

1 December 2017

**By Email: Mark.Burns@lendlease.com**

Lend Lease (Millers Point) Pty Ltd  
Attn: Mark Burns  
Level 14, Tower Three, International Towers Sydney  
Exchange Place, 300 Barangaroo Avenue  
Barangaroo NSW 2000

Dear Mark,

**RE: BARANGAROO, REVIEW OF 36 HICKSON ROAD RAP ADDENDUM**

## 1. INTRODUCTION AND BACKGROUND

As a NSW-EPA accredited Contaminated Sites Auditor, I am conducting a contamination audit in relation to the southern portion of the site known as "Barangaroo", at Millers Point, NSW on behalf of Lend Lease (Millers Point) Pty Ltd (Lend Lease).

I previously prepared a Site Audit Report (SAR) dated 31 July 2013 regarding a Remediation Action Plan (the RAP), by AECOM Australia Pty Ltd (AECOM), dated 24 July 2013, and an accompanying Site Audit Statement (SAS) GN447A relating to revocation of the EPA declaration from EPA declaration site number 21122 (including Block 4, Block 5 and Hickson Road) and SAS GN439B-3 relating to development of Block 4.

The RAP identified portions of the declaration site requiring remediation in order to revoke the EPA declaration, including part of Block 4, Block 5 and Hickson Road. This was defined as the Voluntary Management Proposal (VMP) Remediation Extent. Remediation of Hickson Road was proposed in the RAP by in situ remediation or excavation. Excavation and/ or jet grout immobilisation has since been selected as the preferred remediation method. Environmental Resources Management Australia Pty Ltd (ERM) have prepared a Remedial Works Plan (RWP) (dated March 2017) and a VMP Validation and Sampling Management Plan (VSMP) (dated September 2016) to describe the proposed remediation and validation requirements in more detail.

A tar tank which contains residual gasworks wastes extends to the east of Hickson Road, outside the Declaration Area and into the property at 36 Hickson Road. The RAP and RWP identify that remediation is not required to the east of the Declaration Area, but indicate that management measures (likely engineering controls) may be required to mitigate the risk that the remediated Declaration Area could be re-contaminated from potential off-site sources. Construction of a permanent groundwater cut-off

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wall was proposed to minimise migration of significant potential contamination onto the site. An alternative approach is now planned for the portion of the tar tank that extends onto 36 Hickson Road, comprising completion of remediation in lieu of a cut-off wall.

## 2. SCOPE OF WORK AND OBJECTIVE

Environmental Resources Management Australia Pty Ltd (ERM) have prepared the following report that I have been provided for review:

- "Remedial Action Plan Addendum – Off-site Tar Tank Structure (36 Hickson Road), NSW EPA Declaration Area 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point" dated 28 September 2017 (the RAP Addendum).

The objectives of the RAP Addendum is to outline how contamination present within the tar tank off-site to the east of the Declaration Area will be addressed where this is different to the approach specified in the RAP.

This letter provides the Auditor's comments on whether the RAP Addendum meets its stated objectives, and whether the proposed method for addressing the contamination within 36 Hickson Road is appropriate.

## 3. DISCUSSION

The Hickson Road remediation approach has been revised to include excavation and/ or jet grout immobilisation up to the eastern site boundary. This has changed the feasibility for remediation works to extend off-site at the tar tank and remove some contaminant mass that is present to the east of the Declaration Area, in lieu of implementing engineering controls at this location as proposed in the RAP.

The RAP Addendum proposes remediation and validation of the off-site portions of the tar tank (in 36 Hickson Road) as follows:

- Excavation of material and removal from site for treatment/ disposal
- Excavation to the depth of underlying bedrock and to the lateral extent of the tar tank structure
- Implementation of procedures as per the RAP and RWP
- Jet grout columns may be required to be installed to support the excavation
- Jet grout immobilisation will be considered as a contingency remediation method as per the RWP if excavation is not possible due to the presence of services or other underground structures
- Validation as per the RWP and VMP VSMP including:
  - Validation of excavation batter wall if in fill or natural marine sediment, comprising visual inspection and sampling on 20m grid if evidence of separate phase gasworks waste and tar (SPGWT)
  - Validation of excavation wall and base if in rock, comprising visual inspection for the presence of SPGWT
  - If jet grout columns are installed, validation will comprise visual inspection after bulk excavation to demonstrate that the wall reaches bedrock and no significant seepage is present
- Contingency remediation if failure of validation criteria occurs may comprise (optional) over excavation of fill and local over-excavation combined with engineering mitigation measures for rock.

ERM notes that the primary purpose of validation in the off-site area will be to provide a good record of the works undertaken, and addressing failure of validation criteria will be optional (since validation of off-site areas is not required to revoke the declaration).

## 4. CONCLUSION

ERM conclude in the RAP Addendum that:

*“Following review of the off-site extent of the Tar Tank structure, it is now considered feasible and practicable to excavate the material within the portion of the tar tank that extends off-site (on 36 Hickson Rd). The remediation of this limited off-site material is proposed to remove the need for engineering controls at the boundary (as proposed in the RAP), to mitigate potential future impacts to the Hickson Rd Site if this part of the Tar Tank was to remain, and mitigate potential future long-term management in this area”.*

The conclusions further note that:

- The proposed off-site excavation at the tar tank will be subject to landowner consent as well as consent from the relevant planning authorities and if granted will proceed in accordance with the processes and procedures required for the rest of the Hickson Rd remediation as presented in the RAP.
- Validation of off-site areas outside the Declaration Area Boundary is not required, however it is proposed that for the portion of the tar tank that extends into 36 Hickson Rd, validation should be conducted as per the requirements of the Hickson Rd RWP and the VMP VSMP.

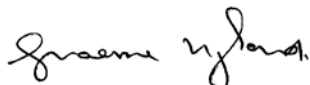
In my opinion, the above conclusions are valid and the RAP Addendum meets its stated objective. The alternate method proposed for remediating and validating the contamination within the tar tank that extends into 36 Hickson Road is considered appropriate.

\* \* \*

Consistent with the NSW EPA requirement for staged ‘signoff’ of sites that are the subject of progressive assessment, remediation and validation, I advise that:

- This letter does not constitute a Site Audit Report or Site Audit Statement.
- At the completion of the remediation and validation I will provide a Site Audit Statement and supporting documentation.
- This review letter will be documented in the Site Audit Report.

Yours faithfully  
Ramboll Environ Australia Pty Ltd



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