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Dear Dean

One Sydney Harbour, Barangaroo South - Stage 1B Basement, State Significant Development Application 6960, Acid Sulfate Soils Letter, Hickson Road, Millers Point

1.0 Introduction

This letter has been prepared by AECOM Australia Pty Limited (AECOM) for Lend Lease Building Pty Ltd (Lend Lease) in support of the State Significant Development Application (**SSD 6960**) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and to respond to Condition 7 of the Secretary's Environmental Assessment Requirements (SEARs) for the **Stage 1B Basement, Barangaroo South** (dated 2 April 2015). The Development Application (DA) seeks approval for construction of the 'Stage 1B Basement and associated works' at Barangaroo South as described in the Overview of Proposed Development section of this letter (refer to **Section 3.0**).

The associated works includes an indicative services and infrastructure zone located to the west of the Stage 1B basement wall (within the Other Remediation Works North Area [ORWN] and within the footprint of the future Barangaroo Avenue) that is proposed to be used for construction of service infrastructure (here-in referred to as the 'ORWN Services Area' and as illustrated in Lend Lease drawing BB2_PA2_A001).

The following Acid Sulfate Soils Management Plan (ASSMP) has previously been prepared for Block 4, Barangaroo, which incorporates the Stage 1B Basement area, to accompany the approved Development Application (SSD 5897-2013) for Remediation and Land Forming Works (approved under delegation by the Minister of Planning on 10 November 2014):

- AECOM (2013b), *ASSMP, Barangaroo Block 4, Hickson Road, Miller Point, NSW*, 4 September 2013 (Block 4 ASSMP).

It is noted that the Stage 1B area correlates with the Block 4 area and is referred to herein as the Site.

2.0 Review of Available Documents

In preparing this letter, AECOM has reviewed the following Lend Lease development drawings provided to AECOM:

Table 1 Lend Lease Development Drawings

Drawing No.	Revision	Drawing Title
BB2_PA2_A000	Rev A	Title Sheet
BB2_PA2_A001	Rev A	Aerial Location Plan
BB2_PA2_A002	Rev A	Survey Plan
BB2_PA2_A003	Rev A	Demolition Plan
BB2_PA2_A105	Rev A	BASEMENT PLAN LEVEL B5
BB2_PA2_A100	Rev A	BASEMENT PLAN LEVEL B0
BB2_PA2_A101	Rev A	BASEMENT PLAN LEVEL B1
BB2_PA2_A102	Rev A	BASEMENT PLAN LEVEL B2
BB2_PA2_A103	Rev A	BASEMENT PLAN LEVEL B3
BB2_PA2_A104	Rev A	BASEMENT PLAN LEVEL B4
BB2_PA2_A501	Rev A	BUILDING ELEMENTS - ELEVATIONS

Drawing No.	Revision	Drawing Title
BB2_PA2_A402	Rev A	BUILDING ELEMENTS - PODIUM 2
BB2_PA2_A401	Rev A	BUILDING ELEMENTS - PODIUM 1
BB2_PA2_A400	Rev A	BUILDING ELEMENTS - GROUND FLOOR
BB2_PA2_A303	Rev A	SECTION 04
BB2_PA2_A302	Rev A	SECTION 03
BB2_PA2_A301	Rev A	SECTION 02
BB2_PA2_A300	Rev A	SECTION 01

3.0 Overview of Proposed Development

The Stage 1B Basement DA seeks approval for the construction of a four level basement to accommodate parking for the Stage 1B Residential Buildings (subject to separate SSD applications). The works contemplated by SSD 6960 (the Stage 1B Basement and associated works) include:

- Stage 1B basement works:
 - construction of common plant and services, loading docks, waste rooms and storage areas, as well as structural cores and associated building services for the Stage 1B Residential Buildings; and
 - above ground elements such as roads, car park ramps and risers, and temporary public domain and landscaping works.
- Associated works (ORWN Services Area):
 - construction of services within the ORWN Services Area. This area is approximately 30m wide and is bounded by (refer to Lend Lease drawing BB2_PA2_A001):
 - the proposed Stage 1B basement retention wall to the west;
 - the existing Stage 1A basement retention wall to the south; and
 - the proposed Crown basement retention wall to the north.

It is understood that excavations within the ORWN Services Area may include excavation to a depth of approximately 6.0 m below ground level (bgl).

It is noted that site preparation works, including demolition, remediation and excavation, are covered under SSD 5897-2013.

The Stage 1B Basement DA works will involve excavation of bedrock materials to the required indicative basement depth of Relative Level -13.5 m Australian Height Datum (AHD, or approximately 15.9 m bgl) (including blinding and hydrostatic slabs) and piling works. Lift pits are proposed for the western areas of the Stage 1B basement where the depth to bedrock is likely to be deeper than the basement depth. These excavation works will involve some additional over excavation (in the order of 7 m deeper than the Stage 1B basement) in small, localised areas. Due to the depth of the natural marine sediments in this area, the lift pit excavation works will mainly involve the excavation of fill material which are not likely to be potential acid sulfate soils (PASS) and/or actual acid sulfate soil (AASS).

It is understood that excavations within the ORWN Services Area (to the west of the Stage 1B basement) may include excavation to a depth of approximately 6.0 m bgl.

4.0 Objectives

The objective of this letter is to confirm that if PASS and/or AASS are identified during the proposed Stage 1B Basement works and associated works in the ORWN Services Area, it can be managed appropriately in accordance with the requirements of the existing *Block 4 ASSMP* (AECOM, 2013b).

5.0 Site Location

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

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

The area considered by SSD 6960 (hereafter referred to as the Stage 1B Basement area) is located:

- within Barangaroo South as shown in Lend Lease drawing BB2_PA2_A003; and
- on land generally known and identified in the approved Concept Plan MP06_0162 (as modified) as Blocks 4A and 4B and part of the public domain area between those blocks and Block 5.

6.0 Block 4 Acid Sulfate Soils Management Plan

The *Block 4 ASSMP* (AECOM, 2013b) was prepared as part of the approved DA SSD 5897-2013 for the Block 4 Remediation and Land Forming Works. The *Block 4 ASSMP* (AECOM, 2013b) was prepared with consultation of the *NSW Acid Sulfate Soils Manual* (Stone et al., 1998) and the Department of Environment and Climate Change NSW, 2008. *Waste Classification Guidelines. Part 4: Acid Sulfate Soils*¹.

The remediation works associated with SSD 5897-2013 will involve excavation of all unconsolidated materials (i.e. fill materials and natural marine sediments) down to the depth of the underlying bedrock to a maximum depth of 10 m bgl within the VMP Remediation Extent (as required by the *VMP/Block 4 Remedial Action Plan* (AECOM, 2013a) or the indicative depth required for the Stage 1B basement (refer to **Section 3.0**). Consequently, PASS/ASS will be removed during these remediation works across most of the eastern portion of the Site where bedrock is known to be shallower.

As discussed in **Section 3.0**, lift pits are proposed for the western areas of the Stage 1B basement and may involve some additional over excavation (in the order of 7 m deeper than the Stage 1B basement) in small, localised areas and including piling works. If PASS/ASS is encountered during these works, it would be appropriately managed in accordance with the *Block 4 ASSMP* (AECOM, 2013b).

The associated works within the ORWN Services Area are not likely to encounter PASS/ASS due to the relatively shallow nature of these works (i.e. excavations to approximately 6.0 m bgl).

7.0 Conclusions

In conclusion, AECOM considers that, in the event PASS/ASS is encountered during the Stage 1B Basement and associated works in the ORWN Services Area (as described by **Section 3.0**), such materials can be appropriately managed in accordance with the *Block 4 ASSMP* (AECOM, 2013b) which was prepared as part of the approved Development Application SSD 5897-2013 for the Block 4 Remediation and Land Forming Works. Furthermore, the potential management of PASS/ASS during the Stage 1B Basement and associated works is considered to meet the requirements of Condition 7 of the SEARs for the *Stage 1B Basement, Barangaroo South* (dated 2 April 2015).

8.0 References

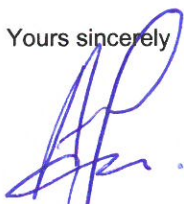
AECOM, 2013a. *Remedial Action Plan (RAP), NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW*, 24 July

AECOM, 2013b. *ASSMP, Barangaroo Block 4, Hickson Road, Miller Point, NSW*. 4 September 2013.

DECC NSW, 2008. *Waste Classification Guidelines. Part 4: Acid Sulfate Soils*.

Stone Y, Ahem, CR and Blunden, 1998. *Acid Sulfate Soils Manual*. Acid Sulfate Soils Management Advisory Committee, Wollongbar, NSW. Australia.

Yours sincerely



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¹ These guidelines were updated by the NSW EPA in November 2014.