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Demolition and Construction Waste Management Plan

The Maltings: 2 Colo Street, Mittagong

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This report contains confidential information. It has been compiled by Waste Audit and Consultancy Services (Aust) Pty Ltd on behalf of Colliers for the The Maltings: 2 Colo Street, Mittagong development.

This Waste Management Plan is not a substitute for legal advice on the relevant environmental legislation, which applies to Colliers, its contractors or other bodies. Accordingly, Waste Audit and Consultancy Services (Aust) Pty Ltd 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 Waste Audit and Consultancy Services (Aust) Pty Ltd.'s negligence.

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1 Introduction

This Construction Waste Management Plan (CWMP) has been prepared by Waste Audit & Consultancy Services (Aust) Pty Ltd ('Waste Audit') on behalf of Colliers for the proposed development at The Maltings: 2 Colo Street, Mittagong to ensure that all waste resulting from construction and 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 and Construction Waste Management Plan has been undertaken with reference to industry best practices. 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 authorised waste/recycling facilities received the material for recycling and disposal.
- Provide reports on management aspects (types, quantities, and disposal pathways).

2 Existing Structures on Site

The proposed works aim to transform a heritage site into a hotel and cultural facility. The site, shown in Figure 1, is proposed to consist of approximately 10,101 m2 of Gross Floor Area (GFA).

Figure 1 Future Construction Site

3 Waste Management Strategy

The waste management hierarchy below (Figure 2) has been used to guide the waste management plan:

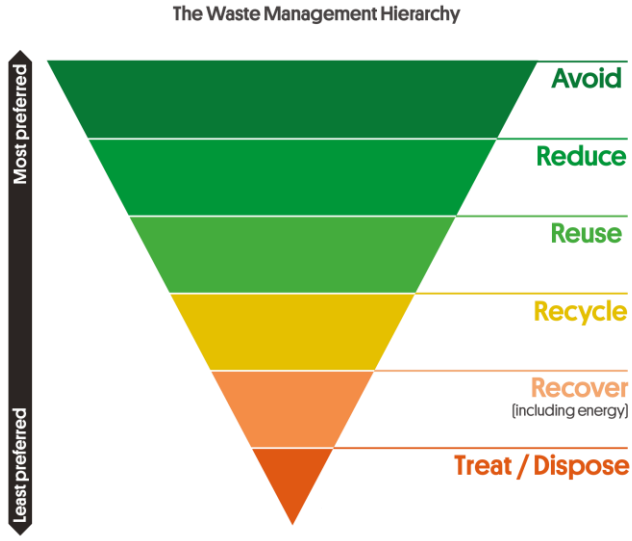

Figure 2 Waste management hierarchy

Estimates of the volumes of waste expected to be produced by demolition and construction of the existing building are based on these parameters.

Avoid:

Adopt sound work practices during the demolition and construction processes 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:

- Implement systems 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.

3.1 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 relevant authorities on request.

3.2 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 to maximise recovery of reusable/recyclable materials.

3.3 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.

3.4 Asbestos

The general management process for materials suspected of containing asbestos is:

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 accidently 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 licensed contractor will be used to manage the removal of any asbestos-contaminated soil and other material contained in the buildings.

There are strict regulatory requirements under Clause 42 of the Protection of the Environment Operations (Waste) Regulation 2005 that apply to management of asbestos waste, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must be always securely packaged.
- 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.

4 Demolition Phase

Table 1 shows estimated quantities in m3 of demolition waste to be generated, and the recommended management strategy for each type of material. It is recommended that opportunities for reusing this material either on site or at an off-site location, or locations, be further investigated.

Table 1 Estimated Quantities in m3 of Generated Demolition Waste.

Materials on Site			Destination		
Type of Material & Generation Factor	**Estimated Volume (m3)**	**Estimated Kilogram (kg)**	**Onsite (Reuse or recycle)**	**Offsite (Reuse or recycle)**	**Disposal (Landfill)**
Excavation Materials 1,113 kg/m3	0.00	-	No onsite reuse or recycling	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Pallets/ Timber Offcuts 156 kg/m3	8.00	1,248.00	Reused on site for storage 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
Tree/ Garden Organics 231 kg/m3	1.00	231.00	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Plastic/ Recyclables 63 kg/m3	3.00	189.00	No onsite reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for recycling	No disposal to landfill
General Waste (All Other Materials) 150 kg/m3	2.86	429.00	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for disposal	Disposal to landfill

Materials on Site			Destination		
Type of Material & Generation Factor	**Estimated Volume (m3)**	**Estimated Kilogram (kg)**	**Onsite (Reuse or recycle)**	**Offsite (Reuse or recycle)**	**Disposal (Landfill)**
Concrete 998 kg/m3	9.00	8,982.00	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
Plasterboard Offcuts 220 kg/m3	4.00	880.00	No onsite reuse	Separated and stockpiled onsite and collected by contractor for recycling. Possible use as soil improver with gypsum removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Structural steel 900 kg/m3	10.00	9,000.00	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Ductwork, Lighting Fixtures, Wiring, Pipework 113 kg/m3	3.00	339.00	No onsite reuse	Collected by specialist metal subcontractor for separation into different metal types for recycling	No disposal to landfill
Carpet/ Flooring 300 kg/m3	2.00	600.00	No onsite reuse or recycling	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
Plumbing Pipework, Fixtures 225 kg/m3	4.00	900.00	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill

Materials on Site			Destination		
Type of Material & Generation Factor	**Estimated Volume (m3)**	**Estimated Kilogram (kg)**	**Onsite (Reuse or recycle)**	**Offsite (Reuse or recycle)**	**Disposal (Landfill)**
Bathroom/ Floor Tiles 1,467 kg/m3	0.00	-	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
Glass 5,625 kg/m3	0.70	3,937.50	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
TOTAL VOLUME OF MATERIALS	**47.56 m^3**	**26,735.5 kg**			
POTENTIAL RECOVERY	**>90 %**		**Total mass recovery potential is 26,306.5 kg**		

In total, the development's demolition phase will produce around 26,735.5 kg of waste materials, of which over 91% by volume can potentially be diverted from landfill if the demolition process is properly managed.

5 Construction Phase

Table 2 shows estimated quantities in metres cubes (m^3) of construction waste to be generated, and the recommended management strategy for each type of material. Please note that this phase includes excavation for the proposed development, which will produce a significant volume of material requiring disposal.

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

Table 2 Estimated Quantities in m^3 of Generated Construction Waste.

Materials on Site			Destination		
Type of Material & Generation Factor	**Estimated Volume (m3)**	**Estimated Kilogram (kg)**	**Onsite (Reuse or recycle)**	**Offsite (Reuse or recycle)**	**Disposal (Landfill)**
Excavation Materials 1,113 kg/m3	17.00	18,921.00	No onsite reuse or recycling	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Pallets/ Timber Offcuts 156 kg/m3	3.00	468.00	Reused on site for storage 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
Tree/ Garden Organics 231 kg/m3	5.00	1,155.00	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Plastic/ Recyclables 63 kg/m3	3.00	189.00	No onsite reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for recycling	No disposal to landfill
General Waste (All Other Materials) 150 kg/m3	3.50	525.00	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for disposal	Disposal to landfill
Concrete 998 kg/m3	5.00	4,990.00	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

Materials on Site			Destination		
Type of Material & Generation Factor	**Estimated Volume (m3)**	**Estimated Kilogram (kg)**	**Onsite (Reuse or recycle)**	**Offsite (Reuse or recycle)**	**Disposal (Landfill)**
Plasterboard Offcuts 220 kg/m3	2.00	440.00	No onsite reuse	Separated and stockpiled onsite and collected by contractor for recycling. Possible use as soil improver with gypsum removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Structural steel 900 kg/m3	8.00	7,200.00	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Ductwork, Lighting Fixtures, Wiring, Pipework 113 kg/m3	1.50	169.50	No onsite reuse	Collected by specialist metal subcontractor for separation into different metal types for recycling	No disposal to landfill
Carpet/ Flooring 300 kg/m3	0.80	240.00	No onsite reuse or recycling	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
Plumbing Pipework, Fixtures 225 kg/m3	2.50	562.50	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Bathroom/ Floor Tiles 1,467 kg/m3	0.35	513.45	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
Glass 5,625 kg/m3	0.60	3,375.00	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill

Materials on Site			Destination		
Type of Material & Generation Factor	Estimated Volume (m3)	Estimated Kilogram (kg)	Onsite (Reuse or recycle)	Offsite (Reuse or recycle)	Disposal (Landfill)
TOTAL VOLUME OF MATERIALS	52.25 m^3	38,748.45 kg			
POTENTIAL RECOVERY	>90 %		Total mass recovery potential is 38,223.45 kg		

In total, the development's construction phase will produce around 38,748 kg of waste materials, of which over 95% by volume can potentially be diverted from landfill if the demolition process is properly managed.

Wingecarribee Shire Council aims to divert 90% of waste from construction and demolition activities from landfill. Large portion of the waste materials come from excavation; the rest of the waste materials will be generated during the actual construction. In total, the development will produce 65,484 kg of waste materials, of which over 93.62% by volume 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.

Table 3 shows the total estimates of materials used and recovered from the demolition and construction phase of this project.

Table 3 Summary Material Recovery from Project

Total Mass of Demolition and Construction Waste Materials	**65,484 kg**
Total Potential Recovery of Demolition and Construction Waste Materials	**64,529 kg**
Estimated Total Recovery by Volume	**93.62%**

6 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 prefabricated, 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 regarding 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.

7 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 regarding packaging.