



Planning &  
Environment

**ENVIRONMENTAL ASSESSMENT  
REPORT:  
Remediation, Land Forming and  
Excavation Works, Barangaroo South  
(SSD 5897)**



Secretary's  
Environmental Assessment Report  
Section 89E of the  
*Environmental Planning and Assessment Act 1979*

October 2014

## ABBREVIATIONS

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Applicant	Lend Lease (Millers Point) Pty Ltd (Lend Lease), or any other person or persons who rely on this consent to carry out the development that is subject to this consent
CIV	Capital Investment Value
Council	The City of Sydney Council
Department	Department of Planning and Environment
EIS	Environmental Impact Statement entitled ' <i>Block 4' Development Remediation Works, Bulk Excavation and Retention Wall System Construction, EPA Remediation Site 21122 'Block 4' (Stage 1B), Barangaroo South</i> ', prepared by JBA Urban Planning Consultants Pty Ltd and dated November 2013
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPA	Environment Protection Authority
EPI	Environmental Planning Instrument
Minister	Minister for Planning
OEH	Office of Environment and Heritage
RTS	Response to Submissions report entitled ' <i>EPA Remediation Site 21122, Block 4 (Stage 1B), Barangaroo South 'Block 4' Development Remediation Works, Bulk Excavation and Retention Wall System Construction</i> ', prepared by JBA Urban Planning Consultants Pty Ltd and dated June 2013
RTS Addendum	The Response to Submissions Addendum report entitled ' <i>Block 4 Remediation and Land Forming Works (SSD 5897) – Addendum to Response to Submissions Report</i> ', prepared by Lend Lease and dated 19 August 2014.
Secretary	Secretary of the Department
SRD SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>
SSD	State significant development
SWC	Sydney Water Corporation
TNSW	Transport for NSW

Cover Photograph: Approximate location of the proposed remediation works  
(Source: [www.barangaroo.com](http://www.barangaroo.com))

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## EXECUTIVE SUMMARY

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Lend Lease is seeking approval to remediate contaminated land predominantly within Block 4 of the approved Barangaroo Concept Plan and public domain areas at Barangaroo, which forms part of an EPA Declaration Area (no. 21122).

The project has a capital investment value (CIV) of approximately \$125.48 million and will generate 298 jobs during construction.

The development is State significant development under clause 3 of Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP), as it is a development at Barangaroo that has a CIV of more than \$10 million. Therefore, the Minister for Planning is the consent authority.

The Department exhibited the State significant development application (DA) and Environmental Impact Statement (EIS) for the proposal from Thursday 21 November 2013 until Friday 20 December 2013. The Department received five (5) submissions, including four (4) from government authorities and one (1) from the general public. None of the government authorities objected to the proposal but some issues of concern were raised and conditions recommended for inclusion in the development consent. The public submission objected to the proposal.

The Department has assessed the merits of the proposal and has found that the key issues associated with the remediation works include potential contamination, construction (noise and vibration and air quality), health, traffic, parking and access impacts.

In its assessment of the proposal, the Department has fully considered all relevant matters under section 79C of the EP&A Act, the objects of the EP&A Act and the principles of ecologically sustainable development. This assessment has concluded that with the implementation of the recommended conditions of consent, the impacts of the development can be mitigated and/or managed to ensure that relevant environmental, health and amenity standards can be met.

In particular, the Department has recommended conditions that would require the remediation works to be carried out in accordance with the Remedial Action Plan (RAP) for the Declaration Area and supporting Human Health and Ecological Risk Assessments (HHERAs) which have been reviewed and approved by an EPA-accredited site auditor. The remediation works and supporting documentation have also been reviewed by the EPA which concluded that provided the site is validated in accordance with the remediation criteria specified in the HHERAs prepared specifically to support the RAP, the contamination should not pose on-going environmental impacts.

The Department has also recommended conditions that would require the Applicant to prepare and implement a number of key environmental management plans to minimise potential construction (e.g. air, noise and vibration), access, traffic and parking and health related impacts.

The Department's assessment has concluded that the development would address the significant risk of harm to human health and the environment identified by the EPA's Declaration (no. 21122) and would bring forward the development of Barangaroo South at significant benefit to the NSW economy. Further, the proposal is generally consistent with the approved Barangaroo Concept Plan (as modified), the strategic objectives for the area, the Metro Strategy, and the requirements of relevant environmental planning instruments and policies.

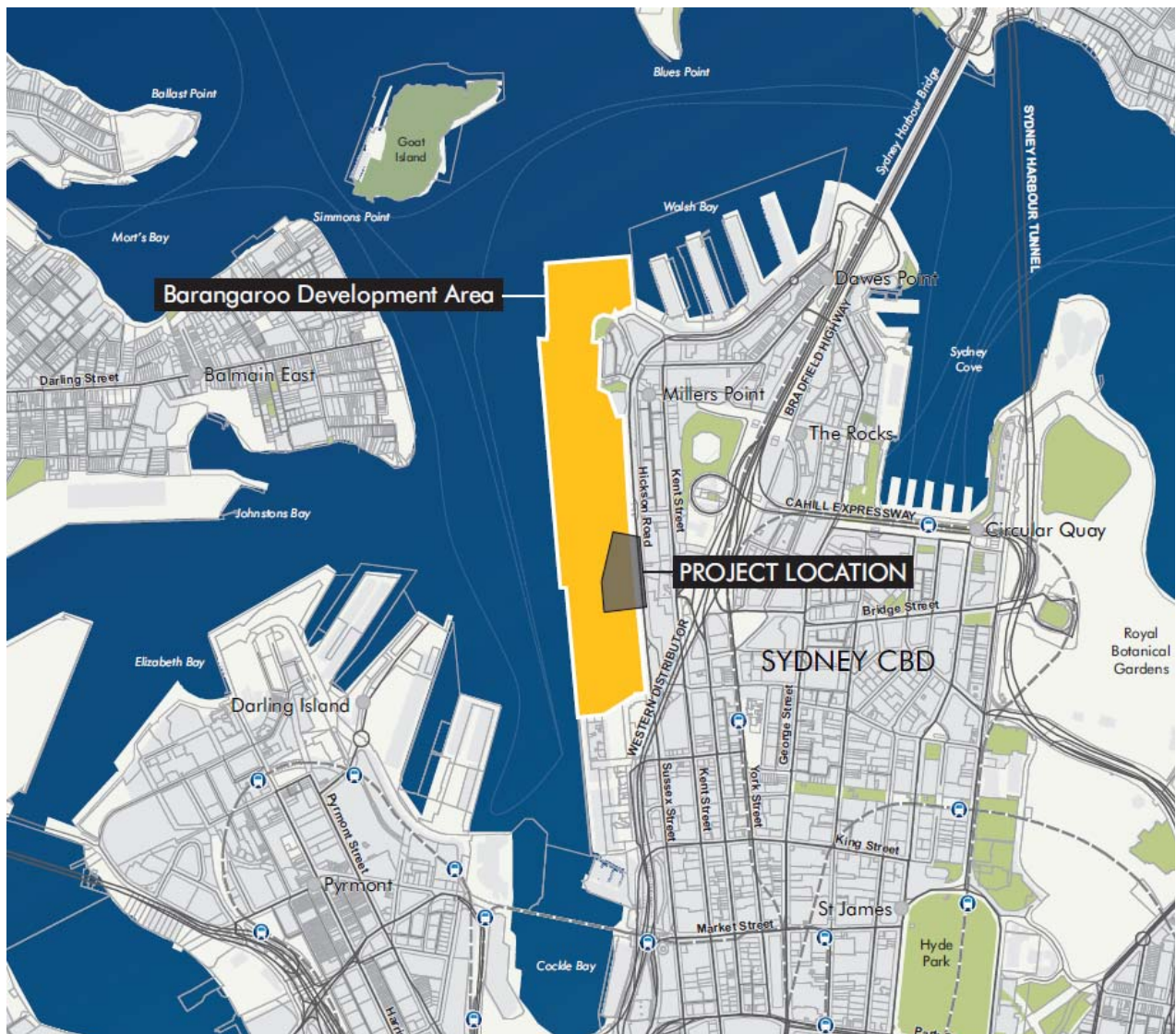
Consequently, the Department concludes that the development is in the public interest and should be approved, subject to conditions.

# 1. BACKGROUND

Lend Lease is seeking consent to remediate contaminated land predominantly within Block 4 of the approved Barangaroo Concept Plan and public domain areas at Barangaroo, which forms part of an EPA Declaration Area (no. 21122).

## 1.1 The Site

Barangaroo is located on the north-western edge of the Sydney CBD. The site is bounded by the Sydney Harbour foreshore to the north and west, Hickson Road and Millers Point to the east, and Kings Street Wharf/Cockle Bay/Darling Harbour to the south. The Barangaroo precinct is divided into three parts: Headland Park; Barangaroo Central; and Barangaroo South. The land that is the subject of this development application is located at Barangaroo South, predominantly within Block 4 of the Barangaroo Concept Plan. A Location Plan is provided at **Figure 1** below.



**Figure 1:** Site context

The land to be remediated is approximately 1 hectare in size and is located immediately to the north of the Barangaroo South Stage 1A basement (MP 10\_0023), which is currently under construction at Barangaroo South.

The land to be remediated includes the north eastern part of Block 3 and parts of Blocks 4A, 4B and 4C and public domain areas (**Figure 2**), as identified in the approved Barangaroo Concept Plan (**Section 1.2.1**). This land is herein referred to in this report as the remediation area.

The remediation area incorporates part of an EPA Declaration Area (**Section 1.3**), as well as some adjoining land to the south and west (**Figures 4 and 5**). Remediation-related logistics and storage areas, and a contaminated soil treatment enclosure would also be located on Blocks 5 and 6 to facilitate the remediation (**Figure 5**).

The site is generally flat and is currently either vacant and variably paved with concrete and asphalt concrete, or currently being used as construction access, storage and management areas supporting the construction works at Barangaroo South.

The closest residents are located approximately 25m from the site on Hickson Road (**Figure 4**).

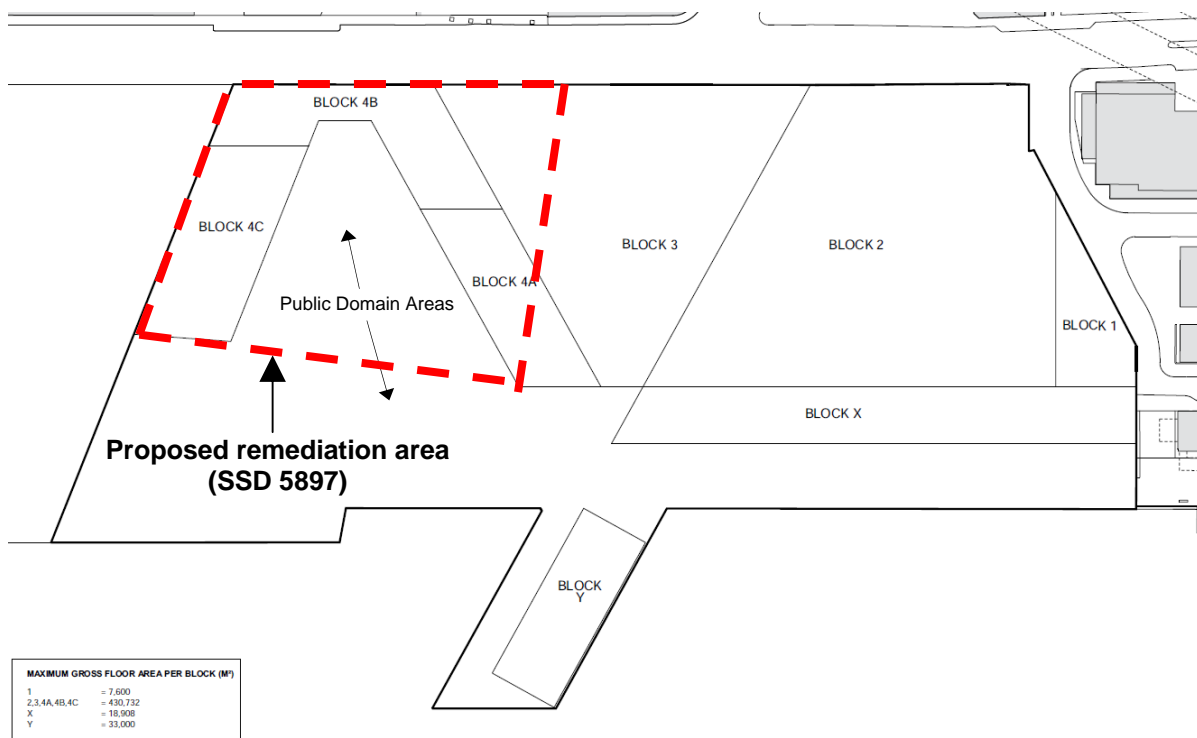
## 1.2 Approval History

### 1.2.1 Approved Barangaroo Concept Plan

On 9 February 2007, the then Minister for Planning approved the Barangaroo Concept Plan (MP 06\_0162). The Concept Plan approval includes a set of built form principles to guide development within the mixed use zone.

The detailed planning history of modifications to the Concept Plan for Barangaroo is provided at **Appendix C**. In summary, seven (7) modifications have been approved since the Concept Plan was originally approved.

The location of the proposed remediation works relative to the approved configuration of development blocks at Barangaroo South is depicted in **Figure 2**.

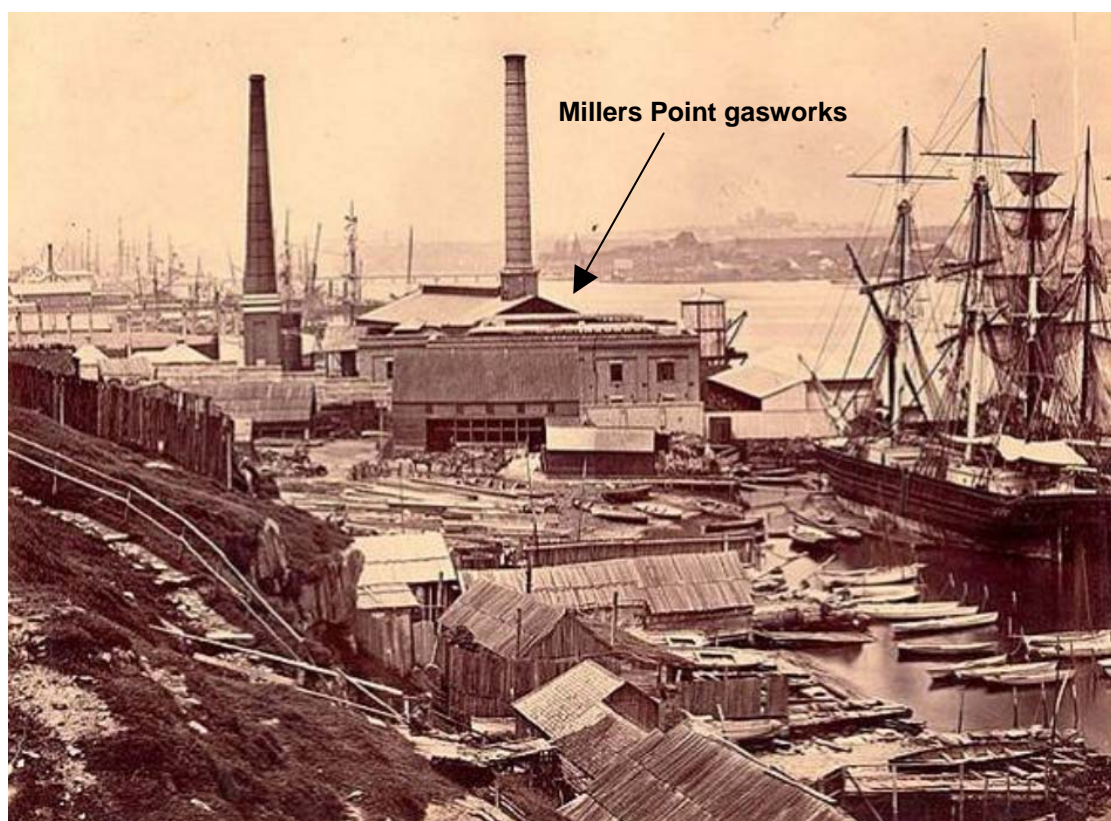


**Figure 2:** Approved block configuration at Barangaroo South and location of remediation works

## 1.3 Contamination History

Barangaroo has been used for wharf/port related activities since the 1800s.

From 1839 to 1921, the former Australian Gas Light Company (now Jemena) gasworks operated at Millers Point on parts of Blocks 4 and 5 and the area now occupied by Hickson Road before being demolished in 1922 (**Figure 3**). Gasworks were used to produce town gas by heating coal for lighting, cooking and heating.



**Figure 3:** View of the Millers Point gasworks from the north in 1880

The remainder of the site largely consisted of finger wharfs which were used for ship berthing and associated activities. These wharfs were removed progressively over time from 1936 to 1998 with a significant portion of land reclaimed from Sydney Harbour with unclassified fill between 1951 and 1972. From 1961 to 1968, the site was used for the construction of longshore berthage, with some additional filling occurring in the north of the site (area of former Southern Cove) in the late 1980s or early 1990s.

In May 2009, the EPA declared part of Millers Point to be a remediation site (no. 21122) under section 9 of the *Contaminated Land Management Act 1997* (CLM Act). The EPA considered that the “EPA Declaration Area” was contaminated in such a way as to present a significant risk of harm to human health and the environment and required a regulatory response. The site to which the declaration relates (the ‘EPA Declaration Area’) coincides with the known footprint of the former Millers Point gasworks and is located within Block 4, a portion of Block 5 and portion of Hickson Road. The extent of the EPA Declaration Area is depicted in **Figures 4 and 5**.

The land is contaminated with gasworks waste, particularly waste tar, and a range of other chemicals likely to be associated with uncontrolled fill used in various stages of site reclamation. The key chemical contaminants identified at the site include petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs) and metals, some of which are classified as human carcinogens and substances toxic to aquatic ecosystems.

Investigations also revealed that remnant infrastructure from the Millers Point gasworks lies beneath the EPA Declaration Area, including part of the annulus of the former main gasholder, a smaller secondary gasholder and a tar tank.

On 23 July 2010, the EPA approved a Voluntary Management Proposal (VMP) application (no. 20101719) by the Barangaroo Delivery Authority (BDA) under section 17 of the CLM Act to remediate the site to enable the EPA Declaration (no. 21122) to be lifted.

In 2011, Lend Lease (on behalf of the BDA) commissioned AECOM to quantify the nature and the extent of the contamination by conducting Human Health and Ecological Risk Assessments (HHERAs) and developing remediation goals and a subsequent Remedial Action Plan (RAP).

Lend Lease has been appointed by the BDA as the preferred Applicant to develop Barangaroo South. Accordingly, the remediation works proposed by Lend Lease are being undertaken pursuant to the BDA's approved VMP with the EPA, to enable the future development of Barangaroo Stage 1B.

## 2. PROPOSED DEVELOPMENT

### 2.1 Development Summary

The major components of the development (as modified by the RTS) are summarised in **Table 1** and depicted in **Figures 4 to 6**. The proposed development is described in full in the Environmental Impact Statement (EIS) and RTS, which are attached at **Appendix C** and **Appendix F** respectively.

**Table 1:** Key development components

Aspect	Description				
Development Summary	Remediation, land forming, structural and general excavation works associated with the future Stage 1B basement area at Barangaroo South.				
Remediation Works	<ul style="list-style-type: none"> <li>Carrying out remediation works within the remediation area to:                             <ol style="list-style-type: none"> <li>enable the EPA Declaration to be lifted; and</li> <li>ensure the future Stage 1B development area is suitable for the intended future uses of the land.</li> </ol> </li> <li>The proposed remediation strategy is described in more detail in <b>Section 2.2</b> below.</li> </ul>				
Groundwater Retention Wall	<ul style="list-style-type: none"> <li>Construction of a groundwater retention wall around Block 4 (<b>Figures 4 and 5</b>) to prevent contamination migrating into the remediation area from the surrounding EPA Declaration Area. This wall will ultimately form the perimeter of the future Stage 1B basement.</li> </ul>				
Bulk Excavation Works	<ul style="list-style-type: none"> <li>Bulk excavation and land stabilisation works for part of the future Stage 1B basement area within the groundwater retention wall around Block 4.</li> <li><b>Note:</b> the construction and operation of the Stage 1B basement would be the subject of a future application.</li> </ul>				
Diversion of Stormwater Infrastructure	<ul style="list-style-type: none"> <li>Diversion and augmentation of stormwater drainage infrastructure around Block 4 to the south of the proposed groundwater retention wall and north of the existing Stage 1A basement.</li> <li>This would involve decommissioning existing pipes, and the construction of a new pipe network and associated water treatment (e.g. gross pollution traps) to connect to an existing Sydney Water pipeline on the southern boundary of Block 4.</li> </ul>				
Air Emissions Control (Excavation and Remediation Enclosures)	<ul style="list-style-type: none"> <li>Temporary excavation enclosures (tent-like structures or similar) would be used to mitigate uncontrolled emissions of air pollutants, including odour during excavation and truck loading.</li> <li>A temporary remediation enclosure (steel shed-like structure or similar - <b>Figure 5</b>) would also be erected and used to mitigate odour during stockpiling and treatment of contaminated material, prior to being loaded onto trucks (inside) for off-site disposal to landfill.</li> <li>Enclosures would operate under negative pressure with air extraction systems including a particulate control device, activated carbon adsorption system and exhaust stacks (4 metres high) which are expected to achieve an odour reduction efficiency of up to 99.8%.</li> </ul>				
Wastewater Treatment	<ul style="list-style-type: none"> <li>Treatment of wastewater (contaminated surface and ground water) at the existing wastewater treatment plant (WTP) on site (<b>Figure 5</b>).</li> <li>Discharge of treated wastewater into Sydney Harbour or sewer in accordance with Environment Protection Licence limits and/or Sydney Water trade waste requirements.</li> </ul>				
Demolition	<ul style="list-style-type: none"> <li>Demolition and removal of a part of an existing sand filled sea wall under Block 4.</li> <li>Demolition of concrete hardstand areas around the site (<b>Figure 6</b>).</li> </ul>				
Tree Removal	<ul style="list-style-type: none"> <li>Removal of approximately 21 trees on the site (<b>Figure 6</b>).</li> </ul>				
Parking and Access	<ul style="list-style-type: none"> <li>No on-site parking will be provided for the construction workforce who will use public transport consistent with other major CBD construction projects.</li> <li>The main site vehicle access would be via a gated entry and exit at the northern extent of Block 5, connecting to Hickson Road.</li> <li>An alternative access is located on the southern edge of the site off Lime Street near Shelley Street. This access would only be used on occasion.</li> <li>Existing concrete hardstand areas of the site would be utilised as internal haul roads where practicable with traffic movements directed around the remediation works.</li> </ul>				
Hours of Operation	<table border="1"> <thead> <tr> <th>Construction</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>7.00am to 6.00pm (Monday to Friday);</li> <li>7.00am to 5.00pm (Saturday); and</li> <li>No work Sundays or public holidays.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>24 hours, 7 days-a-week for some activities such as essential maintenance (e.g. dust suppression) and material deliveries, operation of the WTP and odour control devices in the excavation/remediation</li> </ul> </td> </tr> </tbody> </table>	Construction	Operation	<ul style="list-style-type: none"> <li>7.00am to 6.00pm (Monday to Friday);</li> <li>7.00am to 5.00pm (Saturday); and</li> <li>No work Sundays or public holidays.</li> </ul>	<ul style="list-style-type: none"> <li>24 hours, 7 days-a-week for some activities such as essential maintenance (e.g. dust suppression) and material deliveries, operation of the WTP and odour control devices in the excavation/remediation</li> </ul>
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Aspect	Description
	enclosures, Bentonite Plant and electrical generators.
Capital Investment Value	<ul style="list-style-type: none"> <li>\$125.48 million.</li> </ul>
Employment	<ul style="list-style-type: none"> <li>Construction – 298 full-time jobs.</li> </ul>
Project Duration	<ul style="list-style-type: none"> <li>Approximately 28 months.</li> </ul>

## 2.2 Remediation Strategy

Contaminated material would be excavated in an excavation enclosure and treated to a standard that is suitable for off-site disposal at an EPA-licensed landfill.

Treatment of contaminated material would occur either on-site in a temporary remediation enclosure (**Figure 5**) or off-site (where required) at an EPA-licensed treatment facility.

On-site treatment of contaminated material would comprise either ex-situ stabilisation or ex-situ chemical oxidation. These treatments both involve a mixing process via pug mill inside a remediation enclosure. Ex-situ stabilisation involves blending chemical additives such as: cement, lime or silicates into the contaminated soil to reduce its toxicity and limit solubility and mobility. Ex-situ chemical oxidation involves blending chemicals such as hydrogen peroxide into the contaminated soil to destroy the contaminants through chemical reaction. These are both proven methods for treating a broad range of contaminants including petroleum hydrocarbons, PAHs and metals. These processes are described in detail in the approved Declaration Area RAP.

If on site treatment is proposed, approximately 151,000m<sup>3</sup> (i.e. 53,325 tonnes) of material would be excavated inside an excavation enclosure and classified in-situ in accordance with the EPA's *Waste Classification Guidelines*. If found to be contaminated, excavated material would be loaded into trucks and transported to and treated inside a remediation enclosure located on site (**Figure 5**). Treated material would then be validated in accordance with the site specific treatment criteria in the Declaration Area RAP and/or relevant EPA guidelines and stockpiled on site, prior to transport off-site by truck for final disposal at an EPA-licensed landfill.

If off-site treatment is proposed, material found to be contaminated would be loaded directly into trucks inside an enclosure, covered/sealed using suitable air/odour control measures and transported to an EPA-licensed treatment facility, prior to disposal to landfill.

The final soil treatment location (on site or off-site) and process to be utilised (e.g. ex-situ stabilisation or ex-situ chemical oxidation for on site treatment) will depend on detailed design, preferred methodology (once put to tender) and conformance with the EPA's requirements for final disposal of excavated material to landfill.

Groundwater contamination would be addressed by removing the contaminated soil and pumping contaminated groundwater from within the retention wall to the existing wastewater treatment plant (WTP) located on site (**Figure 5**). Wastewater would then be treated and discharged into Sydney Harbour or sewer in accordance with EPL limits and/or Sydney Water trade waste requirements.

Where excavations are not required for the future Stage 1B basement development, backfilling would be undertaken using suitable clean fill that is validated in accordance with the requirements of the approved RAP. Excavated material that is tested, classified and found not to require treatment (as per the site specific criteria set out in the Declaration Area RAP) would either be sent directly to landfill or re-used as fill at Barangaroo (subject to separate approval from the EPA).

The remediation area comprises three key sections (**Figure 5**) including:

1. parts of Block 4 and public domain areas within the EPA Declaration Area;
2. parts of Block 4 outside of the EPA Declaration Area to south and west; and
3. public domain areas outside of the EPA Declaration Area to the west.

The main difference between the three key areas of remediation is the level of treatment and criteria to be applied and the extent (i.e. lateral range and depth) of land to be excavated and remediated.

Intended future uses for Barangaroo Stage 1B (subject to future applications) include a mixture of commercial, high density residential, retail and public open space land uses. The Declaration Area RAP has therefore been designed to ensure that Block 4 and the adjacent public domain areas are remediated to a standard that allows the EPA Declaration to be lifted and ensures these areas would be suitable for their intended future uses.

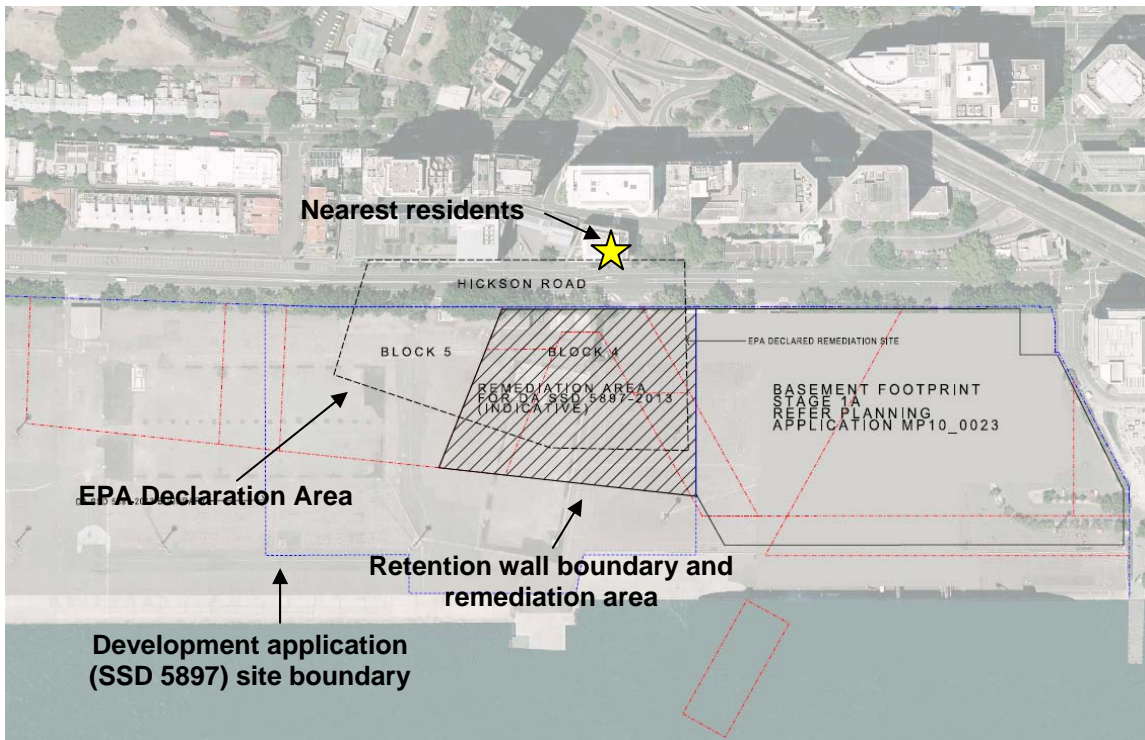


Figure 4: Overview of proposed remediation works

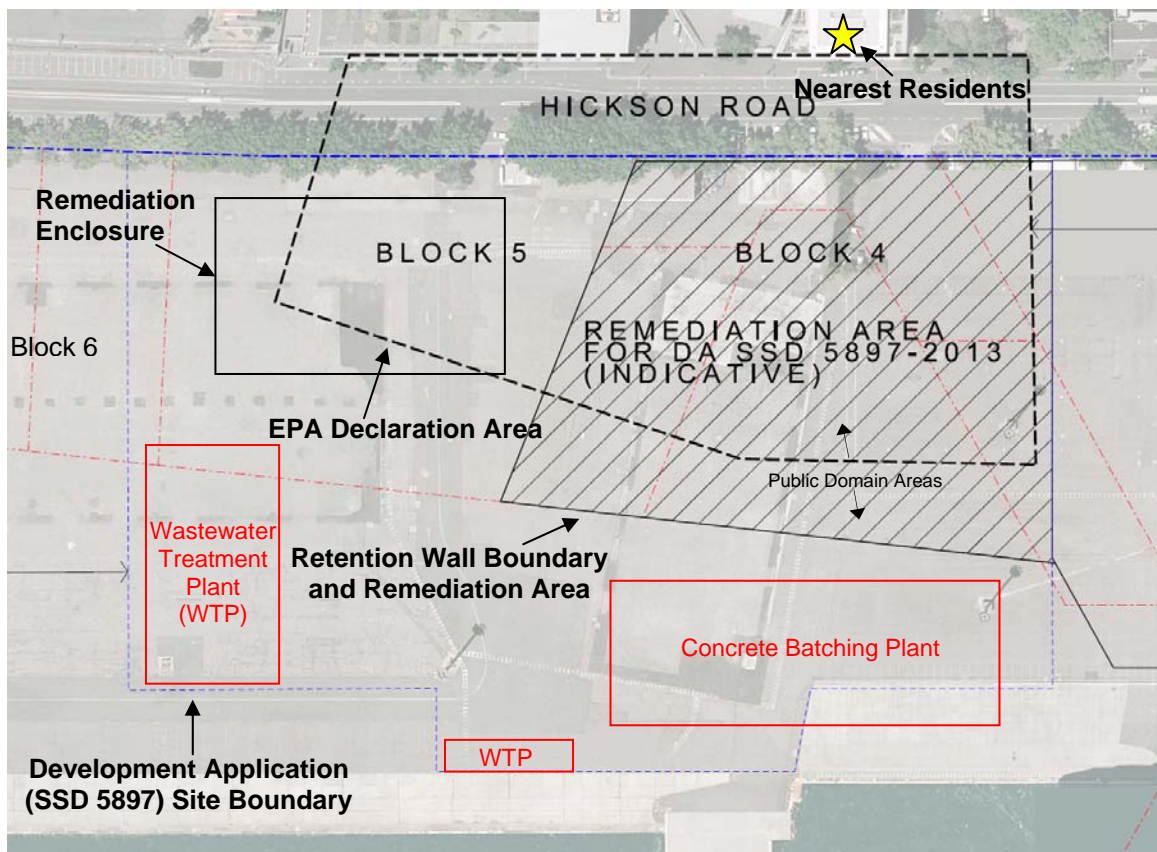


Figure 5: Close up view of proposed remediation works

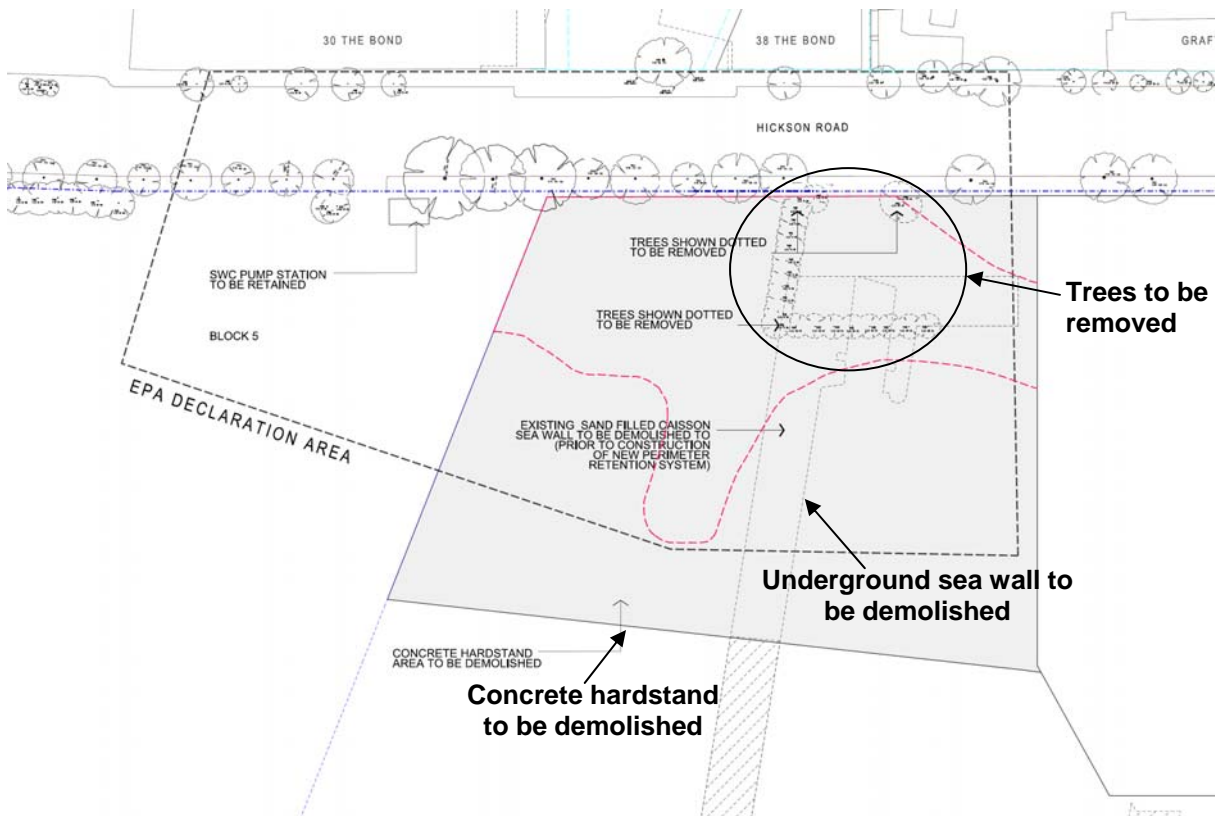


Figure 6: Close up view of other works

### 2.3 Staging

The EPA has indicated that the Declaration (no. 21122) will not be lifted until the entire area (i.e. Block 4, Block 5 and Hickson Road) has been successfully remediated (Figure 5).

The remediation of Block 4 and the adjacent public domain areas (the subject of this application) is therefore the first of three applications required to enable the EPA Declaration to be lifted.

The Block 4 remediation works are expected to take approximately 28 months to complete and would be undertaken in 6 stages which are summarised in Table 2 below.

Table 2: Development staging program

Stage	Description	Duration
1	<ul style="list-style-type: none"> <li>Construction of the Block 4 perimeter groundwater retention wall and the Hickson Road perimeter wall;</li> <li>Establishing site access off Hickson Road;</li> <li>Construction of the remediation enclosure on Block 5;</li> <li>Removal of trees located on Block 4; and</li> <li>Establishment of a logistics, storage and decontamination area located on Block 5 outside of the EPA Declaration Area.</li> </ul>	6 months
2	<ul style="list-style-type: none"> <li>Continuation of construction of the Block 4 perimeter groundwater retention wall; and</li> <li>Removal of spoil and overburden from Block 4 to the remediation enclosure.</li> </ul>	
3	<ul style="list-style-type: none"> <li>Dewatering of Block 4; and</li> <li>Establishing excavation enclosure on Block 4.</li> </ul>	19 months
4 & 5	<ul style="list-style-type: none"> <li>Carrying out of remediation activities at Block 4.</li> </ul>	
6	<ul style="list-style-type: none"> <li>Completion of Block 4 remediation works;</li> <li>Validation of the Block 4 remediation area; and</li> <li>Decommissioning of Block 4 remediation structures, including excavation and remediation enclosures.</li> </ul>	3 months

The remediation of Block 5 and Hickson Road will be the subject of two separate future applications.

## 2.4 Project Need and Justification

The remediation of the EPA Declaration Area (of which Block 4 would be the first stage) is a necessary requirement to address the significant risk of harm to human health and the environment identified by the EPA's Declaration (no. 21122).

The application will also facilitate the future development of Stage 1 of the Barangaroo site in accordance with the approved Barangaroo Concept Plan.

The Barangaroo site is identified as an important part of the "Global Sydney" Strategic Centre within the NSW Government's *draft Sydney Metropolitan Strategy for Sydney to 2031* (Metro Strategy).

Regionally, there are limited sites which can provide significant new foreshore open spaces and linkages within the CBD that could deliver significant amounts of new commercial and residential floor space. Barangaroo's waterfront location, size, and location on the western edge of the CBD means it presents an opportunity to deliver significant new commercial floor space and recreational opportunities. Coupled with significant infrastructure improvements and recreational and cultural activities, the redevelopment of Barangaroo can contribute to the sustained growth and enhance the position of Sydney within the Asia-Pacific region and the global market more generally.

By bringing forward the development of the Barangaroo site, the proposal will help meet key planning challenges in the Sydney CBD precinct (as identified in the Metro Strategy) such as:

- accommodating new jobs;
- ensuring sufficient capacity for office and hotel development in keeping with the city's global status;
- maintaining and improving amenity and cultural opportunities;
- encouraging the development of lifestyle and entertainment activities;
- maintaining and improving accessibility within the Sydney CBD; and
- facilitating the clustering of appropriate mutually supporting land uses.

## 3. STATUTORY CONTEXT

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### 3.1 SEPP (State and Regional Development) 2011

The proposal is a State significant development pursuant to section 89C of *Environmental Planning and Assessment Act 1979* (EP&A Act) because it is development at Barangaroo with a capital investment value (CIV) in excess of \$10 million, under clause 3 of Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*. Therefore, the Minister for Planning is the consent authority for the development.

### 3.2 Permissibility

Under clause 8 of *State Environmental Planning Policy No.55 - Remediation of Contaminated Land*, Category 1 remediation works may be carried out, despite any provision to the contrary in an Environmental Planning Instrument (EPI), with the consent of the consent authority.

The proposed remediation works are Category 1 because they require consent and are therefore permissible with development consent on the subject site.

### 3.3 Delegated Authority

On 14 September 2011, the Minister for Planning delegated responsibility for the determination of State significant development to the Secretary where:

- the relevant local council has not made an objection;
- a political disclosure statement has not been made; and
- there were less than 25 submissions in the nature of objection.

The proposal complies with the terms of the delegation as the City of Sydney Council (Council) did not object to the proposal, a political disclosure statement has not been made in relation to the application, and there were fewer than 25 submissions of objection.

Accordingly, the application is able to be determined by the Secretary under delegation.

### 3.4 Environmental Planning Instruments

Under section 79C of the EP&A Act, the consent authority, when determining a development application, must take into consideration the provisions of any environmental planning instruments (EPIs) and draft EPIs (that has been subject to public consultation and notified under the EP&A Act) that apply to the proposal.

The following EPIs apply to the site:

- State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP);
- State Environmental Planning Policy (Major Development) 2005 (MD SEPP);
- State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55);
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007;
- Sydney Regional Environmental Plan (Sydney Harbour Catchment 2005); and
- Sydney Harbour Foreshores and Waterways Development Control Plan 2005 (Sydney Harbour Waterways DCP).

Detailed consideration of the provisions of all EPIs that apply to the proposed development is provided in **Appendix D** of this report. The Department is satisfied that the proposed development generally complies with the relevant provisions of these EPIs.

It is also noted that while DCPs do not apply to SSD under clause 11 of the SRD SEPP, consideration has been given to the relevant clauses of the Sydney Harbour Waterways DCP in **Appendix D**.

### 3.5 Objects of the EP&A Act

Decisions made under the EP&A Act must have regard to the objects of the EP&A Act, as set out in section 5 of the Act.

The proposal complies with the objects of the EP&A Act as the application would promote the orderly and economic use and development of land at Barangaroo. This is because the proposal would result in the remediation of significantly contaminated land facilitating (bringing forward) the development of Barangaroo consistent with the approved Concept Plan (**Section 3.6**).

The Department's assessment in **Section 5** of this report demonstrates that the proposal would have no adverse impacts on native flora or fauna, including threatened species, populations and ecological communities, and their habitats and is therefore consistent with the principles of ESD (**Section 3.7**).

Accordingly, the application is considered consistent with the objectives of section 5 of the EP&A Act.

### 3.6 Compliance with Clause 3B of Schedule 6A of the EP&A Act

Clause 3B(2)(d) of Schedule 6A the EP&A Act specifies that a consent authority must not grant consent under Part 4 unless it is satisfied that a development is generally consistent with the terms of the approval of a Concept Plan.

The original environmental assessment for the approved Barangaroo Concept Plan identified that parts of the site (particularly those within the known footprint of the former gasworks) were contaminated and would need to be remediated in accordance with a RAP to ensure the site is made suitable for future uses. The remediation works are therefore considered to be consistent with the approved Concept Plan in this regard.

Further, it is considered that the remediation would facilitate (bring forward) the development of Barangaroo and the intended future uses for Barangaroo Stage 1B (subject to future applications) consistent with the approved Concept Plan.

### 3.7 Ecologically Sustainable Development

The EP&A Act adopts the definition of ESD found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental considerations in decision-making processes.

The Applicant has demonstrated that the proposal is consistent with the principles of ESD as described in section 8.3 of the EIS, which has been prepared in accordance with the requirements of Schedule 2 of the EP&A Regulation.

As concluded by the Department's assessment in **Section 5** of this report, the proposal would have no adverse impacts on native flora or fauna, including threatened species, populations and ecological communities, and their habitats and is therefore consistent with the principles of ESD.

### 3.8 Environmental Planning and Assessment Regulation 2000

Subject to any other references to compliance with the EP&A Regulation cited in this report, the requirements for notification (Part 6, Division 6) and fees (Part 15, Division 1AA) have been complied with.

### 3.9 Strategic Context

The Department considers that the proposal is consistent with the following State/regional/local strategies:

- the objectives of NSW 2021 via the creation of 298 new jobs during construction and 3 new jobs during operation within the Sydney CBD; and
- the planning objectives of the draft *Metropolitan Plan for Sydney to 2031* (Metro Strategy), which promotes:
  - bringing forward of the development of Barangaroo as part of Global Sydney and a major city shaper (Objective 4);
  - the protection and enhancement of Sydney Harbour and its environs through the remediation of significant contaminated land (Objective 4);
  - the protection of the health and resilience of environmental assets such as Sydney Harbour; and
  - the provision of capacity for jobs growth in Sydney (Objective 10).

### 3.10 Secretary's Environmental Assessment Requirements

Section 7.1 of the EIS addresses compliance with the Director-General's (now Secretary's) Environmental Assessment Requirements. These matters have been sufficiently addressed in the EIS to enable the Department to undertake a proper assessment of the proposal in accordance with the EP&A Act.

### 3.11 Considerations under Section 79C of the EP&A Act

Section 79C(1) of the EP&A Act sets out the matters to be considered by the consent authority in determining a development application. The Department's consideration of these matters is set out in **Table 3** below.

**Table 3:** Considerations under Section 79C of the EP&A Act

Section of EP&A Act	Matter for Consideration	Consideration in this Report
79C(1)(a)(i)	Provisions of any Environmental Planning Instrument.	<b>Section 3.4 and Appendix D</b>
79C(1)(a)(ii)	Any proposed instrument that has been subject to consultation under the EP&A Act and notified by the consent authority.	N/A
79C(1)(a)(iii)	Any development control plan.	N/A - <b>Section 3.4 and Appendix D</b>
79C(1)(a)(iiia)	Any planning agreement entered into under section 93F.	N/A
79C(1)(a)(iv)	The regulations	The Department has undertaken its assessment in accordance all relevant matters prescribed by the regulations.
79C(1)(a)(v)	Any coastal zone management plans.	N/A
79C(1)(a)(b)	The likely impacts of the development.	<b>Section 5 and Appendix C</b>
79C(1)(a)(c)	Suitability of the site for the development.	<b>Section 1 to Section 3</b>
79C(1)(a)(d)	Any submissions received.	<b>Section 4 and Section 5</b>
79C(1)(a)(e)	The public interest.	<b>Section 5.6</b>

## 4. CONSULTATION AND SUBMISSIONS

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### 4.1 Public Exhibition

Under section 89F(1) of the EP&A Act, the Secretary is required to make the development application (DA) and any accompanying information for a SSD proposal publicly available for at least 30 days.

After accepting the Environmental Impact Statement (EIS) for the proposal, the Department:

- placed the DA and EIS on public exhibition from **Thursday 21 November 2013** until **Friday 20 December 2013**;
  - on the Department's website; and
  - at the Department's Information Centre and City of Sydney Council's One Stop Shop.
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and City of Sydney Council by letter; and
- advertised the exhibition in the Sydney Morning Herald and the Daily Telegraph on **Wednesday 20 November 2013**.

During the exhibition period, the Department received five (5) submissions on the proposal (**Appendix E**):

- four (4) from public authorities; and
- one (1) public submission from Jemena.

None of the government authorities objected to the proposal but some issues of concern were raised with respect to the information provided and conditions recommended for inclusion in the development consent. The one (1) public submission objected to the proposal.

A summary of the issues raised in submissions is provided below.

### 4.2 Public Authority Submissions

The **City of Sydney Council (Council)** supported the Environment Protection Authority's (EPA) comments (see below) in relation to the need for a revised Air Quality Impact Assessment (AQIA) and Construction Noise and Vibration Management Plan (CNVMP) for the development to ensure air, noise and vibration emissions would not adversely impact on surrounding residents.

The **Environmental Protection Authority (EPA)** requested additional information in relation to:

- air pollutant management and the need for a revised AQIA that includes:
  - clarification of the final design of the odour control (i.e. excavation and remediation) enclosures, associated odour control systems, location and number of exhaust stacks which would influence air emissions;
  - further details of the proposed management and mitigation measures to ensure air emissions are effectively controlled and the relevant EPA criteria are met during remediation; and
  - a comprehensive Air Quality Management Plan to address potential impacts.
- noise and vibration management including:
  - further justification for the proposed remediation/construction hours which are outside of the EPA's standards hours;
  - consideration of further reasonable and feasible mitigation measures to address predicted exceedences the construction noise management levels; and
  - the need for a comprehensive CNVMP to address potential impacts.
- water quality management focussing on ensuring the existing water treatment plant can treat contaminated groundwater to an acceptable level to meet the relevant EPL limits; and
- waste management including asbestos and gasworks waste reuse, immobilisation and disposal requirements.

**Sydney Water Corporation (SWC)** requested additional information mainly in relation to the detailed design of stormwater infrastructure required in order to obtain an approval under Section 73 of the *Sydney Water Act 1994*. Information requested related to:

- the connection and disconnection of stormwater drainage;
- the maintenance and operations of temporary stormwater drainage;
- notification, advice and approval from relevant agencies for the disconnection of stormwater services;
- the need to conduct a risk workshop with relevant design consultant, water servicing consultants and contactors to identify key risks relating to temporary and permanent asset deviation proposals;

- the need to develop and implement an emergency response plan for the deviations to ensure safety;
- plans for the backfilling of any redundant pipes require specification;
- temporary stormwater deviation;
- permanent stormwater deviation; and
- consideration of Water Sensitive Urban Design.

SWC also advised that it does not support the proposed road drainage pits B6 and C2 for the permanent deviation.

**Transport for New South Wales (TNSW)** considered that:

- any traffic management plan that is prepared for the development should consider new bus routes outlined in TNSW's *Sydney City Centre Access Strategy 2013* and be updated to reflect the final configuration of Shelley Street once determined during the construction of the Wynyard Walk; and
- truck movements to and from the site should be limited during the peak period, specifically the PM peak.

The **New South Wales Land and Housing Corporation** advised the Department that it did not wish to make a submission.

**Sydney Ports Corporation** advised the Department that it did not wish to make a submission.

### 4.3 Public Submissions

**Jemena** objected to the proposal on the following grounds:

- the proposed Block 4 remediation works are excavation works which the Applicant needs to undertake in order to construct buildings for the approved Barangaroo Development;
- there are less intrusive methods for remediating Block 4;
- the EIS does not adequately assess undertaking the remediation of Block 4 for a continuation of existing use only (in the absence of the Barangaroo Development);
- the EIS does not adequately assess the impact of the proposed remediation works or the Barangaroo Development on groundwater dependent ecosystems;
- the extent of proposed remediation works for Block 4 is significantly larger than is required based on the underlying data; and
- the remediation of the Declaration Area should not occur in a 'piecemeal fashion' involving separate applications for Block 4, Block 5 and Hickson Road.

### 4.4 Response to Submissions

The Applicant has provided a response to the issues raised in submissions (RTS), which included some additional management measures but did not result in any significant changes to the development (**Appendix F**). This response has been made publicly available on the Department's website and was forwarded to the relevant public authorities for comment for 14 days.

On 19 August 2014, the Applicant also provided an addendum to the RTS (**Appendix F**) in response to additional concerns raised by the Department and the EPA regarding potential air quality, construction noise and vibration impacts. Any reference to the RTS in this report is taken to include the additional information provided in the RTS addendum. This report assesses the Applicant's preferred proposal as put forward in the RTS.

## 5. ASSESSMENT

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The Department has considered the EIS, the issues raised in submissions, the Applicant's RTS and RTS addendum in its assessment of the proposal. The Department considers the key issues to be:

- contamination (**Section 5.1**);
- construction impacts (**Section 5.2**);
- health impacts (**Section 5.3**); and
- traffic, parking and access (**Section 5.4**).

All other environmental impacts are considered to be minor. The Department's assessment of all other issues is provided in **Table 7** below.

## 5.1 Contamination

Soil and groundwater at the site is contaminated with gasworks waste and particularly waste tar as a result of the previous use of the site as a gasworks plant. The chemical composition of gasworks waste includes the following contaminants: polycyclic aromatic hydrocarbons (PAHs); benzene, toluene, ethylene and xylene (BTEX); total petroleum hydrocarbon (TPHs); ammonia; phenol and cyanide. The site is possibly further likely to be contaminated as a result of historic uncontrolled filling and land reclamation from Sydney Harbour. These contaminants include some classified as human carcinogens and substances toxic to aquatic ecosystems, some of which have been found to be migrating to the basement of an adjacent residential building and potentially Darling Harbour.

There is also potential for Acid Sulphate Soils (ASS) and hazardous building materials such as lead, PCBs and asbestos to be present.

In 2006, a geotechnical investigation prepared by Environmental Resources Management Australia (ERM) to support the environmental assessment for the approved Barangaroo Concept Plan recommended that a remedial action plan (RAP) be prepared for the site. As such, the *Overarching Remedial Action Plan* (Overarching RAP) for Barangaroo was prepared by ERM in 2010 which presents a summary of the contamination issues identified on the Barangaroo site and outlines an approach to the remediation of the site as a whole. The Overarching RAP required that a site specific RAP be developed for the EPA Declaration Area.

Therefore, in July 2013 a site specific (*NSW Declared Remediation Site No. 21122*) Remedial Action Plan (Declaration Area RAP) was prepared by AECOM for the proposed remediation and included in the EIS. The Declaration Area RAP outlines the remediation activities necessary to achieve two key objectives:

1. enable the revocation of the EPA Declaration (no. 21122); and
2. ensure that the future Stage 1B development area is suitable for the intended future uses of the land.

The proposed remediation strategy is described in detail in **Section 2.2** of this report.

The proposed remediation works would be undertaken in conformance with the abovementioned RAPs and the supporting detailed Human Health and Ecological Risk Assessments (HHERAs). The Declaration Area RAP has been prepared and approved by an independent EPA-accredited Site Auditor (Mr Graeme Nyland) consistent with the BDA's EPA-approved Voluntary Management Proposal (VMP). The Site Auditor has issued Section B Site Audit Statements verifying that the nature and extent of the contamination has been appropriately determined and the Declaration Area RAP is appropriate to achieve the abovementioned objectives.

In its original submission, the EPA did not raise any specific issues of concern in relation to the Declaration Area RAP and the proposed remediation methodology (**Section 2.2**). The EPA considered that, provided the site is validated in accordance with the remediation criteria specified in the HHERAs prepared specifically to support the RAP, contamination should not pose on-going environmental or health impacts. Notwithstanding this, the EPA has indicated to the Department that the Declaration will not be lifted until the entire area (i.e. Block 4, Block 5 and Hickson Road) has been successfully remediated.

In its submission on the RTS, the EPA raised some points of clarification in relation to contamination. The EPA has reviewed the Applicant's response to these issues and advised that it has no objections to approval of the application, subject to recommended conditions.

More recently however, the EPA raised concern that the EIS/RAP does not contain sufficient odour control measures for transportation of contaminated material off-site for treatment. Advice provided by the Applicant's site auditor has stated that if further information were required regarding off-site treatment, this would be appropriately documented in a RAP Addendum.

To address this issue, the Department has recommended a condition requiring the Applicant to prepare a RAP Addendum in consultation with the EPA in the event that contaminated material is to be transported off-site for treatment (see detail below). The EPA has reviewed the recommended condition and advised that it is acceptable.

A public submission from Jemena raised a number of issues of concern in relation to the methodology, nature and extent/scope of the proposed remediation works (**Section 4.3**).

In the RTS, the Applicant provided clarification that the proposed remediation works are being undertaken to: address the significant risk of harm to human health and the environment identified by the EPA's Declaration (no. 21122); and to ensure the site is suitable for its intended future uses. The Declaration Area RAP clearly establishes a set of remediation goals to achieve each of these two objectives and the scope of the development application (as outlined in the EIS) expressly seeks approval to carry out these works. Further, as noted above, the remediation works (including the methodology and extent of these works) would be undertaken in accordance with the Declaration Area RAP which has been prepared and approved by an independent EPA-accredited Site Auditor.

The Applicant also considered that the staged approach to the remediation works (i.e. remediation of the EPA Declaration Area over three separate applications for Block 4, Block 5 and Hickson Road – **Section 2.3**) would allow them to be undertaken in a more controlled and manageable fashion across the EPA Declaration Area which includes an open public road. It was also acknowledged that the remediation of Block 4 and adjacent public domain areas would not remove the Applicant's obligation to remediate the remaining parts of the EPA Declaration Area (i.e. Block 5 and Hickson Road) which would be the subject of future applications (**Section 2.3**).

The Department has reviewed the Applicant's RTS in detail and considers that the issues raised by Jemena have been satisfactorily addressed and that the remediation methodology is appropriate.

The site is currently zoned part 'B4 - Mixed Use' and part 'RE1 – Public Recreation' under the Major Development SEPP and a broad range of land uses (including some sensitive land uses such as child care centres, schools and outdoor recreation facilities) may be permitted within these zones. The Department is satisfied that the proposed remediation work itself would not present a greater risk to human health or the environment than the lawful use of the land in its current contaminated state. This is because the site is currently heavily contaminated with a range of chemicals including some classified as human carcinogens.

The Department considers that while the proposed works do present some risk of harm to human health and the environment, these risks can be effectively managed subject to the implementation of the management and mitigation measures outlined in the EIS (as modified by the RTS) and recommended conditions of consent. Key management and mitigation measures include:

- ensuring all remediation works are undertaken inside sealed enclosures fitted with appropriate air emissions control systems (i.e. odour and dust filtration devices) designed in consultation with the EPA (**Section 5.2.2**);
- implementation of an updated Air Quality Management Plan for Barangaroo South prepared in consultation with the EPA (**Section 5.2.2**);
- implementation of an extended real-time air monitoring program for Barangaroo South including an early warning system and reactive management procedure to ensure corrective actions are implemented prior to exceedences of the relevant air criteria (**Section 5.2.2**);
- use of appropriate personal protective equipment (PPE) for on-site workers; and
- implementation of a Health Management Plan and Asbestos Management Plan for the development prepared in consultation with the EPA, NSW Health and WorkCover NSW (**Section 5.3**).

The Department's assessment concludes that the approved HHERAs and Declaration Area RAP can be relied upon to ensure that the land would be remediated in accordance with the requirements of SEPP 55 and to ensure the land is made suitable for its intended future uses. In order to ensure this occurs, the Department has recommended the imposition of conditions requiring:

- all remediation works to be undertaken in accordance with the approved HHERAs and the Declaration Area RAP;
- the Applicant to prepare an addendum to the Declaration Area RAP in the event that contaminated material is to be transported off-site for treatment that:
  - is prepared in consultation with the EPA;
  - includes final details of all odour control measures to be implemented during transportation of untreated material; and
  - is approved by an EPA-accredited site auditor, prior to issue of the relevant Construction Certificate.
- the Applicant to submit a detailed site audit summary report, site audit statement and validation report verifying that the land is suitable for the proposed uses to the EPA, the Secretary, the Certifying Authority, and the Council within six months of the completion of the remediation works;
- the site auditor to verify that any excavated material for use on site or disposal offsite, including but not limited to the Headland Park at Barangaroo, is managed appropriately and in compliance with the relevant legislation and any relevant approved materials management plans; and

- the Applicant to notify the Council that remediation works have been completed, as per the requirements of Clauses 17 and 18 of SEPP 55.

With these conditions in place, the Department concludes that the subject site can be successfully remediated and validated in accordance with the relevant legislation.

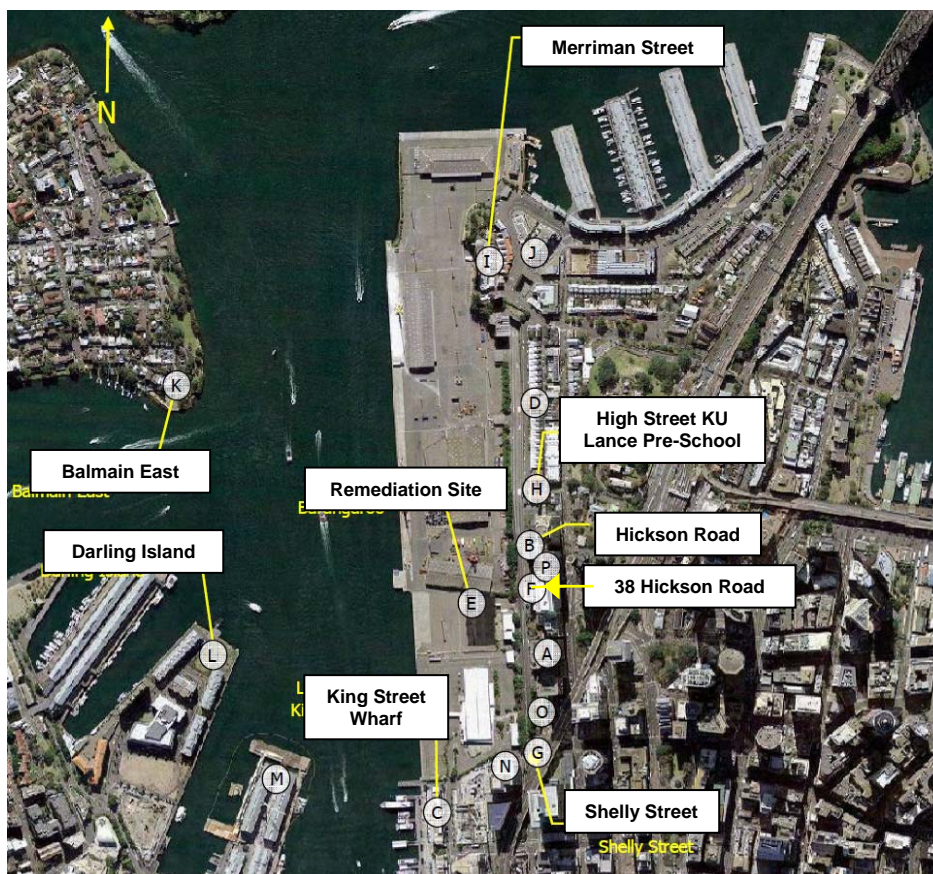
## 5.2 Construction Impacts

### 5.2.1 Noise and Vibration

The EIS for the proposal contains a construction noise and vibration assessment (CNVA) carried out by Wilkinson Murray Pty Ltd (Wilkinson Murray). The CNVA found that the remediation works would result in construction noise impacts above the relevant criteria which could result in disruption to residential amenity, if not appropriately managed.

The remediation works would take approximately 28 months to complete and are proposed to be undertaken from 7.00am to 6.00pm (Monday to Friday) and from 7.00am to 5.00pm on Saturdays. The proposed hours of construction on Saturdays are outside of the EPA's standard construction hours which are from 8.00am to 1.00pm. Some activities would also occur 24 hours, 7 days-a-week such as essential maintenance (e.g. dust suppression), material deliveries, the wastewater treatment plant (WTP), the odour control systems in the remediation enclosures and electrical generators.

The closest residences to the site are located at 38 Hickson Road approximately 25 metres (m) from the proposed remediation works (**Figure 7**). A pre-school is also located approximately 340 m to the north on High Street (**Figure 7**). Other residential receivers are also located further away at Balmain East and Darling Island while commercial receivers are located at the King Street Wharf, Shelly Street and some on Hickson Road (i.e. Lend Lease offices).



**Figure 7:** Noise receptor area locations

The CNVA considers the cumulative noise impacts from concurrent construction works at Barangaroo South (i.e. the construction of C3, C4, C5, R8 and R9), as well as the operation of the on-site concrete

batching plant (CBP) and WTP to present a conservative worst-case scenario. The noise predictions of the CNVA are summarised below.

## Construction Noise

The construction noise criteria for the proposal were determined in accordance with the EPA's *Interim Construction Noise Guideline* (ICNG) by measuring the rating background noise level (RBL) and adding 10dBA. Outside standard hours of construction the criteria would be more stringent at RBL plus 5dBA (i.e. on Saturdays for this project). This is known as the noise management level (NML) which differs depending on the receptor location, measured RBL and time of day (**Figure 7**). The key sources of noise identified includes bulldozers, excavators, rock saws, trucks, piling and soil treatment plant required to undertake the remediation works.

### Residential Receivers

Wilkinson Murray's noise assessment found that the most affected residences would be those located the closest at 38 Hickson Road (**Figure 7**) which is a block of residential apartments.

The daytime NML from Monday to Friday is 63 dBA at these residences. Predicted cumulative noise levels of up to 76 dBA from construction works would exceed the NML by 13 dBA at this receiver.

The daytime NML for Saturdays is more stringent at 55 dBA. Predicted worst-case cumulative noise levels of up to 76 dBA from construction works would exceed the NML by 21 dBA at these residences.

Exceedences of the NML by up to 16 dBA are also predicted at some residences on High Street on Saturdays. All other residences are predicted to experience minor 2 dBA to 4 dBA exceedences of the relevant NML for Saturdays.

At night-time, noise levels are not predicted to exceed relevant criteria due to limited activities occurring on site.

### Commercial Receivers

The relevant NML for commercial receivers is 70 dBA (24 hours, all days). General compliance with the NML is predicted at surrounding commercial premises with the exception of a minor 1 dBA exceedence at Shelly Street during the day. However, this exceedence is considered to be minor and inconsequential as it would be largely indistinguishable from existing background noise and is unlikely to occur in practice given the conservative nature of the noise modelling in the CNVA. This issue is discussed in further detail below.

### 'KU Lance' Pre-School

The relevant NML for external areas of pre-schools is 65 dBA during the day (all days). Predicted cumulative noise levels of up to 66 dBA would result in a minor 1 dBA exceedence of the external NML at the 'KU Lance pre-school'.

The relevant NML for internal areas of pre-schools is 55 dBA during the day (all days). Predicted worst-case cumulative noise levels of up to 66 dBA would exceed the internal NML by 11 dBA at the 'KU Lance pre-school'.

Due to the level of exceedences of the relevant criteria predicted at residences on Hickson Road, High Street and the 'KU Lance pre-school', both the Department and the EPA raised concerns. To address these concerns, it was requested that the Applicant:

- provide further justification for the proposed construction hours which are outside of the EPA's standards hours (i.e. the proposed hours of construction on Saturdays);
- provide further consideration of further reasonable and feasible noise mitigation measures to address predicted exceedences of the construction NMLs; and
- prepare a comprehensive Construction Noise and Vibration Management Plan (CNVMP) to address the potential exceedences.

In response to this request, the Applicant provided a revised CNVA (prepared by Wilkinson Murray) in its RTS. The Applicant's response and the Department's assessment of each of these issues are discussed separately below.

## Discussion

### *Extended Construction Hours and Mitigation Measures for Residential Noise Exceedences*

In the RTS, the Applicant clarified that the main purpose of the extended construction hours is to enable the remediation works to be completed as soon as possible to minimise the time in which nearby sensitive receivers would be exposed to noise impacts. The Applicant considered that complying with the EPA's standard hours would unnecessarily extend the duration of the remediation works by approximately six months meaning that sensitive receivers would be impacted by noise for a substantially longer period. The Applicant also noted that the proposed construction hours are consistent with other Ministerial approvals issued for development at Barangaroo South and are consistent with (marginally less than) Council's standard construction hours for its approvals.

The Applicant has committed to updating the CNVMP sub-plan for Barangaroo South to accommodate noise from the proposed development and adopt the recommended management and mitigation measures outlined in the CNVA. The mitigation measures include installing attenuators on exhaust fans and use of localised treatment such as barriers, shrouds to control noise from fixed plant. This commitment is supported by the EPA, and with the implementation of these measures the Department expects that construction noise levels would be minimised as far as reasonably practicable.

Although the Applicant would not comply with the EPA's standard construction hours and there may be some worst-case exceedences of the relevant construction noise criteria in the order of 11 dBA to 16 dBA at the closest residents (affording the above attenuation), the Department recognises that:

- the proposed construction hours are consistent with other approvals issued by the Minister and generally consistent with Council's standard construction hours for other developments in the area;
- the extended hours would enable the major noise and vibration generating activities to be carried out in a more efficient manner, thereby shortening the overall construction period to which sensitive receptors would be exposed to noise by approximately six months;
- the noise modelling undertaken in the CNVA is conservative such that predicted noise levels at nearby sensitive receivers are likely to be less than forecast because it:
  - considers the cumulative impacts of all noise intensive activities of all development at Barangaroo South which are unlikely to occur simultaneously in practice;
  - does not take into account the likely 'shielding effects' from noise provided by excavation walls for residences on Hickson Road and High Street which would improve as excavation depth increases; and
  - does not take into account that the construction of C4, C5, R8 and R9 (and associated noise impacts) are likely to be completed by the time the Block 4 remediation works commence.
- where possible, the Applicant has committed to implementing all reasonable and feasible noise mitigation measures which would mean that residents are unlikely to be exposed to noise above the highly affected NML of 75 dBA which is the level that is likely to cause a strong community reaction;
- due to the close proximity of construction works there is limited scope to further reduce construction noise levels by using engineered noise controls;
- the remediation/construction works would be undertaken during the daytime only;
- the Applicant has committed to prepare an updated CNVMP for the development with a focus on community consultation including a community liaison (e.g. early notification procedures), complaints and response mechanism for critical stages of the works;
- the Applicant undertakes real-time noise monitoring around the site which could include an early warning system and reactive management procedure to ensure corrective actions are implemented prior to exceedences of the relevant the relevant NMLs; and
- the remediation works are required to address contamination that represents a significant risk to human health and the environment, therefore are in the public interest.

The Department's assessment concludes that the proposed extended construction hours are appropriate in this instance and potential noise impacts can be effectively managed so that they do not exceed the highly affected NML of 75 dBA which is the level that is likely to cause an adverse community reaction. To ensure this is the case, the Department has recommended key conditions of consent that would require the Applicant to:

- comply with the proposed extended day-time construction hours but restrict noisy activities (e.g. rock hammering) to the EPA's standard construction hours and in no more than 3 hour blocks;
- implement all noise controls outlined in the CNVA (as part of the CNVMP);
- comply with the 75 dBA NML at the nearest residential receiver; and

- implement a revised CNVMP for the development consistent with all recommendations of the CNVA with a focus on community consultation, real-time noise monitoring, early warning and reactive management (as above).

By restricting noise intensive works to short periods, implementing all reasonable and feasible noise controls and an updated CNVMP (as above), the Department is confident that the Applicant can readily comply with the 75 dBA NML and ensure that the construction noise impacts of the development are minimised.

Upon review of the RTS, the EPA did not raise any further concerns in relation to construction noise. Where relevant, the Department has incorporated the EPA's recommended conditions into the development consent.

The Department also notes that no public submissions were received during the exhibition raising concerns about construction noise impacts.

#### *Pre-school Noise Exceedences*

The Department acknowledges that while there may be some occasional exceedences of the day-time internal noise objectives at the 'KU Lance pre-school', the Applicant has advised that the relevant NML may be achieved by closing the windows at the receiver on these occasions. The Applicant has advised that the pre-school has operable windows on each side of the building and alternative ventilation in the form of air conditioning. The Department considers that closing the windows would reduce internal noise levels by up to 20 dBA which would enable the development to achieve compliance with the relevant NML.

To formalise this arrangement and to ensure that potential construction noise impacts at the pre-school are effectively managed, the Department has recommended additional conditions requiring the Applicant to:

- consult with the 'KU Lance pre-school' and provide information to them on how to minimise construction noise impacts associated with the development during noise intensive works;
- confirm that the pre-school has operable windows on several sides of the building and/or air-conditioning to ensure that the building would be well ventilated in the event that windows are required to be closed during noise intensive works;
- provide the pre-school with information on its complaint management procedure and 24 hour enquiry line telephone number; and
- document the outcomes of the above in the updated CNVMP.

The Department's assessment has found that with the above recommended conditions in place, requiring the Applicant to work closely with the 'KU Lance pre-school', the development would achieve compliance with the relevant internal day-time NML at this receiver.

#### Conclusion

The Department notes that the noise modelling undertaken in the CNVA is conservative such that predicted noise levels at nearby sensitive receivers are likely to be less than forecast. In particular, the Department notes that the noise modelling does not take into account that the construction of C4, C5, R8 and R9 (and associated noise impacts) are likely to be completed by the time the remediation works commence. Further, both the Department and the EPA acknowledge that the Applicant has committed to the implementation of all reasonable and feasible construction noise mitigation measures which should further reduce the noise levels predicted in the CNVA.

With these measures and recommended conditions in place, the Department is confident that the remediation works can comply with the 75 dBA NML at the nearest residential receiver and the internal day-time NML at the 'KU Lance pre-school' so that construction noise impacts would be within acceptable limits. The implementation of an updated CNVMP by the Applicant with a focus on community consultation, real-time monitoring, early warning and reactive management would be critical to ensuring the potential construction noise impacts of the development are effectively managed.

In addition to this, the Department recognises that the remediation works are temporary in nature and are being undertaken voluntarily by the Applicant (on behalf of the BDA) to address contamination that represents a significant risk to human health and the environment, as demonstrated by the EPA's Declaration (no. 21122). This contamination includes some chemicals classified as human carcinogens.

The Department therefore concludes that the remediation works to be in the broader public interest and considers that potential construction noise impacts on nearby sensitive receivers would be minimised as far as reasonably practicable.

### **Traffic Noise**

The main truck haulage route for disposal of contaminated material would be along Sussex Street connecting to the Western Distribution, Cross City Tunnel or Eastern Distributor. The predicted increase in traffic noise would be less than 2 dBA above the existing peak hour noise level of 68.1 dBA during the day and would therefore meet the requirements of the EPA's *Road Noise Policy*. Further, the traffic operations would generally be limited to standard construction hours and as such, no traffic noise impact would occur during the night.

### **Vibration**

Operation of rock breakers during excavation works has the potential to generate vibration which could transmit to nearby buildings and impact human comfort or cause structural damage. The minimum distance between rock breaking activities and the nearest buildings could be around 15 metres when rock breaking occurs on the eastern boundary of the site. At this distance a heavy rock breaker would generate vibration levels of around 0.75mm/s which would exceed the human comfort criteria of 0.56mm/s.

To manage this potential impact, the Applicant has committed to undertaking trial testing of vibration intensive equipment at the closest buildings to ensure the human comfort criteria is not exceeded during the remediation works noting that the predicted vibration levels would be well within the structural damage criteria under all circumstances.

The Department further notes that the EPA did not raise any issues in relation to predicted vibration levels and with the abovementioned trial mechanism in place, the Department considers that the relevant human comfort criteria can be achieved. The Department has therefore incorporated vibration limits for human comfort and structural damage into the recommended conditions of consent.

#### **5.2.2 Air Quality and Odour**

The EIS for the proposed development included an Air Quality Impact Assessment (AQIA) carried out by AECOM. The AQIA found that the remediation works would result in some short-term air quality impacts above the relevant criteria that could impact human health or cause disruption to residential amenity, if not appropriately managed.

### **Air Emissions**

The proposed works would generate dust during excavation and materials handling. Heavy metals detected within the soil may also be released to the air attached to the dust. The combustion of diesel fuel in plant and equipment would also generate a range of pollutants, primarily NO<sub>2</sub>. Excavated material would also generate the gaseous emission of contaminants and odour to air. Some pollutants would also be emitted from exhaust stacks attached to the WTP and remediation enclosures.

The primary pollutants of concern for the proposed works include:

- dust from combustion activities (i.e. vehicle and plant operations), site preparation, excavation and remediation;
- NO<sub>2</sub> from combustion of diesel fuel in plant and equipment;
- heavy metals (e.g. cadmium, chromium, zinc, copper, lead and mercury) from contaminated soil and groundwater;
- VOCs (e.g. Benzene, Toluene, Ethylbenzene and Xylenes - BTEX) from combustion activities, contaminated soil and groundwater;
- Polycyclic Aromatic Hydrocarbons (PAHs) from contaminated soil and groundwater; and
- odour from contaminated soil and groundwater.

To control the emissions of pollutants to air, the remediation works (where possible) would be undertaken in enclosures operated under negative pressure with air extraction systems including a particulate control device, activated carbon adsorption system and exhaust stacks which are expected to achieve an odour reduction efficiency of up to 99.8%.

The original AQIA provided as part of the EIS included air dispersion modelling for a single ‘worst-case’ scenario (i.e. Scenario 1).

Scenario 1 (the ‘worst-case’ scenario) modelled the cumulative air quality impacts from the proposed development with all concurrent construction works around Barangaroo South (i.e. C3, C4, C5, R8 and R9 buildings) as well as the operation of the on-site CBP and WTP. This modelling found that there would be some exceedences of the relevant air quality criteria at nearby sensitive receivers (**Table 4**).

The EPA and Council raised concerns regarding predicted air quality impacts of the development on nearby sensitive receivers.

Both the EPA and Council requested that the Applicant submit a revised AQIA as part of the RTS including additional information on the mitigation and management measures to be implemented during the remediation works to demonstrate that the relevant air quality criteria could be achieved.

As a result, the Applicant provided a revised AQIA as part of the RTS. In particular, the revised AQIA included more detailed air dispersion modelling for a second more ‘likely’ scenario (Scenario 2) in addition to Scenario 1 (**Table 4**).

Scenario 2 (the ‘likely’ scenario), takes into account the expected decrease in the rate of pollution generation as the buildings C4, C5, R8 and R9 rise up from below ground excavations. These buildings are expected to be finished (or at the finishing stages of) construction with minimal particulate polluting activities occurring when the Block 4 excavations are commence. The ‘likely’ scenario therefore models and assesses the emissions from the remediation activities, with the construction works associated with the C3 building, as well as the ongoing operation of the on-site CBP and WTP.

Predicted air emissions were assessed at a total of 104 receptors identified by AECOM as the most representative sensitive receivers located in proximity to the works, predominantly along the eastern side of Hickson Road. The closest residents are located approximately 25m from the site on Hickson Road (**Figure 6**).

The results of air dispersion modeling for each scenario are summarised in **Table 4** below which presents the maximum pollutant concentrations predicted at any of the 104 receptor locations.

**Table 4:** Air dispersion modelling predictions

Pollutant	Averaging Period	Units	Maximum Predicted Pollutant Concentrations		Criteria
			Scenario 1	Scenario 2	
NO <sub>2</sub>	1 hour	µg/m <sup>3</sup>	<b>377*</b>	<b>250.6*</b>	246
	Annual	µg/m <sup>3</sup>	62* (20.7)	53.2 (20.7)	62
PM <sub>10</sub>	24 hour	µg/m <sup>3</sup>	<b>142*</b>	<b>141*</b>	50
	Annual	µg/m <sup>3</sup>	29.9* (17.4)	28.5* (17.4)	30
TSP	Annual	µg/m <sup>3</sup>	55* (35.5)	54.5* (35.5)	90
VOCs	1 hour	µg/m <sup>3</sup>	8.8 <sup>#</sup>	8.8 <sup>#</sup>	29 <sup>^</sup>
Benzene	1 hour	µg/m <sup>3</sup>	2.5	2.5	29
Ethylbenzene	1 hour	µg/m <sup>3</sup>	0.27	0.27	8,000
Toluene	1 hour	µg/m <sup>3</sup>	1.55	1.55	360
Xylenes	1 hour	µg/m <sup>3</sup>	0.58	0.58	190
Naphthalene	1 hour	µg/m <sup>3</sup>	17.2	17.2	440
Phenol	1 hour	µg/m <sup>3</sup>	0.22	0.22	20
Odour	1 hour	OU	0.02	0.02	2

The results of air dispersion modelling indicate that the proposed development would comply with the relevant criteria for all pollutants under both scenarios with the exception of some short-term exceedences of PM<sub>10</sub> and NO<sub>2</sub> (see highlighted in bold in **Table 4**). Importantly, the proposed development is also predicted to comply with the relevant odour criteria of 2 odour units (OU) with a predicted level of just 0.02 under both scenarios.

For NO<sub>2</sub>, the number of exceedences of the criteria is greatly reduced from 21 out of 104 receptors to 2 out of 104 receptors from Scenario 1 ('worst-case') to Scenario 2 ('likely') respectively. Further, the maximum predicted exceedence of the relevant NO<sub>2</sub> criteria also greatly reduces from 377 µg/m<sup>3</sup> to 250.6 µg/m<sup>3</sup> from Scenario 1 to Scenario 2, a significant reduction of 126.4 µg/m<sup>3</sup> or 33.5%. Finally, the maximum predicted exceedence of the relevant NO<sub>2</sub> criteria for Scenario 2 is minor at just 4.6µg/m<sup>3</sup> or less than 1.87% of the respective criteria (**Table 4**).

For PM<sub>10</sub> (particulate matter), the pollutant concentrations reduce only slightly from Scenario 1 to Scenario 2. This is because the primary source contribution and associated exceedences is attributed to the existing CBP on site which operates under both scenarios. However, these exceedences are considered to be manageable by the Applicant through operational practices and reactive management strategies such as real time particulate monitoring which is currently being successfully used to manage dust impacts associated with the excavation works associated with Blocks 1 to 3.

The Department agrees with the Applicant's position that because the construction of C4, C5, R8 and R9 (and associated polluting activities) are likely to be completed by the time the remediation works commence, air emissions are more realistically predicted by Scenario 2 rather than Scenario 1, which conservatively assumes all 'worst-case' emissions in one scenario.

Further, both scenarios model all equipment operating continuously for all operational hours which is unlikely to occur in practice due to construction lulls, maintenance downtimes etc. The Department therefore considers that the revised AQIA is conservative and that air emissions are likely to be less than predicted for both scenarios. Notwithstanding this, to minimise air emissions, the revised AQIA recommends a number of key mitigation and management measures such as:

- ensuring all remediation works (including excavation and treatment) are undertaken inside sealed enclosures;
- installation of an air emissions control system designed in consultation with the EPA on each enclosure including a particulate control device/s, activated carbon adsorption system and exhaust stack/s;
- covering of all trucks loads during transportation of excavated material;
- ensuring good site management and housekeeping practices such as site speed limits, swift spill clean-up procedures and the use of water sprays to wet down exposed surfaces and haul roads; and
- the implementation of an extended real-time air monitoring program for Barangaroo South including an early warning system and reactive management procedure to ensure corrective actions are implemented prior to exceedences of the relevant air criteria (e.g. for PM<sub>10</sub> particulate matter).

Upon review of the RTS, the EPA advised that it has no objections to the development on environmental grounds and supports approval of the development subject to recommended conditions.

The Applicant has committed to updating the Air Quality Management Sub-Plan for Barangaroo South to adopt the mitigation and management measures and monitoring program outlined in the AQIA which would be consistent with the EPL for the Barangaroo site (No. 13336). The Department has incorporated this requirement into the recommended conditions which is supported by the EPA.

The Department considers that the air modelling undertaken in the AQIA is conservative such that predicted air emissions are likely to be less than forecast. With recommended conditions in place, the Department's assessment has concluded that the air quality impacts of the proposed remediation works can be effectively managed so that they do not adversely impact human health or the environment and do not cause disruption to residential amenity.

### **Detailed Design of Air Emissions Control Enclosures**

The EPA and Council requested that the Applicant prepare a revised AQIA as part of the RTS based on the final design of the enclosures for excavation and treatment works. The EPA requested final details on the air pollutant control systems and the location and number of exhaust stacks to be fitted to the enclosures. This was to ensure that the potential air impacts of the development are accurately predicted and assessed.

In the RTS, the Applicant advised that the final design of the enclosures is not available because this will not be determined until a company is awarded the contract to carry out the works once put to tender. However, the Applicant has confirmed that the final design of the enclosures would be consistent with key conservative parameters assumed in the AQIA modelling such as:

- all excavation and treatment of material to be undertaken in sealed enclosures operated and maintained under negative pressure;

- each enclosure emission stack to be fitted minimum of two carbon filters suitable for the pollutants to be treated; and
- emission stacks to a minimum of 4m high and located a minimum of 60m from Hickson Road.

The Applicant has committed to submitting detailed design information for these structures to the EPA for approval prior to assembly.

Upon review of the revised AQIA in the RTS, Council did not raise any further issues. The EPA advised that it has no objections to the development on environmental grounds and supports approval of the development subject to recommended conditions. In particular, the EPA recommended an additional condition requiring the Applicant to provide a further revised AQIA incorporating final design of the enclosures, prior to the commencement of works.

On 22 July 2014, the Department, the Applicant and the EPA met to clarify the EPA's need for a further revised AQIA. At this meeting, it was confirmed that the EPA is supportive of the Applicant's abovementioned commitment and is comfortable that where material is proposed to be excavated and treated inside an enclosure fitted with a suitable air emissions control and ventilation system (as proposed in the RTS), air emissions can be effectively controlled.

The Department has therefore formalised this commitment in the recommended a conditions of consent which would require the Applicant to:

- submit final detailed design information for each enclosure (including plans and specifications for the air pollutant control systems) prepared by a suitably qualified and experienced person and submitted to the EPA for review and the Secretary for approval, prior to the issue of the relevant Construction Certificate; and
- as a contingency measure, prepare an Air Quality Verification Report (AQVR) based on the final design of the enclosures, prior to the issue of the relevant Construction Certificate.

The final approved design of the enclosures would need to be consistent with the key conservative parameters assumed in the revised AQIA (as above). The purpose of the AQVR would be to verify that the final detailed design of the enclosures (once a tender is awarded) is consistent with the key parameters assumed in the AQIA modelling and confirm compliance with the relevant air quality impact assessment criteria, prior to the commencement of works.

With these conditions in place, the enclosures would be designed so that they effectively control air emissions from the development and ensure that there is no adverse air quality impacts on nearby sensitive receivers, particularly from odour.

### **Air Emissions Control for Works Outside Enclosures**

The EPA's residual concerns related to the effective management of odour emissions when the use of an enclosure is not proposed during works (when the use of an enclosure is not practical), in particular during construction of the groundwater retention wall around Block 4. The EPA considered that this activity has the highest potential to cause short-term odour impacts beyond the site boundary because free tar is likely to be encountered.

In response to these concerns, the Applicant provided a Preliminary Air Quality and Odour Control Plan (PAQOCP) for the retention wall construction works as part of an RTS Addendum. The PAQOCP details the alternative measures that would be implemented to control emissions during the retention wall construction (e.g. covering exposed soil with clean fill or using foam or other chemicals to suppress particulate matter and odour). The EPA has reviewed this Plan and advised the Department that it has no objections to approval of the application on environmental grounds, subject to recommended conditions.

The Department has incorporated the EPA's recommended conditions into the consent. Key conditions would require the Applicant to:

- provide a detailed contractor methodology for odour control during the retention wall construction which meets the minimum requirements of the PAQOCP to the EPA for review and comment, prior to construction; and
- ensure all remediation works are undertaken in an enclosure approved by the Secretary, unless otherwise approved in writing by the EPA.

In deciding whether or not to permit the retention wall construction works to be undertaken outside an enclosure, the EPA would be required to have consideration of the detailed contractor methodology for odour control provided by the Applicant to the EPA in accordance with above condition.

With these conditions in place, air emissions would be effectively controlled when an enclosure is not used during the remediation, particularly during the retention wall construction.

As a final contingency measure, the Department has recommended an additional condition that would require the Applicant to implement additional air controls in consultation with the EPA to the satisfaction of the Secretary if the development is found to be causing unacceptable air and/or odour impacts to nearby sensitive receivers. This condition would ensure that suitable contingency measures are in place in the unlikely event that the development is found to be exceeding appropriate air limits.

### 5.3 Health Impacts

The area proposed for remediation is contaminated with a range of chemicals such as TPH, BTEX, PAHs, heavy metals and some potential asbestos which pose a risk to human health if exposure occurs. As such, a Health Impact Assessment (HIA) was prepared by AECOM and included in the EIS.

Key sensitive receptors which may be impacted upon by the remediation works include (**Figure 7**):

- site workers and visitors;
- the 'KU Lance pre-school' located on High Street;
- residents living to the east, south and north of the site;
- business patrons and staff and office workers to the east and south of the site; and
- pedestrians in the vicinity of the site.

The HHIA identified a range of potential human exposure scenarios with the main exposure pathway being through the inhalation of dust or vapor originating from contaminated soil. Dermal absorption and oral ingestion of deposited dust was not considered to pose a significant health risk due to workers being required to use of personal protective equipment (PPE).

To ensure that potential human health impacts on nearby sensitive receptors are minimised, the Applicant has committed to the implementation of a broad range of pollutant management measures (source controls) including but not limited to:

- dust suppression, including water spraying of exposed surfaces;
- excavation and treatment of contaminated materials within enclosures fitted with odour and dust filtration devices;
- minimising groundwater removal where possible to ensure excavated material is kept wet;
- minimising haul road lengths, truck speeds, covering truck loads and ensuring good material clean-up practices are in place;
- the erection of perimeter hoarding for adjacent sensitive receptors;
- prompt removal, covering (e.g. placement of tarpaulins over stockpiles) and surface stabilisation of contaminated material where possible; and
- treatment of contaminated surface water to enable safe discharge in accordance with the relevant regulatory limits.

With the implementation of these effective control measures, the HHIA concludes that the risk of exposure to harmful pollutant concentrations to nearby sensitive receivers would be low and within acceptable limits.

In addition, the HIA found that while health risks for workers on and adjacent the site would be high, these risks are considered to be manageable due to:

- on-site dust control measures (to be formalised in an updated the Air Quality Management Sub-Plan for Barangaroo South – **Section 5.2.2**);
- engineering controls, safe work practices and effective hygiene procedures (such as hand washing);
- use of the odour and dust filtration devices on the excavation and remediation enclosures;
- implementation of an Asbestos Management Plan (as part of the CEMP); and
- use of appropriate PPE.

The Department has reviewed the HIA and is confident that appropriate controls would be in place to protect the human health of workers on site and nearby sensitive receptors. To formalise these controls and ensure health impacts are appropriately managed, the Department has recommended key conditions which would require the Applicant to:

- prepare a Health Management Plan (HMP), prior to commencing works that:
  - ensures the development complies with the relevant requirements of the *Work, Health and Safety Regulation 2011*;
  - is prepared in consultation with NSW Health and WorkCover NSW;
  - is consistent with (and adopts) all recommendations and management measures outlined in the HHIA;
  - ensures an induction process is in place for site workers and visitors regarding the safe work practices and methods to be followed to minimise the potential for human exposure to pollutants; and
  - includes a suitable occupational health monitoring program that ensures potential and identified exceedences of the adopted health impact assessment criteria are linked to corrective work actions and the implementation of additional controls to ensure work health and safety.
- prepare an Asbestos Management Plan, prior to commencing works that:
  - is prepared in consultation with the EPA and WorkCover NSW;
  - is consistent with Safe Work Australia's codes of practice *How to Safely Remove Asbestos 2011* and *How to Manage and Control Asbestos in the Workplace 2011*;
  - ensures that all asbestos is handled and disposed of by a suitably licensed asbestos removalist in accordance with the relevant guidelines and legislation; and
  - ensures an induction process is in place for site workers and visitors regarding the identification of asbestos and the formal procedures to be followed in the event that asbestos is identified on site.

With these conditions in place, the Department's assessment concludes that the potential health impacts associated with the remediation works would be effectively managed.

#### 5.4 Traffic, Parking and Access

The remediation works would generate increased traffic which has the potential to impact on the surrounding road network. As such, a Traffic Impact Assessment (TIA) was prepared by ARUP and included in the EIS.

##### Traffic Generation

The remediation works would generate a maximum of 196 trucks to and from the site per day or 20 per hour over a standard working day. The likely vehicle access routes including key roads utilised by construction traffic are summarised in **Table 5** below.

**Table 5:** Vehicles access routes

Direction	Access Roads
North and north-west	<ul style="list-style-type: none"> <li>• Harbour Bridge – York Street – Margaret Street – Napoleon Street – Hickson Road (inbound).</li> <li>• Hickson Road – Napoleon Street – Kent Street – Western Distributor – Harbour Bridge (outbound).</li> </ul>
West	<ul style="list-style-type: none"> <li>• Anzac Bridge – Western Distributor – Sussex Street – Hickson Road (inbound).</li> <li>• Hickson Road – Sussex Street – Western Distributor – Anzac Bridge (outbound).</li> </ul>
South and east	<ul style="list-style-type: none"> <li>• Eastern Distributor or Cross City Tunnel (inbound and outbound)</li> </ul>

The TIA includes consideration of the cumulative traffic impacts of the proposed remediation works with all other construction works that would occur concurrently at Barangaroo (Scenario1) including:

- the Stage 1A basement;
- commercial buildings C3, C4 and C5;
- R8 and R9 residential buildings;
- Headland Park;
- Wynyard Walk; and
- Barangaroo Central – Waterfront Promenade.

The TIA also includes consideration of the cumulative traffic impacts of the proposed remediation works with the occupation of commercial buildings C3, C4 and C5 (Scenario 2) given the remediation works would extend beyond October 2015. It is noted that after this time, commercial buildings C3, C4 and C5 would become occupied and all other construction works (excluding the remediation) would be completed.

A summary of the predicted vehicle movements for both of these scenarios is provided in **Table 6** below.

**Table 6:** Vehicle movement generation

Time of Day	Scenario 1 - Cumulative construction traffic generation rates	Total
AM Peak	207 cars in, 67 cars out, 49 trucks in, 47 trucks out	370
PM Peak	67 cars in, 207 cars out, 49 trucks in, 47 trucks out	370
Time of Day	Scenario 2 - Additional traffic with occupation of C3, C4 and C5	Total
AM Peak	+10 cars in, +5 cars out, +15 trucks in, +15 trucks out	415
PM Peak	+5 cars in, +10 cars out, +15 trucks in, +15 trucks out	415

Using the predicted vehicle movements identified in **Table 6**, the TIA modelled the impact of the development on the Level of Service (LOS) of key intersections that would be utilised by construction vehicles.

The TIA found that traffic generated by the proposed remediation under both scenarios would result in minimal changes to the LOS of key intersections surrounding the site with the majority of intersections operating with a reasonable LOS (A to D).

The greatest impact would occur at the intersection of Sussex and Erskine Street in the PM peak hour which is already at capacity with an existing LOS (F). It is noted that while the average vehicle delay at this intersection would increase slightly by 13 seconds, the Applicant considers that it is unlikely that the modelled level of traffic during the PM peak hour (5pm to 6pm) at this intersection would occur in practice given that construction activities on site cease at 6pm would generally slow down after 4pm.

The Applicant therefore considers the TIA to be a conservative worst-case scenario and believes that intersections would operate at a better LOS than forecast in the TIA.

TNSW recommended that truck movements to and from the site be limited during the PM peak period. TNSW also requested that it be consulted so that any traffic management plan (and associated traffic modelling) that is prepared for the development considers new bus routes outlined in TNSW's *Sydney City Centre Access Strategy 2013* and is updated to reflect the final configuration of Shelley Street once determined during the construction of the Wynyard Walk. Council did not raise any issues in relation to construction traffic.

The Department has reviewed the TIA and concludes that the surrounding road network can accommodate traffic generated by the proposed development. In particular, the Department notes that all key intersections would continue to operate at an acceptable LOS, with the exception of the intersection of Sussex and Erskine Street which is already at capacity in the PM peak hour.

The Department generally concurs with views of the Applicant that the TIA modelling is conservative and it is likely that key intersections would operate at a better LOS than forecast in the TIA. However, to ensure that the development does not result in adverse traffic impacts, the Department has recommended a condition requiring the Applicant to prepare a Traffic Management Sub-Plan for Barangaroo South in consultation with TNSW, Council and the Barangaroo Development Authority. This plan would include final details of all measures that would be implemented to limit truck movements to and from the site (as far as practicable) during the PM peak period and minimise the impact of the development on the safety and capacity of the surrounding road network, specifically the intersection of Sussex and Erskine Street.

With this condition in place, the Department's assessment concludes that potential construction traffic impacts would be effectively managed.

## Parking

No parking would be provided on site for construction workers because they would be expected to use public transport consistent with other major CBD construction projects. It is expected that workers would travel to the site via train or bus outside the morning and afternoon peak commuter periods.

The Applicant considers that due to a limited amount of on-street parking surrounding the site and high cost of long-term parking, construction workers would utilise public transport. To encourage public transport use and other non-car travel options and reduce construction traffic, the Applicant has committed to providing advice to construction workers about public transport routes, fare costs (compared to parking costs), walking and cycling routes to the Barangaroo south site during site inductions. This advice would be formalised in a Green Travel Plan (GTP) as part of the Construction Traffic Management Sub-Plan for the development.

All trucks associated with the remediation works would be required to park on site, enter and leave the site in a forward direction and not queue on the public road network. The site is considered to have ample space to accommodate trucks associated with the remediation works.

Council and TNSW did not raise any concerns in relation to the proposed parking arrangements.

The Department concurs with the views of Applicant that proposed parking arrangements are appropriate for the remediation works and consistent with other major CBD construction projects. Notwithstanding this, the Department has incorporated the requirement for a GTP into the recommended conditions of consent.

## Access

The main site vehicle access would be via a gated entry and exit at the northern extent of Block 5, connecting to Hickson Road. An alternative site access is located on the southern edge of the site off Lime Street near Shelley Street. This access would only be used occasionally.

Existing concrete hardstand areas of the site would be utilised as internal haul roads where practicable and traffic movements on site would be directed around the remediation works.

Council and TNSW did not raise any concerns in relation to the proposed site access. The Department has reviewed the proposed access arrangements and concludes that they would be appropriate for the remediation works.

## 5.5 Other Issues

**Table 7:** Assessment of Other Issues

<b>Water Management</b>
<ul style="list-style-type: none"> <li>• The EIS includes a Soil and Water Impact Assessment which found that the potential for adverse impacts to local soil and groundwater systems from the proposed development is low.</li> <li>• This is because impacts to water quality would be managed by the implementation of: <ul style="list-style-type: none"> <li>- industry best practice erosion and sediment controls;</li> <li>- separation of clean stormwater (i.e. run-off from roofs and undisturbed areas of the site);</li> <li>- treatment of all wastewater at the existing wastewater treatment plant (WTP) on site; and</li> <li>- an expanded water quality monitoring program for Barangaroo South.</li> </ul> </li> <li>• Treated wastewater would be discharged into Darling Harbour or sewer in accordance with EPL limits and/or Sydney Water trade waste requirements.</li> <li>• The EPA recommended that the Applicant update the Water Management Plan for Barangaroo South to ensure wastewater treatment at the WTP is optimised for potential changes in the quality of water generated by the remediation.</li> <li>• Sydney Water did not raise any issues in relation to wastewater disposal.</li> <li>• The Department has incorporated the EPA's recommended condition into the development consent.</li> <li>• Construction of the groundwater retention wall is expected to improve groundwater quality to the west of Block 4 as it will prevent contaminated groundwater migrating east from the EPA Declaration Area towards Darling Harbour.</li> <li>• In addition, the retention wall is not expected to adversely impact on groundwater flow around Block 4 due to: the site remaining largely impervious due to the use of enclosures over open excavations and terrestrial groundwater recharge/flow therefore being low; and the relatively impermeable nature of sandstone bedrock which restricts natural groundwater flow.</li> <li>• The Department's assessment therefore concludes that the potential water impacts of the development would be effectively managed, subject to conditions. Further, upon completion, the remediation works would improve water quality in Darling Harbour.</li> </ul>
<b>Waste Management</b>
<ul style="list-style-type: none"> <li>• Waste generated by the development would include general work site waste, chemical waste (e.g. waste oils), demolition waste (e.g. asbestos), concrete and asphalt (2,100m<sup>3</sup>), excavated material (151,000m<sup>3</sup>), contaminated wastewater (2.5ML of groundwater and 0.24ML of stormwater) and some green waste from tree removal/pruning works.</li> <li>• Up to 6,000m<sup>3</sup> of solid wastes would be stockpiled on the site at any one time, the bulk of which (around 5,100m<sup>3</sup>) would be excavated material stored in the remediation enclosure.</li> <li>• The Applicant has prepared a Waste Management Plan (WMP) as part of the EIS which identifies waste sources and quantities and ensures all waste streams would be classified and disposed of in accordance with the EPA's <i>Waste Classification Guidelines 2009</i> (WCG).</li> <li>• The EPA requested clarification from the Applicant regarding the intent to reuse excavated asbestos containing material (ACM) on site and recommended conditions to ensure excavated ACM and gas works waste are classified, validated and managed in accordance with the relevant guidelines.</li> <li>• In the RTS, the Applicant clarified that excavated ACM may be re-used on site if it has been deemed (validated) suitable for re-use in accordance with the EPA's <i>Use of Asbestos-Contaminated Soils on Barangaroo 2013</i> and there is a need for the fill.</li> </ul>

- The Applicant also accepted the EPA's recommended condition that gas works waste that has been classified as restricted or hazardous would be managed in accordance with the EPA's *Specific Immobilisation Approval – EPA Waste Classification Guidelines Part 2: Immobilisation of Waste 2008*.
- The Department has incorporated the EPA's recommended conditions into the development consent.
- With the recommended conditions in place, the Department concludes that waste generated by the development would be effectively managed.

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#### Heritage

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- There are no items on the site listed as having local or State heritage significance.
- A non-Aboriginal Heritage Assessment (HA) was undertaken as part of the EIS which found that the site contains an archaeological resource associated with remains of Australia's first gasworks and nineteenth-century shipbuilding, reclamation and wharfage (e.g. an old sea wall – **Figure 6**).
- However, the HA concluded that:
  - the area is highly contaminated which affects its significance and makes it difficult to realise the significance of the resource in its current state;
  - there is limited ability for archaeological monitoring or recording of the remains in Block 4 due to the level of contamination and methodology proposed; and
  - given the above, the resource is of local heritage significance.
- The HA recommended that a methodology be developed by the Applicant for some archaeological monitoring and recording of remains to be removed during the remediation.
- The Applicant has committed to the above and the Department has incorporated this requirement into the recommended conditions.
- An Aboriginal Heritage Assessment was undertaken as part of the EIS which concluded that the site has no Aboriginal archaeological or cultural heritage potential.
- This is because the site is located on land that has been reclaimed and heavily impacted upon by the construction and operation of the former gasworks.
- Council did not raise any issues in relation to heritage.
- The Department's assessment concludes that the heritage impacts of the remediation would be minor, subject to recommended conditions.

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#### Visual Impact

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- The remediation works would generally not be visible from ground level as they would take place inside enclosures and behind a 2.4m high hoarding around the site. However, the enclosures and some external works would be visible from elevated areas above on Hickson Road.
- Stockpiles would be up to 4m high but would generally not be visible from ground level.
- Temporary enclosures (tent like structures or similar) would be used to mitigate air emissions during excavation. These enclosures would be up to 8m in height and would vary in size depending on the nature and scale of excavation.
- A temporary remediation enclosure (steel shed like structure or similar - **Figure 5**) would also be erected for stockpiling and treatment of contaminated material.
- Overview plans provided in the EIS indicate that the remediation enclosure would be approximately 60m long by 40m wide (~2,400m<sup>2</sup>) and up to 8m in height.
- Despite this, it is considered that the visual aspect of the remediation works would be similar to the current extensive construction works being undertaken at Barangaroo South (e.g. Stage 1A Basement, commercial and residential buildings) and specifically on Block 4. The visual context of these works is illustrated on the **cover photo** of this report.
- It is also noted that the cement storage silos on site at the adjacent Concrete Batching Plant are approximately 19.5m high.
- The remediation works would also be temporary in nature taking approximately 28 months to complete and mature fig trees present along Hickson Road would also help screen the site from public view.
- Night-time lighting would comply with the relevant Australian Standards, and would therefore not result in light spill off-site.
- As such, the visual impact assessment (VIA) in the EIS concludes that the remediation would not have a significant impact on views to the site.
- Council did not raise any issues in relation to visual impacts.
- The Department agrees with the conclusions of the VIA and concludes that the visual impacts of the development would be minimal. This is largely because these impacts would be temporary and the visual nature of the works (including the bulk height and scale of enclosures and stockpiles) would be largely indistinguishable from existing construction works and associated structures at Barangaroo South.
- Recommended conditions would require the Applicant to submit final detailed design plans of the proposed enclosures to the Secretary for approval, prior to the issue of the relevant Construction Certificate for excavation works. This will enable the Department to verify that the final design of these structures would not result in adverse visual impacts to nearby sensitive receivers.
- Following the completion works, all odour control enclosures would be required to be dismantled and removed from the site within 3 months.

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#### Hazards and Risks

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- The EIS includes a Preliminary Hazards Assessment (PHA) prepared by AECOM because the proposed remediation works are 'potentially hazardous' as defined by *State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)*.

- This is mainly due to the large quantities of oxidising agents (Dangerous Goods Class 5.1) to be stored on site and used to treat contaminated soil under the preferred remediation methodology.
- Upon review of the original PHA, the Department requested that the Applicant prepare an updated PHA as part of the RTS including site layout plans showing the final locations of Dangerous Goods (DG) storage areas and rectifying a number of minor errors and incorrect references.
- The updated PHA makes conservative recommendations for separation distances for DG storage areas with respect to the site boundary, as well as between different classes of DGs. As the final locations of DGs storage areas were not available at the time the updated PHA was prepared (subject to detailed design), compliance with the relevant hazards and risks requirements would be verified in the Final Hazards Analysis (FHA).
- The updated PHA also makes recommendations for the preparation of fire and emergency response plans to manage potential hazards and risks.
- The Department has reviewed the updated PHA and considers the approach and recommendations to be acceptable.
- Although the proposal represents a 'low risk' development, hazards and risks conditions have been incorporated into the development consent due to the CBD/foreshore location of the site.
- Based on the information provided in the revised PHA, and assuming all safeguards and recommendations of the PHA are implemented along with the Department's recommended conditions of consent, the Department's assessment concludes that the development would not pose an unacceptable risk to surrounding land uses.

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### Tree Removal

- The EIS includes a Tree Management Plan (TMP) which identifies the trees to be removed and those to be retained, and includes a detailed set of restrictions to protect the trees which are identified to be retained.
- Twenty one (21) low quality trees (i.e. 20 Tuckeroos and a Beach Hibiscus) would be removed from the site to enable the remediation to occur.
- Ten (10) existing Hill Fig Trees located along the western side of Hickson Road would be retained. Tree Protection Zones would be established for these trees.
- Tree removal works would be undertaken and monitored by a suitably qualified arborist and would comply with the WorkCover NSW's *Code of Practice for the Amenities Tree Industry 1998*. These works also require approval under Council's *Tree Preservation Order*.
- Some crown pruning may also be required to facilitate the construction of the retention wall and stormwater diversion works.
- Crown pruning would be undertaken in accordance with the relevant Australia Standards and in consultation with the project arborist.
- The Applicant has committed to appointing a project arborist to monitor all tree removal and tree health and preservation works in accordance with the TMP.
- The Department has formalised the requirement for the Applicant to undertake all tree removal works in accordance with the TMP in the recommended conditions.
- With this condition in place, the Department's assessment concludes that tree removal and pruning would be effectively managed.

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### Ecology

- The remediation works would be undertaken behind the existing caisson walls and rock embankment beneath the existing wharf which form the current shoreline.
- The remediation works would also be undertaken within a groundwater retention wall and therefore the potential for contaminated water or sediment to move beyond these structures and impact marine ecology is very low.
- Further, no marine vegetation (e.g. sea grasses) was observed at the site during the undertaking of marine ecological studies.
- A public submission raised concern that the EIS did not adequately assess potential impacts to groundwater dependent ecosystems (GDEs).
- However, the Applicant has advised that no GDEs have been identified on site in project lead-in studies. Further, given the high concentration of contamination currently present at the site, it is considered unlikely that any significant GDEs would be present.
- In the RTS, the Applicant also confirmed that: Block 4 is being remediated because the existing contamination presents an unacceptable risk to downstream GDEs; and the proposed remediation works would result in minimal impact to GDEs as a result of localised and temporary dewatering of the excavation areas.
- The EPA did not raise any concerns in relation to potential impacts on GDEs.
- The Department's assessment therefore concludes that the proposal would result in minimal impacts to marine ecology and GDEs.
- Conversely, the Department considers that the successful remediation of Block 4 would improve water quality in Darling Harbour resulting in indirect improvements to riparian and aquatic habitats.

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### Stormwater Infrastructure

- The EIS includes a Stormwater Diversion Plan prepared by Cardno because the development requires diversion and augmentation of stormwater drainage infrastructure around Block 4 to the south of the proposed groundwater retention wall and north of the existing Stage 1A basement (**Section 2.1**).
- This would involve decommissioning existing pipes, and the construction of a new pipe network and associated water treatment (e.g. gross pollution traps) to connect to an existing Sydney Water pipeline on the southern boundary of Block 4.
- SWC did not object to the proposal but requested additional information mainly in relation to the detailed design of stormwater infrastructure (**Section 4.2**) required in order to obtain an approval under Section 73 of the *Sydney*

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*Water Act 1994.*

- In the RTS, the Applicant advised that it is continuing to consult with SWC to ensure that it obtains a Section 73 compliance certificate from SWC for the stormwater diversion works.
  - SWC has reviewed the RTS and advised that it has no further requirements and that it will continue to work with the Applicant so that they can obtain a Section 73 approval.
  - The Department is confident that the impacts of the development on stormwater infrastructure can be effectively managed. The Department has therefore formalised requirements for the Applicant to obtain a Section 73 Certificate from SWC for the proposed stormwater works into the recommended conditions.
- 

## 5.6 Public Interest

The application is considered to be in the public interest as it will provide the following key public benefits:

- address the significant risk of harm to human health and the environment identified by the EPA's Declaration (no. 21122);
- bring forward the development of the Barangaroo site which is identified as an important part of the "Global Sydney" in the Metro Strategy;
- facilitate the development of Barangaroo South in accordance with the approved Barangaroo Concept Plan (as modified) which will involve significant capital investment of around \$6 billion dollars into the NSW economy;
- improve water quality in Darling Harbour therefore enhancing Sydney Harbour and its environs which is identified as a key objective of the draft Metro Strategy and State Plan; and
- create approximately 298 full-time jobs during construction and 3 full-time jobs during operation which is consistent with the objectives of *NSW 2021*.

## 6. CONCLUSION

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The Department has assessed the merits of the development having regard to the objects of the EP&A Act and the principles of ecologically sustainable development. The Department has reviewed the EIS and duly considered advice from public authorities as well as issues raised in public submissions in accordance with section 75I(2) of the EP&A Act.

The key issues relating to the assessment of the remediation works include potential contamination, construction (noise and vibration and air quality), health, traffic, parking and access impacts.

All key environmental issues associated with the proposal have been assessed, and appropriate conditions are recommended, where necessary. This assessment has concluded that with the implementation of the recommended conditions of consent, the impacts of the development can be mitigated and/or managed to ensure an acceptable level of environmental performance.

In particular, the Department has recommended conditions that would require the remediation works to be carried out in accordance with the Declaration Area RAP and supporting HHERAs which have been reviewed and approved by an EPA-accredited site auditor. The Department has also recommended conditions that would require the Applicant to prepare and implement a number of key environmental management plans to mitigate potential residual construction (e.g. air, noise and vibration), traffic, parking, access and health impacts.

The Department's assessment has concluded that the development would address the significant risk of harm to human health and the environment identified by the EPA's Declaration (no. 21122) and would bring forward the development of Barangaroo South at significant benefit to the NSW economy. Further, the proposal is generally consistent with the approved Barangaroo Concept Plan (as modified), the strategic objectives for the area, the draft Metro Strategy, and the requirements of relevant environmental planning instruments and policies.

Consequently, the Department considers that the development is in the public interest and should be approved, subject to conditions.

## 7. RECOMMENDATION

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It is recommended that the Secretary:

- **consider** all relevant matters prescribed under section 79C of the EP&A Act, as contained in the findings and recommendations of the assessment report and appended documentation;
- **grant consent** to the development application, subject to conditions, under section 89E of the EP&A Act, having considered all relevant matters in accordance with the above; and
- **sign** the attached instrument of consent at **Appendix A**.

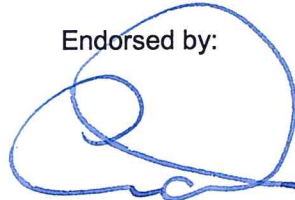
Prepared by: Andrew Hartcher

Endorsed by:



Ben Lusher  
**Manager**  
**Key Sites and Social Projects**

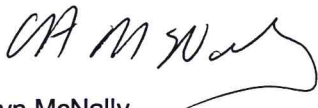
Endorsed by:



30.10.14

Chris Wilson  
**Executive Director**  
**Infrastructure and Industry Assessments**

Approved by:



Carolyn McNally  
**Secretary**

10.11.14

## **APPENDIX A    RECOMMENDED CONDITIONS**

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## **APPENDIX B - BARANGAROO CONCEPT PLAN – PLANNING HISTORY**

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### **Barangaroo Concept Plan MP 06\_0162**

The then Minister for Planning approved the Barangaroo Concept Plan (MP 06\_0162) on 9 February 2007.

The Concept Plan approval allowed for:

- mixed use development involving a maximum of 388,300 sqm of gross floor area (GFA) contained within eight blocks on a total site area of 22 hectares (ha);
- approximately 11 ha of new public open space/public domain, including a 1.4 kilometre (km) public foreshore promenade;
- a maximum of 8,500 sqm GFA for a passenger terminal and a maximum of 3,000 sqm GFA for active uses that support the public domain within the public recreation zone;
- built form design principles, maximum building heights and maximum GFA for each development block within the mixed use zone;
- alteration of the existing seawalls and creation of a partial new shoreline to the Harbour;
- retention of the existing Sydney Ports Corporation Port Safety Operations and Harbour Tower Control Operations including employee parking; and
- an underground car park beneath the northern headland park, containing approximately 300 car parking spaces.

The capital investment value (CIV) of the approved Concept Plan was \$1.5 billion with up to 16,000 operational jobs

The following outlines the subsequent 7 modification approvals to the Concept Plan:

### **MP 06\_0162 MOD 1**

On 25 September 2007, the Executive Director, Strategic Sites and Urban Renewal, as delegate of the Minister for Planning, approved a minor modification to the approved Concept Plan to correct minor typographical errors and re-wording of the design excellence terms. This modification did not alter the maximum GFA or mix of uses.

### **MP 06\_0162 MOD 2**

On 16 February 2009, the then Minister for Planning approved a second modification to the Concept Plan to increase the GFA of commercial uses by 120,000 sqm in Blocks 2, 3, 4 and 5, to a total overall GFA of 438,000 sqm. The modification increased the total maximum GFA for Barangaroo to 508,300 m<sup>2</sup> (an increase of 120,000 sqm or 31 per cent over the whole site).

### **MP 06\_0162 MOD 3**

On 11 November 2009, the then Minister for Planning approved a third modification to the Concept Plan, generally meeting the requirements of the Concept Plan approval relating to the northern headland and northern cove, with other changes as follows:

- the reinstatement of a headland at the northern end of the site with a naturalised shape and form including a build up of height and a landscaped connection to physically link Clyne Reserve to allow direct pedestrian access from Argyle Place;
- an enlargement of the northern cove to achieve a greater naturalised shape, form and edges (note this modification and the one above were required modifications in the terms of the original Concept Plan, contained in Modification B1 and B2, and following recommendations made in the jury report regarding the original winning competition scheme);
- the consequential re-alignment of Globe Street to turn right towards Hickson Road immediately south of the enlarged cove, rather than continuing north around the headland;
- the consequential removal of development Block 8 and part of Block 7 and redistribution of the associated land use mix;
- the demolition of three heritage items being the Sandstone Seawall; the Sydney Ports Harbour Control Tower; and the MWS & DB Sewage Pumping Station; and
- amendments to the Statement of Commitments relating to the preparation of relevant plans and strategies so that work can commence in stages.

This modification slightly reduced the approved GFA and mix of uses, with a resulting total GFA of 501,000 m<sup>2</sup> (comprising 489,500 m<sup>2</sup> of mixed uses and 11,500 m<sup>2</sup> for the passenger terminal and active uses in the open space zone).

#### **MP 06\_0162 MOD 4**

On 16 December 2010, the then Minister for Planning approved a fourth modification to the Concept Plan. The modified Concept Plan provides for the following:

- a maximum of 563,965 sqm mixed uses GFA, including residential, commercial and retail uses which includes:
  - a maximum of 128,763 sqm of residential uses
  - a maximum of 50,000 sqm of tourist uses GFA; and
  - a maximum of 39,000 sqm of retail GFA.
- a maximum of 4,500 sqm of active uses GFA (3,000 sqm of which will be in Barangaroo South);
- a minimum of 12,000 sqm of community uses GFA (10,000 sqm of which will be in Barangaroo South);
- approximately 11 hectares of new public open space/public domain, with a range of formal and informal open space serving separate recreational functions and includes a 2.2 km public foreshore promenade;
- built form principles, maximum building heights and GFA for each development block within the mixed use zone;
- public domain landscape concept including parks, streets and pedestrian connections; and
- alteration of the existing seawalls and creation of a portion of the new shoreline to the Harbour.

In order to accommodate the changes made to the Concept Plan, Schedule 3 of Part 12 of the Major Development SEPP was concurrently amended. The amendment rezoned parts of the Barangaroo site and the adjoining areas from 'RE1 Public Recreation' and 'W1 Maritime Waters and Transport' to 'B4 Mixed Use' and 'RE1 Public Recreation'. Modifications to the distribution of GFA and building heights were also included in the amendment.

#### **MP 06\_0162 MOD 5**

This modification was lodged in February 2011, and proposed modifications to clarify the outcomes with respect to the distribution of community uses GFA across the Barangaroo site, and to correct a number of minor typographical errors. This application was subsequently withdrawn on 22 March 2011.

#### **MP06\_0162 MOD 6**

This modification application proposed to modify the Barangaroo Concept Plan for Barangaroo South. The proposed modifications, as publicly exhibited, sought approval for the following:

- the realignment of the development block boundaries for Blocks 3, 4A and 4B;
- revisions to the Urban Design Controls to reflect the changes to the Block boundaries for Blocks 3, 4A and 4B;
- change the requirement for a 'minimum' of 12,000 sqm of community uses gross floor area (GFA) to be delivered to a 'maximum';
- allow architectural roof elements and building management units to be excluded from the maximum height limit definition; and
- specify the car parking rates for 'other' uses thus removing the requirement to comply with City of Sydney Council's current car parking rates.

On 25 March 2014, the Planning Assessment Commission approved the application.

#### **MP06\_0162 MOD 7**

On 11 April 2014, the then Minister for Planning and Infrastructure approved a seventh modification to the Concept Plan to allow the construction, operation and maintenance of a concrete batching plant to supply concrete for the construction of future development under this Concept Plan at Barangaroo South.

## **APPENDIX C ENVIRONMENTAL IMPACT STATEMENT**

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See the Department's website at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5897](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5897)

## APPENDIX D      CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

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### State Environmental Planning Policy (State and Regional Development) 2011

The aims of this SEPP are to identify State significant development and State significant infrastructure and provide the necessary functions to joint regional planning panels to determine development applications.

The proposal is a State significant development pursuant to section 89C of *Environmental Planning and Assessment Act 1979* (EP&A Act) because it is development at Barangaroo with a capital investment value (CIV) in excess of \$10 million, under clause 3 of Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*. Therefore, the Minister for Planning is the consent authority for the development.

### State Environmental Planning Policy (Major Development) 2005

The aims of the MD SEPP are to facilitate the redevelopment of important sites such as Barangaroo for the benefit of the State and provide for the development of major sites for a public purpose.

The proposed development is considered to be consistent with the MD SEPP as it will enable the future development of Stage 1 of the Barangaroo site in accordance with the approved Barangaroo Concept Plan (as modified).

### State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 aims to identify proposed developments with the potential for significant off-site impacts, in terms of risk and/or offence (odour, noise etc). A development is defined as potentially hazardous and/or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/or offence impact on off-site receptors.

The proposed quantities of dangerous goods to be stored at the facility exceed the threshold limits established for SEPP 33. SEPP 33 requires that a Preliminary Hazards Analysis (PHA) be carried out on a potentially hazardous development to ensure that any hazards are systematically evaluated as part of the overall environmental assessment.

The EIS includes a Preliminary Hazards Assessment (PHA) prepared by AECOM because the proposed remediation works are 'potentially hazardous' as defined by *State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)*. This is mainly due to the large quantities of oxidising agents (Dangerous Goods Class 5.1) to be stored on site and used to treat contaminated soil under the preferred remediation methodology.

Upon review of the original PHA, the Department requested that the Applicant prepare an updated PHA as part of the RTS including site layout plans showing the final locations of Dangerous Goods (DG) storage areas and rectifying a number of minor errors and incorrect references. As such an updated PHA was submitted as part of the RTS which the Department has reviewed and considers acceptable.

Based on the information provided in the revised PHA, and assuming all safeguards and recommendations of the PHA are implemented along with the Department's recommended conditions of consent, the Department's assessment concludes that the development would not pose an unacceptable risk to surrounding land uses (**Section 5.4**).

The Department's assessment therefore concludes that the proposal is consistent with the relevant provisions of SEPP 33.

### State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 aims to provide a State wide approach to the remediation of contaminated land. In particular, SEPP 55 aims to promote the remediation of contaminated land to reduce the risk of harm to human health and the environment by specifying:

- under what circumstances consent is required;
- the relevant considerations for consent to carry out remediation work; and
- that remediation works undertaken meet certain standards and notification requirements.

As the proposed development requires consent under the provisions of clause 3 of Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*, the proposed works are classified as 'Category 1' works under clause 9 of SEPP 55, and the Applicant must obtain consent before undertaking the remedial works.

Clause 7 of the SEPP prevents a consent authority from issuing development consent unless it has considered:

- whether the subject site is contaminated;
- whether a contaminated site is suitable for its proposed use in its current state, or will be suitable following remediation; and
- whether it is satisfied that the site will be remediated before the land is used for the purpose proposed under the application.

In addition, where remedial works are required, Clause 17 of the SEPP requires all remedial works to be undertaken in accordance with the EP&A Act, any guidelines drafted under the *Contaminated Land Management Act 1997*, and a remedial action plan (if works are 'Category 1' works), prepared in accordance with the *Contaminated Land Planning Guidelines*. Clause 18 also requires the Applicant to notify the relevant Council within 30 days of the completion of remedial works.

In May 2009, the EPA declared part of Millers Point to be a remediation site (no. 21122) under Section 9 of the *Contaminated Land Management Act 1997* (CLM Act). The site to which the declaration relates (the 'EPA Declaration Area') encompasses Block 4 of the approved Barangaroo Concept Plan (as modified) which is the subject of this application. The EPA considered that the Declaration Area was contaminated in such a way as to present a significant risk of harm to human health and the environment.

As such, a site specific *NSW Declared Remediation Site No. 21122 Remedial Action Plan* (Declaration Area RAP) has been prepared by AECOM for the proposed remediation and included in the EIS. The proposed remediation works will be undertaken in conformance with the abovementioned Declaration Area RAP and the supporting detailed Human Health and Ecological Risk Assessments (HHERAs). The Declaration Area RAP has been prepared and approved by an independent EPA-accredited Site Auditor (Mr. Graeme Nyland) consistent with the Barangaroo Development Authority's EPA-approved Voluntary Management Proposal (VMP). The Site Auditor has issued Section B Site Audit Statements verifying that the nature and extent of the contamination has been appropriately determined and the Declaration Area RAP is appropriate to achieve the desired outcomes.

The Department's assessment concludes that that the approved HHERAs and Declaration Area RAP can be relied upon to ensure that the land would be remediated in accordance with the requirements of SEPP 55 and to ensure the land is made suitable for its intended future uses (**Section 5.1**). In order to ensure this occurs, the Department has recommended the imposition of conditions requiring:

- all remediation works to be undertaken in accordance with the approved HHERAs and the Declaration Area RAP;
- the Applicant to prepare an addendum to the Declaration Area RAP in the event that contaminated material is to be transported off-site for treatment that:
  - is prepared in consultation with the EPA;
  - includes final details of all odour control measures to be implemented during transportation of untreated material; and
  - is approved by an EPA-accredited site auditor, prior to issue of the relevant Construction Certificate.
- the Applicant to submit a detailed site audit summary report, site audit statement and validation report verifying that the land is suitable for the proposed uses to the EPA, the Secretary, the Certifying Authority, and the Council within six months of the completion of remediation works;
- the site auditor to verify that any excavated material for use on site or disposal off-site, including but not limited to the Headland Park at Barangaroo, is managed appropriately and in compliance with the relevant legislation and any relevant approved materials management plans; and
- the Applicant to notify the Council that remediation works have been completed, as per the requirements of Clauses 17 and 18 of SEPP 55.

The Department's assessment therefore concludes that the proposal is consistent with the relevant provisions of SEPP 55.

## State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP (ISEPP) aims to facilitate the effective delivery of infrastructure across the State by improving regulatory certainty and efficiency, identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and providing for consultation with relevant public authorities about certain development during the assessment process.

The proposal satisfies the criteria for traffic generating development under clause 104 the SEPP and comprises a freight/intermodal facility, therefore must be referred to RMS (apart of Transport for NSW) for comment under the ISEPP.

The proposal was referred to the Transport for NSW for comment in accordance with the ISEPP and their comments are summarised in Section 4 of this report. The proposal is considered to be consistent with the ISEPP given the consultation and consideration of the issues raised by TNSW has been undertaken in the Department's assessment in Section 5 of this report.

## State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007

Consideration of the relevant clauses in SEPP (Miscellaneous Consent Provisions) 2007 are addressed in Table 1 below:

**Table 1:** Consideration of SEPP (Miscellaneous Consent Provisions) 2007

SEPP 64	Criteria	Department Comment / Assessment	Complies
<b>Part 1, clause 3 Aims, objectives</b>	<ul style="list-style-type: none"> <li>This policy aims to ensure suitable provision is made to ensure the safety of patrons and the protection of the environment in relation to temporary structures.</li> </ul>	<ul style="list-style-type: none"> <li>Recommended conditions of consent require the Applicant to provide the Certifying Authority with documentation from a suitably qualified structural engineer certifying that all structures (including temporary structures) comply with the State's building laws (i.e. the Building Code of Australia), and ensure the facility will not have a detrimental impact on the environment.</li> </ul>	<b>YES</b>
<b>Part 2, clause 12 Matters for consideration</b>	<ul style="list-style-type: none"> <li>Whether number of persons should be restricted.</li> <li>Adverse noise impacts.</li> <li>Limitation on hours of operation</li> <li>Parking impacts</li> <li>Principles for minimising crime risk</li> <li>Satisfactory location</li> <li>Toilets</li> <li>Whether it is located on land that comprises a State heritage item, an item of environmental heritage (Aboriginal objects etc) or is in a heritage conservation area or a place of significant Aboriginal significance.</li> <li>Duration of consent</li> <li>Conditions relating to dismantling or removal of structures.</li> </ul>	<ul style="list-style-type: none"> <li>The proposal does not constitute a major event and patrons would be limited to on site construction/remediation workers.</li> <li>Conditions of consent will ensure noise impacts are controlled whilst the remediation works are undertaken.</li> <li>The Department has carefully considered the appropriateness of the proposed hours of construction/remediation in <b>Section 5</b> of this report.</li> <li>No parking is proposed on site for construction workers who would use public transport consistent with other major CBD construction projects. A Green Travel Plan would be prepared by the Applicant to encourage</li> </ul>	<b>N/A</b>

		<p>public transport use and other non-car travel options and reduce construction traffic.</p> <ul style="list-style-type: none"> <li>• The application includes signage, fenced access pathways, night-time lighting and security hoardings. These measures are expected to minimise the risk of crime.</li> <li>• Recommended conditions require the Applicant to submit final detailed design drawings of all structures to the Secretary for approval, prior to issue of the relevant Construction Certificate. This will enable the Department to ensure the final design and location of these structures is satisfactory.</li> <li>• Amenities will be provided in accordance with BCA requirements.</li> <li>• There are no listed local or State heritage items located on the site. Notwithstanding, conditions are recommended that would ensure there is archaeological monitoring and recording of some non-Aboriginal heritage remains to be removed during the remediation.</li> <li>• Development consent will be limited to 5 years.</li> <li>• Recommended conditions of consent require temporary structures to be dismantled and removed from the site within 3 months of the completion of the remediation works.</li> </ul>	
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### Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

Consideration of the relevant clauses in SREP (Sydney Harbour Catchment) 2005 are addressed in Table 2 below.

**Table 2:** Consideration of SREP (Sydney Harbour Catchment) 2005

SREP	Criteria	Department Comment / Assessment	Complies
<p><b>Part 3, clause 17 Zoning</b>  <b>W1 Maritime Waters</b></p>	<ul style="list-style-type: none"> <li>• Land is divided into a number of zones as shown on the zoning map.</li> <li>• The objectives of the zone are to protect waters required for effective movement of public water transport, allow development that is compatible with and will not affect public</li> </ul>	<ul style="list-style-type: none"> <li>• Although the W1 Maritime Waters zone is adjacent to the site no works will be carried out in the zone.</li> </ul>	N/A

	water transport and to promote equitable use of the waterway.		
<b>Part 3, clause 18 Development control</b>	<ul style="list-style-type: none"> <li>Development may only be carried out in the W1 Maritime Zone if it outlined in the Table.</li> </ul>	<ul style="list-style-type: none"> <li>See above.</li> </ul>	<b>N/A</b>
<b>Part 3, clause 20 Matters for Consideration</b>	<ul style="list-style-type: none"> <li>The matters referred to in Division 3 must be considered by the consent authority.</li> </ul>	<ul style="list-style-type: none"> <li>The Department has considered the relevant matters below.</li> </ul>	<b>YES</b>
<b>Part 3, clause 21 Biodiversity, ecology &amp; environmental protection</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration biodiversity, ecology and environmental protection matters that are outlined in this clause.</li> </ul>	<ul style="list-style-type: none"> <li>The proposed development is likely to have a positive effect on water quality in Darling Harbour as it will prevent contaminated groundwater migrating west from the EPA Declaration Area into the water body. This is likely to have a positive effect on marine ecology.</li> </ul>	<b>YES</b>
<b>Part 3, clause 22 Public access to, and use of, foreshores and waterways</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration measures to maintain public access to foreshores and waterways.</li> </ul>	<ul style="list-style-type: none"> <li>Public access is provided along the foreshore and along Hickson Road.</li> </ul>	<b>YES</b>
<b>Part 3, clause 23 Maintenance of a working harbour</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration measures to maintain maintenance of a working harbour.</li> </ul>	<ul style="list-style-type: none"> <li>The application will not impact on the ability of the site to maintain a working harbour.</li> </ul>	<b>YES</b>
<b>Part 3, clause 24 Interrelationship of waterway and foreshore uses</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration the interrelationship of waterway and foreshore uses.</li> </ul>	<ul style="list-style-type: none"> <li>The development does not propose any works in the waterway and public access along the foreshore would be maintained.</li> </ul>	<b>YES</b>
<b>Part 3, clause 25 Foreshore and waterways scenic quality</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration measures to maintain or enhance the scenic quality of foreshores and waterways.</li> </ul>	<ul style="list-style-type: none"> <li>The works are considered to be consistent with the overall visual character of on-going extensive construction works at Barangaroo South.</li> <li>Therefore, the scenic quality of foreshores and waterways would be maintained.</li> <li>Further, the remediation works and associated enclosures would be temporary and would be removed following the completion of the works.</li> </ul>	<b>YES</b>
<b>Part 3, clause 26 Maintenance, protection and enhancement of views</b>	<ul style="list-style-type: none"> <li>The consent authority must take into consideration measures to maintain or enhance views.</li> </ul>	<ul style="list-style-type: none"> <li>Public views of the remediation works would be screened by hoardings and mature fig trees present along Hickson Road.</li> <li>The remediation works and enclosures would be temporary and would be removed following the completion of the works.</li> </ul>	<b>YES</b>
<b>Part 3, clause 27</b>	<ul style="list-style-type: none"> <li>The consent authority must</li> </ul>	<ul style="list-style-type: none"> <li>No boat storage facilities</li> </ul>	<b>N/A</b>

<b>Boat storage facilities</b>	take into consideration the matters outlined in this clause in relation to boat storage facilities.	are proposed as part of the development.	
<b>Part 3, clause 29 Foreshores &amp; Waterways Development Advisory Committee</b>	<ul style="list-style-type: none"> <li>• A consent authority must not grant consent to a DA unless it has considered any submission received from the Advisory Committee within 30 days of the referral.</li> </ul>	<ul style="list-style-type: none"> <li>• While the Department did not consider that a formal response to the Committee was required, the application was formally referred to the Committee on 15 July 2014.</li> <li>• To date, a submission from the Committee has not been received.</li> <li>• As over 30 days have passed since the referral was made to the Committee, the Minister (or delegate) may proceed to determine the application.</li> <li>• Notwithstanding this, the Committee would typically require the Department to ensure the relevant requirements of the Sydney Harbour Foreshores and Waterways Development Control Plan (DCP) 2005 have been addressed in a similar type application.</li> <li>• Therefore, the Department has considered the relevant clauses of the DCP below.</li> </ul>	<b>N/A</b>

## Sydney Harbour Foreshores and Waterways DCP 2005

Consideration of the relevant clauses in Sydney Harbour Foreshores and Waterways Development Control Plan (DCP) 2005 are addressed in Table 3 below.

**Table 3: Summary of Compliance with the Sydney Harbour Foreshores and Waterways DCP**

DCP	Key controls	Department's Comment / Assessment	Complies
<b>Ecological assessment (Part 2)</b>	<ul style="list-style-type: none"> <li>Determination of conservation status, statement of intent and performance criteria.</li> </ul>	The site contains no terrestrial or aquatic ecological communities as identified in the DCP.	<b>N/A</b>
<b>Landscape assessment (Part 3)</b>	<ul style="list-style-type: none"> <li>Consideration of landscape character types and performance criteria.</li> </ul>	The site contains no landscape characters as identified in the DCP.	<b>N/A</b>
<b>Design Guidelines (General &amp; Land/Water based – Part 5)</b>	<ul style="list-style-type: none"> <li>Foreshore access (5.2)</li> </ul>	<ul style="list-style-type: none"> <li>Public access is provided along the foreshore and along Hickson Road.</li> </ul>	<b>YES</b>
	<ul style="list-style-type: none"> <li>Waterway conflicts (5.2)</li> </ul>	<ul style="list-style-type: none"> <li>The proposal does not include works within the waterway.</li> </ul>	<b>N/A</b>
	<ul style="list-style-type: none"> <li>Siting of buildings &amp; structures (5.3)</li> </ul>	<ul style="list-style-type: none"> <li>The remediation works and enclosures would be temporary and would be removed following the completion of the works. The works have been sited so that public views of would be screened by hoardings and mature fig trees present along Hickson Road. As noted in <b>Table 6</b>, the Department also considers the visual nature of the works (including the bulk height and scale of enclosures and stockpiles) would be largely indistinguishable from existing construction works and associated structures at Barangaroo South.</li> </ul>	<b>N/A</b>
	<ul style="list-style-type: none"> <li>Built form (5.4)</li> <li>Signage (5.5)</li> </ul>	<ul style="list-style-type: none"> <li>As above.</li> <li>Temporary site identification signage is proposed. The Department is confident that the signage would be consistent with the requirements of Section 5.5.</li> </ul>	<b>N/A</b> <b>YES</b>
	<ul style="list-style-type: none"> <li>Waterfront Industry (5.8)</li> </ul>	<p>The Department has considered the relevant provisions of Section 5.8 of the DCP in <b>Section 5</b> of this report and considers that the development would not adversely impact on the waterway.</p>	<b>YES</b>

## **APPENDIX E SUBMISSIONS**

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See the Department's website at:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=5897](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5897)

## **APPENDIX F      RESPONSE TO SUBMISSIONS AND ADDENDUM**

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