

LANG WALKER AO MEDICAL RESEARCH BUILDING - MACARTHUR

Waste Management Plan

Prepared for:

BVN

Level 11

255 Pitt St, Sydney, NSW, 2000

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BASIS OF REPORT

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1 Introduction

1.1 Overview

Western Sydney University (WSU) is constructing the Lang Walker AO Medical Research Building - Macarthur (LWMRB) at 100 Parkside Crescent, Campbelltown.

The LWMRB will include integrated connections and associated refurbishments to the Campbelltown Hospital Outpatient Pathology and the WSU Macarthur Clinical School.

This document applies to the waste generated from the site preparation, construction and operational stages of the Project. This is not a demolition or construction waste management plan. At the appropriate time a demolition and/or construction waste management plan specific to this site should be prepared by the appropriate contractor to comply with relevant approvals requirements and, if appropriate, Section 2.15.2 Waste Management During Demolition and Construction of the Campbelltown DCP.

1.2 Objectives

The principal objective of this WMP is to identify all potential waste likely to be generated at the Project site during 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 Secretaries Environmental Assessment Requirements (SEARs) in the first instance and then Campbelltown (Sustainable City) Development Control Plan 2015, as a guide.

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated and hazardous waste.
- To identify procedures and chain of custody records for waste management.
- To assist in ensuring that any environmental impacts during the operational life of the Project comply with consent conditions and other relevant regulatory authorities.

2 Project Description

2.1 Overview of Proposed Development

The LWMRB site is on Lot 6 DP 1058047 and is within the Campbelltown Hospital Precinct. It is surrounded on three sides by the hospital. Access to the site is from Parkside Crescent to the west. The site is currently occupied by an emergency services helicopter pad.

Figure 1 below shows the site location.

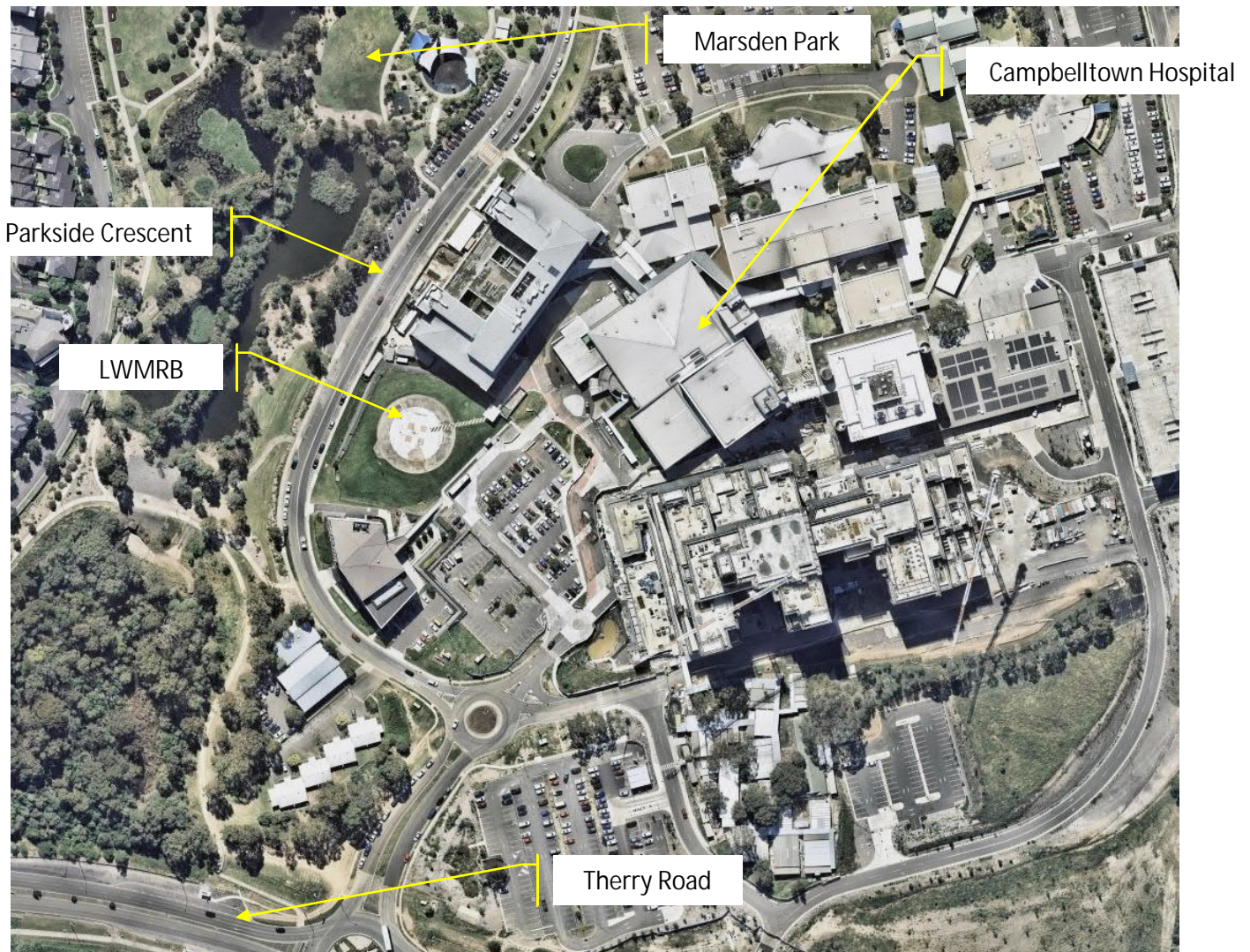


Figure 1 Site location

2.2 Overview of Proposed Construction Work

Project works for most of the site are expected to include site preparation, including clearing of vegetation, demolition of helipad and earthworks.

The anticipated construction works include the construction of the building, car parking areas and associated roads and access.

2.3 Overview of Proposed Operations

The LWMRB will include integrated connections and associated refurbishments to the Campbelltown Hospital Outpatient Pathology and the WSU Macarthur Clinical School. The design of the LWMRB includes the following areas:

- Administration and reception
- Shared Collaboration

- Dry Research
- Clinical Research and
- Research Assessment.

These areas will include consultation rooms, meeting rooms, workspaces and an amphitheatre, treatment rooms, utility rooms, observation rooms and research facilities.

3 Better Practice Waste Management and Recycling

3.1 Waste Management Hierarchy

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

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

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



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

Figure 2 Waste management hierarchy

3.2 Benefits of Adopting Better Practice

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

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

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

4 Waste Legislation and Guidance

4.1 SEARs

The relevant requirements of the SEARs issued for SSD-17491477 are addressed in this report as shown in Table 1.

Table 1 SSD-17491477 Conditions for Waste Management

Conditions for Waste Management		Relevant Sections in this WMP
1. Statutory Context, Strategic Context and Policies	Address the statutory provisions contained in all relevant legislated and draft environmental planning instruments, including but not limited to: <ul style="list-style-type: none"> • Campbelltown Local Environmental Plan 2015. 	Table 3, page 12
	Having regard to the relevant environmental planning instruments: <ul style="list-style-type: none"> • identify compliance with the development standards applying to the site and provide justification for any contravention of the development standards. 	Table 3, page 12 Section 4.2, page 10 Section 5.2, page 15
	Address the relevant planning provisions, goals and strategic planning objectives in all relevant planning policies including but not limited to the following: <ul style="list-style-type: none"> • NSW State Priorities 	Table 3, page 12 Section 4.2, page 10 Section 5.1, page 15
18. Waste	<ul style="list-style-type: none"> • Identify, quantify and classify the likely waste streams to be generated during construction and operation. • Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. • Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site. 	Table 4, page 16 Table 5, page 18 Section 5.6, page 18 Table 7, page 18 Section 5.7, page 19 Section 5.8, page 20 Section 5.9, page 22 Section 5.10, page 22 Section 5.11, page 23 Section 5.12, page 23 Table 8, page 24 Table 9, page 25 Table 12, page 35 Section 6.4, page 30

4.2 Campbelltown (Sustainable City) Development Control Plan 2015

The specifications relevant to this development are summarised below.

4.2.1 All developments

Section 2.15 of Part 2 of the Campbelltown (Sustainable City) Development Control Plan 2015 (DCP) sets out a number of specifications for waste management in all new developments.

A detailed waste management plan must accompany development applications for certain types of developments. Although medical developments are not specifically listed, the DCP says that a waste management plan should be prepared for 'any other development that in opinion of Council a WMP is required'.

Plans submitted with a development application should detail a number of features. Those relevant to this development are shown below:

- the size and location of waste and recycling storage areas
- routes for occupants to access waste and recycling areas
- collection point and/or access routes for collection vehicles
- ventilation of waste and recycling storage areas
- bin and storage area washing facilities, and
- occupants' disposal points for all waste streams.

Design requirements

Waste storage areas

- All waste and recycling storage containers must be located behind the primary and secondary building line, out of secondary building line and out of public view.
- Any room(s) for storing garbage and recycling should be located in a position that is convenient for occupants and waste collection staff.
- Collection rooms should complement the development and not be visibly obtrusive when viewed from any public place.
- The waste collection point should be nominated and show that waste loading operations can occur on a level surface not adjacent to steep gradients, vehicle ramps and pedestrian access points.
- The path for wheeling bins between waste storage area(s) and the collection vehicle should be free of steps or kerbs and have a maximum gradient of 1V:8H.
- The maximum travel distance between any storage area and the collection point should be 25 metres.
- Where it is intended that collection vehicles are to drive into a private property to collect waste and recycling, the development should be designed to provide for the safe and efficient service of the development with minimal need to reverse
- Vehicles must enter and exit in a forward direction
- There must be adequate clearance to accommodate the waste collection vehicle. Dimensions are detailed in Table 2.15.2 of the DCP and shown in Table 2 below.

- Where collection vehicles are required to enter the property, the pavement should be constructed in such a manner that it will not be damaged by a collection vehicle carrying the maximum legal weight.

Table 2 Indicative dimensions of waste collection vehicles

Dimension	Rear Lift Vehicles	Front Lift Vehicles
Overall length (m)	8	9.2
Overall width (m)	2.5	2.5
Operational height (m)	4	6
Travel height (m)	4	4
Vehicle tare weight (t)	13	16.5
Vehicle payload weight (t)	9.5	11
Turning circle radius (m)	12.5	12.5

Some waste collection contractors operate vehicles that are as much as 11 m long and, despite the specifications in Table 2, it would be prudent to accommodate vehicles of this length in the development design. Although the waste collection system proposed for this development uses bins collected by a rear lift vehicle, this should not prevent longer vehicles being accommodated in the design.

4.2.2 Commercial developments

Section 5.8 of Part 5 of the Campbelltown DCP sets out a number of specifications for waste management in all new commercial developments.

This section specifies that commercial developments should make provision for an enclosed onsite waste and recycling facility that has adequate storage area to accommodate the waste generated from the development.

A range of commercial waste generation rates are provided, although none of these, other than for offices, apply to the LWMRB. The waste generation rates for offices are 10 L of garbage and 10 L of recycling per 100 m² of floor area per day. These figures have been used to assist in estimating waste quantities likely to be generated from the LWMRB.

4.3 AS/NZS 3816:1998 Management of clinical and related wastes

Storage and management of clinical waste must comply with this standard.

The Standard allows bags to be used for clinical waste as well as 'Reusable rigid-walled containers, e.g. mobile garbage bins'. Bags may be used within the facility, however, mobile bins are proposed to be used to contain and store clinical waste in the waste storage area.

Sections of particular relevance are:

- Section 6 Segregation of Wastes - Wastes shall be effectively segregated according to their category at the time and source of generation, and bagged, packaged or containerised, as appropriate.
- 11 Storage Requirements
 - 11.1 General - Clinical and related wastes should be safely stored in a vermin-proof, clean and tidy area.

- 11.2 Requirements for waste generators
 - Containers storing clinical and related waste shall be closed.
 - There shall be dedicated clinical and related waste storage so that there is no mixing of wastes with any other stored materials.
 - Access to storage shall be limited to authorised persons.
 - Stored waste shall be labelled so that it is readily apparent what type of material is stored within
 - No liquid wastes, washdown waters or stormwater waste contaminated with clinical and related wastes shall be disposed of via the stormwater drainage system.
- 11.3 Requirements for storage areas. The storage area shall be designed and constructed in the following manner:
 - The storage area shall have an impervious surface and shall contain any spillage.
 - Containment can be achieved by bunding, by a sump, inward sloping floor or tray.
 - Where practicable, all loading and unloading shall take place within the containment area.
 - Where vehicular access to a bunded area is required, the bund shall be rounded to prevent its damage by vehicles.
 - All wastes shall be stored and supervised in accordance with any relevant regulations and licensing arrangements.

4.4 Other Waste Legislation and Guidance

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

Table 3 Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Campbelltown Local Environmental Plan (LEP) 2015 ¹	The Campbelltown LEP provides the legal framework of the Campbelltown DCP, including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.
Campbelltown (Sustainable City) Development Control Plan 2015. ² See Section 4.2.	The Campbelltown DCP came into effect on 11 March 2016 and supports provision of the LEP planning controls by providing detailed planning and design guidelines. The DCP has been prepared in accordance with the Waste Avoidance and Resource Recovery Act 2001. This WMP is guided by Section 2.15 of Part 2 of the DCP which sets out a number of specifications for waste management in all new developments.
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.

¹ <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2015-0754>

² <https://www.campbelltown.nsw.gov.au/BuildAndDevelop/PlanningPoliciesandControls/DevelopmentControlPlans/CampbelltownSustainableCityDevelopmentControlPlan2015>

Legislation and Guidance	Objectives
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.
AS/NZS 3816:1998 Management of clinical and related wastes. See Section 4.3.	This Standard sets out the requirements for the storage and management of clinical, cytotoxic, pharmaceutical and sharps waste.
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 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 that may be recovered for beneficial re-use. These waste 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 Waste Classification Guidelines assist waste generators to effectively manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the POEO Act 1997 and its associated regulations.
Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011	<p>The POEO Act 1997 and POEO Amendment Act 2011 are administered by the NSW Environment Protection Authority (NSW EPA) to enable the NSW Government to establish instruments for setting environmental standards, goals, protocols and guidelines. They outline the regulatory requirements for lawful disposal of waste generated during the demolition, construction and operational phases of a development, as well as the system for licencing waste transport and disposal.</p> <p>The POEO Act also covers the handling and disposal of special waste, which is the classification for clinical, cytotoxic pharmaceutical and sharps waste under the NSW Waste Classification Guidelines.</p>
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 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.

Legislation and Guidance	Objectives
Waste Avoidance and Resource Recovery Act 2001	<p>The Waste Avoidance and Resource Recovery Act 2001 aims to promote waste avoidance and resource recovery and repeals the Waste Minimisation and Management Act 1995. Specific objectives of the Waste Avoidance and Resource Recovery Act 2001 include:</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>

5 Site Preparation and Construction Waste and Recycling Management

5.1 Targets for Resource Recovery

Targets for new development are expected to contribute to state specific targets. The NSW Waste and Sustainable Materials Strategy 2041 (DPIE, 2021) sets a target of 80% average recovery rate from all waste streams by 2030. Analysis by DPIE (2021) indicates that construction and demolition waste recovery rates in 2018-19 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 have been recycled during the construction and site preparation stage of the Development.

5.2 Campbelltown (Sustainable City) Development Control Plan 2015

5.2.1 Part 2 Requirements Applying to all Types of Development

Section 2.15.2 of this part of the DCP deals with waste management during demolition and construction.

This section states that:

- a) All waste and recyclable streams shall be stored separately on site.
- b) All storage areas/containers for each waste and recycling stream shall be kept on the site at all times and shall be indicated on the site plans/drawings as part of the WMP.
- c) Where material cannot be reused or recycled, it shall be disposed of at an appropriately licensed waste management facility. Details of disposal arrangements shall be specified in the arrangements shall be specified in the WMP.
- d) Convenient and safe vehicular access to waste and recycling material storage areas shall be provided.
- e) The removal, handling and disposal of asbestos or other hazardous materials shall be carried out in accordance with WorkCover NSW³, Office of Environment and Heritage⁴ and other regulatory authority guidelines and requirements.

5.3 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

³ Now SafeWork NSW

⁴ The NSW EPA is now likely to be the relevant authority

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

5.4 Site Clearance and Demolition Waste Types and Quantities

The helipad appears to be constructed of concrete and sits on top of a mound about 6 m above the level of Parkside Cres. It is supported on the road side by a gabion wall about 5 m high.

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 4.

For further information on how to classify a waste type refer to the NSW EPA (2014) Waste Classification Guidelines⁵. Further information on managing site preparation and construction waste is available from the NSW EPA website⁶.

Table 4 Potential waste types and their management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Site Clearance		
Green waste including trees and timber fences	General solid waste (non-putrescible)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling. Stumps and large trees to landfill.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
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

⁵ Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

⁶ <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	Hazardous waste	Off-site recycling or disposal; contact FluoroCycle for more information ⁷
Plant Maintenance		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility Note: Discharge to sewer subject to Trade Waste Agreement with local Council
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling, Contact the Australian Battery Recycling Initiative ⁸ for more information
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LLPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact Business Recycling for more information ⁹
Work Compound and Associated Offices		
Food Waste	General solid (putrescible) waste	Dispose to landfill with general garbage
Recyclable beverage containers including glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or deliver to local NSW container deposit scheme 'Return and Earn' facility ¹⁰
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers such as soiled paper and cardboard and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

Table 5 below shows approximate dimensions of certain elements of the existing helipad and estimates of waste quantities that may be generated from its demolition.

⁷ Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

⁸ <http://www.batteryrecycling.org.au/home>

⁹ <http://businessrecycling.com.au/search/>

¹⁰ Available online from <http://returnandearn.org.au/>

Table 5 Helipad dimensions and waste quantity estimates

Element	Area	Perimeter	Height/Depth	Concrete	Gravel	Soil	Metals
	m ²	m	m	m ³	m ³	m ³	m ³
Helipad	1,100		0.6	660			
Helipad mound	3,278		6			19,668	
Gabion wall	147		5		735		
Gabion wall		126	5				6.3
Totals	4,525.0	126		660	735	19,668	6.3

5.5 Construction Waste Types and Quantities

In the absence of readily available construction waste generation rates from Campbelltown Council, SLR has adopted the waste generation rates from Appendix A of The Hills Development Control Plan (DCP) 2012 for estimating the type and quantities of waste generated from construction of the Project. SLR has adopted the 'Office' rates to measure waste expected from construction of the LWMRB as much of the development is office-type accommodation and meeting rooms.

The waste generation rates are shown in Table 6.

Table 6 Waste generation rates per 1000 m² floor area

Rate Type	Floor Area (m ²)	Waste types and quantities (m ³)						
		Timber	Concrete	Bricks	Plasterboard	Sand or Soil	Metal	Other
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5

Based on these figures, the anticipated construction waste quantities for the LWMRB are shown in Table 7 below.

Table 7 Estimates of quantities of construction waste

Level	GFA (m ²)	Timber (m ³)	Concrete (m ³)	Bricks (m ³)	Gyprock (m ³)	Sand/Soil (m ³)	Metal (m ³)	Other (m ³)
L00	1,450	7.4	27.3	12.3	12.5	12.8	4.0	7.3
LG01	1,194	6.1	22.4	10.1	10.3	10.5	3.3	6.0
LG02	342	1.7	6.4	2.9	2.9	3.0	0.9	1.7
L01	1,533	7.8	28.8	13.0	13.2	13.5	4.2	7.7
L02	1,235	6.3	23.2	10.5	10.6	10.9	3.4	6.2
Total	5,754	29.3	108.2	48.9	49.5	50.6	15.8	28.8

The numbers shown in Table 7 are estimates only and actual waste quantities and composition will vary.

5.6 Waste Avoidance

In line with good practice waste management the Building Contractor, Building Designer and/or those in 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 'as needed' to avoid material degradation through weathering and moisture damage.
- Communicate strategies to handle and store waste to minimise environmental, health and amenity impacts.
- Select materials with a low environmental impact over the lifecycle of the building.
- Choose timber from certified plantations and avoid unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau.
- Use leased equipment rather than purchase and disposal.
- Minimise site disturbance and unnecessary excavation.
- Incorporate existing trees and shrubs into the landscape plan.
- Grouping wet areas together to minimise the amount of pipe work required.
- Design the Project to require standard material sizes or make arrangements with manufacturing groups for the supply of non-standard material sizes.
- Design works for de-construction.
- Reduce packaging waste by:
 - Returning packaging to suppliers where practicable to reduce waste further along the supply chain
 - Purchasing in bulk
 - Requesting cardboard or metal drums rather than plastics
 - Requesting metal straps rather than shrink wrap, and
 - Using returnable packaging such as pallets and reels.
- Use prefabricated materials.
- Select materials for Project works with low embodied energy properties or materials that have been salvaged or recycled for the construction of the Project including concrete that utilises slag and fly ash content, structural and reinforced steel that uses recycled steel content or bulk insulation products that contain recycled content, such as recycled glass in glass-wool.
- Preferentially use paints, floor coverings and adhesives with low VOC (volatile organic compound) content.
- Reduce the use of polyvinyl chloride products.
- Implement measures to prevent the occurrence of windblown litter, dust and stormwater pollution.
- Ensure subcontractors are informed of and implement site waste minimisation and management procedures.

5.7 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.

Table 4 shows proposed reuse, recycling and disposal methods for potential site preparation and construction waste streams generated by the Project.

In line with good practice waste management the following specific procedures should be implemented:

- Ensure the site's project management includes minimising waste generation, requiring the appropriate storage and timely collection of waste materials, and maximising re-use or recycling of materials.
- Store waste on site appropriately to prevent cross-contamination and guarantee the highest possible re-use value.
- Consider the potential of any new materials to be re-used and recycled at the end of the Project's life.
- Determine opportunities for the use of prefabricated components and recycled materials.
- Strip topsoil from areas designated for excavation and store it on site for reuse.
- Reuse excavation material will be on-site where possible.
- Re-use formwork where appropriate.
- Retain roofing material cut-offs for re-use or recycling.
- Retain used crates for storage purposes unless damaged.
- Recycle cardboard, glass and metal waste.
- Recycle or dispose of solid waste timber, brick, concrete, asphalt and rock, where such waste cannot be re-used on site, to an appropriately licenced construction and demolition waste recycling facility or an appropriately licenced landfill.
- Dispose of all asbestos and/or hazardous waste in accordance with SafeWork NSW and NSW EPA requirements.
- Deliver batteries and florescent lights to drop off-site recycling facility.
- Return excess materials and packaging to the supplier or manufacturer.
- Dispose of all garbage via a council approved system.

5.8 Waste Storage and Servicing

5.8.1 Waste Segregation and Storage

In line with good practice waste management waste materials produced from site preparation and construction activities should be separated at the source and stored separately on-site. It is anticipated that there will be enough space on-site for separate storage of waste materials, for example, separate bins or appropriately managed stockpiles, for the following waste types:

- | | |
|--------------------------|---|
| • Steel and other metals | • Concrete |
| • Timber | • Bricks and tiles |
| • Glass | • Plasterboard |
| • Hardstand rubble | • Sand and soil |
| • Road base | • Uncontaminated excavation spoil |
| • Asphalt | • Contaminated excavation spoil, if present |

- Hazardous waste, if present
- Paper and cardboard
- General co-mingled recycling waste, and
- Non-recyclable general waste.

If there is insufficient space on-site for full segregation of waste types, the Site Manager, or someone in an 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.

5.8.2 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 enough to cater for change of use over the course of the project. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated bins for sorting.

All waste placed in 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.

Areas designated for waste storage should:

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

5.8.3 Waste Servicing and Record Keeping

The Site Manager or someone in an equivalent role should:

- Arrange for suitable waste collection contractors to remove construction waste from site
- Ensure waste bins are not filled above recommended filling levels
- Ensure that all bins and loads of waste materials leaving site are covered
- Maintain waste disposal documentation detailing, at a minimum:
 - Descriptions and estimated amounts of all waste materials removed from site
 - Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables
 - Records of waste and recycling collection vehicle movements, for example, date and time of loads removed, licence plate of collection vehicles, tip dockets from the receiving facility, and
 - Waste classification documentation for materials disposed to off-site recycling or landfill facilities.

- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Campbelltown City Council, SafeWork NSW or NSW EPA, and
- Remove waste during approved hours.

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

5.8.4 Contaminated or Hazardous Waste Management

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

All asbestos and other hazardous waste must be handled according to appropriate legislation and regulations.

5.9 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.

Induction training is to cover, as a minimum, an outline of this waste management plan as well as issues specific to the site such as:

- 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.

5.10 Signage

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

Signs approved by the NSW EPA for labelling of waste materials are available online¹¹ and should be used where applicable. A selection of signs prepared by NSW EPA is provided in Figure 3.

¹¹ NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>



Figure 3 Examples of NSW EPA labels for waste skips and bins

5.11 Monitoring and Reporting

The following monitoring practices are to 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.

Records of waste quantities recycled, reused or removed by a contractor should be maintained. This can include dockets or receipts verifying recycling and disposal in accordance with this waste management plan. This evidence should also be provided 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 each week 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 to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

5.12 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 waste management plan, and an employee and subcontractor responsibility to ensure that they always comply with the waste management plan.

Where possible, an environmental management representative should be appointed for the Project. Suggested roles and responsibilities are provided in Table 8.

Table 8 Suggested roles and responsibilities for site preparation and construction waste management

Responsible Person	General Tasks
Construction Site Manager	Ensuring plant and equipment are well maintained.
	Ordering only the required amount 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 waste management plan.
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 waste management plan 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.
	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 waste management plan through the project induction and contract engagement process.

6 Operational Waste Management

6.1 Targets for Resource Recovery

Targets for new development are expected to contribute to state specific targets. The NSW Waste and Sustainable Materials Strategy 2041 (DPIE, 2021) sets a target of 80% average recovery rate from all waste streams by 2030.

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 have been recycled during the construction and site preparation stage of the Development.

6.2 Waste Streams and Classifications

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

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

Potential ongoing waste types, their associated waste classifications, and management methods are provided in Table 9. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines. Suggestions for recycling drop off locations and contacts can be found on <https://businessrecycling.com.au/> for each waste type.

Table 9 Potential waste types, classifications and management methods for operational waste

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

Waste Types	NSW EPA Classification	Proposed Management Method
E-waste	Hazardous waste	Off-site recycling
Printer toners and ink cartridges	Hazardous waste	Off-site recycling, free disposal box or bags and pickup service exists for printer toners and ink cartridges
Clinical waste	Special waste	Stored, handled, collected and disposed of according to AS 3816 and the Protection of the Environment Operations Act 1997
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Maintenance		
Spent smoke detectors ¹²	General solid (non-putrescible) waste, or Hazardous waste (some commercial varieties)	Disposal to landfill, or off-site disposal at licensed facility
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Off-site recycling or disposal, contact FluoroCycle ¹³ or Lamp Recyclers ¹⁴ for more information
Cleaning chemicals, solvents, area wash downs, empty oil or paint drums, chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.
Garden organics - lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility

6.3 Estimated Quantities of Operational Waste

Waste quantities have been estimated in two main ways.

General waste and recycling quantities have been estimated using the waste generation rates in the DCP. The rate for offices has been used for offices, meeting rooms, interview rooms, work spaces, consultation rooms, reception areas, research rooms, stores and other general purpose areas. The rates for the tea point, kiosk and makers space have been drawn from a database of waste generation rates developed by SLR. Waste generation rates are based on kilograms per 100 square metres of floor space per day. These have then been multiplied by the floor area in each case and then multiplied by the number of operating days per week, assumed to be five, to arrive at an estimate of the weekly waste generation.

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/>

The rates for specialised areas such as medication rooms, clean and dirty utility rooms, treatment rooms and the plaster room have been calculated by examining the Australasian HFG Standard Components specifications for these rooms in the Macarthur Medical Research Centre Functional Design Brief Volume 2 — Appendices, March 2021. This shows the number, type and size of waste bins for each of these rooms. This has then been used to estimate maximum, or close to maximum, quantities of these waste types that may be generated each day. These are then multiplied by the number of operating days per week, assumed to be five, to arrive at an estimate of the weekly waste generation.

The assumed waste generation rates and resulting estimates of weekly waste quantities are shown in Table 10 below.

Table 10 Waste Generation Estimates

Space or room	Floor	GFA	Generation Rate Source	Number of days operation	Garbage	Clinical	Pharmaceutical	Sharps	Recycling	Garbage	Clinical	Pharmaceutical	Sharps	Recycling
					L/100 m ² /day					Total per Week (L)				
AV Room	LG1	11	DCP	5	10				10	6				2
Meeting room	LG1	36	DCP	5	10				10	18				7
Quiet room, focus rooms	LG1	18	DCP	5	10				10	9				4
Seminar	LG1	60	DCP	5	10				10	-				-
Seminar	LG1	60	DCP	5	10				10	-				-
Store	LG1	48	DCP	5	10				10	24				10
Store	LG1	11	DCP	5	10				10	6				2
Toilets	LG1	12	DCP	5	10					6				-
Utilities	LG1	7	N/a	5	10				10	4				1
Workspace	LG1	180	DCP	5	10				10	25				10
Bulk store	LG2	23	DCP	5	10				10	12				5
Gas Store	LG2	12	DCP	5						-				-
Amphitheatre	0	22	N/a	5						-	-	-	-	-
Bays	0	11	DCP	5	10					6	-	-	-	-
Clean utility/ medication room	0	8	Design Brief	5	200		245	100	200	80	-	-	-	32
Clinical workroom	0	12	DCP	5	10				10	6	-	-	-	2
Coffee Kiosk	0	15	SLR Database	5	1,700				850	1,275	-	-	-	255
Consult room	0	22	DCP	5	10	10			10	11	-	-	-	4
Consult room	0	17	DCP	5	10	10			10	9	-	-	-	3
Consult room	0	14	DCP	5	10	10			10	7	-	-	-	3
Consult room	0	14	DCP	5	10	10			10	7	-	-	-	3
Consult room	0	14	DCP	5	10	10			10	7	-	-	-	3
Consult room	0	14	DCP	5	10	10			10	7	-	-	-	3
Consult room	0	14	DCP	5	10	10			10	7	-	-	-	3
Consult room	0	13	DCP	5	10	10			10	7	7	-	-	3
Dirty utility	0	8	Design Brief	5	500	20				200	8	-	-	-

Space or room	Floor	GFA	Generation Rate Source	Number of days operation	Garbage	Clinical	Pharmaceutical	Sharps	Recycling	Garbage	Clinical	Pharmaceutical	Sharps	Recycling
					L/100 m ² /day					Total per Week (L)				
Disposal room	0	8	N/a	5	10				10	4	-	-	-	2
Incubators	0	60	DCP	5	10				10	30	-	-	-	12
Interview room	0	12	DCP	5	10				10	6	-	-	-	2
Interview room	0	12	DCP	5	10					6	-	-	-	-
Interview room	0	12	DCP	5	140	350		140	10	84	210	-	84	2
Interview room Mental health	0	13	DCP	5	10				10	7	-	-	-	3
Maker space	0	61	SLR Database	5	60				60	183	-	-	-	73
Maker store	0	11	SLR Database	5	60				60	33	-	-	-	13
Open plan work space	0	93	DCP	5	10				10	47	-	-	-	19
Quiet room, focus rooms	0	17	DCP	5	10				10	9	-	-	-	3
Reception	0	10	DCP	5	10				10	5	-	-	-	2
Store Equipment	0	20	DCP	5	10				10	10	-	-	-	4
Tea point	0	100	DCP	5	10				10	50	-	-	-	20
Toilets, parents	0	48	DCP	5	10					24	-	-	-	-
Treatment room	0	14	Design Brief	5	140	350		140	10	98	245	-	98	3
Ultrasound room	0	14	DCP	5	10				10	7				3
Bays	1	11	DCP	5	10					6	-	-	-	-
Bod Pod Room	1	14	DCP	5	10				10	7	-	-	-	3
Change, Toilet	1	18	DCP	5	10					9	-	-	-	-
Clean utility/ Medication room	1	16	Design Brief	5	200		245	100		160	-	196	80	-
Clinical work room	1	12	DCP	5	10				10	6	-	-	-	2
Clinical workroom	1	12	DCP	5	10				10	6	-	-	-	2
Consult room	1	17	DCP	5	10	10			10	9	9	-	-	3
Consult room	1	14	DCP	5	10	10			10	7	7	-	-	3
Consult room Podiatry	1	18	DCP	5	10	10			10	9	9	-	-	4
Consult room Podiatry	1	14	DCP	5	10	10			10	7	7	-	-	3
Consult room Podiatry	1	14	DCP	5	10	10			10	7	7	-	-	3
Consult room Podiatry	1	14	DCP	5	10	10			10	7	7	-	-	3
Consult room Retinal	1	14	DCP	5	10	10			10	7	7	-	-	3
Consult UN	1	16	DCP	5	10	10			10	8	8	-	-	3
Consult/ treatment	1	14	DCP	5	10	10			10	7	7	-	-	3
DEXA	1	14	DCP	5	10				10	7	-	-	-	3
Dirty utility	1	16	Design Brief	5	500	20				400	16	-	-	-
Disposal room	1	8	N/a	5	10				10	4	-	-	-	2
Group research room	1	70	DCP	5	10				10	35	-	-	-	14
Interview room	1	14	DCP	5	10				10	7	-	-	-	3

Space or room	Floor	GFA	Generation Rate Source	Number of days operation	Garbage	Clinical	Pharmaceutical	Sharps	Recycling	Garbage	Clinical	Pharmaceutical	Sharps	Recycling
					L/100 m ² /day					Total per Week (L)				
Interview room	1	18	DCP	5	10				10	9	-	-	-	4
Lab processing room	1	25	DCP	5	10				10	13	-	-	-	5
Medication room	1	14	Design Brief	5			245	100		-	-	172	70	-
Meeting room	1	24	DCP	5	10				10	12	-	-	-	5
Meeting room	1	37	DCP	5	10				10	19	-	-	-	7
Meeting room	1	18	DCP	5	10				10	9	-	-	-	4
Open plan work space	1	97	DCP	5	10				10	49	-	-	-	19
Pea Pod Room	1	14	DCP	5	10				10	7	-	-	-	3
Physiology/Gait room	1	63	DCP	5	10				10	32	-	-	-	13
Quiet room, focus rooms	1	25	DCP	5	10				10	13	-	-	-	5
Reception	1	10	DCP	5	10				10	5	-	-	-	2
Store Equipment	1	20	DCP	5	10				10	10	-	-	-	4
Store Furn	1	10	DCP	5	10				10	5	-	-	-	2
Store Gen	1	10	DCP	5	10				10	5	-	-	-	2
Store Gen	1	8	DCP	5	10				10	4	-	-	-	2
Toilets etc	1	18	DCP	5	10					9	-	-	-	-
Treatment room	1	14	Design Brief	5	140	350		140	10	98	245	-	98	3
Work space	1	24	DCP	5	10				10	12				5
Bays	2	11	DCP	5	10					6	-	-	-	-
Clean utility/ Medication room	2	8	Design Brief	5	200		245	100		80	-	98	40	-
Clinical workroom	2	12	DCP	5	10				10	6	-	-	-	2
Consult large	2	14	DCP	5	10	10			10	7	7	-	-	3
Consult UN	2	16	DCP	5	10	10			10	8	8	-	-	3
Dirty utility	2	8	Design Brief	5	500	20				200	8	-	-	-
Disposal room	2	8	N/a	5	10				10	4	-	-	-	2
Focus	2	15	DCP	5	10				10	8	-	-	-	3
Interview room	2	12	DCP	5	10	10			10	6	6	-	-	2
Interview room	2	12	DCP	5	10				10	6	-	-	-	2
Interview room	2	12	DCP	5	10				10	6	-	-	-	2
Interview room	2	12	DCP	5	10				10	6	-	-	-	2
Interview room	2	12	DCP	5	10				10	6	-	-	-	2
Interview room	2	12	DCP	5	10				10	6	-	-	-	2
Interview room mental health	2	17	DCP	5	10				10	9	-	-	-	3
Interview room mental health	2	14	DCP	5	10				10	7	-	-	-	3
Interview room mental health	2	14	DCP	5	10				10	7	-	-	-	3

Space or room	Floor	GFA	Generation Rate Source	Number of days operation	Garbage	Clinical	Pharmaceutical	Sharps	Recycling	Garbage	Clinical	Pharmaceutical	Sharps	Recycling
					L/100 m ² /day					Total per Week (L)				
Interview room mental health	2	12	DCP		10				10	6	-	-	-	2
Interview room mental health	2	14	DCP	5	10				10	7	-	-	-	3
Meeting room	2	14	DCP	5	10				10	7	-	-	-	3
Open plan work space	2	137	DCP	5	10				10	69	-	-	-	27
Reception	2	10	DCP	5	10				10	5	-	-	-	2
Store Equipment	2	20	DCP	5	10				10	10	-	-	-	4
Store Gen	2	10	DCP	5	10				10	5	-	-	-	2
Toilets	2	17	DCP	5	10					9	-	-	-	-
Utilities	2	8	N/a	5	10				10	4	-	-	-	2
Work space	2	22	DCP	5	10				10	11				4
Total										5,723	1,374	588	639	1,098

The table shows that about 5,700 litres of general waste, 1,300 litres of clinical waste, 590 litres of pharmaceutical waste, 640 litres of sharps and 1,100 litres of recyclables, likely to be mostly paper, could be generated each week.

6.4 Waste storage area size and location

Based on the quantities estimated in Table 10, Table 11 below shows the number of bins of each capacity proposed, the materials to be collected in each and the space required to store them.

Table 11 Bin numbers and space required

Stream	Bin Capacity (L)	Collections Per Week	Number of Bins	Space - Bins Only (m ²)	Space Including Manoeuvring - (m ²)
Garbage	1,100	3	2	3.5	10.5
Recycling	1,100	1	1	1.8	
Clinical	240	2	3	1.3	8.3
Pharmaceutical	240	2	2	0.9	
Sharps	20	1	32	2.0 ¹⁵	
Total			40.0	9.4	18.8

¹⁵ Mobile rack to hold all 20 L containers

The table shows that three 1100 L bins will be required, two for garbage and one for recyclables, as well as five 240 L bins, three for clinical waste and two for pharmaceutical waste, assuming the weekly collection frequencies shown. Sharps will be collected in 32, 20 litre containers which will be stored and collected in a mobile rack designed to hold these containers. A space allowance of 2 m² has been made for these racks. Clinical and pharmaceutical waste bins, including sharps, should be secured either in a separate storage area or in a locked section of the main waste room.

Space has been allowed for manoeuvring to arrive at the totals for general waste and recycling (10.5 m²) and clinical and pharmaceutical waste (8.3 m²) and a total of 18.8 m² for the whole waste storage area. A bin store of 20.2 m² has been allowed for in the design, which is adequate to contain the proposed number and types of bins for general waste and recycling. A separate store of 10 m² has been allowed for in the design, which is adequate for the storage of clinical and sharps waste.

Figure 4 below shows the proposed location of the bin stores and the collection point. Collection of all waste streams is proposed to take place from the adjacent loading area as shown.

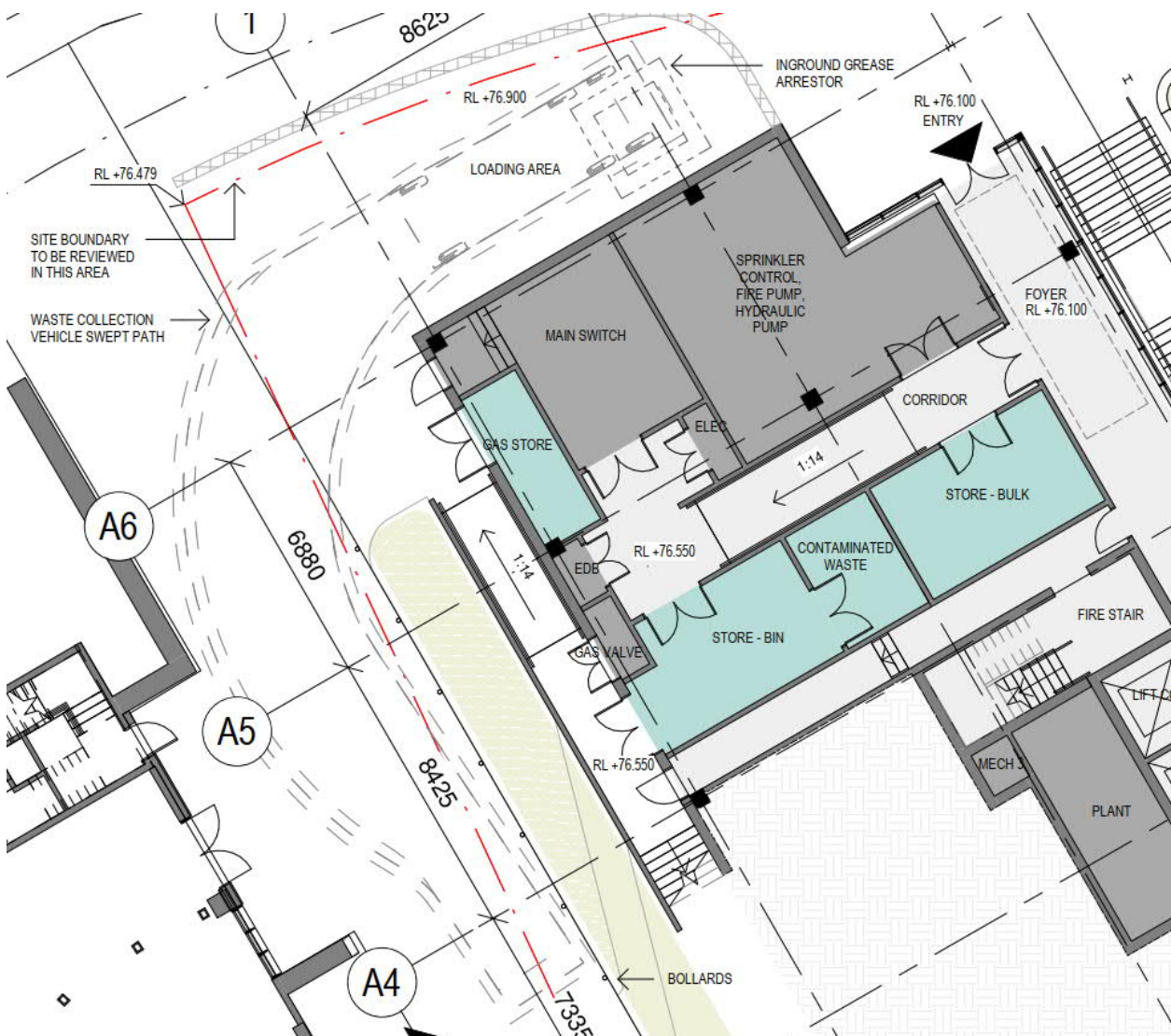


Figure 4 Proposed location of bin store and collection point

The loading bay is also expected to be used for delivery and collection of other goods such as linen. Hydraulic bollards are proposed to control use and allow unrestricted access by waste collection vehicles when required.

Waste collection contractors will park the collection vehicle in the loading area and when the waste bins down a ramp from the bin store to the collection point.

6.5 Waste Avoidance, Reuse and Recycling Measures

6.5.1 Waste Avoidance

Waste avoidance measures that could be implemented at the LWMRB include:

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

6.5.2 Re-use

Possible re-use opportunities that could be implemented at the LWMRB include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible.

6.5.3 Recycling

Recycling opportunities that could be implemented at the LWMRB include:

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

6.6 Communication Strategies

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

- improved satisfaction with services
- increased ability and willingness to participate in recycling
- improved amenity and safety
- improved knowledge and awareness through standardisation of services

- increased awareness or achievement of environmental goals and targets
- reduced contamination of recyclables stream
- increased recovery of recyclables and organics material, if implemented, and
- greater contribution to targets for waste reduction and resource recovery, the environment and heritage conservation.

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

- Use consistent signage and colour coding throughout the Project
- Ensure all staff are trained in correct waste separation and management procedures
- Provide directional signage to show location of and routes to waste storage area
- General waste and co-mingled recycling bins should be clearly labelled and colour-coded to ensure no cross contamination, where applicable
- Employees and cleaners should adhere to the WMP for compliance, in consultation with management, and
- Repair signs and labels promptly to avoid breakdown of communications.

6.7 Signage

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 warehouse. 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 5
- 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 EPA¹⁶. 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.

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



Figure 5 Example of bin labels for operational waste

6.8 Monitoring and Reporting

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

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

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

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

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

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

6.9 Roles and Responsibilities

It is the responsibility of the Building Manager, or a person with an equivalent role, to implement this WMP and a responsibility of all warehouse tenants and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors enlisted by the Client are to have roles and responsibilities identified and the warehouse's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in Table 12.

Table 12 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 (e.g. 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 floor areas for 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.

7 Impact

The impact from the generation and collection of waste at the LWMRB will be minimal. Storage and collection of waste will comply with the SEARs, the Campbelltown DCP and good waste management practice.

Mitigation and control measures for waste generated during the demolition, construction and ongoing phases of the LWMRB are provide in detail in this document. Waste minimisation strategies and comprehensive recycling and recovery systems will be put into place during demolition of the helipad, construction of the LWMRB and during its operation. Any residual waste will be disposed of at a facility lawfully able to accept it.

One or more reliable and professional waste contractors are expected to be used at all times during the construction and operation of the LWMRB. Heavy vehicle movements, including for waste collection, during demolition and construction are unavoidable. The impact of these is covered elsewhere in the EIS, however, the impact of waste collection vehicles is expected to be comparatively minimal.

Once the facility is operational, waste collection will be undertaken as part of the existing waste services at the hospital and will result in only a slight increase in vehicle movements.

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