

Health Infrastructure NSW

**St Leonards Health Organisation's
Relocation (SHOR)**

Waste Management Plan

Issue | 15 November 2017

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 253715

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1 Introduction

This report supports a State Significant Development Application (SSDA) submitted to the Department of Planning and Environment pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the St Leonards Health Organisations Relocation (SHOR) Project at the Royal North Shore Hospital (RNSH).

The SSD Application relates to the Concept Plan Approval for the Royal North Shore Hospital, St Leonards which was approved in April 2007 (MP 06_0051). This application is SSD by way of Ministerial declaration pursuant to Section 89(C) of the EP&A Act, the order for which was published on 13 October 2017.

This proposal relates specifically to the construction of a new building on the south-western edge (identified as site 4A under the Concept Plan) of the RNSH Campus. Uses proposed include health-related commercial uses, retail and a child care centre.

This report has been prepared having regard to the Secretary's Environmental Assessment Requirements issued for the project.

1.1 Background

The subject site is located within the hospital grounds of RNSH, and is identified as Site 4a, within Precinct 4.

The site forms part of a wider Concept Plan approval for the redevelopment and renewal of RNSH (MP 06_0051). On 13 April 2007, approval was granted for a Concept Plan, including proposed building envelopes (height, bulk, and scale), associated GFA and land use, site preparatory works, and road networks.

The Concept Plan proposed staged renewal of the entire campus through the nomination of eight precincts and a six-stage construction and delivery strategy. Since concept approval, redevelopment of the following buildings has been completed:

- Kolling Institute Research Building;
- Acute Services Building;
- Clinical Services Building;
- Community Services Building; and
- Multi-Storey Car Park with capacity for 567 spaces.

Under the Concept plan, the subject site is identified as Precinct 4, comprising of Site 4a and Site 4b.

Approval for demolition of existing buildings currently located on Precinct 4 and adjoining areas of the RNSH Campus was obtained as part of a Review of Environmental Factors (REF) under Part 5 of the *EP&A Act 1979*, dated August

2016. The Part 5 approval also included regrading of land for landscaping purposes and some landscaping works. Other works that have been carried out on site, and were covered under the REF include refurbishment of the existing buildings (Building 33, 35, 36 and the Douglas Building) and other civil infrastructure upgrades.

The Concept Plan has undergone several modifications, with the most recent modification relating to the subject site. Modification 7 (MP 06_0051 MOD 7 - Modification to Concept Plan building footprint in Precinct 4a) was lodged on December 2016 and approved by the DP&E on 20 July 2017. The modification amended the building footprint originally approved for Site 4a under the Concept Plan and consolidated the commercial floor plate design, allowing a more efficient commercial floor plate and an improved design response for the site.

1.2 Overview of Proposed Development

This SSD Application seeks approval for works proposed to Precinct 4 (Site 4A and Site 4B) and some adjoining public domain grounds. Specifically, consent is sought for the following:

- Construction of a 10-storey building with a total ground floor area (GFA) of 30,977 m² comprising of the following uses:
 - 28,615 m² of health-related employment generating uses;
 - 658m² lobby;
 - 241m² café;
 - 902 m² child care facility;
 - 561m² basement storage and miscellaneous.
- Construction of 2 basement levels with 115 car parking spaces and 1 car wash bay;
- Subdivision of the existing land parcel into the following additional allotments:
 - Proposed Lot 41 (Area 8,049 m²);
 - Proposed Lot 42 (Area 64 m²); and
 - Proposed Lot 40 (Residue Lot comprising the RNS hospital precinct)
- Improved east-west connectivity of the 4A+4B precinct through an at grade pedestrian access way interconnecting Herbert Street (east) to Reserve street (west);
- Creation of an additional easement along the southern alignment of the site for unrestricted vehicular access; and
- Associated public domain and landscaping works.

1.3 The site

The RNSH Campus is situated approximately 6.5 km north of Sydney CBD and 3 km south west of Chatswood. The RNSH precinct is located within Willoughby City Council LGA, less than 200 metres from St Leonards Station.

The subject site (Precinct 4) is located at the southern edge of the RNSH Campus with direct frontage to Reserve Road (west of the site).

The land is owned by the Health Administration Corporation. Precinct 4 currently forms a part of the Royal North Shore Hospital campus, legally described as Lot 210 under DP 1172133. Total site area of the existing campus is 11.38 hectares.

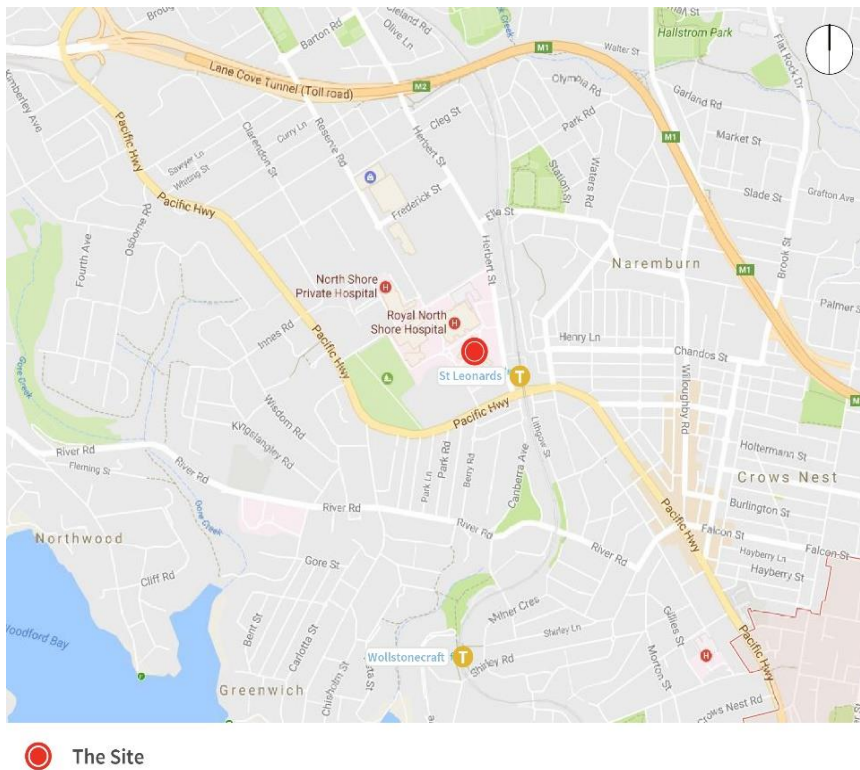


Figure 1 – Site Location Context Plan
Source: Ethos Urban

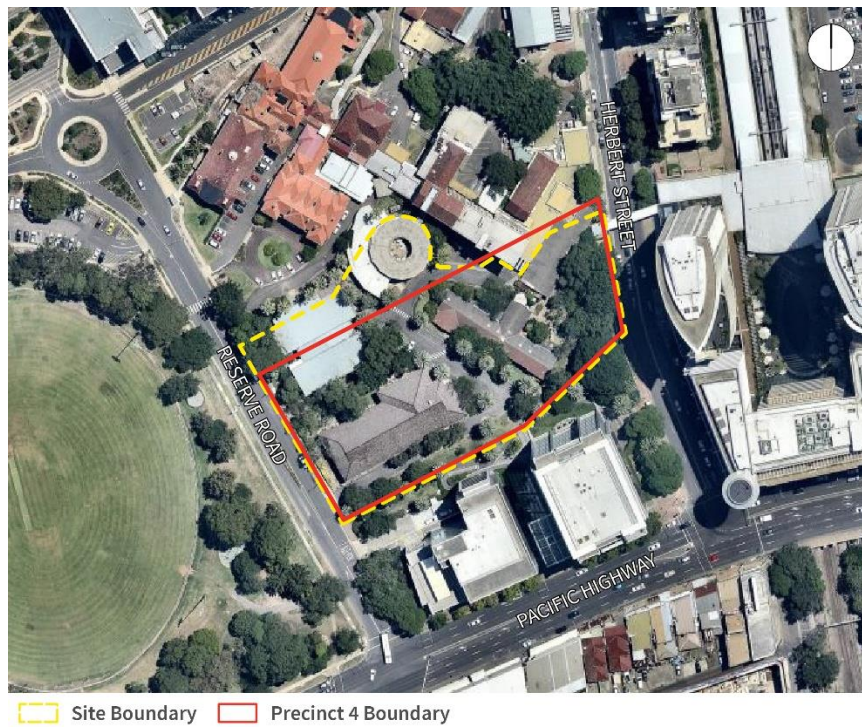


Figure 2 – Project Aerial Plan
Source: Ethos Urban

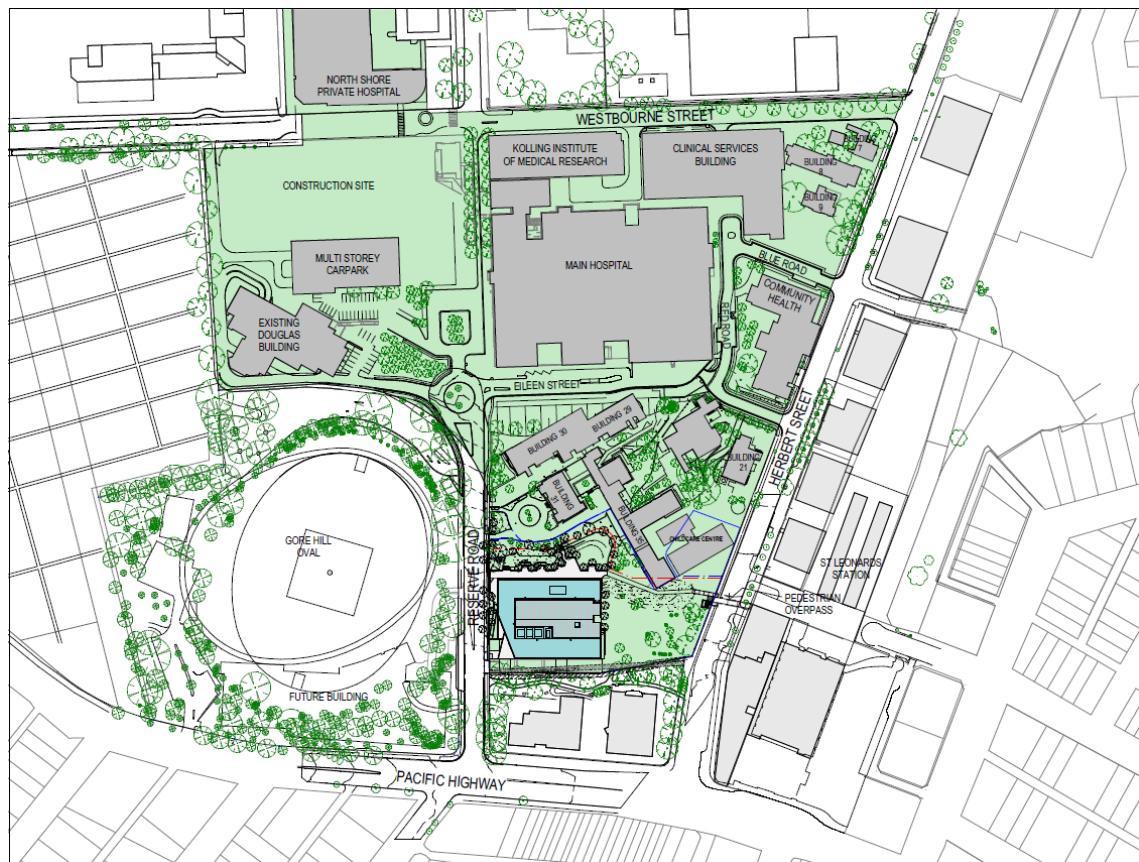


Figure 3 – Proposed Precinct Plan
Source: BVN

1.4 Purpose

The key purposes of the WMP are to:

- Address the waste management requirements for the proposal to a standard suitable for approval under the EP&A Act;
- Respond to the requirements set out in the Secretary's Environmental Assessment Requirements;
- Provide guidance for the project for waste minimisation from construction activities;
- Increase economic feasibility of the project through effective waste separation, recycling and re-use measures; and
- Identify and classify the likely waste streams to be generated during construction and describe the measures to be implemented to safely manage this waste.

2 Legislative requirements

2.1 NSW State legislation

2.1.1 *Protection of the Environment Operations Act, 1997*

The *Protection of the Environment Operations Act* (POEO Act) 1997 covers the requirements for waste generators in terms of storage and correct disposal of waste. The POEO Act establishes the waste generator as having responsibility for the correct management of waste, including final disposal.

2.1.2 *Waste Avoidance and Resource Recovery Act 2001*

Due to concerns about waste management practices and increasing volumes of waste, the NSW government introduced the *Waste Avoidance and Resource Recovery Act* (WARR Act) 2001, superseding the Waste Minimisation and Management Act 1995 following its five year review.

The objectives of the WARR Act are as follows:

- (a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development (ESD),
- (b) to ensure that resource management options are considered against a hierarchy of the following order:
 - i. avoidance of unnecessary resource consumption,
 - ii. resource recovery (including reuse, reprocessing, recycling and energy recovery),
 - iii. disposal
- (c) to provide for the continual reduction in waste generation
- (d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,
- (e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste,
- (f) to ensure the efficient funding of waste and resource management planning, programs and service delivery,
- (g) to achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis,
- (h) to assist in the achievement of the objectives of the *Protection of the Environment Operations Act 1997*.

A WMP is a requirement for new developments in NSW and must be written with reference to the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*, made under the Act.

2.1.3 *NSW Waste Reduction and Purchasing Policy 2007 (WRAPP)*

The *NSW Waste Reduction and Purchasing Policy (WRAPP)* requires all state government agencies and state owned corporations to develop and implement a WRAPP plan to reduce waste in four scheduled waste sources:

- Paper products;
- Office equipment and components;
- Vegetation material; and
- Construction and demolition materials.

The NSW WRAPP is not directly applicable to the project, but has been used as a guiding document for waste initiatives.

2.2 *Local Government requirements*

2.2.1 *Willoughby Council Development Control Plan 2006*

The Willoughby Council Development Control Plan (Council's DCP) provides detailed guidelines and environmental controls to guide development within the Willoughby local government area. The purpose of Part C.8 of Council's DCP is to encourage efficient building design and effective ongoing management systems for the handling of waste and recyclable materials in all developments. In addition, Part C.8 of Council's DCP seeks to facilitate the efficient and safe waste and recycling collection from all premises in the Willoughby City Council area.

The guiding principles for the requirements in Part C.8 of Council's DCP are:

- [1] Waste minimisation and resource recovery – encouraging improved environmental outcomes and to help meet Council's waste minimisation targets through increased source separation of materials to ensure more efficient management of waste and recyclable materials.
- [2] Access – ensuring waste systems are easy to use and that collection vehicles are able to access buildings to remove waste and recycling materials.
- [3] Safety – ensuring safe practices for storage, handling and collection of waste and recycling.
- [4] Pollution prevention – preventing stormwater pollution that may occur as a result of poor waste storage and management practices.

- [5] Ecologically Sustainable Development (ESD) – promoting the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources.
- [6] Hygiene – ensuring health and amenity for residents and workers in the Willoughby Council area.
- [7] Noise minimisation – minimising the creation of noise during use by residents and collection of waste and recyclables.
- [8] Space – ensuring adequate space is provided for storage of waste and recycling containers.

As part of Willoughby Council's DCP, all commercial and industrial waste management plans are expected to meet all requirements listed in the Willoughby Council Commercial and Industrial Waste Management Plan checklist. The completed checklist can be found in Appendix A.

2.2.2 Council of the City of Sydney Policy for Waste Minimisation in New Developments

The Council of the City of Sydney *Policy for Waste Minimisation in New Developments* (CoS Waste Policy) was developed in 2005 in support of the *NSW Waste Avoidance and Resource Recovery Strategy* (2003, now superseded by the 2014-21 Strategy). The CoS Waste Policy is the guiding document for many of the waste initiatives and requirements for the SHOR building.

The specific sections which pertain to the proposed development include:

- Section A – All developments; and
- Section C – Commercial Provisions.

Key requirements of the CoS Waste Policy include:

- All commercial premises must have a dedicated and enclosed waste and recycling storage area which has adequate storage to meet generation rates;
- All businesses must have written evidence, held on site, of a valid and current contract with a licensed collector for waste and recycling collection and disposal; and,
- All businesses are encouraged to include provisions within waste contracts that allow for the collection and recycling of significant waste streams.

Numerous other requirements are specified within the CoS Waste Policy. These have been addressed throughout this WMP where applicable.

2.3 Green Star

In line with the Project Brief, a Green Star assessment is being sought for this development under the Green Building Council of Australia (GBCA) Green Star Design and As Built v1.1 rating tool. The waste management facilities and

procedures set out in this WMP align with the requirements of Credit 8A – Operational Waste.

The performance pathway relevant to the SHOR building is the Specialist Pathway. Table 1 outlines the requirements of Credit 8A.

Table 1 Performance Pathway: Specialist Plan Green Star credit overview

Option 8A	Criteria	Requirements
Performance Pathway: Specialist Plan	1 point is available where a waste professional specialist prepares and implements an Operational Waste Management Plan (OWMP) for the project in accordance with best practice approaches and this is reflected in the building's design.	- Identify the site boundary, the waste streams relevant to the project, and the individual roles responsible for delivering and reviewing the OWMP; - Set diversion from landfill targets and/or targets for reducing total materials generation (general waste materials and recyclable/reusable materials), as well as monitoring and measurement procedures for waste and recycling streams by weight. - Outline methods for encouraging the separation of waste streams, such as bins, storage areas or recycling facilities in public areas as required. - Identify storage areas for all waste streams and outline best practice safety and access requirements for their collection. - Identify safe methods for vehicle access and transfer of waste; and - Incorporate a review process to assess the success of the OWMP and make improvements, based on operational experience.

In addition to a 5-star Green Star Design and As Built v1.1 rating, the SHOR building is seeking the following outcomes as a minimum:

- Adoption of WELL measures under the WELL Building Standard as follows:
 - Investigate the feasibility of pursuing WELL Certification preconditions in each category as feasible/practical.
- Ongoing certification under the National Australian Built Environment Rating System (NABERS) as follows:
 - NABERS Energy Base Building: 5 stars
 - NABERS Energy Tenancy: 5 stars
 - NABERS Water Whole Building: 4 stars.

2.4 Secretary's Environmental Assessment Requirements (SEARs)

According to the final SEARs issued 31 October 2017, an SSD application requires an EIS that addresses the relevant planning provisions, goals and strategic planning objectives, relevant to waste:

- Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe 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.

It should be noted that the quantification and classification of construction waste will be provided by the nominated Principal Contractor and/or Quantity Surveyor. High level identification and management measures for construction waste have been outlined in this WMP.

Additionally, the EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the *EP&A Regulation 2000*. For waste management, a waste management plan is required as part of the EIS.

This WMP seeks to meet all requirements outlined in the SEARs, and may form part of an EIS document.

2.5 Assumptions and limitations

All central waste storage areas have been observed to be compliant with the advice in this report, and the relevant legislation and policy upon issue (14/11/17).

It should be noted that the rates provided are estimates using the waste generation rates found in Council's DCP. Actual rates of waste generation will vary according to specific commercial tenants and their behaviours.

All figures and calculations in this document are based upon the following supplied building design schedule and plans:

- BVN Architects: Area Plans – Schedules, AR-R-XX-29 Revision C, dated 8 November 2017
- BVN Architects: AR-B-B2-01-A, GA Plan Basement Level 2, Current Drawings for SSD Submission issued 8 November 2017

All waste facilities and equipment are required to be designed and constructed in accordance with Council's DCP as the highest priority. Beyond this, the requirements outlined in the City of Sydney Waste Policy, the Building Code of Australia (BCA), and Australian Standards have also been used as a guide and are referenced in this WMP where applicable.

3 Targets, monitoring and measurement

High quality waste data can improve the overall level of accuracy, transparency of, and confidence in, waste monitoring. It enables meaningful and accurate comparisons and benchmarking to be conducted both within portfolios and between waste contractors.

Good waste data informs strategic resource planning and provides insight into equipment/operational efficiency as well as ensuring accuracy of invoicing and fees. The SHOR building can achieve greater resource recovery by accurately measuring current and future waste performance.

3.1 Target

The SHOR building aims to set an exemplary sustainability standard and as such waste related targets will be set to ensure ongoing improvement of waste segregation and recycling. The SHOR building will adopt a proposed landfill diversion target of 70% for operational waste, in line with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*. In other words, the SHOR building aims to send only 30% of total waste generated to landfill.

This target will be calculated as follows:

$$\frac{\text{total waste (kg)} - \text{landfill waste (kg)}}{\text{total waste (kg)}} \times 100\%$$

Due to the nature of the new build, there are no historical landfill diversion rates calculated.

Given the lack of accurate diversion from landfill data, a modest target has been set until baseline data can be gathered and analysed. This target is based on the predicated separation of organic waste.

The baseline data for this target will be sourced from bin weights collected by the nominated waste service provider for the development. The Building Manager onsite will calculate the diversion rate based on data provided by the waste service provider.

3.2 Monitoring and measurement

Data pertaining to waste generation at the SHOR building will be collected, collated and recorded by the waste service provider to ensure best practice monitoring procedures for building management to help measure their progress towards achieving their waste targets.

3.2.1 Operations

The waste service provider for the SHOR building must adhere to this WMP and comply with minimum operational safety standards.

The waste service provider must be able to attribute a weight to each bin collected, and mass must be measured according to the individual waste stream with evidence regarding the integrity of any scales/meters used. Masses must be recorded in an agreed format and forwarded on to the building manager at the close of each invoicing period. The parameters for contamination should be outlined by the waste service provider in accordance with their own accepted contamination rates.

Where the waste service provider observes contamination in a recycling bin, that bin must be weighed and added to the operational waste management report as a 'contamination incident'. The contents in the contaminated bin must then be disposed of as general waste and the incident reported to the building manager.

The waste service provider must supply equipment (bins, signage/stickers etc.) colour-coded in accordance with the Australian Standard 4123 and approved by the building manager.

The waste service provider must ensure that collecting services are done periodically and only when necessary to ensure the bins are not greater than three quarters full, and to maintain a hygienic and odour free environment.

3.2.2 Contamination audit

A site specific contamination audit of each recycling stream is recommended annually. This audit may be conducted or overseen by an independent competent person.

For two consecutive collections, the contents of the sample are to be audited to determine the level of "non-acceptable" items. The sample will consist of all bins normally presented for collection and non-acceptable items must be as advised by the receiving facility.

Contamination rate is determined as the total mass of 'non-acceptable' items expressed as a percentage of the total mass of all bins in the sample.

Where contamination is deemed unacceptable, the building manager should seek to address this issue with the building tenants e.g. through educational or other means.

3.2.3 Reporting

The waste service provider is to issue periodic operational waste management reports e.g. on a monthly or quarterly basis, to the building manager, including:

- A list quantifying the amount and types of waste generated at the SHOR building.
- A list of contamination incidents including the masses of contaminated bins.

- Records and evidence to substantiate data contained within reports to the nominated reporting standard.

3.3 Review of OWMP

The waste service provider and cleaning contractor will annually review the WMP with the building manager as well as any other relevant parties in the SHOR building to determine enhancements, sustainability initiatives and other waste management initiatives.

4 Construction and demolition

4.1 Waste streams

Demolition and construction works for this development are to take place with consideration of the project's Green Star pathway objectives, particularly in regards to use of recycled building materials and recycling of construction waste streams. The primary goal for waste management in the construction and demolition phase is to ensure the highest possible proportion of waste is recycled or reused. The target rate for construction and demolition waste diversion from landfill will be determined once the Green Star pathway for this project has been finalised.

An overview of the major waste streams resulting from demolition and construction is provided in Figure 4. Waste streams which are generally predicted to generate the greatest volume are highlighted in orange.

4.2 Management

Waste generation and management during the construction and demolition phase will be the responsibility of the Principal Contractor and is to be handled in accordance with the approved Construction Waste Management Plan as it relates to materials procurement, handling, storage, and use. Waste generated during construction and demolition will be reused and recycled as a priority, and only disposed to landfill when unavoidable.

During construction and demolition, suitable areas on site (or off site, if necessary), will be allocated which provide adequate space and access for:

- Separated storage of building materials,
- Separated storage of construction and demolition waste,
- Separated sorting of construction and demolition waste, and
- Removal of construction and demolition for recycling, re-use or landfill.

Waste that is unable to be reused or recycled will be disposed of offsite at an EPA-approved waste management facility following classification. Details of waste types, volumes and destinations will be recorded in recording and tracking schedules. Prior to transporting waste materials to offsite facilities, it will be verified that the transporter and facility is licensed to handle the material it is designated to carry.

As a requirement of Green Star, the construction contractor will develop a CWMP in order to ensure that construction waste is minimised and diverted from landfill where ever possible.

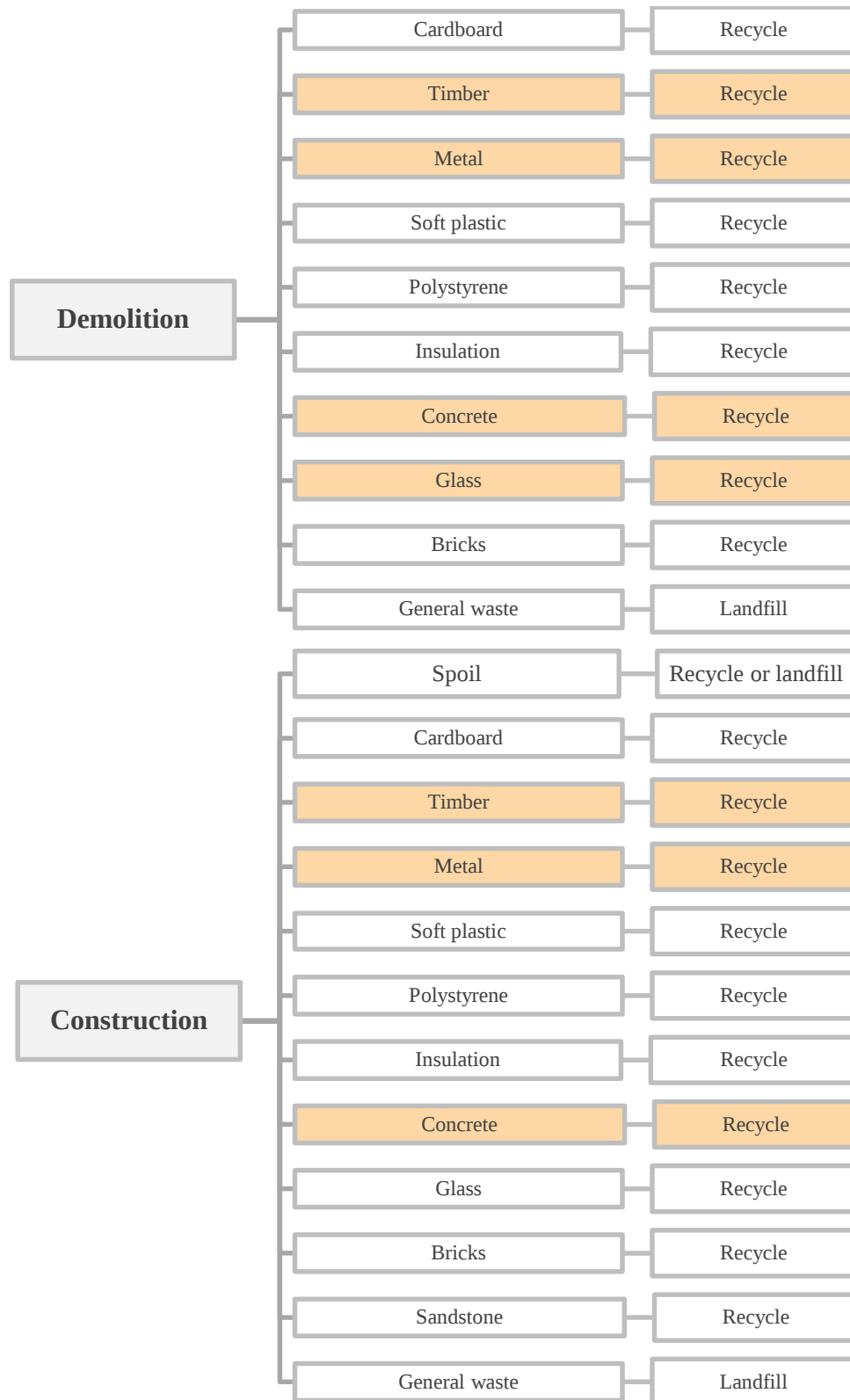


Figure 4 Overview of expected construction and demolition waste streams

5 Operation

This section includes an overview of waste streams generated during operation, details on their segregation, and their estimated volumes. Detailed area schedules for this development can be found in Appendix B.

5.1 Operational waste streams

The waste streams that will be generated during operation of the SHOR building are identified below in Table 2.

Table 2 Waste streams per operational area

Waste streams	Operational area
General waste	Entire building, public realm
Food and garden organics	Commercial, retail*
Paper and cardboard	Commercial, retail, lobby
Co-mingled recycling	Entire building, public realm
Secure documents	Commercial
Hard / bulky items	Entire building
Electronic waste	Commercial
Liquid waste	Retail
Sanitary waste	Entire building

*For this WMP, retail refers to the café and childcare facility.

5.2 Waste generation

Daily waste volumes for the proposed development have been estimated in order to determine waste storage and collection requirements. Waste volume is calculated from the waste generation rates found in Council's DCP and the gross floor area, according to the intended occupancy type.

Daily waste volumes are based on the assumption that waste will be collected five times a week, as per the current arrangement.

5.2.1 Rates

For all commercial tenancies at the SHOR building, Council DCP waste generation rates in conjunction with the total GFAs outlined in Section 1.2 have been used to calculate daily waste volumes. As there is no historical waste collection data available, it has not been possible to cross-reference estimated waste volumes with historical waste collection data, therefore actual waste generation may vary.

For waste and recycling generated in the public realm, Arup have consulted with Local Government NSW about specific council guidelines and standards for

allocating public bins. Currently, there are no specific guidelines for the placement of receptacles in public spaces, however, it is recommended that bin stations are located every 30 metres as a benchmark footfall. A bin station may comprise of 1 x 60L general waste receptacle and 1 x 60L co-mingled recycling receptacle that are placed side by side.

The allocation of bin stations in the park area adjacent to the SHOR building has been summarised in Table 3.

Table 3 Summary of public realm bin allocation

Stream	Volume	Number of receptacles
General waste	60L	4
Co-mingled recycling	60L	4

Table 4 identifies the appropriate generation rates for all spaces within the building.

Table 4 Applicable waste and recycling generation rates

Building space use	Applicable waste generation type	General waste generation rate	Recycling generation rate
Commercial / office / lobby	Offices	10 L / 100 m ² / day	10 L / 100 m ² / day
Childcare	Retail shops over 100 sqm floor space*	50 L / 100 m ² / day	50 L / 100 m ² / day
Café	Restaurants	10 L / 1.5 m ² / day	2 L / 1.5 m ² / day

The storage, loading and service areas of the buildings have been assumed to not generate any waste. Public realm waste currently has no generation type in Council's DCP, and there is no publicly available data in Australia on public realm waste.

*This generation type has been used to accurately encompass the waste and recycling generation from the childcare facility, where there were no other appropriate generation types.

5.2.2 Volumes

Estimates of the waste segregation and daily waste generation for the SHOR building are summarised below in Table 5.

Table 5 Estimated waste generation (volume)

Source	Waste and recycling volumes (L/day)			
	General waste	Food and organic waste ¹	Co-mingled recycling	Paper and card recycling ²
Commercial / office ³	2,927	-	110	2,818
Retail (including café and childcare)	1,698	359	206	566
Public realm	240	-	240	-
Total	4,865	359	556	3,384

Please note that waste estimates have not been provided for other waste streams (e.g. hard / bulky waste, e-waste, cooking oil, sanitary waste etc.) including public realm waste due to their anticipated small volumes or a lack of metrics available.

¹ Assuming that 30% of general waste comprises organic waste for cafes with a 75% capture rate for segregated organic collection, 4% of general waste comprises organics for offices with a 50% capture rate for segregated organic collection and 16% of general waste comprises organic waste for retail with a 50% capture rate. Composition data is based on data from: Encycle (2013) A Study into commercial & industrial (C&I) waste and recycling in Australia by industry division.

² Assuming that 51% of total recycling comprises paper/card for cafes, 96% of total recycling comprises paper/card for offices and 89% of total recycling comprises paper/card for retail (based on data from: Encycle (2013) A Study into commercial & industrial (C&I) waste and recycling in Australia by industry division)

³ Waste generation figures for 'commercial / office' includes lobby, back of house, and terrace spaces.

6 Systems

The proposed Waste Management System (WMS) is summarised in Table 6. This summary identifies the reticulation from the point of disposal to the central waste room and collection point.

In addition, the responsibilities associated with waste management are outlined below. All contracts with building managers, tenants and cleaners should clearly outline the waste management and collection system for allocating waste management responsibilities.

Table 6 Proposed operational waste management system

Space use	Local disposal	Transfer to central waste storage room	Central waste room(s)	Transfer to collection point	Collection point
Office	Bins / receptacles as needed in shared spaces	Cleaners (using trolleys)	Central waste storage room (general waste and recycling) on Basement Level 2.	Nominated cleaning staff/building management transfer waste receptacles from central waste room on Basement Level 2, to temporary holding alcove adjacent to the loading zone.	Waste contractors collect waste from loading zone in waste collection vehicles. Loading zone is located on Basement Level 2, accessed via the driveway entrance on Reserve Road. Collection vehicles will use the area at the bottom of the driveway to reverse into the loading dock.
Retail	Bins / receptacles as needed in shared spaces	Cleaners (using trolleys)			
Public realm	Bins / receptacles as needed in public spaces	Building management / grounds keeper (using automated grounds vehicles)			

7 Storage

7.1 Central room

Waste storage area requirements are calculated from the total volume of weekly waste generation, collection frequencies, and Willoughby City Council standard mobile garbage bin sizes.

All waste storage rooms will be designed according to the provisions stipulated by the Council's DCP. All waste storage areas and bins will be provided with clear labels and directions for use in order to maximise appropriate separation of waste streams.

The recommended waste storage room requirements are outlined in Table 7 below.

Table 7 Recommended area requirements for central waste and recycling storage

Component	Waste stream	Bin Requirements	Area m ²
General waste storage	General waste	8 x 660L general waste receptacles	9.3
		1 x 240L general waste receptacle (for public realm waste)	0.5
Recycling storage	Co-mingled	2 x 660L recycling receptacles	2.3
		1 x 240L recycling receptacle (for public realm waste)	0.5
	Paper/card	11 x 660L recycling receptacles	12.8
	Food and garden organics	3 x 120L recycling receptacles	0.9
Hard waste storage	Bulky items / e-waste	Caged section	12.0
Bin wash-down area	All		2.0
Bin scaling factor			1.5
Total required			58.4
Total allocated			137.0

660L MGBs have been used in this instance due to the unconventional layout of the waste and recycling storage room. 1100L MGBs are too large to easily and safely manoeuvre through the narrow parts of the waste storage room.

A bin scaling factor of 1.5 has been applied to account for compliance in receptacle manoeuvrability and accessibility. The proposed waste storage room on Basement Level 2 is currently **137 m²**, which forms 0.44% of the total GFA of the building and will be adequate for storing all waste generated by the SHOR building and surrounding public realms. There will be no local waste storage rooms on each level.

It should be emphasised that the recommended area requirement for central waste and recycling storage is highly dependent on the layout and access points of the waste storage room. Unconventionally-shaped rooms are typically more difficult to store and manoeuvre bins around. Please refer to Appendix C for a scale layout of the central storage area and the proposed bin configuration within the room.

7.2 Location

The central waste storage room will be located away from public access to minimise visual, odour, and safety impacts. The proposed central waste storage room will be located on Basement Level 2, as illustrated below in Figure 5.

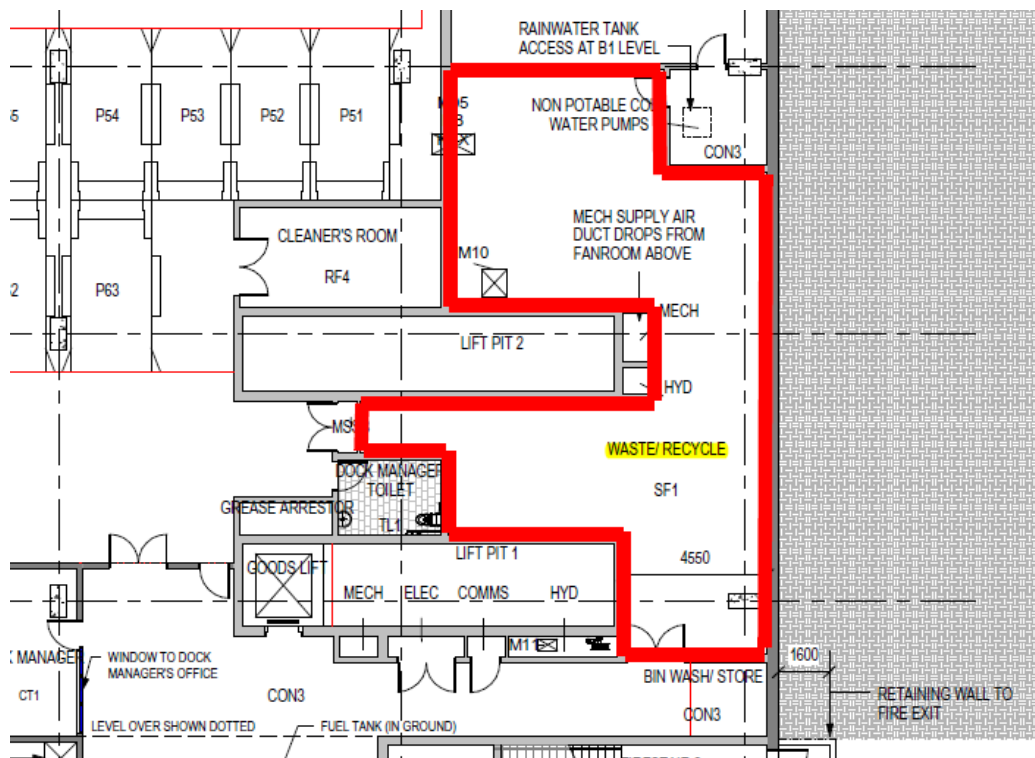


Figure 5 Location of central waste storage room

7.3 Signage

Signage will be provided in all waste disposal, storage and collection areas demonstrating how to use the waste management system, including what materials are acceptable in each recycling bins. This signage is available from Willoughby Council. All waste streams will be stored in clearly labelled, colour coded bins as appropriate to ensure that waste streams are not inadvertently mixed.

The standard colours of each waste stream are outlined in Table 8. These measures are necessary in order to encourage the appropriate separation of waste streams and the recovery of resources.

Table 8 Standard bin colours

Bin	Colour
General waste	Red lid and dark green body
Co-mingled recycling	Yellow lid and dark green body
Paper / card recycling	Blue lid and blue body
Food organics	Maroon lid and dark green body

In addition, clear Occupational Health and Safety (OHS) signage must be provided as appropriate. In particular, appropriate OHS must be provided within each waste and recycling room.

According to Council's DCP, where a roller shutter door is installed in waste and recycling rooms or communal bin areas, a sign must be erected in a conspicuous position drawing attention to the fact the door must be kept closed at all times when not in use. This is necessary to prevent theft of bins.

7.4 Design

The central waste storage room will be designed according to the provisions stipulated by Council's DCP and must comply with the Building Code of Australia and all relevant Australian Standards.

The central waste storage room must be located in a position that is convenient for both users and waste contractors. The access pathway for wheeling bins between a central waste storage point and a collection point must be free of steps or kerbs. The distance between the central waste storage room and its respective collection points will not exceed 15 m and must not exceed grade of 1 in 14.

Table 9 below provides a summary of design requirements relating to the waste storage facilities.

Table 9 Waste storage design

Design aspect	Design provision
General	All waste management facilities will be compliant with the Building Code of Australia (BCA) and all relevant Australian Standards. The waste management system and storage areas will not be visible from the exterior of the building.
Surfaces	The floors of the waste storage rooms will be constructed of concrete of at least 75mm thickness and graded and drained to the sewerage system. The floors will be finished to a smooth, even surface, and covered at their intersection with walls and plinths. A ramp to the doorway will be provided if necessary.
Structure	The walls, ceilings and floors of the storage rooms will be finished with a light colour.

Design aspect	Design provision
	The walls of the waste storage rooms will be constructed of approved solid impervious material and will be cement rendered internally⁴ to a smooth even surface coved at all intersections. The storage area will be constructed and finished to prevent absorption of liquids and odours, and will be easily cleanable.
Doors	A close-fitting and self-closing door or gate operable from within the room must be fitted to all waste and recycling storage areas (rooms or bin bays). Doors/gates to the waste storage rooms must provide a minimum clearance of 1,200mm. At least one door or gate to the waste and recycling storage area must have sufficient dimensions to allow the entry and exit of waste containers of a capacity nominated for the development. Lightweight roller shutter-type doors or grilles should be considered for access to waste and recycling storage areas, 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 storage area other than through the roller door or grille.
Water	All waste and recycling rooms and communal bin areas must be provided with an adequate supply of cold water (excluding the waste service compartments located on residential floors of residential flat buildings). A floor waste basket trap connected to the sewer shall be provided within the bin room area. Storm water shall not be permitted to enter this floor waste trap.
Lighting	Adequate lighting will be provided for all rooms, controllable from a switch located both outside and inside the room. Lighting will ensure safe access to the area at night. Automatic light sensors may be installed for ease of manual handling during transfer of bins.
Pest control	The potential for vermin must be minimised. To achieve this, all waste and recycling awaiting collection is to be stored in a Council approved container (such as an MGB or bulk bin).
Ventilation	The waste storage rooms will be supplied with an approved system of mechanical exhaust ventilation, exhausting at a rate of 5L/s.m² floor area, with a minimum rate of 100L/s minimum or permanent, unobstructed natural ventilation openings direct to the external air, not less than one-twentieth (1/20th) of the floor area. Mechanical exhaust systems shall comply with AS1668 and not cause any inconvenience, noise or odour problem.
Safety	Smoke detectors will be fitted in accordance with AS1670 Automatic Fire Detection and Alarm Systems and connected to the fire prevention system of the building. The waste compactors will be fully fire proofed and child proofed. Only trained building management and waste contracting staff will have access to compactor equipment. All equipment will be protected from theft and vandalism.
Signage	Signs will be provided to demonstrate how to use the waste management system (including segregation of wastes for recycling), as well as appropriate safety signage. The different recycling and waste bins will be stored in their streams and will clearly identified and signed appropriately. Standard signage on how to use the waste management system and what materials are acceptable in the recycling system will be posted in all waste and recycling rooms, waste service

⁴ Use of other equivalent surfacing such as off form concrete to be confirmed with Council during consultation

Design aspect	Design provision
	compartments and communal bin areas, after the Occupation Certificate is issued but before the first users occupy the building. This signage is available from Council.
Refrigeration	Council may require waste storage to be refrigerated if sufficiently large quantities of food waste are generated on site and waste removal from this site is difficult due to location or long trading hours. Where a waste room is refrigerated the temperature must be maintained at or below 50°C with all refrigeration equipment installed with sufficient space for cleaning.

7.5 Amenity

The management systems and constructed elements of this development will be designed and installed so as to enhance outcomes for building amenity. Any potential for noise and odour to arise will be minimised. Specifically:

- **Visual aspects:** Any facet of the waste management system that is visible from outside the building must be in keeping with the dominant design of the remainder of the development.
- **Noise:** The potential for noise must be minimised. Significant noise-generating waste management equipment will not be utilised in this development. However, Council may require waste storage to be refrigerated if sufficiently large quantities of food waste are generated on site and waste removal from this site is difficult due to location or long trading hours. Production of offensive noise will be avoided.
- **Odour:** The potential for odour must be minimised. Any putrescible waste awaiting collection will be stored in a Council approved container with permanently tight fitting lids and smooth, washable internal surfaces. All waste storage areas will be fitted with mechanical vertical ventilation systems. Adequate mechanical ventilation and regular collection of waste will eliminate the risk of odour to building inhabitants and neighbours.

8 Collection

8.1 Location and access

The central room for storing waste and recycling will be located on Basement Level 2. This position is convenient for staff and facilities management. Prior to collection, nominated staff/building management will move waste and recycling receptacles from the central waste storage room to a temporary alcove in the loading zone, where they will await collection.

Collection vehicles will be able to access the loading zone by entering into the zone from Reserve Road in a forward-facing direction. The waste receptacles will be transferred by cleaning staff to within 3 metres of the loading zone. Collection vehicles will reverse into the loading zone once underground, and will exit the loading zone in a forward-facing direction.

Further details of the transfer pathway for waste service vehicles in the loading dock can be found in Appendix D.

The nominated collection point where the waste loading operations occur will be on a level surface away from slopes or vehicle ramps. In addition to this, the path where the waste contractor will transport the bins from the central waste storage room to the collection vehicle will be free of steps, kerbs and other uneven surfaces. The maximum distance for the waste contractor to transport mobile garbage bins larger than 660L is 3 metres according to Council's DCP.

8.2 Frequency

Waste collection services for each waste stream are yet to be confirmed. Written evidence will be provided and held on site at all times of the contractor's valid and current licence for waste and recycling collection and disposal.

Collection frequency assumptions are as follows:

- Collection of co-mingled recycling, and paper/cardboard recycling is to occur 3 x per working week (every second day).
- Collection of general waste, and food / garden organics is to occur 5 x per week (every working day).
- Collection of other waste streams (e.g. hard / bulky waste, e-waste, cooking oil etc.) would be less frequent and arranged as required.

Collection frequency of hazardous waste and sanitary waste will be at the discretion of the separate waste service providers collecting and treating these waste streams, and can be arranged with facilities management as required.

Note: Waste collection frequencies can be adjusted once the building is in operation and actual waste generation rates can be observed. If waste collection becomes less frequent, there is enough space in the allocated waste storage room to host more MGBs.

8.3 Collection vehicles

The route for waste contractor access to the internal loading zone is via the driveway, can be accessed from Reserve Road. Access will at no time cause the flow of traffic on Reserve Road to be blocked.

The loading zone of the SHOR building must cater for the size of a standard waste service provider collection vehicle. At the time of writing, a specific waste contractor has not been appointed. Therefore vehicle access to the basement will be designed according to the indicative rear loading waste collection vehicle specifications outlined in Table 10 below. A minimum unobstructed height clearance of 3.8m will be maintained as stipulated by Council's DCP.

Table 10 Indicative rear loading collection vehicle for MGBs

Vehicle Specification	Measurement
Length overall	9.54 m
Width overall	2.6 m
Operational height	3.8 m
Travel height	3.8 m
Weight (payload)	26 tonnes
Turning circle	18.0 m

9 Separation

9.1.1 Increasing recycling

The addition of co-mingled, paper/cardboard, and food organics recycling bins in common office space is a beneficial addition to current waste management practices that would further increase the volume of recyclables being separated and diverted from landfill.

Clear signage and colour coding on the bins in these areas will help educate and support correct segregation. In addition to this, bold and informative posters in the common office spaces that illustrate correct recycling practices will increase the volume of recyclables being diverted from the general waste bins.

9.2 Waste education

Waste education will be integral for the SHOR building to achieve its waste targets. As stipulated in Council's DCP, building management may promote waste as a resource to be captured, rather than rubbish being sent to landfill. To do this, Arup recommends one of the following waste education strategies to be enforced every three months

- Include waste education as part of staff development and broader educational visions.
- Expand public place recycling and accelerate awareness programs for staff, and commercial/retail tenants.
- Bold signage in all common areas that clearly illustrate correct recycling practices.
- Sustainable procurement workshop with suppliers to review current procurement practices and whether or not the need for some products can be reduced.

10 Next steps

This WMP forms a framework to implement best practice for waste management across all design and planning stages. The waste management approach supports the Green Star requirement for the project to enhance outcomes for waste minimisation, reuse and recycling.

Once planning approval is granted for the proposed development, this WMP will:

1. Inform the development of a detailed Waste Policy Design Compliance Certificate for the Construction Certificate application, which is to include details regarding disposal and recycling of different materials expected from demolition, construction, and the transport and destinations of these materials
2. Inform the development of the relevant Green Star credit requirements
3. Ensure that detailed design and fit-out of the building is consistent with best practice standards and plans for waste management, and
4. Inform all plans and procedures for operational waste management.

Appendix A

Willoughby Council Commercial and Industrial Waste Management Plan Checklist

Storage space and location		✓	Justification
Service requirements discussed with the collection service provider/s		—	A waste service provider has not yet been engaged at this early stage of design. However, all service requirements have been designed to reflect standard collection services outlined in Council's DCP.
Space allocated inside premises for source-separation of waste (minimum separation into recycling, organics and garbage) using appropriate receptacles.		✓	Yes, all bins will be stored within the waste room.
Waste cupboards provided in eating areas (shown on plans)		✓	All office levels will have dedicated cupboards for waste and recycling bins in the kitchens.
Bin storage area designed to allow for all bins allocated in the waste service and for the manoeuvring of bins, etc. (with future requirements catered for).		✓	Yes – shown on plans with bins drawn to scale
Bin storage area constructed to fit in with the aesthetics of the commercial/industrial development with the following features: (refer to example diagrams of bin storage areas).		✓	
- Roof over bin area			Yes
- Face brickwork to match main building		N/A	N/A as the waste storage room is located underground and internally
- Concrete floor graded and drained to sewer		✓	Yes
- Floor flush with outside path/driveway – no steps		✓	Yes
Space, access, noise and security have been considered in locating the waste storage area.		✓	Yes, it is located internally with close access to the goods lift and the loading dock. Waste storage room has two entrance/exit points, both of which can be closed and locked.

Bin storage area located in a high pedestrian-traffic area, close to both the commercial/industrial unit and the kerb, for ease of access and to encourage good housekeeping.	N/A	Storage room is located internally next to the goods lift which is convenient for all facilities management and cleaning staff.
Bins are stored out of sight from the street	✓	Yes
Refrigerated storage is provided for large amounts of putrescibles.	N/A	N/A as there will not be a large volume of putrescible waste, and all general / organic waste will be collected daily to maintain the hygiene of the storage room. The storage room will be ventilated at a rate of 5L/s.m ² floor area.
Potential noise problems during bin use and waste collection are minimised as the need for collection vehicles to reverse has been eliminate.	✓	Waste vehicles enter and exit the loading dock in a forward facing direction. The underground location of the loading dock has eliminated potential noise problems for tenants and pedestrians.
Potential odour problems are minimised as: - The bin storage area is well ventilated - Good housekeeping will be enforced (by appointed caretaker and signage posted in the bin storage area)	✓	Yes Yes
Bin storage area is protected from theft and vandalism as it is: - Out of sight from the street - Able to be locked	✓	Yes Yes
Features are included in the bin storage area to prevent ingress of vermin into waste storage areas.	✓	Yes, this includes a bin wash area where all bins may be cleaned regularly, ventilation according to Council's DCP requirements, smooth non-porous surfaces, doors that are able to be locked, and the storage room is underground.
The building caretaker is able to wheel all MGBs to the kerbside on collection day.	N/A	All MGBs will be wheeled to the loading dock, where the waste service provider will collect all waste and recycling

		internally, rather than from the kerbside.
Distance – MGBs should not need to be wheeled more than 15m.	✓	Cleaners will move MGBs 14 metres from the waste storage room to the loading dock. Waste service contractors will move MGBs 3 metres from the loading dock to the collection vehicle.
Slope – bin carting grade is at a maximum of 1:14	✓	Yes
Bins do not have to be wheeled over steps or through the commercial/industrial unit to get them from where they are stored, to the kerbside	✓	Bins are collected internally, not from the kerbside, therefore they are not wheeled over steps or through the C&I unit to be collected
Access – for collectors	✓	Justification
Collection from storage area (bulk bins): - Collectors can move bins from the collection point to the vehicle as quickly as possible, with a minimal amount of manual handling over an even, hard surface.	✓	Yes, bins will be moved to the loading dock prior to collection, where the waste contractors will be able to wheel them directly to the vehicle for lifting.
- If the storage area is located within the building the height of the area allows for the collection vehicle to access and empty bins. A minimum height of 6m is required.	✓	The loading dock area where the waste vehicle will collect all waste and recycling has a 6m clearance height due to a void between Basement Level 1 and Basement Level 2.
- Driveway access is suitable for the collection vehicle in terms of its strength and its geometric design (refer to attachment 20 for technical specifications)	✓	The driveway access will be designed according to the design provisions outlined in Council's DCP, and all final materials have been detailed in the Architectural Finishes Brief.
Management	✓	Justification
Responsibility will be assigned for washing bins, cleaning bin storage areas, and keeping	✓	Outlined in Section 6 of WMP.

them free of clutter and dumped rubbish.		
All bins (organics, recycling and garbage and others) display appropriate signage to encourage the correct use of ins. Note: this applies to all bins inside the C&I unit and in the external bin storage area.	✓	Yes, further signage detail is outlined in Section 7.3 and 7.4 of the WMP.
Responsibility has been assigned for liaison with waste collectors ensuring all staff are informed of the waste and recycling arrangements (e.g. through staff meetings and a waste management policy)	✓	This will be the responsibility of the Facilities Management team, and proposed responsibilities have been outlined in Section 6 of the WMP.
Management is committed to waste reduction and recycling, and provides incentives for staff to manage waste correctly.	✓	Outlined in Section 9 of the WMP.
Education of source separation and use of waste facilities is reinforced every three months.	✓	Outlined in Section 9.2 of WMP

Appendix B

Area Schedule

GBA SCHEDULE - NLA INCREASE		
Level	Name	Area

LEVEL B2	GBA - LEVEL B2	3402 m²
LEVEL B1	GBA - LEVEL B1	3116 m²
LEVEL G	GBA - LEVEL G	3597 m²
LEVEL 01	GBA - LEVEL 01	3243 m²
LEVEL 02	GBA - LEVEL 02	3498 m²
LEVEL 03	GBA - LEVEL 03	3498 m²
LEVEL 04	GBA - LEVEL 04	3484 m²
LEVEL 05	GBA - LEVEL 05	3484 m²
LEVEL 06	GBA - LEVEL 06	3498 m²
LEVEL 07	GBA - LEVEL 07	3498 m²
LEVEL 08	GBA - LEVEL 08	3484 m²
LEVEL 09	GBA - LEVEL 09	3484 m²
LEVEL 10	GBA - LEVEL 10	3498 m²
TOTAL		44784 m²

GFA SCHEDULE - NLA INCREASE		
Level	Name	Area

LEVEL B2	GFA - BASEMENT - LEVEL B2	3256 m²
LEVEL B2	GFA - UCA - LEVEL B2	142 m²
LEVEL B1	GFA - BASEMENT - LEVEL B1	3054 m²
LEVEL B1	GFA - UCA - LEVEL B1	59 m²
LEVEL G	GFA - GROUND FLOOR - LEVEL G	2145 m²
LEVEL G	GFA - UCA - LEVEL G	692 m²
LEVEL G	GFA - UCA - LEVEL G	715 m²
LEVEL 01	GFA - COMMERCIAL - LEVEL 1	3079 m²
LEVEL 01	GFA - UCA - LEVEL 1	71 m²
LEVEL 02	GFA - COMMERCIAL - LEVEL 2	3499 m²
LEVEL 03	GFA - COMMERCIAL - LEVEL 3	3499 m²
LEVEL 04	GFA - COMMERCIAL - LEVEL 4	3484 m²
LEVEL 05	GFA - COMMERCIAL - LEVEL 5	3484 m²
LEVEL 06	GFA - COMMERCIAL - LEVEL 6	3499 m²
LEVEL 07	GFA - COMMERCIAL - LEVEL 7	3499 m²
LEVEL 08	GFA - COMMERCIAL - LEVEL 8	3502 m²
LEVEL 09	GFA - COMMERCIAL - LEVEL 9	3484 m²
LEVEL 10	GFA - PLANT - LEVEL 10	1201 m²
GRAND TOTAL		42363 m²

NLA SCHEDULE - NLA INCREASE		
Level	Name	Area

01 RETAIL		
LEVEL G	NLA EXTERIOR - CHILDCARE - LEVEL G	191 m²
LEVEL G	NLA - CAFE - LEVEL G	161 m²
LEVEL G	NLA - CAFE - LEVEL G	81 m²
LEVEL G	NLA - CHILDCARE - LEVEL G	896 m²
LEVEL G	NLA EXTERIOR - CHILDCARE - LEVEL G	727 m²
		2055 m²
03 COMMERCIAL		
LEVEL 01	NLA - COMMERCIAL - LEVEL 1	2618 m²
LEVEL 02	NLA - COMMERCIAL - LEVEL 2	3056 m²
LEVEL 03	NLA - COMMERCIAL - LEVEL 3	3056 m²
LEVEL 04	NLA - COMMERCIAL - LEVEL 4	3041 m²
LEVEL 05	NLA - COMMERCIAL - LEVEL 5	3041 m²
LEVEL 06	NLA - COMMERCIAL - LEVEL 6	3056 m²
LEVEL 07	NLA - COMMERCIAL - LEVEL 7	3056 m²
LEVEL 08	NLA - COMMERCIAL - LEVEL 8	3041 m²
LEVEL 09	NLA - COMMERCIAL - LEVEL 9	3041 m²
		27005 m²
RETAIL AND OFFICE TOTAL		29060 m²

COMBINED AREA SCHEDULE						
LEVEL	GBA (m²)	AIQS GFA (m²)	Willoughby Council GFA (m²)	Office NLA (m²)	Retail NLA (m²)	Efficiency % (NLA/GBA x 100)
BASEMENT 02	3402	-	92	-	-	-
BASEMENT 01	3116	-	469	-	-	-
GROUND	3597	3552	1801	-	1718	47.76%
LEVEL 01	3243	3150	2755	2618	-	80.73%
LEVEL 02	3498	3499	3240	3056	-	87.35%
LEVEL 03	3498	3499	3240	3056	-	87.35%
LEVEL 04	3484	3484	3225	3041	-	87.30%
LEVEL 05	3484	3484	3225	3041	-	87.29%
LEVEL 06	3498	3499	3240	3056	-	87.35%
LEVEL 07	3498	3499	3240	3056	-	87.35%
LEVEL 08	3484	3502	3225	3041	-	87.30%
LEVEL 09	3484	3484	3225	3041	-	87.30%
LEVEL 10 (PLANT)	-	-		-	-	-
TOTAL	41286	34650	30977	27005	1718	86.59%

AVERAGE TOTAL
EFFICIENCY FOR OFFICE
FLOORS (LEVELS 01 - 09)



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A	02.03.17	TENDER ISSUE
B	29.09.17	WCC GFA ADDED
C	08.11.17	WCC GFA ADDED

STRUCTURAL & CIVIL
ENSTRUCT

MECHANICAL, ELECTRICAL, DRY FIRE & ESD
WOOD & GRIEVE ENGINEERS

HYDRAULIC & WET FIRE
MEDLAND ENGINEERING

FACADE
SURFACE DESIGN

TRAFFIC
ASON GROUP

QUANTITY SURVEYOR
RIDER LEVETT BUCKNALL

VERTICAL TRANSPORTATION
NORMAN DISNEY & YOUNG

PROJECT MANAGER
SAVILLS PROJECT MANAGEMENT

CLIENT

HEALTH INFRASTRUCTURE NSW
PROJECT

ST LEONARDS HEALTH
ORGANISATIONS RELOCATION
(SHOR)
RNSH - ST LEONARDS, SYDNEY

BVM PROJECT NUMBER

1609521.000

DRAWING KEY

TRUE NORTH PROJECT NORTH
GRAPHIC SCALE

SCALE @ A1
1 : 200
SCALE @ A3
DO NOT SCALE
STATUS

FOR TENDER
DRAWING

AREA PLANS - SCHEDULES

	ISSUE
AR-R-XX-29	C

Appendix C

Architectural layout

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2	09.01.17	ISSUE FOR COSTING
3	19.01.17	ISSUE FOR COORDINATION
4	30.01.17	ISSUE FOR COORDINATION
5	07.02.17	PRELIMINARY TENDER ISSUE
6	17.02.17	PRE TENDER UPDATE
A	24.02.17	TENDER ISSUE

STRUCTURAL & CIVIL

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MECHANICAL, ELECTRICAL, DRY FIRE & ESD

WOOD & GRIEVE ENGINEERS

HYDRAULIC & WET FIRE

MEDLAND ENGINEERING

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RIDER LEVETT BUCKNALL

VERTICAL TRANSPORTATION

NORMAN DISNEY & YOUNG

PROJECT MANAGER

SAVILLS PROJECT MANAGEMENT

CLIENT

HEALTH INFRASTRUCTURE NSW

PROJECT

ST LEONARDS HEALTH ORGANISATIONS RELOCATION (SHOR)

RNSH - ST LEONARDS, SYDNEY

BVN PROJECT NUMBER

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GRAPHIC SCALE

SCALE @ A1 1:125

SCALE @ A3 1:250

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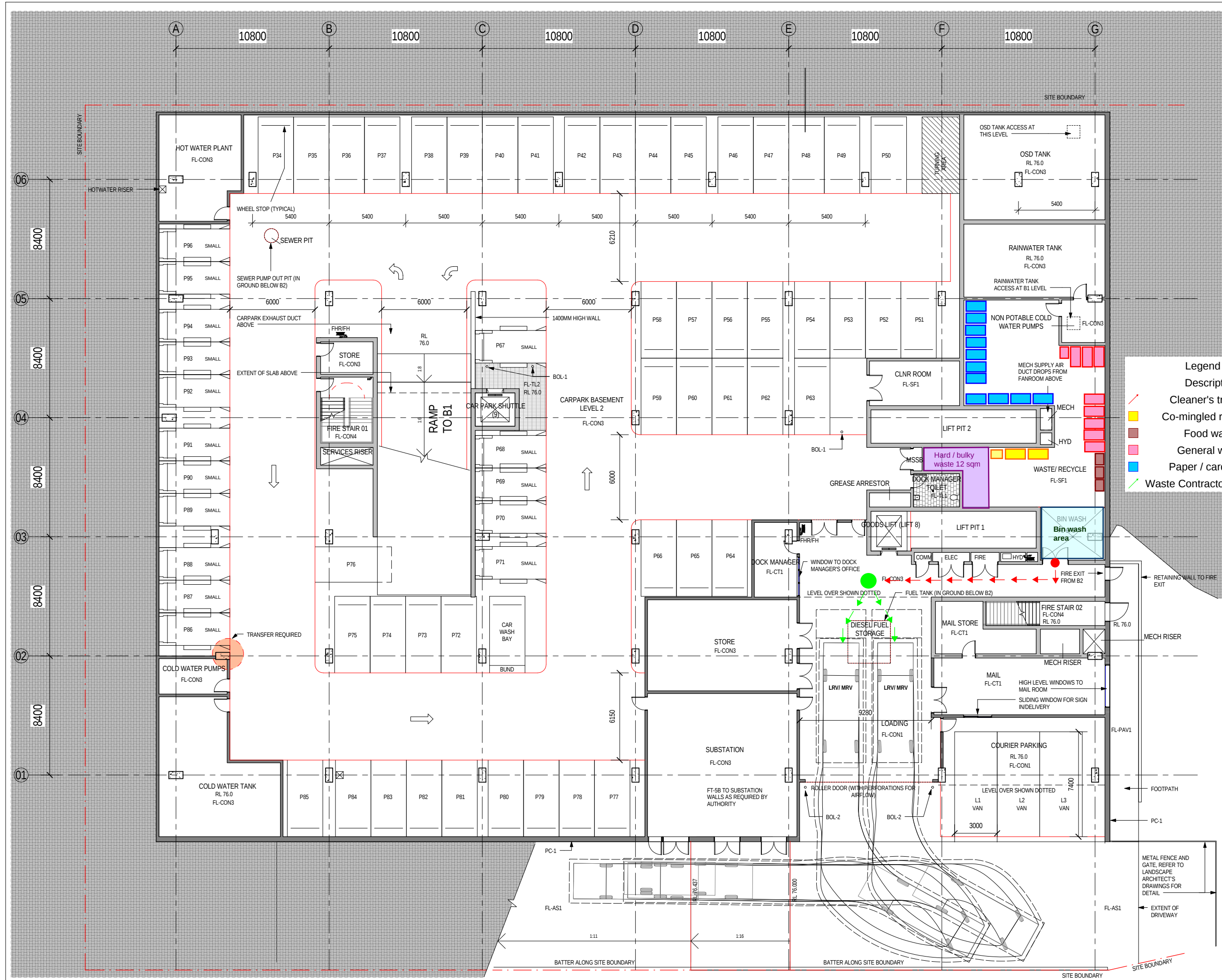
DRAWING

GA PLAN - BASEMENT LEVEL

2

AR-B-B2-01

ISSUE A



Legend

Description

- Cleaner's transfer
- Co-mingled recycling
- Food waste
- General waste
- Paper / cardboard
- Waste Contractor's Transfer

FOR TENDER

DRAWING

GA PLAN - BASEMENT LEVEL

2

AR-B-B2-01

ISSUE A

Appendix D

Transfer pathway



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WOOD & GRIEVE ENGINEERS

HYDRAULIC & WET FIRE
MEDLAND ENGINEERING

SURFACE DESIGN

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CLIENT

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ORGANISATIONS RELOCATION

RNSH - ST LEONARDS, SYDNEY

OWN PROJECT NUMBER

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RUE NORTH PROJECT NORTH

GRAPHIC SCALE

CASE #11

SCALE @ A3

STATUS

FOR TENDER

DRAWING

BA PLAN - BASEMENT LEVEL

	ISSUE
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AR-B-B2-01	A
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