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17 October 2014

John Templeman
Transport Access Program
Transport Projects

Transport for NSW

Dear John,

Transport Access Program - Pendle Hill Easy Access Upgrade

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Transport for NSW (TfNSW) to undertake contamination assessment and waste classification works at the Pendle Hill Station Precinct (the Site) as outlined in the TfNSW tender for the Transport Access Program, specifically for the Pendle Hill Station Easy Access Upgrade (Reference 3507895_1).

2.0 Objective

The objective of the contamination assessment is to provide preliminary waste classification of material which may be disturbed as part of the proposed upgrade works at the Site.

3.0 Scope of Works and Methodology

The scope of works completed for this investigation comprised the following:

- Preparation of a task-specific Safe Work Method Statement;
- Clearance of underground services using available underground service plans, Pendle Hill Station plans and a Telstra accredited service locator;
- Completion of six boreholes to a maximum depth of 8.65 metres below ground surface (m bgs). Three boreholes were completed on the station platforms (BH01 to BH03B) and three boreholes were completed outside the rail corridor (BH04 to BH06) at predetermined locations agreed with TfNSW;
- Soil sampling, logging and screening for volatile organic compounds (VOCs) at each of the six borehole locations using a calibrated photoionisation detector (PID);
- Laboratory analysis of two selected soil samples (per borehole) by National Association of testing Authority (NATA) accredited laboratories for the following contaminants of potential concern (CoPC):
    - Heavy metals (Arsenic [AS], Cadmium [Cd], Chromium [Cr], Copper [Cu], Lead [Pb], Mercury [Hg], Nickel [Ni] and Zinc [Zn]);
    - Polycyclic aromatic hydrocarbons (PAHs);
    - Total recoverable hydrocarbons (TRH);
    - Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN);
    - Organochlorine and organophosphate pesticides (OCP and OPP);
    - Polychlorinated biphenyls (PCBs);
    - Asbestos; and
    - Toxicity Characteristic Leaching Procedure (TCLP) for lead and nickel on selected samples.
- Collection and analysis of quality control and quality assurance (QA/QC) samples, comprising:
    - Intra-laboratory duplicate samples, at a rate of 1 sample per 20 primary soil samples;

- Inter-laboratory (split) duplicate samples, at a rate of 1 sample per 20 primary soil samples;
- Trip blank, at a rate of 1 per site; and
- Rinsate blanks, at a rate of 1 per day of sampling.

- Data analysis and preparation of this waste classification letter report documenting the results of the field and analytical program, providing an overview of waste classification for waste disposal purposes during construction and recommendations for any treatment that may be required as part of the proposed works.

4.0 Site Identification

The Site is located between Wentworth Avenue to the northeast and Joyce Street to the southeast, in Pendle Hill NSW. The Site is located in Sydney's West, approximately 30 km from the Sydney central business district (CBD). The Site Location is detailed on **Figure A1** and the Site Layout and Sampling Locations shown on **Figure A2** in **Attachment A**.

The station comprises two island platforms surrounded by four tracks. A pedestrian overpass connects Wentworth Avenue with Joyce Street and with each of the platforms.

The Sydney 1:250,000 Geological Series Sheet (3rd edition 1966) maps the regional geology as Triassic shale with some sandstone beds, characterised by Wianamatta Group Shales and sandstones.

The NSW Natural Resource Atlas website[1] and CSIRO ASRIS[2] tool were used to identify the potential for Acid Sulphate Soils (ASS) at the Site. Pendle Hill is not identified as an area with known occurrence of ASS. As such, AECOM would consider the Site to have a very low probability for the occurrence of ASS.

5.0 Soil Investigation Methodology

AECOM completed the soil investigation program between 25 September and 1 October 2014. AECOM field methods were undertaken in accordance with the relevant NSW EPA[3] and NEPM[4] guidelines.

The adopted sampling methodology is summarised below:

- Completion of six boreholes. Three locations (BH01 to BH03B) were completed on the station platforms with a portable Melvelle drill rig, two locations (BH04 and BH05) were completed in the station car park along Wentworth Avenue using a JK250 Drill Rig, and one location (BH06) was completed in the pedestrian walkway between the Station and Joyce Street with a JK300 Drill Rig;
- The total depth of the boreholes ranged between 3.94 m bgs (BH02) and 8.65 m bgs (BH06);
- All boreholes were cleared with a hand auger to minimum depth of 1.2 m bgs or the depth of hand auger refusal. Following hand auger refusal, platform boreholes were advanced with diamond coring (TT56 core barrel). After hand auger refusal in the roadway boreholes, intermittent samples were taken using Standard Penetration Test (SPT) equipment. In between SPT samples, the roadway boreholes were advanced using solid flight augers until refusal and were then completed using diamond coring (NMLC core barrel);
- Soil was classified in accordance with the Unified Soil Classification System (USCS). Field observations were recorded on logs and included a description of general properties, presence/absence of asbestos containing materials (ACM), a description of odour (if present), a description of anthropogenic inclusions (if present) and a description of staining (if present);
- All samples were placed in appropriately prepared sampling containers using single use disposable nitrile gloves. All samples were clearly labelled with unique sample identification numbers. Samples were kept chilled in an ice-filled chiller prior to dispatch to the laboratory under chain of custody (COC) protocols;
- All samples were sub-sampled into snap-lock bags and the vapour headspace was screened in the field for volatile organic compounds (VOCs) using a calibrated PID with a 10.6 electron volt (eV) lamp;

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[1] http://www.nratlas.nsw.gov.au
[2] http://www.asris.csiro.au/
[3] NSW Environment Protection Authority (EPA) 1995. *Sampling Design Guidelines*. September

[4] NEPC, 2013. *National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM)* (No. 1). May.

- The hand trowel used to extract soil samples was washed in Decon-90 solution and rinsed in potable water prior to use and between each sample collection event; and
- Primary, intra-laboratory duplicate, rinsate and trip blank samples were submitted to ALS Environmental laboratory located in Smithfield, NSW. Inter-laboratory duplicate samples were submitted to Envirolab Chatswood, NSW for analysis. The selected laboratories are NATA certified for the analysis required.

6.0 Soil Assessment Criteria

6.1 Human Health

The following soil assessment criteria (SAC) (endorsed by NSW EPA) were used to evaluate whether the soil analytical results represent a potential risk to human health for a commercial/industrial land use:

- The National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 as amended and implemented on 16 May 2013 (ASC NEPM [2013]): *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater* and *Schedule B(2) Guideline on Site Characterisation*, specifically:
    - Health Investigation Level D (HIL D) (commercial/industrial); and
    - Health Screening Level D (HSL D) – Sand – 1 to <2m (commercial/industrial).
- Friebel & Nadebaum (2011) Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Health Screening Levels (HSLs) for Petroleum Hydrocarbons on Soil and Groundwater. Soil HSLs, specifically:
    - Direct contact HSL D (commercial/industrial);
    - Intrusive maintenance worker – Direct Contact HSL; and
    - Intrusive maintenance worker HSL – sand 0 - <2m.
- US EPA (May, 2014) - Regional Screening Levels (RSLs) – Residential Soil (US EPA, 2014).

In the first instance the NEPC (May, 2013) and Friebel and Nadebaum (2011) guidelines were adopted in preference to the US EPA RSLs. The US EPA RSLs were only adopted in the absence of Australian based criteria values.

The following rationale was applied in the selection of these SAC:

- Commercial/industrial standards (HIL_D, HSL_D and Industrial land use) have been adopted as they are most applicable to the existing and proposed commercial/industrial land use for the Site;
- For HSLs, sand was selected as the soil type and the shallowest depth to contamination (0-<1m) as these are the most conservative options; and
- Assumed soil impact (where detected) does not extend off-Site.

6.2 Asbestos

The presence of ACM was visually assessed during the investigation works and selected samples were analysed for presence/absence of ACM by a NATA accredited laboratory.

6.3 Waste Classification

The current criteria used in NSW to characterise waste materials for off-site disposal to landfill are provided in the NSW Department of Environment, Climate Change and Waste (DECCW) *Waste Classification Guidelines Part 1: Classifying Waste.* (NSW DECCW, 2009).

The guidelines set different maximum total concentrations for specific contaminants that define the classification of soil as either ‘general solid waste’, ‘restricted solid waste’ or ‘hazardous waste’, which affects the way in which the waste is handled and controls the landfills to which the waste is able to be disposed.

6.4 Summary of Field Observations

6.4.1 Fill Materials

Fill materials were encountered in all three platform boreholes (BH01 to BH03B) and ranged in thickness from 1.4 m and 2.5 m bgs. Fill materials in the platform boreholes generally consisted of sand and clay with varying proportions of gravels and silt. Brick rubble fragments were observed in BH02. Fill materials in BH03B were noted

to contain slag fragments and white gravels of possibly lime or chalk material, and large sandstone cobbles/boulders approximately 300 mm in diameter.

Fill materials in the roadway and pedestrian walkway (BH04 to BH06) ranged in depth from 0.3 to 0.8 m bgs. Materials comprised mainly sand, with varying proportions of silt.

Concentrations of total VOCs in the vapour headspace of fill sub-samples averaged a concentration of 0.1 parts per million (ppm). There were no odours, ACM or staining observed in fill materials at the locations sampled.

6.4.2 Natural Soil

Fill materials were underlain by silty clays grading to weathered shale and shale bedrock. Silty clays were generally red and orange brown with low plasticity, containing varying proportions of shale gravels and extended to an approximate depth of 2 m bgs. Silty clays graded to weathered siltstone materials and were generally orange and grey mottled and extended to an approximate depth of 5 m bgs. Weathered siltstone graded to pale and dark grey banded siltstone bedrock and extended to the maximum depth of investigation of 8.65 m bgs.

Concentrations of VOCs in sub-samples ranged between 0 and 0.3 ppm. There were no odours, ACM or staining observed in natural materials at the locations sampled.

Borehole logs and PID calibration certificates are provided in **Attachment B** and **Attachment C** respectively.

7.0 Quality Assurance and Quality Control

One intra-laboratory duplicate sample (QC01) and one inter-laboratory duplicate sample (QC02) were collected and analysed during this investigation (refer to **Table T1** in **Attachment D**). The reported relative percentage difference (RPD) of CoPC concentrations in the primary sample and duplicates were less than the maximum acceptable limit of 50% with the exception of:

- BH03_0.5-0.6 and QC02 – arsenic 86%; and
- BH03_0.5-0.6 and QC02 – benzo(a)pyrene TEQ (LOR) 82%.

These LOR exceedences are considered to be attributable to:

- Low reported concentrations detected close to the laboratory LOR (i.e. less than 10 x LOR); and/or
- Samples heterogeneity due to variability in fill samples.

A trip blank (QC101) was collected and the analytical results were less than the LOR for the analytes reported.

Five rinsate blank samples were collected (QC102 to QC106) (refer to **Table T2** in **Attachment D**). The analytical results were less than the laboratory LOR for the anyltes reported with the exception of:

- Copper in QC105 (0.001 mg/l); and
- Zinc in QC103 (0.006 mg/l), QC105 (0.008 mg/l) and QC106 (0.007 mg/l).

Given the elevated copper and zinc concentrations are only marginally above the laboratory LOR, AECOM does not consider that the reported outliers impact upon the reliability of the sample collection methods used in the field.

The laboratory QA/QC results including surrogate/matrix spike/control samples, sample holding times, laboratory duplicates and their RPDs and laboratory blanks were reported within acceptable limits with the exception of some analytes (PAH, OCP/OPP, PCBs and TRH) in the laboratory duplicate sample for rinsate water in batch ES1440041. This was due to insufficient volume in the rinsate water sample for complete analysis. AECOM does not consider this to impact the reliability of the QC data.

In summary, AECOM considers that the field and laboratory QA/QC results are acceptable for the purposes of the Site investigation. Laboratory certificates are provided in **Attachment E**.

8.0 Summary of Analytical Results

The analytical results are tabulated and compared against the adopted assessment criteria in **Table T1** in **Attachment D**.

8.1 Human Health

There were no exceedences of the selected soil assessment criteria for human health in any of the samples analysed. It is noted that concentrations of heavy metals were elevated above the laboratory LOR.

8.2 Asbestos

There were no detections of asbestos fibres in any of the seven samples analysed.

8.3 Waste Classification

Reported concentrations of CoPC in the samples analysed were less than the criteria for general solid waste (CT1) with the exception of the following:

- Lead: one exceedence of the CT1 value (100 mg/kg) (PH_BH03_0.3-0.4) and one exceedance of the CT2 value (PH_BH03_0.5-0.6) triggered TCLP analysis. The TCLP concentrations are below the criteria for general solid waste (SCC1 and TCLP1); and
- Nickel: two exceedences of the CT1 value (40 mg/kg) in samples PH_BH05_0.2-0.3 and PH_BH06_0.05-0.15 triggered TCLP analysis. The TCLP concentrations are below the criteria for general solid waste (SCC1 and TCLP1).

9.0 Conclusions

Based on the data obtained and evaluated, it is concluded that soil within the locations analysed as part of this investigation are suitable for the existing commercial/industrial land-use scenario. From a contamination perspective, no remediation is considered necessary.

Materials requiring offsite disposal as part of the proposed upgrade works are suitable for disposal as general solid waste. Subject to the volumes of material requiring offsite disposal, additional confirmatory waste classification testing may be required at the time of the excavation works.

10.0 Limitations

This document was prepared for the sole use of Transport for New South Wales, the only intended beneficiaries of this report. Any advice, opinions or recommendations contained in this document should be read and relied upon only in the context of the document as a whole and are considered current to the date of this document. Any other party should satisfy themselves that the scope of work conducted and reported herein meets their specific needs. AECOM Australia Pty Ltd (AECOM) cannot be held liable for third party reliance on this document, as AECOM is not aware of the specific needs of the third party. From a technical perspective, the subsurface environment at any Site may present substantial uncertainty. It is a heterogeneous, complex environment, in which small subsurface features or changes in geologic conditions can have substantial impacts on water and chemical movement. Uncertainties may also affect source characterisation assessment of chemical fate and transport in the environment, assessment of exposure risks and health effects, and remedial action performance.

AECOM's professional opinions are based upon its professional judgement, experience, and training. These opinions are also based upon data derived from the testing and analysis described in this document. It is possible that additional testing and analysis might produce different results and/or different opinions. AECOM has limited its investigation to the scope agreed upon with its client. AECOM believes that its opinions are reasonably supported by the testing and analysis that have been done, and that those opinions have been developed according to the professional standard of care for the environmental consulting profession in this area at this time. That standard of care may change and new methods and practices of exploration, testing, analysis and remediation may develop in the future, which might produce different results. AECOM's professional opinions contained in this document are subject to modification if additional information is obtained, through further investigation, observations, or validation testing and analysis during remedial activities.

AECOM

11.0 Closure

Should you require further information please do not hesitate to contact the undersigned on 02 8934 0000.

Kind regards,

Lauren Kontus
Environmental Scientist
lauren.kontus@aecom.com

Anthony Davis
Principal Professional Scientist
anthony.davis@aecom.com

encl. Attachment A - Figures
Attachment B - Borehole Logs
Attachment C - Calibration Certificates
Attachment D - Tables
Attachment E - Laboratory Certificates

Attachment A – Figures

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AECOM

SITE LOCATION

Contamination Assessment

Pendle Hill Station Precinct, New South Wales

FIGURE A1

G:\IENV\GIS\Projects\603 Projects\60303367 Pendle Hill Station Precinct\FIGURES\60303367 FA2 Site Layout and Sampling Locations 09 10 2014 TO Rev B

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SITE LAYOUT AND SAMPLING LOCATIONS

Contamination Assessment

Pendle Hill Station Precinct, New South Wales

Note: BH03 and BH03A were terminated at 0.50m and 0.75m respectively due to obstructions preventing completion of the borehole in that location. BH03B was moved 0.75m southwest of BH03.

FIGURE A2

Attachment B – Borehole Logs

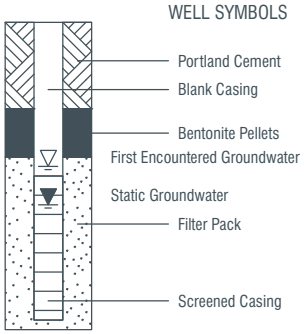
MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW	WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP	POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM	SILTY GRAVELS WITH OR WITHOUT SAND
			GC	CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW	WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP	POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL	ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH	INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH	ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

SYMBOLS KEY

SAMPLE TYPES

- Split Spoon
- Shelby Tube
- Rock Core
- Grab Sample

WELL SYMBOLS



ABBREVIATION KEY

CA - CHEMICAL ANALYSIS (CORROSIVITY)
CD - CONSOLIDATED DRAINED TRIAXIAL
CN - CONSOLIDATION
CU - CONSOLIDATED UNDRAINED TRIAXIAL
DS - DIRECT SHEAR
PP - POCKET PENETROMETER (TSF)
(3.0) - (WITH SHEAR STRENGTH IN KSF)
RV - R-VALUE
SA - SIEVE ANALYSIS: % PASSING #200 SIEVE
(200) - (WITH % PASSING NO. 200 SIEVE
SW - SW ELL TEST
TC - CYCLIC TRIAXIAL
TV - TORVANE SHEAR
UC - UNCONFINED COMPRESSION
(1.5) - (WITH SHEAR STRENGTH IN KSF)
UU - UNCONSOLIDATED UNDRAINED TRIAXIAL
WA - WASH ANALYSIS
(200%) - (WITH % PASSING NO. 200 SIEVE)

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KEY TO BORING LOG

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH01

PROJECT NUMBER 60303367-1.4 **DATE** 25 Sep 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD Melvelle Rig
SAMPLING METHOD Hand Auger

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0.1		QC01	✳			ASPHALT	Asphalt.	0.04
		PH_BH01_0.04-0.1	✳	0.2		FILL	FILL, gravelly silty sand (SP-SM), brown/red brown, medium grained, dry, dense. Contains asphalt fragments, quartz gravels, <10% silty clay pockets. No odour, ACM or staining observed.	0.40
0.1		PH_BH01_0.5-0.6		0.4		FILL	FILL, gravelly silty clay (CL), red brown and grey mottled, slightly moist, low to medium plasticity, medium stiff. Contains <20% gravels. No odour, ACM or staining observed.	0.60
				0.6		FILL		
				0.8			FILL, silty clay (CL), dark brown, slightly moist, low plasticity, medium stiff. Contains <10% shale cobbles (<5cm). No odour, ACM or staining observed.	1.00
0.1		PH_BH01_1.0-1.1		1.0		FILL	FILL, silty clay (CL), red brown and grey mottled, slightly moist, medium plasticity, medium stiff. Contains <10% shale gravels. No odour, ACM or staining observed.	
				1.2				
0.1		PH_BH01_1.4-1.5		1.4				1.50
				1.6		CL	silty CLAY (CL), orange brown, slightly moist, low plasticity, stiff. No odour, ACM or staining observed.	
				1.8				
0.1		PH_BH01_1.9-2.0		2.0				
				2.2				
0.1		PH_BH01_2.4-2.5	✳	2.4		CL	Becomes grey, orange and brown mottled, slightly moist, low plasticity, very stiff. No odour, ACM or staining observed.	
				2.6				
				2.8		CL	Hand auger refusal, start rock coring. No further soil samples collected.	
				3.0				
				3.2				
				3.4				
				3.6				3.64
				3.8		SILTSTONE	Siltstone bedrock.	
				4.0				
				4.2				
				4.4				
				4.6				
				4.8				
				5.0				
				5.2				
				5.4				
				5.6				
				5.8				
				6.0				
				6.2				6.28
							Borehole terminated. Total Depth: 6.28 m	

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH02

PROJECT NUMBER 60303367-1.4 **DATE** 24 Sep 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD Melvelle Rig
SAMPLING METHOD Hand Auger

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
						ASPHALT	Asphalt.	0.05
0.1		PH_BH02_0.05-0.1				FILL	FILL, sandy gravel (GWS), brown, slightly moist, medium dense. Contains asphalt fragments, quartz gravels, brick rubble, <30% sand component. No odour, ACM or staining observed.	0.20
				0.2		FILL	FILL, gravelly sandy clay (CL), dark brown, slightly moist, medium dense. Contains brick rubble, and shale cobbles (<8cm). No odour, ACM or staining observed.	0.50
				0.4				
0.1		PH_BH02_0.5-0.6	✳			FILL	FILL, gravelly silty clay (CL), grey and orange brown mottled, slightly moist, medium stiff. Contains <20% shale gravels (<2cm). No odour, ACM or staining observed.	0.90
				0.6				
				0.8				
0.1		PH_BH02_0.9-1.0				FILL	FILL, clayey gravel (GC), orange brown, dry, medium dense. Contains shale gravels. No odour, ACM or staining observed.	1.60
				1.0				
				1.2				
				1.4				
				1.6		FILL	FILL, gravelly clayey sand (SC), dark brown, dry, medium dense. No odour, ACM or staining observed.	1.90
0.1		PH_BH02_1.7-1.8						
				1.8		CL	silty CLAY (CL), dark brown and red brown mottled, moist, medium to high plasticity, stiff. Contains minor shale gravels (<10%). No odour, ACM or staining observed.	3.18
0.1		PH_BH02_2.0-2.1	✳	2.0				
				2.2				
				2.4				
				2.6				
				2.8				
				3.0				
				3.2		SILTSTONE	Hand auger refusal, start rock coring. No further soil samples collected.	3.94
				3.4				
				3.6				
				3.8				
							Borehole terminated Total Depth: 3.94 m	

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH03B

PROJECT NUMBER 60303367-1.4 **DATE** 26 Sep 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD Melvelle Rig
SAMPLING METHOD Hand Auger

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
						ASPHALT	Asphalt.	0.06
0.1		PH_BH03_0.06-0.16	✳	0.2		FILL	FILL, silty sand, brown, slightly moist, medium dense. Contains <10% siltstone/shale gravels (<10mm). No odour, ACM or staining observed.	0.20
0.0		PH_BH03_0.3-0.4		0.4		FILL	FILL, silty clay (CL), grey and brown mottled, slightly moist, medium stiff, low to medium plasticity. No odour, ACM or staining observed.	0.30
0.1		QC02 PH_BH03_0.5-0.6	✳	0.6		FILL	FILL, silty gravelly sand (SC), dark brown, slightly moist, medium dense. Contains slag fragments and white gravels of possible lime or chalk material (<30mm). No odour, ACM or staining observed.	0.40
				0.8		FILL	FILL, silty clay (CL), red brown, slightly moist, medium stiff, low to medium plasticity. No odour, ACM or staining observed.	0.50
				1.0		FILL	Hand auger refusal on sandstone cobbles. Initial BH03 is repositioned 300mm NW (BH03A) and logging/sampling continues.	
				1.2			FILL, silty gravelly sand (SC), dark brown, slightly moist, medium dense. Contains slag fragments and asphalt gravels, medium to coarse grained sand. No odour, ACM or staining observed.	
				1.4			Hand auger refusal on concrete slab. Hole repositoned 700mm SE (BH03B) and logging/sampling continues.	
				1.6			Hand auger refusal of large sandstone cobbles. Start rock coring. No further soil samples collected.	
				1.8				
				2.0				
				2.2				
				2.4		SILTSTONE	Siltstone bedrock.	2.46
				2.6				
				2.8				
				3.0				
				3.2				
				3.4				
				3.6				
				3.8				
				4.0				
				4.2				
				4.4				
				4.6				
				4.8				
				5.0				
				5.2				
				5.4				
				5.6				
				5.8				
				6.0				
				6.2				
				6.4			Borehole terminated. Total Depth: 6.45 m	6.45

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH04

PROJECT NUMBER 60303367-1.4 **DATE** 30 Sep 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD JK250 Geoprobe
SAMPLING METHOD Auger/SPT

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
						ASPHALT	Asphalt.	0.05
1.2		QC03 PH_BH04_0.12-0.2		0.2		FILL	Roadbase gravels.	0.12
				0.4		FILL	FILL, silty sand (SM), brown, dry, dense. Conatins approximately 20% road base gravels, sand is medium grained. No odour, ACM or staining observed.	0.50
0.1		PH_BH04_0.5-0.6	✳	0.6		CL	silty clay (CL), red brown, slightly moist, low plasticity, stiff. No odour, ACM or staining observed.	
				0.8				
				1.0				
0	■	PH_BH04_1.2-1.3		1.2				
				1.4				1.50
				1.6		SILTSTONE	Hand auger refusal on weathered siltstone, switch to SPT.	
				1.8			Extremely weathered SILTSTONE, orange and grey mottled, dry to slightly moist. No odour, ACM or staining observed.	
0	■	PH_BH04_2.0-2.1		2.0				
				2.2				
				2.4				
				2.6				
				2.8				
				3.0				
0	■	PH_BH04_3.1-3.2		3.2			Becomes dark grey and highly weathered.	
				3.4				
				3.6				
				3.8				
0.1	■	PH_BH04_4.0-4.1	✳	4.0				
				4.2				
				4.4			Becomes moderately weathered.	
				4.6				
				4.8				
				5.0				
				5.2				
				5.4			Solid auger refusal on dark and pale grey banded siltstone. Start rock coring. No further soil samples collected.	
				5.6				
				5.8				
				6.0				
				6.2				
				6.4				
				6.6				
				6.8				
				7.0				
				7.2				
				7.4				
				7.6				
				7.8				
				8.0				
				8.2				
				8.4				8.53
							Borehole terminated. Total Depth: 8.53 m	

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH05

PROJECT NUMBER 60303367-1.4 **DATE** 30 Sep 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD JK250 Geoprobe
SAMPLING METHOD Auger/SPT

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
						ASPHALT	Asphalt.	0.07
2.2		PH_BH05_0.22-0.3	✳	0.2		FILL / FILL	Concrete and road base gravels.	0.22
0.2		PH_BH05_0.5-0.6		0.4 / 0.6		FILL	FILL, gravelly silty sand (SM), brown, dry, medium dense. Contains road base gravels. No odour, ACM or staining observed.	0.40
				0.8		CL	FILL, clayey silty sand (SM), red brown, dry to slightly moist, dense. No odour, ACM or staining observed.	0.80
0.2		PH_BH05_1.0-1.1	✳	1.0 / 1.2			silty CLAY (CL), red, orange and grey mottled, slightly moist, low to medium plasticity, stiff. No odour, ACM or staining observed.	
0.2	■	PH_BH05_1.3-1.4		1.4		SILTSTONE	weathered SILTSTONE, grey and orange brown mottled, dry. No odour, ACM or staining observed.	1.40
0.2	■	PH_BH05_2.1-2.3		1.6 / 1.8 / 2.0 / 2.2 / 2.4 / 2.6 / 2.8 / 3.0 / 3.2 / 3.4		SILTSTONE	Weathered siltstone is pale grey and brown mottled, dry. No odour, ACM or staining observed.	
0.3		PH_BH05_3.7-4.0		3.6 / 3.8 / 4.0 / 4.2 / 4.4 / 4.6		SILTSTONE	Weathered siltstone is brown, dry. No odour, ACM or staining observed.	
				4.8 / 5.0 / 5.2 / 5.4 / 5.6 / 5.8 / 6.0 / 6.2 / 6.4 / 6.6 / 6.8 / 7.0		SILTSTONE	Solid auger refusal, start rock coring. No further soil samples collected.	7.15

Borehole terminated.
Total Depth: 7.15 m

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW 2000

BOREHOLE LOG BH06

PROJECT NUMBER 60303367-1.4 **DATE** 1 Oct 14
PROJECT NAME Transport for NSW - Transport Access Program
LOCATION Pendle Hill Station Precinct
DRILLING METHOD JK300 Geoprobe
SAMPLING METHOD Auger/SPT

LOGGED BY Lauren Kontus
COMMENTS

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0.1		PH_BH06_0.05-0.1	✳	0.2		FILL	Brick overlay.	0.06
						FILL	FILL, sand (SW), yellow, slightly moist, loose. No odour, ACM or staining observed.	0.09
				0.4		FILL		0.30
0.1		PH_BH06_0.5-0.6		0.6			FILL, sand (SP), brown, slightly moist, loose. No odour, ACM or staining observed.	0.70
				0.8		CL	silty clay (CL), red brown, slightly moist, medium plasticity, medium stiff. No odour, ACM or staining observed.	
0.1		PH_BH06_0.9-1.0	✳	1.0			silty CLAY (CL), orange brown and grey mottled, slightly moist, low to medium plasticity, very stiff. No odour, ACM or staining observed.	1.20
				1.2		SILTSTONE	Hand auger refusal on shale gravels, swithc to SPT.	
				1.4				
				1.6			Extremely weathered SILTSTONE, pale grey and brown, dry. No odour, ACM or staining observed.	
				1.8				
				2.0				
0.1		PH_BH06_2.0-2.2		2.2				
				2.4				
				2.6				
				2.8				
				3.0				
0		PH_BH06_3.0-3.2		3.2			Becomes highly weathered.	
				3.4				
				3.6				
				3.8				
				4.0				
0.2		PH_BH06_4.0-4.2		4.2				
				4.4				
				4.6				
				4.8				
				5.0			Solid auger refusal, start rock coring. No further soil samples collected.	
				5.2				
				5.4			Weathered siltstone is pale grey to dark grey bands.	
				5.6			Becomes slightly weathered.	
				5.8				
				6.0				
				6.2				
				6.4				
				6.6				
				6.8				
				7.0				
				7.2				
				7.4				
				7.6				
				7.8				
				8.0				
				8.2				
				8.4				
				8.6			Borehole terminated. Total Depth: 8.65 m	8.65

PENDLE HILL_BORELOGS_20141003.GPJ 9/10/14

Attachment C – Calibration Certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-105435**

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	**Low**	**High**	**TWA**	**STEL**
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		100ppm Isobutylene	NIST	SY21		101.3ppm

Calibrated by: **Jacob Arnott**

Calibration date: **18/09/2014**

Next calibration due: **18/10/2014**

AECOM

CPFO472a (ENV) Photoionization Detector (Hire Unit)

Job Number/Name: 60303367 - 1.4

Frequency: Daily on Use or Twice Daily

PID Serial Number	Date/Time	Fresh Air Cal.	Span Gas concentration (e.g.101 ppm Isobutylene)	Span Gas Cal.	Name (print)	Signature
T-105435	22.9.14	0.0 ppm.	100.0 ppm.	Isobutylene. 100ppm.	Lauren Kontis	[signature]
T-105435	24.9.14-9:00	0.0ppm.	Isobutylene 100ppm.	100.0ppm.	Lauren Kontis	[signature]
T-105435	25.9.14-8:30	0.0 ppm.	Isobutylene 100ppm.	100.0ppm.	Lauren Kontis	[signature]
T-105435	26.9.14-8:35	0.0ppm.	Isobutylene 100ppm.	100.0ppm.	Lauren Kontis	[signature]
T-105435	29.9.14-9:25	0.0ppm.	Isobutylene 100ppm.	100.0ppm	Lauren Kontis	[signature]
T-105435	30.9.14-7:10	0.0ppm.	Isobutylene 100ppm.	100.0ppm.	Lauren Kontis	[signature]
T-105435	1.10.14-7:35	0.0ppm.	Isobutylene 100ppm.	100.0ppm.	Lauren Kontis	[signature]

Attachment D – Tables

Table T1 - Analytical Results
(Human Health and Waste Classification)

			BTEX							TRH								Halogenated Benzenes	Metals							
			Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10	C6-C10 less BTEX (F1)	C10-C16	C10-C16 less NAPHTHALENE (F2)	C16-C34	C34-C40	C10 - C40 (Sum of total)	Hexachlorobenzene	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		LOR	0.2	0.5	0.5	0.2	0.5	0.5	0.5	10	10	50	50	100	100	50	0.05	4	0.4	1	1	1	0.1	1	1
Human Health	Criteria hierarchy	NEPC 2013 HIL D - Commercial/Industrial															80	3000	900	3000	240000	1500	730	6000	400000
		NEPM 2013 HSL D - Sand 0 to <1 m	3	NL	NL				230	260	260	NL	NL												
		CRC CARE 2011 HSL D - Direct Contact	430	27000	99000				81000	26000	26,000	20,000	20,000	27000	38000										
		CRC CARE 2011 IMW - Sand - 0-<2m	77	NL	NL				NL	NL	NL	NL	NL												
		CRC CARE 2011 IMW - Direct Contact	1100	85000	120000				130000	82000	82,000	62,000	62,000	85000	120000										
		US EPA May 2014 - Industrial Soil	5.1	25	47000			2800	2500								1.4	3	980	6.3	47000	800	40	22000	350000
	Adopted Criteria	Commercial Worker Screening Criteria	3	NL	NL			2800	230	260	260	NL	NL	27,000	38,000		80	3000	900	3000	240,000	1400	730	6000	400,000
		Intrusive Maintenance Worker Screening Criteria	77	NL	NL			2800	NL	NL	NL	NL	NL	27,000	120,000		80	3000	900	3000	240,000	1500	730	6000	400,000
Waste Classification	General Solid Waste	NSW 2009 General Solid Waste (No Leaching) (CT1)	10	600	288				1000									100	20			100	4	40	
		NSW 2009 General Solid Waste (with leached) (SCC1)	18	1080	518				1800									500	100			1500	50	1050	
		NSW 2009 General Solid Waste (Leachable Concentration) (TCLP1) ***(mg/L)***	*0.5*	*30*	*14.4*				*50*									*5*	*1*			*5*	*0.2*	*2*	
	Restricted Solid Waste	NSW 2009 Restricted Solid Waste (No Leaching) (CT2)	40	2400	1152				4000									400	80			400	16	160	
		NSW 2009 Restricted Solid Waste (with leached) (SCC2)	72	4320	2073				7200									2000	400			6000	200	4200	
		NSW 2009 Restricted Solid Waste (Leachable Concentration) (TCLP 2) ***(mg/L)***	*2*	*120*	*57.6*				*200*									*20*	*4*			*20*	*0.8*	*8*	

Field_ID	LocCode	Sample_Depth_ Range	Sampled_ Date	Sample_Type	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10	C6-C10 less BTEX (F1)	C10-C16	C10-C16 less NAPHTHALENE (F2)	C16-C34	C34-C40	C10 - C40 (Sum of total)	Hexachlorobenzene	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
PH_BH01_0.04-0.1	PH_BH01	0.04-0.1	25/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	19	<1	13	26	52	<0.1	10	67
QC01	PH_BH01	0.04-0.1	25/09/2014	Duplicate	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	22	<1	12	28	60	<0.1	13	85
				RPD(%)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	15	NC	8	7	14	NC	26	24
PH_BH01_2.4-2.5	PH_BH01	2.4-2.5	25/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	<5	<1	6	12	13	<0.1	<2	10
PH_BH02_0.5-0.6	PH_BH02	0.5-0.6	24/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	17	<1	7	31	17	<0.1	28	140
PH_BH02_2.0-2.1	PH_BH02	2-2.1	24/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	11	<1	23	80	42	<0.1	7	72
PH_BH03_0.3-0.4	PH_BH03	0.3-0.4	26/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	36	<1	6	87	478	<0.1	10	68
PH_BH03_0.3-0.4	*PH_BH03*	*0.3-0.4*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.3*	-	-	-
PH_BH03_0.5-0.6	PH_BH03	0.5-0.6	26/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	10	<1	10	128	164	<0.1	8	44
QC02	PH_BH03	0.5-0.6	26/09/2014	Split	<0.2	<1	<0.5	-	<2	<1	<3	<25	<25	<50	-	<100	<100	-	<0.1	4	<0.4	7	91	99	<0.1	10	35
				RPD(%)	NC	NC	NC	-	NC	NC	NC	NC	NC	NC	-	NC	NC	-	NC	**86**	NC	35	34	49	NC	22	23
PH_BH03_0.5-0.6	*PH_BH03*	*0.5-0.6*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.1*	-	-	-
PH_BH04_0.5-0.6	PH_BH04	0.5-0.6	30/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	9	<1	18	19	16	<0.1	<2	17
PH_BH04_4.0-4.1	PH_BH04	4-4.1	30/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	8	<1	8	41	21	<0.1	22	91
PH_BH05_0.2-0.3	PH_BH05	0.2-0.3	30/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	<5	<1	52	159	12	<0.1	50	58
PH_BH05_0.2-0.3	*PH_BH05*	*0.2-0.3*	*30/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.1*	-
PH_BH05_1.0-1.1	PH_BH05	1-1.1	30/09/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	10	<1	13	19	18	<0.1	<2	13
PH_BH06_0.05-0.15	PH_BH06	0.05-0.15	1/10/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	<5	<1	20	58	<5	<0.1	119	48
PH_BH06_0.05-0.15	*PH_BH06*	*0.05-0.15*	*1/10/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.1*	-
PH_BH06_0.9-1.0	PH_BH06	0.9-1	1/10/2014	Normal	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<10	<50	<50	<100	<100	<50	<0.05	10	<1	12	17	15	<0.1	<2	8

Notes:

NSW 2009 - New South Wales Department of Climate Change and Water *Waste Classification Guidelines*

CT - Contaminant Theshold Value
SSC - Specific Contaminant Concentration
TCLP - Toxicity Characteristic Leaching Procedure
LOR - Limit of Reporting
mg/kg - Miligrams per Kilogram
mg/L - Miligrams per Litre
RPD - Relative percentage difference
NC - Non calculable
NL - Not Limiting – A vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

Blue - assessment criteria value is less than the Laboratory LOR

Bold - exceedence of RPD
Italic denotes TCLP analysis
Duplicate - Intra-laboratory duplicate sample
Split - Inter-laboratory duplicate sample
- = no value/not analysed
< denotes result less than LOR
Shading denotes exceedence of NSW 2009 Contaminant Threshold Value for General Solid Waste
Shading denotes exceedence of NSW 2009 Contaminant Threshold Value for Restricted Solid Waste

Table T1 - Analytical Results
(Human Health and Waste Classification)

			Organochlorine Pesticides																									Organophosphorous Pesticides																
			4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		LOR	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.05
Human Health	Criteria hierarchy	NEPC 2013 HIL D - Commercial/Industrial				45		530						3600		2000				100				50		2500					2000													
		NEPM 2013 HSL D - Sand 0 to <1 m																																										
		CRC CARE 2011 HSL D - Direct Contact																																										
		CRC CARE 2011 IMW - Sand - 0-<2m																																										
		CRC CARE 2011 IMW - Direct Contact																																										
		US EPA May 2014 - Industrial Soil	6.8	0.37	0.14		1.3					9.6	8.6		0.14	4900				250			2.5	0.51	0.25	4100	2500			580	820	8200	580	8	160	410			16000	210		
	Adopted Criteria	Commercial Worker Screening Criteria	6.8	0.37	0.14	45	1.3	530				9.6	8.6	3600	0.14	2000				100			2.5	50	0.25	2500	2500			580	2000	8200	580	8	160	410			16,000	210		
		Intrusive Maintenance Worker Screening Criteria	6.8	0.37	0.14	45	1.3	530				9.6	8.6	3600	0.14	2000				100			2.5	50	0.25	2500	2500			580	2000	8200	580	8	160	410			16,000	210		
Waste Classification	General Solid Waste	NSW 2009 General Solid Waste (No Leaching) (CT1)														60															4												
		NSW 2009 General Solid Waste (with leached) (SCC1)														108															7.5												
		NSW 2009 General Solid Waste (Leachable Concentration) (TCLP1) ***(mg/L)***														*3*															*0.2*												
	Restricted Solid Waste	NSW 2009 Restricted Solid Waste (No Leaching) (CT2)														240															16												
		NSW 2009 Restricted Solid Waste (with leached) (SCC2)														432															30												
		NSW 2009 Restricted Solid Waste (Leachable Concentration) (TCLP 2) ***(mg/L)***														*12*															*0.8*												

Field_ID	LocCode	Sample_Depth_ Range	Sampled_ Date	Sample_Type	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos
PH_BH01_0.04-0.1	PH_BH01	0.04-0.1	25/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
QC01	PH_BH01	0.04-0.1	25/09/2014	Duplicate	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
				RPD(%)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	-	NC	NC	NC	NC	NC
PH_BH01_2.4-2.5	PH_BH01	2.4-2.5	25/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH02_0.5-0.6	PH_BH02	0.5-0.6	24/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH02_2.0-2.1	PH_BH02	2-2.1	24/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH03_0.3-0.4	PH_BH03	0.3-0.4	26/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH03_0.3-0.4	*PH_BH03*	*0.3-0.4*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH03_0.5-0.6	PH_BH03	0.5-0.6	26/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
QC02	PH_BH03	0.5-0.6	26/09/2014	Split	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-	-	-
				RPD(%)	NC	NC	NC	NC	NC	-	NC	NC	NC	NC	NC	NC	NC	-	NC	NC	NC	NC	NC	-	NC	NC	NC	NC	-	NC	-	-	NC	NC	NC	-	NC	NC	-	-	-	-	-	-
PH_BH03_0.5-0.6	*PH_BH03*	*0.5-0.6*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH04_0.5-0.6	PH_BH04	0.5-0.6	30/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH04_4.0-4.1	PH_BH04	4-4.1	30/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH05_0.2-0.3	PH_BH05	0.2-0.3	30/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH05_0.2-0.3	*PH_BH05*	*0.2-0.3*	*30/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH05_1.0-1.1	PH_BH05	1-1.1	30/09/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH06_0.05-0.15	PH_BH06	0.05-0.15	1/10/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05
PH_BH06_0.05-0.15	*PH_BH06*	*0.05-0.15*	*1/10/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH06_0.9-1.0	PH_BH06	0.9-1	1/10/2014	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05

Notes:

NSW 2009 - New South Wales Department of Climate Change and Water *Waste Classification Guidelines*

CT - Contaminant Theshold Value
SSC - Specific Contaminant Concentration
TCLP - Toxicity Characteristic Leaching Procedure
LOR - Limit of Reporting
mg/kg - Milligrams per Kilogram
mg/L - Miligrams per Litre
RPD - Relative percentage difference
NC - Non calculable
NL - Not Limiting – A vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

Blue - assessmer

Bold - exceeden
Italic denotes TCI
Duplicate - Intra-l
Split - Inter-labora
- = no value/not a
< denotes result

Table T1 - Analytical Results
(Human Health and Waste Classification)

			Ronnel
			mg/kg
		LOR	0.1
Human Health	Criteria hierarchy	NEPC 2013 HIL D - Commercial/Industrial	
		NEPM 2013 HSL D - Sand 0 to <1 m	
		CRC CARE 2011 HSL D - Direct Contact	
		CRC CARE 2011 IMW - Sand - 0-<2m	
		CRC CARE 2011 IMW - Direct Contact	
		US EPA May 2014 - Industrial Soil	41000
	Adopted Criteria	Commercial Worker Screening Criteria	41,000
		Intrusive Maintenance Worker Screening Criteria	41,000
Waste Classification	General Solid Waste	NSW 2009 General Solid Waste (No Leaching) (CT1)	
		NSW 2009 General Solid Waste (with leached) (SCC1)	
		NSW 2009 General Solid Waste (Leachable Concentration) (TCLP1) ***(mg/L)***	
	Restricted Solid Waste	NSW 2009 Restricted Solid Waste (No Leaching) (CT2)	
		NSW 2009 Restricted Solid Waste (with leached) (SCC2)	
		NSW 2009 Restricted Solid Waste (Leachable Concentration) (TCLP 2) ***(mg/L)***	

Field_ID	LocCode	Sample_Depth_ Range	Sampled_ Date	Sample_Type	
PH_BH01_0.04-0.1	PH_BH01	0.04-0.1	25/09/2014	Normal	-
QC01	PH_BH01	0.04-0.1	25/09/2014	Duplicate	-
				RPD(%)	-
PH_BH01_2.4-2.5	PH_BH01	2.4-2.5	25/09/2014	Normal	-
PH_BH02_0.5-0.6	PH_BH02	0.5-0.6	24/09/2014	Normal	-
PH_BH02_2.0-2.1	PH_BH02	2-2.1	24/09/2014	Normal	-
PH_BH03_0.3-0.4	PH_BH03	0.3-0.4	26/09/2014	Normal	-
PH_BH03_0.3-0.4	*PH_BH03*	*0.3-0.4*	*26/09/2014*	*TCLP (mg/L)*	-
PH_BH03_0.5-0.6	PH_BH03	0.5-0.6	26/09/2014	Normal	-
QC02	PH_BH03	0.5-0.6	26/09/2014	Split	<0.1
				RPD(%)	-
PH_BH03_0.5-0.6	*PH_BH03*	*0.5-0.6*	*26/09/2014*	*TCLP (mg/L)*	-
PH_BH04_0.5-0.6	PH_BH04	0.5-0.6	30/09/2014	Normal	-
PH_BH04_4.0-4.1	PH_BH04	4-4.1	30/09/2014	Normal	-
PH_BH05_0.2-0.3	PH_BH05	0.2-0.3	30/09/2014	Normal	-
PH_BH05_0.2-0.3	*PH_BH05*	*0.2-0.3*	*30/09/2014*	*TCLP (mg/L)*	-
PH_BH05_1.0-1.1	PH_BH05	1-1.1	30/09/2014	Normal	-
PH_BH06_0.05-0.15	PH_BH06	0.05-0.15	1/10/2014	Normal	-
PH_BH06_0.05-0.15	*PH_BH06*	*0.05-0.15*	*1/10/2014*	*TCLP (mg/L)*	-
PH_BH06_0.9-1.0	PH_BH06	0.9-1	1/10/2014	Normal	-

Notes:

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CT - Contaminant Theshold Value
SSC - Specific Contaminant Concentration
TCLP - Toxicity Characteristic Leaching Procedure
LOR - Limit of Reporting
mg/kg - Miligrams per Kilogram
mg/L - Miligrams per Litre
RPD - Relative percentage difference
NC - Non calculable
NL - Not Limiting – A vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

Blue - assessmer

Bold - exceeden
Italic denotes TCI
Duplicate - Intra-l
Split - Inter-labora
- = no value/not a
< denotes result

Table T1 - Analytical Results
(Human Health and Waste Classification)

			PAH																					Pesticides				Polychlorinated Biphenyls								Asbestos
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ (half LOR)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Benzo(b)&(k)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	Asbestos Detected
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g/kg
		LOR	0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5	0.2	0.5	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.05	0.05	0.2	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Human Health	Criteria hierarchy	NEPC 2013 HIL D - Commercial/Industrial																			4000														7	
		NEPM 2013 HSL D - Sand 0 to <1 m																		NL																
		CRC CARE 2011 HSL D - Direct Contact																		11000																
		CRC CARE 2011 IMW - Sand - 0-<2m																		NL																
		CRC CARE 2011 IMW - Direct Contact																		29000																
		US EPA May 2014 - Industrial Soil	45000		230000	2.9	0.29					2.9		29	290	0.29	30000	30000	2.9	17			23000		210	4900		30	0.66	0.66	1	1	1	1	1	
	Adopted Criteria	Commercial Worker Screening Criteria	45,000		230,000	2.9	0.29					2.9		29	290	0.29	30,000	30,000	2.9	NL	4000		23,000		210	4900		30	0.66	0.66	1	1	1	1	1	
		Intrusive Maintenance Worker Screening Criteria	45,000		230,000	2.9	0.29					2.9		29	290	0.29	30,000	30,000	2.9	nl	4000		23,000		210	4900		30	0.66	0.66	1	1	1	1	1	
Waste Classification	General Solid Waste	NSW 2009 General Solid Waste (No Leaching) (CT1)					0.8																													
		NSW 2009 General Solid Waste (with leached) (SCC1)					10														200														50	
		NSW 2009 General Solid Waste (Leachable Concentration) (TCLP1) ***(mg/L)***					*0.04*																													
	Restricted Solid Waste	NSW 2009 Restricted Solid Waste (No Leaching) (CT2)					3.2																													
		NSW 2009 Restricted Solid Waste (with leached) (SCC2)					23														800														50	
		NSW 2009 Restricted Solid Waste (Leachable Concentration) (TCLP 2) ***(mg/L)***					*0.16*																													

Field_ID	LocCode	Sample_Depth_ Range	Sampled_ Date	Sample_Type	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ (half LOR)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Benzo(b)&(k)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	Asbestos Detected
PH_BH01_0.04-0.1	PH_BH01	0.04-0.1	25/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
QC01	PH_BH01	0.04-0.1	25/09/2014	Duplicate	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
				RPD(%)	NC	NC	NC	NC	NC	0	0	NC	-	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	-	-	-	NC	-
PH_BH01_2.4-2.5	PH_BH01	2.4-2.5	25/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-
PH_BH02_0.5-0.6	PH_BH02	0.5-0.6	24/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
PH_BH02_2.0-2.1	PH_BH02	2-2.1	24/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-
PH_BH03_0.3-0.4	PH_BH03	0.3-0.4	26/09/2014	Normal	<0.5	<0.5	<0.5	1.1	0.8	1.4	1.6	1.1	-	1.1	<0.5	0.6	1	<0.5	2.7	<0.5	<0.5	<0.5	11.7	2	2.4	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
PH_BH03_0.3-0.4	*PH_BH03*	*0.3-0.4*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH03_0.5-0.6	PH_BH03	0.5-0.6	26/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-
QC02	PH_BH03	0.5-0.6	26/09/2014	Split	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	-	<0.2	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
				RPD(%)	NC	NC	NC	NC	NC	-	**82**	-	-	-	NC	-	NC	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH03_0.5-0.6	*PH_BH03*	*0.5-0.6*	*26/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH04_0.5-0.6	PH_BH04	0.5-0.6	30/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
PH_BH04_4.0-4.1	PH_BH04	4-4.1	30/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-
PH_BH05_0.2-0.3	PH_BH05	0.2-0.3	30/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
PH_BH05_0.2-0.3	*PH_BH05*	*0.2-0.3*	*30/09/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH05_1.0-1.1	PH_BH05	1-1.1	30/09/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-
PH_BH06_0.05-0.15	PH_BH06	0.05-0.15	1/10/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	No
PH_BH06_0.05-0.15	*PH_BH06*	*0.05-0.15*	*1/10/2014*	*TCLP (mg/L)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PH_BH06_0.9-1.0	PH_BH06	0.9-1	1/10/2014	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	<0.1	-

Notes:

NSW 2009 - New South Wales Department of Climate Change and Water *Waste Classification Guidelines*

CT - Contaminant Theshold Value
SSC - Specific Contaminant Concentration
TCLP - Toxicity Characteristic Leaching Procedure
LOR - Limit of Reporting
mg/kg - Milligrams per Kilogram
mg/L - Miligrams per Litre
RPD - Relative percentage difference
NC - Non calculable
NL - Not Limiting – A vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

Blue - assessmer

Bold - exceeden
Italic denotes TCI
Duplicate - Intra-l
Split - Inter-labora
- = no value/not a
< denotes result

			SDG	ALSE-Sydney 26-Sep-14	ALSE-Sydney 26-Sep-14	ALSE-Sydney 26-Sep-14	ALSE-Sydney 01-Oct-14	ALSE-Sydney 01-Oct-14	ALSE-Sydney 26-Sep-14
			Field_ID	QC102	QC103	QC104	QC105	QC106	QC101
			Sampled_Date-Time	24/09/2014 15:00	25/09/2014 15:00	26/09/2014 15:00	30/09/2014 15:00	1/10/2014 15:00	24/09/2014 15:00
			Sample_Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B
Chem_Group	**ChemName**	**Units**	**LOR**						
BTEX	Benzene	µg/L	1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	<2	<2	<2	<2	<2	<2
	Total BTEX	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Xylene (m & p)	µg/L	2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	<2	<2	<2	<2	<2	<2
TRH	C6-C10	mg/l	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
	C6-C10 less BTEX (F1)	mg/l	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
	C10-C16	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	C10-C16 less NAPHTHALENE (F2)	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	C16-C34	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	C34-C40	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	C10 - C40 (Sum of total)	µg/L	100	<100	<100	<100	<100	<100	
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Metals	Arsenic (Filtered)	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	<0.001	**0.001**	<0.001	
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
	Nickel (Filtered)	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Zinc (Filtered)	mg/l	0.005	<0.005	**0.006**	<0.005	**0.008**	**0.007**	
Organochlorine Pesticides	4,4-DDE	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	a-BHC	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Aldrin	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Aldrin + Dieldrin	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	b-BHC	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	chlordane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlordane (cis)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlordane (trans)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	d-BHC	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	DDD	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	DDT	µg/L	2	<2	<2	<2	<2	<2	
	DDT+DDE+DDD	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dieldrin	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endosulfan I	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endosulfan II	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endosulfan sulphate	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endrin	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endrin aldehyde	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Endrin ketone	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	g-BHC (Lindane)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Heptachlor	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Heptachlor epoxide	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Methoxychlor	µg/L	2	<2	<2	<2	<2	<2	
Organophosphorous Pesticide	Azinophos methyl	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Bromophos-ethyl	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Carbophenothion	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlorfenvinphos	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlorpyrifos	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlorpyrifos-methyl	mg/l	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
	Diazinon	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dichlorvos	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dimethoate	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Ethion	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Fenthion	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Malathion	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Methyl parathion	µg/L	2	<2	<2	<2	<2	<2	
	Monocrotophos	µg/L	2	<2	<2	<2	<2	<2	
	Prothiofos	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
PAH/Phenols	Acenaphthene	µg/L	1	<1	<1	<1	<1	<1	
	Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1	
	Anthracene	µg/L	1	<1	<1	<1	<1	<1	
	Benz(a)anthracene	µg/L	1	<1	<1	<1	<1	<1	
	Benzo(a) pyrene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(a)pyrene TEQ (zero)	mg/l	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
	Benzo(b)fluoranthene	µg/L	1	<1	<1	<1	<1	<1	
	Benzo(g,h,i)perylene	µg/L	1	<1	<1	<1	<1	<1	
	Benzo(k)fluoranthene	µg/L	1	<1	<1	<1	<1	<1	
	Chrysene	µg/L	1	<1	<1	<1	<1	<1	
	Dibenz(a,h)anthracene	µg/L	1	<1	<1	<1	<1	<1	
	Fluoranthene	µg/L	1	<1	<1	<1	<1	<1	
	Fluorene	µg/L	1	<1	<1	<1	<1	<1	
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	<1	<1	<1	
	Naphthalene	µg/L	1	<5	<5	<5	<5	<5	<5
	PAHs (Sum of total)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Phenanthrene	µg/L	1	<1	<1	<1	<1	<1	
	Pyrene	µg/L	1	<1	<1	<1	<1	<1	
Pesticides	Demeton-S-methyl	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Fenamiphos	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Parathion	µg/L	2	<2	<2	<2	<2	<2	
	Pirimphos-ethyl	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Polychlorinated Biphenyls	PCBs (Sum of total)	µg/L	1	<1	<1	<1	<1	<1	

Notes
LOR - Limit of Reporting
mg/L - Miligrams per Litre
µg/L - Micrograms per Litre
< denotes result less than LOR

Attachment E – Laboratory Certificates

updated Email. ES1421904

use Email as COC

Fadi Soro

From: Barbara Hanna
Sent: Monday, 29 September 2014 10:15 AM
To: Fadi Soro
Subject: FW: Schedule of Analysis Samples for AECOM Project Number 60303367

Environmental Division
Sydney
Work Order
ES1421904
Telephone : +61-2-8784 8555

Hi Fadi,

Please use this e-mail as the COC for the samples dropped off on Friday afternoon (26 September 2014).

Please let me know if there isn't a project number or task number so I can chase these up.

Thanks!!

Kind Regards

Barbara Hanna

Client Services Manager
ALS | Environmental Division

277-289 Woodpark Road
Smithfield NSW 2164 Australia

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F +61 2 8784 8500

www.alsglobal.com

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EnviroMail 83 - NSW Waste Classification
EnviroMail™ 00 - Summary of all EnviroMails™ by Category

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From: Liddle, Eleanor [mailto:Eleanor.Liddle@aecom.com]
Sent: Monday, 29 September 2014 9:57 AM

To: Barbara Hanna
Cc: Kontus, Lauren; Davis, Anthony
Subject: Schedule of Analysis Samples for AECOM Project Number 60303367

Hello Barbara,

Please find below the schedule of analysis for the samples Lauren Kontus dropped off on Friday afternoon (26 September 2014).

Soil

- PH_BH01_0.04-0.1: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH01_2.4-2.5: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs
- PH_BH02-0.5-0.6: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH02_2.0-2.1: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs
- PH_BH03_0.3-0.4: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH03_0.5-0.6: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCB
- QC01: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- QC02: **Please forward to Envirolab for analysis for the following**: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs

Please hold all other soil samples. Note we may need to complete TCLP testing.

Water

- QC101: BTEXN
- QC102: Suite W-7, W-2 Metals, W-13
- QC103: Suite W-7, W-2 Metals, W-13
- QC104: Suite W-7, W-2 Metals, W-13

Please contact me on the details below with any questions.

Kind regards,

Eleanor Liddle
Environmental Scientist
D +61 2 8934 0477 M +61 439 837 919
Eleanor.Liddle@aecom.com

AECOM
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PAGE 1/2.

AECOM

Chain of Custody

AECOM - Sydney
Level 21 420 George Street
Sydney, NSW 2000

Chain of Custody
Phone: 8934 0000
E-mail:

Laboratory Details
Lab. Name: ALS Smithfield.
Lab. Address:
Contact Name: Loren Scriavon.
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: ALS MSA.

Sampled By: Lauren Konns
AECOM Project No: 60303367-1.4
Project Name: TFNSW - Pendle Hill. PO No. –

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership: lauren.konns@aecom.com.	
7. Report Format: Fax Hardcopy Email: eleanor.liddle@aecom.com.	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TPH C6-C10 + BTEXN	TPH C10-C36 +TD	PAH	Metals (8) Heavy.	OCP / OPP	PCB	Asbestos	HOLD	Other
1	PH_BH02_0.05-1.0	24.9.14		X					X		1 jar + 1 bag.								X	
2	PH_BH02_0.5-0.6	↓		X					X		↑								X	
3	PH_BH02_0.9-1.0			X					X										X	
4	PH_BH02_1.7-1.8			X					X										X	
5	PH_BH02_2.0-2.1			X					X		▼								X	
6	QC101				X				X		2V	X								
7	QC102	▼			X				X		2V, 1A, 1P.	X	X	X	X	X	X			
8	PH_BH01_0.05-0.1	25.9.14		X					X		1 jar + 1 bag								X	
9	PH_BH01_0.5-0.6	↓		X					X		↓								X	
10	PH_BH01_1.0-1.1			X					X										X	
11	PH_BH01_1.4-1.5			X					X										X	
12	PH_BH01_1.9-2.0			X					X										X	
13	PH_BH01_2.4-2.5			X					X										X	
14	QC01	▼		X					X		▼								X	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments: All soil samples have 1 jar and 1 asbestos bag

Lab Report No.
Esky ID

Relinquished by: Lauren Konns Signed: [signature] Date: [redacted]
Recieved by: Signed: Date:
Relinquished by: Signed: Date:
Recieved by: FAS Signed: [signature] Date:

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Page 1 of 1

BMS-PM-DV-F046
Revision: Jun 08

26-09-2014
26/9/14 3:40pm

Chain of Custody

PAGE 2/2

AECOM

AECOM - Sydney
Level 21 420 George Street
Sydney, NSW 2000

Chain of Custody
Phone: 8934 0000
E-mail:

Laboratory Details
Lab. Name:
Lab. Address:
Contact Name:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: ALS MSA

Sampled By: Lauren Konnors
AECOM Project No: 60303367 - 1.4
Project Name: TFNSW - Pendle Hill · PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: Fax Hardcopy Email: See page 1.	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TPH C6-C10 + BTEXN	TPH C10-C36 40	PAH	Metals (8) heavy.	OCP / OPP.	PCB	Asbestos	HOLD	Other
15	QC103	25-9-14			X				X		2V, 1P, 1A.	X	X	X	X	X			✓	
16	PH_BH03_0.06-0.16	26-9-14		X					X		1 jar + bag								X	
17	PH_BH03_0.3-0.4			X					X										X	
18	PH_BH03_0.5-0.6			X					X										X	
19	QC02			X					X										X	
20.	QC104				X				X		2V, 1A.	X	X	X	X	X				

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Lauren Konnors Signed: Date:
Recieved by: Signed: Date:

Relinquished by: Signed: Date:
Recieved by: Signed: 26/9/14 Date: 3:40p

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Page 1 of 1

BMS-PM-DV-F046 Revision: Jun 08

26-09-2014

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1421904**	Page	: 1 of 15
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	: Client Services
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 60303367- TASK 1 4		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2014
Sampler	: LK	Issue Date	: 08-OCT-2014
Site	: ----		
		No. of samples received	: 19
Quote number	: EN/004/14	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**
- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.**
- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EG005T: Poor precision was obtained for Zinc on sample ES1421904 #002, due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**
- **EG020A-F: Zinc results for samples (ES1421904-015) confirmed by reanalysis**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH02_0.5-0.6	PH_BH02_2.0-2.1	PH_BH01_0.04-0.1	PH_BH01_2.4-2.5	QC01
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00
Compound	CAS Number	LOR	Unit	ES1421904-002	ES1421904-005	ES1421904-008	ES1421904-013	ES1421904-014
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	14.3	21.2	12.9	17.3	9.8
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	No	----	No
Asbestos Type	1332-21-4	-	--	-	----	-	----	-
Sample weight (dry)	----	0.01	g	256	----	216	----	264
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	S.SPOONER	----	S.SPOONER
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	17	11	19	<5	22
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	7	23	13	6	12
Copper	7440-50-8	5	mg/kg	31	80	26	12	28
Lead	7439-92-1	5	mg/kg	17	42	52	13	60
Nickel	7440-02-0	2	mg/kg	28	7	10	<2	13
Zinc	7440-66-6	5	mg/kg	140	72	67	10	85
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH02_0.5-0.6	PH_BH02_2.0-2.1	PH_BH01_0.04-0.1	PH_BH01_2.4-2.5	QC01
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00
Compound	CAS Number	LOR	Unit	ES1421904-002	ES1421904-005	ES1421904-008	ES1421904-013	ES1421904-014
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH02_0.5-0.6	PH_BH02_2.0-2.1	PH_BH01_0.04-0.1	PH_BH01_2.4-2.5	QC01
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00
Compound	CAS Number	LOR	Unit	ES1421904-002	ES1421904-005	ES1421904-008	ES1421904-013	ES1421904-014
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH02_0.5-0.6	PH_BH02_2.0-2.1	PH_BH01_0.04-0.1	PH_BH01_2.4-2.5	QC01
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00	25-SEP-2014 15:00
Compound	CAS Number	LOR	Unit	ES1421904-002	ES1421904-005	ES1421904-008	ES1421904-013	ES1421904-014
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	78.6	72.5	70.6	87.4	71.0
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	108	99.6	99.1	118	73.8
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	120	115	109	114	77.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	114	115	122	119	118
2-Chlorophenol-D4	93951-73-6	0.1	%	113	113	118	118	116
2.4.6-Tribromophenol	118-79-6	0.1	%	95.6	106	108	104	97.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	105	104	106	105	108
Anthracene-d10	1719-06-8	0.1	%	124	117	122	122	120
4-Terphenyl-d14	1718-51-0	0.1	%	121	128	120	127	119
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	93.6	113	91.6	92.9	103
Toluene-D8	2037-26-5	0.1	%	91.0	109	88.0	84.7	90.3
4-Bromofluorobenzene	460-00-4	0.1	%	99.4	114	92.7	92.2	101

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	----	----	----
			Client sampling date / time	26-SEP-2014 15:00	26-SEP-2014 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1421904-017	ES1421904-018	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	15.9	23.0	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	99.1	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	36	10	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	6	10	----	----	----
Copper	7440-50-8	5	mg/kg	87	128	----	----	----
Lead	7439-92-1	5	mg/kg	478	164	----	----	----
Nickel	7440-02-0	2	mg/kg	10	8	----	----	----
Zinc	7440-66-6	5	mg/kg	68	44	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	----	----	----
			Client sampling date / time	26-SEP-2014 15:00	26-SEP-2014 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1421904-017	ES1421904-018	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	----	----	----
			Client sampling date / time	26-SEP-2014 15:00	26-SEP-2014 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1421904-017	ES1421904-018	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**2.0**	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**2.7**	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	**2.4**	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	**1.1**	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	**1.0**	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	**1.1**	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**0.6**	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**0.8**	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**11.7**	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	**1.1**	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**1.4**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.6**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	----	----	----
			Client sampling date / time	26-SEP-2014 15:00	26-SEP-2014 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1421904-017	ES1421904-018	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	73.2	72.9	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	90.7	89.7	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	102	99.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	104	98.3	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	98.7	92.4	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	77.7	65.4	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	105	101	----	----	----
Anthracene-d10	1719-06-8	0.1	%	113	113	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	124	120	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	88.2	105	----	----	----
Toluene-D8	2037-26-5	0.1	%	80.1	97.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	79.2	94.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC101	QC102	QC103	QC104	----
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	26-SEP-2014 15:00	----
Compound	CAS Number	LOR	Unit	ES1421904-006	ES1421904-007	ES1421904-015	ES1421904-020	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	**0.006**	<0.005	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	<0.0001	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	<1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	----	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L	----	<0.5	<0.5	<0.5	----
gamma-BHC	58-89-9	0.5	µg/L	----	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	----	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	<0.5	----
4.4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L	----	<0.5	<0.5	<0.5	----
4.4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
4.4`-DDT	50-29-3	2.0	µg/L	----	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	----	<2.0	<2.0	<2.0	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC101	QC102	QC103	QC104	----
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	26-SEP-2014 15:00	----
Compound	CAS Number	LOR	Unit	ES1421904-006	ES1421904-007	ES1421904-015	ES1421904-020	----
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Total Chlordane (sum)	----	0.5	µg/L	----	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	----	0.5	µg/L	----	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	----	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	----	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	----	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	----	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	----	<0.5	<0.5	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	<1.0	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC101	QC102	QC103	QC104	----
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	26-SEP-2014 15:00	----
Compound	CAS Number	LOR	Unit	ES1421904-006	ES1421904-007	ES1421904-015	ES1421904-020	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	----	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC101	QC102	QC103	QC104	----
			Client sampling date / time	24-SEP-2014 15:00	24-SEP-2014 15:00	25-SEP-2014 15:00	26-SEP-2014 15:00	----
Compound	CAS Number	LOR	Unit	ES1421904-006	ES1421904-007	ES1421904-015	ES1421904-020	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	73.8	73.0	76.3	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	70.0	70.0	77.0	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	68.0	81.0	73.0	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	23.6	22.2	24.6	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	47.9	47.4	51.5	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	36.7	37.1	39.8	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	65.5	62.7	68.2	----
Anthracene-d10	1719-06-8	0.1	%	----	48.1	44.1	49.4	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	59.7	55.9	64.2	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	102	93.8	93.4	101	----
Toluene-D8	2037-26-5	0.1	%	105	102	101	99.7	----
4-Bromofluorobenzene	460-00-4	0.1	%	96.2	92.2	102	94.0	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	PH_BH02_0.5-0.6 - 24-SEP-2014 15:00	Mid orange - brown clay soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	PH_BH01_0.04-0.1 - 25-SEP-2014 15:00	Mid brown clay soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	QC01 - 25-SEP-2014 15:00	Mid brown clay soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	PH_BH03_0.3-0.4 - 26-SEP-2014 15:00	Dark grey clay soil with grey rocks plus plenty of slag debris.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	30	120
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	26.8	129
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: **ES1421904**	Page	: 1 of 18
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	: Client Services
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2014
Sampler	: LK	Issue Date	: 08-OCT-2014
Order number	: 60303367- TASK 1 4		
		No. of samples received	: 19
Quote number	: EN/004/14	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3660043)									
ES1421861-025	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.0	7.7	9.7	No Limit
ES1421904-008	PH_BH01_0.04-0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	12.9	12.3	5.3	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 3659614)									
ES1421904-002	PH_BH02_0.5-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	37	25.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	17	14	18.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	31	24	25.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	12	32.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	140	178	# 24.1	0% - 20%
ES1421916-035	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	26	42.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	25	23	10.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	19	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	49	49	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	74	64	14.6	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3659615)									
ES1421904-002	PH_BH02_0.5-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1421916-035	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3657836)									
ES1421904-002	PH_BH02_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1421950-011	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3657835)									
ES1421904-002	PH_BH02_0.5-0.6	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3657835) - continued									
ES1421904-002	PH_BH02_0.5-0.6	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1421950-011	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3657835)									
ES1421904-002	PH_BH02_0.5-0.6	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3657835) - continued									
ES1421904-002	PH_BH02_0.5-0.6	EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1421950-011	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3657838)									
ES1421904-002	PH_BH02_0.5-0.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3657838) - continued									
ES1421904-002	PH_BH02_0.5-0.6	EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1421950-011	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3657670)									
ES1421965-021	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1421965-025	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3657837)									
ES1421904-002	PH_BH02_0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1421950-011	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3657670)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3657670) - continued									
ES1421965-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1421965-025	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3657837)									
ES1421904-002	PH_BH02_0.5-0.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1421950-011	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3657670)									
ES1421965-021	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1421965-025	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3658193)									
ES1421904-020	QC104	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES1421976-004	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3658193) - continued									
ES1421976-004	Anonymous	EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3658192)									
ES1421904-007	QC102	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1421976-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3658591)									
ES1421854-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1421854-012	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3658591)									
ES1421854-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1421854-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3658591)									
ES1421854-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1421854-012	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3659614)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	98.8	92	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.8	87	121
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	89.1	80	136
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	99.8	93	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	95.0	86	124
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	98.5	93	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.2	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3659615)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	75.7	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3657836)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	90.0	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 3657835)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	77.0	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	86.3	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.3	66	118
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.5	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	76	120
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	71.3	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.9	60	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.2	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	80.8	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	76.0	65	129
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3657835)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3657835) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	56	126
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	64	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	78.2	54	122
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	64	124
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	112	73	117
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	99.0	55	119
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	86.0	69	123
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	70	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	71	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	68	114
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	88.8	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	69	115
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	70	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	68	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	64	120
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	68	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	70	118
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	67	123
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	48.6	42	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3657838)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	99.2	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	97.0	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	94.9	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.2	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	96.1	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	104	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	99.6	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	98.6	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	90.5	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	91.6	81	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	92.3	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	108	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	85.3	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	76.0	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	71.9	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	87.1	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657670)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	104	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657837)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657837) - continued								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	104	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	93.8	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	85.3	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657670)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	96.3	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657837)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	97.2	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.2	74	138
EP071: >C34 - C40 Fraction	----	50	mg/kg	<100	150 mg/kg	77.8	63	131
EP080: BTEXN (QCLot: 3657670)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.3	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.7	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.8	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	81.7	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	85.0	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	82.6	62	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3658193)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.7	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.5	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.0	81	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.4	79	113
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.2	81	113
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.6	81	115
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 3658192)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	100	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3657978)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	85.2	61.6	107
EP068A: Organochlorine Pesticides (OC) (QCLot: 3657977)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	92.0	65	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	80.0	51	119
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	96.0	63	113
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	92.0	62	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	98.0	60	106

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3657977) - continued								
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	90.6	58	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	88.0	58	114
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	92.0	59	111
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	92.0	62	114
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	92.0	64	114
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	92.0	62	114
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	92.0	59	111
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	92.0	63	111
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	92.0	61	119
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	96.0	71	119
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	94.0	70	118
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	82.0	62	112
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	98.0	53	113
EP068: 4.4`-DDT	50-29-3	2.0	µg/L	<2.0	5 µg/L	96.0	52	120
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	104	51	117
EP068: Methoxychlor	72-43-5	2.0	µg/L	<2.0	5 µg/L	96.0	53	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3657977)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	84.0	52	122
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	74.0	51	123
EP068: Monocrotophos	6923-22-4	0.5	µg/L	<2.0	5 µg/L	40.0	10	89.1
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	86.0	61	119
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	98.0	67	113
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	102	60	116
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2.0	5 µg/L	98.0	64	120
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	100	67	115
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	102	64	110
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	102	63	109
EP068: Parathion	56-38-2	2.0	µg/L	<2.0	5 µg/L	90.0	63	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	98.0	60	110
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	84.0	68	114
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	102	61	109
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	100	63	117
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	94.0	63	111
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	100	65	115
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	100	55	115
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	108	44	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3657980)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	<1.0	5 µg/L	72.3	58.6	119
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	<1.0	5 µg/L	81.2	63.6	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3657980) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	<1.0	5 µg/L	75.2	62.2	113
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	<1.0	5 µg/L	79.6	63.9	115
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	<1.0	5 µg/L	81.5	62.6	116
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	<1.0	5 µg/L	80.7	64.3	116
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	<1.0	5 µg/L	86.6	63.6	118
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	<1.0	5 µg/L	94.5	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	<1.0	5 µg/L	84.3	64.1	117
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	<1.0	5 µg/L	93.0	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.2	µg/L	<1.0	5 µg/L	84.1	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<1.0	5 µg/L	89.0	61.7	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.5	5 µg/L	78.3	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	<1.0	5 µg/L	79.8	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	<1.0	5 µg/L	77.8	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	<1.0	5 µg/L	81.0	59.1	118
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657979)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	99.0	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	93.5	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3658591)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	116	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657979)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	105	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	101	73.9	138
EP071: >C34 - C40 Fraction	----	50	µg/L	<100	1500 µg/L	101	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3658591)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	116	75	127
EP080: BTEXN (QCLot: 3658591)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	114	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	85.0	70	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3659614)							
ES1421904-002	PH_BH02_0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	83.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.9	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.9	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	102	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	94.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	109	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	111	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3659615)							
ES1421904-002	PH_BH02_0.5-0.6	EG035T: Mercury	7439-97-6	5 mg/kg	76.9	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3657836)							
ES1421904-002	PH_BH02_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	77.5	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3657835)							
ES1421904-002	PH_BH02_0.5-0.6	EP068: gamma-BHC	58-89-9	0.5 mg/kg	81.7	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	75.9	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.5	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	81.6	70	130
		EP068: Endrin	72-20-8	2 mg/kg	98.9	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	82.3	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3657835)							
ES1421904-002	PH_BH02_0.5-0.6	EP068: Diazinon	333-41-5	0.5 mg/kg	104	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	89.6	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	85.2	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	83.2	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	80.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3657838)							
ES1421904-002	PH_BH02_0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	87.9	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657670)							
ES1421965-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657837)							
ES1421904-002	PH_BH02_0.5-0.6	EP071: C10 - C14 Fraction	----	560 mg/kg	82.0	73	137
		EP071: C15 - C28 Fraction	----	2370 mg/kg	94.0	53	131
		EP071: C29 - C36 Fraction	----	1695 mg/kg	106	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657670)							
ES1421965-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	122	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657837)							
ES1421904-002	PH_BH02_0.5-0.6	EP071: >C10 - C16 Fraction	>C10_C16	902 mg/kg	90.1	73	137
		EP071: >C16 - C34 Fraction	----	3190 mg/kg	97.6	53	131
		EP071: >C34 - C40 Fraction	----	1087 mg/kg	115	52	132
EP080: BTEXN (QCLot: 3657670)							
ES1421965-021	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	112	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	102	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	100	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	103	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	99.4	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3658193)							
ES1421918-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	120	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	111	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	105	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	106	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.8	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	81.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3658192)							
ES1421904-015	QC103	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3658591)							
ES1421854-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	129	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3658591)							
ES1421854-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	70	130
EP080: BTEXN (QCLot: 3658591)							
ES1421854-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	110	70	130
		EP080: Toluene	108-88-3	25 µg/L	98.8	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.8	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.3	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	94.8	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	70.7	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657670)										
ES1421965-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	126	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657670)										
ES1421965-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	122	----	70	130	----	----
EP080: BTEXN (QCLot: 3657670)										
ES1421965-021	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	112	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	102	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.4	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	100	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	103	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	99.4	----	70	130	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 3657835)										
ES1421904-002	PH_BH02_0.5-0.6	EP068: gamma-BHC	58-89-9	0.5 mg/kg	81.7	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	75.9	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.5	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	81.6	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	98.9	----	70	130	----	----
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	82.3	----	70	130	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3657835)										
ES1421904-002	PH_BH02_0.5-0.6	EP068: Diazinon	333-41-5	0.5 mg/kg	104	----	70	130	----	----
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	89.6	----	70	130	----	----
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	85.2	----	70	130	----	----
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	83.2	----	70	130	----	----
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	80.0	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3657836)										
ES1421904-002	PH_BH02_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	77.5	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3657837)										
ES1421904-002	PH_BH02_0.5-0.6	EP071: C10 - C14 Fraction	----	560 mg/kg	82.0	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	2370 mg/kg	94.0	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	1695 mg/kg	106	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657837)										
ES1421904-002	PH_BH02_0.5-0.6	EP071: >C10 - C16 Fraction	>C10_C16	902 mg/kg	90.1	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	3190 mg/kg	97.6	----	53	131	----	----

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%) MS	Spike Recovery (%) MSD	Recovery Limits (%) Low	Recovery Limits (%) High	RPDs (%) Value	RPDs (%) Control Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3657837) - continued										
ES1421904-002	PH_BH02_0.5-0.6	EP071: >C34 - C40 Fraction	----	1087 mg/kg	115	----	52	132	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3657838)										
ES1421904-002	PH_BH02_0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	87.9	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.2	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3659614)										
ES1421904-002	PH_BH02_0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	83.6	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.9	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	98.9	----	70	130	----	----
		EG005T: Copper	7440-50-8	250 mg/kg	102	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	94.4	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	109	----	70	130	----	----
		EG005T: Zinc	7440-66-6	250 mg/kg	111	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3659615)										
ES1421904-002	PH_BH02_0.5-0.6	EG035T: Mercury	7439-97-6	5 mg/kg	76.9	----	70	130	----	----

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%) MS	Spike Recovery (%) MSD	Recovery Limits (%) Low	Recovery Limits (%) High	RPDs (%) Value	RPDs (%) Control Limit
EG035F: Dissolved Mercury by FIMS (QCLot: 3658192)										
ES1421904-015	QC103	EG035F: Mercury	7439-97-6	0.0100 mg/L	83.9	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3658193)										
ES1421918-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	120	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	111	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	105	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	106	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.8	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	81.4	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3658591)										
ES1421854-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	129	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3658591)										
ES1421854-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	127	----	70	130	----	----
EP080: BTEXN (QCLot: 3658591)										
ES1421854-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	110	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	98.8	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.8	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.3	----	70	130	----	----

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QCLot: 3658591) - continued										
ES1421854-001	Anonymous	EP080: ortho-Xylene	95-47-6	25 µg/L	94.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	70.7	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1421904**	Page	: 1 of 10
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	: Client Services
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2014
Sampler	: LK	Issue Date	: 08-OCT-2014
Order number	: 60303367- TASK 1 4		
		No. of samples received	: 19
Quote number	: EN/004/14	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**----**	----	----	**03-OCT-2014**	08-OCT-2014	✓
Soil Glass Jar - Unpreserved (EA055-103) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**----**	----	----	**03-OCT-2014**	09-OCT-2014	✓
Soil Glass Jar - Unpreserved (EA055-103) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**----**	----	----	**03-OCT-2014**	10-OCT-2014	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag - Separate asbestos bag received (EA200) PH_BH02_0.5-0.6		**24-SEP-2014**	**---**	23-MAR-2015	----	**03-OCT-2014**	23-MAR-2015	✓
Snap Lock Bag - Separate asbestos bag received (EA200) PH_BH01_0.04-0.1,	QC01	**25-SEP-2014**	**---**	24-MAR-2015	----	**03-OCT-2014**	24-MAR-2015	✓
Snap Lock Bag - Separate asbestos bag received (EA200) PH_BH03_0.3-0.4		**26-SEP-2014**	**---**	25-MAR-2015	----	**03-OCT-2014**	25-MAR-2015	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	23-MAR-2015	✓	**03-OCT-2014**	23-MAR-2015	✓
Soil Glass Jar - Unpreserved (EG005T) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	24-MAR-2015	✓	**03-OCT-2014**	24-MAR-2015	✓
Soil Glass Jar - Unpreserved (EG005T) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	25-MAR-2015	✓	**03-OCT-2014**	25-MAR-2015	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	22-OCT-2014	✓	**04-OCT-2014**	22-OCT-2014	✓
Soil Glass Jar - Unpreserved (EG035T) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	23-OCT-2014	✓	**04-OCT-2014**	23-OCT-2014	✓
Soil Glass Jar - Unpreserved (EG035T) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	24-OCT-2014	✓	**04-OCT-2014**	24-OCT-2014	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP066) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP066) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP068) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP068) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP068) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP068) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP071) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP071) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) PH_BH02_0.5-0.6,	PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) PH_BH01_0.04-0.1, QC01	PH_BH01_2.4-2.5,	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) PH_BH03_0.3-0.4,	PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**04-OCT-2014**	12-NOV-2014	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) PH_BH02_0.5-0.6, PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**03-OCT-2014**	08-OCT-2014	✓
Soil Glass Jar - Unpreserved (EP080) PH_BH01_0.04-0.1, PH_BH01_2.4-2.5, QC01	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**03-OCT-2014**	09-OCT-2014	✓
Soil Glass Jar - Unpreserved (EP080) PH_BH03_0.3-0.4, PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**03-OCT-2014**	10-OCT-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) PH_BH02_0.5-0.6, PH_BH02_2.0-2.1	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**03-OCT-2014**	08-OCT-2014	✓
Soil Glass Jar - Unpreserved (EP080) PH_BH01_0.04-0.1, PH_BH01_2.4-2.5, QC01	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**03-OCT-2014**	09-OCT-2014	✓
Soil Glass Jar - Unpreserved (EP080) PH_BH03_0.3-0.4, PH_BH03_0.5-0.6	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**03-OCT-2014**	10-OCT-2014	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC102	**24-SEP-2014**	---	23-MAR-2015	----	**02-OCT-2014**	23-MAR-2015	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC103	**25-SEP-2014**	---	24-MAR-2015	----	**02-OCT-2014**	24-MAR-2015	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC104	**26-SEP-2014**	---	25-MAR-2015	----	**02-OCT-2014**	25-MAR-2015	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC102	**24-SEP-2014**	---	22-OCT-2014	----	**04-OCT-2014**	22-OCT-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC103	**25-SEP-2014**	---	23-OCT-2014	----	**04-OCT-2014**	23-OCT-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC104	**26-SEP-2014**	---	24-OCT-2014	----	**04-OCT-2014**	24-OCT-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) QC102	**24-SEP-2014**	**01-OCT-2014**	01-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP066) QC103	**25-SEP-2014**	**01-OCT-2014**	02-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP066) QC104	**26-SEP-2014**	**01-OCT-2014**	03-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) QC102	**24-SEP-2014**	**01-OCT-2014**	01-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP068) QC103	**25-SEP-2014**	**01-OCT-2014**	02-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP068) QC104	**26-SEP-2014**	**01-OCT-2014**	03-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) QC102	**24-SEP-2014**	**01-OCT-2014**	01-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP068) QC103	**25-SEP-2014**	**01-OCT-2014**	02-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP068) QC104	**26-SEP-2014**	**01-OCT-2014**	03-OCT-2014	✓	**04-OCT-2014**	10-NOV-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QC102	**24-SEP-2014**	**01-OCT-2014**	01-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP071) QC103	**25-SEP-2014**	**01-OCT-2014**	02-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP071) QC104	**26-SEP-2014**	**01-OCT-2014**	03-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC102	**24-SEP-2014**	**01-OCT-2014**	01-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC103	**25-SEP-2014**	**01-OCT-2014**	02-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC104	**26-SEP-2014**	**01-OCT-2014**	03-OCT-2014	✓	**03-OCT-2014**	10-NOV-2014	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC101, QC102	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**03-OCT-2014**	08-OCT-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC103	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**03-OCT-2014**	09-OCT-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC104	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**03-OCT-2014**	10-OCT-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC102	**24-SEP-2014**	**03-OCT-2014**	08-OCT-2014	✓	**03-OCT-2014**	08-OCT-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC103	**25-SEP-2014**	**03-OCT-2014**	09-OCT-2014	✓	**03-OCT-2014**	09-OCT-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC104	**26-SEP-2014**	**03-OCT-2014**	10-OCT-2014	✓	**03-OCT-2014**	10-OCT-2014	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	18	**11.1**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	18	**5.6**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	ES1421904-002	PH_BH02_0.5-0.6	**Zinc**	7440-66-6	24.1 %	0-20%	**RPD exceeds LOR based limits**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **ES1421904**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	: Client Services
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW 1230	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2014HLAENV0523 (EN/004/14)
Site	: ----		
Sampler	: LK	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 26-SEP-2014	Issue Date	: 30-SEP-2014 17:53
Client Requested Due Date	: 07-OCT-2014	Scheduled Reporting Date	: **07-OCT-2014**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.3'C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 19
Security Seal	: Not intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample QC02 to be forwarded to Envirolab as per coc request.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA200 Asbestos Identification in Soils	SOIL - S-16 TRH/BTEXN/PAH/OC/OP/PCB/8Metals
ES1421904-001	24-SEP-2014 15:00	PH_BH02_0.05-1.0	✓		
ES1421904-002	24-SEP-2014 15:00	PH_BH02_0.5-0.6		✓	✓
ES1421904-003	24-SEP-2014 15:00	PH_BH02_0.9-1.0	✓		
ES1421904-004	24-SEP-2014 15:00	PH_BH02_1.7-1.8	✓		
ES1421904-005	24-SEP-2014 15:00	PH_BH02_2.0-2.1			✓
ES1421904-008	25-SEP-2014 15:00	PH_BH01_0.04-0.1		✓	✓
ES1421904-009	25-SEP-2014 15:00	PH_BH01_0.5-0.6	✓		
ES1421904-010	25-SEP-2014 15:00	PH_BH01_1.0-1.1	✓		
ES1421904-011	25-SEP-2014 15:00	PH_BH01_1.4-1.5	✓		
ES1421904-012	25-SEP-2014 15:00	PH_BH01_1.9-2.0	✓		
ES1421904-013	25-SEP-2014 15:00	PH_BH01_2.4-2.5			✓
ES1421904-014	25-SEP-2014 15:00	QC01		✓	✓
ES1421904-016	26-SEP-2014 15:00	PH_BH03_0.06-0.16	✓		
ES1421904-017	26-SEP-2014 15:00	PH_BH03_0.3-0.4		✓	✓
ES1421904-018	26-SEP-2014 15:00	PH_BH03_0.5-0.6			✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP080 BTEXN	WATER - W-16 TRH/BTEXN/PAH/OC/OP/PCB/8 Metals
ES1421904-006	24-SEP-2014 15:00	QC101	✓	
ES1421904-007	24-SEP-2014 15:00	QC102		✓
ES1421904-015	25-SEP-2014 15:00	QC103		✓
ES1421904-020	26-SEP-2014 15:00	QC104		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

APCORP PAYABLE

- A4 - AU Tax Invoice (INV)	Email	ap_customerservice@aecom.com

MS ELEANOR LIDDLE

- *AU Certificate of Analysis - NATA	Email	eleanor.liddle@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	eleanor.liddle@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA	Email	eleanor.liddle@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT	Email	eleanor.liddle@aecom.com
- A4 - AU Tax Invoice	Email	eleanor.liddle@aecom.com
- Chain of Custody (CoC)	Email	eleanor.liddle@aecom.com
- EDI Format - ENMRG	Email	eleanor.liddle@aecom.com
- EDI Format - ESDAT	Email	eleanor.liddle@aecom.com
- EDI Format - HLAPro	Email	eleanor.liddle@aecom.com
- EDI Format - XTab	Email	eleanor.liddle@aecom.com

MS LAUREN KONTUS

- *AU Certificate of Analysis - NATA (COA)	Email	lauren.kontus@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	lauren.kontus@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	lauren.kontus@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	lauren.kontus@aecom.com
- A4 - AU Tax Invoice (INV)	Email	lauren.kontus@aecom.com
- Chain of Custody (CoC) (COC)	Email	lauren.kontus@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	lauren.kontus@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	lauren.kontus@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	lauren.kontus@aecom.com
- EDI Format - XTab (XTAB)	Email	lauren.kontus@aecom.com

Chain of Custody

Page 1 of 2.

AECOM

AECOM - Sydney
Level 21 420 George Street
Sydney, NSW 2000

Chain of Custody
Phone: 8934 0000
E-mail: see below

Laboratory Details
Lab. Name: ALS Smithfield.
Lab. Address:
Contact Name: Loren Schrauer.
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: ALS MSA.
PO No. ALS MSA.

Sampled By: Lauren Kovacs
AECOM Project No: 60503367.
Project Name: TPNSW Kendle HSU

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership: Eleanor.Liddle@aecom.com	
7. Report Format: Fax Hardcopy Email: lauren.kovacs@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TPH C6-C9 + BTEXN	TPH C10-C36	PAH	Metals (8) + Hexavalent	OCP / OPP	PCB	Asbestos	HOLD	Other
3	QC03	30.9.14		X					X		1 jar + 1 bag								X	
4	QC04	30.9.14		X					X		1 jar + 1 bag								X	
1	QC05	30.9.14			X				X		2V, 1A, 1P	X	X	X	X	X	X			
2	QC06	1.10.14			X				X		2V, 1A, 1P	X	X	X	X	X	X			
5	BT_BH01_2.9-3.0	29.9.14		X					X		1 jar + 1 bag								X	
6	PH_BH04_0.12-0.2	30.9.14		X					X		1 jar + 1 bag								X	
7	PH_BH04_0.5-0.6	30.9.14		X					X		1 jar + 1 bag								X	
8	PH_BH04_1.2-1.3	30.9.14		X					X		1 jar.								X	
9	PH_BH04_2.0-2.1	30.9.14		X					X		1 jar.								X	
10	PH_BH04_3.1-3.2	30.9.14		X					X		1 jar.								X	
11	PH_BH04_4.0-4.1	30.9.14		X					X		1 jar.								X	
12	PH_BH05_0.22-0.3	30.9.14		X					X		1 jar + 1 bag								X	
13	PH_BH05_0.5-0.6	30.9.14		X					X		1 jar + 1 bag								X	
14	PH_BH05_1.0-1.1	30.9.14		X					X		1 jar + 1 bag								X	

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ES1440041
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Lauren Kovacs Signed: Date: ~~20/03/2010~~ 1/10/14
Recieved by: Frank Signed: Date: 1/10/14 1430

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

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Revision: Jun 08

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AECOM

Chain of Custody

AECOM - Sydney
Level 21 420 George Street
Sydney, NSW 2000

Chain of Custody
Phone: 8934 0000
E-mail: see page 1

Laboratory Details
Lab. Name: ALS Smithfield.
Lab. Address:
Contact Name:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Sampled By: Lauren Kontis
AECOM Project No: 60306367
Project Name: TfNSW Rendle Hill
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: Fax Hardcopy Email: see page 1	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TPH C6-C9 + BTEX	TPH C10-C36	PAH	Metals (8)	OCP	PCB	Asbestos	HOLD	Other
15	PH_BH05_1.3-1.4	30.9.14		X							1jar								X	
16	PH-BH05_2.1-2.3	30.9.14		X							1jar								X	
17	PH_BH05_3.7-4.0	30.9.14		X							1jar								X	
18	PH_BH06_0.05-0.15	1.10.14		X							1jar + 1bag								X	
19	PH_BH06_0.5-0.6	1.10.14		X							1jar + 1bag								X	
20	PH_BH06_0.9-1.0	1.10.14		X							1jar + 1bag								X	
21	PH_BH06_2.0-2.2	1.10.14		X							1jar								X	
22	PH_BH06_3.0-3.2	1.10.14		X							1jar								X	
23	PH_BH06_4.0-4.2	1.10.14		X							1jar								X	

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No.
Esky ID

Relinquished by: Lauren Kontis Signed: Date: 30/09/2014
Recieved by: Frank Signed: Date: 1/10/14 1430

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

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BMS-PM-DV-F046

Revision: Jun 08

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1440041**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS ELEANOR LIDDLE	Contact	:
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW 1230	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: eleanor.liddle@aecom.com	E-mail	:
Telephone	: +61 02 4911 4900	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 4911 4999	Facsimile	: +61-2-8784 8500
Project	: 60303367 TFNSW Pendle Hill	Page	: 1 of 3
Order number	: ALS MSA	Quote number	: ----
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: KENDLE HILL		
Sampler	: LAUREN KONTUS		

Dates

Date Samples Received	: 01-Oct-2014	Issue Date	: 02-Oct-2014
Client Requested Due Date	: 08-Oct-2014	Scheduled Reporting Date	: **08-Oct-2014**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 0.9'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 23 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA200 Asbestos Identification in Soils	SOIL - S-16 TRH/BTEXN/PAH/OC/OP/PCB/8Metals
ES1440041-007	[30-Sep-2014]	PH_BH04_0.5-0.6	✓	✓
ES1440041-011	[30-Sep-2014]	PH_BH04_4.0-4.1		✓
ES1440041-012	[30-Sep-2014]	PH_BH05_0.2-0.3	✓	✓
ES1440041-014	[30-Sep-2014]	PH_BH05_1.0-1.1		✓
ES1440041-018	[01-Oct-2014]	PH_BH06_0.05-0.15	✓	✓
ES1440041-020	[01-Oct-2014]	PH_BH06_0.9-1.0		✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP071(V - TPH-WD) TRH Volatiles	WATER - W-16 TRH/BTEXN/PAH/OC/OP/PCB/8 Metals
ES1440041-001	[30-Sep-2014]	QC105	✓	✓
ES1440041-002	[01-Oct-2014]	QC106	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ELEANOR LIDDLE

- *AU Certificate of Analysis - NATA (COA)	Email	eleanor.liddle@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	eleanor.liddle@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	eleanor.liddle@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	eleanor.liddle@aecom.com
- A4 - AU Tax Invoice (INV)	Email	eleanor.liddle@aecom.com
- Chain of Custody (CoC) (COC)	Email	eleanor.liddle@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	eleanor.liddle@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	eleanor.liddle@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	eleanor.liddle@aecom.com
- EDI Format - XTab (XTAB)	Email	eleanor.liddle@aecom.com

LAUREN KONTUS

- *AU Certificate of Analysis - NATA (COA)	Email	lauren.kontus@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	lauren.kontus@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	lauren.kontus@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	lauren.kontus@aecom.com
- A4 - AU Tax Invoice (INV)	Email	lauren.kontus@aecom.com
- Chain of Custody (CoC) (COC)	Email	lauren.kontus@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	lauren.kontus@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	lauren.kontus@aecom.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES1440041**	Page	: 1 of 14
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS ELEANOR LIDDLE	Contact	:
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: eleanor.liddle@aecom.com	E-mail	:
Telephone	: +61 02 4911 4900	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 4911 4999	Facsimile	: +61-2-8784 8500
Project	: 60303367 TFNSW Pendle Hill	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ALS MSA	Date Samples Received	: 01-Oct-2014 16:45
C-O-C number	: ----	Date Analysis Commenced	: 02-Oct-2014
Sampler	: LAUREN KONTUS	Issue Date	: 08-Oct-2014 22:21
Site	: PENDLE HILL		
		No. of samples received	: 23
Quote number	: ----	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**
- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.**
- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EG020A-F: (Zinc & Copper) results for samples (ES1440041-001 & 002) confirmed by reanalysis.**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH04_0.5-0.6	PH_BH04_4.0-4.1	PH_BH05_0.2-0.3	PH_BH05_1.0-1.1	PH_BH06_0.05-0.15
			Client sampling date / time	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]
Compound	CAS Number	LOR	Unit	ES1440041-007	ES1440041-011	ES1440041-012	ES1440041-014	ES1440041-018
				Result	Result	Result	Result	Result
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1	%	23.7	11.4	11.8	18.7	7.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	No	----	No
Asbestos Type	1332-21-4	-	--	-	----	-	----	-
Sample weight (dry)	----	0.01	g	169	----	175	----	294
APPROVED IDENTIFIER:	----	-	--	G.MORGAN	----	G.MORGAN	----	G.MORGAN
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	8	<5	10	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	8	52	13	20
Copper	7440-50-8	5	mg/kg	19	41	159	19	58
Lead	7439-92-1	5	mg/kg	16	21	12	18	<5
Nickel	7440-02-0	2	mg/kg	<2	22	50	<2	119
Zinc	7440-66-6	5	mg/kg	17	91	58	13	48
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH04_0.5-0.6	PH_BH04_4.0-4.1	PH_BH05_0.2-0.3	PH_BH05_1.0-1.1	PH_BH06_0.05-0.15
			Client sampling date / time	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]
Compound	CAS Number	LOR	Unit	ES1440041-007	ES1440041-011	ES1440041-012	ES1440041-014	ES1440041-018
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH04_0.5-0.6	PH_BH04_4.0-4.1	PH_BH05_0.2-0.3	PH_BH05_1.0-1.1	PH_BH06_0.05-0.15
			Client sampling date / time	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]
Compound	CAS Number	LOR	Unit	ES1440041-007	ES1440041-011	ES1440041-012	ES1440041-014	ES1440041-018
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	**0.5**	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	**0.5**	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH04_0.5-0.6	PH_BH04_4.0-4.1	PH_BH05_0.2-0.3	PH_BH05_1.0-1.1	PH_BH06_0.05-0.15
			Client sampling date / time	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]
Compound	CAS Number	LOR	Unit	ES1440041-007	ES1440041-011	ES1440041-012	ES1440041-014	ES1440041-018
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	89.3	90.5	86.8	80.0	94.1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	83.3	88.5	83.8	88.3	91.3
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	93.0	94.2	96.6	90.9	91.1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	108	102	99.7	110	97.8
2-Chlorophenol-D4	93951-73-6	0.5	%	105	98.4	95.9	106	93.8
2.4.6-Tribromophenol	118-79-6	0.5	%	84.0	82.5	64.3	83.5	77.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	98.7	98.2	97.6	101	96.6
Anthracene-d10	1719-06-8	0.5	%	100	99.9	99.8	105	98.6
4-Terphenyl-d14	1718-51-0	0.5	%	109	109	108	114	107
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	87.0	91.2	97.6	79.3	97.9
Toluene-D8	2037-26-5	0.2	%	92.2	92.0	105	88.2	103
4-Bromofluorobenzene	460-00-4	0.2	%	109	109	120	105	120

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH06_0.9-1.0	----	----	----	----
			Client sampling date / time	[01-Oct-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-020	--------	--------	--------	--------
				Result	Result	Result	Result	Result
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1	%	20.0	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	12	----	----	----	----
Copper	7440-50-8	5	mg/kg	17	----	----	----	----
Lead	7439-92-1	5	mg/kg	15	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	8	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH06_0.9-1.0	----	----	----	----
			Client sampling date / time	[01-Oct-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-020	--------	--------	--------	--------
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH06_0.9-1.0	----	----	----	----
			Client sampling date / time	[01-Oct-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-020	--------	--------	--------	--------
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH06_0.9-1.0	----	----	----	----
			Client sampling date / time	[01-Oct-2014]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-020	--------	--------	--------	--------
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	94.7	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	87.6	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	81.9	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	93.7	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	89.8	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	70.8	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	90.9	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	92.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	101	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	92.9	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	99.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	112	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC105	QC106	----	----	----
			Client sampling date / time	[30-Sep-2014]	[01-Oct-2014]	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-001	ES1440041-002	--------	--------	--------
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.008**	**0.007**	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2	µg/L	<2.0	<2.0	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Sum of DDD + DDE + DDT	----	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC105	QC106	----	----	----
			Client sampling date / time	[30-Sep-2014]	[01-Oct-2014]	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-001	ES1440041-002	--------	--------	--------
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC105	QC106	----	----	----
			Client sampling date / time	[30-Sep-2014]	[01-Oct-2014]	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-001	ES1440041-002	--------	--------	--------
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	**68.9**	**74.9**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**76.4**	**77.8**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC105	QC106	----	----	----
			Client sampling date / time	[30-Sep-2014]	[01-Oct-2014]	----	----	----
Compound	CAS Number	LOR	Unit	ES1440041-001	ES1440041-002	--------	--------	--------
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.5	%	70.9	92.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1	%	20.7	25.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%	47.8	55.0	----	----	----
2.4.6-Tribromophenol	118-79-6	1	%	44.1	58.4	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1	%	59.8	72.0	----	----	----
Anthracene-d10	1719-06-8	1	%	70.2	83.9	----	----	----
4-Terphenyl-d14	1718-51-0	1	%	65.9	85.8	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	86.3	92.8	----	----	----
Toluene-D8	2037-26-5	2	%	101	105	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	91.0	94.5	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	PH_BH04_0.5-0.6 - [30-Sep-2014]	Mid orange clay soil with a trace of vegetation.
EA200: Description	PH_BH05_0.2-0.3 - [30-Sep-2014]	Mid grey clay soil with a trace of vegetation.
EA200: Description	PH_BH06_0.05-0.15 - [01-Oct-2014]	Mid grey sandy soil with grey rocks plus a trace of vegetation.

QUALITY CONTROL REPORT

Work Order	: **ES1440041**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS ELEANOR LIDDLE	Contact	:
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: eleanor.liddle@aecom.com	E-mail	:
Telephone	: +61 02 4911 4900	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 4911 4999	Facsimile	: +61-2-8784 8500
Project	: 60303367 TFNSW Pendle Hill	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ALS MSA	Date Samples Received	: 01-Oct-2014
C-O-C number	: ----	Date Analysis Commenced	: 02-Oct-2014
Sampler	: LAUREN KONTUS	Issue Date	: 08-Oct-2014
Site	: PENDLE HILL	No. of samples received	: 23
Quote number	: ----	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 18754)									
ES1440041-012	PH_BH05_0.2-0.3	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	11.8	11.5	2.77	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 19655)									
ES1440041-007	PH_BH04_0.5-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	6.72	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	10	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	19	19	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	17	0.00	No Limit
ES1440103-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	29	35.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	12	39.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	15	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	58	64	8.83	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	121	109	10.6	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 19656)									
ES1440041-007	PH_BH04_0.5-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1440103-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 18677)									
ES1440041-007	PH_BH04_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 18676)									
ES1440041-007	PH_BH04_0.5-0.6	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 18676) - continued									
ES1440041-007	PH_BH04_0.5-0.6	EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 18676)									
ES1440041-007	PH_BH04_0.5-0.6	EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 18675)									
ES1440041-007	PH_BH04_0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 18675) - continued									
ES1440041-007	PH_BH04_0.5-0.6	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 18673)									
ES1440041-007	PH_BH04_0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 18674)									
ES1440041-007	PH_BH04_0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 18673)									
ES1440041-007	PH_BH04_0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 18674)									
ES1440041-007	PH_BH04_0.5-0.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 18673)									
ES1440041-007	PH_BH04_0.5-0.6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EG020F: Dissolved Metals by ICP-MS (QC Lot: 19401)									
ES1440001-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.092	0.092	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.090	0.090	0.00	0% - 50%
ES1440062-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 19401) - continued									
ES1440062-002	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	22.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 19402)									
ES1440001-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1440119-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 18920)									
ES1440188-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1440188-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	110	110	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 18920)									
ES1440188-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1440188-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	100	120	11.2	No Limit
EP080: BTEXN (QC Lot: 18920)									
ES1440188-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1440188-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 19655)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	117	92	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	87	121
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	122	80	136
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	109	93	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	108	86	124
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	118	93	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 19656)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.4	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 18677)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	89.0	57	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 18676)								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.3	76	120
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	69	117
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	74.1	67	127
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	68	118
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.1	71	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	69	119
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	69	119
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.3	76	120
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	67	121
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	65	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	80.3	66	118
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	71.8	60	124
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.3	67	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	57	115
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	72.1	65	123
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	71	115
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.0	68	116
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	81.5	68	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	81.8	66	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	74.3	65	129
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.3	68	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 18676)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 18676) - continued								
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	111	42	126
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.9	68	116
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	72.5	67	123
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.2	70	118
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	68	114
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	55	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	64	128
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	73	117
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	71.2	56	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	64	124
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	70	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	64	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.8	71	115
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	70	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	57.7	54	122
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	81.8	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	78.2	69	115
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	68	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 18675)								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	90.7	79	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	84.7	77	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	87.4	79	123
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	82.5	73	121
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	85.2	76	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	83.0	70	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	86.0	72	114
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	86.4	77	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	88.6	81	123
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	82.0	72	113
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	82.5	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	85.6	77	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	83.1	71	113
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	92.6	80	124
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	86.8	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	82.6	79	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18673)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	103	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18674)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	103	71	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18674) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	250 mg/kg	101	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	89.9	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18673)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	103	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18674)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	102	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	98.8	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	200 mg/kg	63.9	63	131
EP080: BTEXN (QCLot: 18673)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	96.1	62	116
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.0	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.6	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	77.5	62	138
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.2	60	120
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	62	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 19401)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	109	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.0	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.4	81	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.4	79	113
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.3	81	113
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.7	81	115
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	108	80	116
EG035F: Dissolved Mercury by FIMS (QCLot: 19402)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.9	78	114
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 20625)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	87.9	62	107
EP068A: Organochlorine Pesticides (OC) (QCLot: 20622)								
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	79.0	70	118
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	81.5	63	111
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	92.0	52	120
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	75.5	58	114
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	87.6	65	107
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	81.0	64	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 20622) - continued								
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	93.2	63	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	99.8	71	119
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	72.9	62	114
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	80.9	60	106
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	80.2	59	111
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	92.1	53	113
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	73.6	61	119
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	74.2	62	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	92.6	51	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	73.9	62	112
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	65.0	58	108
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	94.0	59	111
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	93.1	51	119
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	100	53	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	72.8	62	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 20622)								
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	93.0	44	124
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	85.1	61	109
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	98.2	55	115
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	85.7	68	114
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	76.5	63	109
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	93.9	60	116
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	102	51	123
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	101	67	113
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	102	52	122
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	98.1	61	119
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	80.6	65	115
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	96.6	63	117
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	79.9	64	110
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	86.9	67	115
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	54.5	10	89
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	79.0	63	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	# 112	60	110
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	80.6	63	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 20624)								
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	66.7	62	113
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	72.0	64	114
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	74.4	64	116
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	67.9	64	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 20624) - continued								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	73.4	63	117
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	76.5	62	119
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	75.2	59	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.1	62	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	74.5	63	116
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	76.3	61	117
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	90.5	64	118
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	69.6	64	115
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	83.0	60	118
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.3	59	119
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	77.0	63	116
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	89.2	63	118
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18920)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	102	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 20623)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	99.0	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.0	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.5	62	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18920)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	106	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 20623)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	92.8	59	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	99.1	74	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	100	67	127
EP080: BTEXN (QCLot: 18920)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	95.7	70	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	96.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	101	69	121
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	89.0	70	124
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	72	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.6	65	129

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 19655)							
ES1440041-007	PH_BH04_0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	103	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 19656)							
ES1440041-007	PH_BH04_0.5-0.6	EG035T: Mercury	7439-97-6	5 mg/kg	95.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 18677)							
ES1440041-007	PH_BH04_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	88.9	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 18676)							
ES1440041-007	PH_BH04_0.5-0.6	EP068: 4.4`-DDT	50-29-3	2 mg/kg	81.3	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	85.5	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	82.3	70	130
		EP068: Endrin	72-20-8	2 mg/kg	93.2	70	130
		EP068: gamma-BHC	58-89-9	0.5 mg/kg	104	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	78.4	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 18676)							
ES1440041-007	PH_BH04_0.5-0.6	EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	85.9	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	82.1	70	130
		EP068: Diazinon	333-41-5	0.5 mg/kg	99.1	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	81.5	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	74.9	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 18675)							
ES1440041-007	PH_BH04_0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	78.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	87.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18673)							
ES1440041-007	PH_BH04_0.5-0.6	EP080: C6 - C9 Fraction	----	32.5 mg/kg	107	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18674)							
ES1440041-007	PH_BH04_0.5-0.6	EP071: C10 - C14 Fraction	----	560 mg/kg	79.9	73	137
		EP071: C15 - C28 Fraction	----	2370 mg/kg	93.1	53	131
		EP071: C29 - C36 Fraction	----	1695 mg/kg	105	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18673)							
ES1440041-007	PH_BH04_0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18674)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18674) - continued							
ES1440041-007	PH_BH04_0.5-0.6	EP071: >C10 - C16 Fraction	>C10_C16	902 mg/kg	87.9	73	137
		EP071: >C16 - C34 Fraction	----	3190 mg/kg	97.0	53	131
		EP071: >C34 - C40 Fraction	----	1087 mg/kg	113	52	132
EP080: BTEXN (QCLot: 18673)							
ES1440041-007	PH_BH04_0.5-0.6	EP080: Benzene	71-43-2	2.5 mg/kg	100	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	103	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	106	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 19401)							
ES1440001-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	91.3	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	86.7	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	81.6	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	88.2	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	84.6	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	73.0	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	85.3	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 19402)							
ES1440001-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	98.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 18920)							
ES1440188-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	121	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 18920)							
ES1440188-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130
EP080: BTEXN (QCLot: 18920)							
ES1440188-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	89.0	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	95.8	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	95.1	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	72.8	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	94.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	89.3	70	130

QA/QC Compliance Assessment for DQO Reporting

Work Order	: **ES1440041**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS ELEANOR LIDDLE	Telephone	: +61-2-8784 8555
Project	: 60303367 TFNSW Pendle Hill	Date Samples Received	: 01-Oct-2014
Site	: PENDLE HILL	Issue Date	: 08-Oct-2014
Sampler	: LAUREN KONTUS	No. of samples received	: 23
Order number	: ALS MSA	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits for regular samples are based on control limits obtained from matrix spike data.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-20622-002	----	**Pirimphos-ethyl**	23505-41-1	112 %	60-110%	**Recovery greater than upper control limit**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	1	12	8.33	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	17	0.00	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	0	12	0.00	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	0	10	0.00	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	0	16	0.00	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	17	0.00	5.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	0	12	0.00	5.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	0	10	0.00	5.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	0	16	0.00	5.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	----	----	----	02-Oct-2014	15-Oct-2014	✓
Soil Glass Jar - Unpreserved (EA055-103)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	----	----	----	02-Oct-2014	14-Oct-2014	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200)								
PH_BH06_0.05-0.15		01-Oct-2014	08-Oct-2014	30-Mar-2015	✓	08-Oct-2014	30-Mar-2015	✓
Snap Lock Bag (EA200)								
PH_BH04_0.5-0.6,	PH_BH05_0.2-0.3	30-Sep-2014	08-Oct-2014	29-Mar-2015	✓	08-Oct-2014	29-Mar-2015	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	03-Oct-2014	30-Mar-2015	✓	04-Oct-2014	30-Mar-2015	✓
Soil Glass Jar - Unpreserved (EG005T)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	03-Oct-2014	29-Mar-2015	✓	04-Oct-2014	29-Mar-2015	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	03-Oct-2014	29-Oct-2014	✓	07-Oct-2014	29-Oct-2014	✓
Soil Glass Jar - Unpreserved (EG035T)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	03-Oct-2014	28-Oct-2014	✓	07-Oct-2014	28-Oct-2014	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	02-Oct-2014	15-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
Soil Glass Jar - Unpreserved (EP066)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	02-Oct-2014	14-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							
EP068S: Organochlorine Pesticide Surrogate								
Soil Glass Jar - Unpreserved (EP068)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	02-Oct-2014	15-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
EP068E: Other Pesticides								
Soil Glass Jar - Unpreserved (EP068)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	02-Oct-2014	14-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
PH_BH06_0.05-0.15,	PH_BH06_0.9-1.0	01-Oct-2014	02-Oct-2014	15-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
Soil Glass Jar - Unpreserved (EP071)								
PH_BH04_0.5-0.6,	PH_BH04_4.0-4.1,	30-Sep-2014	02-Oct-2014	14-Oct-2014	✓	02-Oct-2014	11-Nov-2014	✓
PH_BH05_0.2-0.3,	PH_BH05_1.0-1.1							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)T: PAH Surrogates							
Soil Glass Jar - Unpreserved (EP075(SIM)) PH_BH06_0.05-0.15, PH_BH06_0.9-1.0	**01-Oct-2014**	**02-Oct-2014**	15-Oct-2014	✓	**02-Oct-2014**	11-Nov-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) PH_BH04_0.5-0.6, PH_BH04_4.0-4.1, PH_BH05_0.2-0.3, PH_BH05_1.0-1.1	**30-Sep-2014**	**02-Oct-2014**	14-Oct-2014	✓	**02-Oct-2014**	11-Nov-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) PH_BH06_0.05-0.15, PH_BH06_0.9-1.0	**01-Oct-2014**	**02-Oct-2014**	15-Oct-2014	✓	**07-Oct-2014**	15-Oct-2014	✓
Soil Glass Jar - Unpreserved (EP080) PH_BH04_0.5-0.6, PH_BH04_4.0-4.1, PH_BH05_0.2-0.3, PH_BH05_1.0-1.1	**30-Sep-2014**	**02-Oct-2014**	14-Oct-2014	✓	**07-Oct-2014**	14-Oct-2014	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC106	**01-Oct-2014**	**03-Oct-2014**	30-Mar-2015	✓	**03-Oct-2014**	30-Mar-2015	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC105	**30-Sep-2014**	**03-Oct-2014**	29-Mar-2015	✓	**03-Oct-2014**	29-Mar-2015	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC106	**01-Oct-2014**	**03-Oct-2014**	29-Oct-2014	✓	**04-Oct-2014**	29-Oct-2014	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC105	**30-Sep-2014**	**03-Oct-2014**	28-Oct-2014	✓	**04-Oct-2014**	28-Oct-2014	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) QC106	**01-Oct-2014**	**07-Oct-2014**	08-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
Amber Glass Bottle - Unpreserved (EP066) QC105	**30-Sep-2014**	**07-Oct-2014**	07-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
EP068S: Organochlorine Pesticide Surrogate							
Amber Glass Bottle - Unpreserved (EP068) QC106	**01-Oct-2014**	**07-Oct-2014**	08-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
Amber Glass Bottle - Unpreserved (EP068) QC105	**30-Sep-2014**	**07-Oct-2014**	07-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QC106	**01-Oct-2014**	**07-Oct-2014**	08-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
Amber Glass Bottle - Unpreserved (EP071) QC105	**30-Sep-2014**	**07-Oct-2014**	07-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)T: PAH Surrogates							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC106	**01-Oct-2014**	**07-Oct-2014**	08-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC105	**30-Sep-2014**	**07-Oct-2014**	07-Oct-2014	✓	**08-Oct-2014**	16-Nov-2014	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC106	**01-Oct-2014**	**02-Oct-2014**	15-Oct-2014	✓	**04-Oct-2014**	15-Oct-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC105	**30-Sep-2014**	**02-Oct-2014**	14-Oct-2014	✓	**04-Oct-2014**	14-Oct-2014	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	12	8.33	10.00	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.67	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	14.29	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	11.11	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	7	14.29	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.29	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	11	**18.18**	**13.79**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	18	**11.11**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	**0.00**	**10.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	0	12	**0.00**	**10.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	0	10	**0.00**	**10.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	0	16	**0.00**	**10.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	2	16	**12.50**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.09**	**5.17**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.56**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	**8.33**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.09**	**5.17**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.56**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	**8.33**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	11	**9.09**	**5.17**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	**5.56**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	**0.00**	**5.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	0	12	**0.00**	**5.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	0	10	**0.00**	**5.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	0	16	**0.00**	**5.00**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

AECOM Australia Pty Ltd (Sydney)
PO Box Q410
Sydney NSW 1230

ph: 02 8484 8999
Fax: 02 8484 8989

Attention: Loren Schiavon

Sample log in details:

Your reference:	**60303367**
Envirolab Reference:	**116926**
Date received:	30/09/2014
Date results expected to be reported:	**8/10/14**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Soil
Turnaround time requested:	Standard
Temperature on receipt (°C)	7.6
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:
Water samples - 1 month
Soil and other solid samples - 2 months
Samples collected in canisters - 1 week. Canisters will then be cleaned.
All other samples are not retained after analysis
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

updated Email. ES1421904

use Email as COC

Entered

Fadi Soro

From: Barbara Hanna
Sent: Monday, 29 September 2014 10:15 AM
To: Fadi Soro
Subject: FW: Schedule of Analysis Samples for AECOM Project Number 60303367

Environmental Division
Sydney
Work Order
ES1421904

Telephone : +61-2-8784 8555

Hi Fadi,

Please use this e-mail as the COC for the samples dropped off on Friday afternoon (26 September 2014).

Please let me know if there isn't a project number or task number so I can chase these up.

Thanks!!

Kind Regards

Barbara Hanna

Client Services Manager
ALS | Environmental Division

277-289 Woodpark Road
Smithfield NSW 2164 Australia

T +61 2 8784 8555
F +61 2 8784 8500

www.alsglobal.com

We are keen for your feedback! Please click here for your 1 question survey

EnviroMail 83 - NSW Waste Classification
EnviroMail™ 00 - Summary of all EnviroMails™ by Category

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Subcon / Forward Lab / Split WO
1 Lab / Analysis: ENVIROLAB: QC02
Organised By / Date: Frank
Relinquished By / Date:
Connote / Courier:
WO No: ES1421904
Attach By PO / Internal Sheet:

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 116926

Date Received: 30/9/14
Time Received: 12:30
Received by: PT
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

From: Liddle, Eleanor [mailto:Eleanor.Liddle@aecom.com]
Sent: Monday, 29 September 2014 9:57 AM

To: Barbara Hanna
Cc: Kontus, Lauren; Davis, Anthony
Subject: Schedule of Analysis Samples for AECOM Project Number 60303367

Hello Barbara,

Please find below the schedule of analysis for the samples Lauren Kontus dropped off on Friday afternoon (26 September 2014).

Soil

- PH_BH01_0.04-0.1: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH01_2.4-2.5: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs
- PH_BH02-0.5-0.6: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH02_2.0-2.1: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs
- PH_BH03_0.3-0.4: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- PH_BH03_0.5-0.6: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCB
- QC01: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs; asbestos
- QC02: **Please forward to Envirolab for analysis for the following**: Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH/TPH; BTEXN; Organochlorine and organophosphate pesticides; PCBs

Please hold all other soil samples. Note we may need to complete TCLP testing.

Water

- QC101: BTEXN
- QC102: Suite W-7, W-2 Metals, W-13
- QC103: Suite W-7, W-2 Metals, W-13
- QC104: Suite W-7, W-2 Metals, W-13

Please contact me on the details below with any questions.

Kind regards,

Eleanor Liddle
Environmental Scientist
D +61 2 8934 0477 M +61 439 837 919
Eleanor.Liddle@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
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PAGE 1/2.

AECOM

Chain of Custody

AECOM - Sydney
Level 21 420 George Street
Sydney, NSW 2000

Chain of Custody
Phone: 8934 0000
E-mail:

Laboratory Details
Lab. Name: ALS Smithfield.
Lab. Address:
Contact Name: Loren Schiavon.
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: ALS MSA.

Sampled By: Lauren Konns
AECOM Project No: 60303367-1.4
Project Name: TFNSW - Pendle Hill. PO No. –

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership: lauren.konns@aecom.com.	
7. Report Format: Fax Hardcopy Email: eleanor.riddle@aecom.com.	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix: soil	Matrix: water	Matrix: other	Preservation: fil'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TPH C6-C10 + BTEXN	TPH C10-C36 +D	PAH	Metals (8) Heavy.	OCP / OPP	PCB	Asbestos	HOLD	Other
1	PH_BH02_0.05-1.0	24-9-14		X					X		1 jar + 1 bag.								X	
2	PH_BH02_0.5-0.6	↓		X					X		↓								X	
3	PH_BH02_0.9-1.0			X					X										X	
4	PH_BH02_1.7-1.8			X					X										X	
5	PH_BH02_2.0-2.1			X					X		↓								X	
6	QC101				X				X		2V	X								
7	QC102	↓			X				X		2V, 1A, 1P.	X	X	X	X	X	X			
8	PH_BH01_0.04-0.1	25-9-14		X					X		1 jar + 1 bag								X	
9	PH_BH01_0.5-0.6	↓		X					X		↓								X	
10	PH_BH01_1.0-1.1			X					X										X	
11	PH_BH01_1.4-1.5			X					X										X	
12	PH_BH01_1.9-2.0			X					X										X	
13	PH_BH01_2.4-2.5			X					X										X	
14	QC01	↓		X					X		↓								X	

Environmental Division
Sydney
Work Order
ES1421904
Telephone : +61-2-8784 8555

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments: All soil samples have 1 jar and 1 asbestos bag.

Lab Report No.
Esky ID

Relinquished by: Lauren Konns Signed: Date: [redacted]
Recieved by: Signed: Date:
Relinquished by: Signed: Date:
Recieved by: FAS Signed: Date:

Printed copies of this document are uncontrolled
Page 1 of 1

BMS-PM-DV-F046
Revision: Jun 08

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 116926

Client:
AECOM Australia Pty Ltd (Sydney)
PO Box Q410
QVB Post Office
Sydney
NSW 1230

Attention: Loren Schiavon

Sample log in details:

Your Reference:	**60303367**		
No. of samples:	1 Soil		
Date samples received / completed instructions received	30/09/2014	/	30/09/2014

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	8/10/14	/	7/10/14
Date of Preliminary Report:	Not Issued		

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Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	1/10/2014
Date analysed	-	2/10/2014
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	97

svTRH (C10-C40) in Soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	01/10/2014
Date analysed	-	02/10/2014
TRHC_{10} - C_{14}	mg/kg	<50
TRHC_{15} - C_{28}	mg/kg	<100
TRHC_{29} - C_{36}	mg/kg	<100
TRH>C_{10}-C_{16}	mg/kg	<50
TRH>C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH>C_{16}-C_{34}	mg/kg	<100
TRH>C_{34}-C_{40}	mg/kg	<100
Surrogate o-Terphenyl	%	92

PAHs in Soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	1/10/2014
Date analysed	-	1/10/2014
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE
Surrogate p-Terphenyl-d14	%	114

Organochlorine Pesticides in soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	01/10/2014
Date analysed	-	01/10/2014
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCMX	%	92

Organophosphorus Pesticides Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	01/10/2014
Date analysed	-	01/10/2014
Diazinon	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Surrogate TCMX	%	92

PCBs in Soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date extracted	-	01/10/2014
Date analysed	-	01/10/2014
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	92

Acid Extractable metals in soil Our Reference: Your Reference Type of sample	UNITS ---------- ----------	116926-1 QC02 Soil
Date digested	-	02/10/2014
Date analysed	-	02/10/2014
Arsenic	mg/kg	4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	7
Copper	mg/kg	91
Lead	mg/kg	99
Mercury	mg/kg	<0.1
Nickel	mg/kg	10
Zinc	mg/kg	35

Moisture		
Our Reference:	UNITS	116926-1
Your Reference	----------	QC02
Type of sample	----------	Soil
Date prepared	-	2/10/2014
Date analysed	-	3/10/2014
Moisture	%	26

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			1/10/2014	[NT]	[NT]	LCS-7	1/10/2014
Date analysed	-			02/10/2014	[NT]	[NT]	LCS-7	02/10/2014
TRHC_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-7	126%
TRHC_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-7	126%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-7	115%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-7	124%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-7	127%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-7	131%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-7	130%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	109	[NT]	[NT]	LCS-7	106%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Date analysed	-			02/10/2014	[NT]	[NT]	LCS-7	02/10/2014
TRHC_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-7	123%
TRHC_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-7	129%
TRHC_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-7	119%
TRH>C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-7	123%
TRH>C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-7	129%
TRH>C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-7	119%
Surrogate o-Terphenyl	%		Org-003	95	[NT]	[NT]	LCS-7	105%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			1/10/2014	[NT]	[NT]	LCS-7	1/10/2014
Date analysed	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	94%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	86%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	90%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	84%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	85%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-7	88%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-7	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	105	[NT]	[NT]	LCS-7	102%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Date analysed	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	96%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	96%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	97%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	100%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	96%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	91%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	97%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	95%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	100%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-7	99%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	93	[NT]	[NT]	LCS-7	89%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Date analysed	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-7	94%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-7	82%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-7	97%
Surrogate TCMX	%		Org-008	93	[NT]	[NT]	LCS-7	94%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Date analysed	-			01/10/2014	[NT]	[NT]	LCS-7	01/10/2014
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-7	109%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	93	[NT]	[NT]	LCS-7	100%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			2/10/2014	116926-1	02/10/2014 || 02/10/2014	LCS-1	1/10/2014
Date analysed	-			2/10/2014	116926-1	02/10/2014 || 02/10/2014	LCS-1	1/10/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	116926-1	4 || 7 || RPD: 55	LCS-1	98%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	116926-1	<0.4 || <0.4	LCS-1	104%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	116926-1	7 || 10 || RPD: 35	LCS-1	104%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	116926-1	91 || 89 || RPD: 2	LCS-1	103%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	116926-1	99 || 110 || RPD: 11	LCS-1	99%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	116926-1	<0.1 || <0.1	LCS-1	93%

Client Reference: 60303367

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	116926-1	10 || 10 || RPD: 0	LCS-1	103%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	116926-1	35 || 47 || RPD: 29	LCS-1	101%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

CERTIFICATE OF ANALYSIS

Work Order	: **ES1440494**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	:
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	:
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 60303367- TASK 1 4	Date Samples Received	: 08-Oct-2014 08:21
C-O-C number	: ----	Date Analysis Commenced	: 10-Oct-2014
Sampler	: LAUREN KONTUS	Issue Date	: 10-Oct-2014 16:28
Site	: ----		
		No. of samples received	: 4
Quote number	: ----	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	PH_BH05_0.2-0.3	PH_BH06_0.05-0.15	----
			Client sampling date / time	[26-Sep-2014]	[26-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]	----
Compound	CAS Number	LOR	Unit	ES1440494-001	ES1440494-002	ES1440494-003	ES1440494-004	--------
				Result	Result	Result	Result	Result
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**6.3**	**7.2**	**9.8**	**9.2**	**----**
After HCl pH	----	0.1	pH Unit	**1.8**	**1.8**	**2.6**	**2.3**	**----**
Extraction Fluid Number	----	1	-	**1**	**1**	**1**	**1**	**----**
Final pH	----	0.1	pH Unit	**5.0**	**5.0**	**5.9**	**5.2**	**----**

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)			Client sample ID	PH_BH03_0.3-0.4	PH_BH03_0.5-0.6	PH_BH05_0.2-0.3	PH_BH06_0.05-0.15	----
			Client sampling date / time	[26-Sep-2014]	[26-Sep-2014]	[30-Sep-2014]	[01-Oct-2014]	----
Compound	CAS Number	LOR	Unit	ES1440494-001	ES1440494-002	ES1440494-003	ES1440494-004	--------
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	**0.3**	<0.1	----	----	----
Nickel	7440-02-0	0.1	mg/L	----	----	<0.1	**0.1**	----

QUALITY CONTROL REPORT

Work Order	: **ES1440494**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Contact	:
Address	: LEVEL 21, 420 George Street SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lauren.kontus@aecom.com	E-mail	:
Telephone	: 02 8295 3600	Telephone	: +61-2-8784 8555
Facsimile	: 03 9262 5060	Facsimile	: +61-2-8784 8500
Project	: 60303367-1 4 TFNSW - PENDLE HILL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 60303367- TASK 1 4	Date Samples Received	: 08-Oct-2014
C-O-C number	: ----	Date Analysis Commenced	: 10-Oct-2014
Sampler	: LAUREN KONTUS	Issue Date	: 10-Oct-2014
Site	: ----	No. of samples received	: 4
Quote number	: ----	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005C: Leachable Metals by ICPAES (QC Lot: 22752)									
ES1440494-001	PH_BH03_0.3-0.4	EG005C: Lead	7439-92-1	0.1	mg/L	0.3	0.3	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EN33: TCLP Leach (QCLot: 22694)								
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 22752)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	98.6	83	117
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	101	81	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 22752)							
ES1440494-002	PH_BH03_0.5-0.6	EG005C: Lead	7439-92-1	1 mg/L	127	70	130
		EG005C: Nickel	7440-02-0	1 mg/L	124	70	130

QA/QC Compliance Assessment for DQO Reporting

Work Order	: **ES1440494**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MS LAUREN KONTUS	Telephone	: +61-2-8784 8555
Project	: 60303367-1 4 TFNSW - PENDLE HILL	Date Samples Received	: 08-Oct-2014
Site	: ----	Issue Date	: 10-Oct-2014
Sampler	: LAUREN KONTUS	No. of samples received	: 4
Order number	: 60303367- TASK 1 4	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits for regular samples are based on control limits obtained from matrix spike data.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Method Blanks (MB)					
TCLP for Non & Semivolatile Analytes	0	8	0.00	9.09	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)							
PH_BH03_0.3-0.4, PH_BH03_0.5-0.6, PH_BH05_0.2-0.3, PH_BH06_0.05-0.15	**10-Oct-2014**	**10-Oct-2014**	08-Apr-2015	✓	**10-Oct-2014**	08-Apr-2015	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB)							
TCLP for Non & Semivolatile Analytes	EN33a	0	8	**0.00**	**9.09**	×	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	1	4	**25.00**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	4	**25.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	4	**25.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	4	**25.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Leachable Metals by ICPAES	EG005C	SOIL	In house QWI-EN/EG005C referenced to APHA 21st ed., 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.

S730-731

Fadi
8/10/14
Nam

Fadi Soro

From: Brenda Hong
Sent: Wednesday, 8 October 2014 10:58 AM
To: Samples Sydney
Subject: REBATCH ES1421904

Importance: High

TAT

ALS GROUP - Sydney
ES1440494

Telephone : +61-2-8784 8555

Rebatch as below. best possible TAT - 24 hrs

Best regards,

Brenda Hong

From: Liddle, Eleanor [mailto:Eleanor.Liddle@aecom.com]
Sent: Wednesday, 8 October 2014 10:47 AM
To: Brenda Hong
Cc: Kontus, Lauren; Davis, Anthony
Subject: RE: ALS PRELIM RESULTS FOR ES1421904
Importance: High

Hi Brenda,

Please could we request the fastest possible TAT for completing TCLP testing for lead on PH_BH03_0.3-0.4 (1) and PH_BH03_0.5-0.6 (2)?

17 18

I'll give you a call to discuss how quickly we can get these results.

Thanks in advance,

Eleanor Liddle
Environmental Scientist
D +61 2 8934 0477 M +61 439 837 919
Eleanor.Liddle@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001

www.aecom.com

Please consider the environment before printing this email.

From: Brenda Hong [mailto:Brenda.Hong@alsglobal.com]
Sent: Wednesday, 8 October 2014 10:29 AM
To: Liddle, Eleanor
Cc: Kontus, Lauren
Subject: RE: ALS PRELIM RESULTS FOR ES1421904

HI Eleanor, please find all final results as per attached spreadsheet. I will get the final reports released to you shortly.

Best regards,

Brenda Hong

Senior Client Services
ALS | Environmental Division

277-289 Woodpark Road
Smithfield NSW 2164 Australia

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F +61 2 8784 8500

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NB. My working days are Monday to Thursday.

From: Liddle, Eleanor [mailto:Eleanor.Liddle@aecom.com]
Sent: Wednesday, 8 October 2014 9:23 AM
To: Brenda Hong
Cc: Kontus, Lauren
Subject: RE: ALS PRELIM RESULTS FOR ES1421904

Hi Brenda,

Thanks for letting us know. Do you know when we might expect the remainder of the results? There is a rush on the report that they are for and we might yet need to complete TCLP testing on them.

Kind regards,

Eleanor Liddle
Environmental Scientist
D +61 2 8934 0477 M +61 439 837 919
Eleanor.Liddle@aecom.com

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Please consider the environment before printing this email.

From: Brenda Hong [mailto:Brenda.Hong@alsglobal.com]
Sent: Tuesday, 7 October 2014 4:20 PM
To: Liddle, Eleanor
Cc: Kontus, Lauren
Subject: ALS PRELIM RESULTS FOR ES1421904

Hi Eleanor/Lauren,

We are experiencing a temporary capacity issue with our PCB and Pesticides tests and therefore your results have been effected.
We anticipate to have these reported tomorrow 8/10.

I do apologise for the inconvenience that this slight delay may have caused, however please find all your other results as per attached spreadsheet.

Please feel free to contact me should you wish to discuss this matter further.

Best regards,

Brenda Hong

Senior Client Services
ALS | Environmental Division

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5787 - 788

Fadi Soro

From: Brenda Hong
Sent: Wednesday, 8 October 2014 11:27 AM
To: Samples Sydney
Subject: Add 2 more samples to ES1440494

Importance: High

As below...

From: Liddle, Eleanor [mailto:Eleanor.Liddle@aecom.com]
Sent: Wednesday, 8 October 2014 11:24 AM
To: Brenda Hong
Cc: Kontus, Lauren; Davis, Anthony
Subject: RE: ES1440041 - Prleims
Importance: High

Hi Brenda,

Thanks for sending this through. Please can we request the fastest TAT for the following:

TCLP nickel for PH_BH05_0.2-0.3 and PH_BH06_0.05-0.15

Thanks in advance for your help,

Ellie

Eleanor Liddle
Environmental Scientist
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Eleanor.Liddle@aecom.com

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T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

Please consider the environment before printing this email.

From: Brenda Hong [mailto:Brenda.Hong@alsglobal.com]
Sent: Wednesday, 8 October 2014 11:04 AM
To: Liddle, Eleanor
Subject: ES1440041 - Prleims

Hi Ela, please find prelims as per attached. As mentioned this is in a new format so I am sorry if it's a little messy for now. Hopefully we will get the formatting corrected.

Best regards,

Brenda Hong

Senior Client Services
ALS | Environmental Division

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Smithfield NSW 2164 Australia

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F +61 2 8784 8500

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