TOGA CENTRAL

Waste Management Plan

Prepared for:

TOGA
L5, 45 Harris St
Ultimo NSW 2007

SLR Ref: 610.30799-R01
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BASIS OF REPORT

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

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30799-R01-v4.0	27 July 2022	Andrew Quinn	Damian Balas	Andrew Quinn
610.30799-R01-v3.1	14 July 2022	Andrew Quinn	Damian Balas	Andrew Quinn
610.30799-R01-v3.0	15 July 2022	Andrew Quinn	Damian Balas	Andrew Quinn
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610.30799-R01-v1.2	15 June 2022	Andrew Quinn	Damian Balas	Andrew Quinn

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

1 Executive Summary

This waste management plan has been prepared by SLR Consulting to accompany a detailed state significant development (SSD) development application (DA) for the mixed-use redevelopment proposal at TOGA Central, located at 2 and 8A Lee Street, Haymarket (the site). The site is legally described as Lot 30 in Deposited Plan 880518 and Lot 13 in Deposited Plan 1062447. The site is also described as 'Site C' within the Western Gateway sub-precinct at the Central Precinct.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the SSD DA (SSD 33258337).

This report concludes that the proposed mixed-use redevelopment is suitable and warrants approval subject to the implementation of the following mitigation measures.

- Schedule waste collections at times of day that create the least impact.

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

2 Introduction

2.1 The Development

This report has been prepared to accompany an SSD DA for the for the mixed-use redevelopment proposal at TOGA Central, located at 2 and 8A Lee Street, Haymarket.

The Minister for Planning, or his delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning and Environment (DPE) for assessment.

The purpose of the SSD DA is to complete the restoration of the heritage-listed building on the site, delivery of new commercial floorspace and public realm improvements that will contribute to the realisation of the Government's vision for an iconic technology precinct and transport gateway. The application seeks consent for the conservation, refurbishment and adaptive re-use of the Adina Hotel building, also referred to as the former Parcels Post building (fPPb), construction of a 45-storey tower above and adjacent to the existing building and delivery of significant public domain improvements at street level, lower ground level and within Henry Deane Plaza. Specifically, the SSD DA seeks development consent for:

- Site establishment and removal of landscaping within Henry Deane Plaza.
- Demolition of contemporary additions to the fPPb and public domain elements within Henry Deane Plaza.
- Conservation work and alterations to the fPPb for retail premises, commercial premises, and hotel and motel accommodation. The adaptive reuse of the building will seek to accommodate:
  - Commercial lobby and hotel concierge facilities.
  - Retail tenancies including food and tenancies and convenience retail with back of house areas.
  - Four levels of co-working space,
  - Function and conference area with access to Level 7 outdoor rooftop space, and

  - Reinstatement of the original fPPb roof pitch form in a contemporary terracotta materiality.
- Provision of retail floor space including a supermarket tenancy, smaller retail tenancies, and back of house areas below Henry Deane Plaza, at Basement Level 1 (RL12.10) and Lower Ground (RL 16).
- Construction of 45-storey hotel and commercial office tower above and adjacent to the fPPb. The tower will have a maximum building height of RL 202.28 m and comprise:
  - 10 levels of hotel facilities between Level 10 and Level 19 of the tower, including 204 hotel keys and two levels of amenities such as pool, gymnasium and day spa to operate ancillary to the hotel premises. A glazed atrium and hotel arrival is accommodated adjacent to the fPPb, accessible from Lee Street.
  - 22 levels of commercial office space between Level 23 and Level 44 of the tower accommodated within a connected floor plate with a consolidated side core.
  - Rooftop plant, lift overrun, servicing and BMU.
- Provision of vehicular access into the site via a shared basement, with connection points provided to both Block A (at RL 5) and Block B (at RL5.5) basements. Primary access will be accommodated from the adjacent Atlassian site at 8-10 Lee Street, Haymarket, into four basement levels in a split-level arrangement. The basement will accommodate:
  - Car parking for 106 vehicles four car share spaces and five loading bays.
  - Hotel, commercial and retail and waste storage areas.
  - Plant, utilities and servicing.
- Provision of end of trip facilities and 165 employee bicycle spaces in the fPPb basement, and an additional 72 visitor bicycle spaces in the public realm
- Delivery of a revitalised public realm across the site that is co-ordinated with adjacent development, including an improved public plaza linking Railway Square (Lee Street), and Block B, known as 'Central Place Sydney'. The proposal includes the delivery of a significant area of new publicly accessible open space at street level, lower ground level, and at Henry Deane Plaza, including the following proposed elements:
  - Provision of equitable access within Henry Deane Plaza including stairways and a publicly accessible lift.
  - Construction of raised planters and terraced seating within Henry Deane Plaza.
  - Landscaping works within Henry Deane Plaza and along Lee Street.
- Utilities and service provision.
- Realignment of lot boundaries.

This report has been prepared in response to the requirements in the SEARs dated 17 December 2021 and issued for the SSD DA. Specifically, this report has been prepared to respond to the SEARs requirement issued in Table 1 below.

Table 1 SEARs Addressed

Item	Description of requirement	Section reference (this report)
19.	Waste Management • Identify, quantify and classify the likely waste streams to be generated during construction and operation.	Table 6, Table 8, Table 13 and Table 14
	• Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	Table 4, Table 10 and Section 6.5
	• Identify appropriate servicing arrangements for the site.	Section 6.12
	• If buildings are proposed to be demolished or altered, provide a hazardous materials survey	Addressed in a separate hazardous materials survey report

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

2.2 The Site

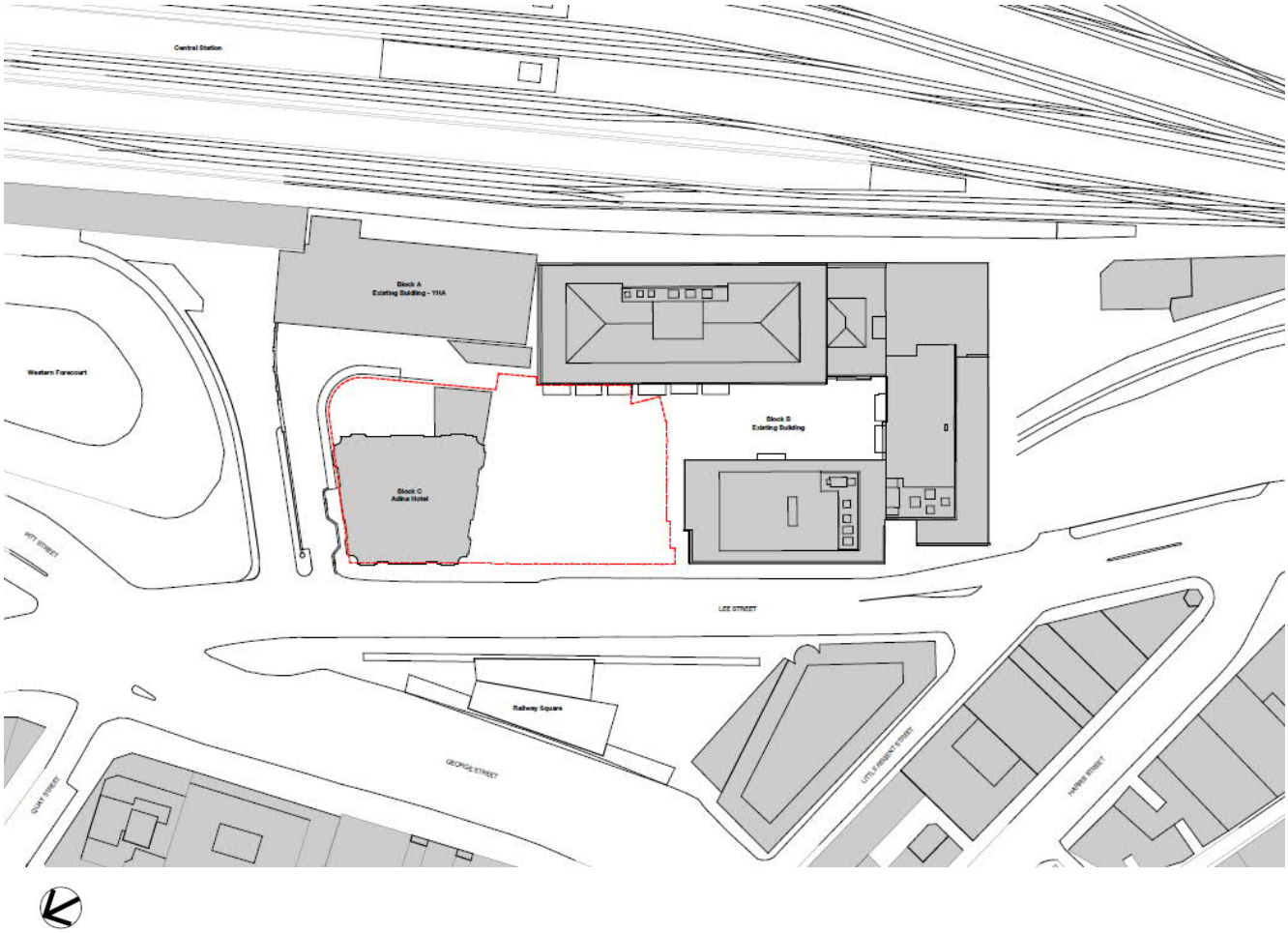
The site is in the City of Sydney Local Government Area and is situated 1.5 km south of the Sydney CBD and 6.9 km north-east of the Sydney International Airport in the suburb of Haymarket.

The site is located in the Western Gateway sub-precinct, an area of approximately 1.65 ha immediately west of Central Station in Haymarket on the southern fringe of the Sydney CBD. Immediately north of Central Station is Belmore Park, to the west is Haymarket, including the University of Technology, Sydney and Chinatown, to the south and east are rail lines and services and Prince Alfred Park and to the east is Elizabeth Street and Surry Hills.

Central Station is a public landmark, heritage building, and the largest transport interchange in NSW. With regional and suburban train services, connections to light rail, bus networks and Sydney Airport, the area around Central Station is one of the most-connected destinations in Australia.

The site is located at 2 & 8A Lee Street, Haymarket and is legally described as Lot 30 in Deposited Plan 880518 and Lot 13 in Deposited Plan 1062447. The land that comprises the site under the Proponent's control, either wholly or limited in either height or depth, comprises a total area of approximately 4,159 m^2.

The location of the TOGA Central site is shown in Figure 1 below.



Source: Bates Smart

Figure 1 Site Identification Plan

The site currently comprises the following existing development:

- Lot 30 in Deposited Plan 880518 (Adina Hotel building): the north-western lot within the Western Gateway sub-precinct accommodates a heritage-listed building which was originally developed as the Parcels Post Office building. The building has been adaptively re-used and is currently occupied by the Adina Hotel Sydney Central. The eight-storey building provides 98 short-stay visitor apartments and studio rooms with ancillary facilities including a swimming pool and outdoor seating at the rear of the site.

- Lot 13 in Deposited Plan 1062447 and part of Lot 14 in Deposited Plan 1062447 (Henry Deane Plaza): the central lot within the Western Gateway sub-precinct adjoins Lot 30 to the south. It accommodates 22 specialty food and beverage, convenience retail and commercial service tenancies. The lot also includes publicly accessible space which is used for pop-up events and a pedestrian thoroughfare from Central Station via the Devonshire Street Tunnel. At the entrance to the Devonshire Street Tunnel is a large public sculpture and a glazed structure covers the walkway leading into Railway Square. This area forms part of the busy pedestrian connection from Central Station to Railway Square and on to George and Pitt Streets, and pedestrian subways.

The site is listed as an item of local significance under Schedule 5 of the Sydney Local Environmental Plan 2012 'Former Parcels Post Office including retaining wall, early lamp post and building interior', Item 855.

The site is also included within the Central Railway Station State heritage listing. This is listed on the State Heritage Register 'Sydney Terminal and Central Railway Station Group', Item SHR 01255, and in Schedule 5 of the Sydney Local Environmental Plan 2012 'Central Railway Station group including buildings, station yard, viaducts and building interiors' Item 824.

The site is not however, listed independently on the State Heritage Register. There is an array of built forms that constitute Central Station, however, the Main Terminal Building, particularly the western frontage and associated clocktower, constitute key components in the visual setting of the fPPb.

2.3 Objective

The objective of this Waste Management Plan (WMP) is to identify all potential wastes likely to be generated at the development site during the operational phases of the development, including a description of how waste would be handled, processed and disposed of, or re-used or recycled, in accordance with the SEARs and using Council requirements as a guide.

2.4 Review of WMP

This WMP requires review and updating to ensure ongoing suitability for the proposed on-going operations at the site.

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.

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.

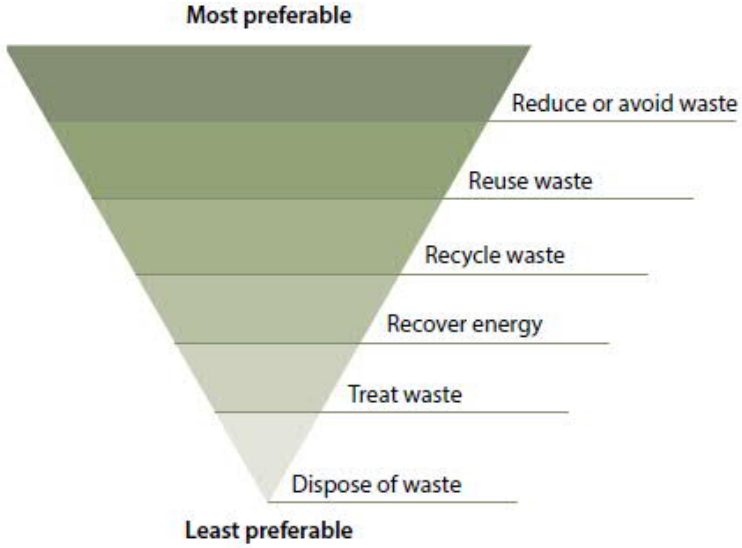


Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

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 Design Guide - Western Gateway Sub-precinct

Section 3.4.3 of The Design Guide - Western Gateway Sub-precinct, September 2021 deals with waste management.

Two objectives for waste are listed:

- referring to the City of Sydney's Guidelines for Waste Management in New Developments – this has been done for this project, and
- including a waste management system that maximises resource recovery to reduce the amount of construction and demolition waste going to landfill and reduces the amount of waste generated in the operation of the development from going to landfill and maximising resource recovery - These are essentially operational goals with their success due to design features likely to be limited to providing enough space for a range of resource recovery options, convenient travel paths for staff and suggestions for resource recovery infrastructure.

This waste management plan complies with the Design Guide as shown in Table 2.

Table 2 Compliance with Design Guide

Item	Location in this document	Comments
Waste and Recycling Management Plan	This document	
Construction and Demolition		
How waste is to be minimised during the demolition and construction phase	Table 4 on page 17	This is a guide and the extent that waste will be minimised will depend on the construction contractor
Estimations of quantities and types of materials to be re-used or left over for removal from the site	Table 8 on page 20	These figures are estimates
Details regarding the types of waste and likely quantities of waste to be produced	Table 8 on page 20	These figures are estimates
A site plan showing storage areas away from public access for reusable materials and recyclables during demolition and construction and the vehicle access to these areas	N/a	This will be developed by the construction contractor when one is engaged
Targets for recycling and reuse	Section 5.1 on page 16 and Section 6.1 on page 27	
Nomination of the role/person responsible for ensuring targets are met and the person responsible for retaining waste dockets from facilities appropriately licensed to receive the development's construction and demolition waste,	Section 5.11 on page 25	
Confirmation that all waste going to landfill is not recyclable or hazardous	N/a	The extent to which this can be achieved depends on the construction contractor and its waste service providers
Measures to reuse or recycle at least 90% of construction and demolition waste.	Table 4 on page 17	This is a guide and the extent that waste will be recycled will depend on the construction contractor

Item	Location in this document	Comments
Operational Waste		
Plans and drawings of the proposed development that show the location and space allocated within buildings to the waste and recycling management systems	Figure 4	This shows the main waste storage areas and loading dock. The location and allocation of elements of the waste management in other parts if the building will be a matter for tenants and occupants
Plans and drawings the nominated waste collection point/s for the site	Figure 4	Waste collection will take place from the loading dock
Plans and drawings the path of access for users and collection vehicles	Figure 4, Figure 10, Figure 11, Figure 12, Figure 13, Figure 14, Figure 15, Figure 16, Figure 17, Figure 18, Figure 19, Figure 20 and Figure 21	
Details of the on-going management of the storage, separation and collection of waste and recycling, including responsibility for cleaning, transfer of bins between storage areas and collection points, maintenance of signage, and security of storage areas	Section 6.9	
Where appropriate to the nature of the development, a summary document for tenants and residents to inform them of waste and recycling management arrangements	N/a	Not applicable at the moment but may be development the building manager at an appropriate time
Measures to reuse or recycle at least 75% of waste from industrial, commercial and residential operations, with an aim of 90%.	Table 10	This is a guide and the extent that waste will be reused or recycled will depend on the building manager and tenants
Adequate space within buildings for waste infrastructure and accessibility for waste collection vehicles	Figure 4	
Provision of a space specifically set aside to accommodate Container Deposit Scheme Infrastructure	Figure 4	There is enough space in the main waste rooms to accommodate separate bins for CDS containers
Identify and consider building and or precinct-scale solutions including onsite separation of food waste	N/a	On-site separation of food is assumed.

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

Table 3 Legislation and guidelines

Legislation and Guidelines	Objectives
Council legislation and guidelines	
Sydney Local Environmental Plan (LEP) 2012[1]	The Sydney LEP came into force on 14 December 2012 and provides the legal framework of the Sydney Development Control Plan (DCP), including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.

[1] https://www.legislation.nsw.gov.au/#/view/EPI/2012/628

Legislation and Guidelines	Objectives
Sydney Development Control Plan (DCP) 2012[2]	The Sydney Development Control Plan 2012 (DCP) came into effect on 14 December 2012 and supports provision of the LEP planning controls by providing detailed planning and design guidelines. As detailed in Section 1.6(3) of the Western Gateway Design Guide, only a number of provisions of the Sydney DCP 2012 applies to the site, including: • Section 3.6: Ecologically sustainable development • Section 3.7.2: Drainage and stormwater management • Section 3.7.3: Stormwater quality • Section 3.7.5: Water re-use, recycling and harvesting • Section 3.9.1: Heritage Impact Statements • Section 3.11.6: Service vehicle parking • Section 3.11.11: Vehicle access and footpaths • Section 3.11.13: Design and location of waste collection points and loading areas
Guidelines for Waste and Recycling Management in New Developments, The City of Sydney	Council's Guidelines for Waste and Recycling Management in New Developments (Council's Guidelines) have been written to support the Sydney DCP by providing the minimum design criteria for the waste management of all development and for preparing WMPs for DAs. The guidelines were approved by Council in August 2018. The guidelines aim to promote efficient waste and recycling storage, separation, collection and handling of waste to maximise resource recovery and provide safe and healthy spaces.
Waste Policy - Local Approvals Policy for Managing Waste in Public Places, The City of Sydney	Council's waste policy was approved in December 2017 and was written to support Council's Waste Strategy and the Sustainable Sydney 2030 vision. The policy covers waste management activities in Council's local government area (LGA). The policy discusses Council's, residents' and businesses' responsibilities for managing and collecting residential and commercial waste in public spaces.
Environmental Action 2016-2021 – Strategy and Action Plan, City of Sydney	Council's Environmental Action Plane for 2016 to 2021 sets out the environmental targets for the LGA including working towards the long-term goal of zero waste to landfill. The strategy defines the actions required to reach the environmental targets, including targets for waste diversion from landfill, resource recycling, water protection, transport, climate adaptation and other environmental factors.
Leave nothing to waste – Managing resources in the City of Sydney area: Waste strategy and action plan 2017–2030	Leave nothing to waste is the Council's strategy and action plan focusing on managing waste and resources for the years 2017 to 2030. The strategy sets out clear targets for the LGA including a zero waste to landfill target by 2030. Council's pathway to achieving the target is outlined in this strategy.
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 2016	The National Construction Code 2016 sets the minimum requirements for the design, construction and performance of buildings throughout Australia.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	These better practice guidelines present information on waste minimisation and resource recovery as well as information on commonly used waste management provisions. The guidelines also provide benchmarks for assessing waste production rates within Australia.
NSW Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021-2027	Replacing the NSW Waste Avoidance and Resource Recovery Strategy (2014-21), the NSW Waste and Sustainable Materials Strategy 2041 focuses on the transition of NSW to a circular economy. The strategy focuses on minimising what is thrown away, and to use and reuse resources more efficiently, making them as productive as possible. The strategy identifies the need to identify infrastructure needs, the mandating of separation of some organic waste streams, and incentivising biogas generation from waste materials.

[2] https://www.cityofsydney.nsw.gov.au/development/planning-controls/development-control-plans

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

5 Construction and Demolition 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 DPIE (2021) indicates that construction and demolition waste recovery rates in 2018-2019 were 77%.

The Western Gateway Design Guide identifies a target of at least 90% of construction and demolition waste to be reused or recycled. See Section 4.1.

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 waste that are being, or have been, recycled during the site preparation, demolition and construction stages of The Development.

Potential figures for recovery and landfilling are shown in Table 8. Assuming these are reasonably accurate and that 'Other' will be landfilled, 91% resource recovery during construction is achievable so a 90% target is not unreasonable.

5.2 Waste Streams and Classifications

The demolition and construction phases of the Development will generate the following broad waste streams:

- demolition waste
- construction waste
- plant maintenance waste
- packaging waste, and
- work compound waste from on-site employees.

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

For further information on how to determine a waste's classification refer to the NSW EPA (2014) Waste Classification Guidelines.[3] Further information on managing demolition and construction wastes is available from the NSW EPA website.[4]

[3] Available online from https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines
[4] http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition

Table 4 Potential waste types and their management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Site Clearance		
Green waste including timber, pine and particle board	General solid waste (non-putrescible)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling, including copper and aluminium	General solid waste (non-putrescible)	Off-site recycling at metal recycling compounds and remainder to landfill
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling, Chip for landscaping, Sell for firewood Treated: reused for formwork, bridging, blocking, propping or second-hand supplier Untreated: reused for floorboards, fencing, furniture, mulched second-hand supplier Remainder to landscape supplies.
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second-hand building supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling, glazing or aggregate for concrete production
Asbestos	Hazardous waste	Off-site disposal at a licenced landfill facility.
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact FluoroCycle for more information[5]
Paint	Hazardous waste	Off-site recycling, Paintback collection[6] or disposal

[5] Available online from http://www.fluorocycle.org.au/ or http://www.environment.gov.au/settlements/waste/lamp-mercury.html
[6] Available online from https://www.paintback.com.au/

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling at a crushing and recycling company
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Plant maintenance		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling, Contact the Australian Battery Recycling Initiative[7] 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[8]
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[9]
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, cardboard and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

5.3 Demolition Waste Types and Quantities

Areas to be demolished include Henry Deane Plaza and the internal walls and rear façade of the Adina Hotel building. Excavation will also be undertaken for the four basement levels. Henry Dean Plaza has an area of about 1500 m^2 and is an open area at street level with a small shopping centre of 19 food and general retailers and services below ground.

[7] http://www.batteryrecycling.org.au/home
[8] Available online from http://businessrecycling.com.au/search/
[9] Available online from http://returnandearn.org.au/

In the absence of demolition waste generation rates in the Sydney DCP SLR has adopted the demolition waste generation rates for 'Office' from Appendix A of The Hills Development Control Plan (The Hills DCP) 2012. The demolition waste generation rates used are shown in Table 5.

Table 5 Demolition waste generation rates

Rate Type	Area (m^2)	Waste types and quantities (m^3)				
		Timber or Gyprock	Concrete	Bricks	Metal	Other
Office	1,000	124	7,410	1,485	29	155

The waste generation rates in Table 5 are used to estimate the quantities of demolition waste shown in Table 6. The floor areas shown in Table 6 are as provided in the architectural drawings listed in Appendix A. Because only internal walls are being demolished in the Adina Hotel building, the floor area for demolition is assumed to be 25% of the total for each floor.

Table 6 Estimated types and quantities of demolition waste

Location	Approximate Area (m^2)	Waste types and quantities (m^3)				
		Timber or Gyprock	Concrete	Bricks	Metal	Other
Henry Deane Plaza	1500	186	11,115	2,228	44	233
Adina Hotel Building Level B1	666	83	4,931	988	19	103
Adina Hotel Building Lower Ground Level	914	113	6,773	1,357	27	142
Adina Hotel Building Ground Level	466	58	3,453	692	14	72
Adina Hotel Building Level 2	306	38	2,267	454	9	47
Adina Hotel Building Level 3	280	35	2,077	416	8	43
Adina Hotel Building Level 4	283	35	2,099	421	8	44
Adina Hotel Building Level 5	283	35	2,099	421	8	44
Adina Hotel Building Level 6	336	42	2,486	498	10	52
Adina Hotel Building Rear Façade	957	119	7,091	1,421	28	148
Total		743	44,391	8,896	174	929

The quantity of excavated material has been calculated as the combined depth of Basement 1, Basement 2, Basement 3 and Basement 4, 14.5 m, multiplied by the floor area in each case, a total of 9,925 m^2. This is a total of 143,913 m^3 of what is assumed to be soil but may also include rock. All soil excavated should be tested for contamination.

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

Where possible, all disassembled materials should be sold or distributed for reuse. Where this is not possible, material will be sent for recycling and reused off-site. For reuse and recycling recommendations for demolition materials, refer to Table 4.

5.4 Construction Waste Types and Quantities

Construction activities at the Adina Hotel are primarily for refurbishment and waste quantities are expected to be minimal. While the estimated waste and recycling quantities are small, better practice waste management should still be practiced and is addressed in the following sections.

In the absence of readily available construction waste generation rates from 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 tower Development. SLR has adopted the 'Office' rates to measure waste expected from the Development. These waste generation rates are shown in Table 7.

Table 7 Construction waste generation rates

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

The areas are based on the areas provided in the architectural plans attached in Appendix A.

The construction waste quantities anticipated from the construction of the Development are provided below in Table 8.

Table 8 Estimated types and quantities of construction waste

Project area	GBA (m^2)	Waste types and approximate quantities (m^3)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Total	68,558	693	2,556	1,156	1,169	1,196	374	680

5.5 Waste Avoidance

In accordance with Council's Guidelines, better practice waste management and the principles of ESD, the Building Contractor will identify opportunities for waste avoidance by:

- appropriate sorting and segregation of construction waste to ensure efficient recycling of wastes
- selecting construction materials taking into consideration their long lifespan and potential for reuse
- ordering materials to size and ordering pre-cut and prefabricated materials
- reuse of formwork
- planned work staging
- use of prefabricated components for internal fit outs
- reducing packaging waste on-site by returning packaging to suppliers where possible and practicable, 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
- careful on-site storage and source separation
- reducing the amounts of materials used in construction where possible, such as:
  - exposing structures to reduce the use of floor, ceiling and wall cladding and finishes

  - ventilating buildings naturally to reduce use of ductwork
  - using prefabricated components for internal fit outs
- subcontractors informed of site waste management procedures, and
- co-ordination and sequencing of various trades.

The Building Contractor will advise on material selection for the reduction of embodied energy and resource depletion. This includes:

- the use of recycled concrete and steel
- the reduction of PVC use
- the use of low VOC (volatile organic compounds) paints, floor coverings and adhesives
- the use of low formaldehyde wood products and post-consumer reused timber or Forest Stewardship Council certified timber where possible
- the use of fittings and furnishings that have been recycled, are made from or incorporate recycled materials, and have been certified as sustainable or environmentally friendly by a recognised third-party certification scheme
- the use of building materials, fittings and furnishings including structural framing, roofing and façade cladding chosen with consideration to their longevity, adaptation, disassembly, reuse and recycling potential, and
- the use of materials that have been certified as environmentally friendly by a recognised third-party certification scheme.

5.6 Reuse, Recycling and Disposal

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

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

The following specific procedures should be implemented:

- concrete, tiles and bricks should be reused or recycled off-site
- steel should be recycled off-site, and all other metals should be recycled where economically viable
- framing timber should be reused on-site or recycled off-site
- windows, doors and joinery should be recycled off-site, where possible
- all used crates should be stored for reuse unless damaged
- all glass that can be economically recycled should be recycled
- all solid waste timber, brick, concrete, rock that cannot be reused or recycled should be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner

- all asbestos, hazardous and/or intractable wastes should be disposed of in accordance with SafeWork NSW and NSW EPA requirements
- provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources should be provided on site, and
- all waste and recycling should be disposed of through a council approved system.

5.7 Waste Storage and Servicing

5.7.1 Waste Segregation

The Development will be managed ensuring effective source separation and appropriate collection of waste during demolition and construction works.

For construction stages, minimum dedicated skips, bins and stockpiles should be considered for these materials:

- Timber and wood
- Steel and scrap metal
- Bricks
- Concrete
- General waste, and
- Other waste such as materials that may be re-used on future projects.

Where limited room is available for segregation of construction materials, consultation with recycling facilities is to be undertaken to determine which materials can be disposed of in the same skip and still be easily sorted post collection.

Separate receptacles for the safe disposal of hazardous waste types, such as light bulbs and batteries among others, will also be provided.

5.7.2 Space and Siting Requirements

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

The positions of the designated waste holding areas on site will change according to building works and the progression of the development, but must consider visual amenity, safety and accessibility in their selection. Appropriate siting of waste stockpile locations will consider slope and drainage factors to avoid contamination of stormwater drains during rain events.

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.

Council's Guidelines require an architectural drawing showing details of the storage areas for construction recyclable and reusable waste. This includes showing that storage areas are away from public and vehicle access. At the time of preparing this WMP, architectural drawings with storage details for construction waste were not available.

5.7.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role will:

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

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

5.7.4 Waste Servicing and Transport

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

All waste collections for construction works will be conducted between hours nominated in the approvals. The private waste contractor should refer to Council's Waste Policy for the approved commercial collection time zones. All site generated building waste collected in the skips and/or bins will leave the site and be deposited in the approved and appropriately licensed recycling centre, transfer station or landfill site.

5.8 Site Inductions

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

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 wastes
- Waste related signage
- The implications of poor waste management practices, and
- Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.

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

5.9 Signage

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

Signs approved by the NSW EPA for labelling of waste materials are available online[10] and should be used where applicable. A selection of signs prepared by NSW EPA is provided in Figure 3.

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

5.10 Monitoring and Reporting

In accordance with Council's Guidelines, a person should be nominated to be responsible for ensuring that targets are met and that waste dockets are retained from disposal and recycling facilities.

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

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

- 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 volumes recycled, reused or contractor removed should be maintained. This can include dockets or receipts verifying recycling and disposal in accordance with this WMP. This evidence should also be presented to regulatory bodies when required.

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

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

5.11 Roles and Responsibilities

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

Where possible, an Environmental Management Representative should be appointed for the Development. Suggested roles and responsibilities are provided in Table 9.

Table 9 Suggested roles and responsibilities for demolition and construction waste management

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

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

6 Operational Waste Management

6.1 Targets for Resource Recovery

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

The Western Gateway Design Guide identifies a target of recycling or reuse of 75% of waste from commercial operations, with an aim of 90%. See Section 4.1.

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 percentages of waste that are, or have been, recycled during operation.

Figures for recovered and landfilled materials are shown in Table 13 and Table 14. Assuming these are reasonably accurate, and that 'Garbage' will be landfilled, 80% resource recovery during retail and commercial operations is achievable as is a 77% target for hotel operations.

6.2 Waste Streams and Classifications

The operation of the Development will generate the following broad waste streams:

- domestic wastes, such as general waste, recyclable paper and cardboard and comingled containers
- bulk packaging wastes, such as cardboard boxes
- garden organic wastes from the landscaping areas
- food waste, and
- bulky waste items, such as furniture.

Potential waste types, their associated waste classifications, and management methods are provided in Table 10. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines.[11] Suggestions for recycling drop off locations and contacts can be found on https://businessrecycling.com.au/ for each waste type.

[11] Available online from https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines

Table 10 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
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
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

[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/

6.3 Estimated Operational Waste Quantities

The area required for waste storage in the building takes into account Council's waste generation rates for retail, commercial offices and hotels, bin sizes and numbers and additional space for the easy and safe movement of bins.

Our calculations are based on the following assumptions:

- Use of waste generation rates for premises types in the City of Sydney's Guidelines as shown in Table 11 below.
- Garbage and paper and cardboard will be compacted 2:1 with a bin press.
- No compaction of any other streams
- One Auscol 700 L tank for cooking oil
- A glass crusher will be installed near hotel bar serving areas and bins for crushed glass will be kept in the waste storage room
- Seven day per week operation for the hotel and all tenants except commercial offices, which are assumed to be five days per week
- Composition of the recyclables[15] stream as shown in Table 12 below. Paper and cardboard and recyclable containers should be stored and handled separately so estimates for the quantities of each have been calculated.

Table 11 City of Sydney Waste Generation Rates

Tenant type	City of Sydney Classification	Garbage	Recycling	Food
		(L/100 m^2/day)		
Commercial	Commercial Offices	15	25	5
Food and beverage	Restaurant/eating	100	500	100
Hotel	Hotels	20	25	15
General retail	General retailing	25	200	5
Bar	Pubs/Clubs	100	150	40
Supermarket	Supermarkets	75	450	25
Convenience	Convenience Stores	50	250	10

Table 12 Assumed composition of recycling stream

Tenant type	Proportion of Paper and Cardboard	Proportion of Recyclable Containers
Commercial offices[16]	93%	7%
Hotel[17]	73%	27%
Restaurant/eating[18]	69%	31%
General retailing[19]	62%	38%

[15] The City of Sydney's Guidelines provide generation rates for recyclables but not for paper and cardboard or recyclable containers which are the main components of this stream.
[16] NSW EPA Industry Fact Sheet - Reducing business waste - Commercial offices November 2012
[17] NSW EPA Industry Fact Sheet - Reducing business waste – Accommodation November 2012
[18] Reducing business waste – Cafés and restaurants ISBN 978-1-76039-630-5 | EPA 2016/0773 March 2017
[19] Reducing business waste – Retail ISBN 978-1-76039-460-8 | EPA 2016/0501 March 2017

Tenant type	Proportion of Paper and Cardboard	Proportion of Recyclable Containers
Pubs/Clubs[20]	77%	23%
Supermarkets[21]	78%	22%
Convenience Stores[22]	78%	22%

6.4 Waste quantities, bin numbers and waste storage space

6.4.1 Hotel

Taking into account the assumptions in Section 6.3 above, the amount of garbage, food, paper and cardboard and recyclable containers estimated to be generated, the number of bins of different capacities that would be required for the hotel and the amount of waste storage space required is shown in Table 13 below.

Table 13 Hotel waste quantities, bin numbers and waste storage space

Bin Capacity		1100 L	240 L
GFA (m^2)		10,264	
Total per Week (L)	Garbage	17,450	
	Food	14,050	
	Paper and Cardboard	25,690	
	Recyclable Containers	10,559	
Minimum collections per week	Garbage	7	
	Food	7	
	Paper and Cardboard	7	
	Recyclable Containers	7	
Number of bins	Garbage	3	
	Food		9
	Paper and Cardboard	4	
	Recyclable Containers	2	
	Total	9	9
Area Required (m^2)	Garbage	5.2	
	Food		3.8
	Paper and Cardboard	7.0	
	Recyclable Containers	3.5	
	Total Bins Only	15.7	3.8
	Total including Manoeuvring	31.4	7.6
Bulky waste space allowance (m^2)		8.0	
Bin press		1.2	
Cooking oil container (m^2)		0.7	
Crushed glass bins		1.0	
Total waste storage space required (m^2)		50.0	

[20] Industry fact sheets - Pubs and bars EPA 2012/0344 November 2012 ISBN 978-1-74293-879-0
[21] Reducing business waste – Supermarkets ISBN 978-1-76039-459-2 | EPA 2016/0499 March 2017
[22] Reducing business waste – Supermarkets ISBN 978-1-76039-459-2 | EPA 2016/0499 March 2017

Based on the expressed assumptions, and our calculations, the minimum storage area required for bins, including manoeuvring and space for bulky waste, cooking oil and crushed glass bins, is 50.0 m^2. The drawings show a hotel waste storage room with an area of 56 m^2, which is adequate for the proposed waste system.

6.4.2 Commercial office and retail

Taking into account the assumptions in Section 6.3 above, the amount of garbage, food, paper and cardboard and recyclable containers estimated to be generated, the number of bins of different capacities that would be required for the hotel and the amount of waste storage space required is shown in Table 13 below.

Table 14 Commercial and retail waste quantities, bin numbers and waste storage space

Bin Capacity		1100 L	240 L
GFA (m^2)		32,730	
Total per Week (L)	Garbage	41,906	
	Food	20,671	
	Paper and Cardboard	114,229	
	Recyclable Containers	35,685	
Minimum collections per week	Garbage	7	
	Food	7	
	Paper and Cardboard	7	
	Recyclable Containers	7	
Number of bins	Garbage	6	
	Food		13
	Paper and Cardboard	15	
	Recyclable Containers	5	
	Total	26	13
Area Required (m^2)	Garbage	10.4	
	Food		5.6
	Paper and Cardboard	26.1	
	Recyclable Containers	8.7	
	Total Bins Only	45.2	5.6
	Total including Manoeuvring	67.8	8.4
Bulky waste space allowance (m^2)		8.0	
Bin press		1.2	
Cooking oil container (m^2)		0.7	
Total waste storage space required (m^2)		86.2	

Based on the expressed assumptions, and our calculations, the minimum storage area required for bins, including manoeuvring and space for bulky waste and cooking oil, is 86.2 m^2. The drawings show a hotel waste storage room with an area of 89 m^2, which is adequate for the proposed waste system.

6.5 Waste storage rooms

6.5.1 Size of waste storage rooms

The area required for the waste storage rooms in this development take into account Council's waste generation rates for retail, commercial and hotels, bin sizes and numbers and additional space for the easy and safe movement of bins.

Drawing BSMART-AR-DAD-10B03000[1] General Arrangement Plan Basement Level 03.pdf dated 1 July 2022, shows two waste storage rooms on Basement Level 3. One is labelled 'Hotel Waste Room', and has an area of 56 m^2, and the other is labelled 'Commercial/Retail Waste Room', and has an area of 89 m^2. These are shown in Figure 4 below.

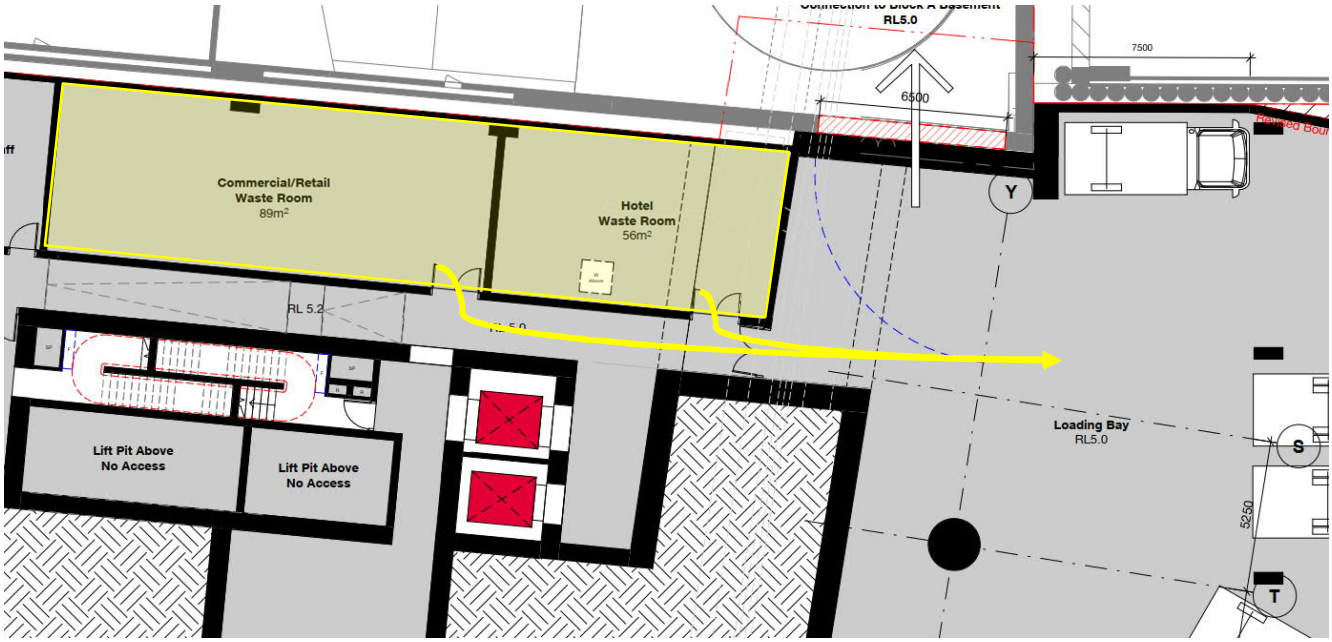


Figure 4 Waste storage rooms

Also shown are the travel paths from the waste storage rooms to the collection point in the loading dock.

As can be seen in Table 13 and Table 14 above, 50 m^2 of space is required for hotel waste and 86.2 m^2 for commercial and retail so the space provided is adequate.

6.5.2 Waste equipment

In accordance with Council's Guidelines, all bins used in the Development will:

- Have a fixed tight-fitting lid and a smooth, washable internal surface
- Always be kept in serviceable condition and at the agreed bin numbers.

Cleaning of bins will be conducted regularly and monitored by the managing body.

Garbage, paper and cardboard and recyclable containers are proposed to be stored in 1100 L bins. Food waste is proposed to be stored in 240 L containers. These are shown in Figure 5.

Figure 5 240 L bin (left), 1100 L bin (right)

Garbage and paper and cardboard will be compacted using a bin press, similar to that shown in Figure 6.

Figure 6 1100 L bin press

Space for one Auscol 700 L tank has been allowed for cooking oil in each room, similar to that shown in Figure 8.

Figure 7 Crushed glass bins

Figure 8 Auscol oil tank

6.5.3 Waste storage rooms locations

The City of Sydney's Guidelines specify that all collection of non-residential waste is to be conducted on-site and that waste collection points should be located wholly within the boundary of the development. Waste storage rooms have been provided on Basement Level 3 that comply with this requirement.

The Guidelines say that the collection locations must be somewhere that waste and recycling collection vehicles can stand safely, the collections must have minimal noise and odour impacts on neighbours and not disrupt traffic and that the maximum distance between the storage room and the collection point should be 10 m.

The drawings, as shown in Figure 4, show that the distance from the door of the commercial and retail waste room to the loading dock is 10 m. The door from the hotel waste room is immediately adjacent to the dock so significantly closer than 10 m.

6.5.4 Additional waste storage arrangements

In addition to the recommendations for general waste, recycling, food waste and bulky waste storage, Council's Guidelines require additional waste storage measures for different streams anticipated from a non-residential development. In accordance with Council's Guidelines, the Development incorporates the waste storage measures identified in the sections below.

6.5.4.1 Kitchen waste

In accordance with Council's Guidelines, sufficient space is provided in kitchen spaces for the separation of food from other waste streams. Waste bin storage areas in the kitchens, office tearooms and other food preparation areas are marked on the architectural plans.

Space is provided for the storage of cooking oil. This area is bunded and drained to a grease trap in accordance with legislation and State government authorities and agencies.

6.5.4.2 Beverage containers

A proportion of co-mingled recycling produced at office developments can be beverage containers brought by employees for consumption. Council's Guidelines require a dedicated space to be provided for the separate collection of beverage containers that are eligible for redemption under the NSW Container Deposit Scheme.[23]

The storage area for beverage containers is located in the waste storage area.

6.5.4.3 Food waste

Council's Guidelines require that food waste be collected separately from other waste streams. Food waste will be stored in 240 L bins.

6.5.4.4 Office waste

In accordance with Council's Guidelines, each office will have an interim holding area for the separation and storage of all recyclable items including mixed containers, carboard and paper. The interim holding area will have sufficient capacity to store at least two day's volume.

Areas designated for printing will have an interim holding area for the separate storage of used paper, toner and printer cartridges. Used paper, toner and printer cartridges will be recycled.

6.5.5 Location of Waste Storage Rooms

In accordance with Council's Guidelines and better practice waste management, waste storage rooms are located so that:

- They are inside the Development's boundaries and in reasonable proximity to the vehicle entrance.
- They are no lower than one level below street level.
- They allow for convenient access by users.
- They are not adjacent to any habitable room.
- The area minimises any noise, or odour impacts on the amenity of nearby premises.

In accordance with Council's Guidelines, the location for the waste storage areas are detailed on the DA drawings.

6.5.6 Construction of Waste Storage Rooms

In accordance with Council's Guidelines and better practice waste management, waste storage rooms will be constructed to the following requirements:

- The waste storage rooms will be constructed in accordance with the requirements of the BCA ensuring impervious floors, walls and ceilings

[23] https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn

- The floors must be graded and drained to a Sydney Water drainage fitting. The flood is to be provided with a ramp to the doorway where necessary
- The floors, walls and ceilings of waste storage rooms must be finished with a rigid smooth faced non-absorbent material capable of being easily cleaned
- The waste rooms must be provided with an adequate supply of water for cleaning purposes.
- A close fitting and self-closing door openable from inside the room must be fitted to all waste and recycling rooms
- Doors to the waste storage rooms are to provide a minimum clearance width of 900 mm
- At least one door to the waste storage area is to have sufficient dimensions to allow the entry and exit of bins of the capacity nominated for the Development
- Lightweight roller shutter-type doors or grilles should be considered for access to waste storage area, as these do not impact on the available storage space. If these types of doors or grilles are used, the requirement for a close-fitting and self-closing door remains, so that waste collectors can access the waste and recycling storage area other than through the roller door or grille
- All doors will be openable from both inside and outside the storage areas
- Waste storage rooms must be constructed in such a manner as to prevent the entry of vermin
- Convenient and step-free access between the waste and recycling storage areas and the collection point will be provided
- Waste storage rooms must be well ventilated. Ventilation is to either occur via natural ventilation with openings of dimensions greater than 5% of the waste storage room area, or via mechanical exhaust in accordance with the relevant Australian standards
- Waste storage rooms are to be well lit by artificial light controlled by switches located both inside and outside of the room
- Smoke detectors will be fitted in accordance with Australian Standards and connected to the fire prevention system of the building, and
- Clear and easy to read signs and warning signs must be fixed to the external face of each waste and recycling room where appropriate.

6.6 Waste Collection and Servicing

SLR anticipates that waste servicing of the Development will be provided by a private waste contractor. This is in accordance with Council's Waste Policy, which says that businesses are responsible for arranging their own waste services.

If a private waste contractor is engaged, a valid waste and recycling collection contract will be provided to demonstrate disposal at a waste facility lawfully able to accept it. Written evidence of the valid contract will be kept on site. The private waste contractor will refer to Council's Waste Policy for the approved commercial collection time zones.

In accordance with Council's Guidelines, the Development will include in its waste contracts, provisions that allow for the collection and recycling of office paper, cardboard packing, secure paper, soft plastics, food waste and other recyclables.

If cleaners are engaged for the Development, contracts will specify the responsibility of cleaners to transport waste and recycling from each interim holding area of the warehouses to the allocated waste storage room each day. The contracts will clearly outline the waste management system and the allocated responsibilities. Contracts

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

6.6.1 Access to Waste Storage Rooms and Collection Points

Council's Guidelines state that the collection point for the bins of the Development is to be located on site. Collection will be undertaken by a commercial waste contractor. Collection vehicles would enter the loading dock at the rear of the property in a forward direction, and then exit in a forward direction.

Council's requirements for the location of the collection point and heavy vehicle access to the collection point, identified in Section A – Waste and recycling collection points of Council's Guidelines will be adhered to.

Heavy vehicle access to the loading dock is addressed in the specialist traffic study undertaken as part of this DA for the Development.

6.7 Communication Strategies

Waste management initiatives and management measures will 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 will be considered:

- Use consistent signage and colour coding throughout the Development
- 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.

6.8 Signage

The waste storage and collection areas will be provided with appropriate signage. These signs will clearly identify waste management procedures and provisions to contractors, tenants and visitors will be distributed around the Development.

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 9
- 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 Development
- Emergency contact information for reporting issues associated with waste or recycling management, and
- Contractor information to be displayed in accordance with Council's Waste Management Local Approvals Policy.

Colour-coded and labelled bin lids are necessary for identifying bins. Bins will be designed and colour-coded in accordance with the Australian Standard AS 4123: Mobile Garbage Containers.

All signage will conform to the relevant Australian Standard and use labels approved by the NSW EPA[24]. The design and use of safety signs for waste rooms and enclosures will comply with Australian Standard AS 1319 Safety Signs for the Occupational Environment and clearly describes the types of materials designated for each bin.

Figure 9 Example of bin labels for operational waste

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

6.9 Cleaning, Maintenance and Security

Regular cleaning of waste and recycling storage areas will be undertaken by cleaners or facilities management staff. Facilities management staff will erect and maintain suitable signage in the waste storage areas (see Section 6.8). Cleaners or waste collection operators will transfer of bins between the main storage areas and the loading dock for collection. All waste storage areas will be secured and access only available to tenants, facilities managers and collection contractors.

6.10 Monitoring and Reporting

As part of Council's Guidelines, Council's Waste and Recycling Management Plan forms have been completed as part of the monitoring of waste generated during the operation of the Development. The forms are attached in Appendix B.

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

Visual assessments of bins and bin storage areas will 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 may 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 will 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 will also be available to regulatory authorities such as the NSW EPA and SafeWork NSW, upon request.

Any deficiencies identified in the waste management system, including unexpected waste quantities, will be rectified by the Building Manager as soon as it is practical. Where audits show that recycling is not carried out effectively, management will 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 Development, review and updates to maintain suitability must be undertaken.

6.11 Roles and Responsibilities

It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all tenants and staff to follow the waste management procedures set out by the WMP. Any subcontractors enlisted by the Client will have roles and responsibilities identified and the Development's waste management system clearly explained. A summary of recommended roles and responsibilities is provided in Table 15.

Table 15 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.

6.12 Waste Movements

6.12.1 Retail

Using wheeled bins, trolleys, bags or other means, all retail waste will be brought by retailers to the waste storage room. Lifts will be used for this purpose.

6.12.2 Commercial

Using wheeled bins, trolleys, bags or other means, all waste from the commercial levels will be brought by cleaners to the waste storage room. Lifts will be used for this purpose.

6.12.3 Hotel

Using wheeled bins, trolleys, bags or other means, all waste from the hotel areas will be brought by cleaners, contractors and staff to the waste storage room. Lifts may be used for this purpose.

6.12.4 Waste travel paths

Possible waste travel paths within the development are shown in Appendix B.

6.12.5 Cleaning, Maintenance and Security

Regular cleaning of waste and recycling storage areas will be undertaken by cleaners or facilities management staff. Facilities management staff will erect and maintain suitable signage in the waste storage areas. All waste storage areas will be secured and access only available to cleaners, tenants, hotel staff, facilities managers and collection contractors.

7 Assessment and findings

Impacts due to waste management can be classified in three ways:

- direct impacts - impacts due to waste management at the development itself, for example noise due to collection vehicles
- indirect impacts - impacts due to waste management that take place elsewhere, for example processing and disposal of construction materials, food and other waste materials
- avoided impacts - impacts related to waste management that may result from waste minimisation and recovery practices during the operational stage of the development, such as buying in bulk and using reusable and recyclable packaging.

7.1 Direct impacts

Direct impacts, impacts due to waste management at the development itself, will chiefly relate to vehicle movements and associated emissions such as noise, particulates and fumes. There is also the potential for odour from the waste management storage areas.

There will be most likely four heavy vehicle movements per day relating to waste management. These will take the form of separate collection vehicles for garbage, food, paper and cardboard and recyclable containers. Another vehicle will occasionally collect cooking oil. This will probably not be daily but may be weekly.

The Central Station precinct is a very busy area with significant small vehicle, bus and heavy vehicle traffic movements on Lee Street and George Street. Waste collection vehicles are already visiting the Adina Hotel and Henry Deane Plaza shopping centre. The proposed four daily waste collection vehicle movements will replace some of these but are likely to have very little impact on the emissions from significant traffic already using the area.

For more details about vehicle movements please refer to the traffic plan for this development.

Odour is also unlikely to have any significant impact. The two waste storage rooms are fully within the development on Basement 3. Collections are proposed to be daily, so no putrescible waste will be stored there for more than 24 hours. Both these factors almost completely mitigate the risk of odour from waste management operations.

7.2 Indirect and Avoided Impacts

Indirect and avoided impacts are subject to operational activities at the development. They will be affected by a range of factors such as:

- The number of patrons
- The nature and quantities of food and drinks prepared at sold at the development
- The features of caterers, chefs and food and drink preparation staff including:
  - Their food preparation philosophy, attitude towards sustainability, sustainable food practices, waste minimisation
  - Experience of staff and level of training
- The philosophy and attitude of hotel and facilities management

- Costs
- Construction specifications
- Professionalism of construction contractors and their attitude to waste minimisation and recovery.
- Professionalism of waste contractors and their access to suitable waste processing and recovery facilities.

These factors are largely operational and outside the scope of this waste management plan. Regardless, a range of mitigation and avoidance measures have been proposed in this waste management plan that could be applied to mitigate the indirect impacts and increase the avoided impacts of the waste management system at the development.

8 Conclusion

Direct impacts of traffic can be mitigated by specifying waste collections at hours where impacts won't be as significant.

Direct impacts of odour are already mitigated by the location of the waste storage rooms and the frequency of waste collections

Indirect impacts can be mitigated and avoided impacts increased by adopting the waste reduction and minimisation measures outlined in this waste management plan

APPENDIX A

Drawings Referenced

Drawing Number	Drawing Name	Revision
BSMART-AR-DAD-10B01000	General Arrangement Plan Basement Level 01	1
BSMART-AR-DAD-10B02000	General Arrangement Plan Basement Level 02	1
BSMART-AR-DAD-10B03000	General Arrangement Plan Basement Level 03	1
BSMART-AR-DAD-10B04000	General Arrangement Plan Basement Level 04	1
BSMART-AR-DAD-10GR0000	General Arrangement Plan Lower Ground Level	1
BSMART-AR-DAD-10GR1000	General Arrangement Plan Ground Level	1
BSMART-AR-DAD-10L02000	General Arrangement Plan Level 02	1
BSMART-AR-DAD-10L03000	General Arrangement Plan Level 03	1
BSMART-AR-DAD-10L04000	General Arrangement Plan Level 04	1
BSMART-AR-DAD-10L05000	General Arrangement Plan Level 05	1
BSMART-AR-DAD-10L06000	General Arrangement Plan Level 06	1
BSMART-AR-DAD-10L07000	General Arrangement Plan Level 07	1
BSMART-AR-DAD-10L08000	General Arrangement Plan Level 08 (Plant)	1
BSMART-AR-DAD-10L09000	General Arrangement Plan Level 09 (Plant)	1
BSMART-AR-DAD-10L10000	General Arrangement Plan Level 10-15	1
BSMART-AR-DAD-10L16000	General Arrangement Plan Level 16-17	1
BSMART-AR-DAD-10L18000	General Arrangement Plan Level 18-19	1
BSMART-AR-DAD-10L20000	General Arrangement Plan Level 20 (Plant)	1
BSMART-AR-DAD-10L21000	General Arrangement Plan Level 21	1
BSMART-AR-DAD-10L22000	General Arrangement Plan Level 22	1
BSMART-AR-DAD-10L23000	General Arrangement Plan Level 23-44	1
BSMART-AR-DAD-10L45000	General Arrangement Plan Level 45 (Plant)	1
BSMART-AR-DAD-10L46000	General Arrangement Plan Level 45 (Plant) Upper	1
BSMART-AR-DAD-10L47000	General Arrangement Plan Roof Level	1

APPENDIX B

Waste Travel Paths

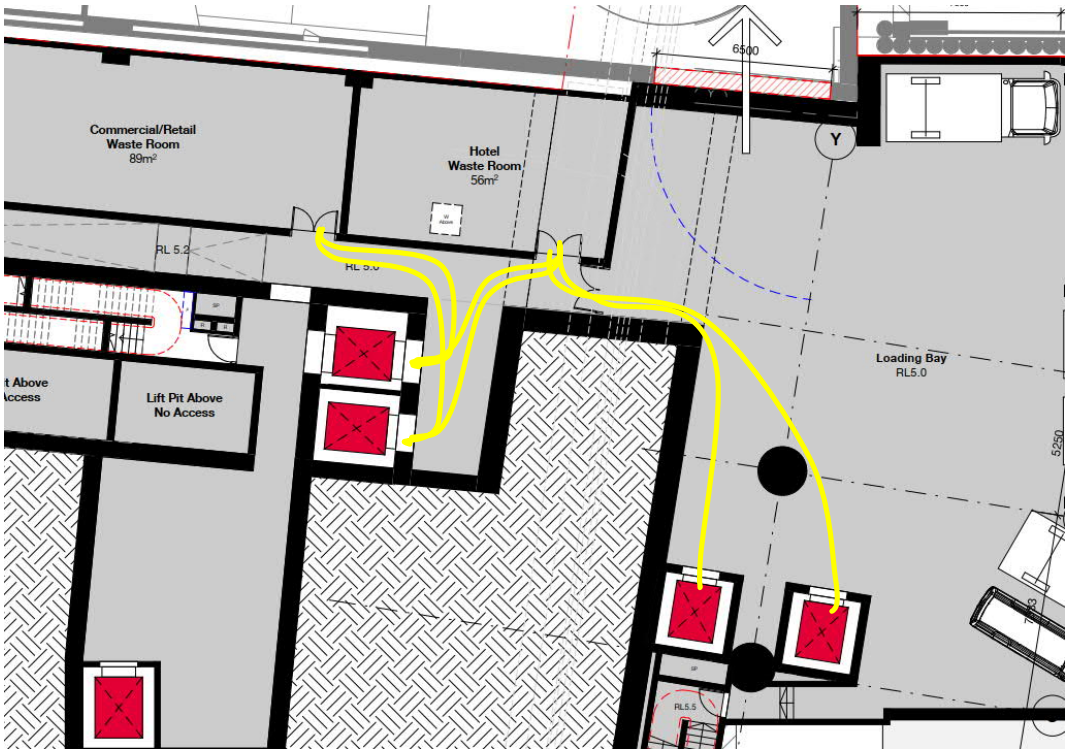


Figure 10 Travel paths Basement 3

Figure 11 Travel Paths Lower Ground Level

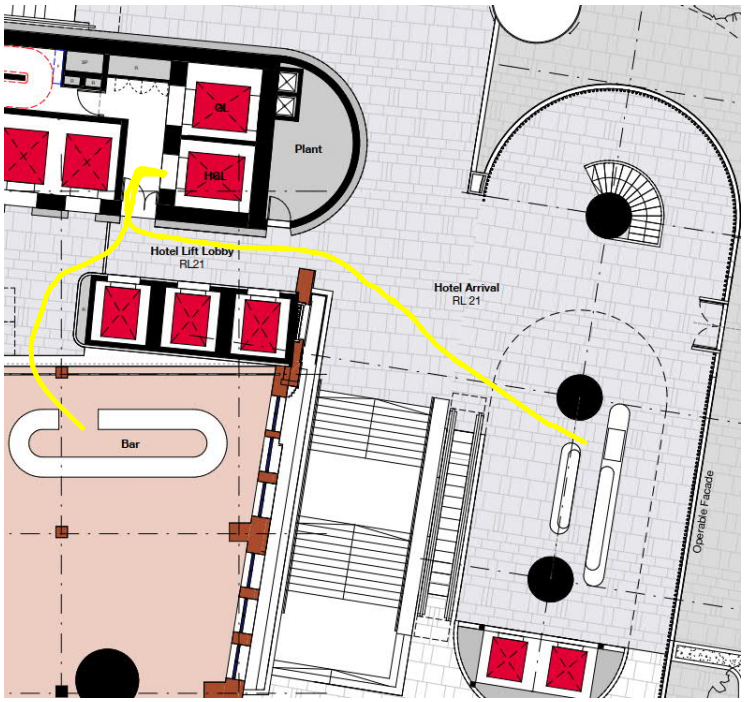


Figure 12 Travel paths Ground Level

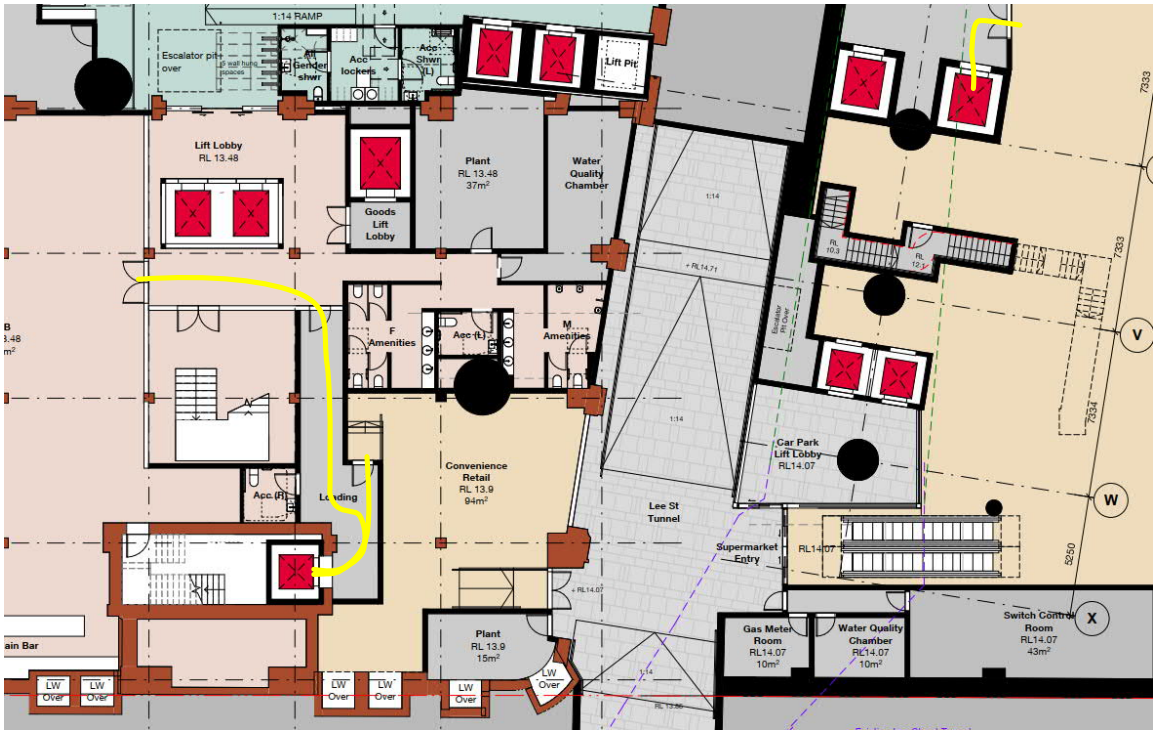


Figure 13 Travel paths Basement 1

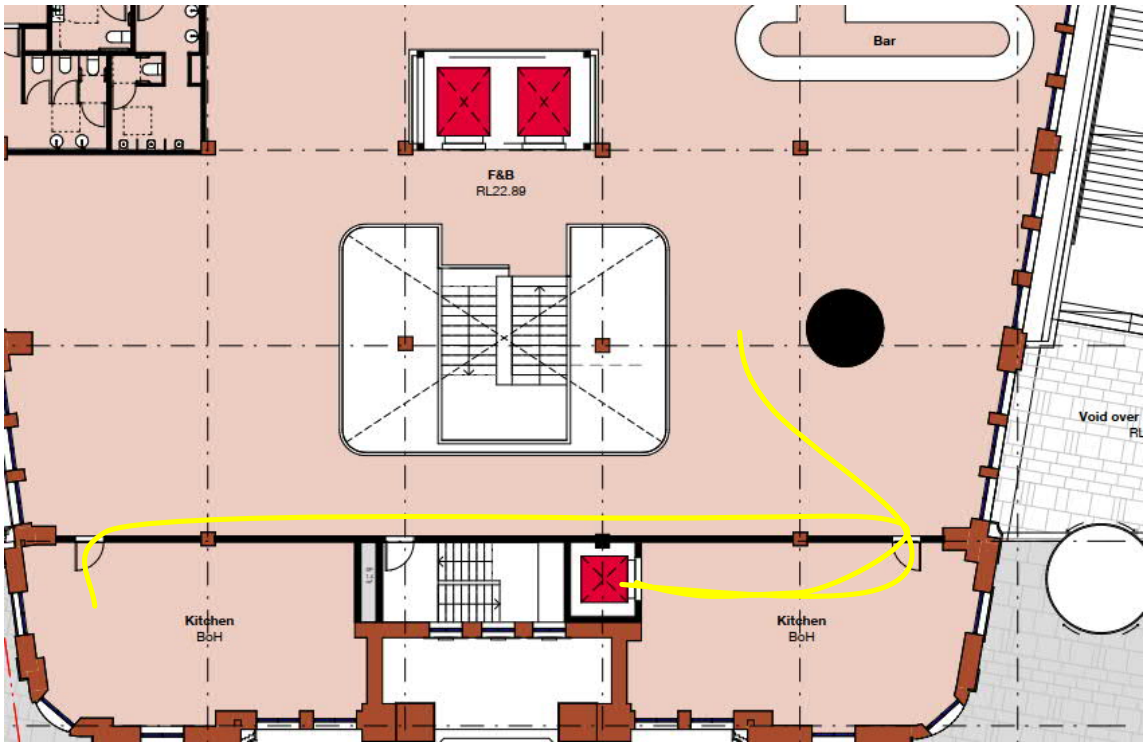


Figure 14 Travel paths Ground Level

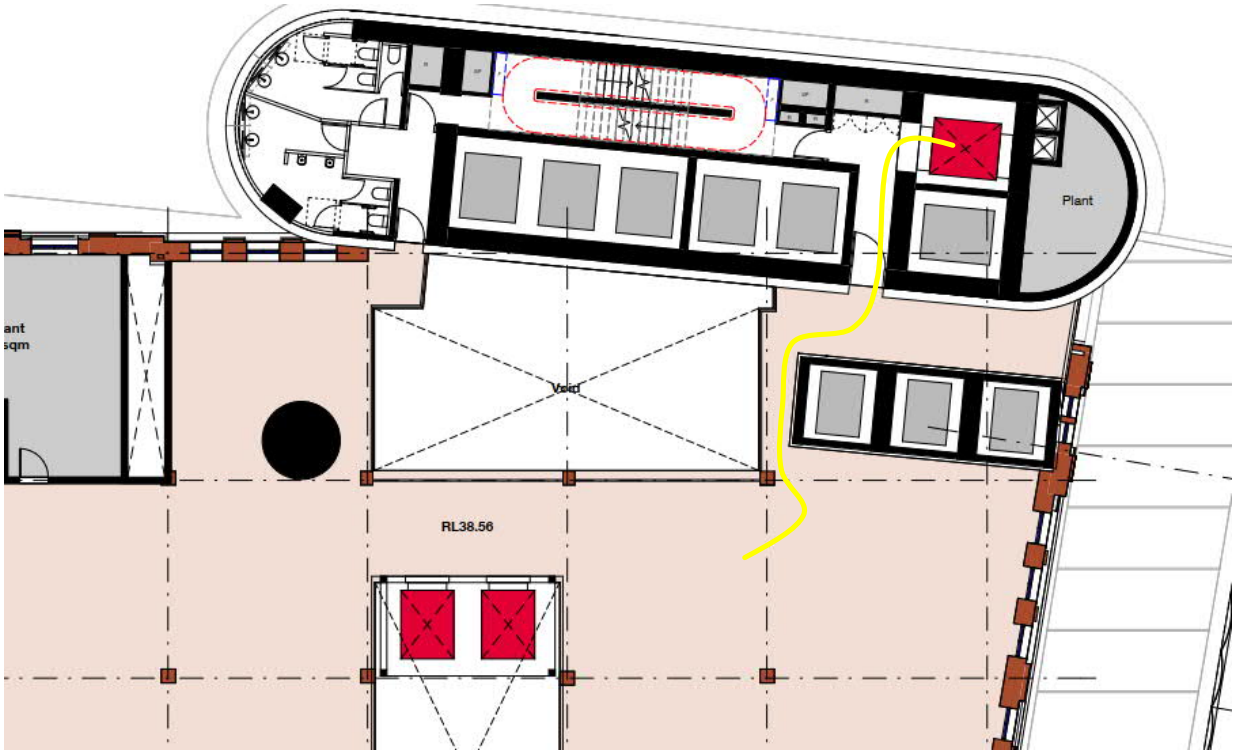


Figure 15 Travel paths Levels 2-5

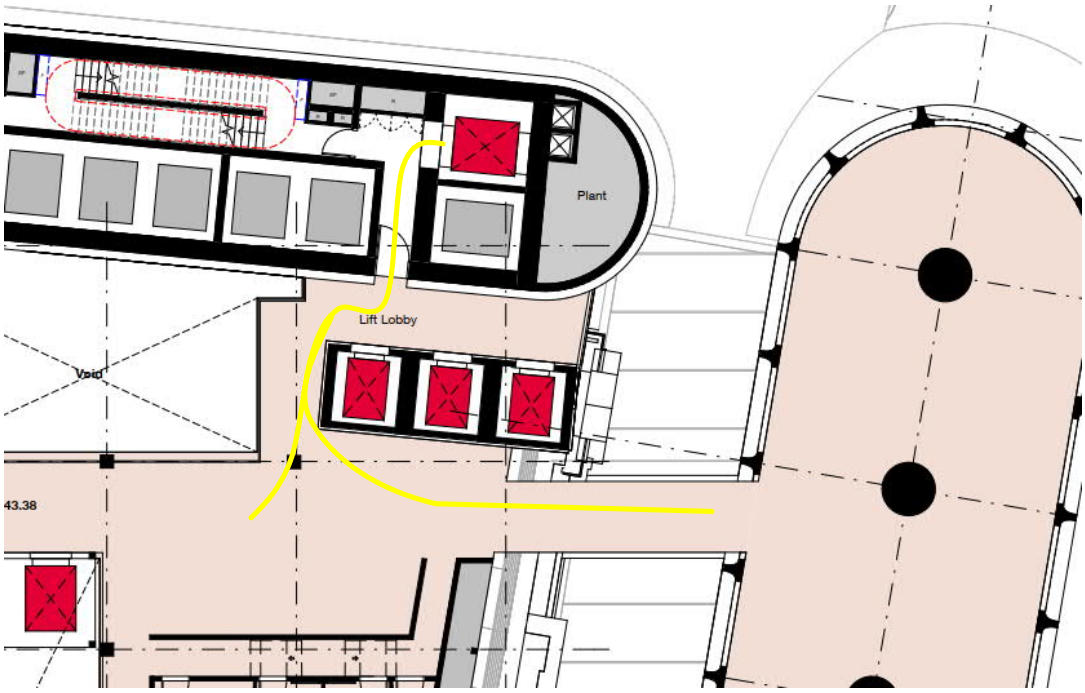


Figure 16 Travel paths Level 6

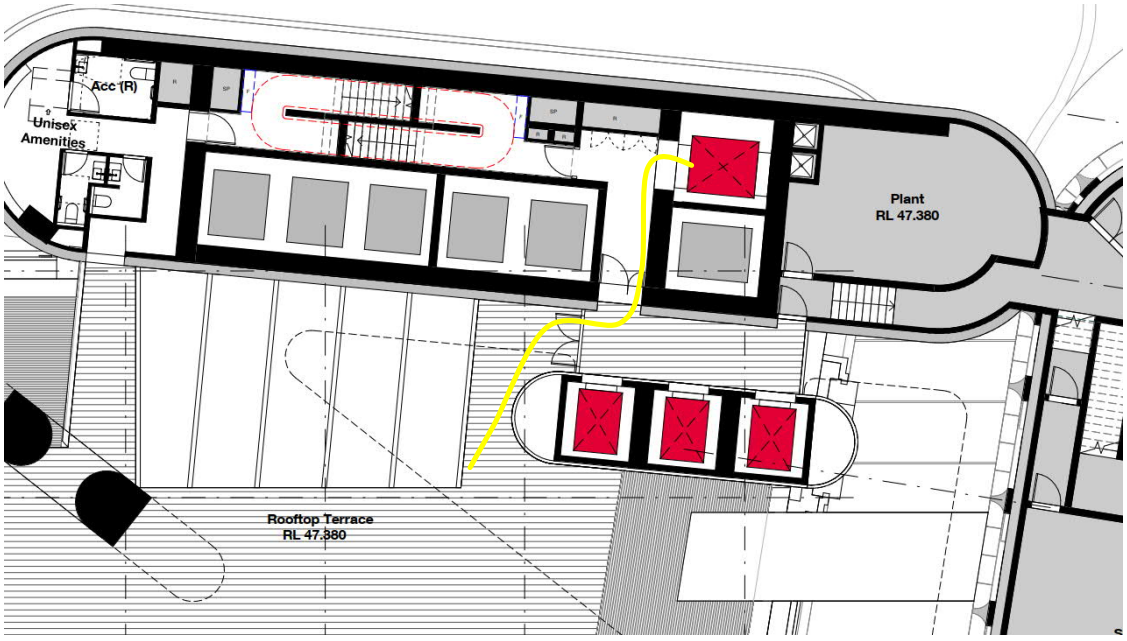


Figure 17 Travel paths Level 7

Figure 18 Travel paths Levels 10-19

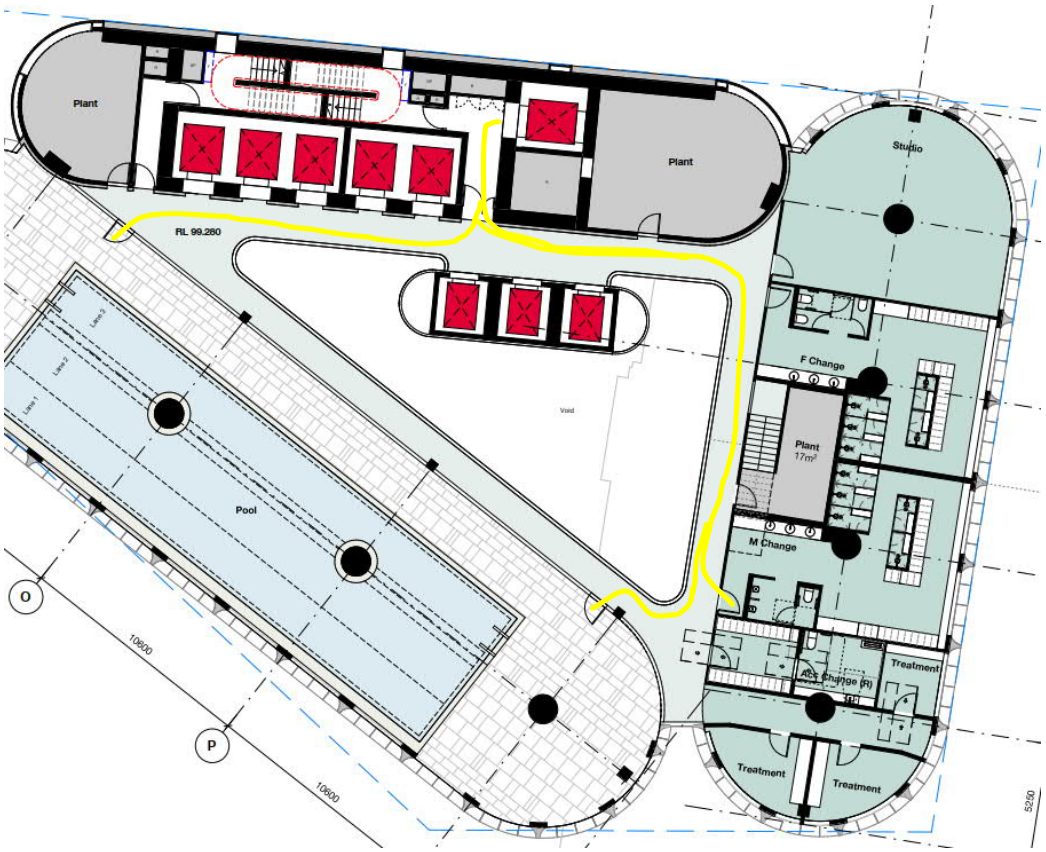


Figure 19 Travel paths Level 21

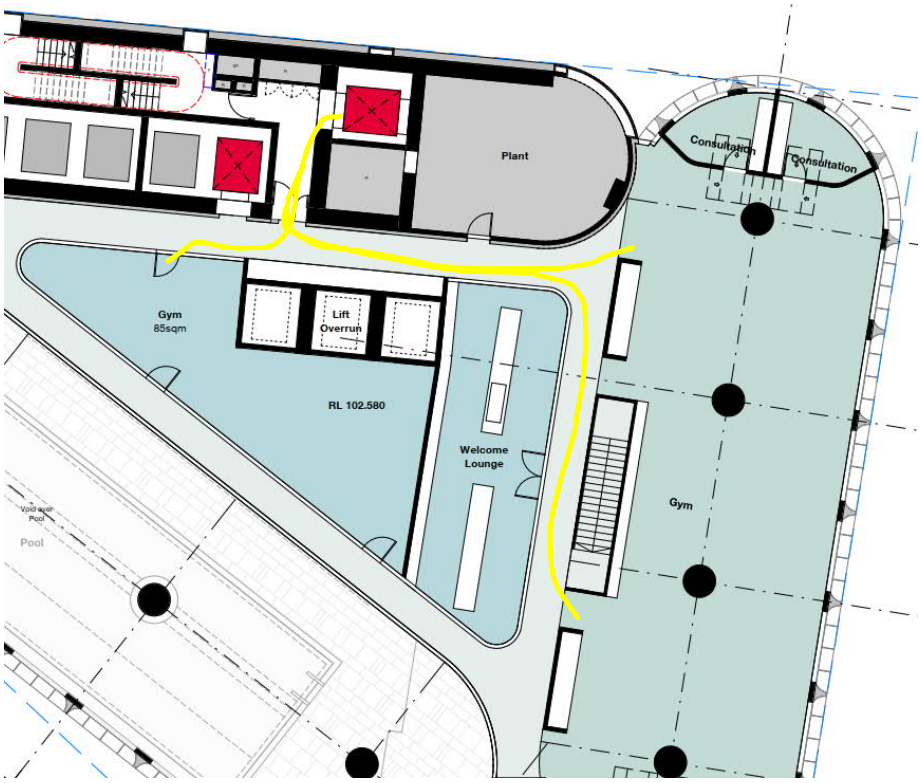


Figure 20 Travel paths Level 22

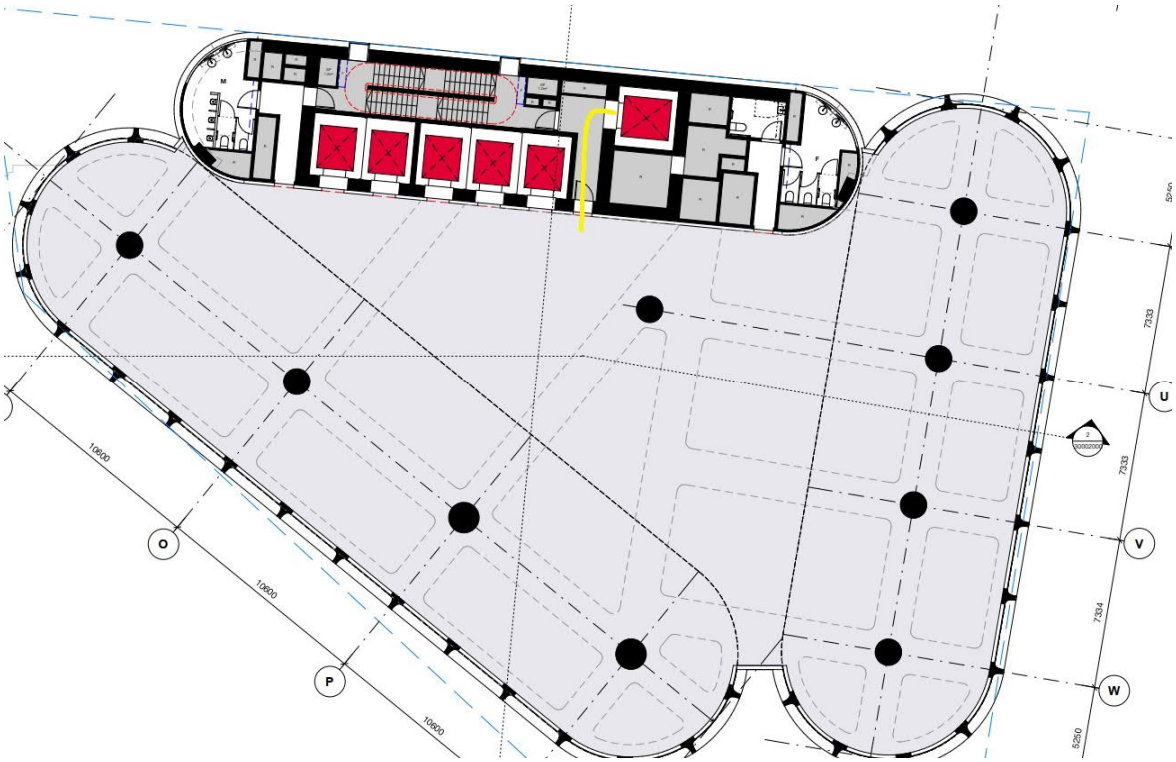


Figure 21 Travel paths Levels 23-44

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