

ENVIRONMENTAL SITE ASSESSMENT

(Phase II Site investigation)

**83 – 99 North Terrace, Bankstown,
Bankstown Compass Centre, NSW**

PREPARED FOR: FIOSON PTY LTD

OUR REFERENCE: REP-271615-A

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EXECUTIVE SUMMARY

Envirotech Pty Ltd has been commissioned by Shaza Rifi (JAPM) on behalf of FIOSON PTY LTD to undertake a Phase 2 Contamination Assessment for the proposed in consideration of the proposed mixed use 20 story multi - building apartment blocks to be constructed at 83 -99 North Terrace BANKSTOWN, NSW (hereafter referred to as the site). The site covers a total area of approximately 1.2 Ha and situated within the local government area of Bankstown City Council. The proposed development is considered as a residential development with minimal opportunities for soil access; includes dwellings space such as high-rise buildings and flats. (HIL B) in regards to the appropriate Health Investigation Levels (HILs).

The guidelines recommend sampling from a minimum of 22 evenly spaced sampling points for this site with an area of approximately 12,000m². At the present time there are inaccessible areas to sample from. As such the below sampling density was undertaken with the remaining number of samples to be sampled after demolition stage.

Samples for this investigation were obtained from 6 sampling points as shown on the attached Figure 3. This density is approximately 28% of the minimum sampling density recommended by the NEPM 2013 guidelines. The sampling locations were placed in accessible areas of the site only. Results were then compared against appropriate guidance values including Health Investigation Levels (HILs) and Ecological Investigation Levels (EILs).

Soil sample results were compared to the Health Investigation Levels (HILs) Guidelines and Ecological Screening Levels (ESLs) for (NEPM 2013). All areas required for the contamination assessment for a full suite of analysis indicated chemical concentrations below the relevant health investigation levels.

Asbestos was not detected within any of the soil samples collected across the site.

In relation to the area of investigation this area is deemed suitable for the proposed development.

It is noted however that this investigation only sampled 28% of the recommended sampling guidelines. These results are therefor only an indicative investigation into the potential contamination within soils on the site.

It is recommended that a further 16 boreholes be sampled once demolition has occurred. This would finalize the 100% requirement of sampling density across the site and would provide a complete contamination status of the site.

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1. INTRODUCTION

1.1 General

Envirotech Pty Ltd has been commissioned by Shaza Rifi (JAPM) on behalf of FIOSON PTY LTD to undertake a Phase 2 Contamination Assessment for the proposed in consideration of the proposed mixed use 20 story multi - building apartment blocks to be constructed at 83 -99 North Terrace BANKSTOWN, NSW (hereafter referred to as the site). The site covers a total area of approximately 1.2 Ha and situated within the local government area of Bankstown City Council. The proposed development is considered as a residential development with minimal opportunities for soil access; includes dwellings space such as high-rise buildings and flats. (HIL B) in regards to the appropriate Health Investigation Levels (HILs).

The guidelines recommend sampling from a minimum of 22 evenly spaced sampling points for this site with an area of approximately 12,000m². At the present time there are inaccessible areas to sample from. As such the below sampling density was undertaken with the remaining number of samples to be sampled after demolition stage.

Samples for this investigation were obtained from 6 sampling points as shown on the attached Figure 3. This density is approximately 28% of the minimum sampling density recommended by the the NEPM 2013 guidelines. The sampling locations were placed in accessible areas of the site only. Results were then compared against appropriate guidance values including Health Investigation Levels (HILs) and Ecological Investigation Levels (EILs). The following report outlines the findings.

1.2 Past Reports

JK Geotechnics – Geotechnical Investigation for Proposed Redevelopment of Compass Centre, Dated 02/09/2015. This report identified via the borehole logs that there is unvalidated fill on the site up to a 1.2m bgl within the accessible areas of the site only. This information slightly altered the depth of sampling with samples being sampled from 0.5m to 1.5m.

Environmental Investigation Services (EIS) – Preliminary Contamination Screening and Waste Classification, Dated 04/09/2015. EIS were commissioned to undertake a Preliminary Contamination Screening (PCS) and waste classification for the proposed redevelopment of the Compass Centre. One of the conclusions of this report was to conduct a Stage 2 ESA. The preliminary soil contamination results from this report indicated thresholds below relevant HILs. It should be noted however sampling was not undertaken to the recommended sampling density of NEPM 2013 guidelines.

1.3 Objectives

The objectives of the investigation were to:

- Assess the site in the context of the proposed development against the Health Investigation Levels (HILs) within the National Environmental Protection Measures (amended 2013),
- Determine the extent of contamination (if present),
- Undertake limited site characterisation and sampling for identified potential contaminants,
- Draw conclusions regarding the suitability of the site for its proposed use.

1.4 Scope of Work

The **Scope of Works** included the following:

- Completion of a specialised Safety, Health & Environment Work Method Statement (SH&EWMS);
- Site inspection and investigations by an experienced environmental scientist;
- Collection of samples from a total of six (6) testpits limited to the top 1.5 m of the soil surface;
- Cold storage of all samples collected;
- Submission to a NATA Accredited laboratory for analysis under chain of custody conditions;
- Laboratory analysis of six (6) soil samples for TRH (C6-C40), BTEX, PAH, OC/OPs, PCBs, 8 metals and asbestos;
- Preparation of a report outlining the investigation methodology, interpretation of the site data (results), and conclusions.

1.5 Legislative Requirements

The investigation was conducted in accordance with:

- *Guidelines for Consultants Reporting on Contaminated Sites*, NSW EPA, 2000.
- *Assessment of Site Contamination, National Environment Protection Measure, 2013 amendment*.
- Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*.
- Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances*.
- *Sampling Design Guidelines* – NSW EPA, 1995.
- *Waste Classification Guidelines Part 1: Classifying Waste*, DECC, 2009.
- *Guidelines for the Assessment and Management of Groundwater Contamination*, NSW DEC, 2007.

1.6 Report overview

This report should be read as a complete document and should not be read in sections. Each section is to be read concurrently with the rest of the report including any appendices.

A summary of the site specific details are provided in Table 1 below:

Table 1. Site specific details

Site specific details	
Site Address	83-99 North Terrace, BANKSTOWN
Date of field work	03.12.2015
Investigation area	Part site, refer to sampling plan
Local Government Area	Bankstown City Council
Proposed Development	Proposed Mixed use Development
Sample size	six (6) soil samples for TRH (C6-C40), BTEX, PAH, OC/OPs, PCBs, 8 Metals and asbestos;

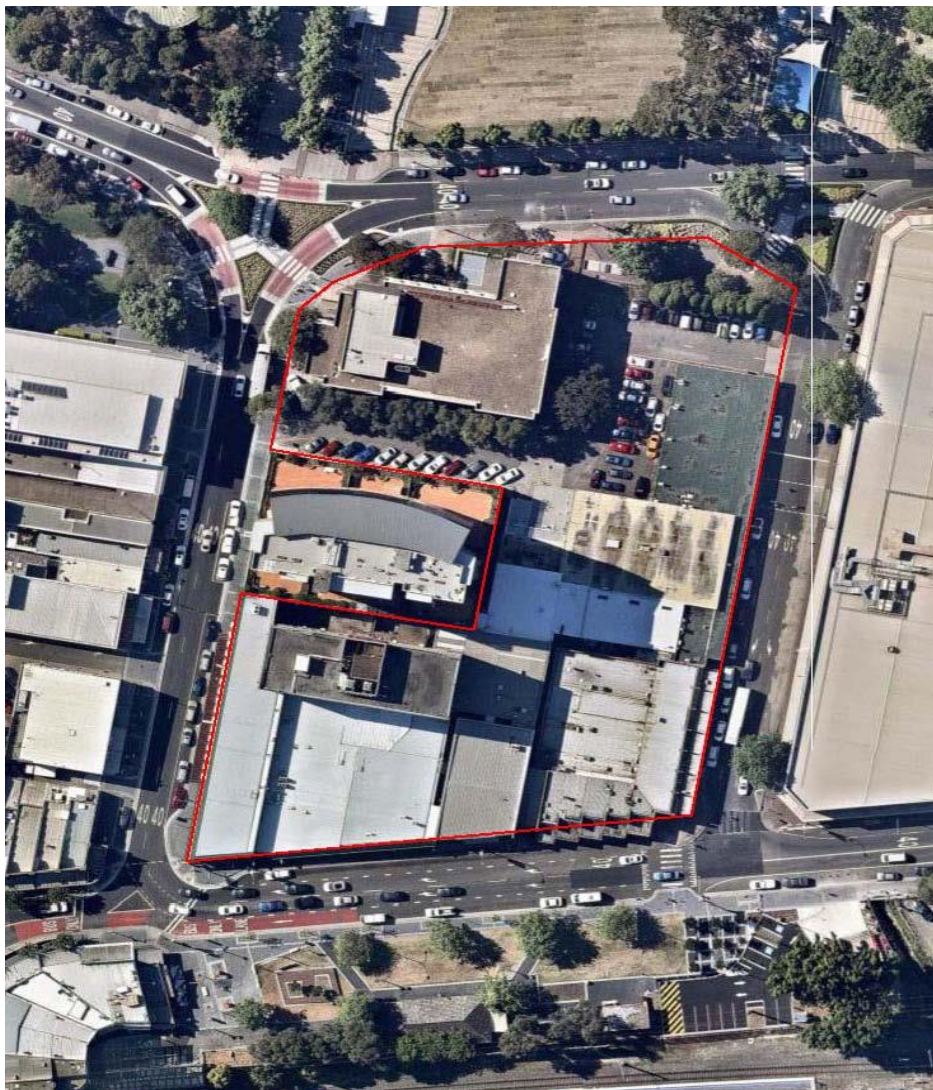


Figure 1. Site location map



Figure 2. Aerial Image showing the area of investigation and the six sampling sites within this area.

2. LEGISLATIVE FRAMEWORK AND ASSESSMENT GUIDELINES

2.1 Contaminated Land Management Act (1997)

In 1997 the NSW Government introduced the CLM Act. This act has been amended by the *Contaminated Land Management Amendment Act* (2008). The CLM Act 1997, associated regulations, *State Environmental Planning Policy No.55* (1997) and NSW OEH guidelines, were designed to provide uniform state-wide control of the management, investigation and remediation of contaminated land.

Prior to granting consent for any proposed rezoning or development, SEPP55 requires the consent authority to:

- Consider whether the land is contaminated;
- Consider whether the site is suitable, or if contaminated, can be made suitable by remediation, for the proposed land use; and
- Be satisfied that remediation works will be undertaken prior to use of the site for the proposed use.

Should the assessment indicate that the site poses a risk to human health or the environment, remediation of the site may be required prior to occupation of the proposed development. SEPP55 requires that the relevant local council be notified of all remediation works, whether or not development consent is required. Where development consent is not required, 30 days written notice of the proposed works must be provided to council.

Details of validation of remediation work must also be submitted to Council within one month of completion of remediation works. The consent authority may request that a site audit be undertaken during, or following the completion of the site assessment process.

Under the terms of the CLM Act 1997 the NSW OEH Site Auditor Scheme was developed to provide a system of independent review for assessment reports. An accredited Contaminated Site Auditor is engaged to review reports prepared by suitably qualified consultants to ensure that the investigation has been undertaken in accordance with the guidelines and confirm that the sites are suitable for their intended use.

Section 59(2) of the CLM Act 1997 states that specific notation relating to contaminated land issues must be included on Section 149 (s149) planning certificates prepared by Council where the land to which the certificate relates is:

- Within an investigation or remediation area;
- Subject to an investigation or remediation order by the OEH;
- The subject of a voluntary investigation or remediation proposal; and/or
- The subject of a site audit statement.

Submission of contaminated site investigation and validation reports to council as part of rezoning or development application submissions may also result in notation of actual or potential site contamination on future s149 certificates prepared for the site. Section 60 of the CLM Amendment Act 2008 sets out a positive duty on a land owner, or person whose activities have caused contamination, to notify the OEH if they are or become aware that contamination exists on a site that generally poses *“an unacceptable risk to human health or the environment, given the site’s current or approved use”*. This duty to report is based on trigger values, above which notification is required.

2.2 The National Environmental Protections Measure

The National Environmental Protections Measures are a set of national environmental objectives negotiated by agreement between the Commonwealth and the Australian states and territories through the Council of Australia Governments (COAG). Each measure is supported by model legislation at the Commonwealth level then incorporated into state and territory jurisdiction. The measures focus on environmental issues that have a trans-boundary dimension where uniformity between jurisdictions is desirable.

Asbestos characterisation and contamination assessment is a new focus of the NEPM, which addresses asbestos characterisation in the context of soil contamination. The inclusion of a specific asbestos assessment method (Vol 2, s 4; Vol’3, s 11) is based largely on Western Australia’s asbestos soil guidelines and may also provide a useful compliance guide for the day to day management of site operations. The NEPM approach is very pragmatic with the primary method being based on inspection of visual fragments on the soil surface from materials that commonly contain asbestos, including cement sheeting and piping and components of electrical equipment such as power boards.

The NEPM also provides updated Health Investigation Levels (HILs) and Ecological Investigation Levels (EILs). Excerpts of HILs and EILs are provided below (NEPM 2013).

Health Investigation Levels (HILs) for Soil Contaminants are detailed in Appendix II – Health Investigation Levels (HILs) & Ecological Investigation Levels (EILs).

3. ENVIRONMENTAL CHARACTERISTICS OF THE SITE

The following summarizes details of the sites environmental characteristics, compiled during the assessment.

3.1 Topography and Geology

Topography

The site is located over a gently sloping north-east facing hillside. (JK Geotechnics 2015).

Geology and Soils

The Geological Survey of NSW 1:100,000 Soil Landscape Series Sheet (9130) shows the site to be underlain by Bringelly Shales comprising surficial fill over residual silty clay with weathered shale bedrock at relatively shallow depth (JK Geotechnics 2015).

3.2 Surface Water Hydrology

Salt Pan Creek is the closest source of water to the site, being located approximately 600m to the south of the site. It is a southern tributary of the Georges River.

No surface waters were identified onsite.

3.3 Hydrogeology

A site-specific groundwater analysis was outside the scope of this assessment. A search carried out through the DNR website found no bores within a 500m radius of area of investigation.

3.4 Receptors and Sensitive Environments

Much of the surrounding area is modified with only a few pockets of green areas remaining in the local area. Two parks are situated within close proximity to the site namely Paul Keating Park located 25 m north and Courthouse Reserve located 25 m north west. Children playing in these parks will be in contact with soils and potential soil contaminants.

A search of the Protected Matters Search Tool indicates that no sensitive ecosystems are in close proximity of the site.

Surrounding commercial properties are the main surrounding receptor and or occupants of the future proposed commercial/residential dwellings on the site.

4. METHODOLOGY

4.1 Site Conceptual Model

4.1.1 Contaminants of Concern (COC)

Results obtained from the preliminary site investigation indicated that the primary areas of concern are as follows:

- Across the whole site where fill has potentially been imported and developed on,

4.1.2 Exposure and receptors

Based upon the potential types of chemicals present at the site and the media in which the chemicals are present, the following mechanisms for chemical transport have been identified for the site:

- Wind erosion and weathering of asbestos sheeting, causing free particles to become airborne;
- Asbestos on soil surface as a remnant from poor demolition processes;
- Leaching of contaminants of potential concern from soil into ground water; and
- Transport of contaminants of potential concern in ground water via ground water flow.

The following potential human exposure routes for chemicals have been identified for the site:

- Inhalation of asbestos particles by breathing in air;
- Dermal contact inhalation and incidental ingestion of soil particulates.

These have the potential to affect both construction workers during the construction phase, and users of the residential proposal upon completion of the works.

The site ground water is not currently used for or planned to be used for domestic purposes in the future.

In regards to potential ecological exposure routes for chemicals it is not expected that any species with the exception of localised birds would be exposed to potential contaminants, this would be limited to the soil on the surface of the site except for during works which will disturb the soil. No sensitive areas occur in the surrounding area of the site.

4.2 Sampling and Analysis Plan

Soil

A sampling plan to address the areas of concern was established including six (6) soil samples for TRH (C6-C40), BTEX, PAH, OC/OPs, PCBs, 8 Metals and asbestos. The six (6) samples are approximately 28% of the recommended sampling density for the size of the subject site. The sampling locations were placed in accessible areas of the site only. The sampling will give an indication of the subsurface contamination without the assuredly of the sampling guidelines. It is recommended that a further 16 boreholes be sampled once demolition has occurred. Sampling was limited to the top 1.5 metres of soil as this is the indication via previous reports of when fill turned to natural ground.

4.3 Documentation

A field observation log was kept by sampling personnel. Details recorded in the log included:

- Location and sample number;
- Soil profile notes;
- Sampling method;
- Sample identification;
- Sample description; and
- Sample point measurements.

A comprehensive master sample register was maintained. As samples were received, they were given a unique sequential number from the sample register into which details from the labels were entered. Before packing and dispatch of samples for analysis, a Chain of Custody form was completed. This form recorded details of the individual samples being dispatched and the type of analysis required for each sample.

A total of six (6) soil samples were submitted to The Australian Laboratory Services Pty Ltd, a NATA accredited laboratory for analytical testing. A copy of the completed Chain of Custody forms were retained on the Central Filing System and the original was sent to the analytical laboratory together with the samples.

4.4 Sampling Program

Soil

Samples were to be collected at a depth of 0.0 – 1.5 m and samples sent for analysis at a NATA accredited laboratory. A total of six (6) samples for chemical analysis and six (6) asbestos samples were allowed for in the scope of works.

Test pits 1 and 4 were hand excavated with a clean mattock which was rinsed between test pits, samples were collected using a clean plastic glove for each sample and placed in glass jars with plastic caps and teflon seals with minimal headspace. The samples were labelled with the job number, sampling location, sampling depth and date.

For all other test pits push tube drilling was undertaken to gather sample. Push tube and hand auger drilling equipment was decontaminated between sampling points, using a solution of fresh potable water and phosphate free detergent (Decon 90), rinsing with fresh potable water, and allowed to air dry.

During the investigation, soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with AS 4482.1-200528 and AS 4482.2-199929. The original Chain of Custody form was enclosed in the Esky that was then sealed and dispatched to NATA accredited analytical laboratories.

Standard decontamination procedures were undertaken before collecting each of the samples to avoid the possibility of cross-contamination. The soil sampling equipment and items likely to come into contact with soil samples were thoroughly washed. Due care was taken with the disposal of any washings and residues from such cleaning operations.

4.5 Laboratory Analysis

All samples collected were submitted to The Environmental OH&S Laboratory for the analytical techniques required.

Six (6) samples of soil were tested for a range of analytes including:

- 8 Metals
- TRH (C6-C40),
- BTEX,
- PAH,
- OC/OPs,
- PCBs,
- Asbestos.

The sampling and analytical program is outlined below in **Table 3**.

Refer to **Appendix IV – Analytical Results** for the analytical methods used by The Environmental Laboratory.

4.6 Sampling Plan, Methodology and Investigation Pattern

Six (6) soil samples were collected for chemical analysis and six (6) soil samples for analysis of presence or absence of asbestos in the soil. All samples were collected based on a judgmental pattern. Refer to **Figure 4** for sampling locations.

Table 2: Soils sample ID, depth, and targeted contaminants for stockpile spread area

Sample ID	Depth	Contaminants
1, 4,	Subsurface samples Approx. 50 cms bgl	Heavy metals, OC/OPs, BTEX,
2, 5,	Subsurface samples Approx. 1.0 m bgl	PAH, TRH, Asbestos, PCBs
3, 6,	Subsurface samples Approx. 1.5 m bgl	

5. ASSESSMENT CRITERIA

5.1 National Environmental Protection Measure (Amended 2013)

The soil samples collected were assessed against the Health Investigation Levels (HILs) for a high density residential i.e HIL B outlined within the *National Environmental Protection Measure*.

The water quality guidelines for recreational purposes in Table 5.2.3 of ANZECC (2000) are adopted for this assessment.

5.2 Data Quality Objectives:

Table 4 provides a list of the data quality indicators adopted for this Phase 2 contamination assessment and the methods used to ensure quality indicators were met.

Table 3. QA/QC Evaluation

Data Quality Indicator	Method(s) of Achievement
Data Precision and Accuracy	• Use of qualified field staff for sampling and investigation. • Appropriate sampling method used, minimising the opportunity for cross-contamination. This included the decontamination of sampling equipment using Decon 90 (phosphate free detergent) followed by rinsing with potable water. • Use of analytical laboratories (ALS) experienced in the analyses undertaken, with appropriate NATA accreditation. NATA accreditation requires use of adequately trained and experienced analytical staff. • Appropriate and validated laboratory test methods used. • Adequate laboratory performance based on results of the blank samples, matrix spike samples, control samples, duplicates and surrogate spike samples.
Data Representativeness	• Coverage of the identified potential contaminants, based on history, site activities and site features. • Adequate laboratory internal quality control and quality assurance methods, complying with the NEPM.
Data Quality Indicator	Method(s) of Achievement
Documentation Completeness	• Preparation of a sample location plan and chain of custody records. • Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain-of-custody. • NATA accredited laboratories results certificates provided.
Data Completeness	• Review of documented information pertaining to site history. • Analysis for potential contaminants.
Data Comparability	• Using appropriate techniques for sample recovery given access and sampling limitations. • Experienced sampler used. • Using appropriate sample storage and transportation methods. • Use of NATA accredited laboratories. • Test methods consistent for each sample.

Based on the above information, the current assessment has generally achieved the quality assurance and quality control data quality indicators. As such, it is concluded that the laboratory test data obtained are reliable and useable for this assessment.

The results of the assessment of laboratory QA/QC are shown in Appendix V. Chain of Custody is provided in Appendix IV.

6. RESULTS

The following table presents the calculations of the Maximum concentration detected, Average concentration detected, and where appropriate (if adequate sample numbers are available) arithmetic average contaminant concentration of only those analytes that returned unacceptable test results. A 95% UCL implies that there is a 95% probability that the true arithmetic average contaminant concentration within the sampling area will not exceed the value determined by this method.

For the site to be considered uncontaminated, the typical minimum requirement is that the 95% upper confidence limit of the arithmetic average concentration of the contaminants is less than the acceptable limit. Highlighted results indicate breaches of HILs or EILs.

6.1 Health Investigation Levels and Ecological Investigation Levels (EILs)

Table 4 and 5 below provides a comparative analysis of the soil sampling results, weighed against acceptable limits for HILs – HIL B High Density Residential.

The laboratory reports are presented in Appendix IV. The results have been assessed against the NEPM Guidelines, adopted for this investigation.

Table 4. Summary of soil sample results from site investigation

Analyte	NSW DEC Health-based Investigation Levels, HIL B (mg/kg)	Ecological Screening Level – urban residential and public open space	Maximum concentration detected (mg/kg)	Average concentration detected (mg/kg)	95% UCL	Acceptability
Metals and inorganics						
Arsenic	500	N/A	29	12.5	N/A	Acceptable
Cadmium	150	N/A	N/D	N/D	N/A	Acceptable
Chromium (IV)	500	N/A	31	23	N/A	Acceptable
Copper	30,000	N/A	64	42.2	N/A	Acceptable
Lead	1200	N/A	125	105	N/A	Acceptable
Mercury	120	N/A	0.4	0.27	N/A	Acceptable
Nickel	1200	N/A	18	12.4	N/A	Acceptable
Zinc	60,000	N/A	256	41.6	N/A	Acceptable
Total Petroleum Hydrocarbons (TPH)						
TPH C6-C10	4200	120	37	14.5	N/A	Acceptable
TPH C10-C16	3800	180	620	145	N/A	Acceptable
TPH C16-C34	3800	1300	2230	510	N/A	Acceptable
TPH C34-C40	3800	5600	620	204	N/A	Acceptable
C10-C40 Fraction (sum)	15600	7200	3470	759	N/A	Acceptable
BTEX						
Benzene	1.2	65	ND	ND	N/A	Acceptable
Toulene	1600	105	ND	ND	N/A	Acceptable
Ethylbenzene	420	125	ND	ND	N/A	Acceptable
Xylenes (total)	280	105	ND	ND	N/A	Acceptable
Polyaromatic Hydrocarbons (PAHs)						
Benzo(a)pyrene	4	1.4	1.2	1.2	N/A	Acceptable
"Carcinogenic PAHs (as BaP TEQ)"	4	N/A	1.2	1.2	N/A	Acceptable
Total PAH	400	N/A	ND	ND	N/A	Acceptable
Dieldrin	10	N/A	ND	ND	N/A	Acceptable
Chlordane	90	N/A	ND	ND	N/A	Acceptable

Table 4. Continued...

Analyte	NSW DEC Health-based Investigation Levels, HIL D (mg/kg)	Ecological Screening Level Commercial and Industrial	Maximum concentration detected (mg/kg)	Average concentration detected (mg/kg)	95% UCL	Acceptability
Organochlorine Pesticides (OCPS)						
Aldrin	10	N/A	ND	ND	N/A	Acceptable
DDT+DDD+DDE	600	N/A	ND	ND	N/A	Acceptable
Endosulfan	400	N/A	ND	ND	N/A	Acceptable
Chlorpyrifos	340	N/A	ND	ND	N/A	Acceptable
Heptachlor	10	N/A	ND	ND	N/A	Acceptable
Hexachlorobenzene (HCB)	15	N/A	0.12	0.07	N/A	Acceptable
Organophosphate pesticides (OPPs)						
Chlorpyrifos Methyl	N/A	N/A	ND	ND	N/A	Acceptable
Diazinon	N/A	N/A	ND	ND	N/A	Acceptable
Fenchlorphos	N/A	N/A	ND	ND	N/A	Acceptable
Methyl Parathion	N/A	N/A	ND	ND	N/A	Acceptable
Prophos	N/A	N/A	ND	ND	N/A	Acceptable
Tributylphosphorothioate	N/A	N/A	ND	ND	N/A	Acceptable
Polychlorinated Hydrocarbons (PCBs)						
PCBs (Total)	1	N/A	ND	ND	N/A	Acceptable

ND = Non Detect

N/A = Not Applicable

6.2 Asbestos

Asbestos was not detected within any of the soil samples collected across the site.

The buildings onsite may potentially contain asbestos related materials within them. Any asbestos identified is to be removed prior to or during demolition phase ensuring that any asbestos removal is undertaken by a suitably qualified asbestos removalist and a clearance certificate issued by a suitable qualified occupational hygienist.

Table. 6: Summary of results from site inspection

Sample ID	Presence/Non-Presence	Types of Asbestos
		Chrysotile (Ch), Amosite (Am), Crocidolite (Cr)
ASB1	Not Present	
ASB2	Not Present	
ASB3	Not Present	
ASB4	Not Present	
ASB5	Not Present	
ASB6	Not Present	

7. DISCUSSION

7.1 Field Observations

During the course of the field investigations no asbestos debris was observed on the soil surface or within soil samples. No visible or olfactory signs of hydrocarbon staining was noted during the detailed site investigation. The inspection did not identify any odour onsite which would suggest contamination. Vegetation in general did not exhibit signs of stress

7.2 Soil Chemical analysis - Health Investigation Levels (HILs) & Health Screening Levels (HSLs)

All areas required for the contamination assessment for full suite analysis indicated chemical concentrations below the relevant health Investigation levels. These results indicate that those areas identified as having the potential for contamination were determined to be acceptable chemically. The results returning acceptable concentrations for the proposed land use within areas of concern which had been identified. It appears that the site from a chemical analysis is appropriate for the proposed land use.

7.3 Asbestos

Asbestos was not detected within any of the soil samples collected across the site.

The dilapidated buildings onsite may potentially contain asbestos related materials within them. Any asbestos identified is to be removed prior to or during demolition phase ensuring that any asbestos removal is undertaken by a suitably qualified asbestos removalist and a clearance certificate issued by a suitable qualified occupational hygienist.

7.4 Ecological Screening Levels (ESLs)

Analysis of Site Specific Ecological Screening Levels, across the site recorded two (2) exceedances of the Ecological Screening Levels (EILs). TPH C10-C16 and TPH C16 – C34. The same sample exceeded the threshold.

8. CONCLUSIONS

EnviroTech Pty. Ltd. has been engaged by the client to undertake a Targeted Phase 2 Contamination Assessment for the site of the proposed development in line with the scope detailed in section 1.3 of the body of this report.

Soil sample results were compared to the Health Investigation Levels (HILs) Guidelines and Ecological Screening Levels (ESLs) for standard residential allotments (NEPM 2013). Chemically the results meet the criteria of the Health Investigation Limits for all of the analysed contaminants across the site. Asbestos was not detected within any of the soil samples collected across the site.

In relation to the area of investigation this area is deemed suitable for the proposed development.

It is noted however that this investigation only sampled 28% of the recommended sampling guidelines. These results are therefore only an indicative investigation into the potential contamination within soils on the site.

It is recommended that a further 16 boreholes be sampled once demolition has occurred. This would finalize the 100% requirement of sampling density across the site and would provide a complete contamination status of the site.

9 REFERENCES

- *Assessment of Site Contamination, National Environment Protection Measure, 2013 amendment.*
- Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
- Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances*
- *Guidelines for the Assessment and Management of Groundwater Contamination, NSW DEC, 2007.*
- *Guidelines for Assessing Service Stations, NSW EPA, 1994*
- *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, 2000.*
- *Guidelines for the NSW Site Auditor Scheme, NSW DEC (NSW DECC), Second Edition, April 2006.*
- *Sampling Design Guidelines - NSW EPA, 1995.*
- *Waste Classification Guidelines - Part 1: Classifying Waste, NSW OEH, December 2009*

10 LIMITATIONS

The information contained within this report have been prepared exclusively for the client. Envirotech has carried out the investigation with a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. This report is to be read in its entirety including attachments and appendixes and should not read in individual sections.

A third party should not rely upon the information prior to making an assessment that the scope of work conducted meets their specific needs. Envirotech cannot be held liable for third party reliance on this document.

The sub-surface environment can vary greatly across an individual site. The conclusions presented in this report are based on limited investigation of conditions at specific sampling locations chosen to be as representative as possible under the given circumstances. However, it is possible that this investigation may not have encountered all areas of contamination at the site due to the limited sampling and testing program undertaken.

Envirotech's professional opinions are based upon its professional judgment, experience, training and results from analytical data. In some cases further testing and analysis may be required, thus producing different results and/or opinions. ADE has limited its investigation to the scope agreed upon with its client.

APPENDIX I – HEALTH INVESTIGATION LEVELS (HILs)

Table 5 Health Investigation Levels (HILs) for Soil Contaminants

Chemical	Health-based investigation levels (mg/kg)			
	Residential ¹ A	Residential ¹ B	Recreational ¹ C	Commercial/ industrial ¹ D
Metals and Inorganics				
Arsenic ²	100	500	300	3 000
Beryllium	60	90	90	500
Boron	4500	40 000	20 000	300 000
Cadmium	20	150	90	900
Chromium (VI)	100	500	300	3600
Cobalt	100	600	300	4000
Copper	6000	30 000	17 000	240 000
Lead ³	300	1200	600	1 500
Manganese	3800	14 000	19 000	60 000
Mercury (inorganic) ⁵	40	120	80	730
Methyl mercury ⁴	10	30	13	180
Nickel	400	1200	1200	6 000
Selenium	200	2033	700	10 000
Zinc	7400	60 000	30 000	400 000
Cyanide (free)	250	300	240	1 500
Polycyclic Aromatic Hydrocarbons (PAHs)				
Carcinogenic PAHs (as BaP TEQ) ⁶	3	4	3	40
Total PAHs ⁷	300	400	300	4000
Phenols				
Phenol	3000	45 000	40 000	240 000
Pentachlorophenol	100	130	120	660
Cresols	400	4 700	4 000	25 000
Organochlorine Pesticides				
DDT+DDE+DDD	240	600	400	3600
Aldrin and dieldrin	6	10	10	45
Chlordane	50	90	70	530
Endosulfan	270	400	340	2000
Endrin	10	20	20	100
Heptachlor	6	10	10	50
HCB	10	15	10	80
Methoxychlor	300	500	400	2500
Mirex	10	20	20	100
Toxaphene	20	30	30	160
Herbicides				
2,4,5-T	600	900	800	5000
2,4-D	900	1600	1300	9000
MCPA	600	900	800	5000
MCPB	600	900	800	5000
Mecoprop	600	900	800	5000
Picloram	4500	6600	5700	35000

Chemical	Health-based investigation levels (mg/kg)			
	Residential ¹ A	Residential ¹ B	Recreational ¹ C	Commercial/ industrial ¹ D
Other Pesticides				
Atrazine	320	470	400	2500
Chlorpyrifos	160	340	250	2000
Bifenthrin	600	840	730	4500
Other Organics				
PCBs ⁸	1	1	1	7
PBDE Flame Retardants (Br1–Br9)	1	2	2	10

Table 5: HSLs direct soil contact (mg/kg).

Chemical	HSL A (low density residential)	HSL B (high density residential)	HSL C (recreational)	HSL D (commercial/ industrial)
Toluene	14,000	21,000	18,000	99,000.
Ethylbenzene	4,500	5,900	5,300	27,000
Xylenes	12,000	17,000	15,000	81,000
Naphthalene	1,400	2,200	1,900	11,000
Benzene	100	140	120	430
C6-C10	4,400	5,600	5,100	26,000
>C10-C16	3,300	4,200	3,800	20,000
>C16-C34	4,500	5,800	5,300	27,000
>C34-C40	6,300	8,100	7,400	38,000

APPENDIX II – ANALYTICAL RESULTS

CERTIFICATE OF ANALYSIS

Work Order	: ES1538018	Page	: 1 of 17
Client	: ENVIROTECH P/L	Laboratory	: Environmental Division Sydney
Contact	: MR SIMON DOBERER	Contact	:
Address	: PO BOX 3086	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	EAST BLAXLAND NSW, AUSTRALIA 2774		
E-mail	: simon@envirotech.com.au	E-mail	:
Telephone	: +61 02 47399232	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47392421	Facsimile	: +61-2-8784 8500
Project	: NORTH TERRACE,BANKSTOWN	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 271615	Date Samples Received	: 04-Dec-2015 13:50
C-O-C number	: ----	Date Analysis Commenced	: 07-Dec-2015
Sampler	: SIMON DOBERER	Issue Date	: 11-Dec-2015 15:56
Site	: ----		
Quote number	: ----	No. of samples received	: 12
		No. of samples analysed	: 12

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Inorganics
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.

- EP068: Positive result has been confirmed by re-extraction and re-analysis.
- EA200 'Am' Amosite (brown 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: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- 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), Dibenzo(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.
- 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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit		ES1538018-001	ES1538018-002	ES1538018-003	ES1538018-004	ES1538018-005
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		5.6	13.1	6.0	6.6	8.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	----	----
Asbestos Type	1332-21-4	-	--		----	----	----	----	----
Sample weight (dry)	----	0.01	g		----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	15	7	29	8
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		24	31	19	26	17
Copper	7440-50-8	5	mg/kg		31	64	36	61	35
Lead	7439-92-1	5	mg/kg		125	133	77	115	89
Nickel	7440-02-0	2	mg/kg		18	14	10	12	9
Zinc	7440-66-6	5	mg/kg		145	256	123	220	125
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	0.4	0.3	0.4	0.2
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	0.12	<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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP1	TP2	TP3	TP4	TP5
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-001	ES1538018-002	ES1538018-003	ES1538018-004	ES1538018-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
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	72-54-8/72-55-9/50-2	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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP1	TP2	TP3	TP4	TP5
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-001	ES1538018-002	ES1538018-003	ES1538018-004	ES1538018-005
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
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
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
Benzo(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	205-99-2 205-82-3	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	60	<50
C15 - C28 Fraction	----	100	mg/kg	<100	170	<100	2170	<100



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit		ES1538018-001	ES1538018-002	ES1538018-003	ES1538018-004	ES1538018-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C29 - C36 Fraction	----	100	mg/kg		<100	160	<100	1000	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	330	<50	3230	<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	----	50	mg/kg		<50	<50	<50	620	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	230	110	2230	140
>C34 - C40 Fraction	----	100	mg/kg		<100	130	<100	620	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	360	110	3470	140
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	620	<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
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	%		80.0	83.0	74.0	60.0	78.0
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		109	96.4	103	92.3	101
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		104	118	109	60.3	62.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		106	108	113	108	111
2-Chlorophenol-D4	93951-73-6	0.5	%		110	98.0	97.5	92.8	102
2,4,6-Tribromophenol	118-79-6	0.5	%		97.6	102	104	115	109
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		105	96.9	98.8	93.4	100
Anthracene-d10	1719-06-8	0.5	%		124	115	118	113	120



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit		ES1538018-001	ES1538018-002	ES1538018-003	ES1538018-004	ES1538018-005
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		108	85.5	87.6	84.1	88.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		105	94.3	86.8	101	82.4
Toluene-D8	2037-26-5	0.2	%		90.0	117	106	122	81.7
4-Bromofluorobenzene	460-00-4	0.2	%		107	128	117	130	111



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP6	ASB1	ASB2	ASB3	ASB4
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-006	ES1538018-007	ES1538018-008	ES1538018-009	ES1538018-010
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	8.9	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	No	No
Asbestos Type	1332-21-4	-	--	----	-	-	-	-
Sample weight (dry)	----	0.01	g	----	471	481	440	283
APPROVED IDENTIFIER:	----	-	--	----	G.MORGAN	G.MORGAN	G.MORGAN	G.MORGAN
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	21	----	----	----	----
Copper	7440-50-8	5	mg/kg	26	----	----	----	----
Lead	7439-92-1	5	mg/kg	91	----	----	----	----
Nickel	7440-02-0	2	mg/kg	11	----	----	----	----
Zinc	7440-66-6	5	mg/kg	114	----	----	----	----
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	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP6	ASB1	ASB2	ASB3	ASB4
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-006	ES1538018-007	ES1538018-008	ES1538018-009	ES1538018-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ 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	72-54-8/72-55-9/50-2	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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP6	ASB1	ASB2	ASB3	ASB4
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-006	ES1538018-007	ES1538018-008	ES1538018-009	ES1538018-010
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----
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	----	----	----	----
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	----	----	----	----
Benzo(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	205-99-2 205-82-3	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	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	17	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	130	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit		ES1538018-006	ES1538018-007	ES1538018-008	ES1538018-009	ES1538018-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C29 - C36 Fraction	----	100	mg/kg		210	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		340	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		37	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		37	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		250	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		170	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		420	----	----	----	----
^ >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	----	----	----	----
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	%		87.0	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		125	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		111	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		110	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		102	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		104	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.9	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		115	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP6	ASB1	ASB2	ASB3	ASB4
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]	[03-Dec-2015]
Compound	CAS Number	LOR	Unit	ES1538018-006	ES1538018-007	ES1538018-008	ES1538018-009	ES1538018-010
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.5	%	83.9	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	102	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	106	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	97.8	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ASB5	ASB6	----	----	----
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	----	----	----
Compound	CAS Number	LOR	Unit		ES1538018-011	ES1538018-012	-----	-----	-----
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		----	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	----	----	----
Asbestos Type	1332-21-4	-	--		-	-	----	----	----
Sample weight (dry)	----	0.01	g		300	290	----	----	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	G.MORGAN	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		----	----	----	----	----
Chromium	7440-47-3	2	mg/kg		----	----	----	----	----
Copper	7440-50-8	5	mg/kg		----	----	----	----	----
Lead	7439-92-1	5	mg/kg		----	----	----	----	----
Nickel	7440-02-0	2	mg/kg		----	----	----	----	----
Zinc	7440-66-6	5	mg/kg		----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				ASB5	ASB6	----	----	----
Client sampling date / time				[03-Dec-2015]	[03-Dec-2015]	----	----	----
Compound	CAS Number	LOR	Unit	ES1538018-011	ES1538018-012	-----	-----	-----
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ASB5	ASB6	----	----	----
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	----	----	----
Compound	CAS Number	LOR	Unit		ES1538018-011	ES1538018-012	-----	-----	-----
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ASB5	ASB6	----	----	----
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	----	----	----
Compound	CAS Number	LOR	Unit		ES1538018-011	ES1538018-012	-----	-----	-----
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ASB5	ASB6	----	----	----
Client sampling date / time					[03-Dec-2015]	[03-Dec-2015]	----	----	----
Compound	CAS Number	LOR	Unit		ES1538018-011	ES1538018-012	-----	-----	-----
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	----

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 Soils		
EA200: Description	ASB1 - [03-Dec-2015]	Mid brown sandy soil.
EA200: Description	ASB2 - [03-Dec-2015]	Mid brown sandy soil.
EA200: Description	ASB3 - [03-Dec-2015]	Mid brown sandy soil.
EA200: Description	ASB4 - [03-Dec-2015]	Mid brown sandy soil.
EA200: Description	ASB5 - [03-Dec-2015]	Mid brown sandy soil.
EA200: Description	ASB6 - [03-Dec-2015]	Mid brown sandy soil.

APPENDIX III – LABORATORY QA/QC



CHAIN OF CUSTODY

ALS Laboratory

DADELAIDE 21 Burna Road Pecarrie SA 5095
Ph: 08 6599 0060 E: adelaide@alsglobal.com
CBRISBANE 32 Strand Street Stairford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
DGLADSTONE 46 Callomoon Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

DMACKAY 78 Hartwood Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
DIELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 8600 E: samples.melbourne@alsglobal.com
DMLDGE 27 Syd Hwy Road Mulgeen NSW 2860
Ph: 02 6372 6735 E: mudgee@alsglobal.com

DNEWCASTLE 5 Rose Gum Road Warneck NSW 2304
Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
DNOOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: norwa@alsglobal.com
DPERTH 10 Hod Way Madding WA 6000
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

DSYDNEY 277-299 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8655 E: samples.sydney@alsglobal.com
DTOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4706 0600 E: townsville.environmental@alsglobal.com
DWOLLONGONG 99 Kerry Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portlenabe@alsglobal.com

CLIENT: Enviroch Pty Ltd

OFFICE: Baxling

PROJECT: Northcote, Bankstown

ORDER NUMBER: 271615

PROJECT MANAGER: Simon Dobber

SAMPLER: Simon Dobber

COC emailed to: YES / NO

Email Reports to (will default to PM if no other addresses are listed): simon@envirotech.com.au

Email Invoice to (will default to PM if no other addresses are listed):

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:

CONTACT PH: 0247 399232

SAMPLER MOBILE:

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

FOR LABORATORY USE ONLY (Circle)

Custom Seal intact?

Free for / frozen / or present upon receipt?

Random Sample Temperature on Receipt:

Other comment:

RECEIVED BY:

DATE/TIME:

SAMPLE DETAILS

CONTAINER INFORMATION

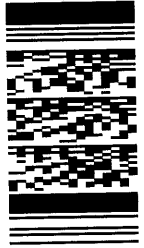
ANALYSIS REQUIRED INCLUDING SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (codes below)	REFER TO	TOTAL CONTAINERS	ANALYSIS REQUIRED	Asbestos (Non-Presence/Presence)	Additional Information
1	TP1	3/12/2015	S			1	S - 19	/	
2	TP2	3/12/2015	S			1	/	/	
3	TP3	3/12/2015	S			1	/	/	
4	TP4	3/12/2015	S			1	/	/	
5	TP5	3/12/2015	S			1	/	/	
6	TP6	3/12/2015	S			1	/	/	
7	ASB1	3/12/2015	S			1	/	/	
8	ASB2	3/12/2015	S			1	/	/	
9	ASB3	3/12/2015	S			1	/	/	
10	ASB4	3/12/2015	S			1	/	/	
11	ASB5	3/12/2015	S			1	/	/	
12	ASB6	3/12/2015	S			1	/	/	
TOTAL						12			

Telephone: +61-2-8784 8655



Environmental Division
Sydney
Work Order Reference
ES1538018

Organised by / Date: 3/12/2015
Relinquished by / Date: 3/12/2015
Comments / Container: WFO No: 12

Water Containers Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORG = Nitric Preserved ORG; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved Plastic; H = HCl Preserved Plastic; HS = HCl Preserved Speculation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass.
V = VOA Via H-C Preserved; VB = VOA Via Sodium Bisulphate Preserved; VS = VOA Via Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speculation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass.
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1538018	Page	: 1 of 5
Client	: ENVIROTECH P/L	Laboratory	: Environmental Division Sydney
Contact	: MR SIMON DOBERER	Telephone	: +61-2-8784 8555
Project	: NORTH TERRACE,BANKSTOWN	Date Samples Received	: 04-Dec-2015
Site	: ----	Issue Date	: 11-Dec-2015
Sampler	: SIMON DOBERER	No. of samples received	: 12
Order number	: 271615	No. of samples analysed	: 12

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.

- **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

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



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	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) TP1, TP3, TP5,	TP2, TP4, TP6	03-Dec-2015	----	----	----	08-Dec-2015	17-Dec-2015	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Soil Glass Jar - Unpreserved (EA200) ASB1, ASB3, ASB5,	ASB2, ASB4, ASB6	03-Dec-2015	----	----	----	09-Dec-2015	31-May-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) TP1, TP3, TP5,	TP2, TP4, TP6	03-Dec-2015	08-Dec-2015	31-May-2016	✓	08-Dec-2015	31-May-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) TP1, TP3, TP5,	TP2, TP4, TP6	03-Dec-2015	08-Dec-2015	31-Dec-2015	✓	09-Dec-2015	31-Dec-2015	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) TP1, TP3, TP5,	TP2, TP4, TP6	03-Dec-2015	07-Dec-2015	17-Dec-2015	✓	08-Dec-2015	16-Jan-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) TP1, TP3, TP5,	TP2, TP4, TP6	03-Dec-2015	07-Dec-2015	17-Dec-2015	✓	08-Dec-2015	16-Jan-2016	✓

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
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)		03-Dec-2015	07-Dec-2015	17-Dec-2015	✓	08-Dec-2015	16-Jan-2016	✓
TP1,	TP2,							
TP3,	TP4,							
TP5,	TP6							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))		03-Dec-2015	07-Dec-2015	17-Dec-2015	✓	08-Dec-2015	16-Jan-2016	✓
TP1,	TP2,							
TP3,	TP4,							
TP5,	TP6							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)		03-Dec-2015	07-Dec-2015	17-Dec-2015	✓	08-Dec-2015	17-Dec-2015	✓
TP1,	TP2,							
TP3,	TP4,							
TP5,	TP6							



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(were) 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	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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	In-house. 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 Soils	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	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. 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	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(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 SnCl ₂ 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.
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, Na ₂ SO ₄ 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.

QUALITY CONTROL REPORT

Work Order	: ES1538018	Page	: 1 of 13
Client	: ENVIROTECH P/L	Laboratory	: Environmental Division Sydney
Contact	: MR SIMON DOBERER	Contact	:
Address	: PO BOX 3086	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	EAST BLAXLAND NSW, AUSTRALIA 2774		
E-mail	: simon@envirotech.com.au	E-mail	:
Telephone	: +61 02 47399232	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47392421	Facsimile	: +61-2-8784 8500
Project	: NORTH TERRACE,BANKSTOWN	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 271615	Date Samples Received	: 04-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 07-Dec-2015
Sampler	: SIMON DOBERER	Issue Date	: 11-Dec-2015
Site	: ----	No. of samples received	: 12
Quote number	: ----	No. of samples analysed	: 12

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Inorganics
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: 302598)									
ES1538018-001	TP1	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	5.6	6.2	10.4	No Limit
ES1538051-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.1	16.8	2.20	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 302195)									
ES1537950-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	10	16.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	17.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	5	59.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	19	10	64.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	51	44	15.0	0% - 50%
ES1538018-002	TP2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	31	30	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	15	8.91	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	15	14	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	64	58	9.82	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	133	124	7.07	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	256	257	0.426	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 302196)									
ES1537950-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1538018-002	TP2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.4	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 301327)									
ES1538018-001	TP1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 301326)									
ES1538032-007	Anonymous	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



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 (%)		
EP068A: Organochlorine Pesticides (OC) (QC Lot: 301326) - continued											
ES1538032-007	Anonymous	EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		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		
ES1538018-001	TP1	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		
		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: 301326)									
		ES1538032-007	Anonymous	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		



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 (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 301326) - continued									
ES1538032-007	Anonymous	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
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
ES1538018-001	TP1	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
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075(SIM)A: Phenolic Compounds (QC Lot: 301325)							
ES1538032-007	Anonymous	EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



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 (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 301325) - continued									
ES1538032-007	Anonymous	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
ES1538018-001	TP1	EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 301325)									
ES1538032-007	Anonymous	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
			205-82-3						
		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
		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
ES1538018-001	TP1	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



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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 301325) - continued									
ES1538018-001	TP1	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	205-99-2 205-82-3	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
		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: 301316)									
ES1538018-001	TP1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EW1512850-025	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 301324)									
ES1538032-007	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	110	100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1538018-001	TP1	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: 301316)									
ES1538018-001	TP1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EW1512850-025	Anonymous	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: 301324)									
ES1538032-007	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	150	150	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1538018-001	TP1	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	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 301316)									
ES1538018-001	TP1	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

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 Work Order : ES1538018
 Client : ENVIROTECH P/L
 Project : NORTH TERRACE,BANKSTOWN



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 (%)
EP080: BTEXN (QC Lot: 301316) - continued									
ES1538018-001	TP1	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
EW1512850-025	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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

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.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Recovery Limits (%)	
Result	Concentration	LCS	Low	High
<5	21.7 mg/kg	117	86	126
<1	4.64 mg/kg	105	83	113
<2	43.9 mg/kg	95.3	76	128
<5	32 mg/kg	116	86	120
<5	40 mg/kg	108	80	114
<2	55 mg/kg	109	87	123
<5	60.8 mg/kg	115	80	122
<0.1	2.57 mg/kg	79.9	70	105
<0.1	1 mg/kg	98.0	62	126
<0.05	0.5 mg/kg	108	69	121
<0.05	0.5 mg/kg	108	67	115
<0.2	0.5 mg/kg	100	66	120
<0.05	0.5 mg/kg	107	69	115
<0.05	0.5 mg/kg	103	69	113
<0.05	0.5 mg/kg	107	66	116
<0.05	0.5 mg/kg	96.3	67	119
<0.05	0.5 mg/kg	107	69	115
<0.05	0.5 mg/kg	102	64	116
<0.05	0.5 mg/kg	109	65	117
<0.05	0.5 mg/kg	107	66	116
<0.05	0.5 mg/kg	106	62	124
<0.05	0.5 mg/kg	106	67	123
<0.05	0.5 mg/kg	97.9	56	120
<0.05	0.5 mg/kg	107	64	122
<0.05	0.5 mg/kg	81.9	68	116
<0.05	0.5 mg/kg	99.7	67	115
<0.05	0.5 mg/kg	102	62	118
<0.05	0.5 mg/kg	97.3	65	117
<0.2	0.5 mg/kg	99.6	54	130
<0.05	0.5 mg/kg	105	63	117



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 301326) - continued								
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	80.6	41	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	106	66	118
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	105	65	127
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	69	121
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	106	76	118
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	105	72	120
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	62	128
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	70	120
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	59	119
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	107	67	119
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	104	68	120
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	68	124
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	107	69	117
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	107	68	122
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	82.6	54	126
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	64	122
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	103	68	120
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	116
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	109	62	112
EP075(SIM)A: Phenolic Compounds (QCLot: 301325)								
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	78.2	60	114
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	70.1	54	114
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	90.6	66	120
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	68	126
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	88.2	70	120
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	97.0	72	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	92.1	71	123
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	75.9	54	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	94.5	67	127
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	90.5	70	116
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	42.0	10	57
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	93.5	71	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 301325)								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	103	73	127
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	96.4	72	124
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	102	77	127
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.7	69	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	100	70	126



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 301325) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	96.9	68	116
	205-82-3							
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	102	63	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	103	74	126
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	104	75	127
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	102	62	118
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	101	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	99.2	72	126
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	102	61	121
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	101	77	125
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	104	75	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	104	74	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 301316)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.4	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 301324)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	101	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	115	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	106	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 301316)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	92.2	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 301324)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	110	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	116	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	95.8	63	131
EP080: BTEXN (QCLot: 301316)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.9	62	116
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	79.2	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.4	66	118
	106-42-3							
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	98.4	63	119
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.4	68	120
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	80.1	67	121

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

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 Work Order : ES1538018
 Client : ENVIROTECH P/L
 Project : NORTH TERRACE,BANKSTOWN



Sub-Matrix: **SOIL**

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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 301324) - continued							
ES1538018-001	TP1	EP071: C10 - C14 Fraction	----	523 mg/kg	86.8	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	102	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	119	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 301316)							
ES1538018-001	TP1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	119	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 301324)							
ES1538018-001	TP1	EP071: >C10 - C16 Fraction	----	860 mg/kg	90.4	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	111	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	110	52	132
EP080: BTEXN (QCLot: 301316)							
ES1538018-001	TP1	EP080: Benzene	71-43-2	2.5 mg/kg	84.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.8	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	96.0	70	130
			106-42-3				
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.2	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	82.3	70	130

APPENDIX IV – SAMPLING PLAN



×1

Area of Investigation

×2

×3

Area of Investigation

×4

×5

×6