Foresight Environmental

SCEGGS Darlinghurst

Wilkinson House Redevelopment

Operational Waste Management Plan

This report is based on information provided by **SCEGGS Darlinghurst** coupled with Foresight Environmental's knowledge of waste generated within the education and commercial sectors. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of **SCEGGS Darlinghurst.**

This report is not a substitute for legal advice on the relevant environmental related legislation, which applies to businesses, contractors or other bodies. Accordingly, Foresight Environmental will not be liable for any loss or damage that may arise out of this project, other than loss or damage caused as a direct result of Foresight Environmental's negligence.

The contents of this report should be treated at all times as confidential, unless permission from **SCEGGS Darlinghurst** is received.

The contents of this document may not be referenced or used in any way by parties other than **SCEGGS Darlinghurst** without the written permission of Foresight Environmental.

Document Information		
Client	SCEGGS Darlinghurst	
Prepared by	Foresight Environmental	
Document name	SCEGGS Darlinghurst Wilkinson House Operational Waste Management Plan	
Author	Scott Ebsary	
Reviewed	Matt Bielby	
Revision	Revision Date	Details/comments
1	6 October 2021	Draft report
2	6 October 2021	Updated with Urbis feedback
3	11 November 2021	Final

Table of Contents

1. Executive Summary

This operational waste management plan (WMP) has been prepared by Foresight Environmental on behalf of SCEGGS Darlinghurst as part of the Development Application for the development of Wilkinson House. The site is bounded by Forbes Street and St Peter's Street, Darlinghurst.

The purpose of this operational waste management plan is to outline the systems and practices involved in managing waste and recycling during the operation of the facility in accordance with Item 18 of the SEARs for SSD-19989744 and Part B, Condition B.17 of the SSDA Concept Approval. This waste management plan has been developed in line with the guidelines and provisions of the City of Sydney Guidelines for Waste Management in Developments 2018 and the EPA Better Practice Guide for Resource Recovery in Residential Developments 2019 (generation rates Appendix F).

2. Overview of Development

The proposed development is for the adaptive re-use of Wilkinson House located at 215 Forbes Street, Darlinghurst Sydney.

The development will involve the following:

- Retain existing perimeter walls/facades
- Demolish internal stairs, walls, floors and ceilings and excavate basement
- Construct new internal learning spaces, break out spaces, staff rooms, meeting rooms, amenities and stair/circulation over ground, levels 1 & 2
- Reconstruct new level 3 within the roof space accommodating a boardroom, multi-purpose room, amenities, staff rooms and a private outdoor roof terrace.
- Construct a new basement sporting facility which connects to the existing Centenary Sports Hall to the south

3. Operational Waste Generation Estimate

Based on the information provided regarding the proposed development and the expected student and staff numbers using Wilkinson House (approx. 300 pax – which remains consistent with existing Wilkinson House student numbers i.e. no increase), a waste estimate has been derived using industry averages and EPA guidelines for waste generation rates. Based on the estimated waste profile and in line with industry-leading best practice, the following streams are recommended to be implemented throughout the facility for everyday operational waste:

- Food waste (where appropriate)
- Cardboard/paper
- Mixed recycling (plastics, glass, aluminium, steel)
- Landfill

In addition to the above "common" streams, the following streams are likely to be generated in a more ad-hoc manner during the ongoing operation of the facility:

- E-waste
- Battery recycling
- Toner cartridge recycling
- Lamps and globes

The following table shows the estimated waste profile.

Table 1 - Waste generation estimate

Waste Stream	Kg/day	L/day	Kg/week	L/week
Paper/cardboard	21	315	105	1,579
Mixed Recycling	5	90	27	451
Organics	38	135	190	677
General Waste	22	360	108	1,805
Total	**86**	**900**	**430**	**4,512**

4. Waste Management Systems

The following table shows the recommended bin systems for the management of the estimated waste profile. It should be noted that the bin types and numbers are indicative of the capacity needed to service the waste from Wilkinson House. Operationally, bins will be stored in one of the two waste storage areas which service the whole campus – there will be more bins than are shown in the table below in both waste storage areas, the bin numbers shown below relate only to the requirements for the waste from Wilkinson House.

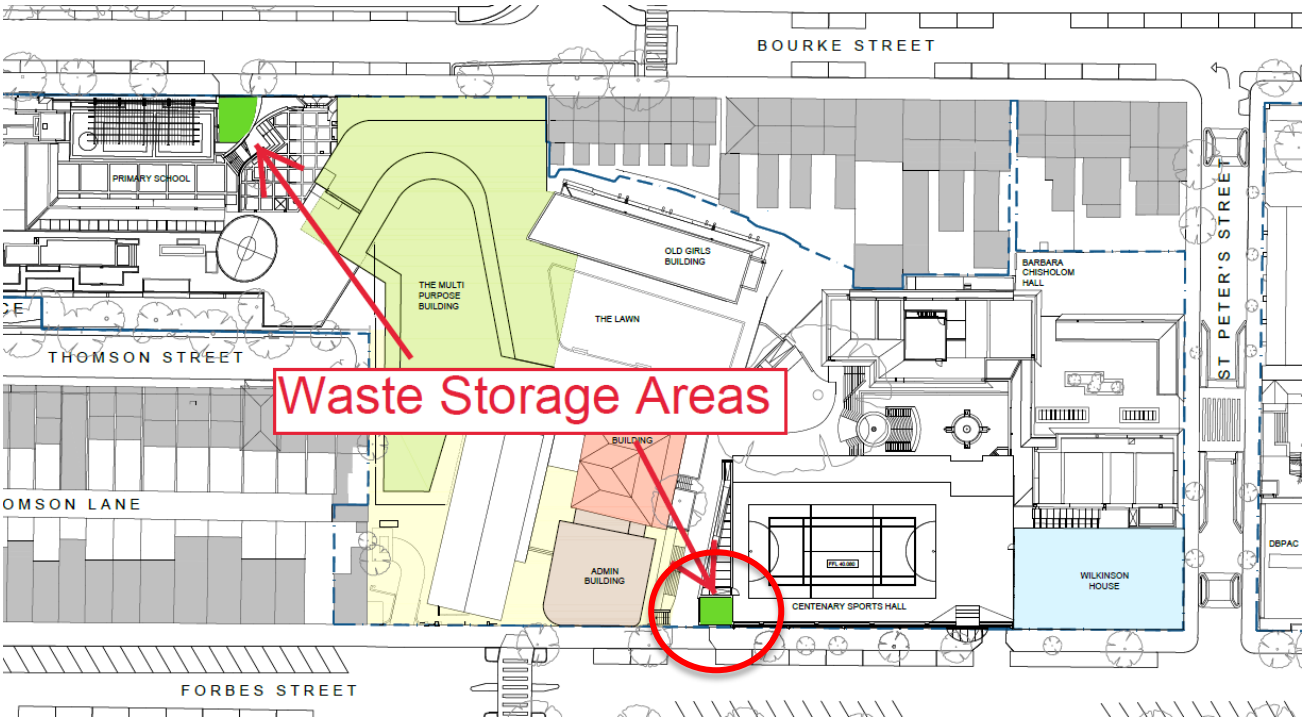
Table 2 - Recommended equipment and collection frequency

Waste Stream	Bin Type	Bin Size	No. of bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume/ Week (L)	Footprint per bin m^2	Total footprint m^2
Paper/cardboard	MGB	660L	1	1	660	1,579	1.05	1.05
Mixed Recycling	MGB	660L	1	1	660	451	1.05	1.05
Organics	MGB	120L	3	3	1,080	677	0.27	0.81
General Waste	MGB	1100L	1	2	2,200	1,805	1.69	1.69
Total								**4.59**
Including 50% additional space around bins for manoeuvring								**6.9**

5. Waste and Recycling Storage Areas

There are two waste storage areas that service the campus. Waste from Wilkinson House will be taken to the waste storage area on Forbes Street – circled in red below.

Figure 1: Waste Storage Area locations



5.1 Amenity

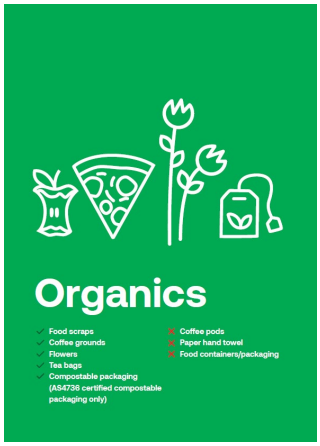
The waste storage area will have the following features:

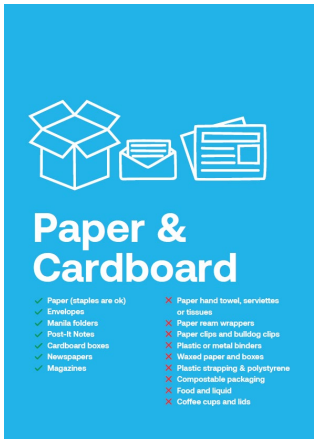
- Ventilation: The bin storage rooms will be naturally ventilated by external air flow
- Vermin and Odour Prevention:
    - Cleaners are to ensure that bin lids are closed when unattended
- Floor: Structural concrete slab. Graded drains to approved sewer connections – fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation
- Water Supply: cold tap and hose connection servicing graded bin wash areas
- Signage: clear signage on each bin identifying the various streams and appropriate use will be prominently displayed (see section on signage below)

The ongoing maintenance and up-keep of the waste storage area will be the responsibility of campus maintenance staff. They will be tasked with ensuring bins are stored neatly and are cleaned as required.

5.2 Signage

All waste and recycling streams should be differentiated with clear signage on all bins. Below are examples of appropriate signage incorporating textual information, pictures and colour-coding to communicate the message.





6. Onsite Management Protocols

It is recommended that a bin hub approach be adopted to service all spaces within Wilkinson House. Different configurations of bins/streams may be implemented in different areas depending on usage requirements (to be determined by school) – the table below outlines the suggested configurations and bin types for consideration.

Table 3 – Recommended waste streams and systems in each area

Location	Waste Streams	Recommended Systems
Learning Spaces	20L Method Bin – General Waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day using a cleaners trolley and transfer materials to waste storage area for disposal.
Staff Areas	60L Method Bin – Mixed Recycling, Paper, Organics and General Waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to waste storage area for disposal. Cleaners to use segregated trolley to keep streams separate.

Figure 2: 60L Method Bin Hub example

Figure 3: Example of segregated cleaner trolley to transfer waste from bin hubs to waste storage area

6.1 Additional Material Streams

The following protocols are in place to manage additional streams.

Table 4 – Management Protocol for additional streams

Waste Stream	Management Protocol
Paper hand towel recycling	In an effort to reduce waste generation volumes, a paper hand towel free system in bathrooms should be considered. Replacing hand towel with a system such as the 'Airblade' produced by Dyson1 or the "Jet Towel" produced by Mitsubishi Electric[2] may prove to be a more environmentally (and economically) efficient than a paper hand towel system. If a paper hand towel system is chosen, then it should be confirmed with the appointed waste contractor which recycling stream is most appropriate for this material.
Toner cartridge recycling	Where cartridges are generated recycling systems should be implemented. Typically a free service provided by Planet Ark for example is sufficient – this system will consist of a large cardboard box located within the print rooms which will be collected by Planet Ark upon request by the facilities manager.
E-Waste	An E-waste collection service should be set up either quarterly or biannually depending on volumes generated. E-waste will be collected and managed by facilities management – all items will be transfered to the dedicated bins within the waste storage room where it will be collected directly by a specialist contractor upon request.

[1] Information gathered from http://www.dysonairblade.com.au/
[2] Information gathered from http://www.mitsubishielectric.com/bu/handdryer/products/index.html

	Measures should be taken to avoid generating E-waste and take-back programs with the supplier or reuse programs with charities or schools are encouraged.

7. Collection

Waste collections will be conducted by the School's appointed waste contractor who will be responsible for emptying waste and recycling from the bins presented within the two waste storage areas. Collection practices are to continue as they are currently being conducted by the waste contractor. Bins are collected immediately adjacent to each waste room on the respective street and then returned to the waste room once emptied. Figure 4 below shows the current waste collection locations and procedure.

Figure 4: Waste contractor collection procedure

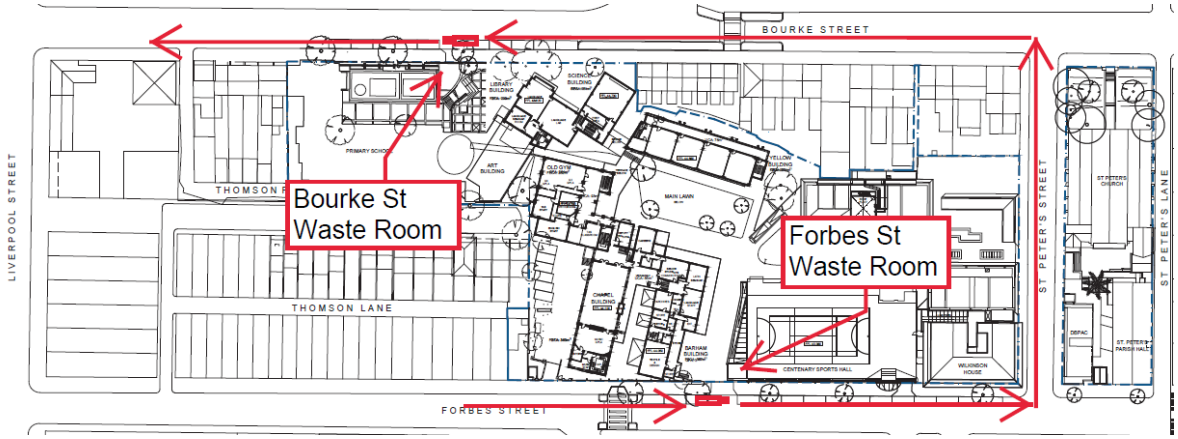
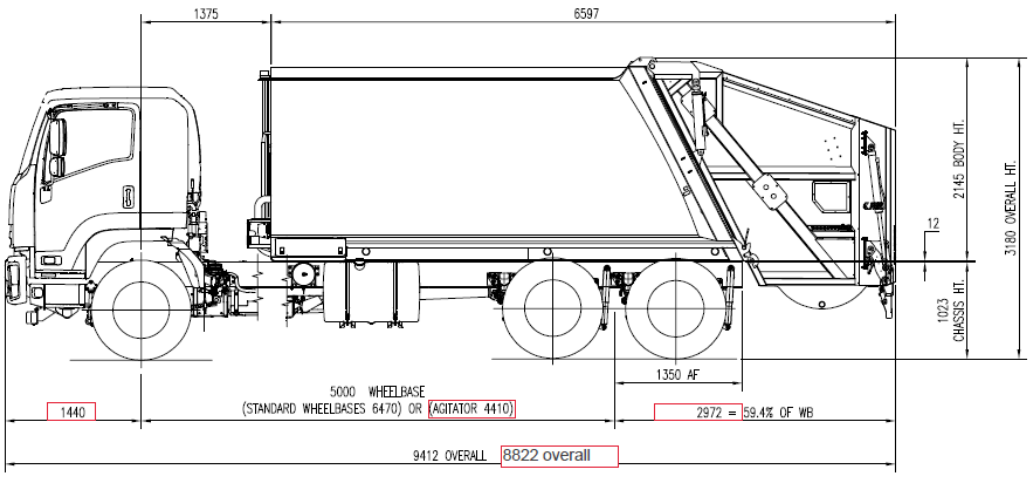


Figure 5 shows the indicative specifications of the medium rigid rear-lift waste gtruck used by the current waste contractor.

Figure 5: Medium rigid rear-lift waste vehicle



8. Additional Opportunities

8.1 Waste Diversion Opportunities

The following initiatives represent opportunities for SCEGGS Darlinghurst to explore in an effort to reduce total waste production. These options are not a requirement, however, should be considered in order to move towards best practice waste management.

8.1.1. Organics Recovery/recycling

Although offering food/organic recycling throughout all areas is not recommended due to the challenges of contamination, options for the kitchen where there is more control over the type of materials being disposed should be investigated.

Alternatively, other onsite options that would reduce the quantity of waste being taken offsite by waste contractors should be investigated. An effective solution could incorporate one or both of the following:

- Onsite compost bins
- Onsite worm farms

Figure 4 – Example of a compost setup

Figure 5 – Example of a basic worm farm

9. Conclusion

The details of this waste management plan confirm that the waste facilities provided in the proposed design adequately cater for the projected waste generation rates at the completion of the development.

SCEGGS Darlinghurst

Wilkinson House Redevelopment

Construction & Demolition

Waste Management Plan

Prepared by Foresight Environmental
e. info@foresightenvironmental.com
w. www.foresightenvironmental.com

This report is based on information provided by **SCEGGS Darlinghurst** coupled with Foresight Environmental's knowledge of waste generated within the residential sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of **SCEGGS Darlinghurst** .

This report is not a substitute for legal advice on the relevant environmental related legislation, which applies to businesses, contractors or other bodies. Accordingly, Foresight Environmental will not be liable for any loss or damage that may arise out of this project, other than loss or damage caused as a direct result of Foresight Environmental negligence.

The contents of this report should be treated at all times as confidential, unless permission from **SCEGGS Darlinghurst** is received. The contents of this document may not be referenced or used in any way by parties other than **SCEGGS Darlinghurst** without the written permission of Foresight Environmental.

Document Information		
Client	**SCEGGS Darlinghurst**	
Prepared by	Foresight Environmental	
Document name	SCEGGS Darlinghurst Wilkinson House Construction & Demolition Waste Management Plan	
Author	Matt Bielby	
Reviewed	Scott Ebsary	
Revision	Revision Date	Details/comments
1	6/10/2021	Draft report
2	11/11/2021	Final

Table of Contents

1. Introduction

This Construction and Demolition Waste Management Plan has been prepared by Foresight Environmental on behalf of **SCEGGS Darlinghurst.** The plan details the way in which the proposed re-development is 215 of Wilkinson House will manage the waste and recycling generated during the construction and demolition phases of the development. The site is bounded by Forbes Street and St Peter's Street, Darlinghurst.

2. Waste Generation Estimate

The aim of this Plan is to ensure that all waste resulting from construction and demolition activities is managed in an effective and environmentally aware manner. Specifically,

- To maximize the reuse and recycling of demolition materials
- To reduce the volume of materials going to landfill
- To maximise waste material avoidance and reuse on site
- To ensure that where practicable, an efficient recycling procedure is applied to waste materials
- To ensure efficient storage and collection of waste

The quantity of waste materials to be generated onsite are estimates based on the information provided to Foresight Environmental and therefore the systems that will be put in place need to incorporate flexibility to allow for variation in the total quantities generated.

2.1 Demolition

The testing and classification of any excavated material is not covered in this report. Where necessary separate specialist testing should be conducted by the project managers.

If acid sulphate soils are present on site, a separate management plan will need to be prepared for handling and disposal of such soil.

The tables below detail the estimated composition by volume of demolition waste to be generated.

Table 1 – Estimated composition of demolition waste by volume

Material	M^3
Fill	210
Concrete	159
Metal	2
General Residual	100
Glazing	10
Timber	250
Bricks	20
Plasterboard	10
Carpet	20
Tiles	38
Asbestos	50
Total	**869**

2.2 Construction

Active site management during the construction phase will ensure all waste/recyclable materials are disposed of appropriately and that all waste receptacles are of sufficient capacity to manage onsite activities.

Table 2 below details the estimated composition by volume of construction waste to be generated.

Table 2 – Estimated composition of construction waste by volume

Material	M^3
Timber	108
Plasterboard	60
Concrete	32
Masonry	16
Tiling	9
Paint	5
insulation	12
Metal	36
Glazing	60
Brick	240
General residual	12
Total	**590**

3. Waste Management Strategy

Consideration of waste management during all phases of the development will provide the best opportunity to minimise the volume of waste generated throughout the project's lifetime. Whilst recycling and reuse of materials are important aspects of waste management, waste minimisation techniques incorporated into construction and demolition can prevent materials from being brought onto the site that will eventually become waste. The following waste hierarchy will be used as a guiding principle:

The construction and demolition teams will implement this Waste Management Plan, incorporating the following best practice management techniques as a minimum:

3.1 Avoid and Reduce

Minimise the production of waste materials in the construction process by

- Assessing and taking into consideration the resultant waste from different design and construction options
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut or fabricated. Where possible, arrange for packaging to be removed by the delivery company
- Not over ordering products and materials
- Ordering materials cut to size to reduce waste material onsite

3.2 Reuse

Ensure that wherever possible, materials are reused either on site or offsite

- Identify all waste products that can be reused
- Any demolition and excavation materials should be salvaged and retained onsite for re-use where possible
- Put systems in place to separate and store reusable items
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse

3.3 Recycling

Identify all recyclable waste products to be produced on site

- Provide clear signage to ensure appropriate disposal of all waste types
- Process the material for recycling either onsite or offsite

To achieve operational and spatial efficiency throughout the course of the project, the appointed waste contractor will be selected on the basis that they are able to achieve >90% diversion from landfill through effective sorting of recyclable materials at an appropriately licensed C&D recycling facility. Through this process, the onsite management of waste becomes far more streamlined by enabling the majority of materials to be disposed together rather than allocating individual bins or stockpiles for different material types (which would be unfeasible within the project timelines and spatial constraints).

3.4 Disposal

Waste products which cannot be reused or recycled will be removed and disposed of. The following will need to be considered:

- Ensure the chosen waste disposal contractor complies with OEH requirements
- Implement regular collection of bins
- Maintain records of both recycled and general waste volumes being transferred offsite or reused onsite.
- The only materials to be sent to landfill are those that cannot be recycled due to contamination, legal requirements or lack of facilities to enable recycling.

4. Waste Management Systems

4.1 Onsite and Offsite Systems

Onsite separation of the various waste streams is encouraged to lower recycling costs so to avoid additional fees for sorting at appropriate facilities – this is particularly relevant for higher value recycling stream i.e. metal. However, to maximise operational and spatial efficiency, it is highly likely that the majority of materials will be disposed together and will be collected for separating and processing at an offsite recycling facility.

The following tables combine the estimated volumes for each component of the development as the recycling practices are to be replicated during each respective phase.

4.1.1. Demolition

Table 3 - Waste management systems (demolition)

Material	Estimated volume (m^3)	Onsite (re-use or recycle)	Offsite (recycling contractor)
Concrete	159	Crushed and reused onsite as aggregate/road base where possible	Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible – materials will be deposited onsite directly into skips or trucks to be removed from site.
Brick	20		
Fill	210		
Tiles	38		
Mixed Residual Waste	100		
Plasterboard	10		
Carpet	20		
Glazing	10		
Timber	250		
Metal	2		Separated on site and taken to metal recycling facility if possible. Otherwise

			collected with other materials for offsite processing/recycling

4.1.2. Construction

Table 4: Waste management systems (construction)

Material	Estimated volume (m^3)	Onsite (re-use or recycle)	Offsite (recycling contractor)
Concrete	32	Crushed and reused onsite as aggregate/road base where possible	Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible – materials will be deposited onsite directly into skips or trucks to be removed from site.
Masonry	16		
Brick	240		
Mixed Residual Waste	12		
Metal	36		
Tiles	9		
Insulation	12		
Paint	5		
Glazing	60		
Timber	108		
Plasterboard	60		

Note: The quantities of construction and demolition waste materials have been estimated using industry guides for predicting waste quantities[1]. The figures in Table 3 and 4 above are estimates and are used as a guide for designing the waste management systems on site. These figures will be adjusted according to the final building material selection and quantities. The waste management systems will be adjusted as necessary.

[1] McGregor Environmental Services (2000) Predicting C&D waste quantities in the Inner Sydney Waste Board Waste Planning Guide for Development Applications-Planning for Less Waste (1998) NSW Waste Boards

It should be noted that there are multiple offsite recycling/disposal facilities available for the appropriate processing of the materials detailed above and the facility choice will depend largely on the waste contractor/supplier engaged. See section 5.

4.2 Site waste control and management

To ensure adequate site environmental standards are maintained, is recommended that the following controls be implemented and enforced by the proponent:

1. All waste generated during the project is assessed, classified and managed in accordance with the "Waste Classification Guidelines Part 1: Classifying Waste" (DECCW, December 2009)
2. The body of any vehicle or trailer, used to transport waste or excavation spoil from the premises, is covered before leaving the premises to prevent any spill or escape of any dust, waste or spoil from the vehicle or trailer
3. Mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorized plant leaving the site, is removed before the vehicle, trailer or motorized plant leaves the premises.
4. Appropriate control measures to eliminate/minimise the airborne emission of dust and fibres, such as:
    a. Dust screening barrier around site and relevant areas within site
    b. Cover stockpiles
    c. Water suppression

4.3 Hazardous Wastes

During any demolition and material recovery activities, contractors should beware of potentially hazardous materials. Hazardous construction materials should be disposed of in accordance with EPA guidelines in order to protect the environment and personnel. In order to avoid risk to the environment and any breach of legislation this development endeavours to uphold the following practices:

- Early identification and reporting of hazardous waste
- Reporting of any suspicious activities of involved stakeholders (waste generator, transporter or receiver) to including handling waste unlawfully or illegally dumping waste through the Environment Line on 131 555.
- Ensure waste is transported to a place that can lawfully accept it under Section 143 of the Protection of the Environment Operations Act 1997.

- Take all reasonable precautions and exercise due diligence at all times to prevent/minimise commission of any offence.
- Keep accurate written records such as:
    - who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste)
    - copies of waste dockets/receipts from the waste facility (date and time of delivery, name and address of the facility, its ABN, contact person).

4.3.1. Asbestos

To manage the risk of asbestos during the demolition/construction phase the following minimum requirements must be implemented:

- Identify all asbestos and asbestos containing material and record in an asbestos register for the project
- Assess the risk of exposure to airborne asbestos
- Eliminate or minimise the risks associated with asbestos by implementing control measures
- Continually review control measures to ensure they are effective

If asbestos is identified a detailed asbestos management plan is required to be prepared for the project which must:

- Identify the location of asbestos and any naturally occurring asbestos.
- Include decisions—and reasons for them—about the management of asbestos at the site, for example safe work procedures and control measures.
- Outline procedures for incidents and emergencies involving asbestos, including who is responsible for what.
- Be maintained with up-to-date information.
- Be accessible to any worker who has carried out or intends to carry out work at the workplace and any health and safety representatives who represent workers at the site.
- Provide information, consultation and training responsibilities to workers carrying out work involving asbestos

4.4 Contracts and Purchasing

Each subcontractor working on the site will be required to adhere to this Waste Management Plan (WMP). The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure waste resulting from their work will be actively managed and where possible recycled, as part of the overall site recycling strategy
- Implements source separation of off cuts to facilitate reuse, resale or recycling.

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site.
- Ensuring all skips/bins/stockpiles are clearly labelled identifying which material is suitable for each receptacle
- Engaging appropriate waste and recycling contractors to remove waste and recycling materials from the site
- Co-coordinating between subcontractors, to maximise on site reuse of materials
- Monitoring of bins on a regular basis by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the appropriate location for recycling and stockpiling station/s. And that each bin/skip/stockpile is clearly sign posted
- Providing training to all site employees and subcontractors in regard to the WMP as detailed in section 4.6 below.
- Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised by a non-conformance report procedure. The offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractors' Quality Management Systems
- Retaining demolition and construction waste dockets to confirm and verify which facility received the material for recycling or disposal.

4.5 Training and Education

All site employees and sub-contractors will be required to attend a site specific induction that will outline the components of the WMP and explain the site specific practicalities of the waste reduction and recycling strategies outlined in the WMP.

All employees are to have a clear understanding of which products are being reused/recycled on site and where they are stockpiled. They are also to be made aware of waste reduction efforts in regard to packaging.

The site manager will post educational signage in relation the recycling activities on site in breakout areas, lunchrooms etc.

5. Waste Facilities

The following waste recycling facilities provide disposal options within reasonable distance to the project. It is the responsibility of the site manager to ensure that the chosen facilities can accept the material being sent to it.

Bingo Recycling Centre - Auburn

Contact	Materials Accepted
3-5 Duck St, Auburn https://www.bingoindustries.com.au/recycling-centres/recycling-centres-sydney-and-surrounds/auburn	• Aluminium Scrap, Iron & Steel, Other Metals • Bricks • Cement • Ceramics/ tiles • Plasterboard

Concrete Recyclers - Camellia

Contact	Materials Accepted
Thackeray St, Camellia, NSW https://concreterecyclers.com.au/	• Concrete • Bricks • Ceramics/ Tiles

Sydney Transwaste Industries – Homebush West

Contact	Materials Accepted
160 Arthur Street, Homebush West, NSW http://www.transwaste.com.au/	• Asbestos • Concrete • Bricks • Garden Cuttings