



Telopea Stage 1A

Waste Management Plan

Homes NSW

Locked Bag 5000
Parramatta NSW 2124

Prepared by:

SLR Consulting Australia Pty Ltd

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Basis of Report

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Table of Contents

Basis of Report	i
1.0 Introduction	1
1.1 Overview	1
1.2 Project Description	2
1.3 Objectives	4
1.4 Review of WMP	5
2.0 Better Practice Waste Management and Recycling	5
2.1 Waste Management Hierarchy	5
2.2 Benefits of Adopting Better Practice	6
3.0 Waste Legislation and Guidance.....	6
4.0 Demolition and Construction Waste and Recycling Management.....	8
4.1 Targets for Resource Recovery.....	8
4.2 Waste Streams and Classifications	8
4.3 Demolition Waste Types and Quantities	10
4.4 Construction Waste Types and Quantities.....	11
4.5 Waste Avoidance	12
4.6 Reuse, Recycling and Disposal	13
4.7 Waste Storage and Servicing	14
4.7.1 Waste Segregation and Storage.....	14
4.7.2 Waste Storage Areas	15
4.7.3 Waste Servicing and Record Keeping	15
4.7.4 Contaminated or Hazardous Waste Management	16
4.8 Site Inductions.....	16
4.9 Signage.....	17
4.10 Monitoring and Reporting	17
4.11 Roles and Responsibilities	18
5.0 Operational Waste Management	19
5.1 Targets for Resource Recovery.....	19
5.2 Waste Quantities.....	19
5.2.1 Waste quantities.....	19
5.2.2 Chute Rooms	19
5.3 Bulky Waste	20
5.4 Bin numbers and Space	20
5.5 Management	22



5.6	Waste Avoidance, Reuse and Recycling Measures.....	23
5.6.1	Waste Avoidance	23
5.6.2	Re-use	23
5.6.3	Recycling.....	23
5.7	Communication Strategies	23
5.8	Signage.....	24
5.9	Monitoring and Reporting	25
5.10	Roles and Responsibilities	26

Tables

Table 1	Number of Units by Block	3
Table 2	Legislation and guidance	6
Table 3	Potential waste types and their management methods	9
Table 4	Demolition waste generation rates.....	11
Table 5	Estimated quantities of demolition waste	11
Table 6	Construction waste generation rates.....	12
Table 7	Anticipated types and estimated quantities of construction waste	12
Table 8	Suggested demolition and construction waste management roles and responsibilities	18
Table 9	Bin numbers and chute room areas	20
Table 10	Waste stream allocations.....	20
Table 11	Number of Units by Shared Waste Storage	21
Table 12	Bin numbers and waste storage area by block.....	21
Table 13	Waste stream allocations.....	22
Table 14	Operational waste management responsibility allocation	26

Figures

Figure 1	Stage 1A	2
Figure 2	Site location	3
Figure 3	Basement layout	4
Figure 4	Waste management hierarchy.....	6
Figure 5	Examples of NSW EPA labels for waste skips and bins	17
Figure 6	Proposed waste storage areas.....	22
Figure 7	Example of bin labels for operational waste	25



1.0 Introduction

1.1 Overview

Homes NSW is the NSW Government agency responsible for the construction, maintenance and repair of public housing across the state. Homes NSW is looking to progress concept design refinements for the redevelopment of Stage 1A of the Telopea project which was originally developed by Frasers Property. This development includes both social and affordable housing and market housing.

The concept design refinements will include:

- *Refinement within current building envelopes*
- *Siting of social and affordable housing within dedicated buildings for highest and best-use outcomes*
- *Staging strategy for early delivery of social housing*
- *Refinement of apartment mix to Homes NSW brief*
- *Refinement of apartment and private open space area requirements to Homes NSW brief*
- *Staging, access, constructability and efficiency of carpark floorplates*
- *Review of apartment and car parking yields*

The proposed development comprises the demolition, construction and operation of three residential towers. The design for the development is shown in Figure 1 below.





Figure 1 Stage 1A

The development is state significant and an SSDA will be lodged with the Department of Planning Housing and Industry. The SEARs are those issued initially for the development. SLR understands that Parramatta City Council supports the original waste management plan and the waste system described in it, despite changes to the Parramatta DCP since and the NSW Government's residential food separation mandate.

1.2 Project Description

The proposed development is located on Sturt Street and Polding Place, Telopea. The location of the site is shown in Figure 2 below.



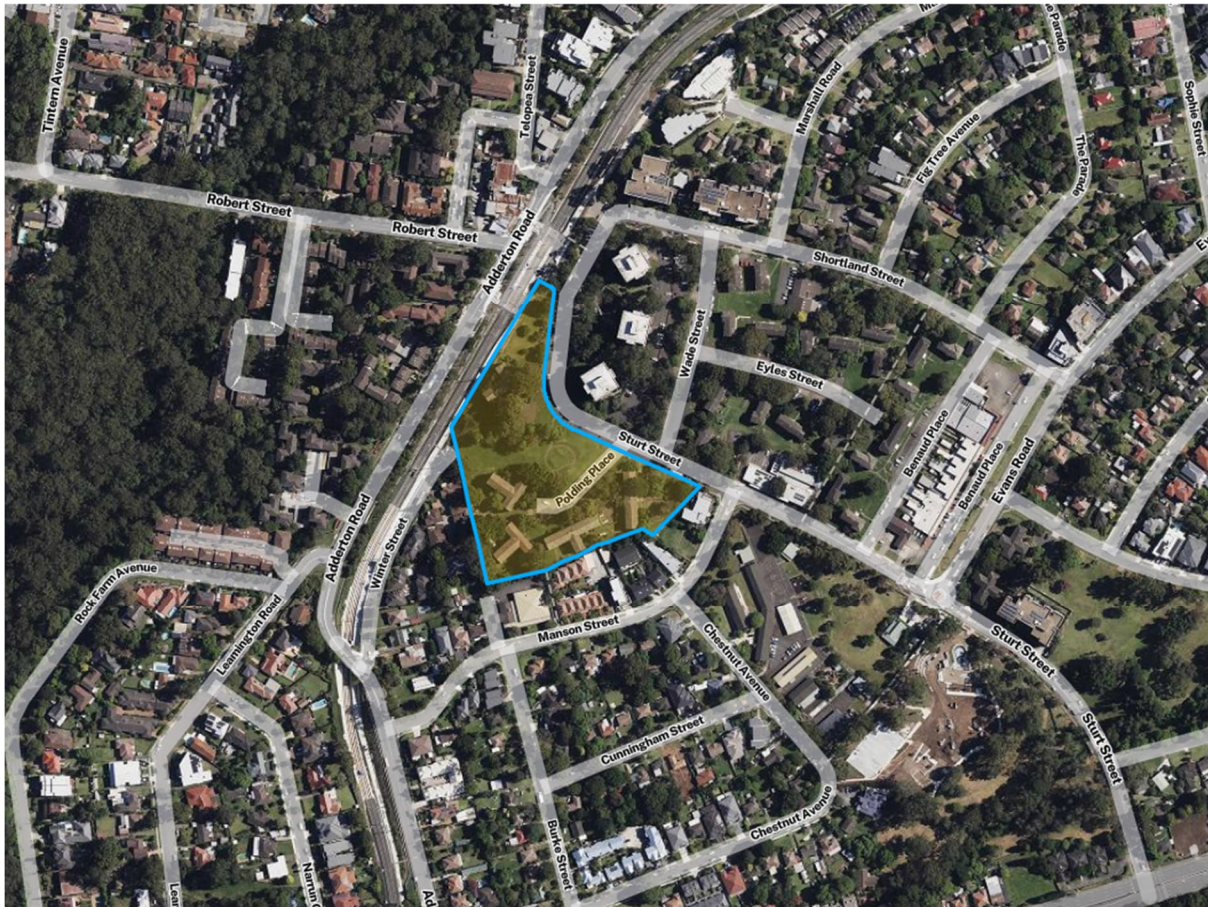


Figure 2 Site location

The number of units proposed for each building and floor is shown in Table 1.

Table 1 Number of Units by Block

Block	Number of Units
A	26
B1	99
B2	74
C	46
D	89
E	89
Total	423

Figure 1 on page 2 shows the layout of the blocks. Figure 3 below shows the basement layout and that Blocks D and E share a basement as do Blocks B and C, while Block A has no basement.





Figure 3 Basement layout

1.3 Objectives

The principal objective of this WMP is to identify all potential waste likely to be generated at the Project site 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 Paramatta City Council's (Council) requirements.

The objectives of this WMP are as follows:

- Identify potential waste types likely to be generated during the construction and operational phases of the Project
- Provide advice on how identified waste should be handled, identified, processed, disposed of, reused or recycled in accordance with the SEARs and Council's requirements, relevant Australian codes and standards and better practice waste minimisation principles
- Encourage waste avoidance and minimisation through advice on design, ordering and planning, and
- Help implement safe and practical options for waste collection from the Project by Council or private waste servicing contractors.



1.4 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.

2.0 Better Practice Waste Management and Recycling

2.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy shown in Figure 4 below 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.



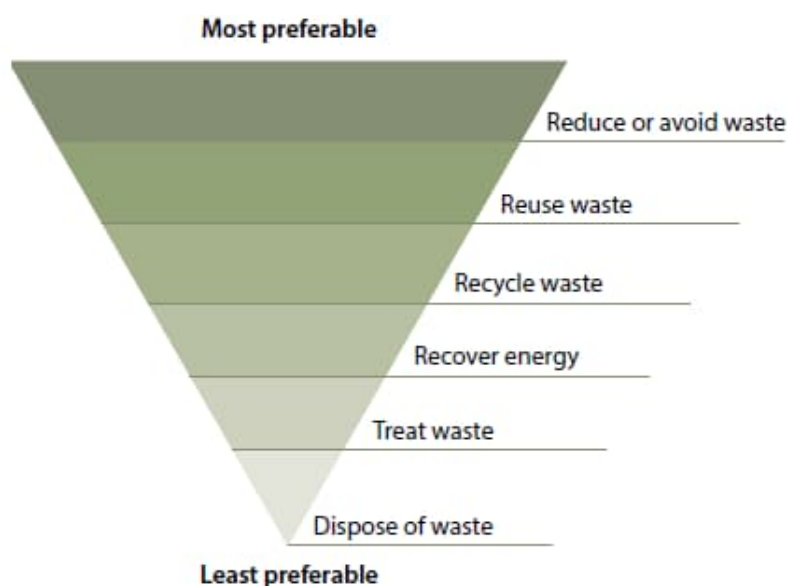


Figure 4 Waste management hierarchy

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

2.2 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.

3.0 Waste Legislation and Guidance

The legislation and guidance outlined in Table 2 below should be referred to during the demolition, construction and operational phases of the Project.

Table 2 Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Parramatta Development Control Plan 2011	The Parramatta Development Control Plan 2011 (DCP) applies to all development proposals in the Parramatta City Council area. The DCP supports provision of the LEP planning controls by providing detailed planning and design guidelines. The DCP has been prepared in accordance with the Section 74C of the <i>Environmental Planning and Assessment Act 1979</i> and the Environmental Planning and Assessment Regulation 2000.



Legislation and Guidance	Objectives
	The DCP includes an appendix on Waste. Waste Management Guidelines for new Development Applications which was updated in 2016.
Parramatta Local Environmental Plan 2011	The Parramatta Local Environmental Plan 2011 provides the legal framework of the DCP, including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.
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	Replacing the <i>NSW Waste Avoidance and Resource Recovery Strategy (2014-21)</i> (see below) identifies a focus on the transition of NSW to a circular economy. The focus of the strategy is 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 (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21	The <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-21</i> is aimed at ultimately "improving environment and community well-being by reducing the environmental impact of waste and using resources more efficiently" by presenting a framework intended to avoid and reduce waste generation, increase recycling, divert more waste from landfill, manage problem waste better, reduce litter and reduce illegal dumping.
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	<p>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 types 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.</p> <ul style="list-style-type: none"> • 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 <i>Waste Classification Guidelines</i> 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.
<i>Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011</i>	The <i>POEO Act 1997</i> and <i>POEO Amendment Act 2011</i> 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 2011	The Work Health and Safety Regulation 2011 provide detailed actions and guidance associated with the topics discussed in <i>The Work Health and Safety Act 2011</i> . 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.



Legislation and Guidance	Objectives
<i>Waste Avoidance and Resource Recovery Act 2001</i>	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>

4.0 Demolition and Construction Waste and Recycling Management

4.1 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 the NSW EPA (2022-2023) indicates that construction and demolition waste recovery rates in 2022-2023 were 73%.¹

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, site clearance and construction stages of the Development.

Waste generated during site clearance 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.

4.2 Waste Streams and Classifications

The site preparation and construction of the Project is likely to generate the following broad waste streams:

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

¹ <https://www.epa.nsw.gov.au/your-environment/waste/waste-overview/waste-performance-data>



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

For further information on how to classify a waste type refer to the NSW EPA (2014) *Waste Classification Guidelines*². Further information on managing site preparation and construction waste is available from the NSW EPA³ and the DCP.

Table 3 Potential waste types and their management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Site preparation 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.

² Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

³ <http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition>



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 ⁴
Paint	Liquid waste	Off-site recycling, Paintback collection ⁵ 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 ⁶
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 ⁷
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

4.3 Demolition Waste Types and Quantities

The project will be constructed on land currently occupied by residential buildings at the site. The generated waste is anticipated to be primarily green waste from grubbing and natural soils, excavation spoil, timber from trees and residential building waste from the demolition of the existing three-storey walk-up residential buildings which comprise a total of 63 dwellings.

In order to calculate the waste generated from the removal of the existing structures, SLR has used the 'Blocks of flats' demolition waste generation rates from The Hills Development Control Plan 2012 for estimating the type and quantities of waste generated from the demolition activities. The waste generation rates used for this Project are provided in Table 4.

⁴ Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

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

⁶ Available online from <https://businessrecycling.com.au/>

⁷ Available online from <http://returnandearn.org.au/>



Table 4 Demolition waste generation rates

Rate Type	Floor Area (m ²)	Waste types and quantities (m ³)					
		Concrete	Brick	Timber or Gyprock	Metal	Roof Tiles	Other
Block of Flats	1,000	813	655	22	9	33	26

The waste generation rates in Table 3 are used to estimate the quantities of demolition waste shown in Table 4. In the absence of details on the specific GFAs of the buildings to be demolished, the estimated quantities of demolition waste (shown in Table 4) are based on:

- Site area estimations obtained from architectural drawings
- Existing dwelling numbers obtained from client information
- Site area estimates obtained from NSW Government Spatial Services SDT Explorer (<https://portal.spatial.nsw.gov.au/explorer/index.html>).

Table 5 Estimated quantities of demolition waste

Location	Area (m ²)	Timber	Concrete	Bricks	Gyprock	Metal	Roof Tiles	Other
Existing residential building area	1,950	45	1590	1280	45	20	65	55

Should the Development's excavation work encounter asbestos-contaminated materials, other contaminated materials or unexpected finds, the contractor should refer to its relevant site management plan. All excavated spoil should be classified by an appropriately experienced environmental consultant and separated into contaminated materials, if any, uncontaminated fill, ENM or VENM.

In accordance with Council's Guidelines records of the waste quantities recycled, reused or removed off-site are to be maintained. Details of how this waste will be re-used, recycled or disposed of and the name and contact details for each receiving waste facility are required. Dockets or receipts verifying recycling and/or disposal in accordance with the WMP must be kept and presented to Council when required. Records of the waste volumes disposed off-site to landfill must show that all waste going to landfill is not hazardous.

Where possible, all disassembled materials should be sold for reuse. Where not possible, parts will be sent for recycling and reused off-site. Delivery of items to an appropriately licenced landfill is to be considered as a last resort. For reuse and recycling recommendations for demolition materials, refer to Table 1.

Should further information on types and quantities of demolition waste be required, SLR recommends that a demolition quantities survey is undertaken by a qualified professional.

4.4 Construction Waste Types and Quantities

To calculate construction waste generation rates, SLR has used the 'Blocks of flats' construction waste generation rates from Appendix A of The Hills Development Control Plan 2012. The rates are listed in Appendix A of The Hills development Control Plan 2012 and are shown in Table 6.



Table 6 Construction waste generation rates

Rate Type	Floor Area (m ²)	Waste types and quantities (tonnes)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Block of Flats	1,000	0.7	6.7	3.2	1.3	28.7	1.3	0.6

Based on the area schedule provided by the client for the development, these waste generation rates were used to estimate the waste generated from the construction of the development. These estimates are provided in Table 7.

Table 7 Anticipated types and estimated quantities of construction waste

Development Component	Area (m ²)	Waste types and quantities (tonnes)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Building 9.1	39,511	30	265	130	55	1135	55	25
Building 9.2	22,998	20	155	75	30	665	30	15
Total	62,509	50	420	205	85	1800	85	40

Actual waste quantities and composition will vary; however, this estimate is provided so that the Construction Site Manager can make provision for on-site or off-site re-use and recycling opportunities.

4.5 Waste Avoidance

In accordance with Council's 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.
- Use leased equipment rather than purchase and disposal.
- 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.

4.6 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.

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

- Maximise reuse and recycling of building and construction materials and minimise disposal of materials to landfill.
- Ensure Waste is minimised by the reuse and recycling of excavated and building materials on-site or in the design and construction of the building or other buildings.
- Identify and nominate opportunities to reuse materials from the demolition and excavation phase for the proposed new use as well as potential waste materials, such as recyclable packaging, off-cuts and other excess materials as part of the construction process.
- Reuse timber formwork or waste corrugated iron as formwork and examine the useability of other materials for productive purposes.
- Maximise reuse and recycling of materials from demolition and construction which can be assisted by deconstruction, where the various building components are carefully dismantled and sorted.
- Source separation of offcuts to facilitate reuse, resale or efficient recycling.
- Temporary stockpiling of surplus materials for use in later stages.
- Building waste materials shall be reused, recycled or disposed to approved landfill sites.
- 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.



- 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.
- 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.

4.7 Waste Storage and Servicing

4.7.1 Waste Segregation and Storage

As outlined in the DCP and better practice waste management, waste materials from site preparation, demolition and construction activities are to be separated at the source and stored separately on-site. Council requires plans of the:

- Location of areas where waste will be sorted for disposal or recycling
- Location of areas where waste and soil stockpiles will be stored on site
- Access path for vehicles removing waste from the site.

It is anticipated that the Project will provide bins and areas on-site for the sorting, recycling and disposal of building waste materials and indicated on the site plans or drawings. Enough space should be for separate storage, for example, separate skip bins or appropriately managed stockpiles, of the following waste types:

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



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.

4.7.2 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.

Where a skip is required and on-site constraints do not enable it to be located on the property, a separate application for a road occupancy license is required.

In accordance with better practice waste management, areas designated for waste storage should:

- Allow for appropriate vehicular access to enable the removal of waste materials for reuse, recycling and/or disposal.
- Ensure construction materials are to be stored separately from waste and recycling materials to enable easy access for waste collectors.
- 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
- Not present hazards to human health or the environment.

In accordance with the DCP stockpiles of topsoil, sand, aggregate, soil or other material are not to be located on any drainage line or easement, natural watercourse, footpath or roadway and shall be protected with adequate sediment controls.

4.7.3 Waste Servicing and Record Keeping

Documentation, such as receipts or weighbridge dockets, for the transport and disposal of waste and recycling materials from the site must be retained.

The Site Manager or equivalent role is to:

- Keep records of waste disposal, waste or tipping receipts or dockets, 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 demolition occurs in accordance with the relevant Australian Standards.
- Arrange for suitable waste collection contractors to remove any construction waste from site
- Provide designated areas on the site sufficient colour coded or labelled storage bins, containers or stockpiles for separated and any left-over waste from the construction process in locations with convenient vehicular access for removal by the waste contractor.
- Ensure waste bins are not filled beyond recommended filling levels
- Ensure that all bins and loads of waste materials leaving site are covered
- 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 skips and bins will leave the site and be deposited in the approved site lawfully able to accept them.

4.7.4 Contaminated or Hazardous Waste Management

During the site preparation 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 an appropriately licenced facility.

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

In accordance with the DCP, hazardous waste management at the site may require a licence from the EPA and approval from Council. If hazardous waste is identified for removal, Council and NSW EPA are to be consulted prior to undertaking any hazardous waste removal.

4.8 Site Inductions

All staff, including sub-contractors and labourers, employed during the site preparation 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.

4.9 Signage

In Accordance with the DCP and better practice waste management, 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 online⁸ 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

4.10 Monitoring and Reporting

The following monitoring practices should be undertaken to improve site preparation 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.

⁸ NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>



As per Council's 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.

4.11 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 8.

Table 8 Suggested demolition and construction waste management roles and responsibilities

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.
	Approval of off-site waste disposal locations and checking licensing requirements.
	Assessment of suspicious potentially contaminated materials, hazardous materials and liquid waste.



Responsible Person	General Tasks
	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.

5.0 Operational Waste 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 the NSW EPA (2022-2023) indicates that the commercial and industrial waste recovery rate in 2022-2023 was 51%.⁹

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.

5.2 Waste Quantities

5.2.1 Waste quantities

To calculate the estimate operational waste quantities likely to be generated by this development the following assumptions were made:

- Council's standard waste generation rates as outlined in the Parramatta DCP 2011 of:
 - 80 litres per unit per week for general garbage
 - 40 litres per unit per week for comingled recycling
- Common bin supplier size dimensions for 660 L bins for both garbage and recycling. This is the preferred size of bin as advised through consultation with Council's waste team
- A collection frequency of once per week for both garbage and recycling.

Table 9 below shows the waste and recycling volume allowances and the number of bins required for each block.

5.2.2 Chute Rooms

Council's Guidelines specify one chute for garbage only. Doors to access the chutes will be installed on each floor along with a separate bin for comingled recyclables. Chutes will empty into bins in a basement chute room while the recycling bin will be taken to the main waste storage area by cleaners. Bins of 660 L capacity will be provided by Council for garbage. Bins of 240 L capacity for recyclables on each floor will be provided by the facilities manager.

⁹ <https://www.epa.nsw.gov.au/your-environment/waste/waste-overview/waste-performance-data>



Table 9 below shows the number of bins and space required for the chute room under each block.

Table 9 Bin numbers and chute room areas

Building	Total number units	Residential garbage total per week (L)	Number of 660 L garbage bins	Area for three-bin 660 L changer (m ²)	Minimum chute room area required (m ²)
A	26	2,080	4	9.7	11.4
B1	99	7,920	7		20.0
B2	74	5,920	5		17.1
C	46	3,680	6		12.3
D	89	7,120	7		16.8
E	89	7,120	6		15.8

The figures assume that the bins in the chute rooms will be changed no more than twice per week. Chute rooms should be configured to allow for the installation of a bin changer.

5.3 Bulky Waste

Bulky waste includes material that does not easily fit into the normal waste bins such as mattresses, damaged and disused furniture and other items and materials. Council requires 10 m² be provided for blocks up to and including 40 units. For larger blocks, another 2 m² should be provided for every additional 10 units, up to a maximum of 50 m².

Applying this formula, the amounts of space required for bulky waste for this development are shown in Table 10.

Table 10 Waste stream allocations

Block	Number of Residential Apartments	Bulky Waste Storage (m ²)		
		Base area up to 40 units	Additional 2 m ² per 10 units	Total
A	27	10	-	10
B1	101	10	13	23
B2	77	10	8	18
C	52	10	3	13
D	119	10	16	26
E	91	10	11	21

5.4 Bin numbers and Space

In the case of this development, Blocks B and C share a basement and so are sharing a waste storage area and Blocks D and E share a basement and are also sharing a waste storage area. The total number of units in each of the shared waste storage rooms is shown in Table 11 below.



Table 11 Number of Units by Shared Waste Storage

Blocks	Number of Units
B and C	219
D and E	178

Table 12 below shows the waste quantities, bin numbers and waste storage area required for each block.

Table 12 Bin numbers and waste storage area by block

		Block A	Block B/C	Block D/E
Per Week (L)	Garbage	2,080	17,520	14,240
	Recycling	1,040	8,760	7,120
Bin Capacity (L)	Garbage	660	660	660
	Recycling	660	660	660
Collection Frequency per Week	Garbage	1	1	1
	Recycling	1	1	1
Number of Bins	Garbage	4	27	21
	Recycling	2	14	11
Area required for bins (m ²)	Garbage	1.7	39.9	31.0
	Recycling	0.9	20.7	16.3
	Total bin space	2.6	60.6	47.3
	Total including manoeuvring	3.8	90.9	71.0
Bulky waste space required (m ²)		10	51	40
Total including bulky waste (m ²)		13.8	141.9	111.0

The drawings show the size and location of residential waste storage areas on the Lower Ground level. Figure 6 below shows chute rooms in red, bulky waste rooms in green and main waste storage areas in yellow.



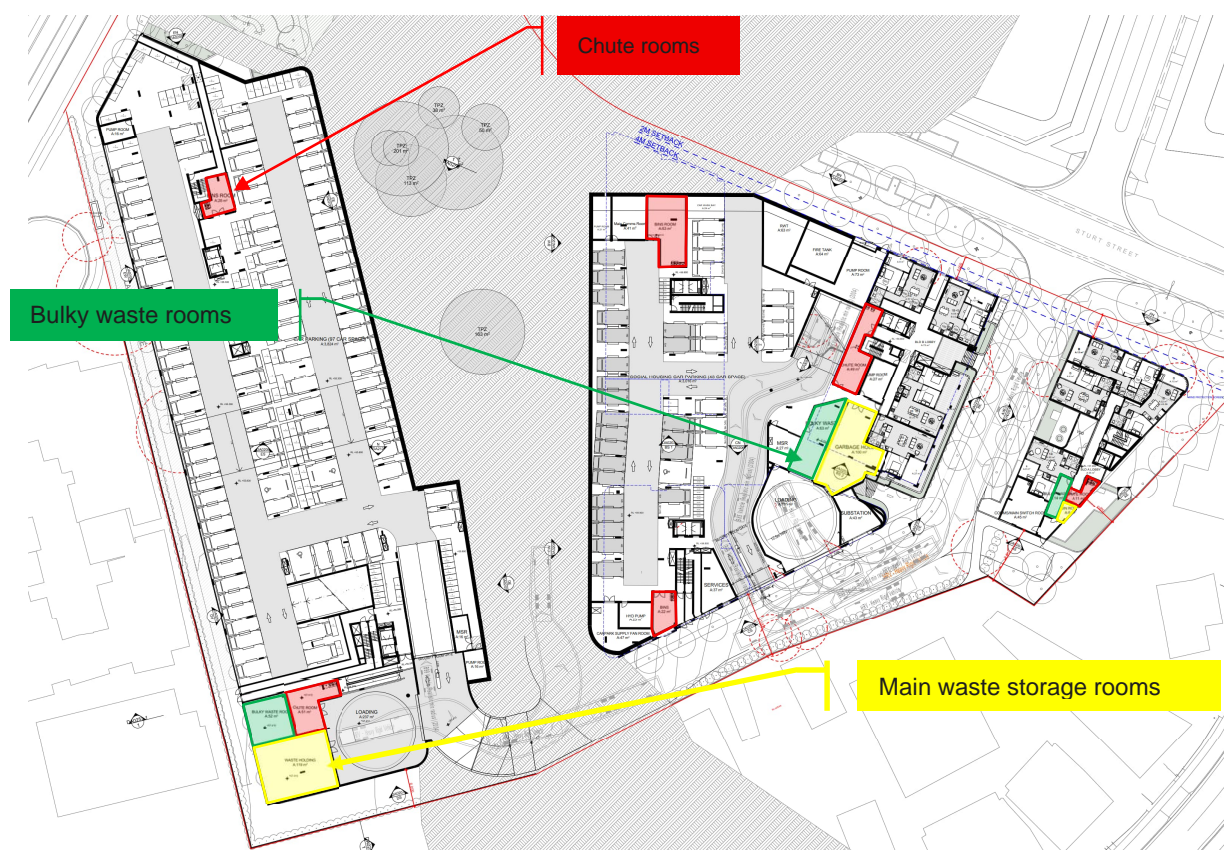


Figure 6 Proposed waste storage areas

The space required and provided for the three proposed waste storage areas are shown in Table 13 below with a description of the location of each waste storage area.

Table 13 Waste stream allocations

Block	Bin Room Area Required (m ²)	Bulky Waste Area Required (m ²)	Bin Room Area Provided (m ²)	Bulky Waste Area Provided (m ²)
A	3.8	10	6	14
B/C	90.9	51	100	63
D/E	71	40	119	52

The table shows that the areas for waste storage provided in the design are all more than adequate for the types and quantities of waste calculated from Council's specifications

The locations of the waste storage areas all provide direct access to heavy vehicle loading areas and are all convenient and appropriate.

5.5 Management

Regular cleaning of waste and recycling storage areas and transfer of bins to collection points will be undertaken by cleaners or facilities management staff.



Residents will take their garbage and recycling to the waste room on their floor and place garbage in the chute and recyclables in the bin located next to the chute. Residents will take bulky waste to the bulky waste storage area located on the floor where there will be bins or caged areas to store this material.

Garbage will fall down each chute and into a 660 L bin in a locked chute room at the base. Cleaners or facilities management staff will collect the recycling bins from their positions next to the chutes on each floor and take them to the residential waste storage room. Cleaners or facilities management staff will change full 660 L bins in the chute rooms for empty ones and take the full bins from each chute room to the residential waste room. All bins will be stored in the residential waste storage room until weekly collection from the garbage holding room adjacent to the loading dock.

5.6 Waste Avoidance, Reuse and Recycling Measures

5.6.1 Waste Avoidance

Waste avoidance measures include:

- Participating in take-back services to suppliers to reduce waste further along the supply chain
- Purchasing consumables in bulk to avoid unnecessary packaging
- Presenting all waste reduction initiatives to tenants as part of their induction program, and
- Investigating leased equipment and machinery rather than purchase and disposal.

5.6.2 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.

5.6.3 Recycling

Recycling opportunities include:

- Collecting and recycling e-waste
- Flatten or bale cardboard to reduce number of bins required
- Development of 'buy recycled' purchasing policy.

5.7 Communication Strategies

Waste management initiatives and management measures should be clearly communicated to building managers, owners, tenants 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 and tenants 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
- Tenants and cleaners should adhere to the WMP for compliance, in consultation with management, and
- Repair signs and labels promptly to avoid breakdown of communications.

5.8 Signage

As outlined in the 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 EPA¹⁰. 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.

¹⁰ NSW EPA waste signage and label designs <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>





Figure 7 Example of bin labels for operational waste

5.9 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 could be conducted every six months 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 Environment 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.



5.10 Roles and Responsibilities

It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all 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.
	Update the WMP on a regular basis, for example annually, to ensure the Plan remains applicable.
	Undertake liaison and management of contracted waste collections.
	Organise internal waste audits on a regular basis.
	Manage any complaints and non-compliances reported through waste audits etc.
	Perform inspections of all waste storage areas and waste management equipment on a regular basis.
	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.
	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 chute rooms and communal areas and transfer to centralised waste and recycling collection rooms daily or as required.
	Cleaning of all bins and waste and recycling rooms on a weekly basis or 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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