BAULDERSTONE

PRELIMINARY WASTE MANAGEMENT PLAN

Barangaroo Central
Waterfront Promenade and Interim Public Domain Works

Client: Barangaroo Delivery Authority

Document Number: PLAN-CT-002

Rev #	Date	Description of Change
0	10-Oct-12	Initial issue

APPROVALS	Prepared by: Stuart HILL Planning Manager	Stuart Hill.	11/10/12
	Reviewed by: Michael SEIBEL Systems Manager		11/10/12
	Approved by: Barry MURPHY Project Director		12/10/12

Table of Contents

Terms used in this document

ACM	Asbestos containing materials
BDA	Barangaroo Development Authority
DGRs	Director-General's Requirements
DP&I	NSW Department of Planning and Infrastructure
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EPL	Environment Protection Licence
MSDS	Material Safety Data Sheet
OEH	Office of Environment and Heritage
PCB	Polychlorinated Biphenyls
PWMP	Preliminary Waste Management Plan
SEPP	State Environmental Planning Policy
SSDA	State Significant Development Application
SWMS	Safe Work Method Statement

1. INTRODUCTION

1.1 BACKGROUND

It is envisioned that the Barangaroo site be developed into an actively diverse cultural and civic centre. The Barangaroo site is divided into three distinct venues, being Headland Park at the northern end, Barangaroo Central and Barangaroo South. Across these venues a mix of land use including residential, retail, commercial, leisure and community purposes is planned.

The Barangaroo Central Waterfront Promenade and Interim Public Domain ("the Project") is the first phase in the development of the Barangaroo Central site, with works planned for completion in 2015. The project broadly comprises:

- Waterfront promenade - including paving, planting, furniture, lighting signage, a public wharf and water taxi pontoon, provision for the berthing of ships during special events and a low level timber board walk.
- Interim public domain – construction and use of a flexible public space to accommodate a range of temporary and long-term uses, including passive recreation and organised events. The site would be graded to the northwest with a fall of 2 per cent to create a naturalised amphitheatre.
- Structural works – allowing the existing seawall structure to link the Barangaroo Headland Park with Barangaroo South.
- Remediation - remediation and management of contaminated soil and groundwater would be undertaken to a level that supports the intended use of the site.
- Demolition – dismantling of the Interim Cruise Passenger Terminal and associated services. Dismantling of all fencing and kerbs, light poles and traffic signage. Demolition and disposal of above ground temporary water service and fire hydrant lines and equipment.

Barangaroo Central is part of the broader Barangaroo site, which is a State Significant Development site under Schedule 2 of the State Environmental Planning Policy (State and Regional Development) 2011 ("State and Regional Development SEPP"). As the proposed public domain works have a capital investment value of more than $10 million, the State and Regional Development SEPP requires that a State Significant Development Application (SSDA) and accompanying Environmental Impact Statement (EIS) be prepared for the project.

In July 2012, a request for Director-General's Requirements (DGRs) for an environmental Impact Statement was lodged with the Department of Planning and Infrastructure (DP&I). The Department issued DGRs on 31 July 2012.

1.2 PURPOSE

This document is a Preliminary Waste Management Plan (PWMP), which has been prepared to ensure best practice and legislative compliance in the management of waste materials. It aims to guide the assessment, and where possible, reduction of waste produced during construction, maximise resource recovery opportunities, and indicate how waste will be managed, tracked and reported.

It also specifically responds to the DGRs, specifically DGR No.15 which states.

16. Waste Management

- *Provide details of the scheduled, liquid and non-liquid wastes; and quantities, storage, treatment and disposal or re-use of waste generated.*

1.3 DOCUMENT STRUCTURE

The structure of this document is as follows:

- Introduction, background and purpose (this section).
- Goals, outcomes and key issues (Chapter 2) – Sets the goals and design outcomes for the management of waste. Reviews the key waste management issues for the proposal.
- Regulatory framework (Chapter 3) – Explains the regulatory framework within which waste must be managed.
- Waste minimisation and management (Chapter 4) – identifies waste streams and explains the approach to waste minimisation and management.
- Monitoring and reporting (Chapter 5) – explains the measures to be implemented to ensure that waste management performance is properly monitored and reported to relevant parties.

2. GOALS, OUTCOMES AND KEY ISSUES

2.1.1 GOALS

The following waste management goals have been adopted:

- To adopt the reduce, reuse, recycle, dispose hierarchy.
- To minimise the use of non-sustainable resources.
- To minimise impacts from waste generation.
- To ensure that all project personnel are aware of the importance of sound waste management practices and the actions they can take.

2.2 OUTCOMES

The following are the expected waste management outcomes:

- Achieve a > 90% waste by weight diversion from landfill.
- Achieve <5% contamination of recyclable waste streams.
- Food waste separated at source and composted at off-site food waste recycling facility.
- All concrete re-used on site.
- No removal of clean spoil or soils from the construction site.
- Educate all project personnel on waste management principles and implementation.

2.3 KEY ISSUES

The following have been identified as key waste management issues for the project:

Separation and Management of Waste Streams

The effective separation of waste streams is a key strategy to minimise waste disposal to landfill and maximise the recovery of resources. Individual waste streams have been identified, (with approximate quantities estimated for each stream), storage and handling requirements determined, and where possible, the destination of waste (for reuse, recycling or disposal) identified.

Wastewater

This includes excess surface water and/or groundwater as well as wastewater from site amenities.

Materials unsuitable for reuse

Materials that do not meet the Site Acceptance Criteria set by the Remedial Action Plan or which are otherwise unsuitable for geotechnical reasons, need to be managed according to their classification.

Procurement

Purchase of construction materials and other project requirements throughout the project would be from preferred suppliers. Wherever possible, agreements would be made with suppliers to take back excess packaging and empty drums.

3. REGULATORY FRAMEWORK

The statutory and policy framework for the management of waste is described below.

3.1 RELEVANT LEGISLATION

Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* establishes the waste hierarchy to ensure that resource management options are considered against the following priorities:

1. Avoidance – actions to reduce the amount of waste generated and undertaking activities;
2. Resource Recovery – which includes reuse, reprocessing, recycling and energy recovery, consistent with the most efficient use of the recovered resources; and
3. Disposal – an "end-of-pipe" option that must be carefully undertaken to minimise any negative environmental outcomes.

Protection of the Environment Operations Act 1997

All material to imported or exported from the project site (including associated activities such as classification) need to be undertaken in strict accordance with the requirements of the POEO Act 1997. Relevant requirements include ensuring:

- Waste is classified appropriately and in accordance with relevant guidelines.
- Waste materials are disposed of to appropriately licensed facilities; and
- Other materials are removed to facilities lawfully able to accept such materials.

Protection of the Environment Operations (Waste) Regulation 2005 and *POEO (General) Regulation 2009*

Sets out the types of waste to which waste tracking requirements apply. Includes special requirements relating to the transportation, collection, storage, or disposal of asbestos wastes.

Work Health and Safety Regulation 2011

WorkCover NSW regulates the management of asbestos waste at worksites under the current provisions of the *Work Health and Safety Regulation 2011*

3.2 RELEVANT POLICY AND GUIDELINES

NSW Waste Avoidance and Resource Recovery Strategy 2007

The NSW Government's priority areas and actions for waste avoidance and resource recovery are outlined in the *Waste Avoidance and Resource Recovery Strategy 2007*. The recycling targets in strategy have been adopted by *NSW 2021: A plan to make NSW number one*.

The four identified "key target areas" in the strategy are:

1. Preventing and avoiding waste;
2. Increasing recovery and use of secondary materials;

3. Reducing toxicity in products and materials; and
4. Reducing litter and illegal dumping.

Waste Classification Guidelines: Part 1: Classifying Waste

All wastes generated and proposed to be disposed off-site would be assessed, classified and managed in accordance with this guideline.

Working with asbestos (Workcover 2008) and Code of Practice for the Safe Removal of Asbestos, 2nd Edition (NOHSC 2005).

Reference and guidance for the management of asbestos.

4. WASTE MINIMISATION AND MANAGEMENT

4.1 IDENTIFICATION AND MANAGEMENT OF WASTE STREAMS

Details of waste streams, classifications, estimated waste quantities and storage / handling requirements are provided in Table 4-1.

Table 4-1 Identification and management of waste streams

Waste Stream	Classification	Estimated Quantities	Storage / Handling Requirements
Concrete Wastes (solids)	General Solid Waste (non-putrescible)	Up to 100 tonnes 2 tonnes crushed per day	Reused in temporary works or site levelling where practicable (following crushing and grinding where appropriate), or sent off site for recycling as building and demolition waste.
Scrap metal	General Solid Waste (non-putrescible)	< ton / month	Off-site recycling.
Sanitary wastes where sewered facilities unavailable	Liquid waste	Unknown	Licenced contractor.
Organic food scraps	General Solid Waste (putrescible)	Up to 5 240L bins / week	Off-site to licenced landfill with other non-recyclable municipal waste.
Food packaging / cans / bottles / wrappers	General Solid Waste (non-putrescible)	Up to 5 240 L bins / week	Recyclables sorted for off-site recycling.
Paper and / or other office based wastes from onsite offices	General Solid Waste (non-putrescible)	Up to 5 240 L bins / week	Off-site recycling.
Asphalt	General Solid Waste (non-putrescible)	Unknown.	Reused in temporary works or site levelling where practicable, or sent off site for recycling or disposal.
Green waste	General Solid Waste (non-putrescible)	Unknown.	Green waste to external recycling centre.
Cables and parts	General Solid Waste (non-putrescible)	2 bins / year	Any metal components are to be segregated and the remainder taken off-site to landfill.
Timber	General Solid Waste (non-putrescible)	Unknown	Timber from formwork and other site uses. Preference to reuse /recycle at site or off site. Otherwise disposal according to classification.
Wood pallets	General Solid Waste (non-putrescible)	1-2 per month	Store in designated area for return to supplier (hired pallets) or for re-use. Broken pallets will be placed in general waste bin. If significant quantities of broken pallets or other waste wood is generated, a wood waste skip will be brought onto site and taken to green waste facility

Waste Stream	Classification	Estimated Quantities	Storage / Handling Requirements
			for chipping.
Sediment controls	General Solid Waste (non-putrescible)	Unknown	Reuse controls where possible on other sites or disposal off site by licenced contractor.
Sediment build up behind erosion and sediment control structures	General Solid Waste (non-putrescible)	Unknown	Respread on site, unless obvious contamination with hydrocarbons or other chemicals evident (by sight / smell).
Drums and containers (empty and containing no residue)	General Solid Waste (non-putrescible)	1-2 drums / month	Taken off-site by licenced contractor for suitable rinsing and disposal at licenced landfill.
Waste oil, grease, lubricants	Liquid waste	20 litres / day	Off-site recycling by licenced waste oil recycler.
Water (that is wastewater not treated on site by the water treatment plant or other site controls) from bunded areas	Liquid waste	Unknown	If water needs to be discharged from bunds, it will be examined for oil contamination. If clean, and the pH is between 6.5 and 8.5, it will be collected for re-use on site. If there is evidence of contamination, it will be stored in a container and taken to an appropriate liquid waste facility.
Soils contaminated by oils or other substances	General solid – hazardous	Minor spillages anticipated (quantity unknown)	Waste to be classified and disposed of at an appropriate waste facility (depending of level of contamination) Minor spills would be cleaned up immediately and the contaminated soil would be temporarily stored in metal containers with lid on, within a bunded area until removed.
Oily rags and filters	General Solid Waste (non-putrescible)	Unknown	Off-site recycling by licenced waste oil recycler where possible or disposal at licensed facility according to classification.
Used spill management materials such as absorbent pads / booms, used absorbent materials used to mop up oil spills / contaminated dirt from dripping machinery or other	General Solid Waste (non-putrescible)	Unknown	Taken off-site to licenced landfill.

Waste Stream	Classification	Estimated Quantities	Storage / Handling Requirements
hydrocarbon / chemical sources			
Plastic wrapping/containers– collected and littered	General Solid Waste (non-putrescible)	Unknown	Off-site recycling or landfill as appropriate
Printer Cartridges	Hazardous Waste	1 box/ month	Off-site recycling
Batteries (small appliances)	General Solid Waste (non-putrescible)	1 box / month	Battery recycling boxes will be provided in offices and these will be sent / picked up for recycling on an as-needs basis.
Medical waste	Special Waste (Clinical and related waste)	0.001 m^3 / month	Will be stored in a protected area and collected by waste contractors authorised to dispose of medical waste.

4.2 MANAGEMENT OF HAZARDOUS WASTE

4.2.1 APPROACH TO HAZARDOUS MATERIALS MANAGEMENT

A hazardous material is one that poses a hazard to human health or the environment when improperly handled, stored or disposed of. The hazard may arise from acute or chronic toxicity or carcinogenicity of the substance or its corrosive or flammable nature.

Hazardous materials that may be encountered during construction work can be broadly identified and categorised as solid, liquid or gaseous:

- Solid hazardous materials are normally associated with activities involving hazardous spoil, construction materials and explosives.
- Liquid hazardous materials comprise flammable and combustible liquids and toxic chemicals including pesticides, insecticides and liquefied gases, acids, solvents, lime and degreasing agents.
- Gaseous materials which may be hazardous are flammable gases, toxic gases and gaseous emissions from construction works.

Details related to a substance's physical properties, flammability, toxicity, special precautions, transport and storage are detailed in a Material Safety Data Sheet (MSDS).

Bunding and spill management would be undertaken in accordance with:

- Relevant legislation and Australian Standards.
- EPA 'Bunding and Spill Management Guidelines'.
- WorkCover requirements and guidelines.

A current MSDS would be made available for any hazardous substance or dangerous good stored and handled at the premises. Controls detailed in the MSDS will be recorded in the Safe Work Method Statement relating to the activity that involves the use of the substance.

A Hazardous Substance Register would be maintained for all hazardous substances used on the site. Containers would be labelled. Prior to bringing any hazardous material on to site, the licensing requirements to store the material would be determined from the:

- Australian Standard for storage and handling of Hazardous Substances (AS1940-2004).
- Australian Dangerous Goods Code.
- Relevant MSDS.

A risk assessment will be performed on the use and disposal of the material, and the appropriate controls implemented.

4.2.2 SPECIFIC HAZARDOUS MATERIALS

Asbestos

Any asbestos containing materials would be disposed in accordance with the *Waste Classification Guidelines: Part 1: Classifying Waste* under which stabilised asbestos waste is classified as "Special Waste".

When conducting demolition works, contractors and site workers would be inducted on risks associated with asbestos containing materials (ACM). ACM would be managed in accordance with the *Work Health and Safety Regulation 2011* and the National Occupational Health & Safety Commission (NOHSC) publication *Asbestos - Code of Practice and Guidance Notes* (2005), which requires that a licensed contractor be employed to undertake the works.

Synthetic Mineral Fibres

There are unlikely to be any significant quantities of materials containing synthetic mineral fibres encountered during the works. However, should synthetic mineral fibre materials be disturbed within areas not previously identified, it should be managed in accordance with the National Occupational Health & Safety Commission (NOHSC) publication *Synthetic Mineral Fibres*. Disposal would be in accordance with *Waste Classification Guidelines: Part 1: Classifying Waste.*

Polychlorinated Biphenyls (PCB)

Should they be encountered during the project works, any capacitors would be handled and disposed of as containing PCBs. According to ANZECC (1997), PCB containing capacitors are to be placed in a polyethylene bay which then is to be placed in a sealable metal container. This container must be clearly marked with the details of the contents and must be maintained in good order (that is, no visible signs of damage or corrosion). If some of these materials are leaking, the container should be partially filled with an absorbent material, such as a commercial absorbent, kitty litter or a diatomaceous earth. Waste removal should be consistent with relevant state and commonwealth regulatory requirements.

Lead

During the demolition works, any identified lead paint would be managed in accordance with AS 4361.2 *Guide to Lead Paint Management Part 2: Residential and Commercial Buildings*. Contractors and workers should be inducted on risks associated with lead paints and any removal work would be organised so that it is undertaken at hours when exposure to others is minimised. Information on lead hazards and training on safe work practices would be given to all workers on site. Disposal would be in accordance with *Waste Classification Guidelines: Part 1: Classifying Waste.*

4.2.3 TRANSPORTING DANGEROUS GOODS

All waste materials moving to and from site would be tracked using dockets and receipts. Only licensed transporters would be used to move and dispose of waste materials.

When transferring dangerous goods, measures would be taken to control spills, overflows and leaks, minimise static electricity and control vapour generation. If significant quantities are being transported, local authorities would be notified in case of an emergency situation or spill during transit.

4.2.4 STORING HAZARDOUS SUBSTANCES

All containers of hazardous chemicals including oil and fuel, would be stored in a bunded area so the capacity of the spillage containment compound is as follows:

- 0-10,000 - Volume of largest package plus 25%
- 10,001 – 100,000 L - Volume of largest package plus 10%
- Over 100,000 L Volume of largest package plus 5%

Or alternatively: 100% of largest container, or 10% of all containers in area with an additional 10% allowance

Other measures include:

- Where possible, the bunded area would be covered to prevent rain and water filling the area, resulting in additional treatment requirements during disposal and management of the storage areas.
- The storage area would be clearly signposted.
- Where the storage area is part of a building, ventilation would be provided at floor and ceiling levels, of an adequate size to allow circulation of air, as per AS1940.
- Storage areas would be kept locked at all times and secured against unauthorised access and potential theft.

- Where different substances are stored in the same room, the MSDS would be consulted prior to storage to verify compatibility of substances. A bunded floor liner may also be required to prevent seepage and spillage.
- Non-compatible dangerous goods would be stored separately so that loss of containment would not cause a dangerous situation.
- Where practicable, fuels and chemicals would not be stored or handled in the vicinity of natural or built waterways or water storage areas. All storage areas would be a minimum distance of 20 metres of natural or built drainage lines, flood prone areas or on slopes steeper than 1:10.
- All storage tanks containing hazardous substances would have the contents and volume clearly identified, be numbered if in a cluster, and have the appropriate Hazchem signs displayed to legislative requirements and AS 1319.
- Storage areas would be protected against damage from impact with vehicles, mobile plant etc.

In each area of the premises where dangerous goods are stored or handled, provision would be made for spill containment:

- Contain the spill of dangerous goods.
- Enable spilled or leaked dangerous goods and any solid or liquid effluent arising from the incident to be cleaned up and disposed of or otherwise treated.
- Appropriate workforce training would be provided for spill management and the use of spill response kits and supplies.
- Incident reporting procedures would be followed in the event of a spill.
- If sources of ionising radiation have been identified, they would be handled in accordance with the requirements of the relevant State radiation safety act and radiation safety regulations.

4.2.5 DISPOSING OF HAZARDOUS WASTE

All unused or excess chemicals and materials would be removed and disposed of in accordance with the MSDS and waste disposal guidelines. Disposal of containers as well as any unused contents would be tracked via the waste disposal processes.

5. MONITORING AND REPORTING

5.1 INCIDENT MANAGEMENT

The construction contractor will develop an Incident and Emergency Response Plan for the project. The plan will classify different types of incidents and prescribe corresponding processes and actions. Refer to Section 5.3 of the Preliminary Environment and Construction Management Plan.

5.2 REPORTING AND CORRECTIVE ACTION

The proposed approach to reporting and corrective action is reviewed in Table 5-1.

Table 5-1 Identification and management of waste streams

Item	Frequency	Applicable standards / goals	Reporting	Action if non-compliance detected
Waste management data – reuse, recycling and disposal	Continuous	> 90% waste by weight diversion from landfill	Use data from waste contractors monthly reports and Waste Management Register	Review and refresh awareness training
Major waste contractor to report unacceptable levels of waste stream contamination	Six monthly	< 5% contamination of waste stream overall	Reporting by contractor if waste stream contamination levels are unacceptable	Review and refresh awareness training Review adequacy of waste facilities and implement changes where required
Inspections for litter, unauthorised disposal of construction waste, contamination of waste streams and adequacy of capacity of waste receptacles	Daily	Inspections completed daily and weekly – identified issues fixed within one day	On inspection checklists (records to be kept). Non-conformance reports and associated corrective actions raised for major or ongoing breaches.	As above.
Inspections of contractors work areas to ensure appropriate separation of wastes and storage and bunding of chemicals, oils, waste oils etc.	Weekly	Inspections completed weekly – identified issues fixed within one week. Where there is risk of harm to the environment, storage and bunding of chemicals issues are to be resolved immediately.	On inspection checklists (records to be kept). Non-conformance reports and associated corrective actions raised for major or ongoing breaches.	Require storage and bunding issues to be resolved immediately. Stop work where noncompliance continues.
Tracking of wastes as required under EPA waste tracking requirements	Whenever wastes that require tracking are collected	All required wastes are tracked and records are kept	Retain records (receipts) of all waste that is required to be tracked. Report monthly.	Obtain records from contractors Require corrective action where records unavailable.
Waste reduction progress	Monthly	• Details of waste material	Waste reduction reports	Review construction methodology and

Item	Frequency	Applicable standards / goals	Reporting	Action if non-compliance detected
		by category e.g. concrete, soil, hazardous. • Estimated total waste including salvaged and recycled waste by category. • Actual total waste including salvaged and recycled waste by category. • Salvaged and recycled waste by category as a percentage of total waste.	to include all supporting documentation including tipping receipts and truck movement records to and from site.	procurement processes
Waste accountability	At the completion of the project	A report summarising data contained in the monthly waste reduction progress reports	The report to include, in addition to the summarised data from the monthly waste reduction reports, the name and location of all waste and recycling facilities used during the process, and quantities of all soil beneficially reusedas part of the project. Relevant supporting documentation to be captured in the report eg tipping receipts, truck movement records.	Lessons learnt for future subsequent Barangaroo stages
Independent waste management audit	Once during the project	The audit to review:	The audit reports to be provided to BDA.	Review waste management procedures and revise as necessary

Item	Frequency	Applicable standards / goals	Reporting	Action if non-compliance detected
		• records relating to monthly waste reduction reports. • monthly waste reduction reports and comparisons against disposal documentation. • waste classification data to assess compliance against the EPA Waste Guide. • Licenses held for each of the nominated waste recycling/disposal facilities to assess lawfulness to receive material. • details of incident reports / corrective action requests relating to waste.		