a minimum doorway width of 1.5m to allow for easy movement of large waste items in and out of the room. In line with Leichhardt's DCP 2013, a minimum of $8m^2$ is to be provided for every 50 residences. Accordingly, $16m^2$ should be provided for this development.

Residents will need to liaise with building management regarding the transportation of bulky items and the availability of the bulky waste room on Basement Level 1 (see APPENDIX A.2). It is the caretaker's responsibility to arrange collection dates with Council and then coordinate with the residents.

On the day of bulky waste collection, a Council collection vehicle will enter the site from Alberto Street and park in the loading bay on Basement Level 1. The building caretaker will provide the driver with access to the bulky waste room. Once bulky items have been loaded, the collection vehicle will exit the site onto Alberto Street in a forward direction. Refer to Council's website for acceptable items and other information regarding bulky waste collection.

6.0 LIGHT INDUSTRIAL WASTE MANAGEMENT

The following section outlines best practice waste management for the light industrial components of the development, including waste generation estimates and waste disposal and collection procedures.

6.1 WASTE GENERATION ESTIMATES

Leichhardt Development Control Plan 2013 has been referenced to calculate the total number of bins required for the anticipated tenants. Calculations are based on generic figures, and waste generation rates may differ according to the final tenancy type and tenants' actual waste management practice.

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

The key activator tenancies (Tenancy Number: CB001, CB003, SM001) surrounding the Courtyard on Ground Level have been assumed as takeaway food and drink premises to consider the waste generation of future possible tenancies and ensure enough space is provided for the waste room. It is assumed that these tenancies will share waste bins, the waste storage room, and the waste collection service.

The estimates in Table 7 are based on a seven-day operating week for takeaway food & drink and a five-day operating week for light industry (showrooms).

6.2 BIN SUMMARY

Based on the estimated waste generated by the light industrial tenancies, the recommended bin quantities and collection frequencies are as follows:

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

Cardboard/Paper Recyclables: 1 x 1100L MGBs collected **3 x weekly**

Commingled Recyclables: 1 x 1100L MGBs collected **3 x weekly**

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.

Table 7: Estimated Waste and Recycling Volumes – Light Industrial

Level	Tenancy	Generation Rate Type	NLA (m^2)	General Waste Generation Rates (L/100m2/day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m^2/day)	Generated Recycling (L/week)
Basement 1	Light Industry	Showroom	536	40	1500.8	10	375.2
Ground	Light Industry	Showroom	299	40	837.2	10	209.3
	Light Industry	Showroom	250	40	700	10	175
	Light Industry	Showroom	300	40	840	10	210
	Artisan food/drink	Takeaway food shop	141	80	789.6	80	789.6
	Light Industry	Showroom	271	40	758.8	10	189.7
	Artisan food/drink	Takeaway food shop	141	80	789.6	80	789.6
	Light Industry	Showroom	343	40	960.4	10	240.1
	Light Industry	Showroom	263	40	736.4	10	184.1
	Artisan food/drink	Takeaway food shop	274	80	1534.4	80	1534.4
Level 1	Light Industry	Showroom	325	40	650	10	162.5
	Light Industry	Showroom	308	40	616	10	154
	Light Industry	Showroom	274	40	548	10	137
	Light Industry	Showroom	130	40	364	10	91
	Light Industry	Showroom	218	40	610.4	10	152.6
	Light Industry	Showroom	298	40	834.4	10	208.6
	Light Industry	Showroom	230	40	644	10	161
	Light Industry	Showroom	205	40	574	10	143.5
	Light Industry	Showroom	282	40	789.6	10	197.4
		TOTAL	**5088**		**15077.6**		**6104.6**
Equipment and Collections			General Waste Bin Size (L)		1100	Recycling Bin Size (L)	1100
			General Waste Bins Per Week		14	Recycling Bins Per Week	6
			General Waste Collections per Week		3	Recycling Collections per Week	3
			Total General Waste Bins Required		5	Total Recycling Bins Required	2

6.3 WASTE DISPOSAL PROCEDURES

On completion of each trading day or as required, nominated staff or contracted cleaners will utilise the lifts to transport all general waste and recyclables to the waste collection room and place into the appropriate collection bins (see APPENDIX A.1). Waste will be compacted 3:1, and paper/cardboard recyclables are baled.

6.4 WASTE COLLECTION PROCEDURES

A private waste collection contractor will be engaged to service the light industrial waste and recycling bins per an agreed schedule. This report assumes waste is collected once weekly and recycling is collected three times weekly.

On the day of service, a private waste collection vehicle will enter the site from Alberto Street and park in the loading bay on Basement Level 1 (see APPENDIX A.2). The building caretaker will provide the driver with access to the light industrial waste room. Once the bins are serviced, the collection vehicle will exit the site onto Alberto Street in a forward direction.

Please note that the collection of light industrial bins should occur on separate days from the collection of residential bins to ensure proper segregation of waste streams.

6.5 OTHER WASTE MANAGEMENT CONSIDERATIONS

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

6.5.1 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.

6.5.2 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.

6.5.3 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.

6.5.4 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 providing either an on-site food waste processing system or food waste bins and collection service through a private contractor.

6.5.5 RE-USEABLE COMMERCIAL ITEMS

Space will be provided back of house for the storage of re-usable commercial items such as crates, pallets, kegs, e-waste, fluorescent tubes, and strip out waste. The building manager will be responsible for ensuring that storage of these items in public places is completely avoided. A minimum of $4m^2$ is to be provided for every $500m^2$ of non-residential floor space, meaning a minimum of $42m^2$ should be provided for this development.

6.5.6 LIQUID WASTE

A room or caged area will be made available for the storage of discarded liquid waste such as commercial cleaning products, chemicals, paints, solvents, motor and cooking oils.

6.5.7 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.

6.5.8 PROBLEM WASTE

The building manager is responsible for arranging 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. Light industrial 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
- e-waste
- Batteries

6.5.9 PAPER/CARDBOARD WASTE

It is recommended that the development consider a baler for paper and cardboard, particularly if the tenants will be producing a larger volume of bulky cardboard. An option has been provided within this report for the provision of a baler with once weekly collection. The footprint of the baler and bale is roughly equivalent to that of 2 x 1100L MGBs, thus saving on space and operational costs. An example of a typical baler can be located at APPENDIX C.5.

7.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 8: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata, Body Corporate or Management	• Ensure all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; • Organise internal waste audits/visual assessments on a regular basis; • Purchase any on-going waste management equipment or maintenance of equipment once building is operational; and • Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	• Coordinate general waste and recycling collections; • Clean and transport bins as required; • Organise replacement or maintenance requirements for bins; • Organise, maintain, and clean the waste holding area; • Organise bulky goods collection when required; • Investigate and ensure prompt clean-up of illegally dumped waste materials; • Prevent storm water pollution by taking necessary precautions (secure bin rooms, prevent overfilling of bins); • Abide by all relevant WH&S legislation, regulations, and guidelines; • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management; • Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers; • Ensure site safety for residents, children, visitors, staff and contractors; and • Ensure effective signage, communication and education is provided to occupants, tenants, maintenance staff, and cleaning contractors.
Residents	• Dispose of all general waste and recycling in the allocated bins provided; • Ensure adequate separation of general waste and recycling; and • Comply with the provisions of Council and the OWMP.
Light Industrial Tenants	• Manage the back of house storage of generated waste and recycling during daily operation. • Correctly separate waste and recycling streams; bag general waste and ensure recyclables are not bagged. • Flatten cardboard within the recycling bin. • If required, arrange for storing used and unused cooking oil in a bunded area, • Organise grease interceptor trap servicing, • Ensure dry basket arrestors are provided to the floor wastes in the food preparation, and • Ensure 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/residents regarding contamination of recyclables; and • Work with building managers to customise waste systems where possible.
Gardening/ Landscaping Contractor	• Remove all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Developer	• Purchase all equipment required to implement this OWMP prior to the occupation of the building to be provided to the strata or Body Corporate.

8.0 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 9: 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	Recyclable materials that can be re-processed into new products.	Resource Recovery Centre	Cardboard should be flattened before placing in the designated cardboard 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 the designated recycling bins.
Secure Documents	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	Unwanted organic materials that are easily biodegradable and/or compostable (e.g., lawn clippings, branches)	Resource Recovery Centre	Landscape Maintenance Contractors will remove the green waste from site during scheduled maintenance.
Food Waste	Unwanted or uneaten kitchen scraps that are easily compostable/biodegradable (e.g., vegetable peels, fruit rinds, coffee grounds).	Composting facility or Landfill	Food waste can be composted on-site, off-site, or else included in the general waste stream.
Electronic Waste	Discarded e-waste, electronic components, and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Building manager arranges collection for e-waste recycling as needed by residents. Commercial tenants 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	Residents liaise with building manager to store in Bulky Goods Room. Building manager arranges with Council for removal. Commercial tenants are responsible for removal of their 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.

9.0 EDUCATION

Educational materials encouraging correct separation of general waste and recyclables must be provided to each resident and light industrial 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, and to minimise the possibility of contamination in communal waste bins.

Education and communication must be provided regularly to encourage behaviour change and account for transient building personnel such as new residents, tenants, or cleaning staff.

9.1 SIGNAGE

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

Signage should include:

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

The building manager is responsible for waste room signage including safety signage. Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in each bin.

All signage should conform to the relevant Australian Standards.

9.2 LITTER MANAGEMENT PLAN

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

As per the Draft Site Specific DCP 469-483 Balmain Road, Lilyfield May 2022, G12.12, Control C16, a Litter Management Plan for the site's open space and public domain should be prepared and submitted prior to the issue of CC (Construction Certificate) and to the satisfaction of the PCA (Principal Certifying Authority). EFC can supply a Litter Management Plan when required.

10.0 EQUIPMENT SUMMARY

Table 10: Equipment Summary

	Part	Qty	Notes
Equipment	Suitable Bin Moving Equipment	1	(See APPENDIX B.4 and B.5 for Typical Bin Movers)

11.0 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 11: Waste Room Areas

Level	Waste Room Type	MGBs	Estimated Area Required (m^2)	Actual Area Provided (m^2)
B2	Building A Waste Room	4 x 660L MGBs general waste 11 x 240L MGBs recyclables	18	20
B2	Building B Waste Room	4 x 660L MGBs general waste 11 x 240L MGBs recyclables	18	21
B2	Building C Waste Room	4 x 660L MGBs general waste 9 x 240L MGBs recyclables	16	16
B2	Building D Waste Room	3 x 240L MGBs general waste 3 x 240L MGBs recyclables	6	6
B2	Building E Waste Room	3 x 240L MGBs general waste 3 x 240L MGBs recyclables	6	6
B2	Building F Waste Room	3 x 240L MGBs general waste 3 x 240L MGBs recyclables	6	7
B1	Residential Bin Holding Room	12 x 660L MGBs general waste 49 x 240L MGBs recyclables	50	50
B1	Bulky Goods Waste Storage Room		16	17
B1	Light Industry Waste Room	5 x 1100L MGBs general waste 1 x 1100L MGBs paper/cardboard recyclables 1 x 1100L MGBs commingled recyclables	21	24

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

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 70% of bin GFA factored in for manoeuvrability within waste/storage rooms, and 30% for holding/collection rooms.

In addition, all doorways and passageways facilitating the movement of bins and/or bulky waste items must be at least 1200mm wide per Council's DCP. The following table provides further waste room requirements.

Table 12: Waste Room Requirements

Waste Room Type	Waste Room Requirements
Residential Bin Holding Room and/or Bin Collection Area	• Bins must not be stacked in rows that are more than two bins deep
Bulky Goods Waste Storage Room	• May be a dedicated room or screened area within another waste room • Must be near the collection area • Area must also be allocated for the segregation of e-waste, gas bottles, cardboard, etc. • Doorway should be a minimum of 1200mm wide or 1500mm wide for best practice
Light Industry Waste Room	• To ensure staff safety, all bins should be arranged so they can be accessed without moving another bin

12.0 BIN MOVEMENTS

The building caretaker is responsible for the transportation of bins as required from their designated operational locations to the bin holding room as required and returning them once emptied to resume operational use.

Transfer of bins should minimise manual handling where possible, as bins become heavy when full. The building manager must assess manual handling risks and provide any relevant documentation to key personal.

The routes along the bin moving path should;

- Allow for a continuous route that is wholly within the property boundary.
- Be free from obstruction and obstacles such as steps and kerbs.
- Be constructed of solid materials with a non-slip surface
- Be A minimum of 300mm wider than the largest bin used onsite.
- If bins are moved manually, the route must not exceed a grade of 1:14.
- If a bin moving device is used, the route cannot exceed the maximum operating grade of the device. This is typically a grade of 1:4, however this will vary depending on the model of bin moving device acquired for the site.

As the distance of the bin moving paths exceed 10m, a bin moving device is required to aid the movement of full bins. The developer is responsible for suppling all equipment required for moving bins this includes any bin lifters, bin moving devices and waste transfer bins. This equipment must be new and appropriate for the site. The developer should contact a bin-tug, trailer, or tractor consultant to provide equipment recommendations.

Once the site is operational (and the developers is no longer involved) the building proprietors/strata/body corporate will be responsible for maintaining, repairing, and replacing waste management equipment.

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.

13.0 CONSTRUCTION REQUIREMENTS

Waste room construction must comply with the minimum standards as outlined in the *Leichhardt Development Control Plan 2013* and the *Draft DCP Balmain Road,* 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:

- Ensure BCA compliance, including ventilation. Where required, ventilation system must comply with AS1668.4-2012 The use of ventilation and air conditioning in buildings.
- Ensure 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 located as close as practicable to ensure washing bins and/or waste storage areas do not discharge flow into the stormwater drain.
- Provision of smooth, impermeable, 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.
- Access to hot and cold water with a hose cock for cleaning purposes.
- A close-fitting and self-closing door or gate operable from within the room must be fitted, and the entrance should provide a minimum width clearance of 1200mm. At least one access doorway is to have sufficient dimension to allow the transfer of the maximum size containers selected for the development. These clearances will assist with flexible use of the storage area and variance in bin size.
- A council-approved code locking system for the bin storage area to allow access to Council collection staff.

13.1 ADDITIONAL CONSIDERATIONS

- Waste room floor to be sealed with a two-pack epoxy;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- Tap height and light switch height of 1.6m;
- Storm water access preventatives (grate);
- All surfaces (walls, ceiling, and floors) painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above finished floor level;
- Optional automatic odour and pest control system installed
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors must be used;
- Conform to the Building Code of Australia, Australian standards, and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured
- Waste and recycling rooms must have their own exhaust ventilation system either;
    - Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum. Mechanical exhaust systems shall comply with AS1668.4.2012 and not cause any inconvenience, noise, or odour problem; or
    - Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area.

14.0 USEFUL CONTACTS

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

LOCAL COUNCIL

Inner West Customer Service	Ph: (02) 9392 5000	E: council@innerwest.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

EF Neutralizer	Ph: 1300 435 374	E: info@elephantsfoot.com.au

SOURCE SPERATION BINS

Source Separation Systems	Ph: 1300 739 913	E: info@sourceseparationsystems.com.au

MOBILE GARBAGE BINS, BULK BINS AND BIN EQUIPMENT

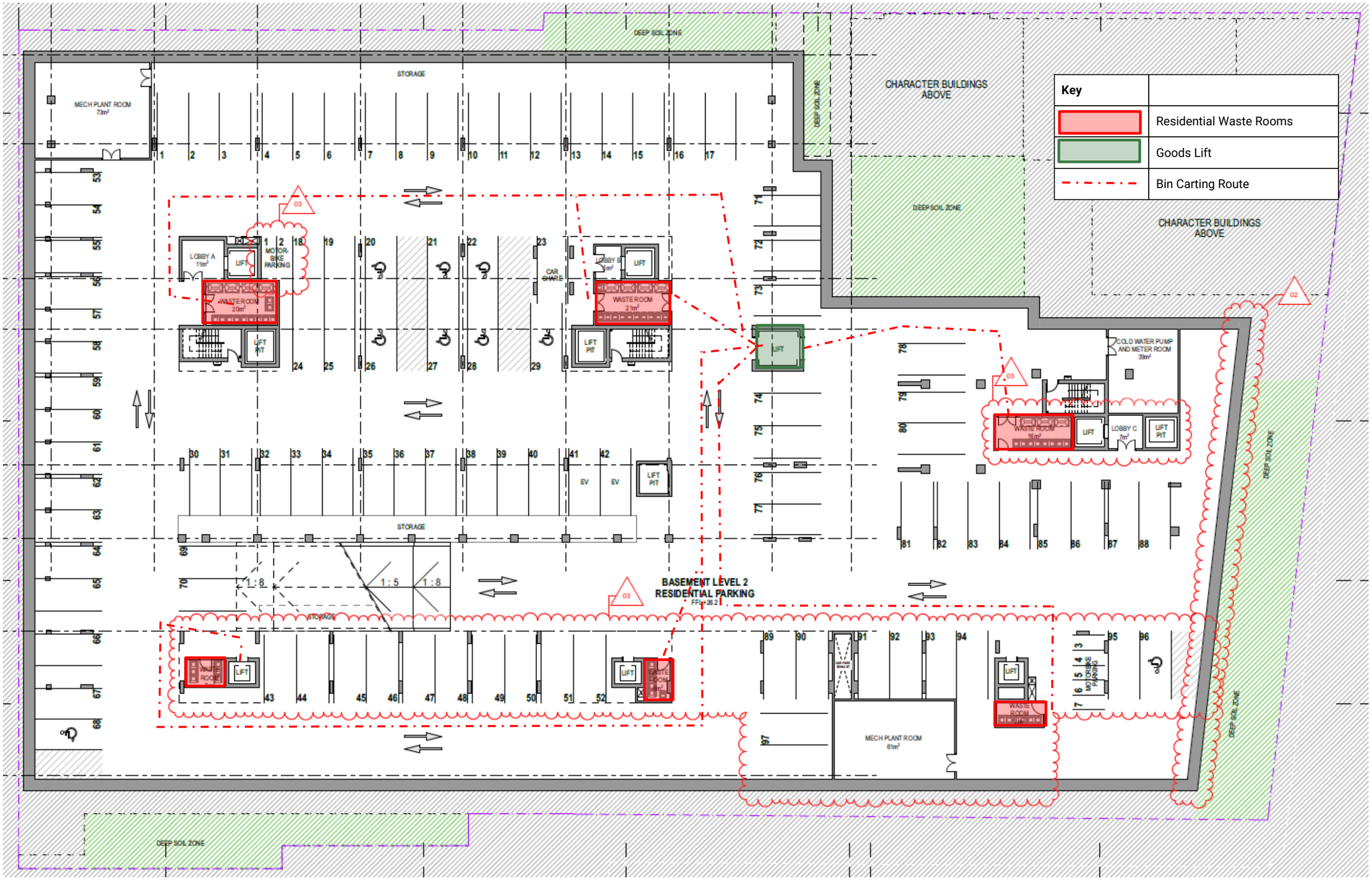
SULO	Ph: 1300 364 388	E: sales@sulo.com.au
OTTO Australia	Ph: 02 9153 6999	

CHUTES, COMPACTORS AND EDIVERTER SYSTEMS

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

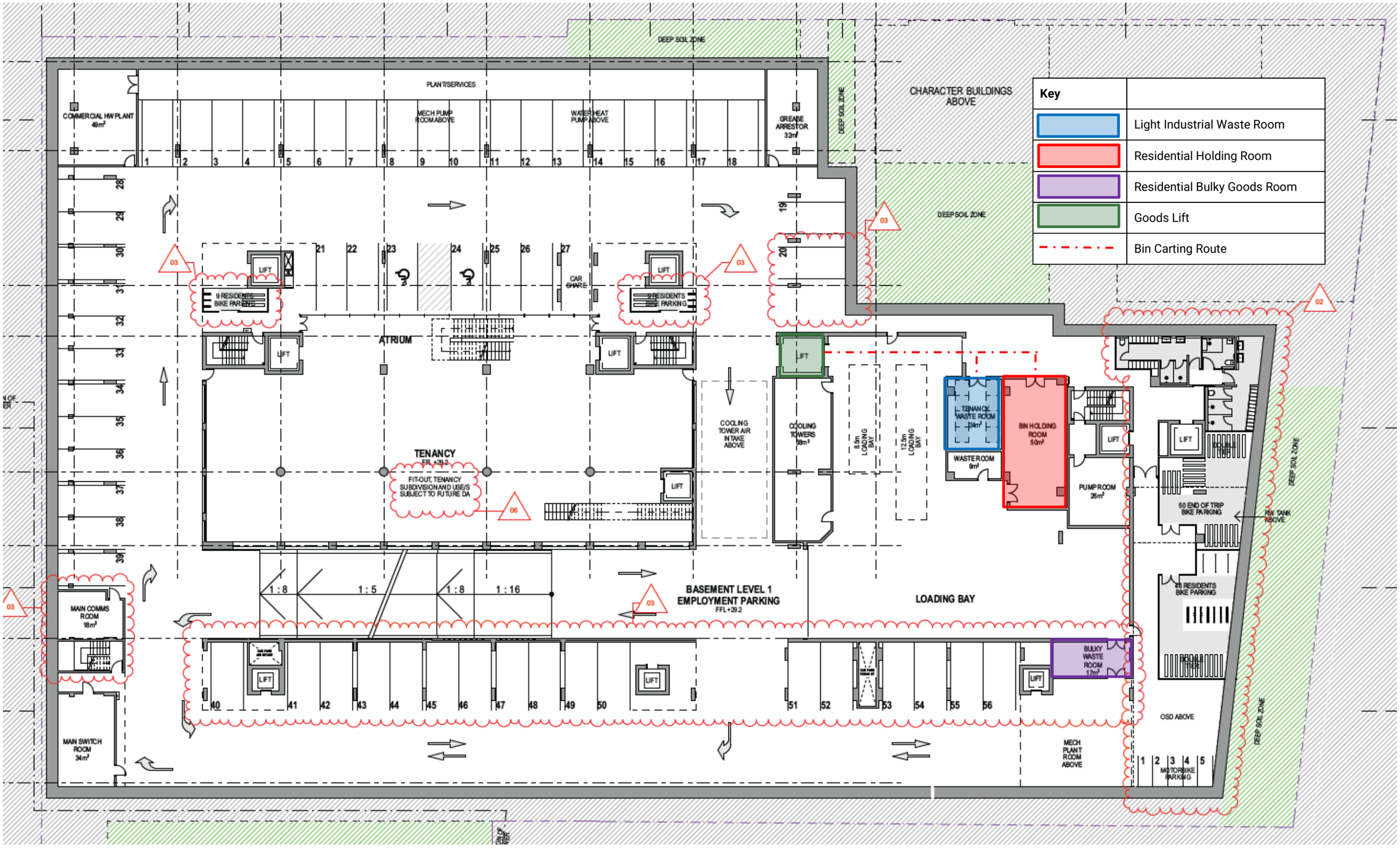
APPENDIX A: ARCHITECTURAL PLANS

APPENDIX: A.1 BASEMENT LEVEL 2 FLOOR PLAN



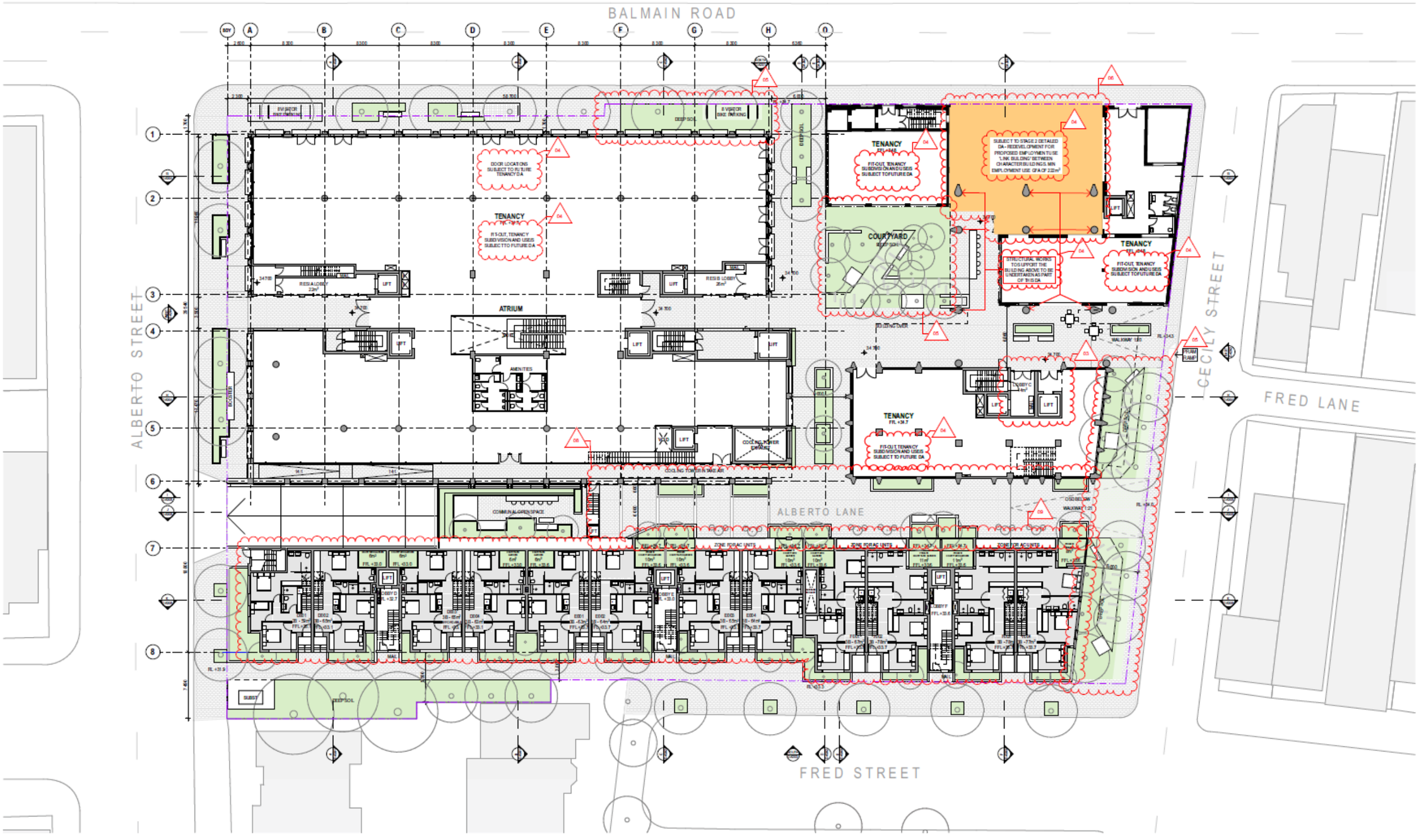
Source: CHROFI, Drawing Number A-DA101[02], Basement 2 Floor Plan, 28.11.2023

APPENDIX: A.2 BASEMENT LEVEL 1 FLOOR PLAN



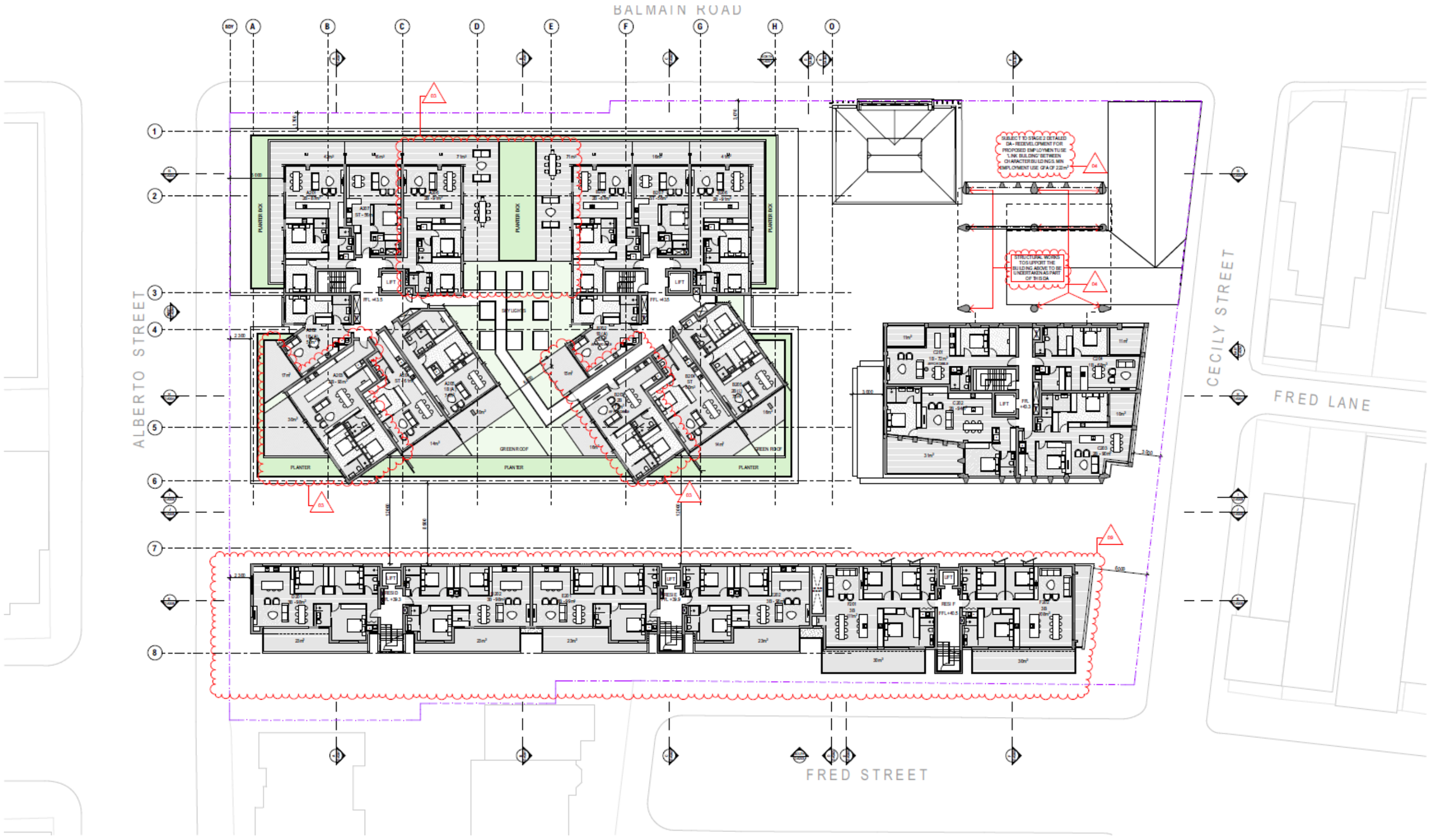
Source: CHROFI, Drawing Number A-DA102[02], Basement 1 Floor Plan, 28.11.2023

APPENDIX: A.3 GROUND LEVEL FLOOR PLAN



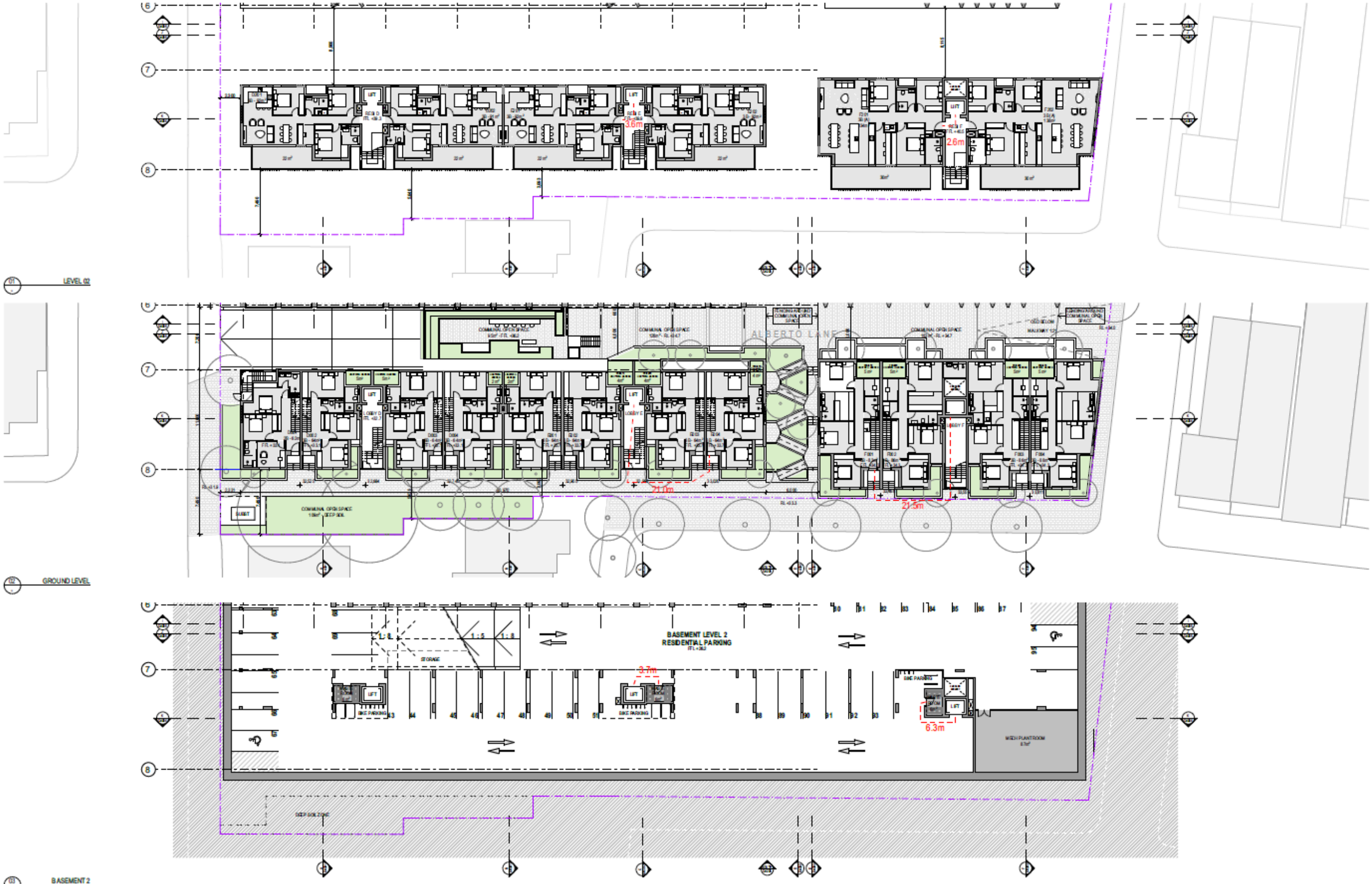
Source: CHROFI, Drawing Number A-DA103[02], Ground Floor Plan, 29.11.2023

APPENDIX: A.4 TYPICAL FLOOR PLAN – LEVEL 2



Source: CHROFI, Drawing Number A-DA105[02], Level 2, 28.11.2023

APPENDIX: A.5 WASTE TRANSFER DISTANCES


LEVEL 02
GROUND LEVEL
BASEMENT 2
LIFT
3.6m
2.6m
21.1m
21.3m
ALBERTO LANE
COMMUNAL OPEN SPACE
BASEMENT LEVEL 2
RESIDENTIAL PARKING
STORAGE
BIKE PARKING
3.7m
6.3m
MECH PLANTROOM
DEEP SOIL ZONE

APPENDIX B: PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX: B.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: B.2 SIGNAGE FOR WASTE AND RECYCLING BINS

Waste signs

Signs and educational materials perform several functions including:

- informing residents why it is important to recover resources and protect the environment
- providing clear instructions on how to use the bins and services provided
- alerting people to any dangers or hazards within the bin storage areas.

All waste, recycling and organic bins should be Australian Standard colours and clearly and correctly labelled, such as by a sticker on the lid and/or the body of the bin.

Communal bin storage areas should be clearly signposted with signs outlining how to correctly separate waste into the bins provided. The local council responsible for waste services may be a good source of signs and posters and can advise on what signs are suitable.

Information on who to contact to find out more about the recycling and/or other resource recovery services in the building should also be displayed in communal areas, such as on a noticeboard.

The Planet Ark website also has resources available free of charge for use by businesses and councils. These signs can be found at businessrecycling.com.au/research/signage.cfm

Figure I1.1: Examples of waste wall posters (EPA supplied)

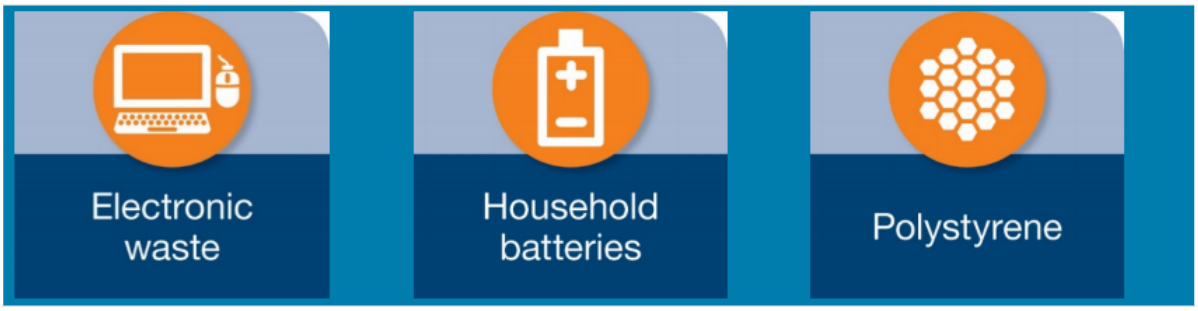
Figure I1.2: Examples of bin lid stickers (EPA supplied)

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

Problem waste signs

The EPA has also produced a range of images and signs that can be used for problem wastes, such as fluoro globes and tubes, household and car batteries, e-waste and smoke detectors. To access these resources, contact the NSW EPA. Some examples are shown below.

Figure I2.1: Problem waste signs



Safety signs

The use of safety signs for waste resource recovery rooms must comply with *AS1319 Safety signs for occupational environments*. Safety signs must be used to regulate and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Suitable signs should be decided for each development as required.

Figure I3.1: Example safety signs

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

APPENDIX: B.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

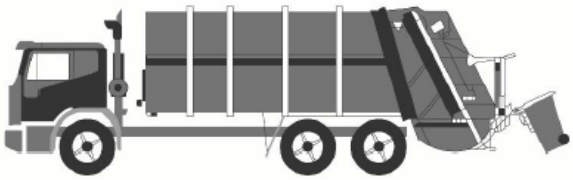
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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

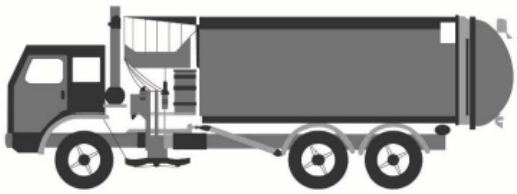
These vehicles are commonly used for domestic waste collections from MUDs and RFBs and sometimes for recycling. They can be used to collect waste stored in mobile bins or bulk bins, particularly where bins are not presented at the kerbside. They are also used for collecting bulky waste.



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: B.4 EXAMPLE BIN MOVER

Battery powered tug with a 1 or 2 tonne tow capacity

Features at a glance
One tonne (Evo 1T) or two tonne (Evo 2T) tow capacity
Auto latching hitch
Three speed motor with emergency stop

Typical applications

The Tug Evo is suitable for airports, factories, warehouses, apartment buildings or large facilities. This powered tug is also suitable for transporting medical carts around hospitals or moving heavy specialist equipment.

Features:

- 1 or 2 tonne tow capacity of inclines up to 6 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 5 km/h max speed
- 2 x 12V 42Ah MK-gel batteries with 24V smart charger.
- Powerful transaxle

Safety Features:

- Intuitive control with standard automatic safety brake, forward and reverse drive.
- Emergency stop button.

Emergency back-off button

Source: http://www.electrodrive.com.au/products/tugs/tug-evo.aspx

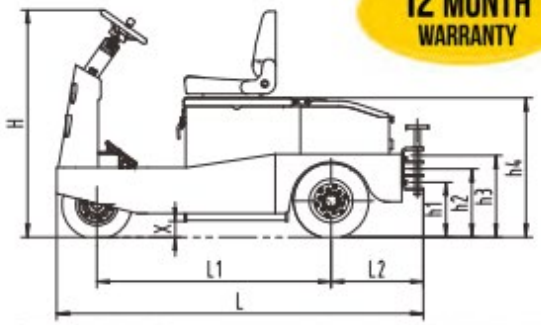
APPENDIX: B.5 EXAMPLE SEATED BIN MOVERS

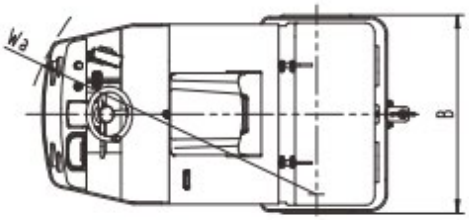
SITECRAFT
MATERIALS HANDLING EQUIPMENT
17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

- Towing capacities from 2000 kg to 6,000 kg
- **Full AC electric system** has a brake-releasing function, making the unit easy and effortless to operate; The maintenance-free motor completely solves the issues of DC motor carbon brush.
- Batteries located in the lowest part of frame ensures excellent stability
- Quick open back service cover for easy maintenance and part replacement
- CANbus technology reduces wiring complexity and increases reliability
- H type axle design provides excellent stability
- New high-range steering design; light steering and easy to maintain.
- New large-screen instrument display provides information clearly and directly to the operator.

12 MONTH WARRANTY





Model		ST-2000AC	ST-3000AC	ST-5000AC	ST-6000AC
Towing Capacity	Kg	2000	3000	5000	6000
Drawbar Centre Height	h1/h2/h3 mm	280/350/420	280/350/420	280/350/420	280/350/420
Motor	Kw / V	3Kw / 36V	3Kw / 36V	5Kw / 48V	5Kw / 48V
Total Size	L x B x H mm	1720 x 968 x 1270	1720 x 968 x 1270	1975 x 1100 x 1270	1975 x 1100 x 1270
Total Weight (With Batteries)	Kg	740	780	1240	1280
Wheel Size	Solid Rubber	15*4-8	15*4-8	15*4-8	15*4-8
Wheelbase	L1 mm	1055	1055	1280	1280
Rear Hanging Distance	L2 mm	382	382	500	500
Seat Height	h4 mm	910	910	910	910
Ground Clearance	X mm	90	90	90	90
Turning Radius	Wa mm	1500	1500	1650	1650
Maximum Speed	Km/h	10	8	14	12
Battery	V/Ah	36/200	36/250	48/360	48/400
Battery Weight	Kg	200	250	610	650
Charger	On-board V/Ah	36/30	36/30	48/50	48/50

SITECRAFT
MATERIALS HANDLING EQUIPMENT

17 Macquarie Drive, Thomastown, VIC 3074
Phone: 1300 363 152 Fax: 1300 722 383
E: sales@sitecraft.com.au ABN: 36 423 328 526

SITECRAFT HEAVY DUTY ELECTRIC TOW TRACTOR

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

Sitecraft ST3000-AC tow tug moving 660 & 1100 litre bins

ST3000-AC tow tug complete with 6 x 250AH heavy duty batteries

Optional steel / aluminium trailers for moving waste bins, linen trolleys, food trolleys, delivery boxes, etc ...

Source: https://www.sitecraft.net.au/materials-handling/tow-tugs-powered-vehicles/electric-tow-vehicles/

APPENDIX C: SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX: C.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms

Worm farms or vermiculture systems transform food and other organic material into vermicast (worm compost) and vermi-liquid (liquid extraction from a worm farm). Seafood, seafood shells, meat or bones, and dairy products are not an acceptable part of the worms' diet and should not be appled to these systems. Worm farms can occupy a small footprint and be located on balconies or in gardens. The worm farm should be placed in a sheltered position to avoid getting too hot in summer.

Worm farms come in different sizes and designs and are sold through hardware stores and often at local government offices. Medium and large-scale worm farms can service many households and commercial acticities. These larger systems need a management process to ensure they are properly maintained.

Onsite composting

Compost tumblers and bins and compost bays transform food and other organic material into useful soil enhancer (compost). They are more versatlie than worm farms as they can generally process a wider range of materials, including woody garden organics and can be placed in the sun. A variety of compost bins and tumblers are available from hardware stores or some local councils. There are also various online resources on how to construct them using recycling materials such as timber pallets. The footprint area requirement for a typical single household compost bin is about 1m x 1m x 1m.

Before setting up an onsite composter or worm-farm system, check with council for any local requirements such as setback distances from property boundaries.

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

APPENDIX: C.2 EXAMPLE APARTMENT STYLE COMPOST BIN

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 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: C.4 TYPICAL SOURCE SEPARATION BINS

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

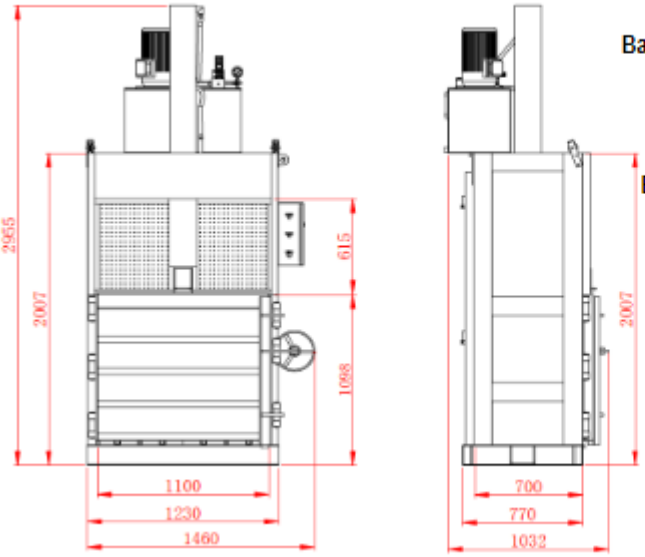
APPENDIX: C.5 TYPICAL PAPER/CARDBOARD BALER

K300

This baler offers maximum volume reduction for minimum cost and floor space. It produces an excellent bale of cardboard up to 250kg. It can bale a range of materials including loose paper, cardboard and plastic film. A great all round vertical baler for medium to large volume operators

Product information

- HxWxD (mm): 2900x1500x1050
- Feed opening LxH (mm):1100x500
- Weight (kg): 1900
- Cycle Time (sec): 30
- Compaction force(T): 30
- Power Supply (V): 415volt , 3 phase
- Motor (kW): 5.5kw
- Chamber Height (mm): 1400



Bale Dimensions:

- HxWxD (mm): 900x700x1100
- Bale Weight (kg): Up to 250 (cardboard)

Benefits:

- Heavy duty baler – easy to transport and install
- Produces up to 250kg bale of cardboard
- Automatic cycle saves labour time
- Safety control box
- User friendly push button controls
- Robustly constructed for long life
- Automatic chain bale ejector for safe and easy ejecting of bales

Source: Elephants Foot Group