Waste Management Plan

Secondary Innovation Precinct and Campus Commons

Pymble Ladies' College

Prepared for
Pymble Ladies' College
c/o
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Report reference
PLC SIP WMP R1.3

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1. Introduction

WPS Advisory (WPS) has been commissioned by Pymble Ladies' College (the College) to prepare this Waste Management Plan (WMP) in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs) and in support of the preparation of an Environmental Impact Statement (EIS) and State Significant Development Application (SSDA) (SSD- 79146716) to the Department of Planning, Housing and Infrastructure (DPHI).

This report has been prepared with reference to architectural plans prepared by 3XN and dated 26 May 2025.

The objectives of this WMP are to:

- Identify the main types of waste and recyclables which may be generated from demolition and construction work for the project.
- Identify the main types and quantities of waste and recyclables likely to be generated from on-going operation of the project.
- Provide advice on how demolition, construction and operational waste and recyclables should be handled, stored and disposed of, in accordance with legislative requirements and better practice waste minimisation principles.

1.1 SEARs Table Response

Project SEAR SSD 79146716

17. Waste Management	Section of Report
Identify, quantify and classify the likely waste streams to be generated during construction and operation.	Demolition and Construction: Section 6.1, Table 1, Table 2, Table 3. Operational: Section 7.2, Table 5.
Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	Demolition and Construction: Sections 6.2, 6.3, 6.4. Table 3, Table 4. Operational: Sections 7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8. Table 6, Table 7, Table 8.
Identify appropriate servicing arrangements for the site.	Demolition and Construction: Section 6.3.1. Operational: Section 7.1, 7.4. Figure 5, Figure 7.
If buildings are proposed to be demolished or altered, provide a hazardous materials survey.	Management of contaminated and/or hazardous waste: Section 6.2, Table 3. See also HMRR report prepared by CETEC Pty Ltd.

1.2 Review of WMP

This WMP is not a static document and should be reviewed and updated

- to remain consistent with changes, if any, in materials and/or design of the project
- to remain consistent with changes to waste legislation, or
- to take advantage of new methods, technologies, and innovations in waste and recyclables management.

2. Description of the Site and Locality

The site is located at 20 Avon Road, Pymble, within the Ku-Ring-Gai Local Government Area (LGA). The site comprises multiple parcels of land and is legally described as

- Lot 1 Deposited Plan 69541, and
- Lots 11- 17 Deposited Plan 7131.

The site and proposed work areas are identified in **Figure 1** and **Figure 2**.

Key features of the site are:

- The site accommodates the existing Pymble Ladies' College which accommodates Kindergarten to Year 12 students.
- Vehicular access to the College is provided via separate ingress and egress driveways on the northern and western sections of Avon Road.
- Pedestrian access is provided through multiple gates along Avon Road.
- The project area that is subject to this SSDA is located at the entrance to the College west of the oval.
- The project area slopes down from south to north with a fall from RL 124.50 m at the southern corner to RL 116 m at the north west corner.

Key features of the locality:

The development context surrounding the site is a leafy suburban environment, predominantly made up of detached residential properties set within expansive gardens and along avenues lined with mature trees.

Recent developments of moderate-scale residential apartment buildings occur closer to the railway corridor. Two storey commercial establishments are located near to Pymble train station, specifically along the Pacific Highway and on the northern flank of the railway line.

- The site is located approximately 19 km north-west of the Sydney Central Business District.
- The College is situated approximately 200 m from Pymble train station, situated on Pacific Highway and Pymble town centre.

The immediately surrounding locality is described as follows:

- North: Avon Road and Pacific Highway (approximately 400m).

- East: Residential uses, accommodating a mixture of dwelling houses and residential flat buildings.
- South: Avondale Golf Course.
- West: Avon Road, beyond which is a residential area characterised by detached dwelling houses.

Figure 1 Site. *Source: Urbis.*

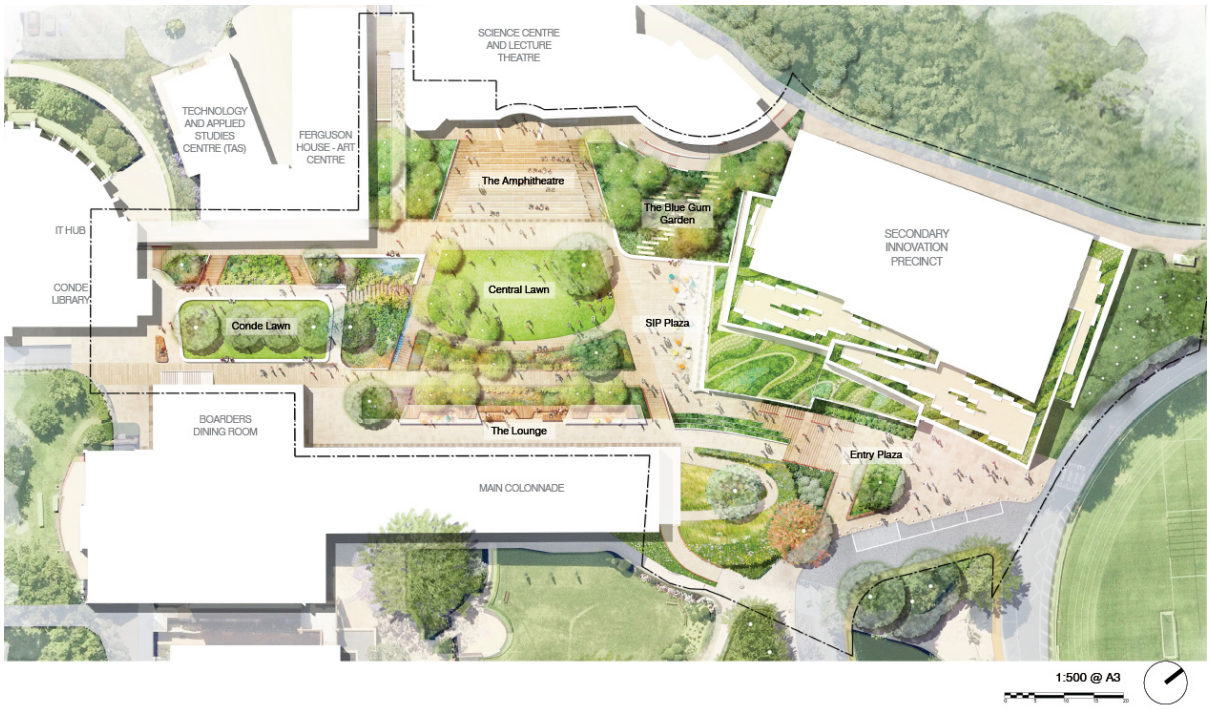

Figure 2 Project design plan. *Source: TCL.*

3. Project Description

3.1 Brief Description

The project comprises demolition of several existing buildings and the construction of the Secondary Innovation Precinct, associated landscaping and Campus Commons at the Pymble Ladies College. The SIP is a five-storey building that will consolidate STEM based learning opportunities within the College.

3.2 Detailed Description

The proposal seeks development approval for the Secondary Innovation Precinct (SIP) and Campus Commons at Pymble Ladies' College. The development comprises:

- Demolition of the existing Isabel Harrison, Dorothy Knox, John Vicars and Robert Vicars Buildings.
- Tree removal.
- Excavation of the basement level.
- Construction of the new five storey SIP building of RL 146.98m and including:
  - General Learning Spaces.
  - STEM teaching spaces.
  - Senior student facilities.
  - Function spaces.
  - Food and beverage facilities.
  - Associated amenities.
  - Storage and building services.
- 1 loading space within the basement (for service vehicles) accessible from the existing rear vehicle service road.
- Minor kerb realignment of the existing access road to the east of the SIP.
- Landscaping on the outdoor terraces and surrounding the building.
- The project also includes the Campus Commons, a significant garden lawn and amphitheatre connecting the SIP precinct to the rest of the campus.

4. Statutory Context

Management of waste and recyclables for the project is subject to NSW State Government legislation and local government requirements:

- **Environmental Planning and Assessment Act 1979**

  The *Environmental Planning and Assessment Act 1979* requires planning authorities to take into consideration impacts to the natural and built environment and the community when assessing proposed developments or changes to land-use.

- **Protection of the Environment Operations (POEO) Act 1997 and Amendment Act 2011**

  The *POEO Act 1997* and *POEO Amendment Act 2011* are administered by the NSW Environment Protection Authority (EPA) and provide legislative instruments for setting environmental standards, goals, protocols and guidelines. Among these are regulatory requirements for lawful disposal of wastes generated during demolition, construction and operational phases of a development, and a system for licensing waste transport and disposal.

- **Protection of the Environment Operations (Waste) Regulations 2014**

  The *POEO (Waste) Regulation 2014* contains provisions relating to the waste levy, waste tracking and management requirements for certain waste types, consumer packaging recycling and payment schemes for local government.

- **Product Stewardship Act 2011**

  The *Product Stewardship Act 2011* sets out mandatory, co-regulatory and voluntary management measures for government, industry and the community to minimise the environmental impact of manufactured, consumed and disposed products.

- **Waste Avoidance and Resource Recovery Act 2001**

  The *Waste Avoidance and Resource Recovery Act 2001* repeals the *Waste Minimisation and Management Act 1995* and is aimed at:

  - 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.

- 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.

- **NSW EPA (2014) Waste Classification Guidelines**

  The EPA *Waste Classification Guidelines* provides the process for characterising and classifying waste so they are managed in accordance with the *POEO Act 1997* and its associated regulations.

- **NSW EPA Resource Recovery Orders and Resource Recovery Exemptions**

  Resource recovery orders and resource recovery exemptions are issued under the *POEO (Waste) Regulation 2014* for a range of wastes that may be recovered for beneficial re-use.

  - 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.

- **DPIE (2021) NSW Waste and Sustainable Materials Strategy 2041**

  This strategy, intended to be applied to 2027, aims to continually improve the State's policies and targets for waste reduction and landfill diversion, as well as focusing on environmental benefits and economic opportunities in how we manage our waste.

- **Educational Facilities Standards and Guidelines (EFSG) v2.0**

  For waste, the EFSG sets a landfill diversion target of 90% for demolition and construction waste and recommends separation of operational waste and recyclables into as many streams as feasible.

5. Waste Hierarchy and Waste Minimisation Targets

5.1 Waste hierarchy

Advice in this WMP is aligned with the waste hierarchy (**Figure 3**). The waste hierarchy comprises possible approaches to waste management, ranked from most to least preferred in the context of promoting waste minimisation and sustainability.

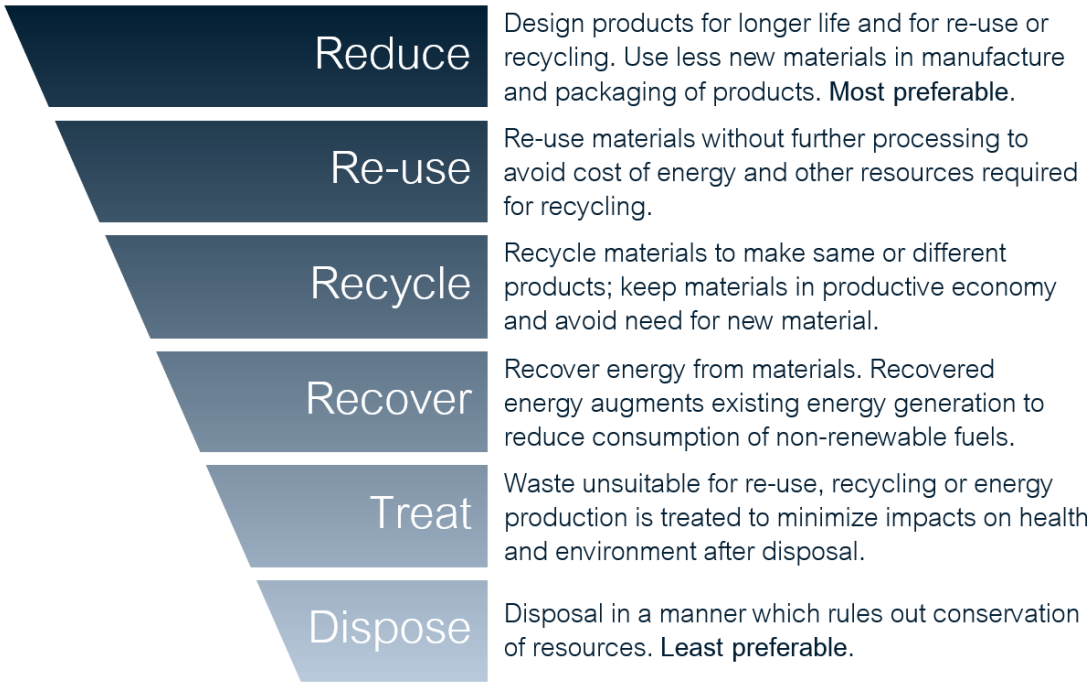

Figure 3 Waste hierarchy for waste minimisation and management.

5.2 Waste minimisation and landfill diversion targets

Advice in this WMP is intended to assist the College to achieve targets set by EFSG v2.0 and the *NSW Waste and Sustainable Materials Strategy 2041.* These targets are:

- Diversion of landfill of at least 90% of demolition and construction waste.
- Phase out problematic and unnecessary plastics by 2025.
- Reduce plastic litter by at least 30% by 2025.
- Reduce overall litter by at least 60% by 2030.
- Triple the rate of plastics recycling by 2030.
- Reduce total waste generated by 10% per person by 2030.
- Achieve 80% average recovery rate from all waste streams by 2030.
- Halve the amount of organic waste sent to landfill by 2030.

6. Demolition and Construction Waste Management

6.1 Types and quantities of demolition and construction waste

With respect to waste generation, the main demolition and construction activities are:

- Demolition:
  - Remove Isabel McKinney Harrison Centre, Dorothy Knox Building, Robert Vicars Building and Jack Vicars Building.
  - Remove amphitheatre bounded by Dorothy Knox, Robert Vicars and Jack Vicars Buildings.
  - Remove courtyard, footpaths, staircases and steps adjacent to Jack Vicars Building.
  - Remove courtyard, footpaths, staircases and steps between Robert Vicars Building and Science Lecture Theatre.
  - Remove footpaths, staircases, steps and trees between Dorothy Knox Building and Isabel McKinney Harrison Centre and immediately north of Isabel McKinney Harrison Centre.
- Construction:
  - Bulk earthworks to allow construction of Basement level.
  - Construction of SIP building.

In the absence of a demolition bill of quantities and reliable published rates of demolition waste generation, anticipated streams and quantities of demolition waste (**Table 1**) have been derived based on:

- Dimensions measured off the provided architectural plans showing buildings and built features to be removed.
- Isabel McKinney Harrison Centre being a single level brick building.
- Dorothy Knox, Robert Vicars and Jack Vicars being 2.5 level brick buildings on account of their 'attic' spaces.
- Demolition waste generation rates for other waste types as per Appendix A of The Hills Shire Council's *The Hills Development Control Plan 2012*, adopted as follows:
  - "Blocks of flats" rates for removal of the five buildings.
  - "Factory" rates for removal of amphitheatre, courtyards, footpaths, staircases and steps.

In the absence of a construction bill of quantities and finishes schedule, anticipated streams and quantities of construction waste (**Table 2**) are based on:

- Floor areas measured off the provided architectural plans of the Development.
- Construction materials use and wastage rates presented in Table S3 and Table S4, respectively, of the supplementary materials for An & Guo (2024)[1], with the Development considered an "Urban P [Public] & C [Commercial]" building type with a "Reinforced Concrete" structure.

6.2 Management of demolition and construction waste

Recommendations for managing and disposing of demolition and construction waste are presented in **Table 3**.

While **Table 3** provides general guidance on managing and disposing of waste, it remains the responsibility of the demolition and construction contractor to ensure waste is managed appropriately, assessed in accordance with NSW EPA waste classification requirements when required and disposed to facilities appropriately licensed by NSW EPA.

Further to the information in **Table 3**, a Hazardous Materials Report and Register (HMRR) has been prepared[2] for the buildings to be removed and provides in-depth recommendations for safe management, handling and removal of the following:

- Asbestos.
- Lead.
- Synthetic Mineral Fibres.
- Polychlorinated biphenyls.
- Mercury in fluorescent lamps.
- Ozone depleting substances.

The HMRR should be read in conjunction with this WMP.

[1] An, R. and Guo, Y. (2024) Estimating construction and demolition waste in the building sector in China: Towards the end of the century. *Waste Management*, Volume 190, pp. 285-295.
[2] CETEC Pty Ltd (2025) *Hazardous Materials Report & Register Pymble Ladies College: Robert Vicas, Jack Vicas, Dorothy Know, and Isabel McKinney Harrison Building.* Report P25010061 v1.0, dated 13 February 2025.

Table 1 Demolition waste types and estimated quantities[1].

Type	Quantity (tonnes)	Disposal Method		
		Re-use on site	Recycle	Landfill
Concrete	5,850	0 %	100 %	0 %
Bricks	3,970	0 %	100 %	0 %
Other[2]	240	0 %	50 %	50 %
Steel	160	0 %	50 %	50 %
Timber & Plasterboard	120	0 %	25 %	75 %
				Estimated total recovered: 97 %

Notes for Table 1
Types and quantities presented in this table are estimates based on information provided to WPS and assumptions presented in Section 6.1. Table 1 is not to be used in any way as a professional bill of quantities nor as a professional quantities survey report. Precise information on types and quantities of demolition waste is to be provided separately by a professional quantities surveyor.
1. Quantities rounded up to the nearest 10 tonnes.
2. Assumed to comprise various building fixtures and fittings made with metals, timber, ceramics, plastics and textiles.

Table 2 Construction waste types and estimated quantities.

Type	Quantity (tonnes)	Disposal Method		
		Re-use on site	Recycle	Landfill
Sand	1,027	75 %	25 %	0 %
Gravel	928	25 %	75 %	0 %
Cement	178	0 %	95 %	5 %
Steel	110	5 %	95 %	0 %
Brick/Tile	96	5 %	95 %	0 %
Lime (mortar)	32	0 %	100 %	0 %
Timber[1]	31	25 %	75 %	0 %
Aluminium	7	0 %	100 %	0 %
Glass[2]	3	0 %	5 %	95 %
Copper	1	0 %	100 %	0 %
Polystyrene	1	0 %	50 %	50 %
				Estimated total recovered: 99 %

Notes for Table 2
Types and quantities presented in this table are estimates based on information provided to WPS and assumptions presented in Section 6.1. Table 2 is not to be used in any way as a professional bill of quantities nor as a professional quantities survey report. Precise information on types and quantities of construction waste is to be provided separately by a professional quantities surveyor.
1. Timber waste assumed to be in new condition.
2. Glass waste assumed to comprise predominantly window (i.e. laminated/tempered/glazed) glass.

Table 3 Management and disposal of demolition and construction waste.

Waste type (*anticipated classification*)	**Management and disposal**
Concrete, gravel, sand, cement, lime, brick, tile, ceramic (*General solid waste non-putrescible*)	Keep clean and separated from other waste streams so this material can be recycled into construction aggregate at a NSW EPA licensed 'construction and demolition waste' processing facility. If contamination is suspected or identified in the material, refer to management and disposal of contaminated or hazardous waste below.
Timber (treated) (*General solid waste non-putrescible*)	Where excess treated timber is generated from demolition and/or construction work, every effort should be made to re-use or incorporate the treated timber on-site (e.g. outdoor seating/fencing/landscaping, interior benches) and avoid the need for off-site disposal of treated timber. Where on-site re-use is not feasible, treated timber in good condition should be on-sold or donated to community re-use shops/workshops. Landfilling of treated timber should be considered a last resort. The potential hazards presented by chemicals present in treated timber means treated timber waste can only be disposed of at a landfill facility licensed by NSW EPA to accept treated timber. Ensure treated timber waste is not mixed with recyclable waste, non-treated timber waste. Treated timber is not to be burned.
Timber (untreated) (*General solid waste non-putrescible*)	Untreated timber can be re-used if in good condition. Care should be taken to avoid damaging or contaminating untreated timber items during demolition and construction work. Untreated timber in good condition should be disposed to a transfer station or sold to a timber recycling facility. Otherwise, dispose at a NSW EPA licensed disposal facility.
Plasterboard (*General solid waste non-putrescible*)	Options for plasterboard recycling in the Sydney region are currently limited, although some facilities in the Sydney metropolitan area are operating as receival locations for plasterboard recycling companies. Plasterboard should be disposed to one of these receival facilities. Otherwise, dispose at a NSW EPA Licensed disposal facility.
Metal, steel, aluminium (*General solid waste non-putrescible*)	Scrap metal should be disposed to scrap metal recyclers directly or via transfer stations.

Waste type (*anticipated classification*)	**Management and disposal**
Glass (*General solid waste non-putrescible*)	Options for recycling glass are currently limited to glass containers. Window glass and other types of laminated or glazed glass is to be disposed to NSW EPA licensed disposal facilities.
Vegetation (*General solid waste non-putrescible*)	Garden waste, including trees and vegetative ground cover, should be mulched on-site and re-used for landscaping. Excess garden waste is to be disposed as organic waste to NSW EPA licensed disposal facilities.
Topsoil, subsoil (*General solid waste non-putrescible*)	A substantial quantity of excess soil requiring off-site disposal is likely to be generated from bulk excavations. Excavated soils are to be managed sequentially as follows: - Carry out in situ assessment of soil for beneficial re-use off-site as virgin excavated natural material (VENM). All soil assessed as VENM is to be beneficially re-used off-site as VENM. Care is to be taken to avoid disqualifying the soil from its VENM classification during site preparation, construction work and delivery to the receiving site. - Any soil not meet requirements for VENM is to be assessed for suitability for beneficial re-use off-site as excavated natural material (ENM) in accordance with the NSW EPA *The excavated natural material order 2014*. All soil assessed as ENM is to be beneficially re-used off-site as ENM. Care is to be taken to avoid disqualifying the soil from its ENM classification during site preparation, construction work and delivery to the receiving site. - Any soil not meeting the requirements for ENM is to be waste classified in accordance with the NSW EPA *Waste Classification Guidelines* (WC Guidelines) for off-site disposal to landfill. Any disposal to landfill should preference use of the soil for operational purposes at the landfill.
Fill materials (*to be assessed*)	Fill materials, if any, generated from excavation work are to be managed and disposed as follows: - Stockpile separate from other materials and assess for suitability for beneficial re-use off-site as ENM in accordance with the NSW EPA *The excavated natural material order 2014*. - If the fill material does not meet requirements for ENM, it should be waste classified in accordance with the WC Guidelines for off-site disposal to landfill.
Recyclables from site workers (*General solid waste non-putrescible*)	Where practical, the contractor is to provide separate bins/skips to collect paper, cardboard, glass containers and recyclable plastics for recycling. At the least, comingled recyclables are to be separated from residual waste for recycling.
Residual waste from site workers (*General solid waste non-putrescible*)	Residual waste from site workers is to be kept separate from other waste streams and disposed by a licensed waste contractor.

Waste type (*anticipated classification*)	**Management and disposal**
Contaminated or hazardous waste (*to be assessed*)	Where unexpected materials are encountered which are, or are suspected of being, contaminated or hazardous: - Work in the vicinity of the suspect material is to stop immediately and access to the area restricted. - The material is to be contained and covered to prevent any uncontrolled spreading of the suspect material. - Contractor to contact a qualified hazardous materials assessor and/or environmental consultant as necessary to arrange an assessment of the suspect material and advise on subsequent management and disposal procedures. For further information on managing contaminated or hazardous waste, refer to the HMRR report prepared by CETEC Pty Ltd.

Notes for Table 3
Waste classifications, where provided, are based on Steps 1 to 4 of NSW EPA (2014) *Waste Classification Guidelines – Part 1: Classification of waste.*

6.3 Demolition and construction waste storage, servicing, documentation and monitoring

6.3.1 Storage and servicing

As the College will remain open during demolition and construction works for the SIP Building and Campus Commons, waste from demolition and construction work is anticipated either to be loaded out from the worksite immediately in covered trucks or, if on-site storage is necessary, contained in covered skip-bins to assist maintaining the tidiness of the worksite. All demolition and construction waste storage is to be located within the worksite boundary and access restricted to authorised site staff.

Bins storing demolition and/or construction waste should

- be labelled to show the contents of the bin (**Figure 4**)
- clearly show the site to which it belongs and the name, address and contact phone number of the contractor and site manager
- clearly show the name, address and 24-hour contact phone number of the waste contractor(s), and
- a unique identification number allowing the bin to be traced to the site.

Servicing times and frequencies for demolition and construction waste is to be arranged in conjunction with the College's management to minimise disturbance to students, staff and visitors at the College.

Figure 4 Example bin labels provided by NSW EPA for demolition and construction waste.

During demolition and construction work, the contractor is to

- prevent mixing and cross-contamination among different streams of waste and recyclables
- prevent uncontrolled off-site migration of waste
- ensure bins are not filled beyond recommended levels
- cover all waste at the end of each day and as soon as practicable before inclement weather
- continuously monitor stored waste and waste storage areas and address any issues or deficiencies as soon as possible (see **Section 6.3.5**), and
- ensure all loads of waste and recyclables are securely covered when being taken off site.

6.3.2 Waste disposal documentation

The contractor is to maintain waste disposal records which are to be made available to their client and to Council, NSW DPE, NSW EPA and other authorities on request.

The following records should be maintained as a minimum:

- Waste classification documentation where applicable.
- Descriptions and quantities of waste removed from the site.
- Details of facilities receiving waste removed from the site.
- Receipts from receiving waste facilities (e.g. tipping dockets) confirming the appropriate disposal of waste removed from the site.

6.3.3 Liquids and spill kits

Liquid wastes generated from demolition or construction activities are not to be discharged to stormwater or sewerage unless with the explicit approval of Council and/or Sydney Water Corporation.

6.3.4 Site inductions

Waste management measures and procedures are to be included in the site induction for all workers and visitors on the site. The induction is to be of a standard sufficient to ensure all site workers and visitors are aware of provisions, arrangements and their own responsibilities for managing recycling and minimising waste at the site.

6.3.5 Monitoring and reporting

Daily inspections of working and waste storage areas should be done by the site manager to identify and rectify any issues at the site associated with demolition and construction waste. A written record of these inspections, which will include observations, remedial actions to be taken and the results of remedial actions, is to be retained by the site manager as part of the site environmental management documentation.

Site environmental management documentation is to be made available to the client and to Council, NSW DPE, NSW EPA and other authorities on request.

6.4 Responsibilities

Responsibilities for managing demolition and construction waste for the project are outlined in **Table 4**.

Table 4 Responsibilities for management of demolition and construction waste.

Responsible Party	Responsibilities
Principal contractor / site manager	Implement this WMP.
	Arrange for waste to be classified and disposed of appropriately.
	Ensure any fit-for-purpose materials are re-used for the project or taken away for re-use on other projects.
	Ensure waste is separated and stored appropriately.
	Monitor and maintain waste storage arrangements, and remedy any issues with waste storage at the site.
	Address any feedback received about waste management during demolition and construction work.
	Keep records and report to their client and authorities as required.
Sub-contractors and visitors	Follow waste management procedures as directed by the Principal contractor / site manager.
	Report any issues related to waste management to the Principal contractor / site manager.

7. Operational Waste and Recyclables Management

7.1 Overview

The College has a centralised waste facility, located in the south end of the campus, which receives waste and recycling from the entire campus and prepares the waste and recycling to be collected and disposed off-site. While the SIP Building has sufficient provisions to manage its own operational waste and recycling, the College's centralised waste facility will form part of the overall plan for waste management for the project (**Figure 5**).

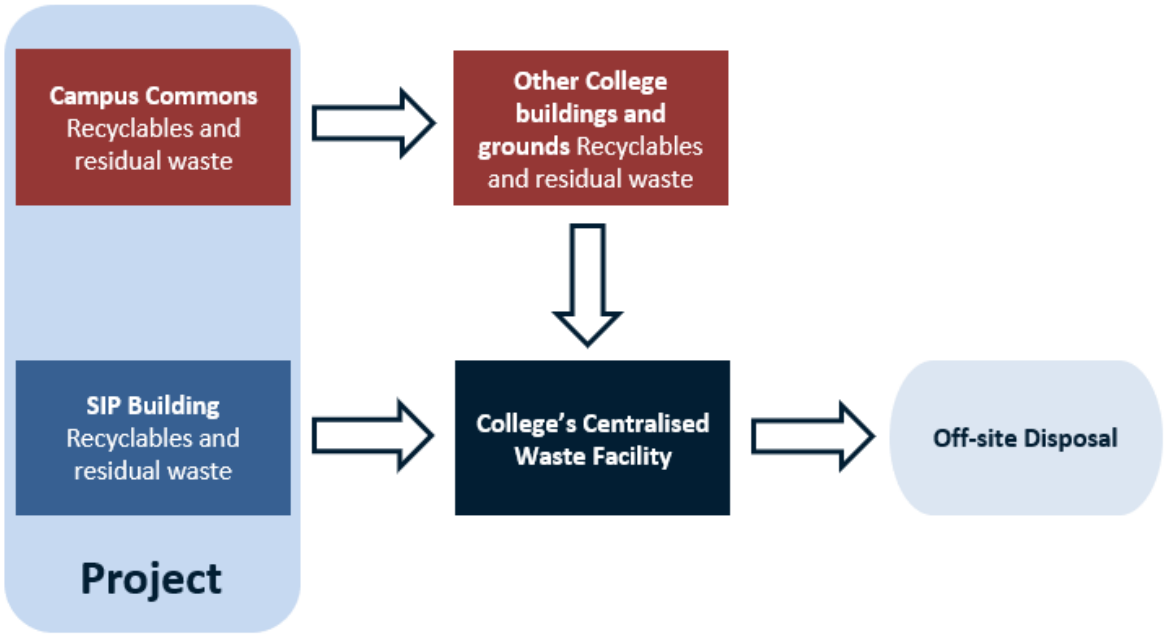

Figure 5 Proposed integration of operational waste management for the project with the College's centralised waste facility.

At the project, management of operational waste and recyclables will comprise:

- Source-separation
  - Recyclables will be separated from residual waste by staff, students and visitors with the aid of separate, dedicated receptacles (**Figure 6**) provided in common areas of the SIP Building.
  - Contents of receptacles will be transferred daily by cleaning staff into separate, dedicated 660 L and 1,100 L mobile bins in a waste room located in the basement of the building. Mobile bins will be coloured and labelled according to the type of waste or recyclables they are designated to receive.

  - Compostable bin liners will be used for all receptacles designated for storing residual waste.
  - 240 L mobile bins will be provided across the Campus Commons. Each mobile bin will be secured in a bin enclosure (**Figure 6**). Separate bins will be provided for recyclables and residual waste.

- Bulky waste
  - Bulky waste will be taken directly to the College's centralised waste facility at the southern end of the campus. Should on-site storage of bulky waste be necessary, bulky waste will be temporarily stored in a skip-bin positioned in the Loading Dock in the basement of the SIP Building prior to disposal off-site or moved to the College's centralised waste facility.

- Servicing
  - All full 660 L and 1,100 L mobile bins will be moved daily by cleaning staff from the SIP Building's waste room to the College's centralised waste facility at the south end of the campus (**Figure 7**).
  - Mobile bins removed from the waste room will be immediately replaced with empty mobile bins to ensure sufficient bins are in the waste room at all times.
  - 240 L bins across the Campus Commons will be serviced daily and directly from their enclosures by cleaning staff. Servicing of these bins is intended to be done as part of the existing arrangement at the College for servicing of outdoor bins across the wider campus. It is anticipated the 240 L bins will either be emptied and immediately replaced in their enclosure, or will be replaced with an empty 240 L bin.

Figure 6 Examples of colour-separated (a) indoor receptacles and (b) outdoor 240 L bin enclosures suitable for the project.

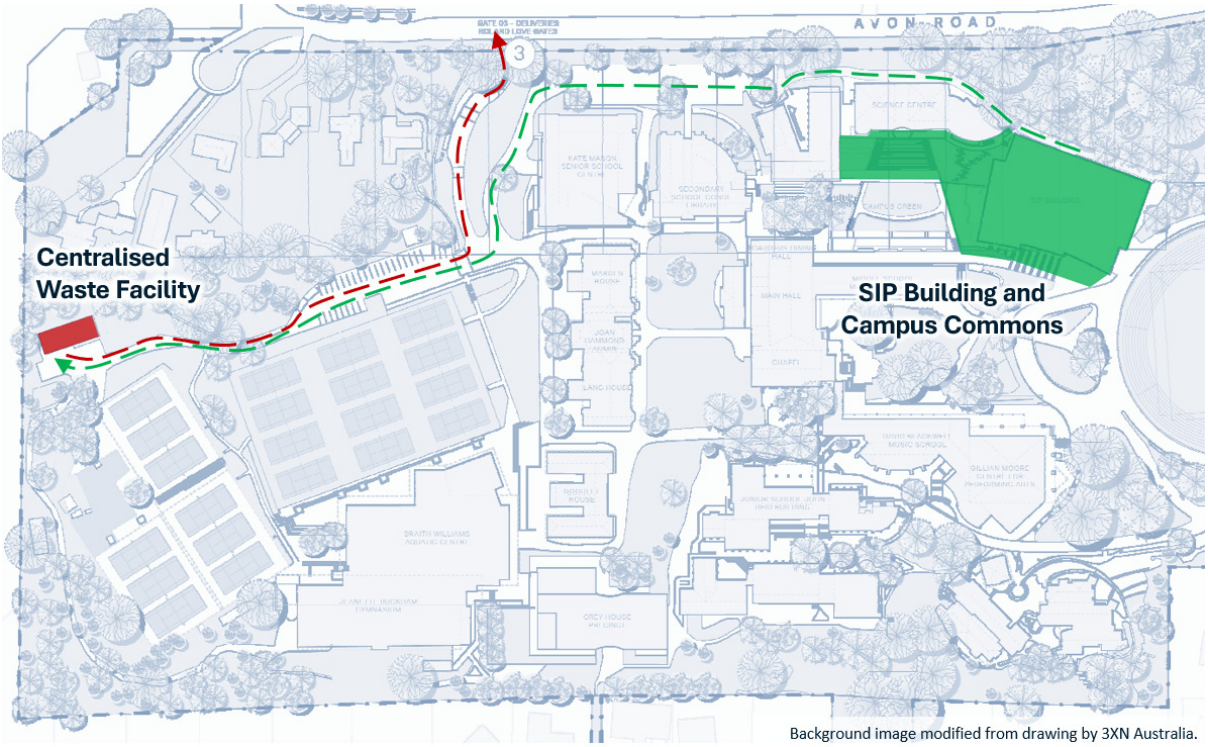

Figure 7 Location of the College's Centralised Waste Facility (red) and SIP Building and Campus Commons (green). Green dashed arrow shows nominal route for taking bins from the SIP Building to the Centralised Waste Facility. Red dashed arrow shows disposal of waste and recycling off-site from the Centralised Waste Facility.

7.2 Quantities of operational waste and recyclables

Estimated quantities of waste and recyclables anticipated from on-going operation of the project are presented in **Table 5**.

Information presented in **Table 5** is based on:

- Estimated floor areas presented in architectural drawings of the project provided to WPS.
- Rates of waste and recyclables generation from Appendix F of NSW EPA (2019) *Better practice guide for resource recovery in residential developments* (hereafter the NSW EPA *Guide*) as follows:
  - 'Offices' rates used for:
    - All staff offices, staff meeting rooms, staff facilities (e.g. break rooms, kitchenettes) and all toilets.
  - 'Restaurants' rates used for:
    - Commercial kitchen, kitchen prep room and canteen seating area.
  - 'Cafes' rates used for:
    - Residential kitchens, canteen kitchen and food hub.
- As the number of students using the SIP Building is currently unknown, WPS has deferred to rates of waste and recyclables generation based on floor area from the Sustainability Victoria (2019) *Better Practice Guide Waste Management and Recycling in Multi-unit Developments* as follows:
  - 'Education/Training (teaching space)' rates for student work studios, student workshop rooms, general learning spaces and the auditorium. These rates are 5 L of garbage (i.e. residual waste) and 5 L of recycling (i.e. comingled recycling) per 100 m^2 floor area per day.
- In the absence of reliable published information on proportions among comingled recycling from schools, WPS has nominally assumed a 1:1 ratio between paper and cardboard and recyclable containers. It is anticipated the number and size of mobile bins for recycling will be adjusted to suit the actual ratios between paper, cardboard and recyclable containers after the project has commenced operation.

Table 5 Estimated quantities of operational waste and recyclables.

	Daily Quantities		
	Recyclables		Residual waste
Source	Containers	Paper and cardboard	
Auditorium, workshops, studios and learning spaces	105 L	105 L	210 L
Staff rooms, toilets etc.	80 L	80 L	105 L
Commercial kitchen, kitchen prep rooms and canteen seating area	715 L	715 L	2,030 L
Residential kitchen, canteen kitchen and food hub	185 L	185 L	305 L
Totals	1,085 L	1,085 L	2,650 L

Notes for Table 5
Quantities rounded up to the nearest 5 L.

7.3 Storage of operational waste and recyclables

7.3.1 Receptacles within SIP Building

At least one set of receptacles for recyclables (containers, paper and cardboard) and residual waste should be provided in every room with the exception of storage and plant rooms.

In common areas in the SIP Building, one set of receptacles should be provided generally for every 144 m^2 of floor space. This is based on the recommendation[3] that people should not need to walk further than 12m to reach a bin in a public space.

7.3.2 Mobile bins

Sizes and numbers of mobile bins proposed for temporarily storing waste and recyclables at the project are presented in **Table 6**. The sizes and numbers of mobile bins shown in **Table 6** are based on estimated daily quantities of waste and recyclables presented in **Table 5**, the dimensions of mobile bins as presented in Appendix G of the NSW EPA *Guide* and incorporates the following preferences, if appropriate, to assist with bin servicing:

[3] Department of Environment and Conservation (NSW) (2005) *Better Practice Guide for Public Place Recycling*.

- Where the space required for storing bins is similar between different sizes of bins, bin sizes allowing for fewer bins to be used have been favoured.
- Where the total number of bins required is similar between different sizes of bins, smaller bins have been favoured.

Table 6 Sizes and numbers of mobile bins.

	Waste/Recycling type	Size of mobile bin	Number of mobile bins
SIP Building	Recyclable containers	1,100 L	1
	Paper and cardboard	660 L	2
	Residual waste	1,100 L	3
Campus Commons[1]	Comingled recycling	240 L	≥ 5
	Residual waste	240 L	≥ 5

Notes for Table 6

1. Minimum number of bin stations corresponding to public events catering for 500 to 1,000 people, according to the *Zero Waste Event Planning Guide* produced by Seven Generations Ahead. This smaller estimate has been used here on account of typical activities in the Campus Commons likely to be less intensive compared to public events.

7.3.3 Bin storage room

(a) Storage space

Space requirements for the bin storage room are shown in **Table 7** and are based on:

- Bin sizes and numbers for the SIP Building in **Table 6**.
- Dimensions of mobile bins as per Appendix G of the NSW EPA *Guide*.
- Allowance of space for manoeuvring bins in and out of the storage area, equivalent to 100% of the total bin footprint.

Table 7 Bin storage room space.

Bins	Bins footprint	Manoeuvring	Total Size
Recyclable containers	1.8 m^2	1.8 m^2	3.6 m^2
Paper and cardboard	2.4 m^2	2.4 m^2	4.8 m^2
Residual waste	5.2 m^2	5.2 m^2	10.4 m^2
		Total space	**18.8 m^2**

The waste room in the basement of the SIP Building provides 36.4 m^2 of floor space, which is sufficient to store the anticipated bins, provide space for moving bins and for additional equipment such as a food digester. A nominal arrangement of bins and equipment within the waste room is shown in **Figure 8**.

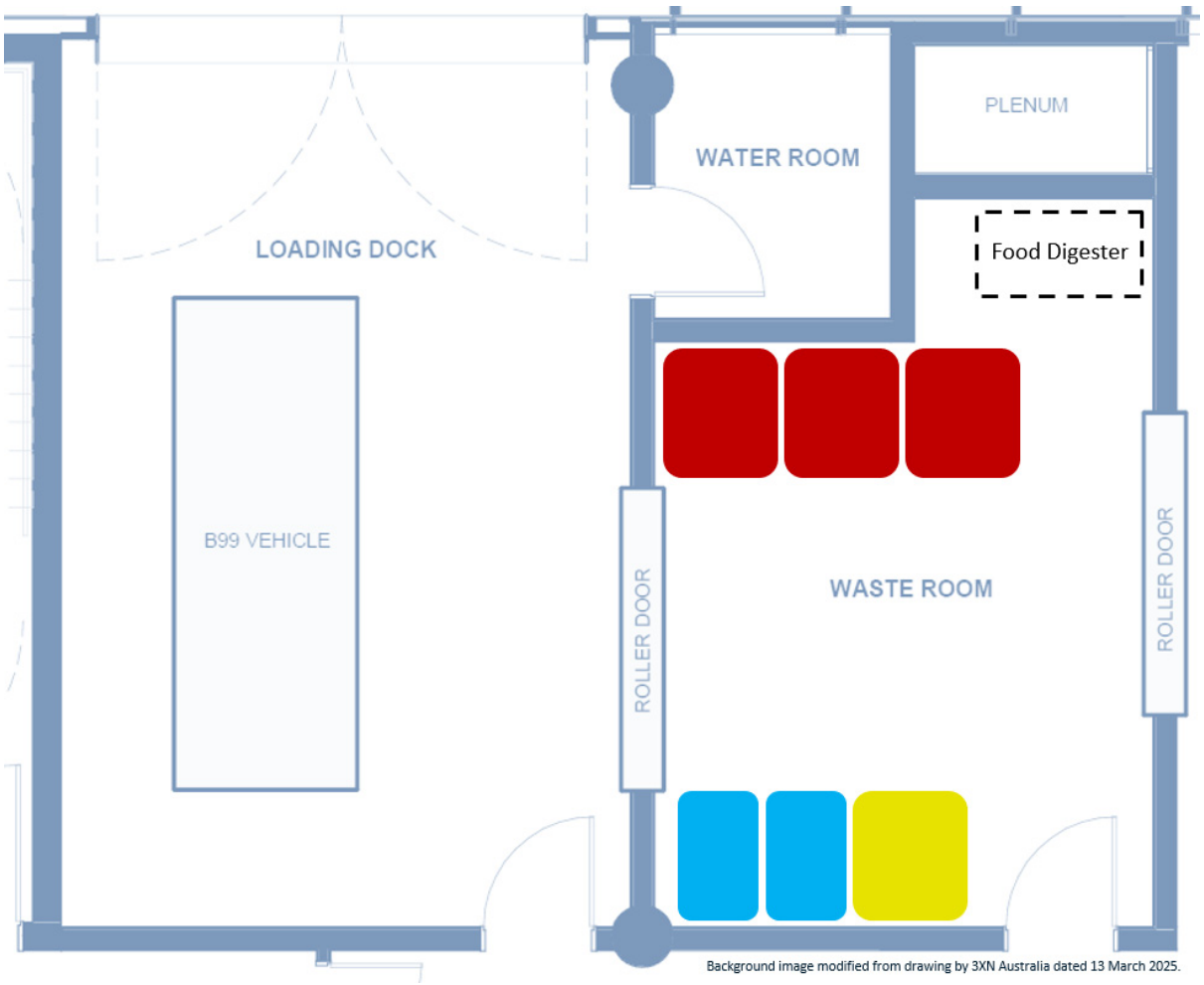

Figure 8 Nominal arrangement of mobile bins and food digester in basement waste room of the SIP Building. Arrangement shows one 1,100 L bin (yellow) for recyclable containers, two 660 L bins (blue) for paper and cardboard and three 1,100 L bins (red) for residual waste. Food digester shown is the size of an ORCA 'OG50' model. Items are shown in proportion to the waste room plan, although the drawing is not strictly to-scale.

(b) Features

The waste room is to be constructed in accordance with the Council of Australian Governments *National Construction Code 2024* and equipped with the following features:

- Lockable doors, which can be opened from the inside as well as from the outside, providing a minimum clearance width of at least 900 mm.
- Adequate artificial lighting.
- Adequate active ventilation.
- Smooth, impermeable and easily cleanable floor.
- Floor graded and drained to a drainage fitting approved by Sydney Water.

- Bunded area with a drainage fitting approved by Sydney Water for bin washing.
- Supplied with water and a hose cock for cleaning purposes.
- Provide clear signage and labelling (see following **Section 7.3.2 (c)**).

(c) Signage and labelling

The waste room is to clearly display safety signage in accordance with Australian Standard *AS1319 Safety signs for occupational environments*, have posted instructions on how to correctly separate wastes and recyclables into the mobile bins provided and present contact details for the Building Manager and waste servicing contractor.

Australian Standards *AS 4123.7-2006 (R2017) Mobile waste containers Part 7: Colours, markings, and designation requirements* provides specific colours for bins depending on the contents of a particular bin. Colours anticipated to apply to receptacles and mobile bins for operational waste and recyclables at the project are:

- Blue, for paper and cardboard.
- Yellow, for recyclable containers.
- Red, for residual waste.

Bins and receptacles are also to be labelled (**Figure 9**) to assist staff, students, visitors, cleaners and waste servicing contractors to identify which material is in which bin and minimise the likelihood of contamination in recyclables streams or incorrect disposal.

Figure 9 Examples of bin labels provided by NSW EPA suitable for the project.

Each mobile bin to be serviced by the waste contractor is to be labelled to show clearly:

- The premises to which the bin belongs and the name, address and contact details of the Building Manager.
- Name, address and 24-hour contact details of the waste servicing contractor.

7.4 Servicing of operational waste and recyclables

All bins in the SIP Building waste room will be serviced daily.

Bins from the SIP Building waste room will be transported to the College's centralised waste facility for consolidation with waste and recyclables streams collected from other areas of the College and for transport off-site for disposal. Empty bins from the College's centralised waste facility will be brought to the SIP Building waste room to replace the bins taken away for servicing. The adjacent loading dock will be used to allow the mobile bins to be loaded and unloaded from the bin trolley vehicle / waste servicing vehicle.

Bins in Campus Commons enclosures will be serviced directly from their enclosure as per the College's existing arrangement for servicing bins in outdoor areas within the College. It is understood waste from these bins will also be taken to the centralised waste facility for consolidation with waste and recyclables streams collected from other areas of the College and off-site disposal.

7.5 Food waste

The estimated quantities and storage allowances for residual waste in **Section 7.2** and **Section 7.3** include food waste. However, food waste may comprise approximately 30% to 50% of the residual waste stream[4].

Given there are several large kitchens in the SIP Building and considering the potentially large proportion of food waste in the residual waste stream, it is recommended the project consider equipping the SIP Building with at least one microbiologically-accelerated aerobic digester to reduce the quantity of food waste requiring disposal to landfill. Commercial food digesters can process from

[4] Based on ratios between residual waste and food waste generation rates presented in City of Sydney's *Guidelines for Waste Management in New Developments*.

approximately 7 kg to 45 kg of food waste per hour depending on the make and model of the digester. Excess food waste, if any, can be refrigerated for later processing or disposed as part of the residual waste stream.

Digesters require a connection to the building's sewerage for disposal of the effluent produced from processing of the food waste and the connection should ideally include a grease trap.

7.6 Communication

Waste management initiatives, waste management measures and contact details for waste management queries are to be clearly communicated by the College to all staff, visitors and contractors via on-going communications such as site inductions (for staff and contractors), notices on noticeboards, signage and colouring/labelling of receptacles and bins. All communications relating to waste management are to

- be consistent in their message, and
- be understood effectively by a culturally and linguistically diverse audience.

7.7 Monitoring, record-keeping and reporting

7.7.1 Monitoring

Informal monitoring of all waste management provisions at the project, as well as arrangements for transferring waste and recyclables to the College's centralised waste facility, is to be maintained at daily or near-daily frequency by the College staff.

A formal review of provisions and arrangements for waste management at the project should be done by the College at least:

- Every two weeks, within the first two months of commencement of operations, to ensure waste management provisions and arrangements are sufficient, are operating as intended and to identify any issues to be addressed and opportunities for improvement.
- Every six months, to ensure waste and recyclables continue to be managed appropriately at the project.

Any deficiencies, identified from informal monitoring or formal reviews, in waste management provisions or arrangements at the project are to be rectified by the College as soon as practicable.

7.7.2 Record-keeping and reporting

As better practice and to allow auditing of waste management performance, the College should maintain records of the quantities of residual waste and recyclables generated and disposed of during operation of the project.

The College is also encouraged to aim at achieving at least a 4-star (or equivalent) rating under the National Australian Built Environment Rating System (NABERS) for the project by engaging an independent waste management consultant to conduct an annual audit on

- separation among streams of waste and recyclables
- quantities of residual waste and recyclables being collected from the project
- contamination rates within recyclables bins
- verification of waste disposal and recycling facilities receiving waste and recyclables from the project, and
- operational waste management provisions at the project.

7.8 Responsibilities

It is the shared responsibility of staff, students, visitors and contractors to follow correct waste and recyclables management procedures.

Specific responsibilities for managing operational waste and recyclables at the project are outlined in **Table 8**.

Table 8 Responsibilities for management of operational waste and recyclables.

Responsible Party	Responsibilities
College	Overall waste management at SIP and Campus Commons.
	Ensure all waste and recyclables management provisions are operating adequately and in good working order.
	Arrange for safe transport of bins between SIP and the centralised waste facility.
	Review waste and recyclables management system and maintain records of waste and recyclables disposal.
	Address feedback received about waste and recycling management.
	Review and update WMP when appropriate.
Students and visitors	Follow waste and recyclables management procedures as directed by the College.
	Report any issues related to waste and recyclables management to the College.
Waste servicing contractor	Follow waste and recyclables management procedures as per their Service Agreement with the College and as directed by College staff.
	Report any issues related to waste and recyclables management to the College.

8. Summary of Consultation

Parties consulted by WPS prior to preparation of this WMP are shown in **Table 9**.

Table 9 Consultation.

Stakeholders	How this group was consulted and when	Issues discussed	Project response
Pymble Ladies' College Pier Property Corporation 3XN Australia	– Email exchanges spanning 21 October to 13 November 2024. – Teleconference meeting 8 November 2024. – Teleconference meeting 24 February 2025.	– Sizing of waste room, bin sizes and numbers of bins. – Use of food digesters. – Role of the College's centralised waste facility.	– Sizes of waste room to reflect discussions. – Use of food digesters to reduce food waste going into bins. – Incorporation of the College's centralised waste facility in the servicing of waste and recyclables for the Project.

9. Conclusions

Based on the work undertaken preparing this WMP, WPS concludes:

- The project is predicted to meet the EFSG v2.0 target of 90% for landfill diversion of demolition and construction waste.
- The unweighted average landfill diversion rate among demolition, construction and operational waste is 80.3%, which is marginally higher than the *NSW Waste and Sustainable Materials Strategy 2041* resource recovery target of 80% from all waste streams. Use of a food digester to process food-waste on the premises, however, is predicted to improve the landfill diversion rate for this project.
- The project provides sufficient provisions for managing operational waste and recycling.
- The project provides sufficient provisions for managing separate streams of operational waste and recycling.

10. About this WMP

This WMP has been prepared by WPS with all reasonable skill, care and diligence and taking into account the time and resources available as agreed with the Client. This WMP is based on the information provided by the Client to WPS, which is accepted in good faith as being accurate and valid.

This WMP is for the exclusive use of the Client and is not to be used by other parties without written consent from WPS or the Client.

This WMP provides no warranties or guarantees. WPS disclaims any responsibilities to the Client and others regarding matters outside the agreed scope of work for this WMP.