



***Royal Institute for Deaf and Blind Children,
Centre of Excellence***

OPERATIONAL WASTE MANAGEMENT PLAN

14/10/2020
Report No. SO716
Revision D

Prepared for

Royal Institute for Deaf and Blind Children

Architect

WMK Architecture

364 Kent St., Sydney NSW
T 02 9299 0401 • W wmkarchitecture.com

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

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

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description
A	21/09/2020	W. Brunson	A. Armstrong	Draft
B	7/10/2020	W. Brunson	A. Armstrong	Amendment
C	9/10/2020	W. Brunson	A. Armstrong	Final
D	9/10/2020	W. Brunson	A. Armstrong	Updated Plans

The information contained in this document produced by Elephants Foot Recycling Solutions (EFRS) is solely for the use of the client identified on the cover sheet for the purpose for which it has been prepared for. EFRS undertakes no duty, nor accepts any responsibility for any third party who may rely upon this document. Reproduction, publication or distribution of this document without written permission from EFRS is strictly prohibited.

TABLE OF CONTENTS

TABLE OF FIGURES.....	iv
LIST OF TABLES.....	iv
GLOSSARY OF ABBREVIATIONS AND TERMS	i
1.0 INTRODUCTION.....	3
1.1 SCOPE OF REPORT	3
1.2 REPORT CONDITIONS.....	4
2.0 LEGISLATION & GUIDANCE	5
2.1 COUNCIL OBJECTIVES.....	6
3.0 DEVELOPMENT OVERVIEW	7
3.1 SITE LOCATION	7
4.0 GREEN STAR.....	8
4.1 CREDIT 8B OPERATIONAL WASTE CRITERIA ASSESSMENT	8
5.0 WASTE MANAGEMENT	10
5.1 WASTE GENERATION ESTIMATES.....	10
5.2 BIN SUMMARY	11
BIN SUMMARY (SCHOOL).....	11
BIN SUMMARY (TOTAL)	11
5.3 WASTE DISPOSAL PROCEDURES	12
OPTION 1	12
OPTION 2	12
5.4 WASTE COLLECTION PROCEDURES	12
5.5 BULKY GOODS & E-WASTE PROCEDURES	13
5.6 OTHER WASTE MANAGEMENT CONSIDERATIONS	14
5.6.1 KITCHEN, OFFICE TEA ROOMS AND FOOD PREPARATION AREAS	14
5.6.2 BATHROOMS.....	14
5.6.3 PRINTING & PHOTOCOPYING ROOMS	14
5.6.4 LIQUID WASTE	14
5.6.5 PROBLEM WASTE.....	14
6.0 STAKEHOLDER ROLES & RESPONSIBILITIES	15
7.0 SOURCE SEPARATION	16
8.0 EDUCATION	17
8.1 WASTE MANAGEMENT PRINCIPLES.....	18
8.2 SIGNAGE	19
8.3 POLLUTION PREVENTION	19
9.0 WASTE ROOMS	20
9.1 CONSTRUCTION REQUIREMENTS.....	21
ADDITIONAL CONSIDERATIONS	21

VENTILATION.....	21
10.0 CONCLUSION	22
USEFUL CONTACTS	23
APPENDIX A: ARCHITECTURAL PLANS	24
APPENDIX A.1 BASEMENT FLOOR PLAN, CONSULTING BLDG	25
APPENDIX A.2 UPPERGROUND FLOOR PLAN; SCHOOL	26
APPENDIX A.3 SITE PLAN	27
APPENDIX B: EXAMPLE EQUIPMENT	28
APPENDIX B.1 EXAMPLE BIN LIFTER	29
APPENDIX C: PRIMARY WASTE MANAGEMENT PROVISIONS	30
APPENDIX C.1 TYPICAL BIN SPECIFICATIONS	31
APPENDIX C.2 SIGNAGE FOR WASTE & RECYCLING BINS	32
APPENDIX C.3 TYPICAL COLLECTION VEHICLE INFORMATION	34
APPENDIX D: SECONDARY WASTE MANAGEMENT PROVISIONS	36
APPENDIX D.1. EXAMPLE EWASTE CONTAINERS.....	37
APPENDIX D.2 TYPICAL BIN STATION.....	38
APPENDIX D.3. SAMPLE FOOD WASTE CONTAINER.....	39

TABLE OF FIGURES

Figure 1. Site Location	7
Figure 2. The Waste Hierarchy	18

LIST OF TABLES

Table 1. Green Star Assessment	8
Table 2. Estimated Waste and Recycling Volumes – School Admin & Staff	10
Table 3. Estimated Waste and Recycling Volumes – School Students.....	10
Table 4. Estimated Waste and Recycling Volumes – Consultation Building	11
Table 5. Stakeholder Roles and Responsibilities.....	15
Table 6: Operational Waste Streams	16
Table 7. Waste Room Areas – Option 1	20
Table 8. Waste Room Areas – Option 2.....	20

GLOSSARY OF ABBREVIATIONS AND TERMS

TERM	DESCRIPTION
<i>Baler</i>	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
<i>Bin-carting Route</i>	Travel route for transferring bins from the storage area to a nominated collection point
<i>Chute</i>	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)
<i>Chute Discharge</i>	The point at which refuse exits from the refuse chute
<i>Chute Discharge Room</i>	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
<i>Collection Area/Point</i>	The identified position or area where general waste or recyclables are loaded onto the collection vehicle
<i>Compactor</i>	A machine for compressing waste into disposable or reusable containers
<i>Composter</i>	A container/machine used for composting specific food scraps
<i>Crate</i>	A plastic box used for the collection of recyclable materials
<i>DA</i>	Development Application
<i>DCP</i>	Development Control Plan
<i>EPA</i>	Environmental Protection Authority
<i>HRV</i>	Heavy Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
<i>L</i>	Litre(s)
<i>LEP</i>	Local Environmental Plans guide planning decisions for local government areas
<i>Liquid Waste</i>	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)
<i>Mixed Use Development</i>	A development comprised of two or more different uses
<i>MUD</i>	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
<i>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
<i>MRV</i>	Medium Rigid Vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities
<i>Onsite Collection</i>	When the collection vehicle enters the property and services the development within the property boundary from a designated loading area

<i>Owners Corporation</i>	An organisation or group of persons that is identified by a particular name and acts, or may act, as an entity
<i>WHS</i>	Workplace Health and Safety
<i>Wheel-in wheel-out service</i>	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
<i>SRV</i>	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 Royal Institute for Deaf and Blind Children (RIDBC) Centre of Excellence.

This development is designed to achieve a 5-star Green Star rating under Design and As Built V1.3, 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:

- City of Ryde Development Control Plan 2014
- City of Ryde 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:

- City of Ryde Development Control Plan 2014
- 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

The City of Ryde values proper planning for waste minimisation and management with respect to all developments. As such, Council aims to:

- Ensure new developments and changes to existing developments are designed to maximise resource recovery (through waste avoidance, source separation and recycling).
- Encourage source separation of waste, reuse, and recycling by ensuring appropriate storage and collection facilities for waste, and quality design of waste facilities.
- Encourage techniques in demolition and construction which minimise waste generation, and which maximise the reuse and recycling of materials.
- Ensure that wastes are handled and stored appropriately in order to minimise risk to health and safety associated with handling and disposal of waste and recycled material and ensure optimum hygiene.
- Minimise adverse environmental and amenity impacts associated with waste management (including odour from waste and noise from collection activity).
- Discourage illegal dumping by providing on-site storage for waste awaiting collection by removal services.
- Ensure waste and recycling storage areas and handling systems for residential properties are designed to meet minimum requirements for Council's domestic waste collection services.

3.0 DEVELOPMENT OVERVIEW

The proposed development falls under the Local Government Area (LGA) of City of Ryde Council. This development consists of 2 buildings, one for the main school and the second for consulting and diagnostics. The school will have one level (ground), and the consulting building will have a basement level, ground level, and level 1.

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

3.1 SITE LOCATION

The site is located at Macquarie University NSW as shown in Figure 1. The site will have frontage to, and entryway access via Gymnasium Road, Culloden Road, and West Precinct Road.

Figure 1. Site Location



Source: Nearmap

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 V1.3 tool. 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 electronic waste (e-waste).

E-waste refers to broken or obsolete electronic components and materials. These are typically items that have a cord, battery, circuit board, or plug, and are no longer working or wanted.

It is important to segregate e-waste from the general waste stream because these items can contain valuable materials such as gold, silver, copper, lead, and nickel, that can be recovered and reused. It is especially crucial to dispose of e-waste correctly since hazardous materials such as cadmium, mercury, and sulphur, may also be present, and can contaminate soil and surrounding water bodies.

For this development, e-waste will largely comprise of IT, telecommunications equipment, and medical devices such as laptops, printers, mobile phones, remote controls, and computer peripherals.

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
<p>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:</p> <ul style="list-style-type: none"> 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. <p>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;</p> <ul style="list-style-type: none"> 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. 	<p>Section 5 identifies the waste streams and discusses their management to ensure separation.</p> <p>Appendix D identify examples of the source separation bins to be implemented within the building.</p> <p>Appendix C.1 identifies examples of collection bins to be implemented within the waste room.</p>

OPERATIONAL WASTE MANAGEMENT PLAN

<p>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.</p>	<p>Section 8.2 outlines significance of including proper signage.</p>
<p>8B.2 Separation of Waste Streams</p> <p>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:</p> <ul style="list-style-type: none"> • Waste generated by the project; and • Collection frequency for each waste stream. <p>The calculation for waste generation rates must be based on figures outlined within third-party best practice guidelines.</p>	<p>Section 5.1 discusses the calculation for bin quantities and sizes required for waste room based on waste generation volumes and collection frequencies.</p> <p>Section 9.0 discusses the waste room configuration and sizing.</p> <p>Appendix A.1 identifies waste room location, equipment configuration and the location of the loading area.</p>
<p>8B.3 Access to Waste Storage Area</p> <p>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.</p>	<p>Section 5.4 discusses the access for waste collection.</p> <p>Appendix A.1 shows the bin moving route between the waste room and loading bay.</p> <p>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.</p>

5.0 WASTE MANAGEMENT

The following section outlines best practice waste management for the proposed 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 waste generation rates used in the following tables are advised by the NSW *Better practice guide for resource recovery in residential developments 2019* and are used as a guideline to estimate the total bins required for the development. Note that the student waste generation rate has been adjusted to L/student/week.

Bin sizes, quantities, collection frequencies, and/or equipment must be reviewed and updated to manage the actual waste volumes generated when the development becomes operational.

The following table shows the estimated volume (L) of general waste and recyclables that will be generated by the school and consulting buildings. Estimates for are based on a five-day operating week.

Table 2. Estimated Waste and Recycling Volumes – School Admin & Staff

Type of Use	NLA m ²	Waste Generation Rate (L/100m ² /Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m ² /Day)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)
Library	507.0	10	253.5	15	253.5	126.8
Admin/Office	218.0	10	109.0	15	109.0	54.5
Meeting/ Training	182.0	10	91.0	15	91.0	45.5
Kitchen	50.3	65	163.4	50	83.8	41.9
TOTALS	957		617		537	269
Collections		Bin Size (L)	240	Bin Size (L)	240	240
		Bins/Day	0.4	Bins/Day	0.3	0.2
		Collections/Wk	2	Collections/Wk	1	1
		Total Bins	1.3	Total Bins	2.2	1.1

Table 3. Estimated Waste and Recycling Volumes – School Students

Type of Use	# Students	Waste Generation Rate (L/Student/Week)	Generated Waste (L/Week)	Recycling Generation Rate (L/Student/Week)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)
Pre-school	80	10	800	15	800	400
Primary school	120	15	1800	20	1600	800
TOTALS	200		2600		2400	1200
Collections		Bin Size (L)	240	Bin Size (L)	240	240
		Bins/Day	1.5	Bins/Day	1.4	0.7
		Collections/Wk	2	Collections/Wk	1	1
		Total Bins	5.4	Total Bins	10.0	5.0

OPERATIONAL WASTE MANAGEMENT PLAN

Table 4. Estimated Waste and Recycling Volumes – Consultation Building

Type of Use	NLA m ²	Waste Generation Rate (L/100m ² /Day)	Generated Waste (L/Week)	Recycling Generation Rate (L/100m ² /Day)	Paper/ Cardboard (L/Week)	Commingled Recyclables (L/Week)
Consultation/ Therapy*	27	20	2700.0	10	900.0	450.0
Meeting/ Training	380.0	10	190.0	15	190.0	95.0
Office	3230.3	10	1615.1	15	1615.1	807.6
Kitchen	19.2	65	62.4	50	32.0	16.0
Business Hub	136.0	10	68.0	15	68.0	34.0
Café	282.0	100	1410.0	120	1128.0	564.0
TOTALS	4074		6046		3933	1967
Collections	Bin Size (L)		1100	Bin Size (L)		1100
	Bins/Day		0.8	Bins/Day		0.5
	Collections/Wk		2	Collections/Wk		1
	Total Bins		2.7	Total Bins		3.6

*Note that the consultation/therapy waste generation rates are based on the number of anticipated consultation rooms, not NLA, as per the NSW Better Practice Guide.

5.2 BIN SUMMARY

BIN SUMMARY (SCHOOL)

Based on the estimated waste and recyclables generated by the school, the recommended bin quantities and collection frequencies are as follows:

General Waste: 7 x 240L MGBs collected **2 x weekly**

Recycled Cardboard/Paper: 13 x 240L MGBs collected **1 x weekly**

Commingled Recyclables: 7 x 240L MGBs collected **1 x weekly**

BIN SUMMARY (TOTAL)

Based on the estimated waste and recyclables generated by the school, the recommended bin quantities and collection frequencies are as follows:

General Waste: 5 x 1100L MGBs collected **2 x weekly**

Recycled Cardboard/Paper: 7 x 1100L MGBs collected **1 x weekly**

Commingled Recyclables: 6 x 660L MGBs collected **1 x weekly**

Electronic Waste: 1 x 660L MGB collected **as needed**

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

Waste and recycling bins will be located throughout the development in convenient locations for staff and students (e.g. classrooms, kitchens, offices, etc.). All bins should be paired together to encourage proper waste segregation and recovery of resources. Waste bins must be bagged, and recyclables should be placed loosely into the designated bins.

Separate bins for the collection of electronic waste should also be placed in convenient locations for all staff and students to utilise (e.g. hallways and print rooms). Refer to APPENDIX D.1 for examples of e-waste receptacles.

It is also suggested that a “resource recovery station” may be introduced in hallways where students or staff can reuse and recycle various items such as commingled recyclables, paper, toner cartridges, as well as electronic waste. Staff and students may also donate excess supplies to the station for others to take and use, such as paper, pencils, notebooks, etc.

OPTION 1

On completion of each trading day or as required, nominated staff or contracted cleaners will collect waste and recyclables from the school and consultation buildings, and transport to the Waste Collection Room on the basement level of the consultation building (see APPENDIX A.1). Waste and recyclables will be placed into the designated bins. Electronic waste will be placed in the designated bin provided by the waste contractor (e.g. 660L MGB), which may be stored in the bulky goods room.

OPTION 2

On completion of each trading day or as required, nominated staff or contracted cleaners will collect waste and recyclables from the school building, and transport to the Waste Holding Room on the upper ground level (see APPENDIX A.2). Waste and recyclables will also be transported from the consultation building and placed into the designated bulk bins in the Waste Collection Room on the basement level of the consultation building.

Prior to waste collection, the building caretaker or contracted cleaners will transport the 240L MGBs from the Bin Holding Room to the Waste Collection Room on the basement level of the consultation building. The 240L MGBs will be decanted into the bulk bins with a bin lifter. Bins will then be returned to the Bin Holding Room on the ground level to resume operational use.

Electronic waste will be placed in the designated bin provided by the waste contractor (e.g. 660L MGB), which may be stored in the designated bulky goods area.

5.4 WASTE COLLECTION PROCEDURES

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

On the day of collection, a rear-load vehicle will enter the site from West Precinct Road and park in the loading bay on the basement level of the consultation building. The driver will service the bins from the Waste Collection Room. Once servicing is complete, the collection vehicle will reverse and exit the site in a forward direction onto West Precinct Road (see APPENDIX A.1).

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

5.5 BULKY GOODS & E-WASTE PROCEDURES

Bulky items and electronic waste will be stored in the designated bulky goods area in the Waste Collection Room on the basement level of the consultation building near the loading dock. It will be the responsibility of the building caretaker to engage a private waste collection contractor to collect the bulky items as needed. It is recommended that donations of reusable items are first considered.

Electronic waste may be collected by a separate contractor as needed, and transported to a materials recycling facility for dismantling and recovery of useable parts. Refer to the waste contractor to determine the types of e-waste that are acceptable.

On the day of collection, a collection vehicle will enter the site from West Precinct Road and park in the loading bay on the basement level of the consultation building. The driver will load the bulky items from the Waste Collection Room. When completed, the collection vehicle will reverse and exit the site in a forward direction onto West Precinct Road (see APPENDIX A.1).

5.6 OTHER WASTE MANAGEMENT CONSIDERATIONS

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

5.6.1 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 and a recycling bin. A food waste bin may be introduced to further segregate waste in future. Cleaners or nominated staff will be responsible for monitoring these bins and emptying them as required.

5.6.2 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.

5.6.3 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.

5.6.4 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.

5.6.5 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
- Batteries

6.0 STAKEHOLDER ROLES & RESPONSIBILITIES

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

Table 5. Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata or Management	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 banded 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Building Contractors	<ul style="list-style-type: none"> 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 6: 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 scraps will be included in the general waste stream, or segregated and collected by a private contractor in future.
Electronic Waste	Discarded e-waste, electronic components and materials such as computers, mobile phones, keyboards, etc.	Resource Recovery Centre	Building manager will arrange for recycling of e-waste.
Bulky Items	Items that are too large to place into general rubbish collection. This includes disused and/or broken furniture, mattresses, white goods, etc.	Resource Recovery Centre or Landfill	Building manager will arrange 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

Building management is responsible for developing and managing the waste and recycling education materials. These educational materials should encourage the correct separation of general waste and recyclables, and must be available to all students and staff.

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.

- 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;
- Obligations to health and safety as well as building management.

Due to the special needs of the students, it is suggested that tactile symbols/stickers are incorporated onto the waste and recycling receptacles.

8.1 WASTE MANAGEMENT PRINCIPLES

During operational activities, effective waste management will be easier to achieve if stakeholders are made aware of basic waste management principles including waste avoidance, recovery, and reuse of discarded materials.

In addition, planning for effective waste management practices in new developments significantly improves environmental, social, and economic outcomes on both a local and regional scale. Managing waste and valuing the materials that are disposed of can help:

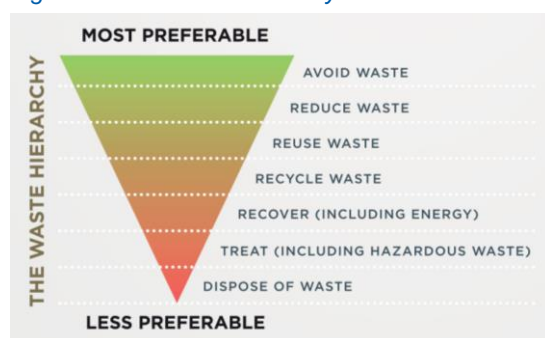
Support the economy by generating jobs in the recycling industry and saving money through resource recovery;

Reduce environmental impacts by controlling litter, illegal dumping, and other potential contaminants of land and water, and;

Protect the health of our communities by reducing odour, noise, dust, vermin, and exposure to toxic substances.¹

The waste hierarchy is a common reference to guide society in the most preferable to least preferable waste management practices. The figure below illustrates this concept.²

Figure 2. The Waste Hierarchy



The choices individuals make in purchasing, using, and disposing of products is central to improving the way waste is managed in Australia. By following the waste hierarchy, we can:

Avoid waste by purchasing products with excessive or unnecessary packaging;

Reduce waste by repairing or reusing items instead of discarding them;

Reuse items and choose to purchase products that can be used multiple times;

Recycle materials by sorting waste properly in recycling and compost bins and purchasing items that are easily recyclable and include recycled content.

In terms of waste disposal, operational facilities that manage general waste items will ideally recover energy from the waste first, before treating and disposing of the waste in a landfill.

¹ NSW Environment Protection Authority. *NSW Waste Avoidance and Resource Recovery Strategy 2014-2*.

² Australian Government, Department of the Environment and Energy. *National Waste Policy. Less Waste, More Resources. 2018*.

8.2 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.

8.3 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 7. Waste Room Areas – Option 1

Bldg	Level	Waste Room Type	Bins/Equipment	Estimated Area Required (m ²)	Actual Area Provided (m ²)
SE Bldg. (Consulting)	B	Waste Collection Room	5 x 1100L MGBs for general waste 7 x 1100L MGBs for paper/cardboard 6 x 660L MGBs for commingled recyclables Bin wash	45	77
		Bulky Goods Storage	1 x 660L MGB for electronic waste	10	10

Table 8. Waste Room Areas – Option 2

Bldg	Level	Waste Room Type	Bins/Equipment	Estimated Area Required (m ²)	Actual Area Provided (m ²)
NW Bldg. (School)	G	Waste Holding Room	7 x 240L MGBs for general waste 13 x 240L MGBs for paper/cardboard 7 x 240L MGBs for commingled recyclables	22	TBD
SE Bldg. (Consultancy)	B	Waste Collection Room	5 x 1100L MGBs for general waste 7 x 1100L MGBs for paper/cardboard 6 x 660L MGBs for commingled recyclables Bin lifter Bin wash	50	TBD
		Bulky Goods Storage	1 x 660L MGB for electronic waste	10	TBD

The waste room areas have been calculated based on equipment requirements and/or bin dimensions with an additional 70% 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).

Since City of Ryde does not specify area requirements for bulky waste storage, the Bulky Waste Area has been calculated based on the guidelines presented in City of Sydney's Guidelines for Waste Management in New Developments, Section D.

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.

10.0 CONCLUSION

To effectively manage waste across the entire site for the proposed Royal Institute for Deaf and Blind Children, it has been demonstrated that utilising the key waste management principles and further segregating electronic waste will reduce overall waste generation and waste volumes going to landfill. The waste management strategies outlined in this document meet the requirements outlined in City of Ryde DCP, and also align with the direction provided by the NSW *Better practice guide for resource recovery in residential developments 2019*, as well as with the Green Building Council of Australia's relevant Green Star credentials.

It must also be recognised that a successful waste management program depends largely on the behaviours exhibited by all stakeholders, so the implementation of a consistent education and training program throughout the operational phase is integral, and should be reviewed regularly. Monitoring waste management procedures and consistently evaluating them will help inform how waste avoidance, waste reduction, reuse, and recycling programs and strategies can continually be improved.

USEFUL CONTACTS

LOCAL COUNCIL

Ryde Customer Service	Ph: (02) 9952 82222	E: cityofryde@ryde.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 SEPARATION 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 DIVERTER SYSTEMS

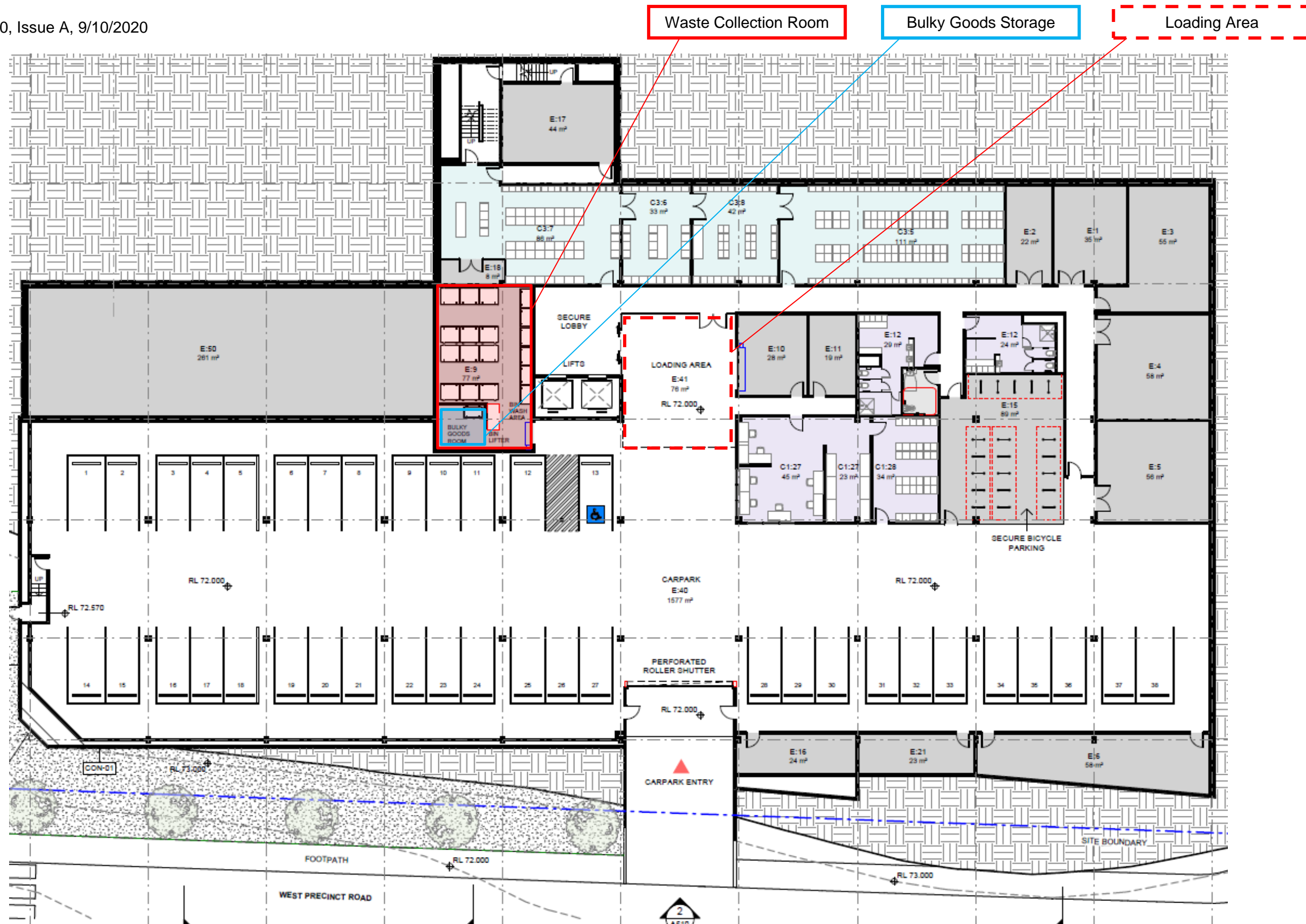
Elephants Foot Recycling Solutions	Ph: 1800 025 073	E: info@elephantsfoot.com.au
------------------------------------	------------------	-----------------------------------------------------------------------------

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

APPENDIX A: ARCHITECTURAL PLANS

APPENDIX A.1 BASEMENT FLOOR PLAN, CONSULTING BLDG

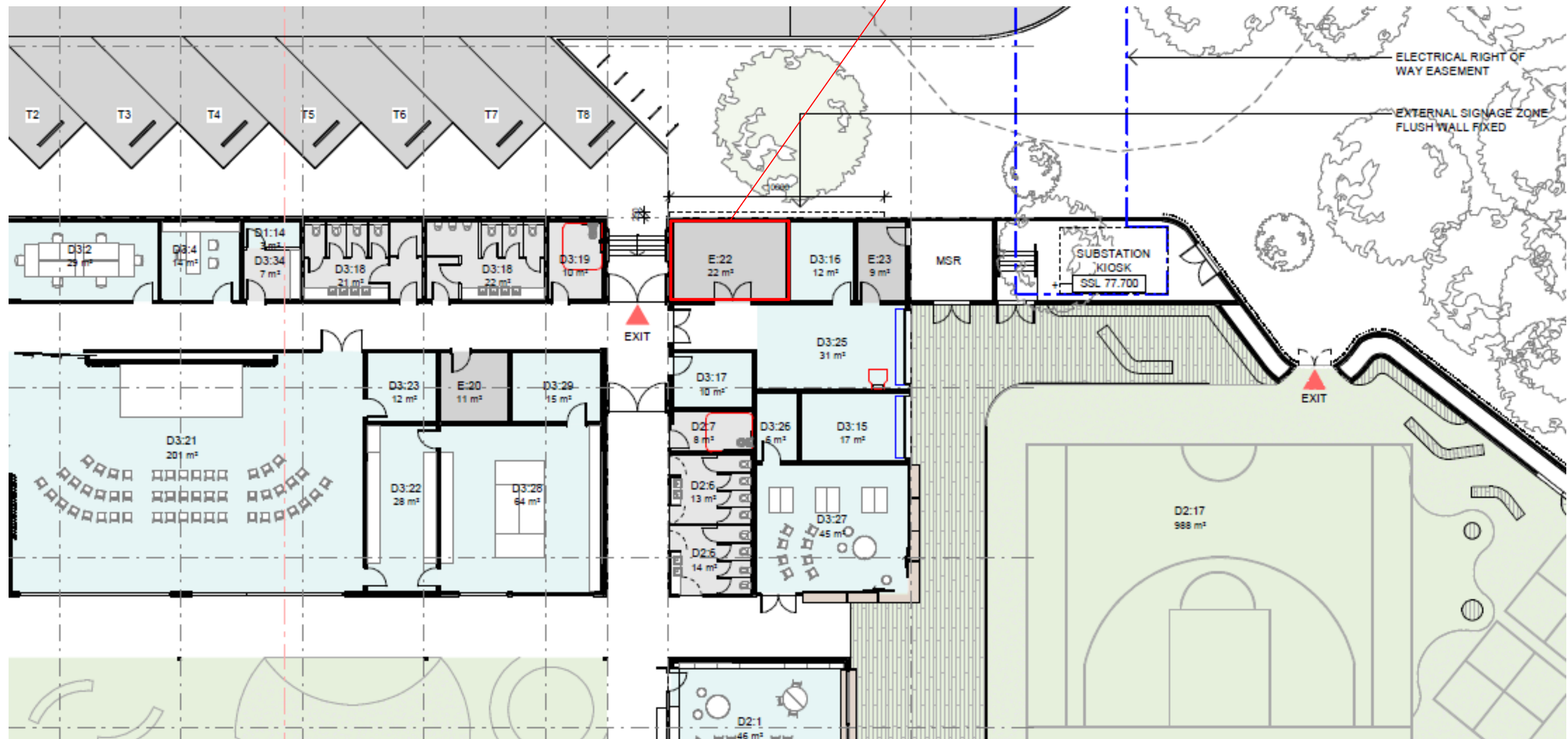
Drawing No. A110, Issue A, 9/10/2020



PPENDIX A.2 UPPERGROUND FLOOR PLAN; SCHOOL

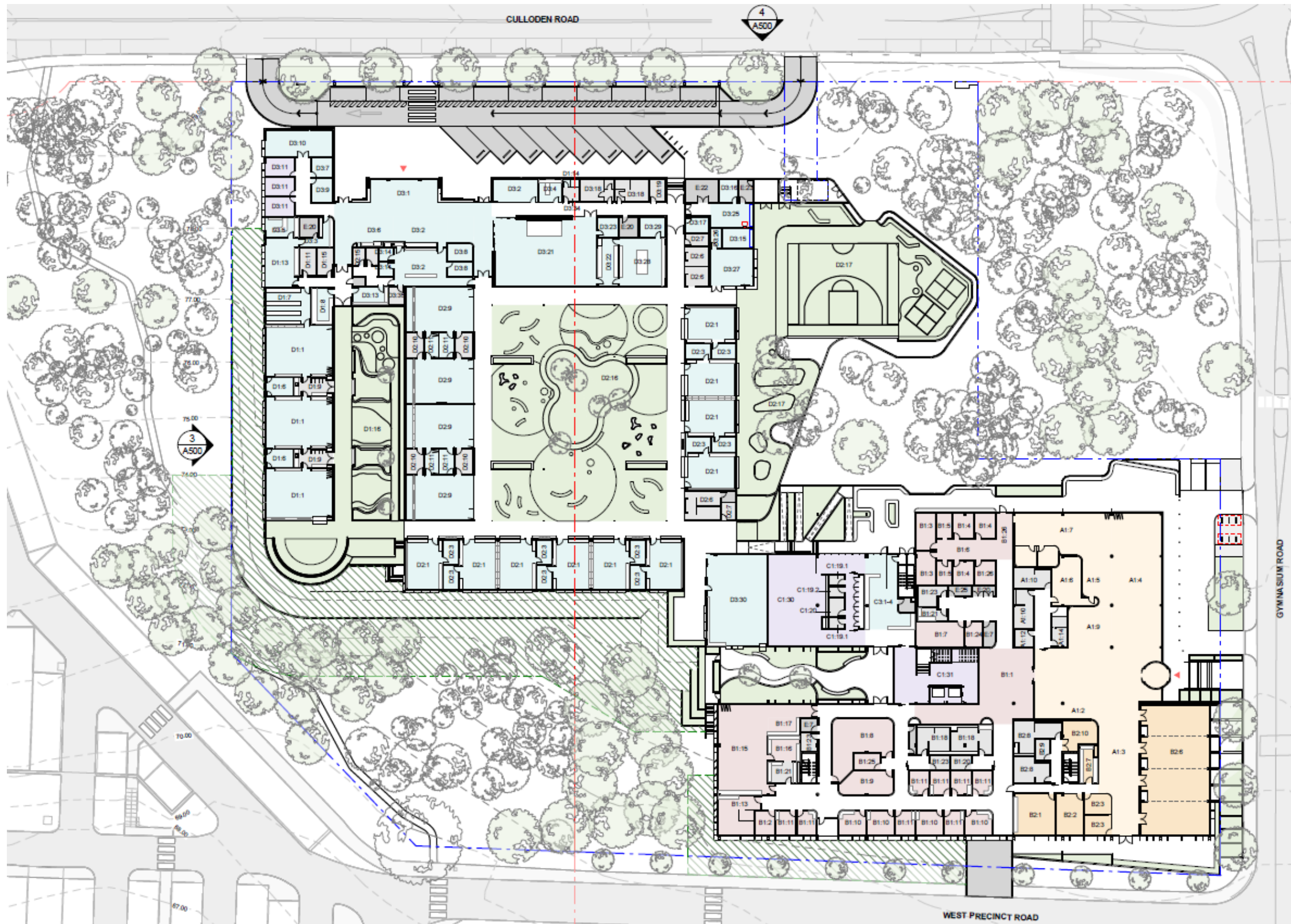
Drawing No. A112, Issue A, 9/10/2020

Option 2 Waste Holding Room



APPENDIX A.3 SITE PLAN

Drawing No. A101, Issue A, 13/10/2020



APPENDIX B: EXAMPLE EQUIPMENT

APPENDIX B.1 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 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




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

Wheelie bin

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



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

Dome or flat lid container

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

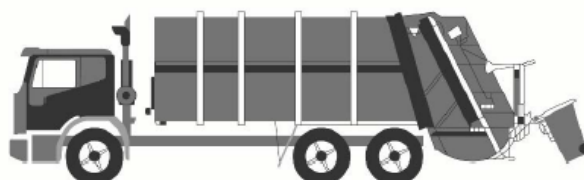
Vehicle type	Rear-loading	Side-loading*	Front-lift-loading	Hook truck	Crane truck
Length overall (m)	10.5	9.6	11.8	10.0	10.0
Width overall (m)	2.5	2.5	2.5	3.0	2.5
Travel height (m)	3.9	3.6	4.8	4.7	3.8
Operational height for loading (m)	3.9	4.2	6.5	3.0	8.75
Vehicle tare weight (t)	13.1	11.8	16.7	13.0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



Source: <https://landmarkstudio.com/products/e-waste-bins/>

APPENDIX D.2 TYPICAL BIN STATION



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

APPENDIX D.3. 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