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Mark Burns
Environment Manager
Barangaroo South
Lend Lease Building
30 The Bond, 30 Hickson Road, Millers Point

20 May 2015

Dear Mark

**Pilot Trial Success Parameters Document Summary - Barangaroo South, Hickson Road, Millers Point**

## 1.0 Introduction

AECOM Australia Pty Limited (AECOM) has been engaged by Lend Lease (Millers Point) Pty Ltd (Lend Lease) to prepare this Pilot Trial *Success Parameters Document* (SPD). This document has been prepared to accompany a Development Application (DA) for remediation of part of Hickson Rd at Millers Point (SSD 6617), to be submitted to the Minister for Planning and Environment pursuant to the Part 4 of the *Environmental Planning and Assessment Act, 1979*.

This SPD was prepared to describe the parameters proposed to be used to demonstrate the success, or otherwise, of the proposed in situ remediation Pilot Trial ('Pilot Trial') to be undertaken within that part of the NSW EPA Declaration Area that is located within Hickson Road (hereafter referred to as the Site, refer to **Figure 1**).

## 1.1 EPA Declaration Area (#21122)

In May 2009, the NSW Environment Protection Authority (EPA), determined that part of the Barangaroo site, including a portion of Hickson Road (corresponding with part of a former gas works) was contaminated in such a way as to present a significant risk of harm (SROH[1]) to human health and the environment. As a consequence, the NSW EPA declared this area to be a Remediation Site (Declaration Number 21122; Area Number 3221) under the then section 9 of the *Contaminated Land Management* (CLM) *Act* (1997). The area of Hickson Road to be remediated is located within the declared area.

The Remediation Site Declaration (Number 21122) indicates that the area of the declaration ('Declaration Area') coincides with the known footprint of the former Millers Point gasworks facilities. This area is located on part of Barangaroo and part of Hickson Road adjacent to Barangaroo.

In accordance with Declaration Number 21122, the Declaration Area comprises:

- Part Lot 5 and Part Lot 3 DP 876514, Hickson Road, Millers Point, NSW 2000.
- Part of Hickson Road adjacent to:
    - 30-34 Hickson Road (Lot 11, DP1065410);
    - 36 Hickson Road (Lot 5, DP873158); and
    - 38 Hickson Road (SP72797) Millers Point.

The Barangaroo Delivery Authority has entered into a Voluntary Management Proposal (VMP) with the EPA associated with EPA Declaration Area (Approval No. 20101719). Phase 1 of this VMP involves investigative works and undertaking remedial design to determine and obtain agreement on a proposed remediation methodology. Phase 2 of the VMP involves the implementation of the agreed remediation works.

An independent, EPA-accredited Site Auditor has been appointed to undertake a review of the proposed remediation works, and prepare statutory audit statements prior to and following completion of remediation.

For the purposes of planning and staging works, the EPA Declaration Area is divided into 3 areas as follows:

- Block 4 Remediation Area - the part of the Declaration Area on Barangaroo South;
- Block 5 Remediation Area - the part of the Declaration Area on Barangaroo Central; and
- Hickson Rd Remediation Area - the part of the Declaration Area located on Hickson Road.

[1] As an amendment to the CLM Act on 1 July 2009, reference to SROH was removed. *Significantly contaminated land* is now referred to as *land is contaminated and that the contamination is significant enough to warrant regulation*.

This DA is for the Hickson Road Remediation Area only. Remediation for the Block 4 and Block 5 Remediation Areas form the subject of separate development applications.

### 1.2 Background

This SPD was prepared with reference to relevant parts of the *Remedial Action Plan, NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW (AECOM, 2013)* (here-in referred to as the *VMP/Block 4 RAP [AECOM, 2013]*) and the following NSW EPA endorsed guidelines developed under the *Contaminated Land Management Act* (1997):

- NSW Office of Environment and Heritage (OEH), 2011. *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. NSW Environment Protection Authority;
- NSW Department of Conservation (DEC), 2006. *Guidelines for the Site Auditor Scheme (2nd Edition)*; and
- NSW DEC (2007a) *Guidelines for the Assessment and Management of Groundwater Contamination.*

It is understood that Lend Lease is seeking to engage a Remediation Contractor to:

a) develop an *in situ* remediation methodology for remediation of Hickson Road in accordance with the requirements of the *VMP/Block 4 RAP* (AECOM, 2013);

b) complete a Pilot Trial of the selected *in situ* remediation methodology within the tar tank in Hickson Road, demonstrating the effectiveness of the proposed *in situ* remediation methodology; and

c) subject to the success of the Pilot Trial, implement and complete full scale *in situ* remediation of Hickson Road in accordance with the requirements of the *VMP/Block 4 RAP* (AECOM, 2013).

### 1.3 SPD Objectives

This SPD has been prepared to inform stakeholders [including the Barangaroo Delivery Authority (the Authority), NSW EPA, Site Auditor, the Remediation Contractor and others of the parameters that will be used to assess the success (or otherwise) of the proposed Pilot Trial. The specific objectives of this SPD are to define:

- commitments made by the previous approved Surfactant enhanced In situ Chemical Oxidation (S-ISCO) and Surfactant Enhanced Product Recovery (SEPR) Pilot Trial DA MP10_0087 that must be met by the proposed *in situ* remediation methodology (refer to **Attachment 1**); and
- technical parameters that will be used to assess the success of the Pilot Trial, which will assist in decision making with respect to the potential for progressing to full-scale remediation.

The ultimate objective of the full scale remedial works is to enable the NSW EPA's declaration of the Declaration Area as a Remediation Site to be revoked (including within the Hickson Road Remediation Area).

## 2.0 Commitments Made Under the DA MP10_0087 Project Approval

The S-ISCO and SEPR Pilot Trial DA MP10_0087 was approved subject to a number of conditions as outlined in the project approval document (refer to **Attachment 1**). Whilst a modification to the existing DA approval may be required, subject to confirmation of the actual *in situ* remedial methodology, there are a number of commitments made within the existing DA, which must be complied with as part of any future Pilot Trial at the Site. As such, compliance with DA requirements forms one of the parameters of Pilot Trial Success.

The key commitments made by the DA and supporting documentation generally relate to the protection of:

- environment and infrastructure (soil, water, air, trees and buildings);
- subsurface infrastructure/assets; and
- roadways, vehicle thoroughfares and pedestrian access.

A summary of the key requirements of the Pilot Trial approval (refer to **Attachment 1**) is provided below:

***Prior to commencement of Works / Pilot Trial***

- Environment Protection Licence (EPL): Ensure that the existing EPL issued to the Authority is varied where required to reflect and permit the works conducted on the Site.
- Pilot Trial Management Plan (PTMP): Prepare and submit for review to the Department of Environment, Climate Change and Water DECCW (now NSW EPA) a PTMP documenting the details of the proposed treatment/remedial works, processes for monitoring environmental impacts, triggers for management actions and contingency measures.

- Air Emissions: Development of an appropriate stack concentration limit (if required by the *in situ* remediation methodology).
- Soil Vapour Extraction System (SVE) and Emission Control System (ECS): Confirmation that stack concentrations will not exceed the health based ground level concentrations criteria. Determination of appropriate breakthrough trigger value and continuous monitoring of VOC emissions from the Soil Vapour Extraction (SVE) system (if required by the *in situ* remediation methodology).
- Water and Stormwater Management Plan: Preparation and submission to the NSW EPA of a water and stormwater plan to ensure appropriate handling of stormwater during the Pilot Trial.
- Noise and Vibration: Preparation of a revised *Noise and Vibration Management Plan* (NVMP) for submission to the NSW EPA and the Director General, to ensure adequate management of noise and vibration impacts associated with construction activities.
- Construction Traffic Management Plan (CTMP): Preparation and submission of a CTMP to the relevant road authority and the Director General to ensure appropriate management of traffic.
- Geotechnical Report: Preparation of a detailed geotechnical report for submission to the principal certifying authority (PCA).

***During Construction / Pilot Trial***

- Vibration Assessment: Noise and vibration received at any sensitive receptor outside of the Hickson Road Remediation Area must be assessed against the guidelines contained in the DECCW (2006) publication "*Environmental Noise Management - Assessing Vibration: A technical guideline*" and in accordance with the approved NVMP.
- Vibration: Vibration cause by construction at any residence or structure outside of the subject site must adhere with the requirements outlined in the DA.
- Weekly Pilot Trial Reports: Weekly reports must be prepared for the duration of the Pilot Trial for submission to the EPA for review. The reports must be prepared in accordance with the requirements outlined in the DA.
- Air Quality and Odour Monitoring: Conduct air quality and odour monitoring for the duration of the Pilot Trial in accordance with the *Air Quality Impact Assessment* (AECOM, 2014a), *Indicative Preliminary Work Plan for In situ Chemical Oxidisation* (AECOM 2014b) and *Trial Management Plan* (to be prepared).
- VOC Emissions: VOC emission form the SVE system must be monitored and recorded in accordance with the NSW EPA (2007b) *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*
- Waste: All waste must be managed in accordance with the *Waste Management Plan* (AECOM, 2014c) and the *Statement of Commitments* (JBA, 2011) and other requirements outlined in the DA.
- Noise and Vibration Management: Pilot Trial vibration must be managed in accordance with the *NVMP* (AECOM, 2010b) and *Statement of Commitments* (JBA, 2011).
- Hazards: All dangerous goods and hazardous substances must be stored and handled on site in accordance with the Dangerous Goods Code, *The Storage and Handling of Flammable and Combustible Liquids* (Australian Standard 1940-2004) and the requirements of the Fire Brigade and NSW Police.
- Construction Traffic and Management: Construction works will be undertaken generally in accordance with the requirements of the *CTMP* (AECOM, 2010a) (as amended) and other DA requirements.

***Additional Considerations*** *(as applicable to the preferred in situ remediation methodology)*

- Hazardous Material Immobilisation: If any soil needs to be disposed offsite then it will need to comply with the NSW DECCW (2009) *Waste Classification Guidelines: Part 1 Classifying Waste* and supporting documentation.
- Temporary Dewatering: Licenses under Part 5 of the Water Act may be required for the purpose of temporary dewatering as part of the proposed construction and excavation.
- Requirements of Public Authorities for Connection to Services: The proponent shall comply with the requirements of any public authorities in regard to the connection to, relocation and/or adjustment of the services affected by the construction of the proposed structure.

## 3.0 Pilot Trial Success Parameters

In determining the type, quantity and quality of data needed to assess the success of the Pilot Trial, AECOM has undertaken the seven-step process to develop the Data Quality Objectives (DQOs) as outlined in the NSW Department of Environment and Conservation (DEC) *Guidelines for the NSW Site Auditor Scheme (2nd edition),* (DEC, 2006).

### 3.1 Step 1 - State the problem

#### 3.1.1 Description of the Problem

Previous investigations undertaken within the Site have identified gasworks contamination in soil and groundwater related to the former Millers Point Gasworks. In May 2009 the NSW EPA determined that the Site was contaminated in such a way as to present a SROH to human health and the environment and consequently declared a Remediation Site.

A Pilot Trial Proving Phase was undertaken to evaluate the effectiveness of SEPR and S-ISCO technologies (one potential in situ remediation technology) to remediate gasworks related contamination in heterogeneous fill to concentrations below nominated success criteria. While the combined SEPR and S-ISCO Proving Phase were able to reduce CoPC concentrations in soil at particular locations and depths to concentrations below the Proving Phase Success Criteria, it did not consistently achieve CoPC concentrations in soil below the Proving Phase Success Criteria.

A Pilot Trial is proposed as a precursor to full scale in situ remediation of Hickson Road to demonstrate the effectiveness of the in situ remediation methodology to be proposed by the Remediation Contractor to be engaged by Lend Lease for the remediation of Hickson Road. The objectives of the Pilot Trial are to:

- verify the effectiveness of the selected in situ remediation methodology at achieving the Remediation Goals at the Site;
- demonstrate that the selected in situ remediation methodology can be implemented without impact to sensitive receptors; and
- acquire data for design of the full scale implementation.

The problem is defining the achievable technical parameters appropriate to demonstrate the success (or otherwise) of the Pilot Trial remediation works at the Site.

#### 3.1.2 Remediation Summary - Pilot Trial

The historic tar tank located below the Site is the preferred location for conducting the Pilot Trial. As described by the *VMP/Block 4 RAP* (AECOM, 2013), this location has been selected as it:

- contains material that is considered to be representative of Separated Phase Gasworks Waste and Tar (SPGWT) contamination – that is the most significant contamination likely to be present within the Site;
- is a semi confined / confined structure – minimising the potential impact to the surrounding environment; and
- is proximate to adjacent building basements – making it representative of conditions in which full scale remediation will be required.

The Pilot Trial will include the following key phases:

- Mobilisation of all monitoring infrastructure and Pilot Trial equipment;
- Chemistry Injections (where required based on the selected remedial methodology);
- Tar contaminated fluid extractions (if required by the in situ remediation methodology); and
- Post-Injection Monitoring to demonstrate completion and success of the Pilot Trial.

### 3.2 Step 2 - Identify the Decisions

The Pilot Trial success parameters as defined by the *VMP/Block 4 RAP* (AECOM, 2013) will be based on assessment of the following decisions following completion of the Pilot Trial:

- Did the Pilot Trial comply with the requirements of approved DA MP10_0087 or equivalent modification?
- Did the Pilot Trial comply with the requirements of the approved *VMP/Block 4 RAP* (AECOM, 2013)?
- Were the chemical reactions associated with the Pilot Trial controlled in accordance with the parameters described by the PTMP (to be prepared by the preferred Remedial Contractor)?

- Did the Pilot Trial result in any unexpected / uncontrolled by-products that may present a risk to human health and the environment?
- Did the results of environmental monitoring conducted during the Pilot Trial demonstrate a low impact to the environment and community?
- Did the Pilot Trial result in the planned reduction in contaminant mass in the tar tank of approximately 25% (or as otherwise agreed with the NSW EPA)?
- Were the operational parameters proposed by the PTMP achieved in practice during the Pilot Trial? It is acknowledged that operational parameters will be dependent on the preferred in situ remediation methodology. Notwithstanding, it is expected that key operational parameters to be assessed are likely to include:
    - Quantity of chemicals / other inputs required by the Pilot Trial;
    - Duration over which chemicals / other inputs are applied and subsequently present within the ground during and following the Pilot Trial; and
    - Methodology used for the application chemicals / other inputs to the contamination to be targeted by the Pilot Trial (including the understanding of and control of preferential pathways).

### 3.3 Step 3- Identify the Inputs to the Decisions

The parameters required to be defined by the preferred Remedial Contractor to make the above decisions include the following:

- The requirements of DA MP10_0087 (or its equivalent modification).
- The requirements of the *VMP/Block 4 RAP* (AECOM, 2013).
- The operational parameters described by the PTMP (for example chemical / other inputs quantity, duration and methodology used for application chemicals / other inputs).
- Concentrations of CoPC in the tar tank, soil and fill prior to, during and following the completion of the Pilot Trial (refer **Section 4.0**).
- Concentrations of CoPC in groundwater within and in the vicinity of the tar tank (and nearby sensitive receptors) prior to, during and following completion of the Pilot Trial (refer **Section 4.0**).
- Concentrations of chemicals / other inputs (and other geochemical parameters that are indicators of the presence of chemicals and / or chemical reactions) in groundwater during and following the Pilot Trial (refer **Section 4.0**).
- Measurements of SPGWT (which includes dense non-aqueous phase liquids [DNAPL]) within the tar tank prior to, during and following the completion of the Pilot Trial (refer **Section 4.0**).
- Observations of tar containing material (TCM) in the tar tank prior to, during and following the completion of the Pilot Trial (refer **Section 4.0**).
- Hydrological data including groundwater levels and hydraulic conductivity within and adjacent to the tar tank prior to, during and following completion of the Pilot Trial (refer **Section 4.0**).
- Geological data and observations on potential subsurface structures.

### 3.4 Step 4 - Define the Study Boundaries

The Site boundary is defined by that portion of the Declaration Area which falls within Hickson Road, which encompasses an area of approximately 5,724 $m^2$.

The location of the Pilot Trial will be the Tar Tank only, which is located in the south eastern portion of the Site. The Tar Tank has been selected as the location of the Pilot Trial as:

- it contains material that is considered to be representative of SPGWT contamination;
- it is a semi confined / confined structure; and
- it is proximate to adjacent basements.

The time frame for conducting the Pilot Trial must be finite and will need to be decided and detailed by the preferred Remedial Contractor prior to the commencement of the Pilot Trial.

A limitation of the selection of the Tar Tank is that the Pilot Trial will focus on remediation of a “structure” known to contain SPGWT. As such it will not necessarily be representative of other areas or conditions outside the tar tank that contain contamination that is more heterogeneously distributed within the fill matrix and is not contained.

### 3.5 Step 5 - Develop a Decision Rule

The decision rule to be applied in determining whether the Pilot Trial is a success is whether the success parameters described by **Section 3.2** are achieved.

The decision rules to be applied in determining whether each of the individual success parameters described by **Section 3.2** will be described in the PTMP to be prepared by the preferred Remedial Contractor. Decision rules will include an assessment of data quality from field and laboratory procedures and corrective actions in the event that the data quality is considered unacceptable.

### 3.6 Step 6 -Specify Limits on Decision Errors

A decision error in the context of the decision rules presented in **Section 3.5** above could lead to the incorrect conclusion that the Pilot Trial was successful when, in fact, it had been unsuccessful and vice versa.

The potential for decision errors in relation to each of the success parameters identified by **Section 3.5** must be minimised by development of a comprehensive PTMP which will include:

- Implementation of a robust Quality Assurance/Quality Control (QA/QC) program;
- Collection and analysis of representative samples for CoPC described by **Section 4.0**; and
- Adoption of a sampling and analytical density that is appropriate for demonstrating the success or otherwise of the Pilot Trial

The acceptable limits on decision errors to be applied in the assessment of whether or not the identified success parameters have been accomplished and the manner of addressing possible decision will be developed based on the Data Quality Indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness (PARCC).

To confirm the success or otherwise of the Pilot Trial, at least 90% of the individual success parameters must be proven to have been achieved.

### 3.7 Step 7 - Optimise the Design for Obtaining Data

Below is a summary of the parameters considered critical to optimising the design for obtaining data for the Pilot Trial and hence measuring success:

- Contaminant data obtained within the tar tank during previous investigations and prior to conduct of the Pilot Trial (if required).
- The presence of coal tar within the tar tank.
- The structure of the tar tank.
- The volume of the tar tank.
- Depth to bedrock both within and surrounding the tar tank.
- The structural integrity of the tar tank (i.e. whether the tar tank is intact or potentially leaking to the surrounding environment).
- The nature of surface and subsurface conditions, including fill materials in the tar tank.
- The presence, type and permeability of soil and fill materials.
- The presence and management of underground utilities overlying and surrounding the tar tank.
- The applicability of the Pilot Trial tar tank results for up scaling to full scale Site remediation.
- Proximity to Darling Harbour and adjacent basements.
- Groundwater conditions in the tar tank and applicability for comparison with groundwater conditions across the Site.

Information provided in the previous steps (**Sections 3.1** to **3.6**) must be considered during the design of the Pilot Trial sampling program in order that the success parameters outlined herein can be adequately quantified. The sampling and analytical plan and field and laboratory methodologies to be applied in order that success can be adequately quantified are to be defined in a PTMP to be prepared by the preferred Remedial Contractor.

## 4.0 Measurement of Technical Success – Operational Parameters and Monitoring Requirements

The duration and specific details of the actual *in situ* remediation methodology and monitoring program will be specified by the preferred Remediation Contractor in the PTMP and associated documentation prepared prior to commencement of the Pilot Trial and full scale remedial works (if required).

### 4.1 Scope of Work

Subject to the final design of the actual *in situ* remediation methodology, evaluation and measurement of the Pilot Trial technical success parameters will be based on consideration of the following inputs:

- The location and construction of extraction, injection, groundwater monitoring and soil vapour monitoring wells;
- Pre-injection baseline sampling soil, groundwater and soil vapour results;
- System set up and supporting infrastructure requirements;
- Process, performance, groundwater, soil vapour and SVE system monitoring and sampling results;
- Post injection performance, groundwater, soil vapour and SVE system monitoring and sampling results;
- Harbour water monitoring results; and
- Air monitoring for Environment Protection Licence (EPL) compliance.

### 4.2 Sampling Location Rationale

The location of the sampling locations will take into consideration the following:

- Historical soil and groundwater results and observations;
- Pre-injection soil sampling observations and analytical results;
- Proximity to existing underground services;
- The area and volume of the treatment area;
- Groundwater flow direction; and
- Surrounding sensitive receptors.

### 4.3 Soil Analysis

Soil samples collected prior to, during and post remediation will be analysed for the Chemicals of Potential Concern (CoPC) detailed in Section 7.1.1 of the *VMP / Block 4 RAP* (AECOM, 2013).

### 4.4 Groundwater

Groundwater samples collected prior to, during and post remediation will be analysed for the CoPC detailed in Section 7.1.1 of the *VMP / Block 4 RAP* (AECOM, 2013).

Groundwater samples will also be analysed for *in situ* remediation parameters for the purpose of managing the performance and potential environmental impacts of the Pilot Trial. The analytical suite will be chosen based on the chemistry to be used by the preferred Remediation Contractor.

### 4.5 Soil Vapour

In the event there is a risk that the selected *in situ* remediation approach will generate soil vapour, samples will be collected prior to, during and post remediation and analysed for the following:

- Toxic Organics - 14A Volatile Organic Compounds; and
- Naphthalene.

### 4.6 Harbour Water

A key objective of the Pilot Trial is to ensure that the trial works have no adverse impact to Darling Harbour. Where appropriate, Harbour water samples will be collected prior to, during and post remediation and analysed for the CoPC.

## 5.0 Conclusions

This SPD defined the parameters that will require consideration during the planning and implementation of the Pilot Trial program. The success parameters comprise the following:

- Pilot Trial
  - Compliance with the requirements of the approved DA MP10_0087 or equivalent modification;
  - Compliance with the parameters described by the PTMP;
  - Protection of human health and the environment as demonstrated by the monitoring program summarised in **Section 4.0**; and
  - Reduction in contaminant mass in the tar tank of approximately 25% based on naphthalene and TPH $C_{10}$-$C_{14}$ concentrations, as required by the *VMP / Block 4 RAP* (AECOM, 2013) (or as otherwise agreed with the NSW EPA).

## 6.0 References


AECOM, 2010a. *Construction Traffic Management Plan*. October.

AECOM, 2010b. *Noise and Vibration Management Plan*. 30 September.

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

AECOM, 2014a. *Air Quality Impact Assessment.*

AECOM, 2014b. *Indicative Preliminary Work Plan for In situ Chemical Oxidisation.*

AECOM, 2014c. *Waste Management Plan, Remediation Development Application SSD 6617-2014, Barangaroo Hickson Road, EPA Declaration Area Number 21122, Hickson Road, Millers Point, NSW.*

Australian Standard 1940-2004. *The Storage and Handling of Flammable and Combustible Liquids*

JBA, 2011. *Preferred Project Report: Block 5, Barangaroo & Hickson Road Surfactant-Enhanced In Situ Chemical Oxidation (SISCO) and Surfactant–Enhanced Product Recovery (SEPR) Pilot Trial*.

NSW DEC, 2006. *Guidelines for the NSW Site Auditor Scheme (2nd edition)*. NSW Department of Environment and Conservation.

NSW DEC, 2007a. *Guidelines for the Assessment and Management of Groundwater Contamination.*

NSW DEC, 2007b. *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*

NSW DECC, 2006. *Environmental Noise Management - Assessing Vibration: A technical guideline.*

NSW DECCW, 2006. *Environmental Noise Management - Assessing Vibration: A technical guideline*.

NSW DECCW, 2009. Waste Classification Guidelines: Part 1 Classifying Waste.


Yours faithfully


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encl: Attachment 1 - DA MP10_0087 Project Approval

# Project Approval

## Section 75J of the *Environmental Planning & Assessment Act 1979*

I approve the Project Application referred to in Schedule 1, subject to the conditions in Schedule 2.

This approval applies to the plans, drawings and documents cited by the Proponent in their Environmental Assessment, Preferred Project Report and the Proponent's revised Statement of Commitments (Schedule 3), subject to the conditions of approval in the attached Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Tony Kelly 3 MAR 2011

Anthony (Tony) Kelly MLC
**Minister for Planning**

Sydney 2011

**SCHEDULE 1**

| | |
|---|---|
| **Application No.:** | 10_0087 |
| **Proponent:** | Lend Lease (Millers Point) Pty Limited |
| **Approval Authority:** | Minister for Planning |
| **Land:** | Lot 3 and Lot 5 in DP 876514 and Part Hickson Road adjacent to Lots 11 & 12 in DP 1065410 |
| **Project:** | SISCO and SEPR remediation pilot trial. |

## DEFINITIONS

| | |
|---|---|
| Advisory Notes | Advisory information relating to the approved project but do not form a part of this approval. |
| BCA | Building Code of Australia |
| Certifying Authority | Has the same meaning as Part 4A of the EP& A Act. |
| Construction | Any works, including earth and building works |
| Council | City of Sydney Council |
| CPI | Consumer Price Index |
| Day | The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays |
| DECCW | Department of Environment, Climate Change and Water or its successors |
| Department | Department of Planning or its successors |
| Director General | Director General of the Department of Planning, or nominee |
| EA | Environmental Assessment Report titled *"Block 5, Barangaroo & Hickson Road, Surfactant-Enhancement In Situ Chemical Oxidation (SISCO) and Surfactant-Enhanced Product Recovery (SEPR) Pilot Trial"*, prepared by JBA Urban Planning Consultants, dated *November 2010* |
| EPA | Environment Protection Authority |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EP&A Regulation | *Environmental Planning and Assessment Regulation 2000* |
| Evening | The period from 6pm to 10pm |
| Incident | A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval |
| Minister | Minister for Planning, or nominee |
| Night | The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays |
| PCA | Principal Certifying Authority |
| PPR | Preferred Project Report titled *"Block 5, Barangaroo & Hickson Road, Surfactant-Enhancement In Situ Chemical Oxidation (SISCO) and Surfactant-Enhanced Product Recovery (SEPR) Pilot Trial"*, prepared by JBA Urban Planning Consultants, dated *January 2011* |
| Project | The project described in Schedule 2, Part A, Condition A1 and the accompanying plans and documentation described in Schedule 2, Part A, Condition A2. |
| Proponent | Lend Lease (Millers Point) Pty Limited, or anyone else entitled to act on this Approval |
| POEO Act | *Protection of the Environment Operations Act 1997* |
| Reasonable and Feasible | Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build. |
| SISCO | Surfactant-Enhancement In Situ Chemical Oxidation |
| SEPR | Surfactant-Enhanced Product Recovery |
| Statement of Commitments | The Proponent's Statement of Commitments in Schedule 3. |
| Subject Site | Lot 3 and Lot 5 in DP 876514 and Part Hickson Road adjacent to Lots 11 & 12 in DP 1065410 |

## SCHEDULE 2

### PART A - ADMINISTRATIVE CONDITIONS

#### *A1 DEVELOPMENT DESCRIPTION*

Except as amended by this approval, project approval is granted for investigative works and a pilot trial of two in situ technologies (SISCO and SEPR) to remediate soil and groundwater contamination.

#### *A2 DEVELOPMENT IN ACCORDANCE WITH PLANS AND DOCUMENTATION*

The development will be undertaken in accordance the following documents and plans:

| | | | |
|---|---|---|---|
| Environmental Assessment Report including appendices *titled "Block 5, Barangaroo & Hickson Road, Surfactant-Enhancement In Situ Chemical Oxidation (SISCO) and Surfactant-Enhanced Product Recovery (SEPR) Pilot Trial", prepared by JBA Urban Planning Consultants on behalf of Lend Lease (Millers Point) Pty Ltd dated November 2010* | | | |
| Preferred Project Report including appendices titled *"Block 5, Barangaroo & Hickson Road, Surfactant-Enhancement In Situ Chemical Oxidation (SISCO) and Surfactant-Enhanced Product Recovery (SEPR) Pilot Trial", prepared by JBA Urban Planning Consultants on behalf of Lend Lease (Millers Point) Pty Ltd dated January 2011* | | | |
| *Waste Management Plan* prepared by AECOM dated 30 September 2010 | | | |
| *Pilot Trials Noise and Vibration Assessment* prepared by AECOM dated September 2010 | | | |
| *Overarching Remediation Action Plan for the Barangaroo Project Site* prepared by ERM dated 1 June 2010 | | | |
| *Construction Traffic Management Plan* prepared by AECOM dated 7 October 2010 | | | |
| *Soil and Water Impact Assessment* prepared by AECOM dated 7 October 2010 | | | |
| *Air Quality Impact Assessment* prepared by AECOM dated 5 October 2010 | | | |
| *Health Impact Assessment* prepared by AECOM dated 30 September 2010 | | | |
| *Construction Management Plan* prepared by VeruTEK Technologies dated 30 September 2010 | | | |
| Plans prepared by Lend Lease Design and VeruTEK Technologies | | | |
| **Drawing No.** | **Issue** | **Name of Plan** | **Date** |
| Figure 1 | - | Block 5 and Hickson Road Pilot Trial Area Map | Jan 2011 |
| Figure 2A | - | Block 5 Pilot Trial Treatment Area Map | Jan 2011 |
| Figure 2B | - | Hickson Road Pilot Trial Treatment Area Map | Jan 2011 |
| Figure 2C | - | Hickson Pilot Test Cross-Sections | Aug 2010 |
| Figure 3 | - | SISCO & SEPR Injection Schematic | Aug 2010 |
| Figure 4 | - | Service Monitoring Map | Aug 2010 |
| Figure 5A | - | Block 5 Proposed Soil Sampling Locations | Sept 2010 |
| Figure 5B | - | Hickson Road Proposed Soil Sampling Locations | Sept 2010 |

except for:

(1) any modifications which are 'Exempt and Complying Development' as identified in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 or as may be necessary for the purpose of compliance with the BCA and any Australian Standards incorporated in the BCA; and

(2) otherwise provided by the conditions of this approval.

#### *A3 INCONSISTENCY BETWEEN DOCUMENTS*

In the event of any inconsistency between conditions of this approval, the drawings/documents referred to above and/or the Statement of Commitments, the conditions of this approval prevail.

#### *A4 PRESCRIBED CONDITIONS*

The Proponent shall comply with the prescribed conditions of approval under Clause 98 of the *Environmental Planning and Assessment Regulation 2000* in relation to the requirements of the *Building Code of Australia* (BCA).

### *A5 CONSTRUCTION CERTIFICATE*

This Determination Notice does not constitute permission to begin works associated with the development. A Construction Certificate (where applicable) must be obtained prior to the commencement of any development works.

### *A6 OTHER APPROVALS*

The approval of the pilot trial in no way implies automatic approval of the remediation of the subject site as proposed in Major Project Application (MP10_0026) *"Remediation and land forming works".*

**End of Section**

## PART B - PRIOR TO COMMENCEMENT OF WORKS/PILOT TRIAL

### *B1 ENVIRONMENTAL PROTECTION LICENCE*

Prior to the commencement of works, the Proponent must ensure that the existing Environmental Protection Licence (EPL) issued to the Barangaroo Delivery Authority is varied where required to reflect and permit the works conducted on site. All works undertaken on site must be done in a manner which ensures compliance with EPL conditions at all times.

### *B2 TRIAL MANAGEMENT PLAN*

Prior to the commencement of works, the Proponent must prepare and submit to DECCW for review and approval, a Trial Management Plan (TMP) which details, but should not be limited to, the following:

a. How the treatment of water and the tars will be undertaken.
b. The process for monitoring the treatment to minimise environmental impacts.
c. The triggers for management actions should the trial move outside the agreed parameters.
d. Contingency measures that will be undertaken if the trigger thresholds are reached.

### *B3 AIR EMISSIONS*

Prior to the commencement of works, an appropriate stack concentration limit which reflects the proper and efficient operation of the plant, complies with relevant *Protection of the Environment Operations (Clean Air) Regulation* limits and ensures health based ground level concentration criteria are met, must be submitted to DECCW for review and approval.

### *B4 SOIL VAPOUR EXTRACTION SYSTEM (SVE) AND EMISSION CONTROL SYSTEM (ECS)*

The Proponent must ensure that the SVE and ECS are designed, operated and maintained to ensure that a stack concentration of total Volatile Organic Compounds (VOC) does not exceed a level which must be agreed in writing by DECCW prior to the commencement of the pilot trial.

The Proponent must also consult with DECCW to determine an appropriate breakthrough trigger value for the ECS prior to the commencement of the pilot trial.

VOC emissions from the SVE system must be monitored and recorded continuously in accordance with the *"Approved methods for the sampling and analysis air pollutants in NSW"*

### *B5 AIR QUALITY AND ODOUR*

Prior to the commencement of works, persulphate batching procedures must be prepared and submitted to DECCW for review and approval. Such procedures must be documented in the *Trial Management Plan* approved by DECCW.

### *B6 WATER AND STORMWATER MANAGEMENT PLAN/SUB PLAN*

Prior to the commencement of works, the Proponent must prepare and submit to DECCW for review and approval, a Water and Stormwater Management Plan (WSMP) to ensure appropriate handling of surface waters during the pilot trial. The WSMP must document any process water batch treatment and reuse criteria (if appropriate).

### *B7 NOISE AND VIBRATION*

Prior to the commencement of works, the Proponent must prepare and submit to DECCW and the Director General for review and approval, a revised Noise and Vibration Management Plan (NVMP) to ensure noise and vibration impacts associated with construction activities are appropriately managed and handled.

### *B8 CONSTRUCTION TRAFFIC MANAGEMENT PLAN*

Prior to the commencement of works, the Proponent must prepare and submit to the relevant road authority and the Director General for review and approval, a revised Construction Traffic Management Plan to ensure appropriate management of traffic.

### *B9 GEOTECHNICAL REPORTS*

Prior to the commencement of any drilling works on site, the proponent shall submit to the PCA, the results of a detailed geotechnical investigation on the site. The report is to address such matters as:

- appropriate drilling methods and techniques
- vibration management and monitoring
- dilapidation survey
- support and retention of excavates faces
- hydrogeological considerations

The recommendations of the report are to be implemented during the course of the works.

### *B10 APPLICATION FOR HOARDINGS AND SCAFFOLDING ON A PUBLIC PLACE*

(a) A separate application under Section 138 of the *Roads Act 1993* is to be made to the relevant road authority to erect a hoarding and/or scaffolding in a public place and such application is to include:-

(i) Architectural, construction and structural details of the design.

(ii) Structural certification prepared and signed by an appropriately qualified practising structural engineer.

Evidence of the issue of a Structural Works Inspection Certificate and structural certification will be required prior to the commencement of demolition or construction works on site.

(b) Should the hoarding obstruct the operation of Council's CCTV Cameras, the Proponent shall relocate or replace the CCTV camera within the hoarding or to an alternative position as determined by Council's Contracts and Asset Management Unit for the duration of the construction of the development. The cost of relocating or replacing the CCTV camera is to be borne by the Proponent. Further information and a map of the CCTV cameras is available by contacting Council's CCTV Unit on 9265 9232.

(c) The hoarding must comply with relevant road authority policies for hoardings and temporary structures on the public way. Graffiti must be removed from the hoarding within one working day.

### *B11 BARRICADE PERMIT*

Where construction/building works require the use of a public place including a road or footpath, approval under Section 138 of the *Roads Act 1993* for a Barricade Permit is to be obtained from the relevant road authority prior to the commencement of work. Details of the barricade construction, area of enclosure and period of work are required to be submitted to the satisfaction of the relevant road authority.

### *B12 TRAFFIC WORKS*

Any proposals for alterations to the public road, involving traffic and parking arrangements, must be designed in accordance with RTA Technical Directives and must be referred to and approved by the relevant road authority prior to any work commencing on site.

### *B13 VEHICLE CLEANSING*

Prior to the commencement of work, suitable measures are to be implemented to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site. It is an offence to allow, permit or cause materials to pollute or be placed in a position from which they may pollute waters.

### *B14 SYDNEY PORTS CONSULTATION*

Prior to the commencement of work, the Proponent must liaise with Sydney Ports to ensure that all temporary impacts on the port and wharf facilities are clearly communicated and minimised as far as practicable. The proposed implementation of traffic management measures, such as placement of barriers, signage and line marking, are to be scheduled to minimise impact on cruise ship arrival and departure times.

**End of Section**

## PART C - DURING CONSTRUCTION/PILOT TRIAL

### *C1 CONSTRUCTION/PILOT TRIAL HOURS*

All construction and pilot trial work on site must be conducted between 7.00 am and 7.00 pm Monday to Friday and between 7.00 am and 6.00 pm Saturdays. At no time is work to be conducted on Sundays and public holidays unless inaudible at any residential premises. Works outside these hours are not permitted except as explicitly specified below:

(a) the delivery of materials which is required outside these hours as requested by the NSW Police or other authorities for safety reasons.

(b) other works expressly approved by the Director General

.

### *C2 CONSTRUCTION/PILOT TRIAL NOISE*

Construction noise management levels (NML) derived in accordance with the DECCW Interim Construction Noise Guidelines apply to this project, and are required to be identified in a revised Noise and Vibration Management Plan (NVMP). Any activities that have the potential for noise emissions that exceed the NML's must be identified and managed in accordance with the NVMP. The Proponent must implement all reasonable and feasible noise mitigation and management measures with the aim of achieving the NML's.

### *C3 VIBRATION ASSESSMENT*

Vibration caused by construction and received at any sensitive receiver outside the site area must be assessed against the guidelines contained in the DECCW publication *"Environmental Noise Management – Assessing Vibration: A Technical Guideline"* and in accordance with the approved NVMP.

### *C4 VIBRATION*

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

a) for structural damage vibration, German Standard DIN 4150 Part 3 Structural Vibration in Buildings. Effects on Structures; and
b) for human exposure to vibration, the evaluation criteria presented in British Standard BS 6472-Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80 Hz) for low probability of adverse comment.

These limits apply unless otherwise approved in the NVMP.

### *C5 WEEKLY PILOT TRIAL REPORTS*

For the duration of the pilot trial and unless agreed by DECCW, the Proponent must prepare and submit to DECCW for review, a weekly report against the contingency triggers detailed in the TMP. The report must demonstrate that the management controls and procedures are sufficiently and accurately assessing the location of the injection front to determine plume movement and temperature. The report must also include any instances where triggers have been reached and a description of what contingencies were implemented.

### *C6 AIR QUALITY AND ODOUR MONITORING*

For the duration of the pilot trial and unless agreed by DECCW, the Proponent must conduct an air and odour monitoring program implemented in accordance with the AECOM Air Quality Impact Assessment, Work Plan and Trial Management Plan.

### *C7 VOC EMISSIONS*

VOC emissions from the Soil Vapour Extraction System (SVE) system must be monitored and recorded continuously in accordance with the *'Approved methods for the sampling and analysis air pollutants in NSW'*.

### *C8 WASTE*

For the duration of the pilot trial all waste must be managed in accordance with the Waste Management Plan prepared by AECOM dated 30 September 2010 and Statement of Commitments prepared by JBA Planning.

Notwithstanding the above, the Proponent must ensure that all waste generated on site during construction and operation is classified in accordance with DECCW's *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* and disposed of to a facility that may lawfully accept waste.

### *C9 NOISE AND VIBRATION MANAGEMENT*

For the duration of the pilot trial vibration must be managed in accordance with the revised Noise and Vibration Management Plan prepared by AECOM dated 30 September 2010 and Statement of Commitments prepared by JBA Planning.

### *C10 HAZARDS*

The Proponent must ensure that all dangerous goods and hazardous substances are stored and handled on site in accordance with the Dangerous Goods Code and AS 1940-2004: *the storage and handling of flammable and combustible liquids* and the requirements of the Fire Brigade and NSW Police.

### *C11 ARCHAEOLOGICAL DISCOVERY DURING EXCAVATION*

(a) Should any historical relics likely to be of significance be unexpectedly discovered on the site during excavation that are above and beyond those already identified and assessed in the reports noted above in Part A, all excavation or disturbance to the area is to stop immediately and the Heritage Council of NSW should be informed in accordance with section 146 of the *Heritage Act 1977*.

(b) Should any Aboriginal relics be unexpectedly discovered that are above and beyond those already identified and assessed in the reports noted above in item (a) then all excavation or disturbance of the area is to stop immediately and the National Parks and Wildlife Service is to be informed in accordance with Section 91 of the *National Parks and Wildlife Act 1974*.

(c) Any relics found on site that are capable of being included in the site's heritage interpretation or public art, are to be kept safe for consideration of their incorporation into site fixtures.

### *C12 CONSTRUCTION TRAFFIC AND MANAGEMENT*

(a) Construction works will be undertaken generally in accordance with the Construction Traffic Management Plan prepared by AECOM dated 7 October 2010 (as amended), as approved by the relevant road authority, except where modified elsewhere in this condition.

(b) Under the current legislation the use of lengthy vehicles in the CBD is prohibited within certain time frames. All lengthy vehicles must comply with this regulation as stipulated in the NSW Road Rules. A map indicating the prohibited area and definitions of lengthy vehicles are included in the Road Rules.

(c) Personnel using stop/slow signage are not permitted in Hickson Road or Sussex Street on weekdays between the hours of 7.00am to 9.00am and 4.00pm to 7.00pm. However, personnel using stop/slow signage will be permitted on Hickson Road, north of the intersection of Hickson Road and Napoleon Street, when it is required to ensure safe truck access at designated site

access points, provided that vehicle queue lengths generated as a result of the traffic control do not exceed more than six vehicles in either direction.

(d) Truck movements should be staged and coordinated to prevent trucks circling CBD streets whilst awaiting access to the site. There should be holding areas outside the CBD on the fringes or sufficient space within the site to store trucks and heavy vehicles.

(e) To minimise impacts on public transport, trucks should avoid where possible the use of York Street to access the development site between 2.00pm to 8.00pm Monday to Friday.

### *C13 PROTECTION OF STREET TREES DURING CONSTRUCTION*

All relevant street trees adjacent to the site must be protected at all times during demolition and construction, in accordance with Council's Tree Preservation Order. Details of the methods of protection shall be prepared in consultation with Council and approved by the relevant authority prior to the issue of the relevant Construction Certificate and such approval should be forwarded to the Certifying Authority. All protection measures must be maintained for the duration of construction and any tree on the footpath which is damaged or removed during construction must be replaced.

### *C14 LOADING AND UNLOADING DURING CONSTRUCTION*

The following requirements apply:

(a) All loading and unloading associated with construction activity should be accommodated on site.

(b) If, during construction, it is not feasible for loading and unloading to take place on site, a Works Zone on the street may be considered by the relevant road authority.

(c) A Works Zone may be required if loading and unloading is not possible on site. If a Works Zone is warranted an application must be made to the relevant road authority at least 8 weeks prior to commencement of work on the site. An approval for a Works Zone may be given for a specific period and certain hours of the days to meet the particular need for the site for such facilities at various stages of construction. The approval will be reviewed periodically for any adjustment necessitated by the progress of the construction activities.

### *C15 NO OBSTRUCTION OF PUBLIC WAY*

The public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances. Non-compliance with this requirement will result in the issue of a notice to stop all work on site.

### *C16 COVERING OF LOADS*

All vehicles involved in the excavation and/or demolition process and departing the property with demolition materials, spoil or loose matter must have their loads fully covered before entering the public roadway.

### *C17 ASSOCIATED ROADWAY COSTS*

All costs associated with the construction of any new road works including kerb and gutter, road pavement, drainage system and footway shall be borne by the Proponent.

### *C18 VEHICLE CLEANSING*

Prior to the commencement of work, suitable measures are to be implemented to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site. It is an offence to allow, permit or cause materials to pollute or be placed in a position from which they may pollute waters.

### *C19 DUST CONTROL MEASURES*

The Proponent must implement adequate measures to prevent dust from affecting the amenity of the neighbourhood during construction. In particular, the following measures must be adopted:

(1) Physical barriers shall be erected at right angles to the prevailing wind direction or shall be placed around or over dust sources to prevent wind or activity from generating dust emissions,

(2) Earthworks and scheduling activities shall be managed to coincide with the next stage of development to minimise the amount of time the site is left cut or exposed,

(3) All materials shall be stored or stockpiled at the best locations,

(4) The surface shall be dampened slightly to prevent dust from becoming airborne but shall not be wet to the extent that run-off occurs,

(5) All vehicles carrying spoil or rubble to or from the site shall at all times be covered to prevent the escape of dust or other material,

(6) Where required, all equipment wheels shall be washed before exiting the site using manual or automated sprayers and drive-through washing bays,

(7) Gates shall be closed between vehicle movements and shall be fitted with shade cloth, and

(8) Cleaning of footpaths and roadways shall be carried out regularly.

### *C20 SECTION 73 CERTIFICATE*

A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained. Application must be made through an authorised Water Servicing Coordinator. Please refer to "Your Business" section of Sydney Water's web site at www.sydneywater.com.au then the "e-developer" icon or telephone 13 20 92.

Following application a "Notice of Requirements" will detail water and sewer extensions to be built and charges to be paid. Please make early contact with the coordinator, since building of water/sewer extensions can be timed consuming and may impact on other services and building, driveway or landscape design. The Section 73 Certificate must be submitted to the Principal Certifying Authority prior to the release of the plan of subdivision.

**End of Section**

## ADVISORY NOTES

### *AN1 HAZARDOUS MATERIAL IMMOBILISATION*

If any soil needs to be disposed of off site then it will need to comply with the Waste Classification Guidelines. These guidelines may indicate the material will need to be immobilised prior to disposal. If this is the case, the Proponent must apply to DECCW for a site specific immobilisation approval.

### *AN2 TEMPORARY DEWATERING*

Licenses under Part 5 of the *Water Act 1912* may be required for the purpose of temporary dewatering as part of the proposed construction and excavation. Further consultation is to be undertaken with the NSW Office of Water and any required licences are to be obtained prior to the issue of the relevant Construction Certificate.

### *AN1 REQUIREMENTS OF PUBLIC AUTHORITIES FOR CONNECTION TO SERVICES*

The proponent shall comply with the requirements of any public authorities (e.g. Energy Australia, Sydney Water, Telstra Australia, AGL) in regard to the connection to, relocation and/or adjustment of the services affected by the construction of the proposed structure. Any costs in the relocation, adjustment or support of services shall be the responsibility of the proponent.

### *AN2 USE OF MOBILE CRANES*

The proponent shall obtain all necessary permits required for the use of mobile cranes on or surrounding the site, prior to the commencement of works. In particular, the following matters shall be complied with:

(1) For special operations including the delivery of materials, hoisting of plant and equipment and erection and dismantling of on site tower cranes which warrant the on street use of mobile cranes, permits must be obtained from Council:

  (a) At least 48 hours prior to the works for partial road closures which, in the opinion of Council will create minimal traffic disruptions, and

  (b) At least 4 weeks prior to the works for full road closures and partial road closures which, in the opinion of Council, will create significant traffic disruptions.

(2) The use of mobile cranes must comply with the approved hours of construction and shall not be delivered to the site prior to 7.30am without the prior approval of Council.

### *AN3 TEMPORARY STRUCTURES*

An approval under Section 68 of the *Local Government Act 1993* must be obtained from the relevant authority for the erection of the temporary structures. The application must be supported by a report detailing compliance with the provisions of the Building Code of Australia.

Structural certification from an appropriately qualified practicing structural engineer must be submitted to the relevant authority with the application under Section 68 of the *Local Government Act 1993* to certify the structural adequacy of the design of the temporary structures.

### *AN4 LONG SERVICE LEVY (IF APPLICABLE)*

Under Section 34 of the *Building and Construction Industry Long Service Payments Act 1986* any work costing $25,000 or more is subject to a Long Service Levy. If applicable in this instance, the levy rate is 0.35% of the total cost of the work and shall be paid to either the Long Service Payments Corporation or Council. Under section 109F(1) of the *Environmental Planning & Assessment Act 1979* this payment must be made prior to commencement of building works.

**End of Section**

**SCHEDULE 3**

**MP No. 10_0087**

**Proponent's Statement of Commitments**

In accordance with Part 3A of the Environmental Planning and Assessment Act 1979, the following are the commitments made by Lend Lease (Millers Point) Pty Ltd to manage and minimise potential impacts arising from the development.

# 6.0 Final Statement of Commitments

In accordance with Part 3A of the *Environmental Planning and Assessment Act 1979*, the following are the commitments made by Lend Lease to manage and minimise potential impacts arising from the proposal. These commitments replace the draft commitments included with the EAR dated November 2010.

## 6.1 Monitoring and Contingency Procedures

Lend Lease makes the following commitments regarding the detailed monitoring and contingency procedures to be implemented as part of the Pilot Trials:

- to implement the environmental, health and safety measures as outlined in the VeruTek Work Plan and CMP to ensure the Pilot Trial works are undertaken in a manner that does not give rise to unacceptable impacts on human health or to the environment;
- to undertake the soil, water, air and other monitoring as required by the VeruTek Work Plan and CMP to monitor compliance and effectiveness of the trial, and allow the trial to be adaptive to respond to monitoring results;
- where required, implement contingency procedures as outlined in the VeruTek Work Plan to respond to monitoring results (eg. Additional water / vapour extraction); and
- prior to commencement of works, develop a Trial Management Plan and provide to DECCW for comment, as specified in this PPR. The Plan will include, amongst other things, specifying quantitative trigger criteria for monitoring, and contingency actions for exceedance of these triggers. This commitment regarding contingency trigger criteria will also respond and addresse a comment by the Site Auditor in the Conclusions and Recommendations of his Interim Review Letter, regarding specifying *"quantitative action levels for the implementation of contingency actions"*.

The VeruTek Work Plan will be updated prior to the commencement of works to incorporate the following:

- Analysis of metals concentrations (As, Cu, Cd, Cr, Pb, Hg, Ni, Zn) will be added to the proposed monitoring regime before, during and after the Pilot Trial.
- Metals analysis will be added to the complete rounds of pre and post-injection groundwater monitoring that will include samples analysis at an external, NATA accredited laboratory (Work Plan Tables 7a and 7b).
- Weekly monitoring for PAHs in ground water will be added to the proposed monitoring regime.
- The proposed monitoring regime will include, on a weekly basis, duplicates from approximately 10% of the weekly performance monitoring samples collected for analysis in the on-site laboratory being submitted to a NATA accredited external laboratory for metals analysis. The samples submitted for metals analysis will be those samples with the lowest PH (measured in the on site lab) and will be selected as follows:
  - Half will come from wells in the Block 5 monitoring area and half from wells in the Hickson Road monitoring area; and
  - Half of the samples will come from wells within each injection area, specifically from wells including: in Block 5 – VTMW-01, VTMW-02, VTMW-03, VTMW-04, VTMW-05 and/or MW198, and in Hickson Road – VTMW-09, VTMW-10 and VTMW-43;

- Half of the samples will come from wells outside the injection area, specifically from wells including: in Block 5 – VTMW-12, VTMW-06, MW64, ME68, MW197 and/or MW62, and in Hickson Road – VTMW-07, VTMW-08, VTMW-11, MW-15 and MW-6.

- Two additional soil vapour monitoring poinst will be established, VTSV-06 and VTSV-07, approximately 10m from the tar tank.
- An additional soil vapour monitoring pointwill be established (VT-SV08).
- Amended Block 5 and Hickson Road Pilot Trial Area Map and Treatment Figures as included at Appendix B of the Preferred Project Report dated January 2011.
- Cooling and chemical storage will be in accordance with the requirements of local MSDS dangerous goods requirements
- Modification of the trigger levels (with the exception of the TWA 8-hour average) to be consistent with the DECCW proposed trigger levels of 3 mg/m3 sampled in accordance with Stack Testing Method TM-34 and compared against 3 mg/Nm3 (no oxygen correction).

## 6.2 Traffic Management and Accessibility Impacts

The Pilot Trial works will be undertaken generally in accordance with the Construction Traffic Management Plan prepared by AECOM.

Lend Lease make the following commitments regarding construction traffic control:

- The site traffic control recommendations for each worksite gate entry or exit point (including all appropriate signage) will be determined by means of a "Traffic Control Plan" to be prepared by an RTA accredited contractor.
- Each site entry and/or exit gate number and the name or other description of its proposed activity will be clearly signposted for the benefit of all approaching site traffic, in particular emergency services vehicles.
- The vehicular traffic movements at each of the site entry or exit gates for traffic to and from Hickson Road will potentially need to be controlled by a flagman to ensure no potential traffic safety conflicts occur between the site truck traffic and pedestrians on the adjacent footpath.
- Traffic management measures will be established to guide and control vehicles through the work site on Hickson Road. These may include temporary speed restrictions, advanced warning signs and delineation where the route alignment has changed.
- The size of construction trucks will be limited to a single unit truck.
- Traffic control plans detailing the proposed signage and line marking of the cycle lanes and alternate paths will be provided as part of the TMP / road occupancy licence applications as required.
- The proposed traffic management will be inspected post implementation to confirm the safe intersection sight distances are available for vehicles requiring access to the worksites.
- The proposed implementation of traffic management, such as placement of barriers, signage and line marking, will be scheduled to minimise impact on cruise ship arrival and departure times. Where feasible and subject to authority approvals, the proposed hours of work for implementation of traffic control will be carried early morning , at night or weekends to avoid the times of peak traffic movements on Hickson Road.

## 6.3 Soil and Water

Lend Lease make the following commitments regarding soil and water management:

- Water quality monitoring will undertaken as described in the Soil and Water Impact Assessment report.
- The following water quality control measures will be implemented: erosion and sediment control measures, routine visual inspections, stormwater management and water quality monitoring.
- Water quality criteria that applied for this project will be generally based on the recommendations provided in the ANZEC Guidelines.
- Implement the management and mitigation measures outlined in the Soil and Water Impact Assessment that include, but are not limited to:
  - preparation of a Spill Management Plan to mitigate any risks associated with solid and liquid spills. This Plan has been prepared and is included in the Construction Management Plan;
  - development of engineering strategies for spill prevention and control;
  - training programs to prevent and control spills and leaks;
  - administrative strategies to prevent and control spills and leaks;
  - implementation of shut down procedures in the event of an injection line release under Hickson Road;
  - implementation of shut down procedures in the event of hazardous substances being released from injection line and injection well head;
  - use of bicarbonate powder to neutralise sodium persulphate release; and
  - reporting of any releases.
- Lend Lease will comply with the water discharge limits identified and agreed with DECCW in the Stormwater and Water Management Plan, and any EPL conditions.
- Any untreated water on site will be held on site until results from monitoring are available for review, unless otherwise agreed to by DECCW.
- Any discharge structure constructed to allow surface water to be discharged to Darling Harbour will allow for at least an initial 5 fold dilution, and dilution calculations will be provided to DECCW to allow dilution to be factored into any license conditions. Any discharge point will be installed with an appropriately installed silt curtain arrangement.
- The on-site monitoring program will cover all types of water collected by the management and mitigation measures at the works site.
- Lend Lease does not proposed to reuse any contaminated water on-site prior to its appropriate treatment in accordance with the relevant requirements and criteria of a Human Health and Economical Risk Assessment that addresses the risks.
- No discharge to Sydney Water's sewer or stormwater channels will be undertaken without required approvals.
- The Spill Management Plan included in the Construction Management Plan will be updated prior to works commencing to include the relevant Sydney Ports contact details and a requirement that Sydney Ports is contacted in the event of any spill event in Sydney Harbour.

A comprehensive Stormwater and Water Management Plan will be prepared and agreed with DECCW prior to the commencement of works to reiterate and provide further detail on the measures and monitoring programs included in the VeruTek Work Plan including:

- The management of contaminated water during the trial works. The Stormwater and Water Management Plan will address the specific water quality and water monitoring matters identified in DECCW's submission, the Soil and Water Impact Assessment and the revised Construction Management Plan.
- Additional detail specifically describing spill identification;
- Contingency triggers and proposed actions relating to changes in temperature, erosion monitoring requirements, frequency of conductivity monitoring and contingency triggers and actions
- Adjustment of the proposed water level extraction trigger to 0.25 m (that is 0.1m above what is expected).
- Treatment systems for any discharge of water to Darling Harbour will be designed to remove all relevant contaminants to the level specified in the Stormwater and Water Management Plan and table of limits, unless otherwise agreed by DECCW.
- The water quality monitoring program described by the Stormwater and Water Management Plan will be based on the program described by the current Work Plan and Work Plan Addendum – Contingency Plan Summary.
- Weekly monitoring for PAHs in ground water will be added to the proposed monitoring regime.
- The proposed monitoring regime will include, on a weekly basis, duplicates from approximately 10% of the weekly performance monitoring samples collected for analysis in the on-site laboratory being submitted to a NATA accredited external laboratory for metals analysis. The samples submitted for metals analysis will be those samples with the lowest PH (measured in the on site lab) and will be selected as follows:
  - Half will come from wells in the Block 5 monitoring area and half from wells in the Hickson Road monitoring area; and
  - Half of the samples will come from wells within each injection area, specifically from wells including: in Block 5 – VTMW-01, VTMW-02, VTMW-03, VTMW-04, VTMW-05 and/or MW198, and in Hickson Road – VTMW-09, VTMW-10 and VTMW-43;
  - Half of the samples will come from wells outside the injection area, specifically from wells including: in Block 5 – VTMW-12, VTMW-06, MW64, ME68, MW197 and/or MW62, and in Hickson Road – VTMW-07, VTMW-08, VTMW-11, MW-15 and MW-6.

A comprehensive Trial Management Plan will be prepared and agreed with DECCW prior to the commencement of works to detail:

- The proposed TPH analytical methods (including both on-site and off-site analysis).
- The proposed methodology for monitoring the injection front.
- Contingency triggers and proposed actions relating to changes in temperature, spill identification, erosion monitoring requirements, frequency of conductivity monitoring and contingency triggers and actions
- The actual wells that trigger the actions to changes in IFT.
- Proposed actions at the Block 5 trial location if hydrogen peroxide escapes the injection zone.
- Proposed actions for VOCs other than benzene.

- Proposed actions at the Block 5 trial location if hydrogen peroxide escapes the injection zone;
- Further information with regards to odour monitoring and contingency actions;
- Adjustment of the proposed water level extraction trigger to 0.25 m (that is 0.1m above what is expected);
- Clarification of the proposed contingency and mitigation measures for responding to elevated PID readings;
- Proposed monitoring wells;
- Monitoring and reporting details for the SISCO and SEPR pilot trials such as groundwater monitoring locations, indicators and frequencies;
- A requirement that details of the SVE system and treatment system maintenance;
- Reinjection criteria for any wastewater extracted from SISCO or SEPR activities and treated in the proposed batch water treatment process;
- How the batch water treatment process will be managed to ensure temperature and pressure in the reaction vessel are maintained at safe levels;
- Trigger criteria and contingency actions for exceedence of triggers at groundwater monitoring wells for the SISCO treatment front and SEPR activity (a contingency plan);
- How the Trial Water Management Plan links to the Stormwater and Water Management Plan.
- The water quality monitoring program described by the Stormwater and Water Management Plan and Trial Management Plan will be based on the program described by the current Work Plan and Work Plan Addendum – Contingency Plan Summary.

## 6.4 Site Auditor Review

Lend Lease make the following commitment relating to the site audit statement:

- Lend Lease will obtain an Interim Review Letter from the Auditor, at the completion of the Pilot Trial works.

## 6.5 Waste Management

Lend Lease make the following commitment relating to waste management:

- Construction works will be undertaken in accordance with the Waste Management Plan (WMP) prepared by AECOM.
- Lend Lease will continue to work with DECCW and the BDA during the preparation of the final construction drawings and documentation and obtain the relevant approvals as relevant to the approved scope of works. This includes any approvals required in relation to the disposal of waste off site which has high concentrations of contaminants.
- Lend Lease will (at a minimum):
  - *(a)* Properly classify any wastes generated as a result of the trial in accordance with DECCW's Waste Classification Guidelines; and
  - *(b)* Ensure that any waste leaving the site for disposal is transported to a facility that can lawfully receive that waste.

- The record of waste being exported from the site will include the quantities, address of the disposal site, classification and transport details, and original records demonstrating the above and lawful disposal of the waste will be retained.
- Where the disposal of off-site material is subject to DECCW Approval number 2005/14 and material has concentrations of contaminants over and above those specified in the general approval, an application for a specific immobilisation approval will be made to DECCW. Lend Lease will consult with DECCW's Hazardous Materials and Radiation Section to determine the requirements should an application be necessary.

## 6.6 Consultation with Sydney Water

Lend Lease make the following commitment relating to ongoing consultation with Sydney Water:

- Lend Lease will continue to work with Sydney Water to prevent potential impact to Sydney Water's assets during the proposed works.
- A comprehensive review of the Sydney Water assets and the contaminants located within the site will be undertaken, prior to commencement of works. The findings and recommendations of the review will be provided to Sydney Water.
- An application to Sydney Water will be submitted for building over/adjacent to sewer as required. A Water Servicing Coordinator will be engaged to manage the application process as necessary.
- If the pilot trial works have any impact on Sydney Water's assets, work will stop immediately and Sydney Water will be contacted. Lend Lease will be responsible for any corrective actions needed to address any impact on Sydney Water's assets.
- Access to Sydney Water assets will be maintained at all times during the works. If Sydney Water needs to access it assets in the immediate vicinity of the pilot trial works, Lend Lease will advise Sydney Water crews of any safety risks associated with the pilot trial works.

## 6.7 Air Quality and Odour

Lend Lease make the following commitment relating to air quality and odour:

- A monitoring program will be implemented in accordance with the recommendations in the AECOM Air Quality Impact Assessment, this PPR and the Trial Management Plan.
- Persulphate batching procedures will be further assessed and discussed with DECCW, prior to commencement of works and detailed in the Trial Management Plan.

## 6.8 Noise & Vibration

Lend Lease make the following commitment relating to noise and vibration:

- Lend Lease will carry out the proposed development as described in the Environmental Assessment and in this PPR.
- Lend Lease will consolidate and reconcile AECOM's Noise and Vibration Management and Mitigation Strategies (September, 2010) and VeruTek's Noise and Vibration Management Plan (October, 2010) into a single Noise and Vibration Management Plan prior to commencement of works.
- All construction activities will be managed in accordance with the above consolidated plan.
- The consolidated Noise and Vibration Management Plan will outline appropriate mitigation measures to ensure minimal disruption to receptors.

## 6.9 Health

Lend Lease make the following commitment relating to the health:

- All construction activities will be managed in accordance with the Health Impact Assessment prepared by AECOM.

## 6.10 Environmental, Construction and Site Management

Lend Lease make the following commitment relating to the environmental, construction and site management:

- All construction activities will be managed in accordance with ***a revised*** Construction Management Plan prepared by VeruTek Technologies.
- The Construction Traffic Management Plan (with future amendments as required) will be revised and refined at the Construction Certificate stage to ensure it appropriately satisfies relevant stakeholders.
- Lend Lease is committed to ensuring that the SISCO Pilot Trials do not unreasonably impact on all neighbours and users of Hickson Road, and the Cruise Passenger Terminal's operations, particularly during berthing days.
- Traffic Control Plans (TCP) will be prepared to detail the traffic control required for each stage of the works, prior to the commencement of works. TCP's are mandatory and will be subject to authority assessment and approvals via road occupancy licence and speed zoning authorisations. TCP will include advance warning to cyclists and motorists of the bike lane closure and intended path and measures to regulate conflicts, such speed reduction, warning of merging cyclists and any proposed shared use of the footpath.
- The proposed works will comply with Austroad's standards related to the provision for cyclists at works, as identified in the Guide to Road Design Part 6a – Pedestrian and Cyclist Paths.

## 6.11 Tree Protection

Lend Lease make the following commitment relating to tree protection:

- An appropriately qualified arborist will be engaged to identify any required tree protection measures required for the proposed scope of works and to monitor the site establishment works.
- Street tree canopy protection will include:
  - construction vehicles will maintain an adequate clearance of 500mm from all street tree canopies (including major branches and/or tree trunks) located along the construction access route, at all times;
  - no street trees will be pruned without the necessary approval being obtained;
  - Stockpiling, storage or mixing of materials, and other works associated with the Pilot Trials will not be undertaken within 5 metres of the trunk of any tree to be retained;
  - Excavation will not occur within 5 metres of the trunk of street trees located on Hickson Road, unless Lend Lease's arborist has identified and implemented specific tree protection measures and construction methodology(ies); and
  - All protection measures will remain in place for the duration of the development works, and shall be removed at the completion of works.

## 6.12 Heritage

Lend Lease make the following commitment relating to heritage:

### Non-Indigenous and Indigenous Archaeology

- If, during the course of the redevelopment, any previously undetected Aboriginal "objects", artefacts or sites are uncovered, work must cease in the vicinity of that object, artefact or site and further advice sought from the archaeologist who undertook the program of sub-surface testing.

### Interpretation Strategy

An Outline Interpretation Plan has been prepared by Tanner Architects. The Plan was prepared for the Stage 1 area, however the strategies will be adopted in the Block 5 and Hickson Road sites where appropriate. The Plan:

- identifies the themes and messages considered significant to the Stage 1 area;
- develops a conceptual approach to interpretation of the Stage 1 area, using a variety of means; and
- proposes locations for specific interpretation to enhance the understanding of the heritage significance of the Stage 1 area.

Where appropriate interpretation options recommended in the strategy will be implemented on the Block 5 site. During the Pilot Trials any archaeological relics or other cultural artefacts identified will, where appropriate, be incorporated into future public displays.