



TAFE Meadowbank

Phase 2.1

Combined Multi-Trades and
Digital Technology Hub

Construction & Demolition
Waste Management Plan
TAFE Meadowbank
September 2019

Table of Contents

1. Introduction.....	3
2. Site Overview	4
3. Waste Management Strategy	5
3.1 Waste Management Principles	5
3.2 Record Keeping	6
3.3 Materials Storage	6
3.4 Liquid Waste	6
3.5 Asbestos.....	6
4. Demolition Phase – Materials Streams.....	7
5. Construction Phase – Materials Streams	9
6. Work Plan	10
7. Contractor Management	11
8. Training and Education.....	11

1. Introduction

This Construction and Demolition Waste Management Plan for Phase 2.1 of the TAFE Meadowbank Education Precinct development has been prepared by Waste Audit & Consultancy Services (Aust) Pty Ltd for Gray Puksand and TAFE Meadowbank to provide guidance regarding the management of waste materials during the demolition and construction phases of the proposed development.

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

- To minimise the generation of waste to landfill
- To maximise waste avoidance and reuse of materials on site
- To ensure that an efficient recycling procedure is applied to waste materials
- To make employees and subcontractors aware of their waste management responsibilities

Preparation of this Demolition Waste Management Plan has been undertaken with reference to the relevant SEARs requirements, as well as industry best practices.

In particular, compliance with *Australian Standard AS2601: The Demolition of Structures* is required under the Environmental Planning and Assessment Regulation 2000, which:

- Sets out requirements for the planned demolition of buildings and certain other structures so that the risk of injury to workers, other site personnel and the public, and the risk of damage to adjacent property and the immediate environment is minimised;
- Covers the methods and safety procedures applicable to demolition work in general as well as procedures for some types of structures;
- Deals with manual and mechanical demolition techniques including those employing specialised earth-moving type machinery;
- Includes appendices covering the demolition of pre-stressed concrete structures, some contractual considerations, a checklist for contractors and qualifications for site personnel;
- Addresses safety and health issues under the headings of:
 - Health and safety of the public - covering general requirements, lighting, falling materials, fencing, hoardings and warning notices, scaffolding, overhead protection for footpaths, and hazardous materials and conditions;
 - Health and safety of site personnel - covering general safety, personal protective clothing and equipment, cutting and welding, fire protection, first aid, amenities, removal of hazardous material and electrical safety;
 - Protection of adjoining buildings and protection of immediate environment - covering requirements relating to access and egress, damage and structural integrity, vibration and concussion, weatherproofing, burning, dust control, noise control, protection of public roads and protection of sewers and water courses; and
 - General protection of the site.

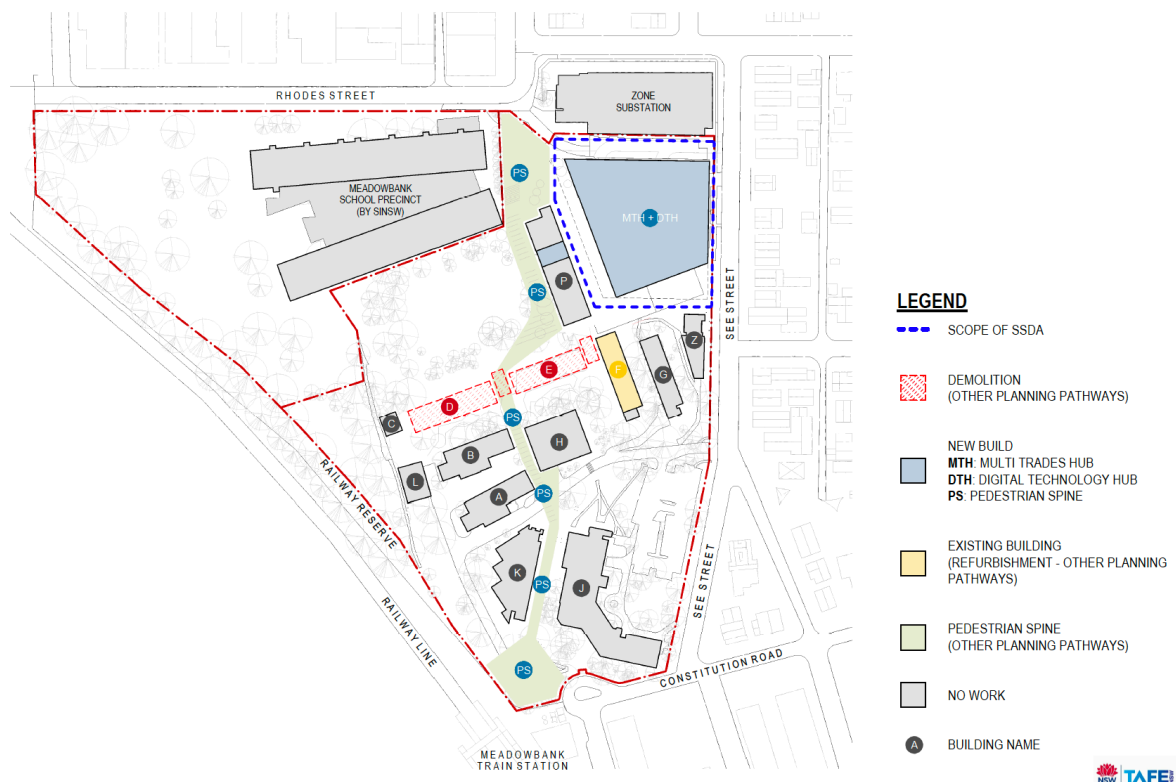
Section 143 of the *Protection of the Environment Operations Act 1997* requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site's developer to ensure that all contractors:

- Provide details of their operating licence to transport waste
- Clearly specify where all wastes are to be transported
- Confirm the capacity of the nominated facilities to receive/manage the waste;
- Retain demolition, excavation, and construction waste/recycling dockets on site to confirm which authorized waste/recycling facilities received the material for recycling and disposal; and
- Provide reports on management aspects (types, quantities and disposal pathways).

Note: The testing and classification of any excavated material is not covered in this report. Where necessary, the development's managers will arrange for separate specialist testing to be conducted. If acid sulphate soils are present on site, a separate management plan will need to be prepared for the handling and disposal of such soil.

2. Site Overview

An overview of the site, indicating the demolition and construction areas, is shown below:



An aerial photograph of the main demolition site and surrounds is shown below:



The main structures to be demolished are as follows:

- An above ground car park and associated infrastructure (lighting, barriers, boom gates etc.)
- A childcare centre
- An electrical substation
- Non-significant vegetation
- Buildings D & E

3. Waste Management Strategy

3.1 Waste Management Principles

The following waste hierarchy has been used to guide the demolition waste management plan:



Avoid

Adopt sound work practices during the demolition process that avoid the creation of waste products in the first place

Reduce

Reduce the use of materials during the demolition process that require treatment or disposal

Reuse

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

- Identify and put systems in place to separate and store materials that can be reused onsite
- Identify the potential applications for reuse offsite and facilitate this process

Recycle/Recover

Identify all recyclable waste products to be produced on site:

- Provide systems for separating and stockpiling of recyclables
- Provide clear signage to ensure recyclable materials are separated
- Process the material for recycling either onsite or offsite

Note: In some cases it may be more economical to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location.

Treat/Dispose

Waste products which cannot be reused or recycled will be removed and treated/disposed of at appropriately licensed facilities, ensuring the following:

- Chosen waste disposal contractor complies with OEH requirements
- Bins to be monitored for fullness and collected on an efficient schedule minimising transport

3.2 Record Keeping

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.

These records will be made available to the relevant authorities on request.

3.3 Materials Storage

All waste and recycling materials will be stored in bins provided by the appointed contractor(s). These bins will be appropriately coloured and signed to indicate what materials are to be deposited into them and located so as to maximise the recovery of reusable/recyclable materials.

3.4 Liquid Waste

- 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

3.5 Asbestos

While materials that may contain asbestos were not tested, should any materials be suspected of being (or containing), asbestos, the following process will apply.

The process for managing what has initially been suspected of being, or containing, asbestos waste is as follows¹:

- 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, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must be securely packaged at all times.
- Friable asbestos material must be kept in a sealed container.
- Asbestos-contaminated soil must be wetted down.
- All asbestos waste must be transported in a covered, leak-proof vehicle.
- It is illegal to re-use, recycle or dump asbestos waste.

¹ Alternatively, any material suspected of being asbestos can simply be classified as such, and then managed accordingly.

4. Demolition Phase – Materials Streams

The table below shows materials streams expected to be generated during the demolition process for the existing structures on site listed in Section 2.

Specific disposal/recycling facilities are not shown, as a waste 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, in order to ensure the guiding principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved.

The following table details the estimated quantities in m³ of demolition waste to be generated, and the recommended management strategy for each type of material.

Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excavation Material	50,850 m ³	Retained onsite for reuse as fill where possible	For excavation materials leaving the site, collected and used as clean fill by waste contractor with notification of location	Material that cannot be reused will be disposed of at landfill facility
Bitumen	1,370 m ³	No onsite reuse	Collected by contractor and taken to recycling facility	No disposal to landfill
Bricks (Structural brickwork, paving)	330 m ³	Separated on site and crushed for use in pavement and/or temporary access road construction	Acceptable quality bricks collected by contractor for reuse. Unusable bricks collected and recycled at recycling facility to be used in aggregate gravel products	No disposal to landfill
Vegetation	200 m ³	Mulched on-site and reused for landscaping	Mulched offsite if onsite treatment is not feasible	No disposal to landfill
Concrete	170 m ³	Separated on site and crushed for use in paving and/or temporary internal road construction	Collected by contractor and taken to recycling facility	No disposal to landfill
Metals (Various-fencing, roofing, fixtures, poles, signage, frames)	155 m ³	No onsite reuse	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
Carpet	75 m ³	No onsite reuse	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
PVC Electrical Piping (From carpark excavation)	75 m ³	No onsite reuse	Collected by contractor and taken to recycling facility	No disposal to landfill
Plasterboard	70 m ³	No onsite reuse	Material to be separated and stockpiled onsite and collected by the waste contractor for recycling. Possible use as soil improver with gypsum etc. removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Ceiling Tiles	70 m ³	No onsite reuse	Material to be separated and stockpiled onsite and collected by the waste contractor for recycling	Material that cannot be recycled will be disposed of at landfill facility

Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Misc. General Waste	70 m ³	No onsite reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for disposal	Disposal to landfill
Wood	60 m ³	Retained onsite for reuse in construction work	Material to be separated and stockpiled onsite for reuse	No disposal to landfill
Electrical Cabling (From carpark excavation, building demolition)	50 m ³	No onsite reuse	Collected by contractor and taken to recycling facility	No disposal to landfill
Hazardous Materials (from substations)	48 m ³	No on-site reuse; all materials to be treated as hazardous waste to likelihood of contamination – will be taken to a specialised treatment facility for treatment		
Light Fixtures (From carpark, building demolition)	32 m ³	No on-site reuse	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
Electrical Fixtures (From carpark, building demolition)	19 m ³	No on-site reuse	This will be disposed of into a designated bin and collected for recycling if of the required quality, or disposal to landfill if not	Material that cannot be recycled will be disposed of at landfill facility
Glazing	12 m ³	No on-site reuse	Recyclers consulted re: potential for recycling, possibly as road base; windows should be removed intact as there is a higher potential for them to be reused	No disposal to landfill
Cardboard Packaging (From Deliveries)	10 m ³	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
Bathroom Tiles	9 m ³	Separated on site and crushed for use in pavement and/or temporary access road construction	Collected by contractor and disposed of at recycling facility or sold for reuse, if of sufficient quality	Material that cannot be reused will be disposed of at landfill facility
Window Blinds	1 m ³	Reused on site if still in good condition	Collected by contractor and disposed of at recycling facility or reused, if of sufficient quality	Material that cannot be reused will be disposed of at landfill facility
Shade Cloths	1 m ³	Reused on site if still in good condition	Collected by contractor and disposed of at recycling facility or reused, if of sufficient quality	Material that cannot be reused will be disposed of at landfill facility
TOTAL VOLUME OF MATERIALS	56,382 m³			
POTENTIAL RECOVERY	50,744 m³			

In total, the development's demolition phase will produce around **56,382 cubic metres** of waste materials, of which **at least 90%** should be able to be diverted from landfill disposal, either by being reused on or off site, or recycled off-site at a specialised facility.

5. Construction Phase – Materials Streams

The table below shows materials streams expected to be generated during the construction process. Specific disposal/recycling facilities have not been shown, as a waste contractor has not yet been appointed for the project.

All waste contractors and sub-contractors, once appointed, will be required to detail all intended and actual disposal facilities used, in order to ensure the guiding principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved.

The following table details the estimated composition by m³ of construction waste to be generated, and the recommended management strategy for each type of material.

Materials on Site		Destination		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse or Recycle)	Offsite (Reuse or Recycle)	Disposal (Landfill)
Concrete (Excess)	10 m ³	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
Floor Coverings	2 m ³	No on-site reuse	Disposed of into a designated bin and collected for recycling if of the required quality, or disposal to landfill if not	Material that cannot be recycled will be disposed of at landfill facility
Metal Offcuts, Roof Sheeting, Wiring, etc.	4 m ³	No on-site reuse	Collected by specialist metal subcontractor for separation into different metal types for recycling	No disposal to landfill
Used Pallets	20 m ³	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Timber Offcuts	10 m ³	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	10 m ³	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
Paper/Cardboard Recycling	20 m ³	Reuse cardboard boxes for storage where possible	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
Glass (Excess)	2 m ³	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
Mixed Recyclables	2 m ³	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
General Waste (All Other Materials)	5 m ³	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for disposal	Disposal to landfill

In total, the development's construction phase will produce around **85 cubic metres** of waste materials, of which **over 90%** should be able to be diverted from landfill disposal, either by being reused on or off site, or recycled off-site at a specialised facility.

6. Work Plan

The following summarises the principles for the Work Plan to be provided for demolition activities for the development; a comprehensive Work Plan will be developed and submitted to the relevant authorities after the demolition contractor(s) have been appointed.

Following this appointment, more detail as to the demolition process will be known, and this will be evaluated to ensure that all applicable requirements are met. It will be a condition of appointment that the contractor(s) will develop a Work Plan and the requirement for submitting it following the appointment should be conditioned in the DA for lodgment with the reviewing authority.

A copy of AS 2601-2001 *The Demolition of Structures* will be kept on site, and during site induction all workers will be advised as to the requirements contained within the Standard.

It is recommended that the following requirements are included in the Work Plan:

Proposed Demolition Methods

- The contractor will be required to detail all machinery that will be used on-site as well as for transporting materials off-site, including vehicles to be used by waste/recycling contractors
- All operators of machinery will be required to provide evidence of licences and insurances to operate machinery
- All machinery will have to be demonstrated to be in good working order
- Safe work method statements will be required for all aspects of the demolition

Estimated Time for Work to be Completed

It is difficult to state with accuracy the actual time for the demolition activities to occur (i.e., be completed), due to issues such as weather and other unforeseen issues. Once the contractor(s) have been appointed a timeframe for demolition activities will be developed.

Hours of Operation

Hours of all demolition activities will be restricted to what is required by the City of Sydney and any other relevant obligations.

There are a large number of residences in close proximity to the site, so all contractors will be required to ensure that hours of operation, noise, dust and other adverse impacts, do not cause nuisance to these other premises.

Sediment Control Measures

All drains located on or off-site that could have any sediment flow to them will be protected by bunding. The type of bunding used will depend on the location.

Contractors will be responsible for undertaking activities that minimise sediment generation and this will be required to be included in their Work Plan as to the methodologies to be used. All measures used for sediment control will be inspected daily.

Site Access

The site will be protected by fencing, and all gates locked when the site is not occupied. Access during working hours will be controlled by a gatekeeper, and there will be clearly signed and controlled entry and exit points. Site access will only be granted to those who have attended site induction and/or required to be on site due to their employing organisations' requirements (e.g., City of Sydney or WorkCover officers).

7. Contractor Management

Each subcontractor working on the site will be required to adhere to this Waste Management Plan.

The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure any waste that is created will be actively managed and where possible recycled, as part of the overall site recycling strategy or separately
- Ensures that the right quantities of materials are ordered, minimally packaged and where practical pre-fabricated, and any oversupplied materials are returned to the supplier
- 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
- Engaging qualified contractors to remove waste and recycling materials from the site
- Coordinating subcontractors to maximise on site reuse of materials
- Regular monitoring of bins by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the correct location for recycling and stockpiling, and that each bin/skip/stockpile is clearly signposted
- Providing training to all site employees and subcontractors in regard to the WMP as detailed in Section 7 below

Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised through a non-conformance report and 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 Contractor's Quality Management System.

8. Training and Education

All site employees and sub-contractors will be required to attend an 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, and are also to be made aware of waste reduction efforts in regard to packaging.

This report has been prepared by:

Peter Hosking



Director
Waste Audit & Consultancy Services (Aust) Pty Ltd
September 6, 2019