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Ross Street Teaching & Learning Hub

Waste Management Plan

Operational and Construction

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PART A – Operational

1. Introduction

This comprehensive Waste Management Plan has been prepared by Waste Audit and Consultancy Services ('Waste Audit') on behalf of the University of Sydney (the applicant) in support of a State Significant Development Application (SSDA) submitted to the Minister of Planning under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The SSDA seeks development consent for the detailed design and construction of a new building, referred to as the A01 Ross Street Teaching and Learning Hub, on the south-eastern corner of Ross Street and Parramatta Road, Camperdown (the site – refer Figure 01).

This Waste Management Plan is intended to provide guidance on management of general waste and recyclable materials that will be generated during the development's operational phase, demolition and construction phases and addresses current legislation, standards, guidelines and best practices, including the relevant SEARs and Green Star requirements.

A separate Waste Management Plan has been produced by Waste Audit to address construction and demolition waste produced by the development.

All waste management provisions, including internal bins, central storage areas, management and handling protocols, and contractor requirements, have been designed to ensure safe and sustainable management of all materials.

Storage areas have been designed to achieve compliance with general best practice requirements as regards design, sizing, and location, and will, as designed, be adequate to manage the expected types and volumes of materials that will be generated.

2. The Site

The site is legally described as Lot 1 in Deposited Plan 1171804 and currently contains demountable buildings:



Figure 01: Site plan

3. Project Background & Objectives

3.1 Background and Objectives

The project has been declared as a State Significant Development (SSD) pursuant to Section 4.36(2) of the EP&A Act. In accordance with Schedule 1, Clause 15 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), the project is declared SSD as it is development for the purpose of a tertiary institution with a capital investment value (CIV) of more than \$50 million.

The project falls within the University's Campus Improvement Program (referred to as the "CIP"). The CIP forms a Concept Approval determined by the Minister for Planning on 16 February 2015 (SSD-6123). The CIP is the University's concept development implementation program for future campus precincts with accompanying building envelopes. The Ross Street Teaching and Learning Hub development is fully compliant with the approved concept plan.

The project is designed to maximise the accommodation of large flat floor teaching spaces and provide a learning hub for students in more flexible, collaborative, and larger scale spaces. Key features of the project include:

- New 5 storey building comprising approximately 6,200m² GFA
- General Teaching Spaces (GTS) comprising 60 and 120 person floor teaching spaces as well as informal learning spaces
- 5-star Greenstar building
- Significantly enhanced public domain, including outdoor seating areas, new landscaping and increased tree canopy
- Traffic improvements, changes on Western Avenue within the University to improve traffic flow and enhanced pedestrian amenity and connectivity
- Food and beverage offering directly fronting the new public domain.

This Waste Management Plan addresses the specific project requirements provided in the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE) on 1 May 2023 (DPE reference: SSD- 57838709). Where relevant, this reports also addresses relevant conditions of consent contained in the CIP Concept Approval (SSD-6123).

4. SEARS Requirements

This report has been prepared with regard to the Secretary's Environmental Assessment Requirements issued for the project by DPIE on 1 May 2023. Preparation of this Operational Waste Management Plan has been undertaken with reference to the following SEARs requirements as well as industry best practices.

- Identify, quantify and classify the likely waste streams to be generated during construction and operation
- Describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste
- Identify appropriate servicing arrangements for the site
- If buildings are to be demolished or altered, provide a hazardous materials survey.

This hazardous materials survey is addressed in a separate consultant's report.

5. Green Star Requirements

Green Star Buildings v1.0 C4 Responsible Resource Management

Requirements	Report Section
The building is designed for the collection of separate waste and resource streams.	Part A, 7-8
The building provides a dedicated and adequately sized waste and resource storage area.	Part A, 7-8
The building ensures safe and efficient access to waste and resource storage areas for both occupants and waste and resource collection contractors.	Part A, 7

Green Star Buildings v1.0 C2 Responsible Construction

Requirements	Report Section
Projects must divert at least 90% of construction and demolition waste from landfill.	Part B, 6-7
(Generated Waste) - Cumulative waste report generated from the monthly waste reports provided by the waste contractor over the entire duration of construction and demolition works.	Part B, 5.4
Compliance Verification Summaries from waste contractor(s) and waste processing facilities as detailed in the Green Star Construction and Demolition Waste Reporting Criteria document.	Part B, 5.5
Demolition or Site Drawings indicating the structures on site at time of purchase, extent of demolition and retained structure and façade.	Appendix 5
(Diverted Waste) - Cumulative waste report generated from the monthly waste reports provided by the waste contractor over the entire duration of construction and demolition works.	Part B, 5.4

6. Legislation, Standards & Guidelines

The following guidelines and standards have been used as references in compiling this Waste Management Plan:

- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment Operations (Waste) Regulation 2014, Part 11*
- *Protection of the Environment (General) Operations Act 1998*
- *NSW EPA Protection of the Environment Operations Act 1997*
- *NSW EPA Waste Classification Guidelines 2014*
- *GBCA Green Star Responsible Resource Management Credit C4*
- *GBCA Green Star Responsible Construction Credit C2*
- *The City of Sydney's Guidelines for Waste Management in New Developments*
- *DPE - SEARs Requirements*

7. Operational Waste Volumes, Storage, & Equipment

7.1 Storage Space Requirements

The following generation rates, taken from both the *City of Sydney's Guidelines for Waste Minimisation in New Developments 2018* and Waste Audits many years of auditing experience, have been used to calculate the volumes of materials that will be produced by the development's operations:

The table below shows waste generating area and generation factors:

Type	Area m ²	Generation Factors		
		General Waste	Paper/ Card/ Organics	Recycling
Classrooms	2,395	15L/100m ² floor area/day	5L/100m ² floor area/day (pc)	20L/100m ² floor area/day
Communal	1,030	15L/100m ² floor area/day	5L/100m ² floor area/day (pc)	20L/100m ² floor area/day
Amenities	184	10L/100m ² floor area/day	5L/100m ² floor area/day (pc)	5L/100m ² floor area/day
*Café/ Takeaway	72	100L/100m ² floor area/day	100L/100m ² floor area/day (org)	250L/100m ² floor area/day

Only waste generating areas are included in the GFA. Storage closets, plant rooms, walkways and school shelving are not included.

*Café/ Takeaway generation is based upon a more practical version of the City of Sydney restaurant generation rates.

Following implementation of the additional recycling systems described in Section 7, the Learning Hub's bin requirements will be as follows:

Material Stream	Weekly Litres Expected	Bin Size Litres	No. of Bins	Bin Type	Collections per Week	Footprint (m ²)*
General Waste	3,625	660	3	Rear lift	2	4.5
Paper/Cardboard Recycling	1,083	660	1	Rear lift	2	1.5
Commingled Recycling	5,245	660	4	Rear lift	2	6.0
Organics	432	240	1	Rear lift	2	0.5
Storage Area (Includes circulation area of 20%)						
Totals	10,385		9			12.5 m ²

* Includes allowance for space between bins

Organics applies only to the food and beverage area, and is not generated by the classrooms.

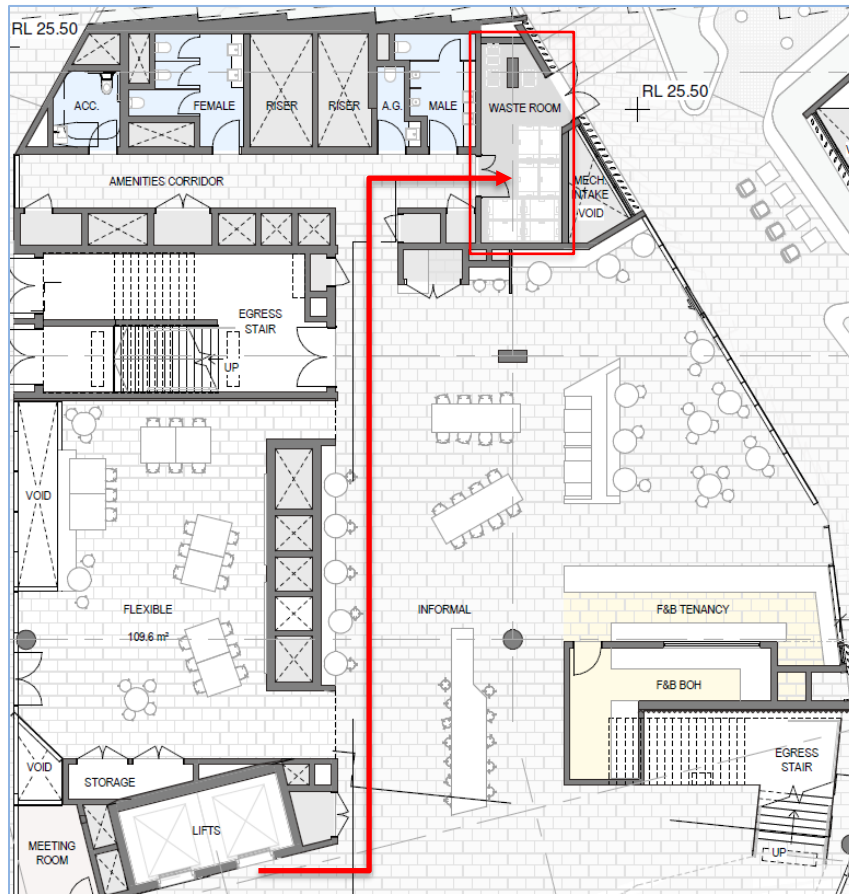
These bin numbers and collection frequencies are based on the predicted generation of each of the expected materials streams.

The waste storage area has an area of greater than 13.0 m² and is adequately sized to accommodate bins for all general waste and recycling generated between collections. If the actual volumes produced exceed these estimates, collection frequencies can be increased.

Waste collections can be increased to meet the demand of a future increase in student numbers.

7.2 Storage Area Location & Accessibility

The bin storage area will be located on Level 2, as shown below:



Waste movement from a typical level, as shown below:



Cleaners will bring general waste and recyclables to the storage area every night.

The storage area as currently designed is adequately sized to accommodate bins for all waste and recycling generated on the site between collections.

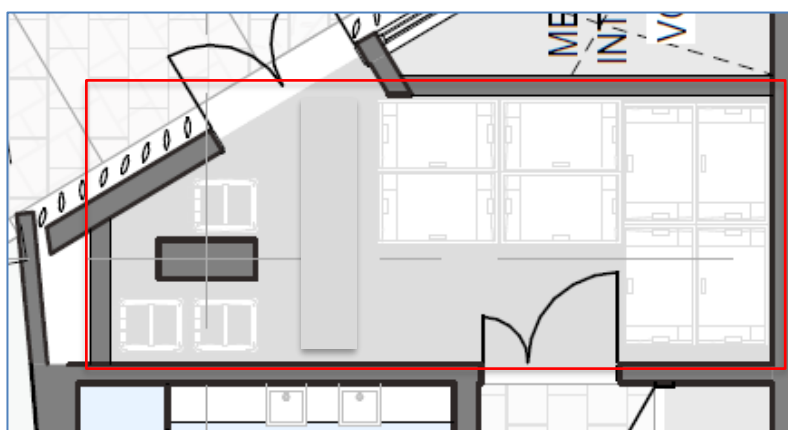
All waste and recycling containers will be clearly differentiated through appropriate signage and colour coding to reflect the materials contained, with each different stream located in a designated area to assist in easy identification by cleaners and other building users.

The development's central waste and recycling storage area will be located on Level 2 with a dedicated room for storage of waste and recycling and will have the following features and maintenance practices to minimise odours, deter vermin, and maintain it a user-friendly and safe area:

1. The floors, walls and ceilings of waste and recycling storage areas are to be finished with a rigid, smooth-faced impermeable material capable of being easily cleaned.
2. A close-fitting and self-closing door or gate operable from within the room is to be fitted to all waste and recycling storage areas.
3. Doors/gates to the waste and recycling storage rooms are to provide a minimum clearance width of 900 mm.
4. At least one door or gate to the waste and recycling storage area is to have sufficient dimensions to allow the entry and exit of waste containers of a capacity nominated for the development.
5. The design shall restrict the entry of trespassers, vermin or other animals into the area.
6. Waste and recycling areas are to be provided with artificial light controlled by switches located both outside and inside the storage area.

All waste and recycling containers will be clearly differentiated through appropriate signage and colour coding to reflect the materials contained, with each stream located in a designated area within storage room, with large and clear signage to assist in easy identification by users, as shown in Appendix 3. Other best practice standards for storage and handling areas include:

- Ensuring the waste loading areas are level and free of kerbs, steps, etc.
- Line markings showing the loading area and positions of bins within the storage room
- Highly visible signage as shown in Appendix 3



Waste Room
Level 2

7.3 Waste Loading Arrangements

Cleaning staff will be responsible for delivering all waste streams to the loading area along the southern boundary, as shown in Appendix 2.

There are 8 by 660 litre bins that require regular transport to the loading area and connectable bin linkages may be used to assist with bin transport for cleaning staff. MGB's have free running castors and foot brakes as standard, to allow for safe travel across paved areas.

On designated collection days (to be established with the private waste contractor), cleaning staff will be responsible for ensuring all bins and bin areas are available for collection and that recycling bins are free of contaminants.

The waste collection vehicle will travel down Western Avenue and onto Science Road, turning left into the loading bay as indicated in Appendix 2.

All bin movements will be performed outside standard building 'operational hours' to avoid internal congestion as much as is practicably possible. This travel path is fully internal and free of any steps, major gradients, or level changes. Collection vehicles will access the loading zone as shown in Appendix 2.



8. Operational Waste Management & Recycling

The Learning Hub is predicted to have collections for general waste and paper, cardboard recycling and comingled recycling on weekday mornings. Collections will take place around 5am. An example bin configuration is shown below:



For this development the Learning Hub's waste separation systems are shown below:

8.1 Paper & Cardboard Recycling

The following materials can be recycled in this system:

- Office paper including white and coloured paper
- Newspapers
- Magazines
- Cardboard (non-waxed)

Unacceptable materials include:

- Tissues, paper towels, paper napkins
- Paper contaminated with food or liquid
- Copy paper wrappers
- Waxed cardboard

8.2 Commingled Recycling

Commingled or mixed recycling consists of the following materials:

- Glass bottles and jars
- Plastic bottles and containers
- Aluminium cans and clean foil
- Steel cans

All materials must be clean and emptied of any food and/or liquid contents.

8.3 General Waste

All materials other than the above will be general waste and will be collected separately by cleaners and disposed of accordingly in the bins in the central storage area. These will include:

- Food scraps (not captured by the F&B organics bins)
- Non-recyclable paper (tissues, paper towels, etc.)
- Non-recyclable plastics (plastic wrap, composites)
- Waxed cardboard

8.4 Monitoring & Measurement

The Learning Hub will implement systems for monitoring, measurement, and reporting of operational waste management performance. Reports and invoices from (the selected waste collector), the Learning Hub's waste and recycling contractor, will provide weights of materials streams and numbers of bins collected.

Annual performance and contract reviews will be conducted with facilities management, waste contractor, and cleaning manager, to assess progress towards annual waste diversion targets and other KPIs, identify operational issues, and address any shortcomings. Waste audits will also be conducted annually to benchmark performance.

8.5 Roles & Responsibilities

The Learning Hub's Facilities Management team will have responsibility for reviewing this Operational Waste Management Plan annually, ensuring that the objectives of the Plan are met, and making adjustments where required, to ensure continued accuracy and relevance to actual operational circumstances.

9. Internal Bins

We recommended providing the Learning Hub's administrative and learning areas with 3-stream bin hubs for:

- Paper & Cardboard Recycling
- Commingled Recycling
- General Waste

The F&B areas will have a 4-stream bin hub, which will include Organics.

Bins should be situated in areas which effectively service a group of workstations and offices, with no bins under desks; this improves cleaning staff efficiencies by reducing the number of bins that require collection, and also reduces the number of bin liners required.

Consideration should also be given to installing recycling bins in some classrooms to provide students with the opportunity to participate in the Learning Hub's sustainability initiatives.

Examples of bins that are commonly used in office or educational settings are shown below. Differently coloured bin liners (general waste-black; paper-clear; commingled-blue) are recommended to assist cleaning staff to distinguish the different streams and enable them to identify contamination, prior to final disposal in the bins in the central storage area.



For areas with bins kept within housings or pull-out drawers in kitchens and central areas, care must be taken to ensure these systems are well designed and provided with clear signage to foster proper separation. An example of best practice drawer design is shown below which provides for two or three streams (paper recycling, commingled recycling, and general waste).



10. Stakeholder Education

For the proposed waste management systems to be successful an education program will be proposed to be implemented for staff and students, by the UoS sustainability team or a selected staff member. This should include requirements for cleaning contractors to undertake regular monitoring and provide feedback to the Learning Hub on waste management performance, using, for example, visual observations of recycling stream contamination, monitoring the condition of bins and equipment, etc. Sustainable Schools NSW provides a number of free resources for educators on its website: <https://www.sustainableLearningHubsNSW.org.au>.

11. Vehicle Access & Site Safety

The Learning Hub's waste contractor will be required to undertake a site induction process to ensure their operational practices are conducted safely and efficiently. Additional best practice requirements for waste contractors are listed in Section 12.

12. Waste Contractor Requirements

The Learning Hub's waste contractors will comply with the following specific requirements:

- Reliable and efficient servicing, and meeting agreed schedules
- The capability to provide the UoS with monthly reports on waste diversion, waste to landfill and further weight-based data separated by waste stream collected
- Maintaining current details of processing facilities used

PART B - Construction

1. Introduction

This construction component has been prepared by Waste Audit and Consultancy Services ('Waste Audit') on behalf of the University of Sydney (the applicant) in support of a State Significant Development Application (SSDA) submitted to the Minister of Planning under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

This plan is intended to provide guidance on management of general waste and recyclable materials that will be generated during the demolition and construction phases of the project, and addresses current legislation, standards, guidelines and best practices, including the relevant SEARs and Green Star requirements.

All waste management provisions, including internal bins, central storage areas, management and handling protocols, and contractor requirements, have been designed to ensure safe and sustainable management of all materials.

Storage areas have been designed to achieve compliance with general best practice requirements as regards design, sizing, and location, and will, as designed, be adequate to manage the expected types and volumes of materials that will be generated.

2. Risk Management

Current legislation determines that the generator of waste is the owner of the waste until the material crosses a weighbridge into a licensed processing or disposal facility. Waste contractors including construction contractors will be the primary transporters of waste off-site; accordingly, contractors will be required to provide monthly reports on waste reused, reprocessed or recycled, thus diverted from landfill or waste sent to landfill.

The WMP will be implemented on site throughout demolition and construction. All entries in the Waste Data File will include:

- Time and date of material removed
- Description, size of waste and facility used
- Vehicle registration and waste contractor's company details

The Waste Data File will be available for inspection to any authorized Council Officer at any time during site works. At the conclusion of site works, the designated person will retain all waste documentation and make this validating documentation available for inspection.

3. Objectives & Targets

The project's waste management objectives include:

- Meeting all waste management standards while ensuring the health and safety of the workers on the project
- Maximising the quantities of materials diverted from landfill by reusing, recycling and reprocessing off-site
- Disposal of no more than 20% of residual waste materials to a licensed landfill in accordance with both regulatory and legal requirements
- The diversion from landfill of 90% of construction waste by weight, to meet the criteria of the NSW State Government's waste legislation, policy settings and regulatory regime

Management strategies and parties responsible for ensuring these objectives are achieved are detailed in Section 4.

4. Waste Management Strategies & Responsibilities

The following waste management strategies for the project will operate over the design, procurement, and construction (including fit out) stages of the project:

Management Strategies	Responsibilities
<i>Design:</i> Use of modular components in design Use of prefabricated components in design Design for materials to standard sizes Design for operational waste minimisation	Architect & Engineer Architect, Builder, Subcontractors Architect, Subcontractors Architect & Builder
<i>Procurement:</i> Select recycled and reprocessed materials Select components that can be reused after deconstruction	Architect, Engineer, Builder, Subcontractors Architect, Engineer & Builder
<i>Pre-construction:</i> Waste management plan to be reviewed and approved prior to construction	Builder
<i>Construction on-site:</i> Use the waste hierarchy principles of avoidance, reuse, reduction, and recycling Minimisation of recurring packaging materials Returning packaging to the supplier Separation and recycling of materials off site Audit and monitor the correct usage of bins Audit and monitor the Waste Contractor	Builder & Waste Contractor Sub-contractors Builder & Sub-contractor Waste Contractor Builder & Waste Contractor Builder

5. Management Practices

5.1 General Principles

The following standard waste management hierarchy principles have been used to guide this waste management plan:

Avoid: Use sound work practices during the demolition and construction processes that avoid the creation of waste products:

- Design for Manufacture and Assembly (DfMA) process combines the manufacture of building components, such as wall systems and facades, in a safe, clean and efficient factory environment, with on-site construction assembly.

Reduce and Reuse

- Reduce the use of materials during demolition that require treatment or disposal
- Ensure that wherever possible, materials are reused either on site or offsite
- Identify and put systems in place to separate and store materials for onsite reuse
- Identify the potential applications for reuse offsite and facilitate this process

Recycle and Recover: Identify all recyclable waste products to be produced on site:

- Provide systems, bins, and signage for separating and stockpiling of recyclables
- Process the material for recycling either onsite or offsite

Treat and Dispose: Waste products which cannot be reused or recycled will be removed and treated/disposed of at licensed facilities. To minimise vehicle movements and transportation costs, bins should be monitored for fullness and collected on an efficient schedule.

5.2 Liquid Waste Management

- Ensure water is used in moderation and no taps are left continuously running
- Use any grey water produced on site for irrigation or for dust suppression
- Only discharge clean water into storm water
- Manage all wastewater and runoff in accordance with Sydney Water requirements

5.3 Asbestos Containing Materials

Should any materials be suspected of being (or containing), asbestos, the following process will be followed:

- i. Treat the material as asbestos unless proven otherwise
- ii. Do not disturb the material (i.e., shift or place into a container)
- iii. Seek advice from a suitably qualified laboratory to test the material(s) to determine if it is or is not asbestos
- iv. If determined not to be asbestos, then it can be managed as an inert waste
- v. If determined to be asbestos then it must be managed by a licenced contractor for packaging, removal and disposal
- vi. If the material has accidentally been uncovered, then the area should be cleared, barriers erected to prevent access, NSW WorkCover and EPA notified, and if the material is broken, it should be covered with a fine spray/mist of water.

For what has been conclusively identified as asbestos-containing materials (including soils), a specialist/licensed asbestos contractor will be used. As required, only workers trained in asbestos removal techniques will be allowed to manage the removal of asbestos-contaminated soil and any material contained in the buildings.

In regard to disposal of asbestos containing materials, there are regulatory requirements under Clause 42 of the *Protection of the Environment Operations (Waste) Regulation 2005* that apply to the management of asbestos waste.

5.4 Waste Reporting

On at least a monthly basis the project applicant must be informed of:

- a. Cumulative waste report generated from the monthly waste reports provided by the waste contractor over the entire duration of construction and demolition works, based upon both;
 - Waste generated by the contractor
 - Waste diverted by the contractor
- b. The processes used to monitor the re-use and recycling of construction and demolition waste;
- c. The quantities achieved for re-used and recycled waste.

Records will be required to be kept of all wastes and recyclables generated and either re-used on site or transported off-site. It will be a condition of appointment that all contractors provide these records and that they also contain details of the facilities that the materials are transported to. Recording and monitoring processes are further outlined below:

1. Clear separation/ tracking system for waste from site to processing facility.

Prior to depositing materials at the site, trucks enter and go over the weighbridge the truck number is registered along with *Gross, Tare and Net weights* (as the truck departs).

As loads are deposited, a staff member visually analyses the load(s) and records the estimated volumes per material type. Data is reviewed that validates the process of incoming and outgoing loads for the types of accepted materials.

The Facility has a system to record all loads entering or exiting the site.

As materials from individual projects are recorded as to where generated and then recycled, the facility can accurately measure the percentage that is recycled.

This is then generated in a report provided to the clients.

2. Certified weighbridge and operational procedures.

A weighbridge should:

Demonstrate that they can quantify and provide an auditable trail for weights of inbound waste as well as weights of outbound recyclables and residuals and that they can prepare accurate reports and account for all inbound waste received and all outbound waste diverted from and to landfill.

The operating system should ensure the following information is captured:

- Date and time are recorded for all loads arriving and departing the site.
- Details of generating site recorded.
- Details of facility for departing loads recorded along with tonnage.

3. Source and fate of inbound and outbound waste.

Documents record all details for inbound and outbound loads.

Reports are provided to clients detailing the volume of materials accepted, disposal and percentages recycled.

4. Calculating Waste.

Calculating waste: Waste must be measured in kilograms. To calculate the amount of waste diverted from landfill, the project team is required to report the total amount of waste generated and the total amount of waste diverted from landfill, and report on the proportion diverted as a percentage.

Volume to weight conversion: Waste contractors are often required to determine the weight of waste material streams from visual inspections of a load's volume for the purpose of reporting the estimated weights of material types removed from site (e.g., timber, steel, plasterboard, concrete, carpet). The conversion factors in the Table below may be used to convert measurement of waste types from volume to weight.

Excavation: Special waste and excavation waste are excluded from this requirement. However, soil generated from site clean-up works must be included in the waste-to-landfill calculations, as it forms part of the building site's general waste profile.

- Excavation waste: Includes unwanted material resulting from excavation activities such as a reduced level dig and site preparation and levelling, and the excavation of foundations, basements, tunnels, and service trenches typically consisting of soil and stones.
- Special waste: Includes asbestos waste and asbestos containing material, or other hazardous waste and restricted solid waste as defined by the NSW Environment Protection Authority Environmental Guidelines and Policies for Waste.
- Soil generated from site clean-up works: Which incorporates soil leaving the site mixed with general construction and demolition waste.

5.5 Processing Facilities

Specific disposal/recycling facilities are not shown, as a waste removal contractor has not yet been appointed for the project. All contractors and sub-contractors, once appointed, will be required to detail all intended and actual disposal facilities used.

Waste contractors and waste processing facilities that provide waste management and reporting services to Green Star projects must achieve independent verification of their compliance with the reporting criteria. Such verification of compliance is a prerequisite for the recognition and acceptance of the waste reports that are provided within Green Star 'Construction and Demolition Waste' credit submissions.

The following requirements are intended to form part of a formalised Environmental Management System (EMS) and is a process that can be used to identify, manage, audit, and reduce environmental impacts, and generate reports on environmental performance progress.

The EMS will follow the basic stages of high-level commitment, identification of impacts, review, target setting, action planning, monitoring, and reporting through other management systems (such as occupational health and safety, risk registers etc.).

In line with the EMS, waste processing facilities will be required to provide:

- Compliance Verification Summaries from waste contractor(s) and waste processing facilities as detailed in the Green Star Construction and Demolition Waste Reporting Criteria document, outlined above in Section 5.4.

6. Demolition Phase

The table below shows estimated quantities in m³ of demolition waste to be generated, and the recommended management strategy for each type of material, based on removal of materials. The existing demountable sheds on site will not be demolished under the SSDA, it will be via an exempt development planning pathway.

Specific disposal/recycling facilities are not shown, as a waste removal contractor has not yet been appointed for the project. All contractors and sub-contractors, once appointed, will be required to detail all intended and actual disposal facilities used.

Demolition Waste - Expected Materials Streams

Materials on Site		Destination/Treatment		
Type of Material	Volume (m ³)/ Tonne	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Structural Concrete	10 m ³ 12 t	Separated onsite and crushed for use in pavement and/or temporary access road	Collected by contractor and taken to recycling facility	No disposal to landfill
Bricks/Pavers	10 m ³ 10.6 t	Separated onsite and crushed for use in pavement and/or temporary access road	Collected by contractor and taken to recycling facility	No disposal to landfill
Garden Organics	5 m ³ 0.75 t	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Misc. General Waste	8 m ³ 1.5 t	No onsite reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for disposal	Disposal to landfill
Tiles/ Tiling	3 m ³ 2.0 t	No onsite reuse or recycling	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
Plumbing Pipework, Fixtures	4 m ³ 2.2 t	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
TOTAL VOLUME OF MATERIALS	40 m ³ 29 t	In total, the development's demolition phase will produce around 40 cubic metres of waste materials, of which over 80% can potentially be diverted from landfill disposal, either by being reused on or off site, or recycled off-site at a specialised facility.		
POTENTIAL RECOVERY	>80%			

7. Construction Phase

The development will seek to employ construction methodology which will result in significantly reduced wastage during the on-site construction process. It is estimated that for a typical construction project, application of for example Design for Manufacture and Assembly (DfMA) can reduce materials wastage by over 30%.

The table below shows expected volumes of waste arising from the construction process, including materials generated from deliveries of materials, including pallets, pallet wrap, cardboard packaging, and general waste and recyclable containers disposed of by construction contractor staff.

Specific disposal/recycling facilities are not shown, as a waste removal contractor has not yet been appointed for the project. All contractors and sub-contractors, once appointed, will be required to detail all intended and actual disposal facilities used.

Construction Waste - Expected Materials Streams

Materials on Site		Destination		
Type of Material	Volume (m ³ / Tonne)	Onsite (Reuse or Recycle)	Offsite (Reuse or Recycle)	Disposal (Landfill)
Excavation Materials	3000 to 4000 m ³	Yet to be classified. No on-site reuse or recycling	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Used Pallets	20 m ³ 6.0 t	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Paper/Cardboard Recycling	20 m ³ 2.0 t	Reuse cardboard boxes for storage where possible	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
Soft Plastics (Pallet Wrap etc.)	10 m ³ 0.1 t	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Concrete (Excess)	16 m ³ 24 t	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
Misc. General Waste	10 m ³ 1.5 t	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for disposal	Disposal to landfill
Timber Offcuts	10 m ³ 3.0 t	Reuse for formwork where possible	Untreated recyclable timber will be collected and recycled at appropriate timber yard. Unrecyclable (treated) timber will be disposed of at landfill	Material that cannot be recycled will be disposed of at landfill facility
Plasterboard Offcuts	5 m ³ 1.0 t	No on-site reuse	Material to be separated and stockpiled onsite and collected by the waste contractor for recycling for use as soil improver with gypsum etc. removed by recycler	Material that cannot be recycled will be disposed of at landfill facility

Materials on Site		Destination		
Type of Material	Volume (m ³)/ Tonne	Onsite (Reuse or Recycle)	Offsite (Reuse or Recycle)	Disposal (Landfill)
Glass (Excess)	4 m ³ 0.4 t	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
Floor Coverings	4 m ³ 1.2 t	No on-site reuse	Collected in designated bin and sent for recycling if of required quality; otherwise sent to landfill	Material that cannot be recycled will be disposed of at landfill facility
Metal Offcuts, Roof Sheeting, Wiring, etc.	2 m ³ 1.8 t	No on-site reuse	Collected by specialist metal subcontractor for separation into different metal types for recycling	No disposal to landfill
Mixed Recyclables	10 m ³ 0.63 t	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
TOTAL VOLUME OF MATERIALS	111 m ³ 41.63 t	In total, the development's construction phase, <i>not including excavation materials</i> , will produce around 111 cubic metres of waste materials, of which over 90% can potentially be diverted from landfill disposal, either by being reused on or off site, or recycled off-site at a specialised facility.		
POTENTIAL RECOVERY	>90%			

Appendix 1: Bin Sizes

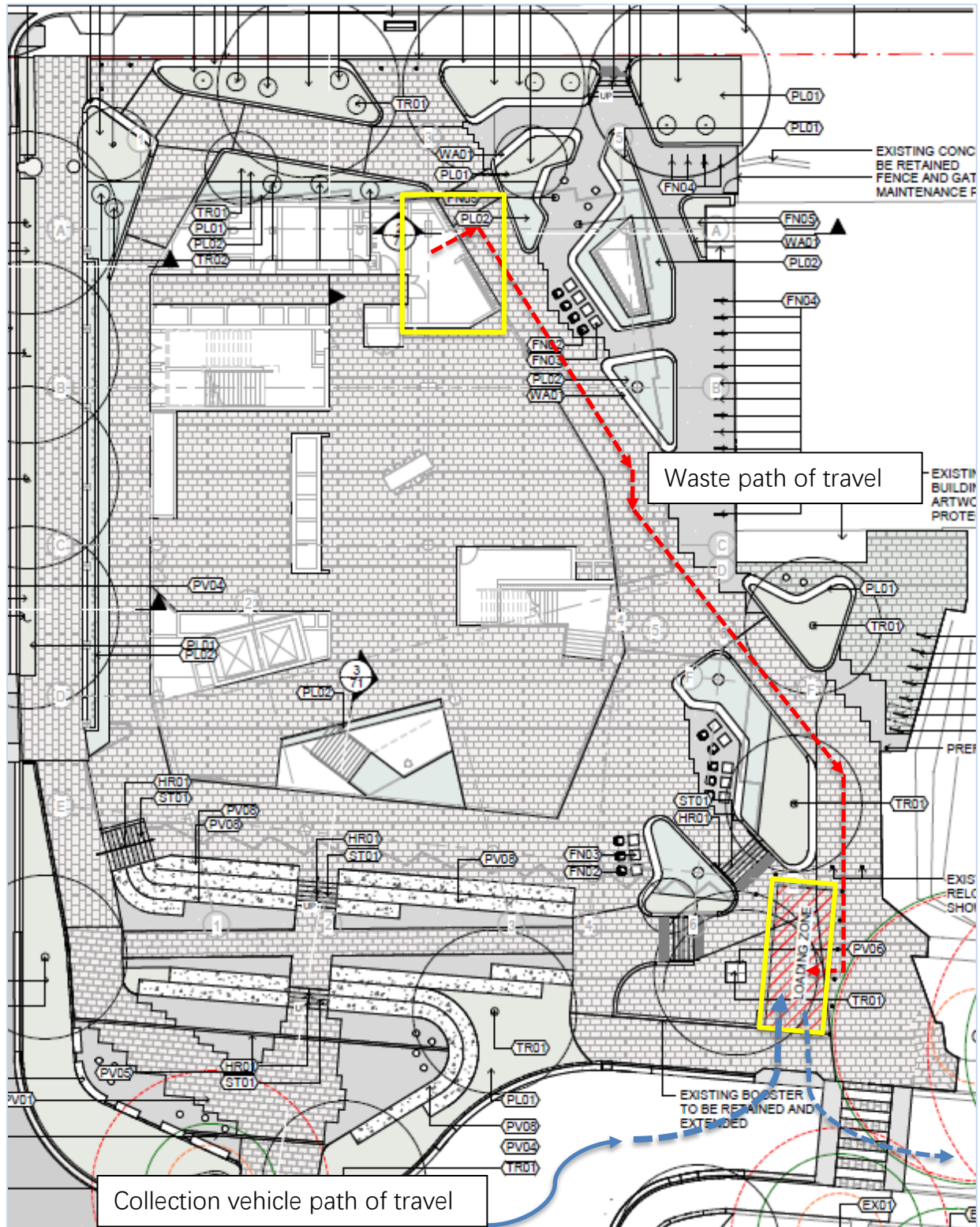
660 Litre (MGB)



Typically - 60 Litre:



Appendix 2: External Collection Area



Appendix 3: Signage Examples



Appendix 4: Green Star Conversion Factors

Material	Density (tonne/m³)	Material	Density (tonne/m³)
Aluminium cans - whole	0.026	Concrete	1.5
Aluminium cans - flattened	0.087	Garbage	0.15
Aluminium cans - baled	0.154	Garden / Vegetation	0.15
Asphalt / Bitumen	0.8	Glass bottles - whole	0.174
Bricks	1.2	Glass bottles - semi-crushed	0.347
Car Batteries	0.375	Green waste processed	0.3
Carpets	0.3	Green waste unprocessed	0.15
Cement Sheet	0.5	Hazardous Wastes	0.2
Ceramics	1	Insulation	0.05
Clean Soil	1.6	Litter trap	0.75
Cobbles / Boulders	1.4	Metals	0.9
Commingle containers (plastic, glass, steel, and aluminium cans)	0.063	Oil	0.8
		Other Textiles	0.15
Material	Density (tonne/m³)	Material	Density (tonne/m³)
Others	0.3	Rubber	0.3
Paint	0.8	Soil / Rubble<150mm	1.4
Paper / Cardboard	0.1	Steel cans - whole	0.052
Plasterboard	0.2	Steel cans - flattened	0.13
Plastic containers - whole	0.01	Steel cans - baled	0.226
Plastic containers - whole, some flattened	0.013	Wood / Timber	0.3
Plastic containers - baled	0.139	Waste oil	0.8

Appendix 5: Demolition Area

The demolition of the demountable shed will not form part of the SSDA as it is being removed as per the SSD 6123 Development Consent.

