WESTLINK STAGE 2

Waste Management Plan

Prepared for:

ESR Australia Pty Ltd
Level 29, 20 Bond St
Sydney 2000 NSW

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with ESR Australia Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30893-R01-v3.0	21 September 2022	Andrew Quinn	Damian Balas	Andrew Quinn

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1 Introduction

1.1 Overview

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by ESR Australia Pty Ltd (the Client) to prepare a waste management plan (WMP) in support of state significant development application (SSDA) SSD-46983729 to the Department of Environment, Infrastructure and Planning (DPIE) for Stage 2 of the Westlink Development, at Kemps Creek in western Sydney (the Project).

This WMP applies to the waste generated from the demolition, construction and operational stages of the Project and has been prepared using architectural drawings supplied by the Client.

1.2 Objectives

The main aim of this WMP is to address the SEARs, for which we have been guided by relevant Penrith Council requirements for waste storage area size, location, design and access. Council's requirements are found in the Penrith Development Control Plan (Penrith DCP) 2014[1] and in its *Industrial, Commercial and Mixed-Use Waste Management Guidelines*.[2]

The SEARs for SSD-46983729 were issued 10 August 2022 and are shown in Table 1 below.

Table 1 SSD-46983729 SEARs Conditions for Waste Management

Conditions for Waste Management	Relevant Sections of WMP
17. Waste Management Identify, quantify and classify the likely waste streams to be generated during construction and operation.	Please refer to Sections 5.2, 5.3, 5.4, 6.2 and 6.3
Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	Please refer to Table 4, Table 8, Table 7 and Table 14 as well as Sections 5.5, 5.6 and 6.8
Identify appropriate servicing arrangements for the site.	Please refer to Sections 5.7 and 6.7
If buildings are proposed to be demolished or altered, provide a hazardous materials survey	Subject to a separate report

The other objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated and hazardous waste.
- To identify procedures and chain of custody records for waste management.

[1] https://www.penrithcity.nsw.gov.au/building-development/planning-zoning/planning-controls/development-control-plans

[2] https://www.penrithcity.nsw.gov.au/images/documents/building-development/planning-zoning/planning-controls/Waste_Management_Guidelines_Industrial_Commercial_Mixed_Use.pdf

- To assist in ensuring that any environmental impacts during the operational life of the Project comply with the development consent conditions and other relevant regulatory authorities.

1.3 Review of WMP

This WMP will be reviewed and updated:

- To remain consistent with waste and landfill regulations and guidelines
- If changes are made to site waste and recycling management, or
- To take advantage of new technologies, innovations and methodologies for waste or recycling management.

Copies of the original WMP and its future versions should be retained by the building manager. Changes made to the WMP, as well as the reasons for the changes made, should be documented by the building manager as part of the review process.

2 Project Description

2.1 Overview of Proposed Project

The Client is developing the Westlink industrial estate at the corner of Abbotts Road and Addington Road in Kemps Creek. This site is primarily a greenfield site with some small buildings to be demolished. The industrial estate will be subdivided into lots with a number of industrial warehouses planned and associated office buildings.

ESR has also acquired two lots of land adjacent to the Westlink site at 1030-1064 Mamre Road and 59-63 Abbotts Road, Kemps Creek in the Penrith local government area. ESR proposes to lodge an SSDA for Stage 2, a proposed warehouse and distribution centre at this site.

Stage 2 consists of one warehouse with a GFA of 37,540 m^2 GFA with 1100 m^2 of office and dock office space and undercroft parking. There are also car parking and hardstand areas. These are shown in Figure 1 below.

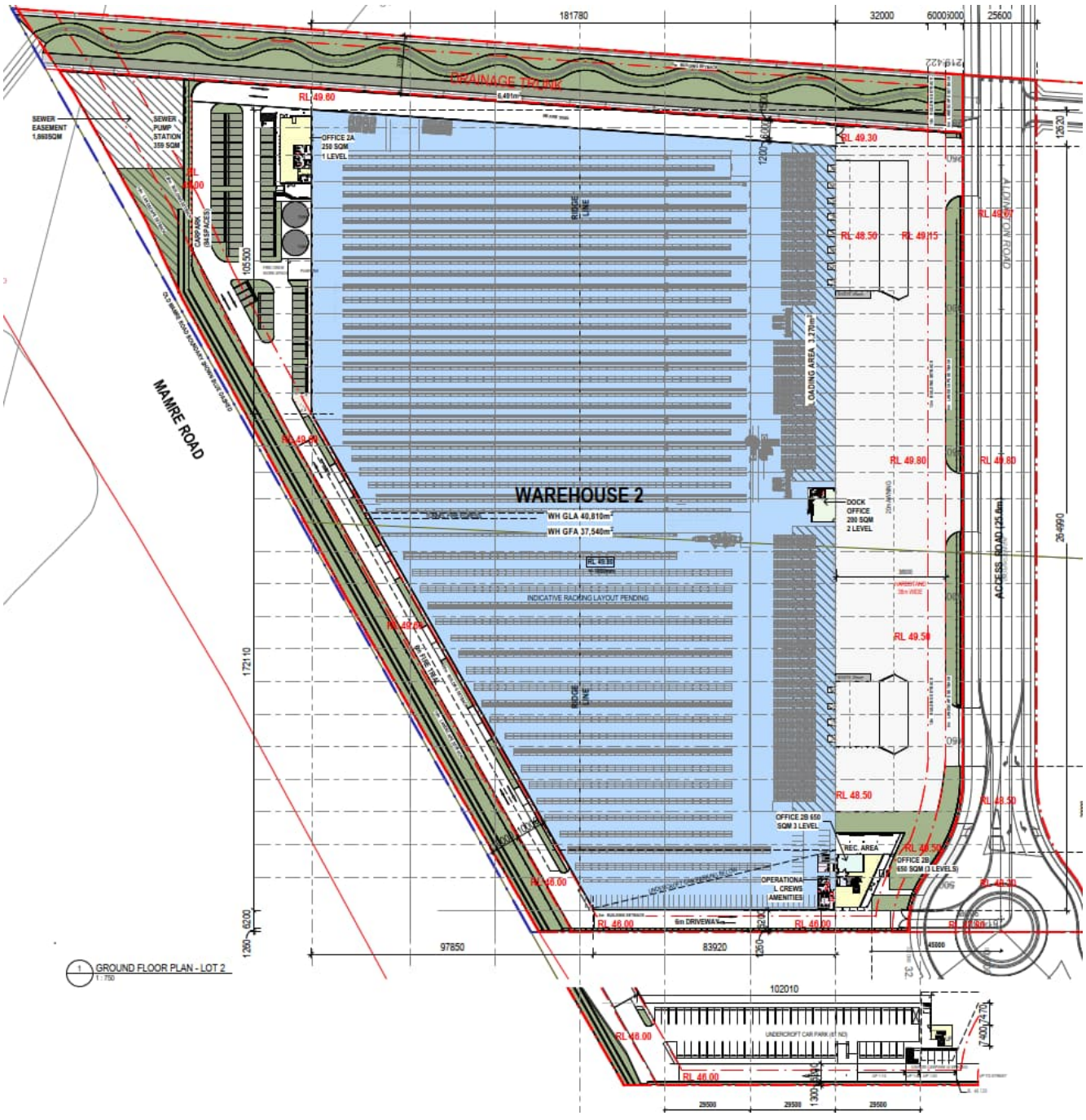

Figure 1 – Stage 2

The greater estate site is largely undeveloped and consists of grass, trees and farm buildings. The Stage 2 site is covered in grass and there are no structures or buildings on the site.

3 Better Practice Waste Management and Recycling

3.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy shown in Figure 2, which summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001.*

The waste management hierarchy comprises the following principles, from most to least preferable:

- Waste avoidance, prevention or reduction of waste generation. Achievable through better design and purchasing choices.
- Waste reuse, reuse without substantially changing the form of the waste.
- Waste recycling, treatment of waste that is no longer usable in its current form to produce new products.
- Energy recovery, processing of residual waste materials to recover energy.
- Waste treatment, reduce potential environmental, health and safety risks.
- Waste disposal, in a manner that causes the least harm to the natural environment.

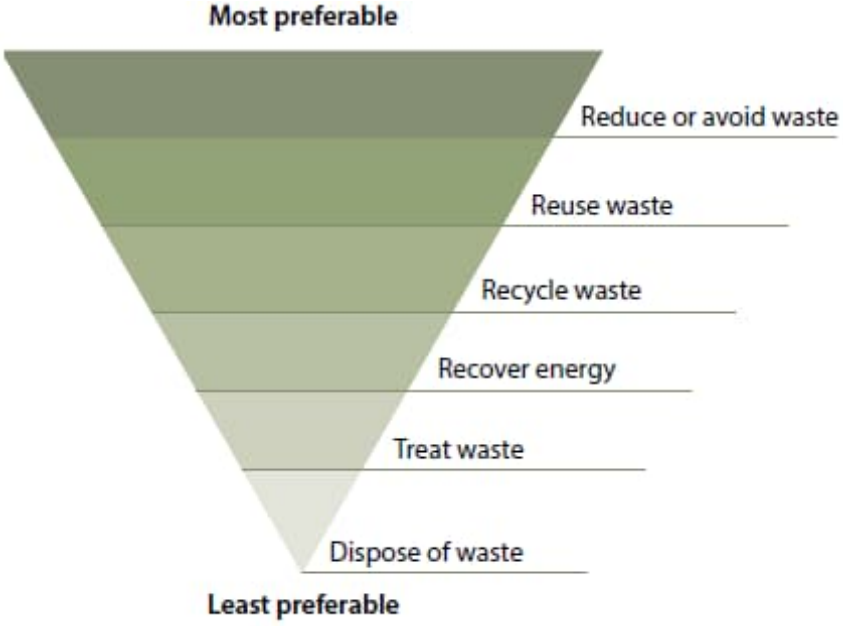

Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

Figure 2 - Waste management hierarchy

3.2 Benefits of Adopting Better Practice

Adopting better practice principles in waste minimisation offers significant benefits for organisations, stakeholders and the wider community. Benefits from better practice waste minimisation include:

- Improved reputation of an organisation due to social and environmental responsibility.
- Lowered consumption of non-renewable resources.
- Reduced environmental impact, for example, pollution, from materials manufacturing and waste treatment.

- Reduced expenses from lower waste disposal.
- Providing opportunities for additional revenue streams through beneficial reuse.

4 Waste Legislation and Guidance

4.1 Penrith Development Control Plan 2014

Section C5 Waste Management of the Penrith DCP provides the following specifications for this kind of development.

Applicants are to submit a waste management plan when lodging a development application. The Waste Management Plan must be supported by scaled waste management drawings that are to assist in demonstrating compliance with the provisions of the Plan and the *Industrial, Commercial and Mixed-Use Waste Management Guidelines* issued by Council.

The Waste Management Plan must include details of:

- The types and quantities of waste and recyclables likely to be generated
- How waste and recyclables will be stored and treated on site
- How the residual non-reusable or non-recyclable wastes and recyclables are to be disposed of
- How ongoing waste management will operate once the development is complete for the life of the development

Other relevant requirements specified in the DCP include:

- There must be a waste bin storage area that is of sufficient size to accommodate all required waste bins associated with the development.
- All waste streams must be catered for, including general waste, bulky waste and recyclable waste.
- Sufficient space must be provided onsite to ensure that adequate room is provided to manoeuvre, clean and maintain all waste and recycling bins for the development.
- The waste bin storage area is to be located where its use and operation will not adversely impact the amenity of development occupants in terms of noise and odour.
- The layout of the waste bin storage area is to be designed so that the area is free from obstructions so not to restrict the movement and servicing of the bins.
- Waste storage and collection areas should be:
  - Flexible in their design so as to allow for future changes in the operation, tenancies and uses
  - Located away from primary street frontages, where applicable
  - Suitably screened from public areas so as to reduce the impacts of noise, odour and visual amenity and
  - Designed and located to consider possible pedestrian and vehicular traffic hazards likely to be caused by the storage and collection of waste.
- Should a collection vehicle be required to enter the property, the driveway and manoeuvring area must be suitable for a collection vehicle in terms of both its strength and design.

- The system for waste management must be compatible with the collection service(s) to be used whether Council or private contractor.
- Swept paths demonstrating adequate manoeuvring area are to be provided with the application.

4.2 Council's Industrial, Commercial and Mixed-Use Waste Management Guidelines

This document provides further guidance on waste management in commercial and industrial developments.

New commercial and industrial developments should provide a waste management system that is responsive to the development's need.

To ensure new developments are able to access a waste service in an efficient and effective manner, the following will be taken into consideration in the assessment of development applications:

- Site planning of the development accommodates on-site waste collection and allows the waste collection vehicle to enter and exit, manoeuvre within the site and access the nominated collection point in a safe and efficient manner.
- Site planning of the development ensures amenity and safety of all users (tenants, caretakers, cleaners and waste collection staff) at all stages of the waste management process.
- Waste management system selection ensures that it is safe and convenient for tenant use; and
- Adequate waste storage areas are provided within the development to store all required waste bins.
- The collection vehicle must be able to safely and efficiently access the site and the nominated collection point to perform on-site waste collection.
- There must be sufficient manoeuvring area on-site to allow the collection vehicle to enter and exit the site in a forward direction and service the development efficiently with little or no need to reverse.
- Scaled architectural plans are required to support the development application which demonstrate the site's entry point, vehicle's route of travel and manoeuvring comply with a standard waste collection vehicle
- Swept path models to be provided illustrating how a standard waste collection vehicle will enter, service and exit the site. A 0.5 m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres. The model to provide on-street parking on both sides of the road adjacent to the development to demonstrate unobstructed access during a 'business as usual' configuration.
- The route of travel of the collection vehicle to the designated loading bay is to satisfy the dimensions of standard waste collection vehicle.
- To support unobstructed access adequate driveways and ramps of sufficient strength are required to support waste collection vehicle movements.
- A structural engineer's report is required to be submitted accompanying the Waste Management Plan. The report to confirm all infrastructure used for vehicle ingress and egress movements can support the vehicle's 'gross weight'.
- All development applications to be submitted with accompanying 'Plan of Operations', outlining proposed; Bin Infrastructure Sizes, Collection Frequency, Waste Collection Vehicle Dimensions, Hours of Collection and Access to Waste Collection Room.

All developments must have a waste collection room integrated wholly within the development's built form. The waste storage area must also:

- Be large enough to accommodate all the bins required plus 0.2 m of space between bins to allow adequate manoeuvrability.
- Have 1.8 m unobstructed clearance zone between the stored bins and the entrance to permit access and manoeuvrability.
- Have a suitable dual door access for the service of bins with a minimum width of 1.8 m and accessed by a minimum 1.8 m unobstructed access corridor.
- Be located within close proximity to the on-site loading bay.
- Be fully enclosed, walled and not permit through access to other on-site waste infrastructure.
- Have a waterproofed, non-slip, sealed floor in accordance with the Building Code of Australia to permit the use of wash facilities.
- Have a graded floor a central drainage point connected to the sewer, enabling all waste to be contained and safely disposed of.
- Be partitioned and enclosed with a minimum 2.7 m unobstructed internal room height in accordance with the Building Code of Australia.
- Be provided with an adequate supply of water through a centralised mixing valve and hose cock.
- Have adequate lighting and natural or mechanical ventilation in accordance with the Building Code of Australia.

The Guidelines shows the dimensions of a rear-loading waste collection vehicle are the same as those for a standard heavy rigid vehicle as identified in Australian Standard 2890.2:2018 Parking facilities, Part 2: Off-street commercial vehicle facilities. These are shown in Table 2 below.

Table 2 Heavy vehicle dimensions

Vehicle Element	Rear Lift Specifications	Front Lift Specifications
Overall Length (m)	10.5	10.5
Operational Length (m)	12.5	12.5
Design Width (m)	2.8	2.8
Design Height (m)	3.7	4.1
Operational Height (m)		+4.5m (specific to bins proposed)[3]
Swept Circle (m)	22.5	22.5
Clearance (travel height) (m)	4.5	4.5
Roadway/ramp grade (max)	1:6.5 (15.4%)	1:6.5 (15.4%)
Rate of change of grade (max)	1:16 (6.25%) in 7.0 m of travel	1:16 (6.25%) in 7.0 m of travel
Gross Weight (max tonnes)	28.0	28.0

[3] Front lift collection vehicles typically require at least 6.1 m overhead clearance

Vehicle Element	Rear Lift Specifications	Front Lift Specifications
Front Chassis Clearance	13º	13º
Rear Chassis Clearance	16º	16º

These are also shown for rear lift vehicles in Figure 3 below and for front lift vehicles in Figure 4.

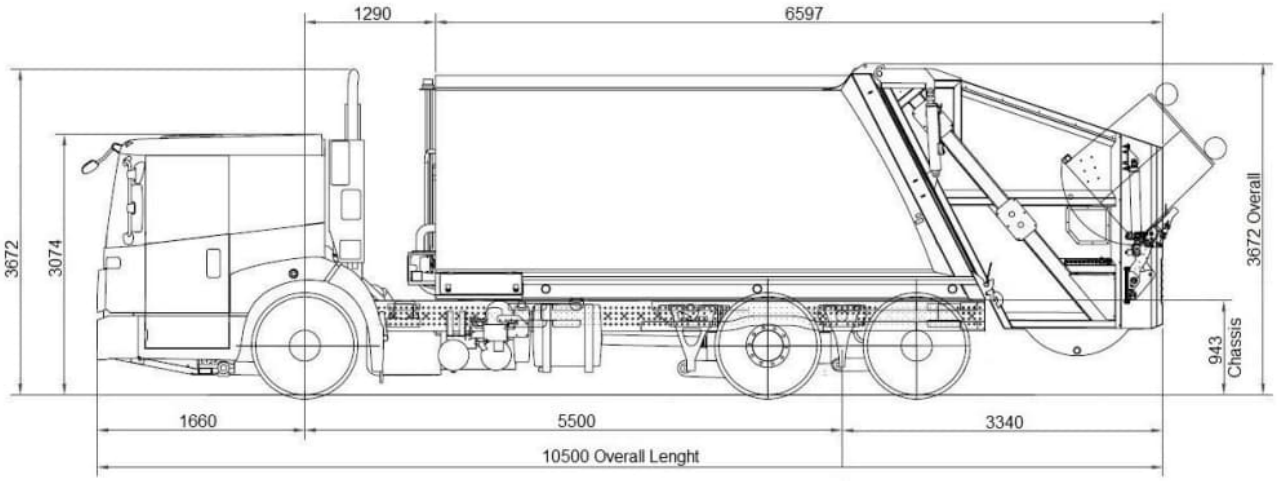

Figure 3 - Rear lift collection vehicle dimensions

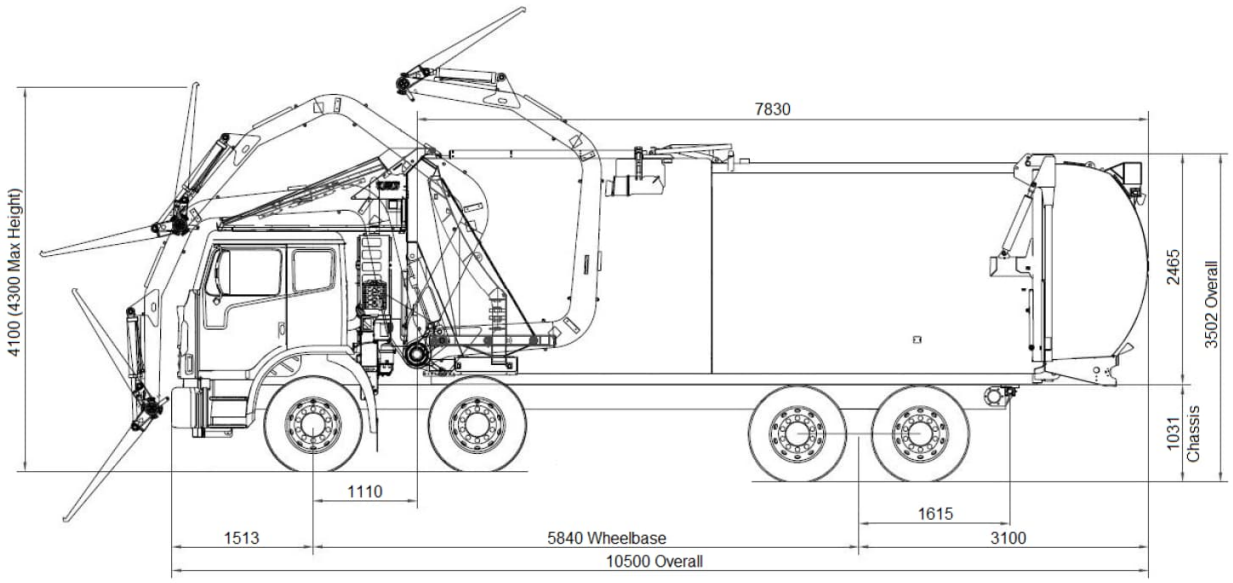

Figure 4 - Front lift collection vehicle dimensions

The dimensions for vehicles used by a particular contractor are likely to be similar but may differ in detail.

4.3 Mamre Road Precinct DCP

The Mamre Road Precinct DCP September 2021 makes a number of requirements for waste management. The requirements of Section 4.5 Waste Minimisation and Management deal mostly with operational waste issues such as minimising reusing and recycling waste.

Those elements relevant to the design of the facility are shown below.

Under Section 4.5 Waste Minimisation and Management, Controls on page 69:

1) Development applications shall include a Waste and Resource Recovery Management Plan (WRRMP)6 developed by an appropriate specialist. The WRRMP is to outline the waste likely to be generated by the development and methods of managing the generation, storage and disposal of wastes in an integrated way during construction and operation.

2) The WRRMP should address the following matters:

- *The types and volumes of waste and recyclables generated*
- *Details of on-site storage and/or treatment of waste*
- *Disposal of waste generated which cannot be re-used or recycled and*
- *Ongoing management of waste during the operational phase of the development.*

3) Waste storage and collection areas should be:

- *Flexible in their design to allow for future changes in the activities and tenancies*
- *Located away from primary street frontages, where applicable*
- *Suitably screened from public areas to minimise noise, odour and visual impacts*
- *Designed and located to consider possible traffic hazards (pedestrian/vehicular)*
- *Accessible to collection vehicles*
- *Compatible with the collection service(s) to be used and*
- *Designed to encourage the separation of materials.*

4) The design of waste storage and collection areas must consider:

- *Separating dry recyclables for recycling on-site, including containers, paper, cardboard and toners for printers and photocopiers*
- *Placing food scraps in specialised containment bins, with regular collection*
- *Providing refrigerated garbage rooms where there are large quantities of perishable wastes and infrequent collections and*
- *Placing clinical or hazardous and liquid waste in specialised containment bins for collection by specialised services.*

Under Section 2.11 Aviation Safeguarding, Controls, Wildlife Hazards on page 32:

8) All waste bins are to be designed and installed with fixed lids.

9) Any bulk waste receptacle or communal waste storage area must be contained within enclosures that cannot be accessed by birds or flying foxes.

Under 4.6 Access and Parking, 4.6.1 Parking and Manoeuvring Areas, Controls, Design of Parking and Manoeuvring Areas on page 72:

20) All loading and unloading areas are to be:

- *Separated from car parking and waste storage and collection areas*

21) Vehicular access to the loading / unloading area(s) is preferred off rear lanes, side streets and right of ways. Where appropriate, consider a single vehicular access point for the loading/unloading area(s) and waste collection area(s).

In Appendix B Lodgement Requirements under Waste and Resource Recovery Management Plan:

A Waste and Resource Recovery Management Plan ('the Plan') must be submitted in accordance with Section 4.5 of this DCP.

The Plan must include details of:

- *The types and volumes of wastes and recyclables likely to be generated as a result of the development*
- *How waste and recyclables will be stored and treated on site*
- *How the residual non-reusable or non-recyclable wastes and recyclables are to be disposed of and*
- *How ongoing waste management will operate once the development is complete (for the life of the development).*

The Plan must be supported by scaled waste management drawings that are to assist in demonstrating compliance with the provisions of this Plan.

A Waste and Resource Management Plan will also be required for applications for a Complying Development Certificate.

4.4 Other Legislation and Guidance

Other legislation and guidance outlined in Table 3 below should be referred to during the demolition, construction and operational phases of the Project.

Table 3 Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Penrith Local Environmental Plan (LEP) 2010[4]	The Penrith LEP came into force for the entire Penrith local government area on 25 February 2015 and provides the legal framework of the Penrith Development Control Plan, including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.
Penrith Development Control Plan (DCP) 2014[5]	The Penrith DCP came into effect on 17 April 2015 and supports provision of the LEP planning controls by providing detailed planning and design guidelines. The DCP has been prepared in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. One of the objectives of the DCP is to assist in reducing Penrith's ecological footprint by encouraging the diversion of waste from landfill. This WMP specifically addresses Part C5 – Waste Management of the DCP and the Waste Management Guidelines for Industrial, Commercial and Mixed Use.
Waste Strategy 2017-2026, Penrith City Council	Council's waste strategy sets out the waste management targets for the Penrith local government area including working towards reduced waste generation and increased landfill diversion. The strategy was prepared in consultation with the community and informed by waste audit results. The strategy defines the actions required to reach the targets, including actions for waste diversion from landfill, resource recovery, technology innovation, community education and resource recovery facilities.
Mamre Road Precinct Draft Development Control Plan NSW Department of Planning, Industry and Environment	The Mamre Road Precinct DCP was released on 10 November 2020. This DCP applies to the Mamre Road Precinct within State Environmental Planning Policy (Western Sydney Employment Area) 2009. Penrith LEP 2010 (and other Penrith local environmental planning instruments) and the Penrith DCP 2014 do not apply to land to which this DCP applies, except where specifically referred to in the WSEA SEPP and this DCP.
State and National legislation and guidelines	
Building Code of Australia (BCA) and relevant Australian Standards	The BCA has the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
Council of Australian Governments National Construction Code 2019	The National Construction Code 2016 sets the minimum requirements for the design, construction and performance of buildings throughout Australia.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	These better practice guidelines present information on waste minimisation and resource recovery as well as information on commonly used waste management provisions. The guidelines also provide benchmarks for assessing waste production rates in Australia.

[4] https://legislation.nsw.gov.au/#/view/EPI/2010/540

[5] https://www.penrithcity.nsw.gov.au/building-development/planning-zoning/planning-controls/development-control-plans

Legislation and Guidance	Objectives
NSW Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021-2027	Replacing the *NSW Waste Avoidance and Resource Recovery Strategy (2014-21)*, the NSW Waste and Sustainable Materials Strategy 2041 focuses on the transition of NSW to a circular economy. The strategy focuses on minimising what is thrown away, and to use and reuse resources more efficiently, making them as productive as possible. The strategy identifies the need to identify infrastructure needs, the mandating of separation of some organic waste streams, and incentivising biogas generation from waste materials.
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	The NSW EPA has issued a number of resource recovery orders and resource recovery exemptions under the POEO (Waste) Regulation 2014 for a range of waste that may be recovered for beneficial re-use. These waste types typically include those from demolition and construction works, as well as operational waste such as food waste. • Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use. • Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use.
NSW EPA's Waste Classification Guidelines 2014	The NSW EPA *Waste Classification Guidelines* assists waste generators to effectively manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the *POEO Act 1997* and is associated regulations.
Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011	The *POEO Act 1997* and *POEO Amendment Act 2011* are administered by the NSW Environment Protection Authority (NSW EPA) to enable the NSW Government to establish instruments for setting environmental standards, goals, protocols and guidelines. They outline the regulatory requirements for lawful disposal of waste generated during the demolition, construction and operational phases of a development, as well as the system for licencing waste transport and disposal.
The Work Health and Safety Regulation 2017	The Work Health and Safety Regulation 2017 provide detailed actions and guidance associated with the topics discussed in *The Work Health and Safety Act 2011*. The primary aim of the regulation is to protect the health and safety of workers and ensure that risks are minimised in work environments. Workplaces are to ensure that they are compliant with the requirements specified in the regulations. The regulations discuss items such as actions that are prohibited or obligated in work environments, the requirements for obtaining licences and registrations, and the roles and responsibilities of staff in workplaces.
Waste Avoidance and Resource Recovery Act 2001	The *Waste Avoidance and Resource Recovery Act 2001* aims to promote waste avoidance and resource recovery and repeals the *Waste Minimisation and Management Act 1995*. Specific objectives of the *Waste Avoidance and Resource Recovery Act 2001* include: • Encouraging efficient use of resources • Minimising the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste • Ensuring industry and the community share responsibility in reducing/dealing with waste, and • Efficiently funding of waste/resource management planning, programs and service delivery. As of 2016, the addition to the Act of Part 5 defines the legislative framework for the "Return and Earn Container Deposit Scheme" whereby selected beverage containers can be returned to State Government authorities for a monetary refund.

5 Site Clearance and Construction Waste and Recycling Management

5.1 Targets for Resource Recovery

Targets for new development are expected to contribute to state specific targets. The NSW Waste and Sustainable Materials Strategy 2041 (DPIE, 2021) sets a target of 80% average recovery rate from all waste streams by 2030. Analysis by DPIE (2021) indicates that construction and demolition waste recovery rates in 2018-2019 were 77%.

Additionally, in the interests of Council's additional commitments to waste management controls, the construction and excavation procedures should endeavour to reach the following outlined target from the DCP to reduce the volume of demolition, construction and fit out waste, including excavation, going to landfill by 76%.

It is anticipated that the waste minimisation measures in the following sections will assist the Project to meet these targets. Waste reporting and audits can be used to determine the actual percentage of waste that have been recycled during the demolition and construction stage of the Project.

5.2 Waste Streams and Classifications

Construction of the Project is likely to generate the following broad waste streams:

- Site clearance waste
- Construction waste
- Plant maintenance waste
- Packaging waste, and
- Work compound waste from on-site employees.

A summary of likely waste types generated from site clearance and construction activities, along with their waste classifications and proposed management methods, is provided in Table 4.

For further information on how to classify a waste type refer to the NSW EPA (2014) *Waste Classification Guidelines*[6]. Further information on managing demolition and construction waste is available from the NSW EPA website[7].

[6] https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines

[7] http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition

Table 4 Potential waste types and their management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Site Clearance		
Green waste including timber, pine and particle board	General solid waste (non-putrescible)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling. Stumps and large trees to landfill.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling, including copper and aluminium	General solid waste (non-putrescible)	Off-site recycling at metal recycling compounds and remainder to landfill
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling, Chip for landscaping, Sell for firewood *Treated*: reused for formwork, bridging, blocking, propping or second-hand supplier *Untreated*: reused for floorboards, fencing, furniture, mulched secondhand supplier Remainder to landscape supplies.
Doors, windows, fittings	General solid waste (non-putrescible)	Off-site recycling at secondhand building supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling, glazing or aggregate for concrete production
Asbestos	Special waste	Off-site disposal at a licensed landfill facility.

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact *FluoroCycle* for more information[8]
Lead Paint	Hazardous waste	Off-site recycling, Paintback collection[9] or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling at a crushing and recycling company
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Plant Maintenance		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Drained Oil filters	General solid waste (non-putrescible)	Off-site recycling
Batteries	Hazardous waste	Off-site recycling, Contact the Australian Battery Recycling Initiative[10] for more information
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LLPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact *Business Recycling* for more information[11]
Work Compound and Associated Offices		
Food waste	General solid (putrescible) waste	Dispose to landfill with general garbage

[8] Available online from http://www.fluorocycle.org.au/
[9] Available online from https://www.paintback.com.au/
[10] http://www.batteryrecycling.org.au/home
[11] Available online from https://businessrecycling.com.au/

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Recyclable beverage containers including glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or deliver to local NSW container deposit scheme 'Return and Earn' facility[12]
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers such as soiled paper and cardboard and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

5.3 Site Clearance Waste Types and Quantities

The Project will be constructed on land that is primarily greenfield. No structures require demolition. All soil excavated on site will be reused on site during construction.

5.4 Construction Waste Types and Quantities

The Penrith DCP provides no assistance for construction waste quantities. SLR has adopted the 'Factory' and 'Office' waste construction generation rates from Appendix A of The Hills' DCP for estimating the type and quantities of waste generated from construction of the Development. SLR has also referenced *Light Duty Asphalt Pavements - Design, Specification and Construction 2002* Australian Asphalt Pavement Association, specifically Table 10 Passenger Car Parking Areas, up to 50-500 Bays, for estimating the amounts of materials required for car park construction and assumed 10% waste.

The construction waste generation rates used are shown in Table 5 below.

Table 5 Construction waste generation rates

Rate Type	Per Area (m^2)	Waste types and quantities (m^3)								
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other	Asphalt	Granular Base
Factory	1,000	0.25	2.1	1.65	0.45	4.8	0.6	0.5	0	0
Offices	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5.0	0	0
Car Park 50-500 bays	100	0	0.225	0	0	0	0	0	0.3	1.25
Hardstand	1,000	0	2.1	0	0	4.8	0.6	0.5	0	0

Estimates of the quantities of construction waste generated from the Development are shown in Table 6 below.

[12] Available online from http://returnandearn.org.au/

Table 6 Estimated types and quantities of construction waste – Stage 2

Development Component	GFA (m^2)	Waste types and quantities (m^3)								
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other	Asphalt	Granular Base
Warehouse 2	37,540	94	788	619	169	1,802	225	188	-	-
Office 2A	250	13	47	21	22	22	7	13	-	-
Office 2B	650	33	122	55	56	57	18	33	-	-
Dock Office	200	10	38	17	17	18	6	10	-	-
Car park 2B	7,557	-	17	-	-	-	-	-	23	94
Hardstand 2B	11,313	-	238	-	-	543	68	57	-	-
Total	57,510	150	1,250	713	264	2,442	323	299	23	94

The areas shown in Table 6 are based on the floor areas shown on the drawing *12963_DA011[P7] - GROUND FLOOR PLAN - LOT 2 (Incl. UNDERCROFT CARPARK).pdf*.

5.5 Waste Avoidance

In accordance with the Penrith DCP and better practice waste management, the Building Contractor, Building Designer and/or equivalent roles should:

- Develop a purchasing policy based on the approximate volumes of materials to be used so that the correct quantities are purchased.
- Arrange for delivery of materials on an 'as needed' basis to avoid material degradation through weathering and moisture damage.
- Communicate strategies to handle and store waste to minimise environmental, health and amenity impacts.
- Select materials with a low environmental impact over the lifecycle of the building.
- Choose timber from certified plantations and avoid unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau.
- Use leased equipment rather than purchase and disposal.
- Minimise site disturbance and unnecessary excavation.
- Incorporate existing trees and shrubs into the landscape plan.
- Grouping wet areas together to minimise the amount of pipe work required.
- Design the Project to require standard material sizes or make arrangements with manufacturing groups for the supply of non-standard material sizes.
- Design works for de-construction.
- Reduce packaging waste by:
  - Returning packaging to suppliers where practicable to reduce waste further along the supply chain
  - Purchasing in bulk
  - Requesting cardboard or metal drums rather than plastics
  - Requesting metal straps rather than shrink wrap, and

  - Using returnable packaging such as pallets and reels.
- Use prefabricated materials.
- Select materials for Project works with low embodied energy properties or materials that have been salvaged or recycled for the construction of the Project including concrete that utilises slag and fly ash content, structural and reinforced steel that uses recycled steel content or bulk insulation products that contain recycled content, such as recycled glass in glass-wool.
- Preferentially use paints, floor coverings and adhesives with low VOC (volatile organic compound) content.
- Reduce the use of polyvinyl chloride products.
- Implement measures to prevent the occurrence of windblown litter, dust and stormwater pollution.
- Ensure subcontractors are informed of and implement site waste minimisation and management procedures.

5.6 Reuse, Recycling and Disposal

Effective management of construction materials and construction and demolition waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only waste that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to Table 4 for an outline of the proposed reuse, recycling and disposal methods for potential demolition and construction waste streams generated by the Project.

In accordance with the Penrith DCP and best practice waste management, the following specific procedures should be implemented:

- Ensure the site's project management of the site includes minimising waste generation, requiring the appropriate storage and timely collection of waste materials, and maximising re-use or recycling of materials.
- Store waste on site appropriately to prevent cross-contamination and guarantee the highest possible re-use value.
- Consider the potential of any new materials to be re-used and recycled at the end of the Project's life.
- Determine opportunities for the use of prefabricated components and recycled materials.
- Strip topsoil from areas designated for excavation and store it on site for reuse.
- Reuse excavation material will be on-site where possible.
- Re-use formwork where appropriate.
- Retain roofing material cut-offs for re-use or recycling.
- Retain used crates for storage purposes unless damaged.
- Recycle cardboard, glass and metal waste.
- Recycle or dispose of solid waste timber, brick, concrete, asphalt and rock, where such waste cannot be re-used on site, to an appropriately licenced construction and demolition waste recycling facility or an appropriately licenced landfill.

- Dispose of all asbestos and/or hazardous waste in accordance with SafeWork NSW and NSW EPA requirements.
- Deliver batteries and florescent lights to drop off-site recycling facility.
- Return excess materials and packaging to the supplier or manufacturer.
- Dispose of all garbage via a council approved system.

5.7 Waste Storage and Servicing

5.7.1 Waste Segregation and Storage

As outlined in the Penrith DCP, waste materials produced from demolition and construction activities are to be separated at the source and stored separately on-site. It is anticipated that the Project will provide enough space on-site for separate storage, for example, separate skip bins or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal
- Metal and steel, in a condition suitable for recycling at metal recycling facilities
- Timber
- Glass
- Hardstand rubble
- Uncontaminated excavation spoil, if present
- Contaminated excavation spoil, if present
- Hazardous waste, if present
- Paper and cardboard
- General co-mingled recycling waste, and
- Non-recyclable general waste.

If there is insufficient space on-site for full segregation of waste types, the Site Manager, or equivalent role, should consult with the waste and recycling collection contractor to confirm which waste types may be co-mingled prior to removal from the site.

5.7.2 Waste Storage Areas

Waste storage areas will be accessible and allow enough space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the project. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting.

All waste placed in skips or bins for disposal or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Waste containers and storage areas are to be kept clean and in a good state of repair.

As detailed in the Penrith DCP, areas designated for waste storage should:

- Allow unimpeded access by site personnel and waste disposal contractors
- Consider environmental factors which could potentially cause an impact to the waste storage, such as slope, drainage and the location of watercourses and native vegetation
- Allow enough space for the storage of garden waste and other waste materials on-site
- Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste. For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation
- Consider visual amenity, safety, accessibility and convenience in their selection, and
- Not present hazards to human health or the environment.

5.7.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role is to:

- Arrange for suitable waste collection contractors to remove any construction waste from site
- Ensure waste bins are not filled beyond recommended filling levels
- Ensure that all bins and loads of waste materials leaving site are covered
- Maintain waste disposal documentation detailing, at a minimum:
- Descriptions and estimated amounts of all waste materials removed from site
- Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables
- Records of waste and recycling collection vehicle movements, for example, date and time of loads removed, licence plate of collection vehicles, tip dockets from receiving facility, and
- Waste classification documentation for materials disposed to off-site recycling or landfill facilities.
- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA, and
- Remove waste during hours approved by Council.

If skips and bins are reaching capacity, removal and replacement should be organised as soon as possible. All site generated building waste collected in the skips and bins will leave the site and be deposited in the approved site lawfully able to accept them.

5.7.4 Contaminated or Hazardous Waste Management

During the demolition and construction phases, SLR recommends that a qualified and certified contractor is engaged to remove all contaminated or hazardous materials, for example, asbestos, and dispose of all contaminated or hazardous waste at site lawfully able to accept it.

All asbestos and other hazardous waste must be handled according to appropriate legislation and regulation including the Work Health and Safety Regulation 2017.

5.8 Site Inductions

All staff, including sub-contractors and labourers, employed during the demolition and construction phases of the Project must undergo induction training regarding waste management for the Site.

Induction training is to cover, as a minimum, an outline of the WMP including:

- Legal obligations and targets
- Emergency response procedures on-site
- Waste priorities and opportunities for reduction, reuse and recycling
- Waste storage locations and separation of waste
- Procedures for suspected contaminated and hazardous waste
- Waste related signage
- The implications of poor waste management practices, and
- Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.

It is the responsibility of the Site Manager or Building Contractor to notify Council of the appointment of waste removal, transport or disposal contractors.

5.9 Signage

Standard signage is to be posted in all waste storage and collection areas. All waste containers should be labelled correctly and clearly to identify stored materials.

Signs approved by the NSW EPA for labelling of waste materials are available online[13] and should be used where applicable. A selection of signs prepared by NSW EPA is provided in Figure 5.

Figure 5 - Examples of NSW EPA labels for waste skips and bins

[13] NSW EPA approved waste materials signage https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs

5.10 Monitoring and Reporting

The following monitoring practices are to be undertaken to improve demolition and construction waste management and to obtain accurate waste generation figures:

- Conduct waste audits of current projects where feasible.
- Note waste generated and disposal methods.
- Look at past waste disposal receipts.
- Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

As per the Penrith DCP, records of waste volumes recycled, reused or contractor removed are to be maintained. This can include dockets or receipts verifying recycling and disposal in accordance with this WMP. This evidence should also be presented to regulatory bodies when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists and logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

5.11 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation. It will be the responsibility of the Building Contractor to implement the WMP, and an employee and subcontractor responsibility to ensure that they always comply with the WMP.

Where possible, an Environmental Management Representative should be appointed for the Project. Suggested roles and responsibilities are provided in Table 7.

Table 7 Suggested roles and responsibilities for demolition and construction waste management

Responsible Person	General Tasks
Construction Site Manager	Ensuring plant and equipment are well maintained.
	Ordering only the required amounts of materials.
	Keeping materials segregated to maximise reuse and recycling.
	Ultimately responsible for routinely checking waste sorting and storage areas for cleanliness, hygiene and safety issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP.
Construction Environmental Manager or equivalent	Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical.
	Establishing separate skips and recycling bins for effective waste segregation and recycling purposes.
	Ensuring staff and contractors are aware of site requirements.
	Provision of training of the requirements of the WMP and specific waste management strategies adopted for the Project.
	Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements.

Responsible Person	General Tasks
	Approval of off-site waste disposal locations and checking licensing requirements.
	Assessment of suspicious potentially contaminated materials, hazardous materials and liquid waste.
	Monitoring, inspection and reporting requirements.

Daily visual inspections of waste storage areas may be delegated to other on-site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the project induction and contract engagement process.

6 Operational Waste Management

6.1 Targets for Resource Recovery

Targets for new development are expected to contribute to state-specific targets. The NSW *Waste and Sustainable Materials Strategy 2041* (DPIE, 2021) sets a target of 80% average recovery rate from all waste streams by 2030. Analysis by DPIE (2021) indicates that the commercial and industrial waste recovery rate in 2019 was 53%.

It is anticipated that the waste minimisation measures in the following sections will assist the Project to meet the state's targets. Waste reporting and audits can be used to determine the actual percentage of waste that are being, or have been, recycled during operation.

6.2 Waste Streams and Classifications

The operation of the Project is anticipated to generate the following broad waste streams:

- Domestic waste generated by employees, including food waste
- Bulk packaging waste, including polystyrene, plastic wrapping and cardboard boxes
- Office waste
- Garden organic waste from landscaped areas
- Bulky waste items such as furniture and e-waste, and
- Stores, plant and general maintenance waste.

Potential ongoing waste types, their associated waste classifications, and management methods are provided in Table 8. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines. Suggestions for recycling drop off locations and contacts can be found on https://businessrecycling.com.au/ for each waste type.

Table 8 Potential waste types, classifications and management methods for operational waste

Waste Types	NSW EPA Classification	Proposed Management Method
General Operations		
Clean office paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard including bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Recyclable beverage containers, glass and plastic bottles, aluminium cans, steel cans	General solid (non-putrescible) waste	NSW container deposit scheme 'Return and Earn', container recycling at off-site licensed facility
Food waste	General solid (putrescible) waste	Compost on or off-site or dispose to landfill with general garbage
Batteries	Hazardous waste	Off-site recycling, alternatively contact the Australian Battery Recycling Initiative for more information

Waste Types	NSW EPA Classification	Proposed Management Method
Mobile Phones	Hazardous waste	Off-site recycling; can be taken to the Mobile Muster program. Contact Mobile Muster for more information
Bulky polystyrene	General solid (non-putrescible) waste	Off-site recycling or disposal at landfill
Furniture	General solid (non-putrescible) waste	Off-site reuse or disposal to landfill
E-waste	Hazardous waste	Off-site recycling
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Maintenance		
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Off-site recycling or disposal, contact FluoroCycle[14] or Lamp Recyclers[15] for more information
Cleaning chemicals, solvents, area wash downs, empty oil or paint drums, chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.
Garden organics - lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility

6.3 Estimated Quantities of Operational Waste

SLR has adopted the 'Offices' and 'Warehouse' waste generation rates from Penrith Council's *Industrial, Commercial and Mixed-Use Waste Management Guidelines* for estimating the type and quantities of waste generated from the operational activities at the Project. The operational waste generation rates used are shown below in Table 9.

Table 9 Operational waste generation rates

Type of Premises	General Waste Generation (L/100 m^2/day)	Recycling Generation (L/100 m^2/day)
Warehouse	10	10
Offices	10	10

Using the waste generation rates in Table 9 above, the approximate waste quantities for the Project have been calculated. The operational waste quantities were additionally calculated based on the assumptions below:

[14] https://www.fluorocycle.org.au/

[15] https://www.lamprecyclers.com.au/

- The floor areas as shown on the drawing *12963_DA011[P3] - GROUND FLOOR PLAN - LOT 2 (Incl. UNDERCROFT CARPARK).pdf* and
- A week comprising seven days of operation.

The estimated quantities of operational waste generated by the Project are shown in Table 10.

Table 10 Estimated quantities of operational waste and recycling

Project area	Area (m²)	(L/day)		(L/week)	
		General Waste	Recycling	General Waste	Recycling
Warehouse 2	37,540	3,754	3,754	26,278	26,278
Offices	900	90	90	630	630
Dock Office	200	20	20	140	140
Total	38,640	3,864	3,864	27,048	27,048

6.3.1 Additional Types of Operational Waste

Based on the Project's proposed operational activities, SLR understands that large quantities of the recycling stream may include pallets and plastic and cardboard packaging waste. To minimise packaging waste generated in the recyclables stream, packing waste should be returned to the suppliers where possible. Standard pallets should be returned to their owners and non-standard and broken pallets stockpiled and collected as required by a private waste contractor.

The Project is anticipated to produce minimal quantities of garden organics. This waste will be taken by a landscaping contractor who will dispose of it at an off-site licenced facility.

6.4 Waste Storage Area Size

6.4.1 Garbage and Recycling Bins

The waste storage area for the Project must be large enough to adequately store all quantities of operational waste and recycling between collections. All waste storage room calculations have considered the bin dimensions listed in the Penrith DCP, as shown in Table 11.

Table 11 Dimensions and approximate footprint of bins

Bin Capacity	Height (mm)	Depth (mm)	Width (mm)	Footprint (m²)
3 m³	1,540	1,520	2,060	3.13

To allow for ready movement of bins into and out of the bin storage area, the bin storage area is to provide a floor area of at least 200% of the total minimum bin GFA. This can also act as a contingency in the event of spikes in waste generation. Additionally, in accordance with the Penrith DCP, an additional 0.2 m is to be permitted between the bins to allow for manoeuvrability. This has been considered in the calculation of the waste storage area for each of the buildings in the Project.

The storage areas do not include consideration for the storage of bulky and hazardous waste. For the additional storage space for bulky and hazardous waste, refer to Section 6.4.2.

The estimated number of bins required for weekly storage of operational waste and recycling generated by the Project are in Table 12 and are based on:

- The estimated quantities of operational waste and recycling as shown in Table 10
- Bin dimensions from the Penrith DCP as shown in Table 11.

Table 12 Recommended number of bins and storage area

Warehouse	Bin Capacity	Collection Frequency		Number of Bins Required		Total Number of Bins	Recommended Storage Area including Manoeuvring (m^2)
		Garbage	Recycling	Garbage	Recycling		
Warehouse 2	3 m^3	3	3	4	4	8	50.1

6.4.2 Bulky Waste Management

As outlined in the Penrith DCP, additional storage space for the bulky waste stream must be provided. This stream includes broken pallets, broken furniture, e-waste and other materials that cannot be disposed of in the general or recyclable waste stream.

Council's guidelines do not provide storage area dimensions for bulky waste. SLR recommends 8 m^2 be allocated for bulky waste storage for each warehouse. Therefore, in addition to the recommended waste storage area noted in Table 12, the total waste storage areas recommended for the Project are shown in Table 13 below.

Table 13 Total recommended storage area for operations of the Project

Warehouse	Recommended Storage Area (m^2)		
	Waste and Recycling Bins	Bulky waste	Total Storage Area
Warehouse 2	50.1	8	58.1

This additional space can also act as a contingency in the event of spikes in waste generation and allow for additional bins. Depending on the Project's operations, this may include additional bins for the separate storage of items such as hard and soft plastics, timber, glass and metals and aluminium.

6.4.3 Space allowed for waste storage

The drawings show two waste storage areas of 29 m^2 each for the proposed warehouses. This is enough combined space for waste storage.

6.5 Waste Storage Room Location

The design for the waste storage areas of the Project takes into consideration better practice waste management and recommendations from the Penrith DCP. In accordance with better practice waste management and the Penrith DCP, the waste storage area will be located so that:

- It is located away from primary street frontages
- It is near any on-site loading bays
- It is convenient, safe, functional and directly accessible to users in each tenancy and servicing collection staff, but inaccessible to the public
- It avoids pedestrian or vehicular traffic hazards likely to be caused by waste collection and storage,

- It has 1.8 m zone of unobstructed clearance between the waste storage area and the entrance.

As detailed in the Penrith DCP, the waste storage areas will be clearly nominated on site plans accompanying development applications.

The locations of the waste storage areas are shown in Figure 6 below.

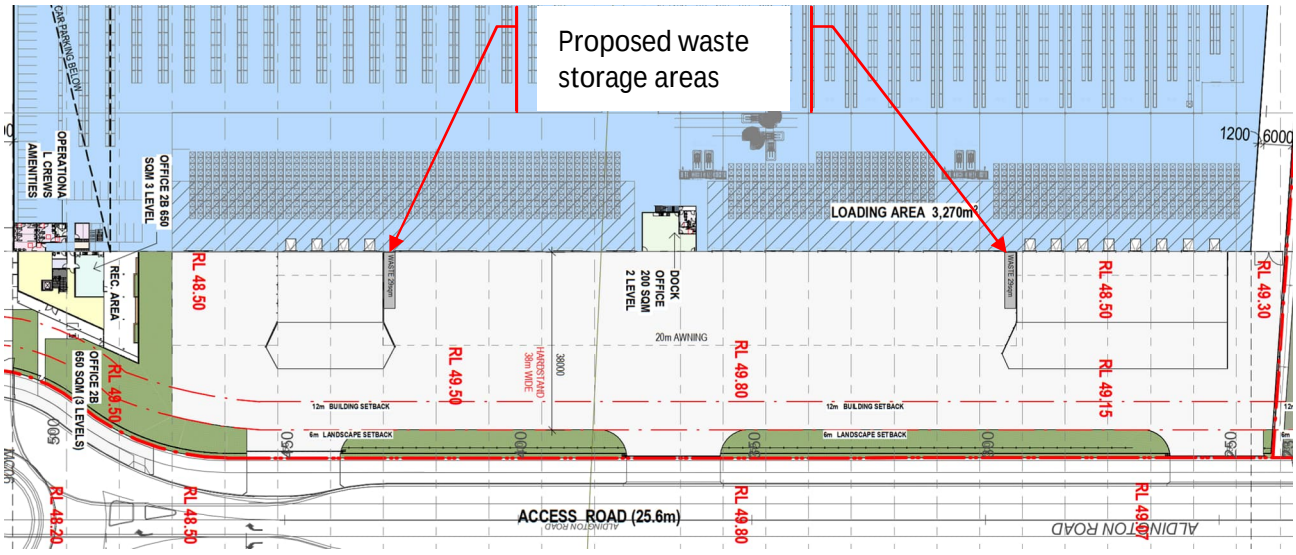

Figure 6 - Stage 2 showing waste storage

6.6 Waste Storage Area Features

In accordance with better practice waste management and the Penrith DCP, the Project's waste storage areas should have the following features:

- Blend in with the design of the wider development and the surrounding streetscape
- Be well lit and well-ventilated
- Fully enclosed and walled
- Adequate vermin prevention measures
- Reduce potential noise and odour impacts
- Enhance safety for the public
- Be connected to a water outlet for washing purposes
- Equipped with a hot and cold tap-based water supply centralised mixing valve
- Floor graded to a central drainage point which is connected to the sewer
- Have water discharge from washing flow to a sewer approved by the relevant authority
- Waterproofed and sealed non-slip floor constructed in accordance with the BCA
- Waste equipment is protected from theft and vandalism
- Be fully enclosed, walled and not permit through access to other on-site waste infrastructure
- Have a minimum 2.7 m unobstructed internal room height in accordance with the BCA

- Adequate lighting and natural or mechanical ventilation in accordance with the BCA
- Provide suitable dual door access with a minimum width of 1.8 m and a minimum 1.8 m unobstructed access corridor for the service of bins
- Provide administrative management, including signage to ensure appropriate use
- Be screened from public areas, preferably with landscape buffer planting, to reduce the impacts of noise, odour and visual amenity, and
- Flexible in design to allow for future changes in operation, tenancies and uses.

6.7 Waste Servicing

SLR anticipates that waste collections will be undertaken through a private contractor. The following general waste servicing access requirements should be implemented:

- Waste will be removed regularly.
- Arrangements should be in place so that the waste and recycling storage rooms are not accessible to the general public.

In accordance with the Penrith DCP, the following is required for the access provisions for of waste collection vehicles:

- Collection vehicles must be able to enter and exit the collection area in a forward direction
- Drawings must show the site's entry point, vehicle's route of travel and manoeuvring
- Swept path models must illustrate how a standard waste collection vehicle will enter, service and exit the site
- A 0.5 m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres
- Unobstructed access, adequate driveways and ramps of sufficient strength to support waste collection
- Access for the collection vehicles must be separate from the entry and exit driveway of any car parking areas to and from public areas
- An acoustic assessment is to accompany the DA and account for waste collection location and times, and
- A structural engineer's report is to accompany the DA and confirm that all infrastructure used for vehicle ingress and egress movements can support the waste collection vehicle's weight. the Penrith DCP consists of dimensions for waste collection vehicles.

Once a private waste contractor is engaged, a valid waste and recycling collection contract is recommended to demonstrate disposal at a waste facility lawfully able to accept it. Written evidence of the valid contract should be kept on-site.

6.8 Waste Avoidance, Reuse and Recycling Measures

6.8.1 Waste Avoidance

Waste avoidance measures include:

- Participating in take-back services to suppliers to reduce waste further along the supply chain
- Avoiding printing where possible
- Review of packaging design to reduce waste but maintain 'fit for purpose'
- Providing ceramic cups, mugs, crockery and cutlery rather than disposable items
- Purchasing consumables in bulk to avoid unnecessary packaging
- Presenting all waste reduction initiatives to staff as part of their induction program, and
- Investigating leased office equipment and machinery rather than purchase and disposal.

6.8.2 Re-use

Possible re-use opportunities include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible.

6.8.3 Recycling

Recycling opportunities include:

- Collecting and recycling e-waste
- Flatten or bale cardboard to reduce number of bins required
- Paper recycling trays provided in office areas for scrap paper collection and recycling
- Collecting printer toners and ink cartridges in allocated bins for appropriate contractor recycling, and
- Development of 'buy recycled' purchasing policy.

6.9 Communication Strategies

Waste management initiatives and management measures should be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include:

- improved satisfaction with services
- increased ability and willingness to participate in recycling
- improved amenity and safety
- improved knowledge and awareness through standardisation of services
- increased awareness or achievement of environmental goals and targets
- reduced contamination of recyclables stream
- increased recovery of recyclables and organics material, if implemented, and
- greater contribution to targets for waste reduction and resource recovery, the environment and heritage conservation.

To realise the above benefits, the following communication strategies should be considered:

- Use consistent signage and colour coding throughout the Project
- Ensure all staff are trained in correct waste separation and management procedures

- Provide directional signage to show location of and routes to waste storage area
- General waste and co-mingled recycling bins should be clearly labelled and colour-coded to ensure no cross contamination, where applicable
- Employees and cleaners should adhere to the WMP for compliance, in consultation with management, and
- Repair signs and labels promptly to avoid breakdown of communications.

6.10 Signage

As outlined in the Penrith DCP, the waste storage and collection areas should be provided with appropriate signage. These signs should clearly identify waste management procedures and provisions to contractors, tenants and visitors should be distributed around the Project.

Signs which clearly identify waste management procedures and provisions to staff and visitors should be distributed around the Project. Key signage considerations are:

- Clear and correct labelling on all waste and recycling bins, indicating the correct type or types of waste that can be placed into a given bin, as shown in Figure 7
- Signposts and directions to location of waste storage areas
- Clear signage in all waste storage areas to instruct users how to correctly separate waste and recycling
- Maintaining a consistent style colour scheme and system for signs throughout the Project, and
- Emergency contact information for reporting issues associated with waste or recycling management.

Colour-coded and labelled bin lids are necessary for identifying bins. All signage should conform to the relevant Australian Standard and use labels approved by the NSW EPA[16]. The design and use of safety signs for waste rooms and enclosures should comply with Australian Standard AS 1319 Safety Signs for the Occupational Environment and clearly describes the types of materials designated for each bin.

Figure 7 - Example of bin labels for operational waste

[16] NSW EPA waste signage and label designs http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

6.11 Monitoring and Reporting

Monitoring is recommended to ensure waste and recycling management arrangements and provisions for the Project are functional, practical and are maintained to the standard outlined in this plan, at a minimum.

Visual assessments of bins and bin storage areas should be conducted by the building manager, at minimum:

- Weekly, in the first two months of operation to ensure the waste management system is sufficient for the operation, and
- Every six months, to ensure waste is being managed to the standards outlined in this document.

In addition, audits are to be conducted on a half-yearly basis to ensure WMP provisions are maintained.

Quantities of waste and recycling associated with disposal of waste and recycling, including dockets, receipts and other physical records should be recorded by the Building Manager. This is to allow reviews of the waste management arrangements and provisions at the site over time. Records of waste disposal should also be available to regulatory authorities such as the NSW Environmental Protection Authority and SafeWork NSW, upon request.

Any deficiencies identified in the waste management system, including, but not limited to, unexpected waste quantities, is to be rectified by the Building Manager as soon as it is practical. Where audits show that recycling is not carried out effectively, management should carry out additional staff training, signage re-examination and reviews of the waste management system where the audit or other reviewing body has deemed necessary. If this waste management plan no longer sufficiently meets the needs of the Project, review and updates to maintain suitability must be undertaken.

6.12 Roles and Responsibilities

It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all warehouse tenants and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors enlisted by the Client are to have roles and responsibilities identified and the Project's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in Table 14.

Table 14 Operational waste management responsibility allocation

Responsible Person	General Tasks
Management	Ensure the WMP is implemented throughout the life of the operation.
	Regularly update the WMP to ensure it remains applicable.
	Undertake liaison and management of contracted waste collections.
	Organise regular internal waste audits.
	Manage any complaints and non-compliances reported through waste audits.
	Perform regular inspections of all waste storage areas and waste management equipment.
	Organise cleaning and maintenance requirements for waste management equipment.
	Monitor bins to ensure no overfilling occurs.
	Ensure effective signage, communication and education is provided to alert visitors, employees and cleaners about the provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.

Responsible Person	General Tasks
	Ensure waste and recycling storage rooms are kept tidy.
	Ensure that regular cleaning and daily transfer of bins is being undertaken by the cleaners
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
Cleaners and staff	Removal of general waste, recyclables, cardboard waste and hazardous waste from floor areas for transfer to centralised waste and recycling collection rooms daily or as required.
	Cleaning of all bins and waste and recycling rooms as required.
	Compliance with the provisions of this WMP.
Gardening contractor, as applicable	Removal of all garden organics waste generated during gardening maintenance activities for recycling at an off-site location or reuse as organic mulch on landscaped areas.

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