



Waste Management Plan

3 Johnston Crescent, Horsley Park

ESR Australia

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Sydney NSW 2000

Prepared by:

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SLR Project No.: 610.31907.00004

21 January 2025

Revision: 3.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
3.0	21 January 2025	Andrew Quinn	Chani Lokuge	Andrew Quinn
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Basis of Report

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1.0 Introduction

This waste management plan has been prepared by SLR Consulting Australia Pty Ltd (SLR) to accompany a state significant development application for proposed warehouses located at 3 Johnston Crescent as part of Horsley Logistics Park Stage 2. The site is currently vacant and cleared and is shown in Figure 1 below.



3 Johnston Cres

Figure 1 Site location

The development is in Fairfield City Council area but is state significant (SSD-71144719) and industry-specific SEARs have been issued. These are shown in Table 1 below.

Table 1 Industry SEARs

Condition	Where Addressed
17. Waste Management Identify, quantify and classify the likely waste streams to be generated during construction and operation.	For construction waste see: - Section 6.2 Waste Streams and Classifications - Section 6.3.2 Construction Waste Types and Quantities - Table 3 Demolition and construction waste types, classifications and management - Table 5 Estimated types and quantities of construction waste



Condition	Where Addressed
	For operational waste see: - Section 7.3 Waste quantities - Table 7 Potential operational waste types, classifications and management - Table 9 Estimated operational waste quantities
Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	For construction waste see: - Section 6.5 Re-use, Recycling and Disposal - Section 6.6 Waste Separation, Storage and Servicing - Table 3 Demolition and construction waste types, classifications and management For operational waste see: - Table 7 Potential operational waste types, classifications and management - Section 7.6 Location of waste storage areas - Section 7.8 Waste System Description - Section 7.11 Waste Avoidance, Reuse and Recycling
Identify appropriate servicing arrangements for the site.	For construction waste see: - Section 6.5 Re-use, Recycling and Disposal - Section 6.6 Waste Separation, Storage and Servicing For operational waste see: - Section 7.6 Location of waste storage areas - Section 7.8 Waste System Description
If buildings are proposed to be demolished or altered, provide a hazardous materials survey.	In a separate hazardous materials survey

This report has been prepared to calculate waste quantities, ensure enough space is allowed for waste storage and that waste is properly handled during the demolition, construction and operational phases of the project as well as addressing relevant requirements of the SEARs including for waste storage area size, location, design and access during the operational phase of the development and using the Fairfield Development Control Plan 2013¹ (FDCP) as a guide.

2.0 Site Description

The proposed development will involve site preparation and construction of three warehouse buildings with offices, as well as associated hardstands and car parking. The total site area is more than 86,000 m².

The proposed site layout² is shown in Figure 2 below.

¹ <https://www.fairfieldcity.nsw.gov.au/Planning-and-Building/Developments-and-Buildings/Development-Control-and-Structure-Plans>

² 14092_DA011[8]





The principal objective of this WMP is to identify all potential wastes likely to be generated at the Development during the demolition, construction and operational phases, including a description of how waste would be handled, processed and disposed of, or re-used or recycled, in accordance with the SEARs, and guided by Council's requirements.

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To assist in ensuring that any environmental impacts during the operational life of the Development comply with the SEARs guided by Council's development consent conditions and other relevant regulatory authorities.

4.1 Waste Management Hierarchy

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.

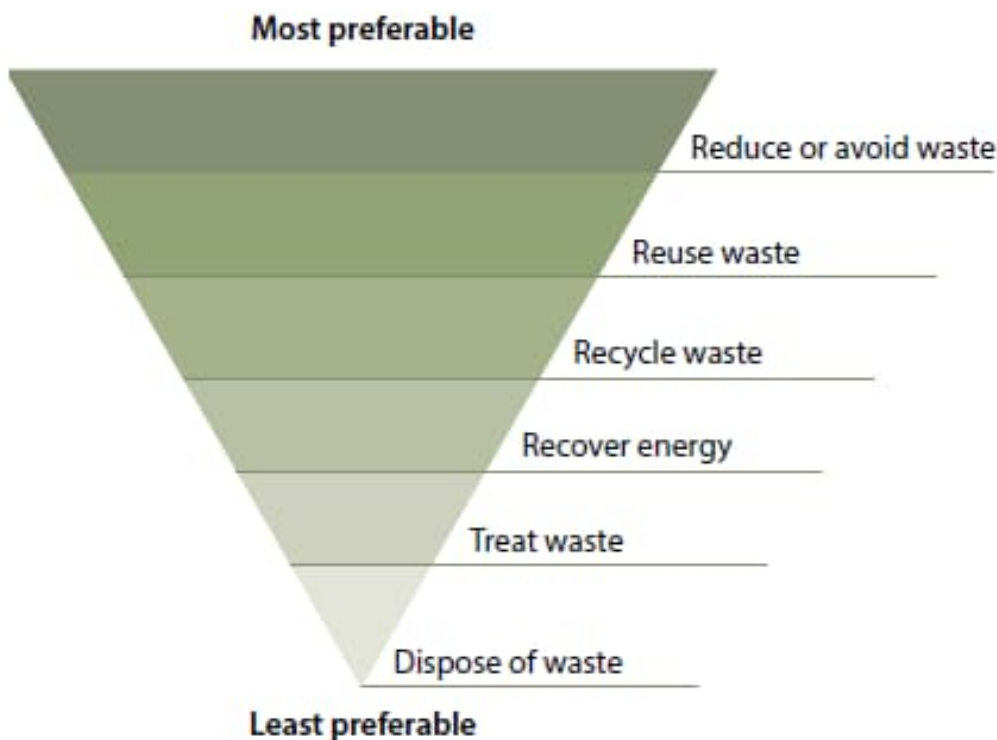


Figure 3 Waste Management Hierarchy

4.2 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.



5.0 Waste Legislation and Guidance

5.1 Fairfield Development Control Plan 2013 Amendment No.4

The following parts of the FDCP refer to waste management.

5.2 Site Access, Parking and Servicing

5.2.6 Site Servicing

Site facilities include:

Development should make adequate and appropriate provisions for site facilities and waste. Their location and their design should minimise impact to the streetscape.

Controls - Core Area

(a) Garbage storage areas should not be accessible from locations shown as access denied in Figure 5.2.4 above the secondary lane frontage and shall not be visually prominent from the public domain area.

Controls - Periphery Area

(c) Garbage storage areas must not be visually prominent from the street. Any storage areas located in proximity to any street or lane must be screened.

(e) Access for service vehicles to the garbage collection point, and any service area is restricted to one point along the sites street frontage, which must be shared with other vehicles accessing the site.

Controls - Across the Entire Centre

(f) Refer to section 5.4.8 Waste Management for information on waste storage and collection.

5.3.8 Waste management

Controls

a. A Waste Management Plan must be submitted as part of the approval process and shall incorporate the following:

iii Garbage rooms shall:

- i. be accessible and cause minimal visual impact, noise, vermin or odour to public and adjoining private spaces,*
- ii. include adequate space for separation of waste material for recycling,*
- iii. include separation facilities for waste to be divided into separate waste streams in order to recycle materials,*
- iv. be secured to prevent unauthorised access, and*
- v. utilise ventilation stacks wherever possible to vent the area.*

iv All garbage compartments and garbage rooms shall:

- i. be constructed using materials impervious to water, capable of being washed out to maintain them clean, and*
- ii. be supplied with a fresh supply of water and provided with a drain connected to the sewer.*



v Waste separation facilities must be provided in all kitchens to separate waste at its source.

vi Management and cleaning of waste services including all compartments, garbage rooms and associated equipment shall be incorporated into the duty statement of the building caretaker.

c. The collection of waste materials from the site shall be in accordance with the NSW Environment Protection Authority, Industrial Noise Policy (2000), so as not to generate excessive noise.

5.2 Other Legislation and Guidance

The waste legislation and guidance outlined in Table 2 below should be referred to during the operation of The Development.

Table 2 A list of legislation and guidance relevant to this report

Legislation and Guidance	Objectives
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 2019 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.
NSW Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021-2027	Replacing the <i>NSW Waste Avoidance and Resource Recovery Strategy (2014-21)</i> , 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 wastes that may be recovered for beneficial re-use. These wastes typically include those from demolition and construction works, as well as ongoing wastes 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 <i>POEO Act 1997</i> and its associated regulations.



Legislation and Guidance	Objectives
<i>Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011</i>	The POEO Act 1997 and POEO Amendment Act 2011 are administered by the 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 wastes 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 provides 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.
<i>Waste Avoidance and Resource Recovery Act 2001</i>	The <i>Waste Avoidance and Resource Recovery Act 2001</i> aims to promote waste avoidance and resource recovery and repeals the <i>Waste Minimisation and Management Act 1995</i>. Specific objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i> 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 and 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.

6.0 Demolition and Construction Waste and Recycling 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 construction and demolition waste recovery rates in 2018-2019 were 77%.

It is anticipated that the waste minimisation measures in the following sections will assist the Development to meet these targets. Waste reporting and audits can be used to determine the actual percentage of wastes that are being, or have been, recycled during the site preparation, demolition and construction stages of the Development.

Waste generated during demolition and construction will be reused on site wherever possible, especially in the case of soil and fill. Waste and recyclables taken off site will be recycled, or disposed of, at facilities lawfully able to accept them.



6.2 Waste Streams and Classifications

The demolition and construction activities are anticipated to generate the following broad waste streams:

- Construction waste as outlined in Section 6.3.2
- Packaging waste, and
- Work compound waste from on-site employees.

A summary of likely waste types generated from demolition and construction activities, along with their waste classifications and proposed management methods are provided in Table 3.

Table 3 Demolition and construction waste types, classifications and management

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Demolition and 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 – treated	General solid waste (non-putrescible)	Reused for formwork, bridging, blocking, propping or second-hand supplier
Timber - untreated		Off-site recycling, chip for landscaping, sell for firewood, reused for floorboards, fencing, furniture, mulched secondhand supplier and remainder to landscape supplies.
Doors, windows, fittings	General solid waste (non-putrescible)	Off-site recycling at secondhand 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 to a licensed landfill facility.



Waste Types	NSW EPA Waste Classification	Proposed Management Method
Fluorescent light fittings and bulbs	General solid waste (non-putrescible)	Off-site recycling or disposal, contact <i>FluoroCycle</i> for more information ³
Paint	Liquid waste	Off-site recycling, Paintback collection ⁴ or disposal
Synthetic rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling, reprocessed for other uses
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling
Carpet	General solid waste (non-putrescible)	Off-site recycling, disposal or reuse
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LDPE, 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 <i>Business Recycling</i> for more information ⁵
Work Compound and Associated Offices		
Food Waste	General solid (putrescible) waste	Dispose to landfill with general garbage
Recyclable beverage containers, such as glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Recycling at off-site licensed facility or at NSW container deposit scheme 'Return and Earn' facility ⁶
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, food and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

For further information on how to determine a waste's classification refer to the NSW EPA (2014) *Waste Classification Guidelines*.⁷ Further information on managing site preparation, demolition and construction wastes is also available on the NSW EPA website.⁸

³ Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

⁴ Available online from <https://www.paintback.com.au/>

⁵ Available online from <https://businessrecycling.com.au/>

⁶ Available online from <http://returnandearn.org.au/>

⁷ Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

⁸ Available online from <http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition>



6.3 Waste Types and Quantities

6.3.1 Demolition Waste Generation Rates

The site is cleared and no demolition is required. Any soil excavated on the site will be retained on site.

6.3.2 Construction Waste Types and Quantities

The FDCP provides no advice on construction waste quantities. As an alternative, SLR has adopted the 'Factory' and 'Office' waste generation rates from *The Hills' Development Control Plan*⁹ for estimating the type and quantities of waste generated from construction of the proposed buildings. The construction waste generation rates used are shown in Table 4 below.

Table 4 Construction waste generation rates

Rate Type	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		
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5		
Carpark	1,000		0.225						3.0	12.5
Hardstand	1,000		2.1			4.8	0.6	0.5		

The areas shown in Table 5 are based on the areas for the Development shown in drawing 14092_DA011[8].

Estimates of the quantities of construction waste generated from the Development are shown in Table 5 below.

Table 5 Estimated types and quantities of construction waste

Warehouse	Component	Area (m ²)	Waste types and quantities (m ³)								
			Timber	Asphalt	Concrete	Granular Base	Bricks	Gyprock	Sand or Soil	Metal	Other
Warehouse A1	Warehouse	10,825	2.7	-	22.7	-	17.9	4.9	52.0	6.5	5.4
	Offices	520	2.7	-	9.8	-	4.4	4.5	4.6	1.4	2.6
Warehouse A2	Warehouse	8,388	2.1	-	17.6	-	13.8	3.8	40.3	5.0	4.2
	Offices	517	2.6	-	9.7	-	4.4	4.4	4.5	1.4	2.6
Warehouse A	Car park	2,966	-	8.9	0.7	37.1	-	-	-	-	-
Warehouse B	Warehouse	33,581	8.4	-	70.5	-	55.4	15.1	161.2	20.1	16.8
	Offices	2,069	10.6	-	38.9	-	17.6	17.8	18.2	5.7	10.3
	Car park	3,785	-	11.4	0.9	47.3	-	-	-	-	-
Hardstand		17,583	-	-	36.9	-	-	-	84.4	10.5	8.8
Total		80,234	29.0	20.3	207.7	84.4	113.5	50.5	365.1	50.8	50.7

⁹ The Hills DCP is one of few DCPs that have waste generation rates for construction and considered reasonably accurate.



6.4 Waste Avoidance Strategies

The Building Contractor, Building Designer and/or those in equivalent roles should follow better practice waste management and the principles of Ecologically Sustainable Development.

Recommendations for the Building Designer include:

- Using prefabricated components
- Using low formaldehyde wood products, post-consumer reused timber and/or Forest Stewardship Council certified timber
- Using fittings and furnishings that have been recycled, are made from or incorporate recycled materials and have been certified as sustainable or environmentally friendly by a recognised third-party certification scheme
- Preferentially using building materials, fittings and furnishings, including structural framing, roofing and façade cladding, that have longer life and better re-use and recycling potential
- Reducing the use of polyvinyl chloride products
- Preferentially using paints, floor coverings and adhesives with low VOC (volatile organic compound) content
- Avoiding unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau
- Selecting materials based on low embodied energy properties that suit the Project, such as recycled materials including recycled steel and glass-wool insulation, or concrete with slag and fly ash content
- Centralising wet areas together to minimise piping, and
- Designing for deconstruction rather than demolition.

Recommendations for the Building Contractor include:

- Applying practical building designs and construction techniques
- Minimising excavation works
- Investigating leased equipment and machinery rather than purchase and disposal
- Sorting and segregating site preparation and construction wastes to ensure efficient recycling of wastes
- Preferentially selecting building materials, fittings and furnishings, including structural framing, roofing and façade cladding, that have longer life and better re-use and recycling potential
- Store wastes on-site appropriately to prevent cross-contamination and/or mixing of different waste types
- Reducing packaging waste by:
 - o Returning packaging to suppliers where practicable to reduce waste further along the supply chain
 - o Purchasing in bulk



- o Requesting cardboard or metal drums rather than plastics
- o Requesting metal straps rather than shrink wrap, and
- o Using returnable packaging such as pallets and reels.
- Arranging deliveries 'as needed' to mitigate degradation, weathering or moisture damage, and
- Ensure subcontractors are informed of and implement site waste minimisation and management procedures.

6.5 Re-use, Recycling and Disposal

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

Refer to Table 3 for an outline of the proposed reuse, recycling and disposal methods for potential waste streams generated by the development.

The following specific procedures should be implemented:

- concrete, tiles and bricks should be reused or recycled off-site
- steel should be recycled off-site, and all other metals should be recycled where economically viable
- framing timber should be reused on-site or recycled off-site
- windows, doors and joinery should be recycled off-site, where possible
- all used crates should be stored for reuse unless damaged
- all glass that can be economically recycled should be recycled
- all solid waste timber, brick, concrete, rock that cannot be reused or recycled should be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner
- all asbestos, hazardous and/or intractable wastes should be disposed of in accordance with SafeWork NSW and NSW EPA requirements
- provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources should be provided on site, and
- all waste and recycling should be disposed of through a council approved system.

6.6 Waste Separation, Storage and Servicing

6.6.1 Waste Separation and Storage

Waste materials produced from demolition and construction activities will be separated at the source and stored separately on-site. A more detailed construction waste management plan will be prepared that will provide further information on waste storage on site during construction.

It is anticipated that there will be enough space on-site for separate storage in, 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 separation 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 before removal from the site.

6.6.2 Waste Storage Areas

Waste storage areas will be accessible and allow sufficient 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 will 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 waste does not fall, blow, wash or otherwise escape from the site. Waste containers and storage areas will be kept clean and in a good state of repair.

Applicable weather protection measures should be considered for storage spaces.

In accordance with good practice waste management, areas designated for waste storage will:

- Allow unimpeded access by site personnel and waste disposal contractors
- Take into account 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 sufficient 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 and accessibility in their selection, and
- Not present hazards to human health or the environment.



6.6.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role will:

- 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:
 - o Descriptions and estimated amounts of all waste materials removed from site
 - o Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables
 - o 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
 - o 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 approved hours.

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

6.6.4 Waste Servicing and Transport

The frequency of the waste removal will, in most cases, be dictated by the quantities of material being deposited into each of the dedicated skip bins. All skips leaving the site will be covered with a suitable tarpaulin to ensure that the spillage of waste from the skips while in transit is eliminated.

6.7 Signage

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

Signs approved by the NSW EPA for labelling of waste materials are available online¹⁰ and should be used where applicable. A selection of the EPA's signs is shown in Figure 4.

¹⁰ NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>





Figure 4 Examples of NSW EPA labels for waste and skip bins

6.8 Site Inductions

All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Development will undergo induction training regarding waste management.

Induction training will 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 wastes
- 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.

6.9 Monitoring and Reporting

During the demolition and construction phases, the following monitoring practices will 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.



Records will be maintained for all waste quantities that are recycled, reused or removed by a contractor. All demolition and construction waste dockets will be kept which show which facility received the material for recycling or disposal.

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 or equivalent role on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits should be carried out by the building contractor or equivalent role 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 will be re-examined.

6.10 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 site manager, or equivalent role, to implement the WMP, and the responsibility of employees and subcontractors to ensure that they comply with the WMP at all times.

Suggested roles and responsibilities for waste management at the site are provided in Table 6. Where possible, a construction environmental manager, or equivalent role, should be appointed for the site preparation and construction work. An equivalent construction environmental manager role is defined to be a person dedicated to overseeing the environmental compliance and performance of a development. Where a construction environmental manager is not appointed, responsibilities in Table 6 for the construction environmental manager will become those of the site manager.

Table 6 Demolition and construction waste management roles and responsibilities

Role	Responsibilities
Site Manager	- Ensuring plant and equipment are well maintained - Ordering only the required amount of materials - Keeping materials segregated to maximise reuse and recycling - Ensuring that waste sorting and storage areas are maintained in a tidy and functional state and do not present hazards to human health or the environment - Ensure hazardous or contaminated materials are appropriately managed and disposed - Ensure site records and documentation is kept and is complete - Ensure this WMP are implemented, and - Liaise with Council and regulatory authorities as required.
Construction Environmental Manager or equivalent	- Ensuring staff and contractors are aware of site requirements for waste management - Establishing separate skips and stockpiles and recycling bins for effective waste segregation and recycling purposes - Developing or identifying, and using, local commercial opportunities for re-use of materials where re-use on-site is impractical - Facilitate correct waste collection - Engage suitable waste collection and disposal contractors - Approval of off-site waste disposal locations and checking licensing requirements



Role	Responsibilities
	• Arranging for the assessment of potentially hazardous or contaminated materials • Arranging for appropriate contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements • Monitor and maintain site environmental controls and • Monitoring, inspection and reporting requirements.

7.0 Operational Waste and Recycling Management

7.1 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 Development to achieve this recycling rate. Waste reporting and audits can be used to determine the actual percentage of wastes that are being or have been recycled during operation.

7.2 Waste Streams and Classifications

The operation of the Development is likely to generate the following broad waste streams:

- Domestic type waste generated by tenants, staff and visitors
- Office waste
- Garden organic waste from landscaped areas
- Bulky waste items such as furniture and e-waste.

Potential waste types, their associated waste classifications, and management methods are provided in Table 7.

Table 7 Potential operational waste types, classifications and management

Waste Types	NSW EPA Waste 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
Lead-acid or nickel-cadmium batteries	Hazardous waste	



Waste Types	NSW EPA Waste Classification	Proposed Management Method
Other batteries	General solid waste (non-putrescible)	Off-site recycling, Contact the Australian Battery Recycling Initiative ¹¹ for more information
Mobile Phones	General solid waste (non-putrescible)	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	General solid waste (non-putrescible)	Off-site recycling
Clinical waste	Special waste	Stored, handled, collected and disposed of according to AS 3816 and the <i>Protection of the Environment Operations Act 1997</i>
Printer toners and ink cartridges	General solid waste (non-putrescible)	Off-site recycling, free disposal box or bags and pickup service exists for printer toners and ink cartridges
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Maintenance		
Spent smoke detectors ¹² - some commercial varieties	Hazardous waste	Disposal to landfill, or off-site disposal at licensed facility
Spent smoke detectors - others	General solid (non-putrescible) waste,	
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	General solid (non-putrescible) waste	Off-site recycling or disposal, contact FluoroCycle ¹³ or Lamp Recyclers ¹⁴ for more information
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups that were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming.	Hazardous waste	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups that have been cleaned by washing or vacuuming.	General solid waste (non-putrescible)	

¹¹ <http://www.batteryrecycling.org.au/home>

¹² The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's Code of practice for the near-surface disposal of radioactive waste in Australia (1992) must be met.

¹³ <https://www.fluorocycle.org.au/>

¹⁴ <https://www.lamprecyclers.com.au/>



Waste Types	NSW EPA Waste Classification	Proposed Management Method
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

For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines. Recycling drop-off locations and contacts can be found on <https://businessrecycling.com.au/> for each waste type.

7.3 Waste quantities

The FDCP provides no waste generation figures to assist in estimating waste quantities for this development. For estimating the type and quantities of waste generated from the operational activities of the Development, SLR has adopted the 'offices' rates from the NSW EPA's *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities* and the 'warehouse' waste generation rates from the Penrith Council Development Control Plan (PDCP).

The operational waste generation rates used are shown below in Table 8.

Table 8 Operational waste generation rates

Type of Use	Source	Source Classification	General Waste Generation (L/100 m ² /day)	Recycling Generation (L/100 m ² /day)
Offices	EPA Guidelines	Offices	8	6
Warehouse	PDCP	Warehouse	10	10

Using the waste generation rates in Table 8 above, the approximate weekly waste quantities for the Development have been calculated based on the assumptions below:

- The floor areas shown in 14092_DA011[8]
- A week comprising seven days of operation.

The quantities of operational waste estimated to be generated by the development are shown in Table 9.

Table 9 Estimated operational waste quantities

Warehouse	Use Type	Area (m ²)	(L/day)		(L/week)	
			General Waste	Recycling	General Waste	Recyclables
Warehouse A1	Warehouse	10,825	1,083	1,083	7,578	7,578
	Office	520	42	31	291	218
	Total	11,345	1,124	1,114	7,869	7,796
Warehouse A2	Warehouse	8,388	839	839	5,872	5,872
	Office	517	41	31	290	217
	Total	8,905	880	870	6,161	6,089
Warehouse B	Warehouse	33,581	3,358	3,358	23,507	23,507
	Office	2,069	166	124	1,159	869
	Total	35,650	3,524	3,482	24,665	24,376



7.4 Waste Storage Area Size

7.4.1 Garbage and Recycling Bins

The waste storage areas must be large enough to adequately store all quantities of operational waste and recycling between collections. Given the sizes of the warehouses in the development, a front lift waste collection service using 3 m³ bins is the most likely service to be provided.

Typical bin dimensions are shown in Table 10, although these can vary between manufacturer and supplier.

Table 10 Dimensions and approximate footprint of bins

Bin Capacity	Height (mm)	Depth (mm)	Width (mm)	Footprint (m ²)
3 m ³	1225	1505	1805	2.72

To allow for ready access to bins, an area of at least 200% of the total minimum bin footprint has been allowed in the bin storage areas. This can also act as a contingency in the event of spikes in waste generation.

The recommended storage areas do not include the storage of bulky waste. For additional storage space for bulky waste, refer to Section 7.5.

The estimated number of bins required for weekly storage of operational waste and recycling are based on:

- The estimated quantities of operational waste and recycling generated are shown in Table 9
- Bin dimensions shown in Table 10.

The estimated number of bins and waste storage space required are shown in Table 11.

Table 11 Recommended number of bins and storage areas

Warehouse	Bin Capacity		Collection Frequency per Week		Number of Bins		Total Number of Bins	Recommended Storage Area (m ²)
	Garbage	Recyclables	Garbage	Recyclables	Garbage	Recyclables		
Warehouse A1	3 m ³	3 m ³	3	3	1	1	2	10.9
Warehouse A2	3 m ³	3 m ³	3	3	1	1	2	10.9
Warehouse B	3 m ³	3 m ³	3	3	3	3	6	32.6

7.5 Bulky Waste

This stream includes broken pallets, broken furniture, e-waste and other materials that cannot be disposed of in the general or recyclable waste stream. While the FDCP provides no specification for bulky waste for this kind of development, SLR recommends 4 m² be allocated for bulky waste storage for each warehouse. The proposed 3 m³ front lift bins are able to accommodate bulky waste to a significant degree so large areas for other bulky waste are not required.



Therefore, in addition to the recommended waste storage area noted in Table 11, the total waste storage areas recommended for the Development are shown in Table 12.

Table 12 Total recommended storage areas

Warehouse	Recommended Storage Area (m ²)		
	Waste and Recycling Bins	Bulky Waste	Total Storage Area
Warehouse A1	10.9	4	14.9
Warehouse A2	10.9	4	14.9
Warehouse B	32.6	4	36.6

This additional space can also act as a contingency in the event of spikes in waste generation and allow for additional bins if required.

7.6 Location of waste storage areas

The locations of the waste storage areas are shown in Figure 5 below.

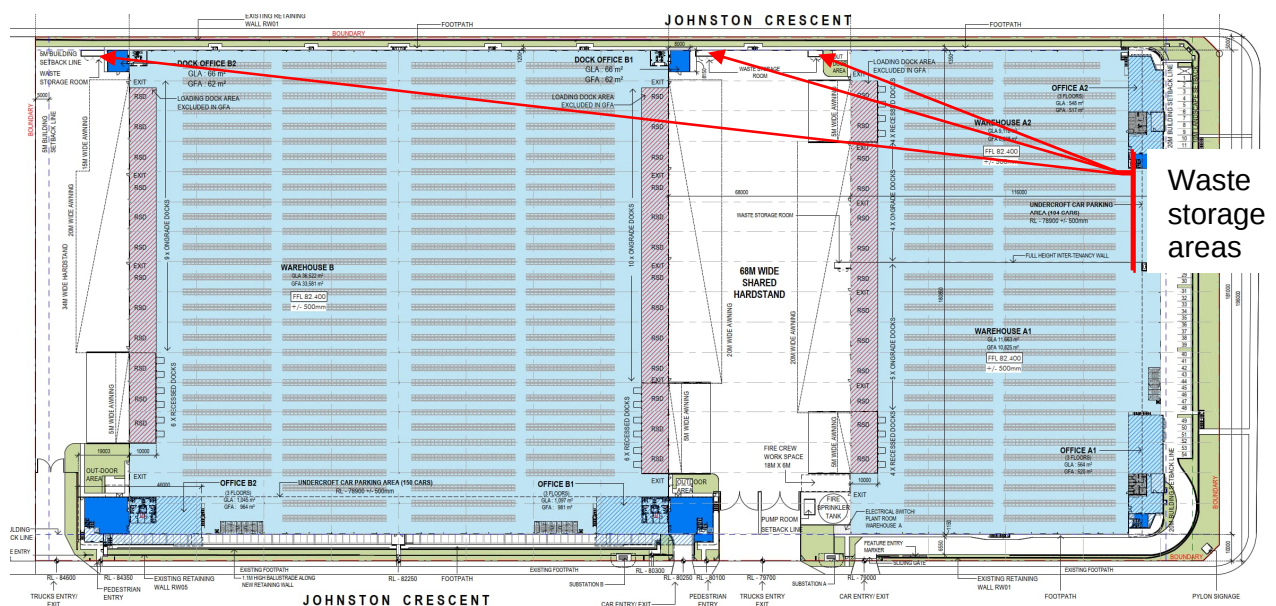


Figure 5 Waste storage locations

7.7 Waste storage area construction

The waste storage areas will have dual, 180-degree, outwards opening, self-closing sealed doors with a minimum opening of 1800 mm and minimum internal width of 1800 mm. The rooms will be enclosed, walled, with a roof and connected to sewer. There will be no access from other on-site infrastructure.

The entrance will face outwards so that there is enough space in front of the entrance to allow a 12.5 m long collection vehicle to approach the entrance directly and not at an angle.



7.8 Waste System Description

Waste will be separated and placed by tenants in bins for each stream in their storage locations. Waste collection vehicles will enter the site through the heavy vehicle entrance and drive to the bins. They will drive onto the bins, empty them into the collection vehicle, reverse off the bins, turn around and exit the site through the heavy vehicles exit. Please refer to the separate traffic management plan.

7.9 Litter Control

Bins will be stored in enclosures in purpose-designed bins with close fitting hangers. No litter is expected to be generated during storage. There is some potential for litter to be generated during collection. An operational waste management plan, yet to be prepared will provide more details on the practices to be implemented for the minimisation of litter generation and confinement of litter.

7.10 Waste Vehicle Access

The following access provisions will apply for collections:

- Collection vehicles will be able to enter and exit the site in a forward direction
- Unobstructed access, adequate driveways and ramps of sufficient strength to support waste collection vehicle have been allowed for.

7.11 Waste Avoidance, Reuse and Recycling

7.11.1 Waste avoidance

Waste avoidance measures include:

- Returning packaging materials like cardboard to the suppliers through the services of the supplier delivery trucks, allowing the reduction of waste further along the supply chain
- Providing ceramic cups, mugs, crockery and cutlery rather than disposable items
- Bulk purchasing and the purchasing of items that use minimal packaging
- Presenting all waste reduction initiatives to staff and tenants as part of their induction program, and
- Leasing equipment and machinery rather than outright purchase and disposal.

7.11.2 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.

7.11.3 Recycling

Recycling opportunities include:

- Collecting and recycling e-wastes



- Printer toners and ink cartridges, if purchased, are collected in allocated bins for appropriate contractor recycling
- Paper recycling trays provided in communal and staff areas for scrap paper collection and recycling
- Providing separate receptacles for general waste, recycling and paper and cardboard throughout public areas, as well as within staff areas, to encourage source-separation of waste streams
- Work with tenants to investigate opportunities for the use of recycled paper bags or reusable bags in place of plastics bags
- Separating, by a reasonable distance, the storage areas for recyclables from the general waste storage areas to avoid cross contamination, and
- Development of 'buy recycled' purchasing policy.

7.12 Communication Strategies

Education and communication on waste management initiatives and measures will be regularly and clearly conveyed to staff, cleaners and visitors. 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 which can incur a collection contractor penalty fee
- Increased recovery of recyclables and organics material, if implemented, and
- Greater contribution to state-wide targets for waste reduction and resource recovery.

To realise these benefits, the following communications strategies are recommended for the Facilities Manager:

- Use consistent signage and colour coding throughout the Development
- Ensure all staff are informed of correct waste separation and management procedures
- Provide directional signage to show locations and routes to waste storage areas
- Repair signs and labels promptly to avoid a breakdown in communication
- Clearly label general and comingled waste bins to ensure no cross contamination and to identify the types of waste that may be disposed of in each bin, and
- Educate all staff and contractors associated with the Development, ensuring they adhere to this WMP.



7.13 Signage

Signs which clearly identify waste management procedures and provisions to contractors, staff and visitors will be posted at the Development as appropriate.

The design and use of safety signs will comply with Australian Standard AS 1319 *Safety Signs for the Occupational Environment* and clearly describe the types of materials designated for each bin.

Colour-coded and labelled bin lids are necessary for identifying bins and the Australian Standard AS 4123.7-2006 (R2017) *Mobile waste containers Part 7: Colours, markings, and designation requirements* provides recommendations for the designated colours for waste bins depending on the type of waste the bins are to receive. The colours that will apply to ongoing waste generated by the Development are:

- Blue: Paper and cardboard
- Yellow: Recyclables (other than paper and cardboard)
- Red: General waste.

All bin signage should also follow the NSW EPA's standard signage.¹⁵

Other key signage considerations include:

- 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 6
- 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 that complies with AS 4123, and a system for signs throughout the Development, and
- Emergency contact information for reporting issues associated with waste or recycling management.



Figure 6 Example NSW EPA labels for ongoing waste

¹⁵ NSW EPA waste signs/posters <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>



7.14 Roles and Responsibilities

It is the responsibility of the Facilities Manager, or equivalent role, to implement this WMP and a responsibility of all tenants and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors have the roles and responsibilities of all waste management personnel identified and The Development's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in Table 13.

Suggested roles and responsibilities for site preparation, demolition and construction waste management

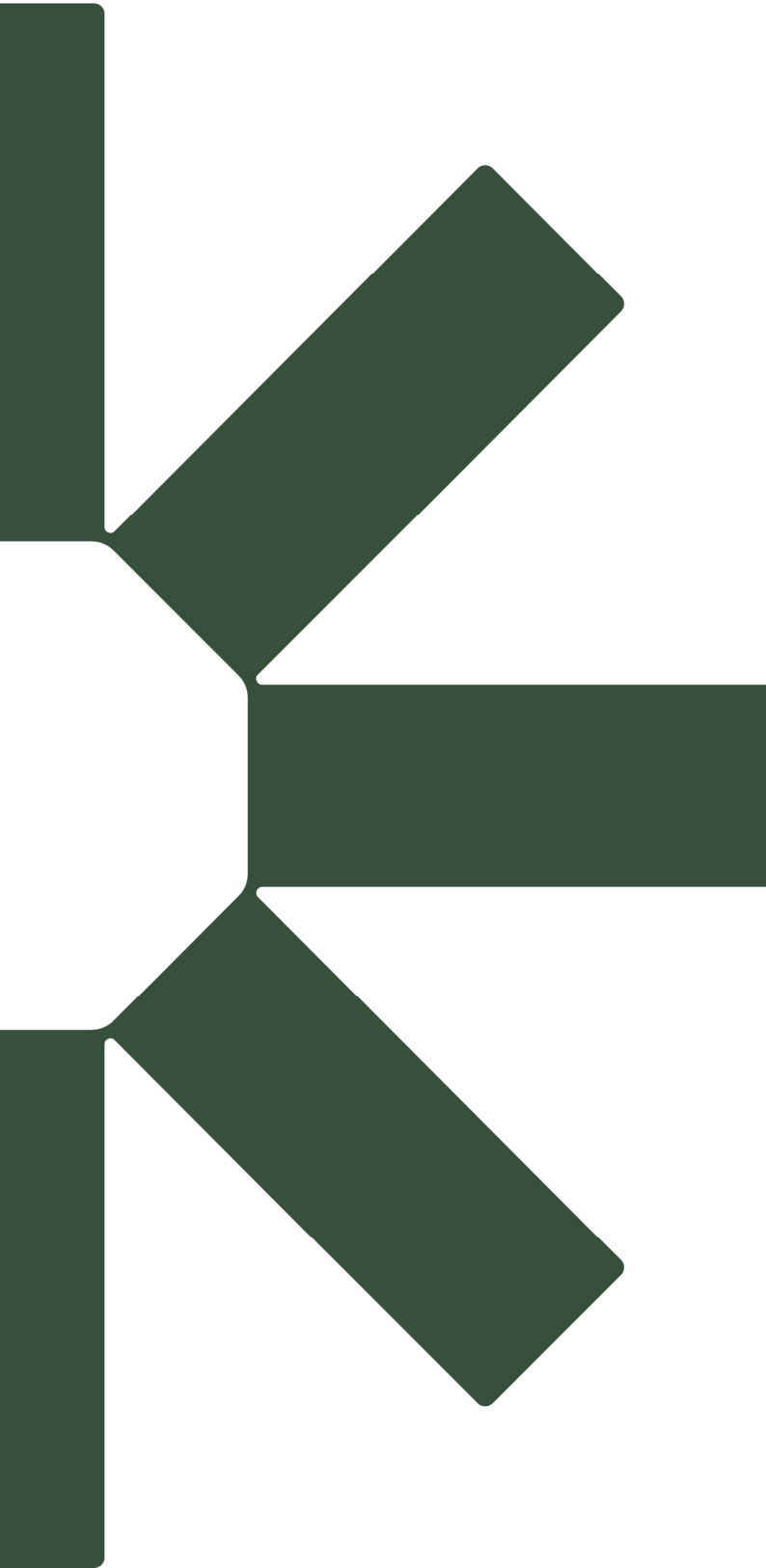
Table 13 Suggested operational waste-related roles and responsibilities

Responsible Person	General Tasks
Facilities Manager or equivalent role	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP as needed to ensure the plan remains applicable to the site.
	Undertake liaison and management of contracted waste and recycling collections with Council, contractors and any relevant authorities.
	Regularly conduct waste audits to review system performance and identify any additional materials that could be recovered.
	Manage any complaints and non-compliances reported through waste audits and other sources.
	Ensure all monitoring and audit results are well documented and conducted as specified in this WMP.
	Conduct regular waste sorting, physical condition and cleanliness inspections of bins, waste storage rooms and all other waste management equipment for functionality, hygiene and safety.
	Organise cleaning and maintenance requirements for waste management equipment as required.
	Ensure waste and recycling storage rooms are kept tidy.
	Monitor bins to ensure no overfilling occurs and manage unexpected waste quantities to mitigate waste overflow in storage areas
	Ensure effective signage, communication and education is provided to alert visitors, employees, site management staff 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.
	Manage ongoing education on correct source separation and waste management at least every three months.
	Ensure that regular cleaning and daily transfer of bins is correctly being undertaken by the cleaners.
	Ensure all waste compactors and balers are maintained and operational.
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
Cleaners and caretakers	Transfer general waste, recyclables, cardboard waste and hazardous waste from public spaces to the waste and recycling storage areas on a daily basis or as required.
	Maintain and operate compactors and balers, if obtained, and ensure no overfilling occurs.



Responsible Person	General Tasks
	Cleaning of all bins and waste and recycling rooms as per the direction of the site manager, or equivalent role.
	Monitor bins to ensure no overfilling occurs.
	Ensure bins and waste storage areas are kept tidy and clean.
	Compliance with the provisions of this WMP.
Tenants	Transfer general waste, recyclables, cardboard waste and hazardous waste to allocated waste and recycling storage areas in the loading docks.
	Adhere to all waste management directions and comply with the Development's waste management provisions as outlined by the Facilities Manager.





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