Lend Lease

One Sydney Harbour - State Significant Development 6960

Stage 1B Basement Barangaroo South - Construction Waste Management Plan

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Job number 222061-19

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1 Introduction

This Construction Waste Management Plan (CWMP) has been prepared in support of a State Significant Development Application (SSD 6960) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Development Application (DA) seeks approval for construction of the Stage 1B Basement and associated works at Barangaroo South as described in the Overview of Proposed Development section of this report.

The format of this document can assist the contractor to prepare a detailed Construction Waste Management Plan (CWMP), which will be required by the contractor to achieve a Construction Certificate prior to commencement of development activities.

In addition, this CWMP assesses the forecast construction waste associated with the construction of the Stage 1B basement.

1.1 Overview of Proposed Development

The Stage 1B Basement DA seeks approval for the construction of a four level basement to accommodate parking for the Stage 1B Residential Buildings (subject to separate SSD applications). The works include the excavation of rock, construction of basement structure, provision of common plant and services, loading docks, waste rooms and storage areas, as well as structural cores to the new ground floor level only and associated building services for the Stage 1B Residential Buildings. The proposed development also includes above ground elements such as temporary roads, car park & loading dock ramps and basement risers, temporary public domain and temporary landscaping works.

It is noted that site preparation works, including demolition, remediation and excavation of fill or contaminated rock, are covered under SSD 5897.

1.2 Site Location

Barangaroo is located on the north western edge of the Sydney Central Business District (CBD), bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and bounded to the south by a range of new development dominated by large CBD commercial tenants.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Barangaroo Reserve, Barangaroo Central and Barangaroo South.

The Stage 1B Basement DA Site area is located within Barangaroo South as shown in Figure 1. The Development Application Site is located on land generally known and identified in the approved Concept Plan MP06_0162 (as modified) as Blocks 4A and 4B and part of the public domain area between those blocks and Block 5.

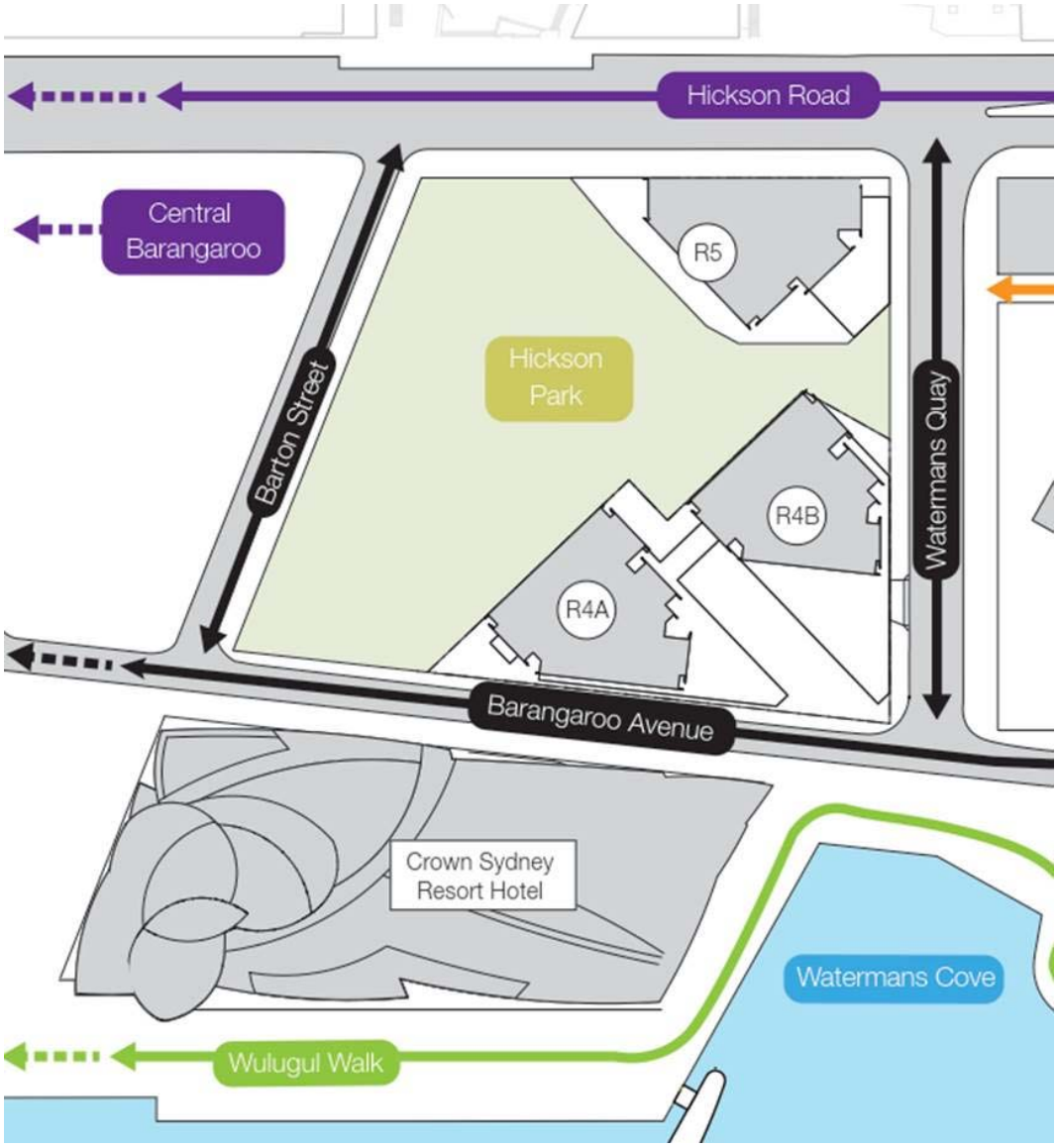


Figure 1 Site Location plan

2 Background

2.1 Scope of the Report

This CWMP has been prepared in support of a State Significant Development Application (SSD 6960) pursuant to Part 4 of the EP&A Act. This CWMP assesses the forecast construction waste associated with the construction of the Stage 1B basement.

Other works indirectly relating to this CWMP, and occurring within Barangaroo South include:

- Stage 1A Basement Construction
- C4 Commercial Building
- C3 Commercial Building
- C5 Commercial Building
- R8/R9 Residential Buildings
- Concrete Batch Plant Operation
- Block 4 remediation works
- Block 5 remediation works
- Hickson Road remediation works
- City Walk Bridge
- R1 Building
- R7 Building
- C2/C6 kiosk
- Crown Sydney
- Stage 1B basement
- Stage 1B residential towers (buildings R4A, R4B, R5)

This CWMP should be read in conjunction with the Waste Management Plan for Remediation and Landforming Works at Block 4 Barangaroo[1] and the Remedial Action Plan (RAP)[2] for the site and does not duplicate the detail of these documents.

The CWMP is a requirement for GreenStar and required by the Secretary's Environment Assessment Requirements (SEARs) for the project, included in a letter from NSW Planning and Environment.

[1] AECOM (2013), *Waste Management Plan, Remediation and Landforming Development Application SSD 5897 – 2013, Barangaroo Block 4, Hicksons Road, Millers Point, NSW*
[2] AECOM (2013), *Remedial Action Plan: NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW*

2.2 Construction Program

2.2.1 Barangaroo South Works

Table 1 below outlines the concurrent developments within the Barangaroo South site, noting the start and finish dates by annual quarters.

Table 1: Construction Details of Barangaroo South Works

Project	**Project Duration***		**Overlaps with Stage 1B works?**
	Start	***Finish***	
Stage 1a Basement Construction	Oct 2011	Sept 2015	✗
C3 Commercial Building	Mar 2014	Sept 2016	✗
C4 Commercial Building	May 2013	Oct 2015	✗
C5 Commercial Building	Oct 2013	Apr 2016	✗
C2 Building	Jul 2015	Sep 2016	✗
C1 Buildings	Nov 2016	Feb 2018	✗
R8/R9 Residential Buildings	Jun 2014	Nov 2015	✗
Batch Plant Operation	Sept 2013	Sept 2015	✗
Block 4 Remediation Works	Aug 2015	Nov 2017	✓
Block 5 Remediation Works	Nov 2015	Oct 2017	✓
Stage 1a Public Domain Works	Jul 2014	Mar 2016	✗
City Walk Link Bridge	Oct 2014	Jun 2015	✗
Building R1	Sep 2015	Jun 2016	✗
Building R7	Jul 2015	Apr 2016	✗
Stage 1C Remediation and Earthworks	Dec 2015	Mar 2018	✓
Crown Sydney	June 2016	Nov 2019	✓
Hickson Road Remediation	Nov 2016	Oct 2018	✓
Stage 1B basement	Jun 2017	Mar 2021	✓
Stage 1B residential towers	Dec 2019	Jul 2023	✓

** The above dates are indicative only and allow for future tenant fit out works within the individual buildings*

2.2.1 Works External to Barangaroo South

The construction staging for works external to the Barangaroo South site are outlined in Table 2 below.

Table 2: Construction Details of Works Adjacent to Barangaroo South

Project	**Project Duration**		**Overlaps with Stage 1B works?**
	Start	***Finish***	
Wynyard Walk Bridge	Apr 2013	Sep 2015	✗
Barangaroo Reserve Main Works	Apr 2013	Jul 2015	✗
Barangaroo Ferry Wharf	Aug 2015	Aug 2016	✗
Barangaroo Central – Waterfront Promenade	Mar 2014	Jul 2015	✗

3 Legislative and regulatory compliance

3.1 SEARs Requirements

Specific issues addressed in the report respond to the Secretary's Environmental Assessment Requirements (SEARs) in relation to waste management for the planning application, those being:

10. Waste Management

- *Identify all potential sources of liquid waste and non-liquid wastes as defined in the NSW EPA Waste Classification Guidelines 2014. The EIS should identify any waste that will be stored, separated or processed on the site and identify the procedures to be adopted to minimise, manage, dispose of this waste in accordance with the relevant standards and guidelines.*

12. Remediation and Contamination

- *Demonstrate compliance with the requirements of SEPP 55.*
- *If remediation works are required, the EIS must include a Remedial Action Plan (RAP). The RAP must be accompanied by a Site B audit statement prepared by an EPA accredited site auditor and the RAP must be prepared in accordance with the contaminated land planning guidelines under section 145C of the Environmental Planning and Assessment Act 1979 and relevant guidelines produced or approved under section 105 of the Contaminated Land Management Act 1997.*
- *The EIS must provide detailed justification for the preferred treatment methodology for contaminated material consistent with the RAP.*

Note that the Remedial Action Plan (RAP)[3] and the Waste Management Plan for Remediation and Landforming Works at Block 4 Barangaroo[4] address point 12 of the SEARs listed above. Point 10 is addressed throughout this CWMP.

3.2 Legislative and policy context

3.2.1 NSW Legislation

Protection of the Environment Operations Act, 1997

The *Protection of the Environment Operations Act 1997* covers the requirements for waste generators in terms of storage and correct disposal of waste and establishes the waste generator as having responsibility for the correct management of waste, including final disposal.

[3] AECOM (2013), *Remedial Action Plan: NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW*
[4] AECOM (2013), *Waste Management Plan, Remediation and Landforming Development Application SSD 5897 – 2013, Barangaroo Block 4, Hicksons Road, Millers Point, NSW*

Waste Avoidance and Resource Recovery Act 2001

The object of the *Waste Avoidance and Resource Recovery Act 2001* is to encourage the most efficient use of resources, to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development (ESD).

This CWMP relates to a new development in NSW and is therefore written with reference to the NSW, *Waste Avoidance and Resource Recovery Strategy 2014-21*, made pursuant to the Act.

The following hierarchy for managing waste, from most desirable to least desirable, meets the objects of the Act:

- Avoid unnecessary resource consumption;
- Recover resources (including reuse, reprocessing, recycling and energy recovery); and
- Dispose (as a last resort).

The Construction Waste Management Measures described in Section 5.6 of this CWMP are made with reference to the waste management hierarchy.

3.2.2 Guidelines

City of Sydney Policy for Waste Minimisation in New Developments 2005

The City of Sydney *Policy for Waste Minimisation in New Developments 2005* (CoS Waste Policy) supports the Department of Environment, Climate Change and Water's (DECCW) NSW *Waste Avoidance and Resource Recovery Strategy 2003*. This Waste Policy is the guiding document for many of the waste initiatives and requirements for the Barangaroo development.

3.3 Goals / Targets

3.3.1 Overall Project Commitments

Lend Lease is committed to minimising waste to landfill and greenhouse gas emissions associated with waste generation and movement of waste from the site.

The key commitments for construction waste are:

- 97% reduction of construction and demolition waste to landfill; and
- 65% reduction in greenhouse gas emissions compared to business as usual waste disposal.

These overall project commitments are applicable to the Stage 1B basement construction.

Prior to construction, the contractor will develop a detailed CWMP in order to achieve a Construction Certificate. The contractor CWMP will incorporate the Green Star requirements for waste diversion and set specific targets, monitoring

procedures and responsibilities to ensure that construction waste is minimised and diverted from landfill where ever possible.

3.3.2 Green Star Credit

Under the Green Star Office Rating Tool (V3) up to two points may be sought for the Man-7 credit, Waste Management. To obtain these points a contractor must:

- Implement a CWMP, retain waste records and present quarterly reports to the building owner; and
- Ensure a percentage (by mass) of all demolition and construction waste is reused or recycled as follows:

  - One point for 60% of the waste; and

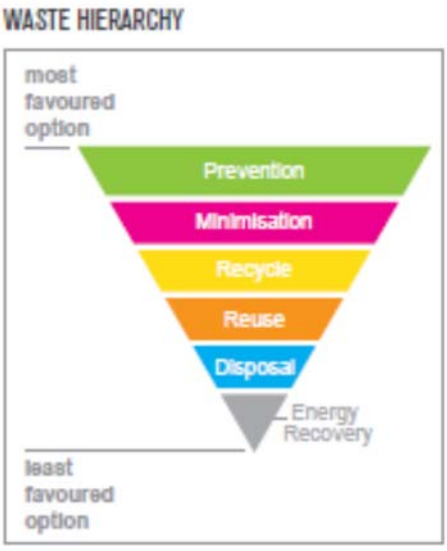
  - Two points for 80% of the waste.

The recycling percentage targets are required to be met for the Stage 1B construction.

The waste management measures that will be implemented during the construction are outlined below. Actual strategies and management measures will be refined as the construction program and phasing is detailed. This will be documented in the CWMP for the project.

3.3.3 Waste Management Hierarchy

The waste hierarchy indicates an order of preference in managing and minimising the impacts of waste generation, and is included in the diagram to the right.



Waste Avoidance and Reduction

The main goal in the construction phase will be to reduce the total volume of waste produced, which is to be achieved by effective materials procurement, management and supply.

Project managers, engineers, builders and subcontractors will play a key role in achieving on-site waste reduction targets on a day-to-day basis.

Strategies to reduce the actual amount of waste generated during construction may include:

- Use of pre-cut and prefabricated materials where possible;
- Returning packaging to suppliers or bring unpacked goods to site;
- Purchasing in bulk;
- Requesting metal straps rather than shrink wrap;
- Using returnable packaging such as delivery and storage pallets and reels;

- Educating site workers in avoidance procedures;
- Ensuring that subcontractors use new purchasing guidelines;
- Materials will be delivered by suppliers only when needed. This reduces the opportunity for waste through error in estimates. It also permits orders to be made from on-site measurements rather than from drawings, and it provides for any modifications that the client may request; and
- Appropriate storage arrangements will be established to protect products from damage due to weathering or moisture.

Resource Recovery

The Lend Lease 97% resource recovery target will be delivered through an on-site waste segregation solution with all waste streams arising that cannot be reused on-site, being transported to the state of the art Benedict Recycling Plant at Chipping Norton.

Waste collected from bins around the site will be consolidated into larger bulk bins located in docks around the site. This process will dramatically reduce the processing required to enable this waste to feed into recycled resources production processes.

Separated wastes are a more valuable resource. Waste streams will be separated on site where possible to save double handling and time and labour intensive sorting. On-site solutions will involve setting up waste handling systems, including a bin coding system on site, to segregate the waste into separate streams as it is produced.

The provision of waste skips or bins at the site (or separation off site) will be made for the following materials (as outlined by Man-7 of the Green Star Manual) as relevant and appropriate to the phase of construction;

- Cardboard;
- Timber;
- Metal;
- Soft Plastic;
- Polystyrene;
- Insulation;
- Concrete;
- Glass; and
- Bricks.

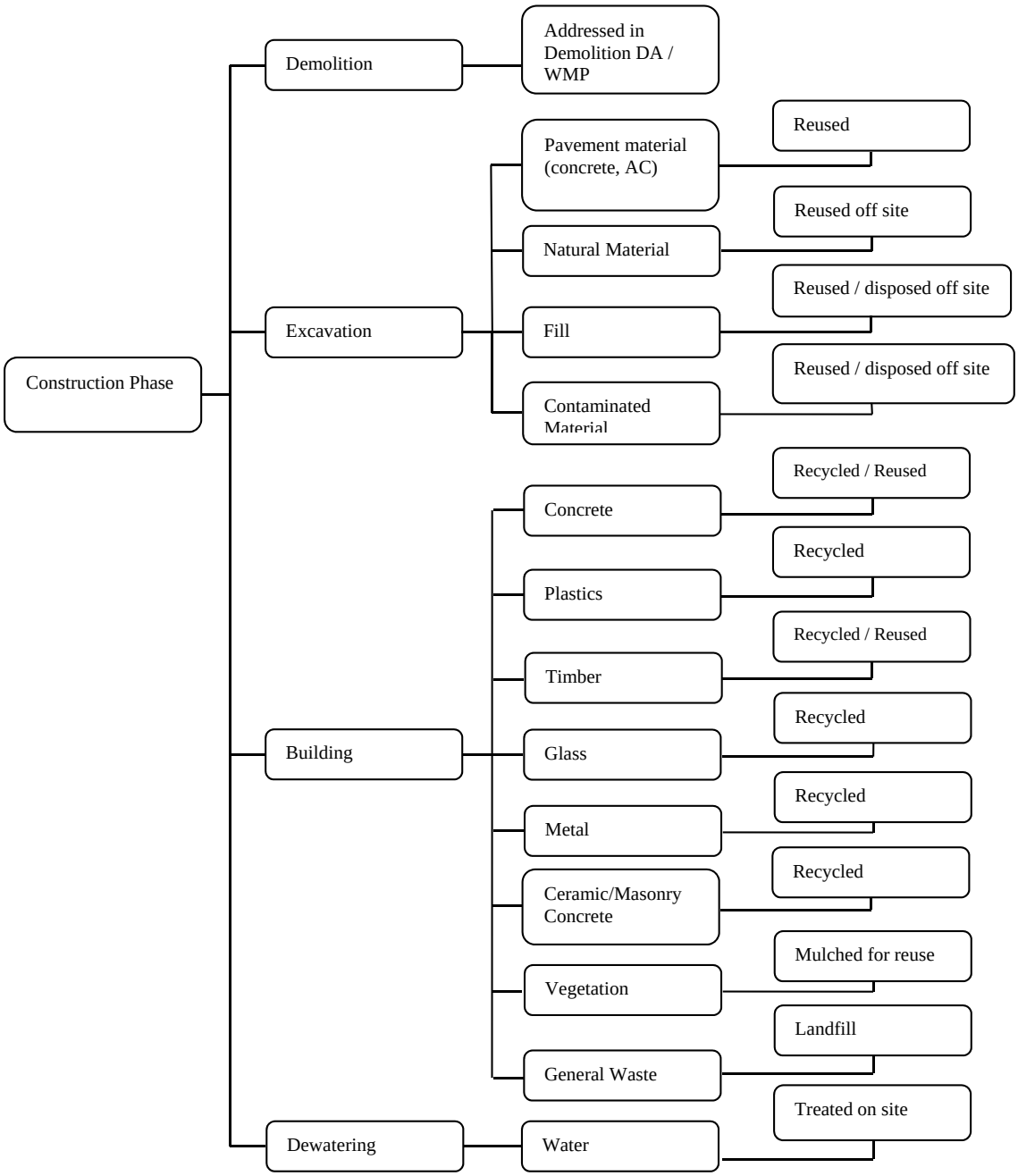
Note that recyclables may be combined in a skip so long as evidence is provided that the waste contractor will separate these materials off-site.

Waste that cannot be reused or recycled will be disposed in a licensed landfill in accordance with the relevant standards and guidelines.

4 Construction Waste Composition

During the construction phase it is anticipated that a significant volume and variety of waste will be generated. As required by the (SEARs) issued for this project, an overview of the major waste streams resulting from construction is provided in Figure 2. All potential sources of liquid and non-liquid wastes from construction have been included, with further detail regarding waste generation provided below in sections 4.1 (demolition), 4.2 (excavation) and 4.3 (construction).

Figure 2 Overview of major waste streams expected from the project



4.1 Demolition

Demolition of the structures on the site is covered under a separate Development Application (Demolition of Existing Structures, East Darling Harbour) which was approved by The Minister for Planning in November 2007 (07_0077).

To avoid duplication, demolition waste is not addressed in this CWMP.

4.2 Excavation

The approach to the proposed bulk earthworks for this Planning Application is to re-use excavated materials where possible, thereby minimising off-site disposal of waste to landfill.

The additional excavation for Stage 1B will total approximately 70,000 m^3 in volume. The material to be excavated includes:

- Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) - Sandstone bedrock and natural marine sediments excavated as part of bulk earthworks.
- General spoil (not requiring treatment) - Based on investigation reports, fill material is anticipated to include a mixture of clay, gravel, sand, crushed rock, ash, timber and steel, that does not contain significant levels of contamination.
- Contaminated spoil - Based on investigation reports, some fill material is contaminated and will require off site treatment, prior to disposal.

Further details of expected spoil fill quality and proposed off-site treatment is provided in the (RAP)[5] and the Waste Management Plan for Remediation and Landforming Works at Block 4 Barangaroo[6].

If material is required to be disposed of off-site, it will be classified for off-site disposal and disposed of in accordance with the NSW EPA *Waste Classification Guidelines 2014*.

4.3 Building / Construction

The goal for construction waste management is primarily the reduction of waste generated. Waste reduction is the responsibility of all on site, as it relates to materials procurement, handling, storage and use. Waste generated during construction will be reused, recycled or disposed to landfill.

While waste reduction is the goal, effective recycling of the waste that is generated will also be undertaken on site.

Waste collection during building will be appropriately managed through the staged nature of construction and the use of known quantities of materials. The majority of recyclable material that could be recovered during construction is

[5] AECOM (2013), *Remedial Action Plan: NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW*
[6] AECOM (2013), *Waste Management Plan, Remediation and Landforming Development Application SSD 5897 – 2013, Barangaroo Block 4, Hicksons Road, Millers Point, NSW*

likely to be off cuts and discards of concrete, reinforcement (steel), timber, plasterboard, bricks and blocks.

Proposed types of waste storage on the site for various waste and recyclable materials are described in Section 5.3 of this CWMP.

Groundwater and dirty stormwater runoff will be collected and treated to suitable standards, prior to discharge into Darling Harbour. All required approval, licences and permits for treatment and discharge will be obtained from appropriate authorities prior to discharge. If other liquid waste is required to be disposed of off-site, it will be classified for off-site disposal and disposed of in accordance with the NSW EPA *Waste Classification Guidelines 2014*.

5 Construction Waste Management

The sections below summarise management requirements for waste vehicle access, waste storage and waste disposal during construction. These arrangements will be further developed prior to issue of a Construction Certificate.

5.1 Waste Transport Routes

The predominant traffic routes that waste transport vehicles would utilise to and from Barangaroo are presented in the Transport Assessment and summarised below.

From the north and north-west:

- Harbour Bridge – Western Distributor – Bathurst Street – Liverpool Street – Harbour Street – Shelley Street – Erskine Street – Sussex Street (inbound); and
- Hickson Road – Napoleon Street – Kent Street – Western Distributor – Harbour Bridge (outbound)

This southbound truck activity would occur during peak hours as there is no access for general traffic from the Harbour Bridge to York Street between 6.30am – 9.30am (Monday – Friday).

From the west and south-west:

- Anzac Bridge – Western Distributor – Sussex Street – Hickson Road (inbound); and
- Hickson Road – Sussex Street – Western Distributor – Anzac Bridge (outbound)

From the south and east:

- Eastern Distributor – Cross City Tunnel – Western Distributor – Wattle Street – Western Distributor – Sussex Street – Hickson Road (inbound); and
- Sussex Street – Harbour Street – Cross City Tunnel (outbound)

5.1.1 Site Access

Access for construction vehicles to the Barangaroo Stage 1B site will be via Hickson Road at the existing gatehouse, approximately 350m north of the Sussex Street / Napoleon Street intersection. This site access will be utilised until January 2019, after which it will move approximately 25m south along Hickson Road as illustrated in Figure 3 below. Note that vehicles access and leave the site from the same point, with a vehicle turning area provided onsite (this applies to waste collection vehicles).

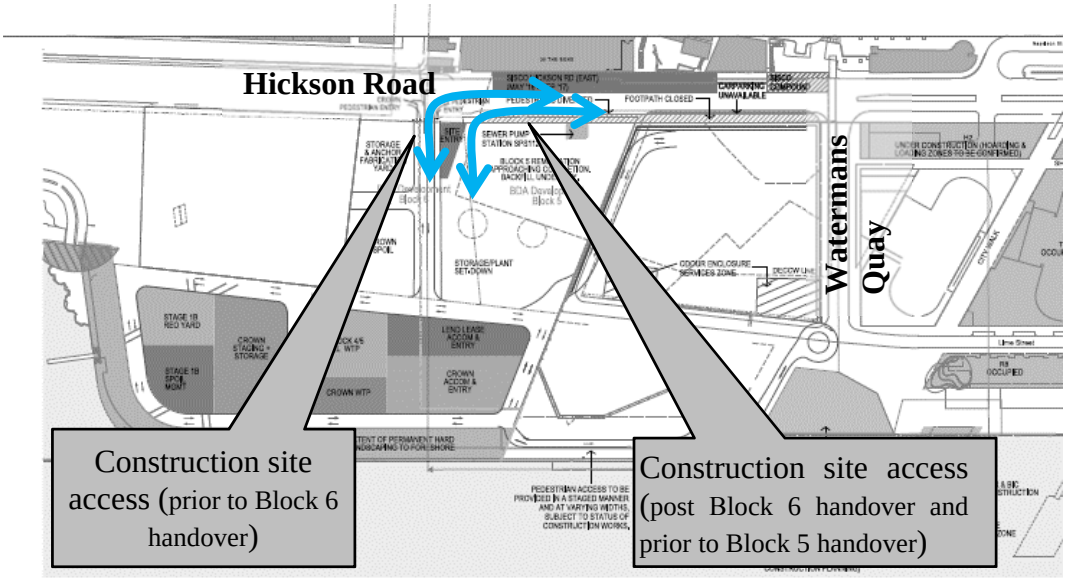


Figure 3 Site Access Diagram

Note: Locations shown are indicative only

5.2 Waste storage

In accordance with the SEARs, the proposed waste storage requirements within the site compound and designated laydown and stockpiling areas are summarised in Table 3. Specific locations within the site suitable for storage of construction waste will be identified in the Lend Lease spoil and waste management sub-plan prior to the Construction Certificate.

Table 3: Waste storage requirements for potential waste streams in construction

Potential Waste Stream	**Indicative waste management on site**
Site Office and Work Sites	
Organic food scraps	240L MGB
Food packaging / cans / bottles / wrappers	240L MGB
Paper and / or other office based wastes	240L MGB
Glass/plastic/ cans/paper/ cardboard – potentially recyclable	240L bins specified for 'Recyclables Only' as per domestic recycling bins
Plastic wrapping/containers– collected and littered	240L bins – general waste or into recycling bin as appropriate
Printer Cartridges	Bin provided (capacity of up to 20 – 25 standard cartridges)

Potential Waste Stream	Indicative waste management on site
Miscellaneous construction wastes (cables, parts, etc.)	10m^3 skip bins – to be combined with other miscellaneous construction wastes
Scrap timber / scrap metal	10m^3 skip bins
Chemicals Storage and Management	
Drums and containers (empty and containing no residue)	Stored in bunded areas
Waste oil, grease, lubricants	Sealed drums / containers stored within bunded area
Oily rags and filters	200L (or similar) bins
Used spill management materials such as absorbent pads / used absorbent materials used to mop up oil spills / any soil contaminated from dripping machinery or other hydrocarbon / chemical sources	Bins and / or tanks suitably bunded
Other Site Waste	
Trackable solid wastes	Sealed in drums and stored within bunded area
Broken concrete / asphalt	10m^3 skip bins
Sediment build up behind erosion and sediment control devices	Regularly cleared from behind control structures, as per the spoil and waste management sub-plan.
Treated liquid waste	Stormwater, extracted groundwater treatment and discharge to Darling Harbour. Other potentially contaminated liquids will be containerised, where appropriate, stored within the containment area and handled and tested in accordance with the NSW EPA *Waste Classification Guidelines 2014* to determine appropriate disposal methods.
Trackable liquid wastes (waters and fluid unable to be treated for discharge, waste oils)	Sealed in drums and stored within bunded area
Excavated Natural Material	Classified in accordance with the NSW EPA *Waste Classification Guidelines 2014* and the Excavated Natural Material Exemption made under the *Protection of the Environment Operations (Waste) Regulation 2010*. Temporarily stockpiled.
Other contaminated and hazardous wastes	Handled and stored in accordance with the NSW EPA *Waste Classification Guidelines 2014* prior to disposal offsite. Hazardous waste will be managed by appropriately qualified and licensed contractors, in accordance with the requirements of the *Environmentally Hazardous Chemicals Act 1985.*

Modified from Table 11 of the Waste Management Plan for Remediation and Landforming Works at Block 4 Barangaroo[7]

[7] AECOM (2013), *Waste Management Plan, Remediation and Landforming Development Application SSD 5897 – 2013, Barangaroo Block 4, Hicksons Road, Millers Point, NSW*

5.3 Waste disposal

As per the SEARs, waste disposal will be in accordance with the *Protection of the Environment Operations Act 1997* and the *Waste Avoidance and Resource Recovery Act 2001*, and the associated NSW EPA *Waste Classification Guidelines 2014*. Wastes that are unable to be reused or recycled will be disposed of off-site at an EPA-approved waste management facility following classification. Details of waste types, volumes and destinations are to be recorded in the example waste tracking form as Appendix B to this CWMP.

Potential waste disposal locations for different waste materials as previously approved as part of the adjacent *Waste Management Plan for Remediation and Landforming Works at Block 4 Barangaroo*[7] are reproduced in Table 4 below. The status of any of the locations suggested below would be confirmed by the contractor during the construction works, with details of waste disposal included on a waste register.

Table 4: Appropriately licenced waste management facilities

Waste type	**Potential waste management facility**
General Solid Waste (putrescible)	Eastern Creek Waste & Recycling Centre (WSN Environmental Solutions)
General Solid Waste (non-putrescible)	Eastern Creek Waste & Recycling Centre(WSN Environmental Solutions) Erskine Park Landfill (Transpacific) Horsley Park Waste Management Facility (Veolia) Kemps Creek Landfill Facility (SITA Environmental Solutions)
Liquid Waste	Worth Recycling South Windsor Site
Hazardous Waste/Restricted Waste	Kemps Creek Landfill Facility (SITA Environmental Solutions)
Green Waste	Eastern Creek Waste & Recycling Centre (WSN Environmental Solutions) Horsley Park Waste Management Facility (Veolia)
Timber	Eastern Creek Waste & Recycling Centre (WSN Environmental Solutions) Horsley Park Waste Management Facility (Veolia)
Untreated PASS Material classified as VENM	Kurnell Landfill Company
Contaminated Soil	Erskine Park Landfill (Transpacific)[1] Kemps Creek Landfill Facility (SITA Environmental Solutions)[1]
Special Waste (Asbestos)	To be managed by off-site disposal at an approved facility

[1] An analytical test-work report is required prior to the acceptance of contaminated soils at the Erskine Park Landfill and Kemps Creek Landfill Facility.

5.4 Staging

The works associated with the construction of the Stage 1B basement and towers are expected to occur between June 2017 and July 2023. The basement works that this CWMP refer to will occur at the commencement of this period. Works and preliminary volumes of waste and other materials to be transported to and from the site during construction are divided into stages as summarised in Table 5 below.

A more detailed breakdown of the construction programme, vehicle movements and excavation and construction waste volumes will be generated by the contractor during the excavation and construction phase. A spoil and waste management sub-plan for the works will be prepared, and all waste from the site would be disposed of in accordance with the waste management hierarchy and the NSW EPA *Waste Classification Guidelines 2014*.

A Waste Tracking Form is included as Appendix B to this CWMP and is to be utilised by the construction contractor.

Table 5: Summary of Stage 1B construction works

Stage	Description	Works
A	Excavation after Remediation	The scenario includes excavation remaining spoil after remediation works that are conducted under the odour tents
B	Rock Excavation	The scenario includes excavation of rock following completion of all spoil excavation & remediation works. Works will not be undertaken under an odour tent.
C	Piling Works	The scenario includes Piling using Auger Piling Rig on the perimeter and core for future buildings
D	Structure Construction	This scenario includes concreting and structural works.
E	Services / Fit-out	The scenario includes services reticulation, fit-out, finishes installation and commissioning.

5.5 Construction Waste Management Measures

As per the SEARs requirements, the construction waste management and minimisation measures for the Barangaroo South - Stage 1B Basement are provided in Table 6:

Table 6: Construction Waste Management Measures

ID	Measure / Requirement	When to implement	Responsibility
GENERAL			
WE1	The NSW Governments Waste Management Hierarchy of "avoid-reduce-reuse- recycle-dispose" will be followed as the framework of waste management throughout the project. The reuse and/or recycling of waste materials generated on site shall be maximised as far as practicable, to minimise the need for treatment or disposal of those materials off site.	Pre-construction Construction	Construction Manager / Environment Manager
WE2	Waste management measures from this CWMP will be included in relevant Safe Work Method Statements to be developed prior to the commencement of specific activities	Pre-construction / Construction	Site Engineer / Environmental Officer
WE3	All staff and subcontractors will undergo a site induction and ongoing toolbox talks that will detail waste minimisation and reuse management measures.	Construction	Environment Manager / Foreman
WE4	Procurement of materials will be planned and managed to avoid the over-ordering of products and minimise excess packaging is to be carried out.	Construction	Site Engineer / Foreman
WE6	Recycled material will be considered for use in all aspects of the project where feasible and reasonable in accordance with the NSW Government's Waste Reduction and Purchasing Policy.	Construction	Site Engineer
WE7	Sediment recovered from erosion and sediment control devices will be classified and disposed of accordingly.	Construction	Foreman
WE8	Where possible, materials will be bought in bulk to minimise the amount of package required. Sources of material that have sustainable packaging design, recycled and recyclable packaging will be favoured over other material sources where cost effective.	Construction	Construction Manager / Environment Manager

ID	Measure / Requirement	When to implement	Responsibility
WE9	All waste material generated on-site will be dealt with in accordance with the Protection of the Environment Operations Act 1997 and Waste Classification Guidelines Part 1: Classifying Waste or any superseding document. Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under *the Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Construction	Construction Manager / Environment Manager
WE10	Waste minimisation and management measures will be developed based on the principles in the *Waste Avoidance and Resource Recovery Act 2001*, the NSW Government's Waste Reduction and Purchasing Policy, and waste exemptions including: - Excavated Natural Material Exemption. - Reclaimed Asphalt Pavement Exemption - Recovered Aggregate Exemption - Stormwater Exemption - Treated Drilling Mud Exemption Measures will seek to avoid, minimise, re-use, recycle, treat or dispose of waste streams during construction and address transport and disposal arrangements.	Construction	Construction Manager / Environment Manager
WE11	Where feasible, the contractor will be required to re-use materials. This could include, but is not limited to concrete formwork or surplus concrete pours.	Construction	Construction Manager / Environment Manager
WE12	At site compounds, on-site recycling facilities will be provided for recycling paper, plastic, glass and other re-useable materials.	Construction	Construction Manager / Environment Manager
WE13	Regular visual inspections will be conducted to ensure that work sites are kept tidy and to identify opportunities for reuse and recycling.	Construction	Foreman / Environment Officer
WE14	Water captured in excavations will be managed in accordance with the construction Soil and Water Management Plan	Construction	Construction Manager / Environment Manager
WE15	Any contaminated waste will be handled, separated, contained, managed and disposed of to prevent migration and further contamination.	Construction	Foreman
WASTE DISPOSAL			
WE16	A waste register will be maintained, detailing types of waste collected, amounts, date/time and details of disposal.	Construction	Environment Manager / Environment Officer

ID	Measure / Requirement	When to implement	Responsibility
WE17	Waste will be managed and disposed of in accordance with the PoEO Act. Wastes that are unable to be reused or recycled will be disposed of offsite at a licensed waste management facility, or premises lawfully permitted to accept the materials following classification.	Construction	Environment Manager / Environment Officer
WE18	Oils and other hazardous liquids will be labelled and stored in a sealed container within a bunded area. Material collected from within bunded areas will be disposed off site at a waste facility approved by the EPA.	Construction	Foreman / Environment Officer
WE19	All loads exiting the site to be covered to minimise dust impacts	Construction	Foreman / Environment Officer
WE20	The relevant licences of waste facilities utilised for the disposal of project waste will be obtained (on a regular basis if necessary) to ensure they are legally able to accept that waste.	Construction	Foreman
WE21	All trucks transporting wastes off site will be appropriately licensed to carry the materials to appropriately licensed waste facilities.	Construction	Site Engineer / Foreman

6 Training

All contractors, sub-contractors and employees are to be informed of the waste management measures to be enforced during construction, and given appropriate training in performing their duties so as to achieve the set waste minimisation goals.

Through the site induction training process, site staff will be made aware of the placement of the waste storage areas, the waste register, and their responsibility to separate materials.

7 Inspections, monitoring, auditing and reporting

7.1 Monitoring

Contractors performing works on the Site will complete the requirements of a Waste register, including completion of the Waste tracking form (Appendix A) for all wastes generated and/or subject to disposal from the Site. The appropriate completion of the Waste register is the responsibility of the Site Manager / Contractors.

Details of roles and responsibilities for the site including waste management will be made clear in the CEMP to be developed for the construction works.

Evidence, such as dockets and receipts from licenced waste facilities and waste contractors will also be retained for waste tracking. The completed waste register/s will be submitted to Lend Lease on a monthly basis.

Site clean-up and appropriate use of onsite waste storage units on a day to day basis would be monitored by the Site Manager / contractors.

7.2 Inspections and Audits

Daily inspections will be undertaken to ensure that waste management and environmental controls are functioning correctly and are well maintained. Routine waste inspections may also be incorporated within a combined environmental inspection checklist or similar for the site.

Site Waste Audits will be undertaken by the contractor on a weekly to fortnightly basis, depending on the on-site activities and specific environmental issues and in accordance with the broader CEMP.

The outcomes of waste inspections and audits will be reported to Lend Lease (developer).

7.3 Reporting

Monthly compliance reports will be prepared and submitted to Lend Lease (developer). The issues to be included in compliance reports are listed below.

Monthly reports will include the following:

- number, waste type and size of bins / containers / trucks (tonnage and volume, in litres for liquid waste and cubic metres for solids) removed from the Site;
- total tonnage and volume generated of each waste type (volume in litres for liquid waste and cubic metres for solids);
- copies of an appropriately completed transport certificate for each load of trackable waste transported offsite in accordance with EPA waste tracking legislation;
- total tonnage and volume of spoil transported within Barangaroo for reuse (volume in cubic metres);
- final on-site location of reused spoil by volume;
- classification documents and validation testing results;
- approximate amounts of stormwater either released or containerised for off-site disposal, along with the results of laboratory testing, on a Stormwater Monitoring and Disposal Record Form;
- PASS (Potential Acid Sulphate Soil) testing and treatment validation results;
- total tonnage and volume of each waste type recycled (in litres for liquid waste and cubic metres for solids); and
- the final destination of waste material.

A process for dealing with non-compliance including waste issues would be incorporated within the contractors CEMP.

8 Summary

This Construction Waste Management Plan supports a State Significant Development Application (SSD 6960) seeking approval for construction of the Stage 1B Basement and associated works at Barangaroo South.

This report provides guidance to ensure that the proposed impacts associated with the works proposed under the Development Application can be appropriately managed and addressed to the requirements of the SEARs and the existing waste and recycling targets of the development. This would be achieved through implementation of the management measures in this report and through onsite management and further development of waste handling procedures and construction site layout by the construction contractor.

Appendix A

Waste Tracking Form

Details of waste management – construction phase

MATERIALS ON-SITE			DESTINATION		
			REUSE AND RECYCLING		DISPOSAL
Type of materials	**Est. Vol. (m^3)**	**Est. Wt. (t)**	**ON-SITE** **- specify proposed reuse or on-site recycling methods**	**OFF-SITE** **- specify contractor and recycling outlet**	**- specify contractor and landfill site**
Excavated Materials					
Garden Organics					
Bricks					
Tiles					
Concrete					
Timber – please specify					
Plasterboard					
Metals					
Other waste eg. ceramic tiles, paints, PVC tubing, cardboard, fittings					