ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

JOSHUA FARKASH & ASSOCIATES PTY LTD

ON

STAGE 2 ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

AT

PART OF 5 RYNAN AVENUE, EDMONDSON PARK, NSW 2174

23 April 2015 **Ref: E27532KGrpt2**

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EXECUTIVE SUMMARY

EIS have undertaken a preliminary Stage 1 desktop environmental site assessment (Stage 1 ESA) for the Lot 1 in DP774700. The report (Ref: E27532KGrpt dated 8 July 2014) recommended undertaking a Stage 2 ESA for the site. EIS understand that the proposed development includes demolition of existing infrastructure and construction of 2 and 5 storey residential flats with basement car parking facilities.

The proposed development area confined to the eastern one-third of Lot 1 in DP774700. We understand development of the remaining two-third of the Lot is restricted.

The assessment objectives are to assess the potential for widespread site contamination, assess the potential risk the contamination may pose to the site receptors, provide a preliminary waste classification for the off-site disposal of soil and comment on the suitability of the site for the proposed development.

The site is located in a predominantly residential area of Edmondson Park. The site is bounded by Rynan Avenue to the east and Camden Valley Way to the north. The Cabramatta Creek was located to the immediate west of the site. The site is located in slightly undulating topography that generally falls towards Cabramatta Creek which is located approximately 50m west of the site.

The overall topography of the site is generally flat. Drilling works for this Stage 2 ESA and inspection of the site was undertaken on 1 April 2015. At the time of the inspection, the site was occupied by a rural residential property. A large two storey brick residential building with a swimming pool was located at the south corner of the site. A fibre-cement cottage was located at the north corner of the site. A number of small sheds were located near the fibre-cement cottage. Construction material including scaffolding were stored at the western section of the site.

Soil samples were obtained on 1 April 2015 in accordance with the standard sampling procedure (SSP) attached in the appendices. Due to access restrictions and inaccessibility to the existing buildings and other infrastructure samples for this investigation were obtained from 11 sampling points as shown on the attached Figure 2. This density is approximately 79% of the minimum sampling density recommended by the EPA. One temporary groundwater monitoring stand pipe was installed in a borehole.

All the samples were analysed by the NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013.
The assessment identified the following:

- Zinc was encountered in two surface soil samples above the EIL. We understand that the surface soil across the site will be removed during the proposed construction/development works and the impacted soil also will be removed from the site. Furthermore the elevations were limited to two samples of the 22 analysed. Therefore the potential risk of zinc having an adverse impact on the ecology receptors at the site is considered to be very low;
- A marginally elevated concentration of copper was encountered in the groundwater sample. EIS are of the opinion that the marginal elevation of copper in groundwater is a background concentration rather than site specific issue as no significant elevation of copper were encountered in any of the soil samples;
- All other results for soil and groundwater were below the relevant SAC adopted for this assessment; and
- EIS consider the risk posed by the AEC to the receptors to be relatively low.

The assessment has identified the following data gaps:

- Areas beneath the existing buildings have not been included in the assessment; and
- The presence of hazardous building materials in the existing buildings has not been assessed.

Based on the scope of work undertaken, EIS are of the opinion that the AEC identified in the CSM pose relatively low risk to the site receptors. The site is considered to be suitable for the proposed residential development provided that:

- A hazardous building material survey is undertaken of the existing buildings prior to demolition; and
- A contingency plan is developed to manage any unexpected finds of asbestos containing materials.

Isolated occurrence of asbestos containing materials are often associated with rural properties. In the event unexpected conditions are encountered during development work or between sampling locations that may pose a contamination risk, all works should stop and an environmental consultant should be engaged to inspect the site and address the issue.

In the event unexpected conditions are encountered during development work or between sampling locations that may pose a contamination risk, all works should stop and an environmental consultant should be engaged to inspect the site and address the issue.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

TABLE OF CONTENTS

ABBREVIATIONS

Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Asbestos Health Screening Levels	**ASL**
Acid Sulfate Soil	**ASS**
Above Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene	**BTEXN**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Construction Management Plan	**CMP**
Chain of Custody	**COC**
Contaminant of Primary Concern	**CoPC**
Conceptual Site Model	**CSM**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Assessment Criteria	**EAC**
Ecological Investigation Levels	**EILs**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environmental Protection Agency	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragments	**FCF**
General Approvals of Immobilisation	**GAI**
General Solid Waste	**GSW**
Health Investigation Level	**HILs**
Hardness Modified Trigger Values	**HMTV**
Health Screening Level	**HSLs**
International Organisation of Standardisation	**ISO**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Local Government Authority	**LGA**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**

ABBREVIATIONS

Potential Contaminants of Concern	**PCC**
Photo-ionisation Detector	**PID**
Practical Quantitation Limit	**PQL**
Preliminary Site Investigation	**PSI**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Restricted Solid Waste	**RSW**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Semi-Volatile Organic Compounds	**sVOC**
Standard Sampling Procedure	**SSP**
Standard Water Level	**SWL**
Standard Sampling Procedure	**SSP**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
Volatile Organic Chlorinated Compound	**VOCC**
Workplace, Health and Safety	**WHS**

1 INTRODUCTION

Joshua Farkash & Associates Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS)[1] to undertake a Stage 2 Environmental Site Assessment (Stage 2 ESA) for the proposed residential development at part of 5 Rynan Avenue, Edmondson Park.

The site location is shown on Figure 1 and the assessment was confined to the proposed development area as shown on Figure 2. The proposed development area is referred to as 'the site' in this report. The site is identified as part of Lot 1 in DP774700.

1.1 Background

EIS have undertaken a preliminary Stage 1 desktop environmental site assessment (Stage 1 ESA) for the Lot 1 in DP774700. The report (Ref: E27532KGrpt dated 8 July 2014) recommended undertaking a Stage 2 ESA for the site.

EIS understand that the proposed development includes demolition of existing infrastructure and construction of 2 and 5 storey residential flats with basement car parking facilities. The proposed development area confined to the eastern one-third of Lot 1 in DP774700. We understand development of the remaining two-third of the Lot is restricted.

1.2 Objectives

The assessment objectives are to:

- Assess the potential for widespread site contamination;
- Assess the potential risk the contamination may pose to the site receptors;
- Provide a preliminary waste classification for the off-site disposal of soil; and
- Comment on the suitability of the site for the proposed development.

1.3 Scope of Work

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP8754KG) of 24 February 2015 and written acceptance from the client of 26 March 2015.

The scope of work included the following:

- Preparation of a Preliminary Conceptual Site Model (PCSM);
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment;
- Undertake a Tier 1 Risk Assessment and review of CSM; and
- Preparation of a report presenting the results of the assessment.

[1] Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

The report was prepared with reference to regulations/guidelines outlined in the table below. Individual guidelines are also referenced within the text of the report.

Table 1-1: Guidelines

Guidelines/Regulations
Contaminated Land Management Act 1997[2]
State Environmental Planning Policy No.55 – Remediation of Land 1998[3]
Guidelines for Consultants Reporting on Contaminated Sites 2011[4]
Guidelines for the NSW Site Auditor Scheme, 2nd Edition 2006[5]
National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended 2013[6]

2 SITE INFORMATION

2.1 Site Identification

Table 2-1: Site Identification

Site Address:	5 Rynan Avenue, Edmondson Park, NSW
Lot & Deposited Plan:	Part of Lot 1 in DP774700
Current Land Use:	Rural Residential
Proposed Land Use:	Residential (high density)
Local Government Authority (LGA):	Liverpool
Area of Proposed Development (m^2) (approximately):	5,625
RL (AHD in m) (approx.):	45
Geographical Location (MGA) (approx.):	N: 33^0 57' 07 E: 150^0 50' 57
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.2 Site Location and Regional Setting

The site is located in a predominantly residential area of Edmondson Park. The site is bounded by Rynan Avenue to the east and Camden Valley Way to the north. The Cabramatta Creek was located to the immediate west of the site.

[2] NSW Government Legislation, (1997), *Contaminated Land Management Act 1997.* (referred to as CLM Act 1997)

[3] NSW Government, (1998), *State Environmental Planning Policy No. 55 – Remediation of Land.* (referred to as SEPP55)

[4] NSW Office of Environment and Heritage (OEH), (2011), *Guidelines for Consultants Reporting on Contaminated Sites.* (referred to as Reporting Guidelines 2011)

[5] NSW DEC, (2006), *Guidelines for the NSW Site Auditor Scheme, 2nd ed.* (referred to as Site Auditor Guidelines 2006)

[6] National Environment Protection Council (NEPC), (2013), *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

2.3 Topography

The site is located in slightly undulating topography that generally falls towards Cabramatta Creek which is located approximately 50m west of the site. The overall topography of the site is generally flat.

2.4 Site Inspection

Drilling works for this Stage 2 ESA and inspection of the site was undertaken on 1 April 2015. At the time of the inspection, the site was occupied by a rural residential property. A large two storey brick residential building with a swimming pool was located at the south corner of the site. A fibre-cement cottage was located at the north corner of the site. A number of small sheds were located near the fibre-cement cottage. Construction material including scaffolding were stored at the western section of the site.

2.5 Surrounding Land Use

The immediate surrounds included the following landuses:
North – Residential properties and a school beyond the Camden Valley Way;
South – Rural residential properties;
East – Rural residential properties and new residential subdivisions beyond Rynan Avenue; and
West – Rural residential property.

2.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment. A brief summary of the relevant information is present below:
Table 2-2: Summary of Services

Service	Location	Contaminant Migratory Pathway
Sewer	The "Sydney Water" plan indicates that a sewer extends through the west section of the site in a north to approximately south direction.	The backfill around the sewer could act as a potential migratory pathway.
Electrical	The "WestLink M7" plans indicate that an electrical cable extends through the middle section of the site in north to approximately south direction.	The backfill around the cable-conduits could act as a potential migratory pathway.

2.7 Regional Geology

A review of the regional geological map of Penrith (1991[7]) indicates that the site is underlain by Hawkesbury Sandstone, which typically consists of medium to coarse grained quartz sandstone with minor shale and laminite lenses.

[7] Department of Mineral Resources, (1991), *1:100,000 Geological Map of Penrith (Series 9030).*

3 CONCEPTUAL SITE MODEL (CSM)

The AEC identified below are based on a review of the site and site history information outlined in Stage 1 ESA report. The AEC can either be a point source or widespread areas impacted by current or historical activities.

Table 3-1: CSM

AEC / Extent	PCC/CoPC	Potential Exposure Pathway and Media	Potential Receptors
Fill Material – Entire Site The site appears to have been historically filled to achieve existing levels. The fill may have been imported from various sources and can contain elevated concentrations of contaminants.	Heavy metals, TRH, BTEXN, PAHs, OCPs, OPPs, PCB, and asbestos	Direct Contact – dermal contact; ingestion; and inhalation of dust, vapours and fibres. Media - soil, groundwater and vapour.	Human Receptors – Site occupants; visitors; development and maintenance workers; and off-site occupants. Environmental Receptors – Flora and fauna at the site and immediate surrounds and receiving water body (Cabramatta Creek).
Use of Pesticides – The site has been used as a market garden prior to 1961 and for other agricultural purposes such as sheep farming until the recent past. The use of pesticides could have resulted in potential contamination.	Heavy metals, OCPs, and OPPs	Direct Contact – dermal contact; ingestion; and inhalation of dust. Media – soil and groundwater.	Human Receptors – As Above Environmental Receptors – As Above
Hazardous Building Material – The buildings on the site have been constructed prior to 1990's. Hazardous building materials were used for construction purposes during this period. The material can pose a potential contamination source during demolition/development.	Asbestos, lead and PCBs	Direct Contact – dermal contact; ingestion; and inhalation of dust and fibres. Media – soil and air.	Human Receptors – As Above Environmental Receptors – As Above

4 SAMPLING, ANALYSIS AND QUALITY PLAN

4.1 Data Quality Objectives (DQO)

The NEPM 2013 defines the DQO process as a seven step iterative planning tool used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of the site.

The DQO process is detailed in the US EPA document *Guidance on systematic planning using the data quality process (2006[8])* and the NSW DEC document *The Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006[9])*.

These seven steps are applicable to this assessment as summarised in the table below:

Table 4-1: DQOs – Seven Steps

Step	Input
State the Problem	The CSM has identified AEC at the site which may pose a risk to the site receptors. An intrusive investigation is required to assess the risk and comment on the suitability of the site for the proposed development or intended landuse.
Identify the Decisions/ Goal of the Study	The data collection is project specific and has been designed based on the following information: • Review of available site information; • AEC, PCC, receptors, pathways and medium identified in the CSM; • Development of Site Assessment Criteria (SAC) for each media; and • The use of decision statements outlined below: 1) Statistical analysis will be used to assess the laboratory data against the SAC. The following criteria will be adopted: ➢ The 95% Upper Confidence Limit (UCL) value of the arithmetic mean concentration of each contaminant should be less than the SAC; ➢ The standard deviation (SD) of the results must be less than 50% of the SAC; and ➢ No single value exceeds 250% of the relevant SAC. 2) Statistical calculations will not be undertaken if all results are below the SAC; and 3) Statistical calculations will not be undertaken on the following: ➢ Health Screening Levels (HSLs) – elevated point source contamination associated with petroleum hydrocarbons can pose a vapour risk to receptors; ➢ Groundwater Investigation Levels (GILs) – elevated GILs can indicate a wider groundwater contamination risk.

[8] US EPA, (2006), *Guidance on Systematic Planning using the Data Quality Objectives Process.* (referred to as US EPA 2006)
[9] NSW DEC, (2006), *Guidelines for the NSW Site Auditor Scheme, 2nd ed.* (referred to as Site Auditor Guidelines 2006)

Step	Input
Identify Information Inputs	The following information will be collected: • Soil samples based on subsurface conditions; • Groundwater samples (if encountered) from a temporary monitoring well; • Fibre Cement Fragments (FCF) in the vicinity of the sampling points (if encountered); • The SAC will be designed based on the criteria outlined in NEPM 2013. Other criteria will be used as required and detailed in this report; • The SAC will be designed based on the criteria outlined in NEPM 2013. Other criteria will be used as required and detailed in this report; • The samples will be analysed in accordance with the analytical methods outlined in NEPM 2013; • Field screening information (i.e. PID data, presence of hydrocarbons etc.) will be taken into consideration in selecting the analytical schedule; and • Any additional information that may arise during the field work will also be used as data inputs.
Define the Study Boundary	The sampling will be confined to the site boundaries (proposed development area) as shown in Figure 2.
Develop the analytical approach (or decision rule)	The following acceptable limits will be adopted for the data quality assessment: • The following acceptance criteria will be used to assess the RPD results: ➢ results > 10 times the practical quantitation limit (PQL), RPDs < 50% are acceptable; ➢ results between 5 and 10 times PQL, RPDs < 75% are acceptable; ➢ results < 5 times PQL, RPDs < 100% are acceptable; and ➢ An explanation is provided if RPD results are outside the acceptance criteria. • Acceptable concentrations in Trip Blanks (TB) and Field Rinsate (FR) sample. Non-compliance to be documented in the report; • The following acceptance criteria will be used to assess the laboratory QA/QC results. Non-compliance to be documented: ➢ <u>RPDs</u>: - Results that are < 5 times the PQL, any RPD is acceptable; and - Results > 5 times the PQL, RPDs between 0-50% are acceptable; ➢ <u>LCS recovery and matrix spikes</u>: - 70-130% recovery acceptable for metals and inorganics; - 60-140% recovery acceptable for organics; and - 10-140% recovery acceptable for VOCs; ➢ <u>Surrogate spike recovery</u>: - 60-140% recovery acceptable for general organics; and - 10-140% recovery acceptable for VOCs; ➢ <u>Blanks</u>: All less than PQL.
Specify the performance or acceptance criteria	NEPM 2013 defines decision errors as '*incorrect decisions caused by using data which is not representative of site conditions'*. This can arise from errors during sampling or analytical testing. A combination of these errors is referred to as '*total study error*'. The study error can be managed through the correct choice of sample design and measurement.

Step	Input
	Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. In this case, for example, the PCC identified in the CSM is considered to pose a risk to receptors unless proven not to. The null hypothesis has been adopted for this assessment.
Optimise the design for obtaining data	The most resource-effective design will be used in an optimum manner to achieve the assessment objectives.

4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this assessment is outlined in the table below:

Table 4-2: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	The NSW EPA Contaminated Sites Sampling Design Guidelines (1995[10]) recommend a sampling density for an environmental assessment based on the size of the investigation area. The guideline provides a minimum number of sampling points required for the investigation on a systematic sampling pattern. The guidelines recommend sampling from a minimum of 14 evenly spaced sampling points for this site with an area of approximately 5,625m^2. Due to access restrictions and inaccessibility to the existing buildings and other infrastructure samples for this investigation were obtained from 11 sampling points as shown on the attached Figure 2. This density is approximately 79% of the minimum sampling density recommended by the EPA.
Sampling Plan	The sampling locations were placed on a systematic plan with a grid spacing of approximately 30m between sampling location. A systematic plan was considered suitable to address potential contaminants associated with the fill material.
Exclusion Areas (Data Gaps)	Sampling was not undertaken in inaccessible areas of the site such as beneath existing buildings and swimming pool area. These areas have been excluded from the investigation.

[10] NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
Sampling Equipment	Soil samples were obtained on 1 April 2015 in accordance with the standard sampling procedure (SSP) attached in the appendices. In-situ sampling locations were cleared for underground services by an external contractor prior to sampling as outlined in the SSP. The sample locations were drilled using the following equipment as shown on the borehole logs attached in the appendices: • A four-wheel-drive (4wd) mounted hydraulically push tube rig. Soil samples were obtained from disposable polyethylene push tube samplers; and • Using hand tools at one location that was not accessible with the drill rig.
Sampling Collection and Field QA/QC	Soil samples were collected from the fill and natural profiles based on field observations. The sampling depths are shown on the logs attached in the appendices. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. Sampling personnel used disposable nitrile gloves during sampling activities. The samples were labelled with the job number, sampling location, sampling depth and date in accordance with the SSP.
Field PID Screening for VOCs	A portable Photoionisation Detector (PID) was used to screen the samples for the presence of VOCs and to assist with selection of samples for hydrocarbon analysis. The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. Some compounds give relatively high readings and some can be undetectable even though present in identical concentrations. The portable PID is best used semi-quantitatively to compare samples contaminated by the same hydrocarbon source. The PID is calibrated before use by measurement of an isobutylene standard gas. All the PID measurements are quoted as parts per million (ppm) isobutylene equivalents. PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases.
Decontami-nation and Sample Preservation	Decontamination of soil sampling equipment was not applicable as the samples were obtained directly from single use polyethylene sleaves of the push tubes. Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with the SSP. On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

4.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 4-3: Groundwater Sampling Plan and Methodology

Aspect	Input
Well Installation	One temporary groundwater monitoring stand pipe (a well) was installed in a borehole (BH2). A 3m of machine slotted PVC and 1m of casing were inserted in the borehole to keep it open. The installation depth was designed to make an assessment of shallow perched groundwater conditions. The standpipe was removed and the borehole backfilled with soil cuttings after the sampling.
Well Development	The well was developed on the day of the installation (1 Apr 2015) using a dedicated disposable PVC bailer. The well was dry after approximately 3 well volumes had been removed.
Groundwater Sampling	The well was allowed to recharge for approximately 7 days after development. A groundwater grab sample was obtained on 7 April 2015 using a dedicated disposable PVC bailer. Prior to sampling the standing water level (SWL) was measured using an electronic dip meter. A duplicate sample was obtained by alternate filling of sample containers. This technique was adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc.
Decontaminant and Sample Preservation	The decontamination procedure adopted during sampling is outlined in the SSP attached in the appendices. A rinsate sample from the bailer was obtained after sampling as part of the field QA/QC. The samples were preserved in accordance with water sampling requirements detailed in NEPM 2013 and placed in an insulated container with ice in accordance with the SSP. On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

4.4 Analytical Schedule

The analytical schedule is outlined in the following table:

Table 4-4: Analytical Schedule

PCC	Fill Samples	Natural Soil Samples	Groundwater Samples
Heavy Metals	11	11	1
TRH/BTEXN	11	11	1
PAHs	11	11	1
OCPs/OPPs	11	0	0
PCBs	11	0	0
Asbestos	11	0	0
pH/EC/hardness	Na	Na	1

4.4.1 Laboratory Analysis

The samples were analysed by the NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 4-5: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks and field rinsate sample)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	126167

5 SITE ASSESSMENT CRITERIA (SAC)

The SAC adopted for the assessment is outlined in the table below. The SAC has been derived from the NEPM 2013 and other guidelines as applicable. The guideline values for individual contaminants are presented in the attached report tables.

Table 5-1: SAC Adopted for this Investigation

Guideline	Applicability
Health Investigation Levels (HILs) (NEPM 2013)	The HIL-A criteria for 'residential with accessible soil' have been adopted for this assessment.
Health Screening Levels (HSLs) (NEPM 2013)	The HSL-A criteria for 'residential with accessible soil' have been adopted for this assessment.

Guideline	Applicability
Ecological Assessment Criteria (EAC) (NEPM 2013)	A preliminary screening of ecological risk has been undertaken based on the limited information available at this stage. The EAC criteria for 'urban residential and public open space (URPOS)' exposure setting have been adopted. Soil parameters: pH; cation exchange capacity (CEC); and clay content have not been analysed for the assessment. On this basis, the EIL and ESL calculations have taken the 'worst case' scenario in order to generate the EAC.
Asbestos in Soil	The 'presence/absence' of asbestos in soil has been adopted as the assessment criterion for the Preliminary Site Investigation (PSI).
Waste Classification (WC) Criteria	The criteria outlined in the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014[11]) has been adopted to classify the material for off-site disposal.
Groundwater Investigation Levels (GILs)	The NSW Department of Environment and Conservation (now EPA) Guidelines for the Assessment and Management of Groundwater Contamination (2007[12]) require an assessment of environmental values including: **1. <u>Aquatic Ecosystems:</u>** The closest receiving water body in the vicinity of the site is Cabramatta Creek. This water body predominantly sustains a freshwater ecosystem. Hence the freshwater water trigger values presented in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000[13]) have been adopted for the assessment (referred to as GIL-ANZECC-Fresh). The NSW EPA promotes the use of trigger values for the protection of 95% of aquatic ecosystems, except where the contaminants have the potential to bio-accumulate, in which case the 99% trigger values are recommended. The 95% trigger values have been adopted for this assessment. Where necessary, the low reliability trigger values are quoted. **2. <u>Health Risk in Non-use Scenarios</u>:** Health risks in non-use scenarios are usually associated with the presence of vapours associated with volatile contaminants. The HSL-A for 'residential with accessible soil' have been adopted for this investigation.

[11] NSW EPA, (2014), *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

[12] NSW DEC (2007), *Guidelines for the Assessment and Management of Groundwater Contamination* (referred to as Groundwater Guidelines 2011)

[13] ANZECC, (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* (referred to as ANZECC 2000)

6 INVESTIGATION RESULTS

6.1 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the table below. Reference should be made to the borehole logs attached in the appendices for further details.

Table 6-1: Summary of Subsurface Conditions

Profile	Description (m in bgl)
Fill	Fill material was encountered at the surface in all boreholes and extended to depths of approximately 0.2m to 0.5m. The fill typically comprised of silty clay with inclusions of root fibres. Traces of ash fragments were encountered in the fill in two boreholes (BH1 and BH4).
Natural Soil	Natural clay was encountered in all boreholes beneath the fill and extended to the maximum depth of investigation (4.6m)
Bedrock	Bedrock was not encountered in any of the boreholes.
Groundwater	Groundwater seepage was encountered in the deeper borehole (BH2) during the drilling. Groundwater seepage was not encountered in the other boreholes, all of wich remained dry on completion of drilling and a short time after.

6.2 Field Screening

A summary of the field screening results are presented in the table below.

Table 6-2: Summary of Field Screening

Aspect	Details (m in bgl)
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in the report tables attached in the appendices. All results were 0 ppm equivalent isobutylene which indicates a lack of PID detectable VOCs.
Groundwater Depth	Groundwater seepage was encountered in boreholes BH2 during drilling at a depth of approximately 3.5mbgl. A standing water level (SWL) was measured in boreholes BH2 at a depth of 3.0mbgl a short time after completion of drilling. The remaining boreholes were dry during and a short time after completion of drilling. The SWL measured in the monitoring well was 2.205mbgl seven days after the installation. This indicates that excavation for the proposed basement may intercept groundwater.
LNAPLs petroleum hydrocarbons	Free phase LNAPLs was not observed in the groundwater sample.

6.3 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 6-3: Summary of Soil Laboratory Results

<table>
<tr><th>Analyte</th><th>Results Compared to SAC</th></tr>
<tr><td>Heavy Metals</td><td><u>HILs:</u>
All heavy metal results were below the HIL-A criteria.
<u>EILs:</u>
Elevated concentrations of individual metals were encountered above the EIL-URPOS criteria as outlined below:
<table>
<tr><th>Analyte</th><th>Sample/Depth</th><th>Description</th><th>EIL</th><th>Concentration</th></tr>
<tr><td>Zinc</td><td>BH4/0-0.2m</td><td>Fill-Clay</td><td>115</td><td>650</td></tr>
<tr><td>Zinc</td><td>BH8/0-0.2m</td><td>Fill-Clay</td><td>115</td><td>120</td></tr>
</table>
<u>WC:</u>
All heavy metal results were less than the CT1 and SCC1 criteria.</td></tr>
<tr><td>TRH</td><td><u>HSLs:</u>
All TRH results were below the HSL-A criteria.
<u>ESLs:</u>
All TRH results were below the ESL-URPOS criteria.
<u>WC:</u>
All TRH results were less than the relevant CT1 and SCC1 criteria.</td></tr>
<tr><td>BTEXN</td><td><u>HSLs:</u>
All BTEXN results were below the HSL-A criteria.
<u>ESLs:</u>
All BTEXN results were below the ESL-URPOS criteria.
<u>WC:</u>
All BTEX results were less than the relevant CT1 and SCC1 criteria.</td></tr>
<tr><td>PAHs</td><td><u>HILs:</u>
All PAH results were below the HIL-A criteria.
<u>HSLs:</u>
All naphthalene results were below the HSL-A criteria.
<u>ESLs:</u>
All benzo(a)pyrene results were below the ESL-URPOS criteria,
<u>EILs:</u>
All naphthalene results were below the EIL-URPOS criteria.
<u>WC:</u>
All PAH and benzo(a)pyrene results were less than the relevant CT1 and SCC1 criteria.</td></tr>
</table>

Analyte	Results Compared to SAC
OCPs & OPPs	**HILs:** All OCP and OPP results were below the HIL-A criteria. **EILs:** All DDT results were below the EIL-URPOS criteria. **WC:** All OCP and OPP results were less than the relevant CT1 and SCC1 criteria.
PCBs	**HILs:** All PCB results were below the HIL-A criterion. **WC:** All PCB results were less than the SCC1 criterion.
Asbestos	Asbestos was not detected in the samples analysed for the investigation.

6.4 Groundwater Laboratory Results

The groundwater laboratory results are presented in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 6-4: Summary of Groundwater Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**GIL-ANZECC-Fresh:** Copper was encountered in the groundwater sample at a concentration on 2µg/L marginally above the GIL of 1.4µg/L. The remaining heavy metal results were all below the GIL-ANZECC criteria.
TRH & BTEXN	**GIL-ANZECC-Fresh:** All BTEXN results were below the GIL-ANZECC criteria. **HSLs:** TRH and BTEXN results were below the GIL-HSL-A criteria.
PAHs	**GIL-ANZECC-Fresh:** PAH results were below the GIL-ANZECC criteria. **HSLs:** Naphthalene result was below the GIL-HSL-A criterion.
Other Parameters	The results for pH, EC, TDS and hardness are summarised below: • pH was 7.6; • EC was 5,800µS/cm; and • Hardness was 600$CaCO_3$/L.

7 DATA QUALITY ASSESSMENT

As part of the data quality assessment the following data quality indicators (DQIs) were assessed: precision, accuracy, representativeness, completeness and comparability as outlined in the table below. Reference should be made to the appendices for an explanation of the individual DQI.

Table 7-1: Assessment of DQIs

Completeness

Field Considerations:

- The investigation was designed to target the AEC identified at the site. A systematic sampling plan was adopted based on the AEC as outlined in the report;
- Samples were obtained from various depths based on the subsurface conditions encountered at the sampling locations. All samples were recorded on the borehole logs. All sampling points are shown on the attached Figure 2; and
- The investigation was undertaken by trained staff in accordance with the SSP.

Laboratory Considerations:

- Selected samples were analysed for a ranged of PCC.
- All samples were analysed by NATA registered laboratory in accordance with the analytical methods outlined in NEPM 2013;
- Appropriate analytical methods and PQLs were used by the laboratory;
- Appropriate sample preservation, handling, holding time and COC procedures were adopted for the investigation.

Comparability

Field Considerations:

- The investigation was undertaken by trained staff in accordance with the SSP;
- Consistency was maintained during sampling in accordance with the SSP.

Laboratory Considerations:

- All samples were analysed in accordance with the analytical methods outlined in NEPM 2013;
- Appropriate PQLs were used by the laboratory for all analysis;
- All primary, intra-laboratory duplicate QA/QC samples were analysed by the same laboratory; and
- The same units were used by the laboratory for all of the analysis.

Representativeness

Field Considerations:

- The investigation was designed to obtain appropriate media encountered during the field work. Dust and/or vapour sampling was outside the scope of this assessment; and
- All media based on the subsurface conditions encountered during the field work was sampled.

Laboratory Considerations:

- All samples were analysed in accordance with the SAQP.

Precision

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- Analysis of field QA/QC samples including intra-laboratory duplicates, trip blanks (TB) and field rinsate (FR) as outlined below;
- The field QA/QC frequency adopted for the investigation is outlined below;
- Calculation of the Relative Percentage Difference (RPD) from the primary and duplicate results (the RPD calculation equation is outlined in the attached appendices);
- Assessment of RPD results against the acceptance criteria outlined in **Section 4.1.**

Intra-laboratory RPD Results:

Soil Samples at a frequency of 4.5% of the primary samples:

- Dup-1 is a soil duplicate of primary sample BH1 (0-0.2m)

Groundwater Samples at a frequency of 100% of the primary samples:

- Dup-2 is a groundwater duplicate of primary sample GW1

The intra-laboratory results are presented in the attached report tables. The results indicated that field precision was acceptable.

Field Rinsate (FR):

One FR sample obtained from the field equipment decontamination process were analysed for BTEXN. The results are presented in the attached report tables. The results were below the PQL which indicates that cross-contamination artefacts associated with sampling equipment was not present.

Trip Blank (TB):

One soil and one groundwater TB were analysed for BTEX. The results are presented in the attached report tables. The results were all less than the PQLs.

Accuracy

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- The analytical quality assessment adopted by the laboratory was in accordance with the NATA and NEPM 2013 requirements as outlined in the analytical report;
- A review of the report indicates that the analytical results were generally within the acceptance criteria adopted by the laboratory.

8 WASTE CLASSIFICATION OF SOIL FOR OFF-SITE DISPOSAL

The waste classification of soil for off-site disposal is summarised in the following table:

Table 8-1: Waste Classification

Material Type	Classification	Disposal Option
Fill material over the majority of the site	General Solid Waste (non-putrescible) (GSW)	A NSW EPA landfill licensed to receive the waste stream. The landfill should be contacted to obtain the required approvals prior to commencement of excavation.
Natural silty clay soil and shale/sandstone bedrock	Virgin excavated natural material (VENM)	VENM is considered suitable for re-use on-site, or alternatively, the information included in this report may be used to assess whether the material is suitable for beneficial reuse at another site as fill material. Alternatively, the natural material can be disposed of as VENM to a facility licensed by the NSW EPA to receive the waste stream.

9 TIER 1 RISK ASSESSMENT AND REVIEW OF CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

The assessment identified the following:

- Zinc was encountered in two surface soil samples above the EIL. We understand that the surface soil across the site will be removed during the proposed construction/development works and the impacted soil also will be removed from the site. Furthermore the elevations were limited to two samples of the 22 analysed. Therefore the potential risk of zinc having an adverse impact on the ecology receptors at the site is considered to be very low;
- A marginally elevated concentration of copper was encountered in the groundwater sample. EIS are of the opinion that the marginal elevation of copper in groundwater is a background concentration rather than site specific issue as no significant elevation of copper were encountered in any of the soil samples;

- All other results for soil and groundwater were below the relevant SAC adopted for this assessment; and
- EIS consider the risk posed by the AEC to the receptors to be relatively low.

9.1 Data Gaps

The assessment has identified the following data gaps:

- Areas beneath the existing buildings have not been included in the assessment; and
- The presence of hazardous building materials in the existing buildings has not been assessed.

10 CONCLUSION

EIS consider that the report objectives outlined in **Section 1.2** have been addressed. Based on the scope of work undertaken, EIS are of the opinion that the AEC identified in the CSM pose relatively low risk to the site receptors.

The site is considered to be suitable for the proposed residential development provided that:

- A hazardous building material survey is undertaken of the existing buildings prior to demolition; and
- A contingency plan is developed to manage any unexpected finds of asbestos containing materials.

Isolated occurrence of asbestos containing materials are often associated with rural properties. In the event unexpected conditions are encountered during development work or between sampling locations that may pose a contamination risk, all works should stop and an environmental consultant should be engaged to inspect the site and address the issue.

11 LIMITATIONS

The report limitations are outlined below:

- EIS accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the EIS proposal; and terms of contract between EIS and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual

observations of the site and immediate surrounds and documents reviewed as described in the report;

- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated in the report;
- EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- EIS have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. EIS should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

LIST OF IN-TEXT TABLES

IMPORTANT INFORMATION ABOUT THIS REPORT

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations
Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

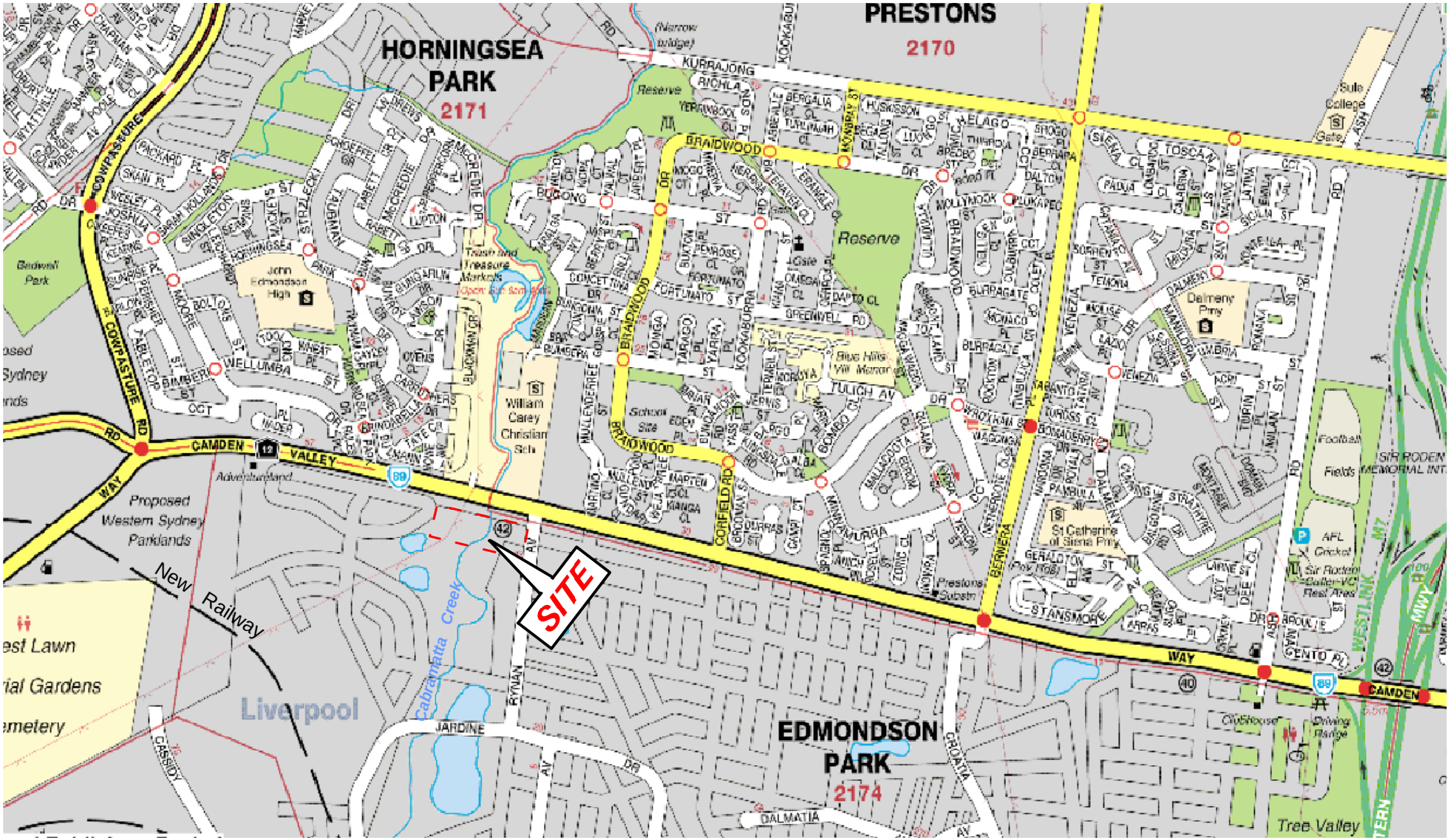
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

REPORT FIGURES



NOTES:
Figure 1 has been recreated from UBD on disc (version 5.0). Figure is not to scale.

Reference should be made to the report text for a full understanding of this plan.

ENVIRONMENTAL INVESTIGATION SERVICES	Project Number: E27532KG	Title: **Site Location Plan**
	Figure: 1	Address: **5 Rynan Avenue Edmondson Park, NSW**

N

LEGEND:

- Approximate site boundary
- BH1 (0.5m) — Borehole Location (Fill Depth)

NOTES:
Figure 2 has been recreated from SixMaps

The borehole locations presented on this plan have been established from site measurements only and should not be construed as survey points.

Reference should be made to the report text for a full understanding of this plan.

Approximate Scale (m): 0 6 12 18 24 30

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E27532KG	Borehole Location Plan
Figure: 2	Address: 5 Rynan Avenue Edmondson Park, NSW 2174

LABORATORY SUMMARY TABLES

TABLE A
SOIL LABORATORY RESULTS COMPARED TO HILs
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI [2]	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P TEQ [3]	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC) [1]			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0-0.2	Fill -Clay	LPQL	LPQL	17	45	27	LPQL	20	88	5.2	0.9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH1	0.4-0.6	Nat - Clay	6	LPQL	16	18	14	LPQL	8	34	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.2	Fill -Clay	7	LPQL	14	47	34	LPQL	6	76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH2	1.0-1.2	Nat - Clay	7	LPQL	12	18	19	LPQL	13	27	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0-02	Fill -Clay	6	LPQL	14	40	32	LPQL	6	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH3	0.6-0.8	Nat - Clay	5	LPQL	16	22	12	LPQL	9	18	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0-0.2	Fill -Clay	4	LPQL	16	37	34	LPQL	13	650	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH4	0.4-0.6	Nat - Clay	7	LPQL	18	21	15	LPQL	8	22	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH5	0-0.2	Fill -Clay	6	LPQL	14	25	22	LPQL	13	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH5	0.8-1.0	Nat - Clay	4	LPQL	11	18	12	LPQL	7	23	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0-0.2	Fill -Clay	9	LPQL	20	30	34	LPQL	8	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH6	0.4-0.6	Nat - Clay	6	LPQL	14	18	15	LPQL	5	19	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH7	0-0.2	Fill -Clay	5	LPQL	15	21	38	LPQL	6	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH7	1.0-1.2	Nat - Clay	LPQL	LPQL	11	17	12	LPQL	9	24	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0-0.2	Fill -Clay	5	0.4	25	30	68	0.2	19	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH8	0.5-0.7	Nat - Clay	6	LPQL	16	19	13	LPQL	9	24	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH9	0-0.2	Fill -Clay	6	0.4	18	30	46	0.7	9	110	LPQL	LPQL	LPQL	LPQL	LPQL	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH9	0.2-0..4	Nat - Clay	5	LPQL	15	11	14	LPQL	6	12	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH10	0-0.2	Fill -Clay	7	LPQL	15	26	34	LPQL	8	45	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH10	0.5-0.7	Nat - Clay	5	LPQL	16	24	15	LPQL	8	26	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH11	0-0.2	Fill -Clay	6	LPQL	15	28	34	LPQL	7	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH11	0.2-0.4	Nat - Clay	5	LPQL	12	25	16	LPQL	7	28	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			22	22	22	22	22	22	22	22	22	22	11	11	11	11	11	11	11	11	11	11
Maximum Value			9	0.4	25	47	68	0.7	20	650	5.2	0.9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

2 - The results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.

3 - B(a)P TEQ - Benzo(a)pyrene Toxicity Equivalence Quotient has been calculated based on 8 carcinogenic PAHs and their Toxic Equivalence Factors (TEFs) outlined in NEPM 2013

Concentration above the SAC **VALUE**

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
OPP: Organophosphorus Pesticides
OCP: Organochlorine Pesticides
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
HILs: Health Investigation Levels
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure

TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID [2]
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1	
HSL Land Use Category [1]					RESIDENTIAL WITH ACCESSIBLE SOIL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH1	0.4-0.6	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	1.0-1.2	Nat - Clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH3	0-02	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH3	0.6-0.8	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0.4-0.6	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0.8-1.0	Nat - Clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH6	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH6	0.4-0.6	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH7	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH7	1.0-1.2	Nat - Clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH8	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH8	0.5-0.7	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	0.2-0..4	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH10	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH10	0.5-0.7	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH11	0-0.2	Fill -Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH11	0.2-0.4	Nat - Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					22	22	22	22	22	22	22	22
Maximum Value					LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL

Explanation:
1 - Site Assessment Criteria (SAC): NEPM 2013
2 - Field PID values obtained during the investigation

Concentration above the SAC **VALUE**
The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

Abbreviations:

UCL: Upper Level Confidence Limit on Mean Value	NC: Not Calculated	PQL: Practical Quantitation Limit
HSLs: Health Screening Levels	NL: Not Limiting	LPQL: Less than PQL
NA: Not Analysed	SAC: Site Assessment Criteria	NEPM: National Environmental Protection Measure

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1
HSL Land Use Category [1]					RESIDENTIAL WITH ACCESSIBLE SOIL						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH1	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH1	0.4-0.6	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH2	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH2	1.0-1.2	Nat - Clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
BH3	0-02	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH3	0.6-0.8	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH4	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH4	0.4-0.6	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH5	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH5	0.8-1.0	Nat - Clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
BH6	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH6	0.4-0.6	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH7	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH7	1.0-1.2	Nat - Clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
BH8	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH8	0.5-0.7	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH9	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH9	0.2-0..4	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH10	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH10	0.5-0.7	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH11	0-0.2	Fill -Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH11	0.2-0.4	Nat - Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5

TABLE C
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES (2014)
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful [2]	Total Scheduled [3]		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	250	0.2	0.5	1	3	100
General Solid Waste CT1 [1]			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1 [1]			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2 [1]			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2 [1]			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH1	0-0.2	Fill -Clay	LPQL	LPQL	17	45	27	LPQL	20	88	5.2	0.62	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	250	250	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH1	0.4-0.6	Nat - Clay	6	LPQL	16	18	14	LPQL	8	34	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH2	0-0.2	Fill -Clay	7	LPQL	14	47	34	LPQL	6	76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH2	1.0-1.2	Nat - Clay	7	LPQL	12	18	19	LPQL	13	27	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH3	0-02	Fill -Clay	6	LPQL	14	40	32	LPQL	6	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH3	0.6-0.8	Nat - Clay	5	LPQL	16	22	12	LPQL	9	18	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH4	0-0.2	Fill -Clay	4	LPQL	16	37	34	LPQL	13	650	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH4	0.4-0.6	Nat - Clay	7	LPQL	18	21	15	LPQL	8	22	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH5	0-0.2	Fill -Clay	6	LPQL	14	25	22	LPQL	13	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH5	0.8-1.0	Nat - Clay	4	LPQL	11	18	12	LPQL	7	23	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH6	0-0.2	Fill -Clay	9	LPQL	20	30	34	LPQL	8	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH6	0.4-0.6	Nat - Clay	6	LPQL	14	18	15	LPQL	5	19	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH7	0-0.2	Fill -Clay	5	LPQL	15	21	38	LPQL	6	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH7	1.0-1.2	Nat - Clay	LPQL	LPQL	11	17	12	LPQL	9	24	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH8	0-0.2	Fill -Clay	5	0.4	25	30	68	0.2	19	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH8	0.5-0.7	Nat - Clay	6	LPQL	16	19	13	LPQL	9	24	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH9	0-0.2	Fill -Clay	6	0.4	18	30	46	0.7	9	110	LPQL	LPQL	LPQL	LPQL	LPQL	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH9	0.2-0..4	Nat - Clay	5	LPQL	15	11	14	LPQL	6	12	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH10	0-0.2	Fill -Clay	7	LPQL	15	26	34	LPQL	8	45	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH10	0.5-0.7	Nat - Clay	5	LPQL	16	24	15	LPQL	8	26	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH11	0-0.2	Fill -Clay	6	LPQL	15	28	34	LPQL	7	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH11	0.2-0.4	Nat - Clay	5	LPQL	12	25	16	LPQL	7	28	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
Total Number of samples			22	22	22	22	22	22	22	22	22	22	11	11	11	11	11	22	22	22	22	22	22	22	22	22	11
Maximum Value			9	0.4	25	47	68	0.7	20	650	5.2	0.62	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	250	250	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

[1] - NSW EPA Waste Classification Guidelines (2014)

[2] - Assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion

[3] - Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde

Concentration above the CT1 — VALUE
Concentration above SCC1 — VALUE
Concentration above the SCC2 — VALUE

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
PID: Photoionisation Detector
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
TRH: Total Recoverable Hydrocarbons
CT: Contaminant Threshold
SCC: Specific Contaminant Concentration
HILs: Health Investigation Levels
NEPM: National Environmental Protection Measure
BTEX: Monocyclic Aromatic Hydrocarbons

TABLE D

SUMMARY OF GROUNDAWATER LABORATORY RESULTS COMPARED TO GILs

All results in µg/L unless stated otherwise.

	PQL Envirolab Services	GIL - ANZECC 2000 [1] Fresh Waters	SAMPLE GW1 7/04/2015
Inorganic Compounds and Parameters			
pH	0.1	6.5 - 8.5[i]	7.6
Electrical Conductivity (µS/cm)	1	NSL	5,800
Hardness (mgCaCo3/L)	3	NSL	600
Metals			
Arsenic (As III)	1	24	LPQL
Cadmium	0.1	0.2	LPQL
Chromium (III)	1	3.3[a]	LPQL
Copper	1	1.4	**2**
Lead	1	3.4	LPQL
Total Mercury (inorganic)	0.05	0.06	LPQL
Nickel	1	11	LPQL
Zinc	1	8	13
Total Recoverable Hydrocarbons (TRH)			
C_6-C_{10} (F1)	25	NSL	LPQL
>C_{10}-C_{16} (F2)	50	NSL	LPQL
>C_{16}-C_{34} (F3)	100	NSL	LPQL
>C_{34}-C_{40} (F4)	100	NSL	LPQL
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)			
Benzene	1	950	LPQL
Toluene	1	180[a]	LPQL
Ethylbenzene	1	80[a]	LPQL
m+p-xylene	2	75[m]	LPQL
o-xylene	1	350[a]	LPQL
Total xylenes	2	NSL	LPQL
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	0.1	16[a]	LPQL
Acenaphthylene	0.1	NSL	LPQL
Acenaphthene	0.1	NSL	LPQL
Fluorene	0.1	NSL	LPQL
Phenanthrene	0.1	0.6[c]	LPQL
Anthracene	0.1	0.01[c]	LPQL
Fluoranthene	0.1	1[c]	LPQL
Pyrene	0.1	NSL	LPQL
Benzo(a)anthracene	0.1	NSL	LPQL
Chrysene	0.1	NSL	LPQL
Benzo(b,j+k)fluoranthene	0.2	NSL	LPQL
Benzo(a)pyrene	0.1	0.1[c]	LPQL
Indeno(1,2,3-c,d)pyrene	0.1	NSL	LPQL
Dibenzo(a,h)anthracene	0.1	NSL	LPQL
Benzo(g,h,i)perylene	0.1	NSL	LPQL

Explanation:

1 - ANZECC Australian Water Quality Guidelines for Fresh Waters (ANZECC 2000) - Trigger Values for protection of 95% of species

a - In the absence of a high reliability guideline concentration, the moderate or low reliability guideline concentration has been quoted

c - 99% trigger values adopted due to the potential for bioaccumulation effects

i - ANZECC 2000 - Level for NSW Lowland Rivers.

m - Guideline value adopted for m-Xylene. We note that the m-Xylene guideline value is 75ug/L and the p-Xylene guideline value is 200ug/L. However these two isomers cannot be distinguished analytically. Therefore EIS have adopted the more conservative guideline value

Concentration above the GIL VALUE

Abbreviations:

NA: Not Analysed

NSL: No Set Limit

GIL - Groundwater Investigation Levels

PQL: Practical Quantitation Limit

LPQL: Less than Practical Quantitation Limit

TABLE E
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	
PQL - Envirolab Services				10	50	1	1	1	3	1	PID [2]
Land Use Category [1]				**LOW DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
GW 1	2.205	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples				1	1	1	1	1	1	1	1
Maximum Value				LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL

Explanation:
1 - Groundwater Investigation Levels (GILs): NEPM 2013
2 - Field PID values obtained during the investigation

Concentration above the SAC — VALUE
Site specific assesment required — VALUE

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

Abbreviations:
UCL: Upper Level Confidence Limit on Mean Value
HSLs: Health Screening Levels
NA: Not Analysed
NC: Not Calculated
NL: Not Limiting
PQL: Practical Quantitation Limit
LPQL: Less than PQL
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure
SSA: Site Specific Assessment

HSL GROUNDWATER ASSESSMENT CRITERIA

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services				10	50	1	1	1	3	1
Land Use Category [1]				**LOW DENSITY RESIDENTIAL**						
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**							
GW 1	2.205	2m to <4m	Clay	NL	NL	5000	NL	NL	NL	NL

TABLE F
SOIL LABORATORY RESULTS COMPARED TO EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category [1]				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																
				AGED HEAVY METALS-EILs						EILs		ESLs								
				Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				NSL	10	8	NSL	5	45	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																	
BH1	0-0.2	Fill -Clay	Fine	LPQL	17	45	27	20	88	LPQL	LPQL	LPQL	LPQL	240	320	LPQL	LPQL	LPQL	LPQL	0.62
BH1	0.4-0.6	Nat - Clay	Fine	6	16	18	14	8	34	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH2	0-0.2	Fill -Clay	Fine	7	14	47	34	6	76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH2	1.0-1.2	Nat - Clay	Fine	7	12	18	19	13	27	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0-02	Fill -Clay	Fine	6	14	40	32	6	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0.6-0.8	Nat - Clay	Fine	5	16	22	12	9	18	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH4	0-0.2	Fill -Clay	Fine	4	16	37	34	13	650	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH4	0.4-0.6	Nat - Clay	Fine	7	18	21	15	8	22	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0-0.2	Fill -Clay	Fine	6	14	25	22	13	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0.8-1.0	Nat - Clay	Fine	4	11	18	12	7	23	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0-0.2	Fill -Clay	Fine	9	20	30	34	8	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH6	0.4-0.6	Nat - Clay	Fine	6	14	18	15	5	19	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH7	0-0.2	Fill -Clay	Fine	5	15	21	38	6	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH7	1.0-1.2	Nat - Clay	Fine	LPQL	11	17	12	9	24	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH8	0-0.2	Fill -Clay	Fine	5	25	30	68	19	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH8	0.5-0.7	Nat - Clay	Fine	6	16	19	13	9	24	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH9	0-0.2	Fill -Clay	Fine	6	18	30	46	9	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH9	0.2-0..4	Nat - Clay	Fine	5	15	11	14	6	12	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH10	0-0.2	Fill -Clay	Fine	7	15	26	34	8	45	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH10	0.5-0.7	Nat - Clay	Fine	5	16	24	15	8	26	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH11	0-0.2	Fill -Clay	Fine	6	15	28	34	7	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH11	0.2-0.4	Nat - Clay	Fine	5	12	25	16	7	28	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of Samples				22	22	22	22	22	22	22	11	22	22	22	22	22	22	22	22	22
Maximum Value				9	25	47	68	20	650	LPQL	LPQL	LPQL	LPQL	240	320	LPQL	LPQL	LPQL	LPQL	0.62

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013

2 - ABC Values for selected metals has been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for new suburbs with high traffic have been quoted)

Concentration above the SAC VALUE

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

Abbreviations:

EILs: Ecological Investigation Levels
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure
NC: Not Calculated
NSL: No Set Limit
ABC: Ambient Background Concentration

EIL AND ESL ASSESSMENT CRITERIA

Land Use Category [1]				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																
				AGED HEAVY METALS-EILs						EILs		ESLs								
				Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				NSL	10	8	NSL	5	45	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																	
BH1	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH1	0.4-0.6	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH2	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH2	1.0-1.2	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH3	0-02	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH3	0.6-0.8	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH4	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH4	0.4-0.6	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH5	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH5	0.8-1.0	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH6	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH6	0.4-0.6	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH7	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH7	1.0-1.2	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH8	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH8	0.5-0.7	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH9	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH9	0.2-0..4	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH10	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH10	0.5-0.7	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7
BH11	0-0.2	Fill -Clay	Fine	100	200	68	1100	35	115	710	180	180	120	1300	5600	60	105	125	45	0.7
BH11	0.2-0.4	Nat - Clay	Fine	100	200	68	1100	35	115	710	--	180	120	1300	5600	60	105	125	45	0.7

TABLE G
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH1 (0-0.2m)	Arsenic	4	LPQL	5	5.0	NC
Dup Ref = Dup 1	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	17	21	19	21
Envirolab Report: 126167	Copper	1	45	37	41	20
	Lead	1	27	44	36	48
	Mercury	0.1	LPQL	0.1	0.1	NC
	Nickel	1	20	23	22	14
	Zinc	1	88	96	92	9
	Naphthalene	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	0.2	0.2	0.2	0
	Anthracene	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.8	0.5	0.7	46
	Pyrene	0.1	0.8	0.5	0.7	46
	Benzo(a)anthracene	0.1	0.4	0.3	0.4	29
	Chrysene	0.1	0.4	0.3	0.4	29
	Benzo(b,j+k)fluoranthene	0.2	1	0.8	0.9	22
	Benzo(a)pyrene	0.05	0.62	0.5	0.6	21
	Indeno(123-cd)pyrene	0.1	0.5	0.4	0.5	22
	Dibenzo(ah)anthracene	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	0.4	0.4	0.4	0
	Benzo(a)pyrene TEQ	0.5	0.8	0.6	0.7	29
	TRH C_6-C_{10} (F1)	25	LPQL	LPQL	NC	NC
	TRH >C_{10}-C_{16} (F2)	50	LPQL	LPQL	NC	NC
	TRH >C_{16}-C_{34} (F3)	100	240	170	205	34
	TRH >C_{34}-C_{40} (F4)	100	320	190	255	51
	Benzene	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable

If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE H
GROUNDWATER INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in µg/L unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = GW 1	Arsenic	1	LPQL	LPQL	NC	NC
Dup Ref = Dup 2	Cadmium	0.1	LPQL	LPQL	NC	NC
	Chromium	1	LPQL	LPQL	NC	NC
Envirolab Report: 126167	Copper	1	2	2	2	0
	Lead	1	LPQL	LPQL	NC	NC
	Mercury	0.5	LPQL	LPQL	NC	NC
	Nickel	1	LPQL	LPQL	NC	NC
	Zinc	1	13	13	13	0
	Naphthalene	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	LPQL	LPQL	NC	NC
	Anthracene	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	LPQL	LPQL	NC	NC
	Pyrene	0.1	LPQL	LPQL	NC	NC
	Benzo(a)anthracene	0.1	LPQL	LPQL	NC	NC
	Chrysene	0.1	LPQL	LPQL	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	LPQL	LPQL	NC	NC
	Benzo(a)pyrene	0.1	LPQL	LPQL	NC	NC
	Indeno(123-cd)pyrene	0.1	LPQL	LPQL	NC	NC
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	LPQL	LPQL	NC	NC
	Benzo(a)pyrene TEQ	0.5	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	10	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	LPQL	LPQL	NC	NC
	TRH >C16-C34 (F3)	100	LPQL	LPQL	NC	NC
	TRH >C34-C40 (F4)	100	LPQL	LPQL	NC	NC
	Benzene	1	LPQL	LPQL	NC	NC
	Toluene	1	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable

If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE I

SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB1[S] 1/04/2015 126167	TB2[W] 1/04/2015 126167	FR[W] 1/04/2015 126167
	mg/kg	µg/L	mg/kg	µg/L	µg/L
Benzene	1	1	LPQL	LPQL	LPQL
Toluene	1	1	LPQL	LPQL	LPQL
Ethylbenzene	1	1	LPQL	LPQL	LPQL
m+p-xylene	2	2	LPQL	LPQL	LPQL
o-xylene	1	1	LPQL	LPQL	LPQL

Explanation:

[W] Sample type (water)

[S] Sample type (sand)

Values above PQLs/Acceptance criteria **VALUE**

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

NA: Not Analysed

NC: Not Calculated

TB: Trip Blank

TS: Trip Spike

RS: Rinsate Sample

TRH: Total Recoverable Hydrocarbons

Appendix A: Borehole Logs

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 1

1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	■					0			FILL: Silty gravelly clay, medium plasticity, brown grey, inclusions of ironstone gravel, sand and ash fragments.	MC>PL			
								CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC>PL			
	■					1							
						2			SILTY SANDY CLAY: low plasticity, brown.	MC>PL			
									END OF BOREHOLE AT 2.5m				
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 2 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Silty clay, medium plasticity, brown, with root fibres.	MC<PL			
								CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC<PL			
						1							
								CL	SILTY CLAY: medium to high plasticity, light brown mottled grey.	MC>PL			
▼ AFTER 7 DAYS						2							
▶						3			SILTY SANDY CLAY: low plasticity, brown.				
						4							
									END OF BOREHOLE AT 4.6m				PROBE REFUSAL ON ASSUMED SHALE BEDROCK TEMPORARY WELL INSTALLED
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 3

1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, medium plasticity, light brown, with root fibres.	MC<PL			
								CL-CH	SILTY CLAY: medium to high plasticity, grey brown.	MC≈PL			
	■					1		CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC>PL			
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 4

1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLET-ION						0			FILL: Silty gravelly clay, medium plasticity, with ash fragments.	MC<PL			
								CL-CH	SILTY CLAY: medium to high plasticity, orange brown mottled grey.	MC≈PL			
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 5

1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, high plasticity, brown and grey brown, trace of root fibres and ironstone gravel.	MC≈PL			
	■					1		CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC<PL			
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 6 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, high plasticity, brown and grey brown, trace of root fibres and ironstone gravel.	MC>PL			
	■							CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC≈PL			
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 7 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, medium to high plasticity, brown and grey brown, trace of root fibres.	MC>PL			
	■					1		CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC>PL			
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 8 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION						0			FILL: Silty gravelly clay, medium plasticity, grey brown, with ironstone and sandstone gravel, trace of root fibres.	MC<PL			
								CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC≈PL			
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 9 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, medium plasticity, light brown, with root fibres.	MC<PL			
								CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC≈PL			
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. **10** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0			FILL: Silty clay, medium plasticity, brown, with root fibres.	MC<PL			
								CH	SILTY CLAY: high plasticity, orange brown mottled grey.	MC≈PL			
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 11
1/1

Environmental logs are not to be used for geotechnical purposes

Client: JOSHUA FARKASH & ASSOCIATES PTY LTD

Project: ENVIRONMENTAL SITE ASSESSMENT

Location: 5 RYNAN AVENUE, EDMONDSON PARK, NSW

Job No. E27532KG **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 1-4-15 **Datum:**

Logged/Checked by: P.B./A.K.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■					0		CH	FILL: Silty clay, high plasticity, brown, with root fibres.	MC>PL			
									SILTY CLAY: high plasticity. brown mottled grey	MC>PL			
									END OF BOREHOLE AT 0.5m				
						1							
						2							
						3							
						4							
						5							
						6							
						7							

Appendix A: Laboratory Report & COC Documents

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CERTIFICATE OF ANALYSIS 126167

Client:
Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Para Bokalawela

Sample log in details:

Your Reference:	**E27532KG, Edmondson Park**
No. of samples:	4 waters 25 soils
Date samples received / completed instructions received	07/04/15 / 07/04/15

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

Report Details:

Date results requested by: / Issue Date:	14/04/15 / 13/04/15
Date of Preliminary Report:	Not Issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-1 BH1 0-0.2 01/04/2015 Soil	126167-2 BH1 0.4-0.6 01/04/2015 Soil	126167-3 BH2 0-0.2 01/04/2015 Soil	126167-4 BH2 1.0-1.2 01/04/2015 Soil	126167-5 BH3 0-02 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	94	106	105	107

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-6 BH3 0.6-0.8 01/04/2015 Soil	126167-7 BH4 0-0.2 01/04/2015 Soil	126167-8 BH4 0.4-0.6 01/04/2015 Soil	126167-9 BH5 0-0.2 01/04/2015 Soil	126167-10 BH5 0.8-1.0 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	105	105	104	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	126167-11	126167-12	126167-13	126167-14	126167-15
Your Reference	----------	BH6	BH6	BH7	BH7	BH8
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	108	104	105	103

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	126167-16	126167-17	126167-18	126167-19	126167-20
Your Reference	----------	BH8	BH9	BH9	BH10	BH10
Depth	----------	0.5-0.7	0-0.2	0.2-0..4	0-0.2	0.5-0.7
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	107	100	107	105	99

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-21 BH11 0-0.2 01/04/2015 Soil	126167-22 BH11 0.2-0.4 01/04/2015 Soil	126167-23 DUP1 - 01/04/2015 Soil	126167-24 TB1 - 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	107	102	104

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	126167-1	126167-2	126167-3	126167-4	126167-5
Your Reference	----------	BH1	BH1	BH2	BH2	BH3
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-02
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	250	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	240	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	320	<100	<100	<100	<100
Surrogate o-Terphenyl	%	87	84	74	88	88

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	126167-6	126167-7	126167-8	126167-9	126167-10
Your Reference	----------	BH3	BH4	BH4	BH5	BH5
Depth	----------	0.6-0.8	0-0.2	0.4-0.6	0-0.2	0.8-1.0
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	87	84	79	83	85

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	126167-11	126167-12	126167-13	126167-14	126167-15
Your Reference	----------	BH6	BH6	BH7	BH7	BH8
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10}-C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34}-C_{40}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	79	81	79	82	79

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	126167-16	126167-17	126167-18	126167-19	126167-20
Your Reference	----------	BH8	BH9	BH9	BH10	BH10
Depth	----------	0.5-0.7	0-0.2	0.2-0..4	0-0.2	0.5-0.7
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10}-C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34}-C_{40}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	79	77	83	77	76

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	126167-21	126167-22	126167-23
Your Reference	----------	BH11	BH11	DUP1
Depth	----------	0-0.2	0.2-0.4	-
Date Sampled		01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	160
TRH >C_{10}-C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16}-C_{34}	mg/kg	<100	<100	170
TRH >C_{34}-C_{40}	mg/kg	<100	<100	190
Surrogate o-Terphenyl	%	84	80	78

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-1 BH1 0-0.2 01/04/2015 Soil	126167-2 BH1 0.4-0.6 01/04/2015 Soil	126167-3 BH2 0-0.2 01/04/2015 Soil	126167-4 BH2 1.0-1.2 01/04/2015 Soil	126167-5 BH3 0-02 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.8	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.8	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.62	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.8	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.9	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.9	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	5.2	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	103	99	98	101	97

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	126167-6 BH3 0.6-0.8 01/04/2015 Soil	126167-7 BH4 0-0.2 01/04/2015 Soil	126167-8 BH4 0.4-0.6 01/04/2015 Soil	126167-9 BH5 0-0.2 01/04/2015 Soil	126167-10 BH5 0.8-1.0 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	105	97	99	99	100

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-11 BH6 0-0.2 01/04/2015 Soil	126167-12 BH6 0.4-0.6 01/04/2015 Soil	126167-13 BH7 0-0.2 01/04/2015 Soil	126167-14 BH7 1.0-1.2 01/04/2015 Soil	126167-15 BH8 0-0.2 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	100	96	93	95	90

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	126167-16 BH8 0.5-0.7 01/04/2015 Soil	126167-17 BH9 0-0.2 01/04/2015 Soil	126167-18 BH9 0.2-0..4 01/04/2015 Soil	126167-19 BH10 0-0.2 01/04/2015 Soil	126167-20 BH10 0.5-0.7 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	91	88	89	93	91

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-21 BH11 0-0.2 01/04/2015 Soil	126167-22 BH11 0.2-0.4 01/04/2015 Soil	126167-23 DUP1 - 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.5
Pyrene	mg/kg	<0.1	<0.1	0.5
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3
Chrysene	mg/kg	<0.1	<0.1	0.3
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.8
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.7
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	4.0
Surrogate p-Terphenyl-d14	%	89	92	90

Organochlorine Pesticides in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-1 BH1 0-0.2 01/04/2015 Soil	126167-3 BH2 0-0.2 01/04/2015 Soil	126167-5 BH3 0-02 01/04/2015 Soil	126167-7 BH4 0-0.2 01/04/2015 Soil	126167-9 BH5 0-0.2 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	88	87	78	84

Organochlorine Pesticides in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-11 BH6 0-0.2 01/04/2015 Soil	126167-13 BH7 0-0.2 01/04/2015 Soil	126167-15 BH8 0-0.2 01/04/2015 Soil	126167-17 BH9 0-0.2 01/04/2015 Soil	126167-19 BH10 0-0.2 01/04/2015 Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	85	81	89

Organochlorine Pesticides in soil		
Our Reference:	UNITS	126167-21
Your Reference	----------	BH11
Depth	----------	0-0.2
Date Sampled		01/04/2015
Type of sample		Soil
Date extracted	-	08/04/2015
Date analysed	-	09/04/2015
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCMX	%	84

Organophosphorus Pesticides						
Our Reference:	UNITS	126167-1	126167-3	126167-5	126167-7	126167-9
Your Reference	----------	BH1	BH2	BH3	BH4	BH5
Depth	----------	0-0.2	0-0.2	0-02	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	88	87	78	84

Organophosphorus Pesticides						
Our Reference:	UNITS	126167-11	126167-13	126167-15	126167-17	126167-19
Your Reference	----------	BH6	BH7	BH8	BH9	BH10
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	85	81	89

Organophosphorus Pesticides Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-21 BH11 0-0.2 01/04/2015 Soil
Date extracted	-	08/04/2015
Date analysed	-	09/04/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate TCMX	%	84

PCBs in Soil						
Our Reference:	UNITS	126167-1	126167-3	126167-5	126167-7	126167-9
Your Reference	----------	BH1	BH2	BH3	BH4	BH5
Depth	----------	0-0.2	0-0.2	0-02	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	88	88	87	78	84

PCBs in Soil						
Our Reference:	UNITS	126167-11	126167-13	126167-15	126167-17	126167-19
Your Reference	----------	BH6	BH7	BH8	BH9	BH10
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	09/04/2015	09/04/2015	09/04/2015	09/04/2015	09/04/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	88	85	81	89

PCBs in Soil		
Our Reference:	UNITS	126167-21
Your Reference	----------	BH11
Depth	----------	0-0.2
Date Sampled		01/04/2015
Type of sample		Soil
Date extracted	-	08/04/2015
Date analysed	-	09/04/2015
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	84

Acid Extractable metals in soil						
Our Reference:	UNITS	126167-1	126167-2	126167-3	126167-4	126167-5
Your Reference	----------	BH1	BH1	BH2	BH2	BH3
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-02
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Arsenic	mg/kg	<4	6	7	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	16	14	12	14
Copper	mg/kg	45	18	47	18	40
Lead	mg/kg	27	14	34	19	32
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	8	6	13	6
Zinc	mg/kg	88	34	76	27	57

Acid Extractable metals in soil						
Our Reference:	UNITS	126167-6	126167-7	126167-8	126167-9	126167-10
Your Reference	----------	BH3	BH4	BH4	BH5	BH5
Depth	----------	0.6-0.8	0-0.2	0.4-0.6	0-0.2	0.8-1.0
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Arsenic	mg/kg	5	4	7	6	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	16	18	14	11
Copper	mg/kg	22	37	21	25	18
Lead	mg/kg	12	34	15	22	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	13	8	13	7
Zinc	mg/kg	18	650	22	42	23

Acid Extractable metals in soil						
Our Reference:	UNITS	126167-11	126167-12	126167-13	126167-14	126167-15
Your Reference	----------	BH6	BH6	BH7	BH7	BH8
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Arsenic	mg/kg	9	6	5	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.4
Chromium	mg/kg	20	14	15	11	25
Copper	mg/kg	30	18	21	17	30
Lead	mg/kg	34	15	38	12	68
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	8	5	6	9	19
Zinc	mg/kg	79	19	49	24	120

Acid Extractable metals in soil						
Our Reference:	UNITS	126167-16	126167-17	126167-18	126167-19	126167-20
Your Reference	----------	BH8	BH9	BH9	BH10	BH10
Depth	----------	0.5-0.7	0-0.2	0.2-0..4	0-0.2	0.5-0.7
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Arsenic	mg/kg	6	6	5	7	5
Cadmium	mg/kg	<0.4	0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	18	15	15	16
Copper	mg/kg	19	30	11	26	24
Lead	mg/kg	13	46	14	34	15
Mercury	mg/kg	<0.1	0.7	<0.1	<0.1	<0.1
Nickel	mg/kg	9	9	6	8	8
Zinc	mg/kg	24	110	12	45	26

Acid Extractable metals in soil					
Our Reference:	UNITS	126167-21	126167-22	126167-23	126167-30
Your Reference	----------	BH11	BH11	DUP1	BH1 - TRIPLICATE
Depth	----------	0-0.2	0.2-0.4	-	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015
Arsenic	mg/kg	6	5	5	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	12	21	16
Copper	mg/kg	28	25	37	26
Lead	mg/kg	34	16	44	31
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	7	7	23	9
Zinc	mg/kg	74	28	96	93

Moisture						
Our Reference:	UNITS	126167-1	126167-2	126167-3	126167-4	126167-5
Your Reference	----------	BH1	BH1	BH2	BH2	BH3
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-02
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	8/04/2015	8/04/2015	8/04/2015	8/04/2015	8/04/2015
Date analysed	-	9/04/2015	9/04/2015	9/04/2015	9/04/2015	9/04/2015
Moisture	%	9.9	15	11	9.4	8.7

Moisture						
Our Reference:	UNITS	126167-6	126167-7	126167-8	126167-9	126167-10
Your Reference	----------	BH3	BH4	BH4	BH5	BH5
Depth	----------	0.6-0.8	0-0.2	0.4-0.6	0-0.2	0.8-1.0
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	8/04/2015	8/04/2015	8/04/2015	8/04/2015	8/04/2015
Date analysed	-	9/04/2015	9/04/2015	9/04/2015	9/04/2015	9/04/2015
Moisture	%	14	12	17	13	12

Moisture						
Our Reference:	UNITS	126167-11	126167-12	126167-13	126167-14	126167-15
Your Reference	----------	BH6	BH6	BH7	BH7	BH8
Depth	----------	0-0.2	0.4-0.6	0-0.2	1.0-1.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	8/04/2015	8/04/2015	8/04/2015	8/04/2015	8/04/2015
Date analysed	-	9/04/2015	9/04/2015	9/04/2015	9/04/2015	9/04/2015
Moisture	%	12	15	13	13	13

Moisture						
Our Reference:	UNITS	126167-16	126167-17	126167-18	126167-19	126167-20
Your Reference	----------	BH8	BH9	BH9	BH10	BH10
Depth	----------	0.5-0.7	0-0.2	0.2-0..4	0-0.2	0.5-0.7
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	8/04/2015	8/04/2015	8/04/2015	8/04/2015	8/04/2015
Date analysed	-	9/04/2015	9/04/2015	9/04/2015	9/04/2015	9/04/2015
Moisture	%	12	13	8.5	8.5	13

Moisture				
Our Reference:	UNITS	126167-21	126167-22	126167-23
Your Reference	----------	BH11	BH11	DUP1
Depth	----------	0-0.2	0.2-0.4	-
Date Sampled		01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil
Date prepared	-	8/04/2015	8/04/2015	8/04/2015
Date analysed	-	9/04/2015	9/04/2015	9/04/2015
Moisture	%	26	10	9.3

Asbestos ID - soils						
Our Reference:	UNITS	126167-1	126167-3	126167-5	126167-7	126167-9
Your Reference	----------	BH1	BH2	BH3	BH4	BH5
Depth	----------	0-0.2	0-0.2	0-02	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/04/2015	10/04/2015	10/04/2015	10/04/2015	10/04/2015
Sample mass tested	g	Approx 20g	Approx 15g	Approx 25g	Approx 40g	Approx 30g
Sample Description	-	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference:	UNITS	126167-11	126167-13	126167-15	126167-17	126167-19
Your Reference	----------	BH6	BH7	BH8	BH9	BH10
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/04/2015	10/04/2015	10/04/2015	10/04/2015	10/04/2015
Sample mass tested	g	Approx 40g	Approx 20g	Approx 40g	Approx 20g	Approx 25g
Sample Description	-	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils		
Our Reference:	UNITS	126167-21
Your Reference	----------	BH11
Depth	----------	0-0.2
Date Sampled		01/04/2015
Type of sample		Soil
Date analysed	-	10/04/2015
Sample mass tested	g	Approx 40g
Sample Description	-	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

vTRH(C6-C10)/BTEXN in Water Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-25 GW1 - 07/04/2015 water	126167-26 DUP2 - 07/04/2015 water	126167-27 TB2 - 07/04/2015 water	126167-29 RR - 07/04/2015 Water
Date extracted	-	07/04/2015	07/04/2015	07/04/2015	07/04/2015
Date analysed	-	08/04/2015	08/04/2015	08/04/2015	08/04/2015
$TRHC_6 - C_9$	µg/L	<10	<10	<10	<10
$TRHC_6 - C_{10}$	µg/L	<10	<10	<10	<10
$TRHC_6 - C_{10}$ less BTEX (F1)	µg/L	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	95	97	98	98
Surrogate toluene-d8	%	106	106	108	107
Surrogate 4-BFB	%	98	98	98	98

svTRH (C10-C40) in Water			
Our Reference:	UNITS	126167-25	126167-26
Your Reference	----------	GW1	DUP2
Depth	----------	-	-
Date Sampled		07/04/2015	07/04/2015
Type of sample		water	water
Date extracted	-	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100	<100
Surrogate o-Terphenyl	%	83	90

PAHs in Water - Low Level Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-25 GW1 - 07/04/2015 water	126167-26 DUP2 - 07/04/2015 water
Date extracted	-	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrono	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	87	81

HM in water - dissolved Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	126167-25 GW1 - 07/04/2015 water	126167-26 DUP2 - 07/04/2015 water
Date prepared	-	08/04/2015	08/04/2015
Date analysed	-	08/04/2015	08/04/2015
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	2	2
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1
Zinc-Dissolved	µg/L	13	13

Miscellaneous Inorganics			
Our Reference:	UNITS	126167-25	126167-26
Your Reference	----------	GW1	DUP2
Depth	----------	-	-
Date Sampled		07/04/2015	07/04/2015
Type of sample		water	water
Date prepared	-	07/04/2015	07/04/2015
Date analysed	-	07/04/2015	07/04/2015
pH	pH Units	7.6	7.6
Electrical Conductivity	µS/cm	5,800	5,900
Hardness	mgCaCO3 /L	600	620
Calcium - Dissolved	mg/L	28	29
Magnesium - Dissolved	mg/L	130	130

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.

Method ID	Methodology Summary

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-			09/04/2015	126167-1	09/04/2015 || 09/04/2015	LCS-2	09/04/2015
$TRHC_6$ - C_9	mg/kg	25	Org-016	<25	126167-1	<25 || <25	LCS-2	101%
$TRHC_6$ - C_{10}	mg/kg	25	Org-016	<25	126167-1	<25 || <25	LCS-2	101%
Benzene	mg/kg	0.2	Org-016	<0.2	126167-1	<0.2 || <0.2	LCS-2	103%
Toluene	mg/kg	0.5	Org-016	<0.5	126167-1	<0.5 || <0.5	LCS-2	102%
Ethylbenzene	mg/kg	1	Org-016	<1	126167-1	<1 || <1	LCS-2	101%
m+p-xylene	mg/kg	2	Org-016	<2	126167-1	<2 || <2	LCS-2	100%
o-Xylene	mg/kg	1	Org-016	<1	126167-1	<1 || <1	LCS-2	97%
naphthalene	mg/kg	1	Org-014	<1	126167-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	89	126167-1	106 || 104 || RPD: 2	LCS-2	105%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-			09/04/2015	126167-1	09/04/2015 || 09/04/2015	LCS-2	09/04/2015
$TRHC_{10}$ - C_{14}	mg/kg	50	Org-003	<50	126167-1	<50 || <50	LCS-2	96%
$TRHC_{15}$ - C_{28}	mg/kg	100	Org-003	<100	126167-1	<100 || <100	LCS-2	111%
$TRHC_{29}$ - C_{36}	mg/kg	100	Org-003	<100	126167-1	250 || 190 || RPD: 27	LCS-2	105%
$TRH>C_{10}$-C_{16}	mg/kg	50	Org-003	<50	126167-1	<50 || <50	LCS-2	96%
$TRH>C_{16}$-C_{34}	mg/kg	100	Org-003	<100	126167-1	240 || 160 || RPD: 40	LCS-2	111%
$TRH>C_{34}$-C_{40}	mg/kg	100	Org-003	<100	126167-1	320 || 290 || RPD: 10	LCS-2	105%
Surrogate o-Terphenyl	%		Org-003	83	126167-1	87 || 82 || RPD: 6	LCS-2	99%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-1	08/04/2015
Date analysed	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-1	08/04/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	LCS-1	94%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	LCS-1	92%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.2 || 0.2 || RPD: 0	LCS-1	89%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.8 || 0.5 || RPD: 46	LCS-1	89%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.8 || 0.5 || RPD: 46	LCS-1	91%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.4 || 0.2 || RPD: 67	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.4 || 0.3 || RPD: 29	LCS-1	83%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	126167-1	1 || 0.6 || RPD: 50	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	126167-1	0.62 || 0.3 || RPD: 70	LCS-1	110%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.5 || 0.2 || RPD: 86	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	126167-1	0.4 || 0.2 || RPD: 67	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	92	126167-1	103 || 101 || RPD: 2	LCS-1	95%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-			09/04/2015	126167-1	09/04/2015 || 09/04/2015	LCS-2	09/04/2015
HCB	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	92%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	87%
Heptachlor	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	82%
delta-BHC	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	90%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	92%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	96%
Dieldrin	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	92%
Endrin	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	93%
pp-DDD	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	102%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	LCS-2	91%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	88	126167-1	88 || 88 || RPD: 0	LCS-2	83%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-			09/04/2015	126167-1	09/04/2015 || 09/04/2015	LCS-2	09/04/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	77%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	102%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	77%
Dimethoate	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	87%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	88%
Malathion	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	LCS-2	81%
Parathion	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-008	88	126167-1	88 || 88 || RPD: 0	LCS-2	88%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-			09/04/2015	126167-1	09/04/2015 || 09/04/2015	LCS-2	09/04/2015
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	LCS-2	100%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	126167-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	88	126167-1	88 || 88 || RPD: 0	LCS-2	90%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-1	08/04/2015
Date analysed	-			08/04/2015	126167-1	08/04/2015 || 08/04/2015	LCS-1	08/04/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	126167-1	<4 || 6	LCS-1	116%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	126167-1	<0.4 || <0.4	LCS-1	106%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	126167-1	17 || 16 || RPD: 6	LCS-1	113%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	126167-1	45 || 46 || RPD: 2	LCS-1	114%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	126167-1	27 || 44 || RPD: 48	LCS-1	106%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	126167-1	<0.1 || 0.1	LCS-1	93%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	126167-1	20 || 12 || RPD: 50	LCS-1	108%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	126167-1	88 || 390 || RPD: 126	LCS-1	107%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			07/04/2015	126167-25	07/04/2015 || 09/04/2015	LCS-W2	07/04/2015
Date analysed	-			08/04/2015	126167-25	08/04/2015 || 09/04/2015	LCS-W2	08/04/2015
TRH C_6 - C_9	µg/L	10	Org-016	<10	126167-25	<10 || <10	LCS-W2	102%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	126167-25	<10 || <10	LCS-W2	102%
Benzene	µg/L	1	Org-016	<1	126167-25	<1 || <1	LCS-W2	99%
Toluene	µg/L	1	Org-016	<1	126167-25	<1 || <1	LCS-W2	116%
Ethylbenzene	µg/L	1	Org-016	<1	126167-25	<1 || <1	LCS-W2	99%
m+p-xylene	µg/L	2	Org-016	<2	126167-25	<2 || <2	LCS-W2	99%
o-xylene	µg/L	1	Org-016	<1	126167-25	<1 || <1	LCS-W2	96%
Naphthalene	µg/L	1	Org-013	<1	126167-25	<1 || <1	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	100	126167-25	95 || 92 || RPD: 3	LCS-W2	101%
Surrogate toluene-d8	%		Org-016	110	126167-25	106 || 108 || RPD: 2	LCS-W2	115%
Surrogate 4-BFB	%		Org-016	99	126167-25	98 || 98 || RPD: 0	LCS-W2	100%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	[NT]	[NT]	LCS-W1	08/04/2015
Date analysed	-			08/04/2015	[NT]	[NT]	LCS-W1	08/04/2015
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	111%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	99%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	111%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	99%
Surrogate o-Terphenyl	%		Org-003	90	[NT]	[NT]	LCS-W1	70%
QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/04/2015	[NT]	[NT]	LCS-W1	08/04/2015
Date analysed	-			08/04/2015	[NT]	[NT]	LCS-W1	08/04/2015
Naphthalene	µg/L	0.2	Org-012 subset	<0.2	[NT]	[NT]	LCS-W1	70%
Acenaphthylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	70%
Phenanthrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	71%
Anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	70%
Pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	71%
Benzo(a)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	70%
Benzo(b,j+k) fluoranthene	µg/L	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	86%
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	88	[NT]	[NT]	LCS-W1	84%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			08/04/2015	126167-25	08/04/2015 || 08/04/2015	LCS-W1	08/04/2015
Date analysed	-			08/04/2015	126167-25	08/04/2015 || 08/04/2015	LCS-W1	08/04/2015
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	<1 || <1	LCS-W1	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	126167-25	<0.1 || <0.1	LCS-W1	103%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	<1 || <1	LCS-W1	104%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	2 || 2 || RPD: 0	LCS-W1	102%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	<1 || <1	LCS-W1	109%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	126167-25	<0.05 || [N/T]	LCS-W1	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	<1 || <1	LCS-W1	99%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	126167-25	13 || 14 || RPD: 7	LCS-W1	100%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			07/04/2015	126167-25	07/04/2015 || 07/04/2015	LCS-W1	07/04/2015
Date analysed	-			07/04/2015	126167-25	07/04/2015 || 07/04/2015	LCS-W1	07/04/2015
pH	pH Units		Inorg-001	[NT]	126167-25	7.6 || [N/T]	LCS-W1	102%
Electrical Conductivity	µS/cm	1	Inorg-002	<1	126167-25	5800 || [N/T]	LCS-W1	103%
Hardness	mgCaCO3/L	3		[NT]	126167-25	600 || 620 || RPD: 3	[NR]	[NR]
Calcium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	126167-25	28 || 29 || RPD: 4	LCS-W1	99%
Magnesium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	126167-25	130 || 130 || RPD: 0	LCS-W1	99%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-12	08/04/2015 || 08/04/2015	LCS-3	08/04/2015
Date analysed	-	126167-12	09/04/2015 || 09/04/2015	LCS-3	09/04/2015
TRHC6 - C9	mg/kg	126167-12	<25 || <25	LCS-3	75%
TRHC6 - C10	mg/kg	126167-12	<25 || <25	LCS-3	75%
Benzene	mg/kg	126167-12	<0.2 || <0.2	LCS-3	75%
Toluene	mg/kg	126167-12	<0.5 || <0.5	LCS-3	75%
Ethylbenzene	mg/kg	126167-12	<1 || <1	LCS-3	75%
m+p-xylene	mg/kg	126167-12	<2 || <2	LCS-3	75%
o-Xylene	mg/kg	126167-12	<1 || <1	LCS-3	72%
naphthalene	mg/kg	126167-12	<1 || <1	[NR]	[NR]

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Surrogate aaa-Trifluorotoluene	%	126167-12	108 || 104 || RPD: 4	LCS-3	81%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-12	08/04/2015 || 08/04/2015	LCS-4	08/04/2015
Date analysed	-	126167-12	09/04/2015 || 09/04/2015	LCS-4	09/04/2015
$TRHC_{10}$ - C_{14}	mg/kg	126167-12	<50 || <50	LCS-4	85%
$TRHC_{15}$ - C_{28}	mg/kg	126167-12	<100 || <100	LCS-4	87%
$TRHC_{29}$ - C_{36}	mg/kg	126167-12	<100 || <100	LCS-4	101%
TRH>C_{10}-C_{16}	mg/kg	126167-12	<50 || <50	LCS-4	85%
TRH>C_{16}-C_{34}	mg/kg	126167-12	<100 || <100	LCS-4	87%
TRH>C_{34}-C_{40}	mg/kg	126167-12	<100 || <100	LCS-4	101%
Surrogate o-Terphenyl	%	126167-12	81 || 76 || RPD: 6	LCS-4	90%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-12	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-	126167-12	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Naphthalene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	93%
Acenaphthylene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	91%
Phenanthrene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	90%
Anthracene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	89%
Pyrene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	91%
Benzo(a)anthracene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	126167-12	<0.1 || <0.1	LCS-2	83%
Benzo(b,j+k)fluoranthene	mg/kg	126167-12	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	126167-12	<0.05 || <0.05	LCS-2	106%
Indeno(1,2,3-c,d)pyrene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	126167-12	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	126167-12	96 || 91 || RPD: 5	LCS-2	98%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	09/04/2015 || 09/04/2015	126167-3	09/04/2015
HCB	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	126167-21	<0.1 || <0.1	126167-3	95%
gamma-BHC	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	126167-21	<0.1 || <0.1	126167-3	89%
Heptachlor	mg/kg	126167-21	<0.1 || <0.1	126167-3	83%
delta-BHC	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	126167-21	<0.1 || <0.1	126167-3	92%
Heptachlor Epoxide	mg/kg	126167-21	<0.1 || <0.1	126167-3	94%
gamma-Chlordane	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
alpha chlordane	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	126167-21	<0.1 || <0.1	126167-3	98%
Dieldrin	mg/kg	126167-21	<0.1 || <0.1	126167-3	94%
Endrin	mg/kg	126167-21	<0.1 || <0.1	126167-3	94%
pp-DDD	mg/kg	126167-21	<0.1 || <0.1	126167-3	104%
Endosulfan II	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	126167-21	<0.1 || <0.1	126167-3	93%
Methoxychlor	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	126167-21	84 || 87 || RPD: 4	126167-3	83%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	09/04/2015 || 09/04/2015	126167-3	09/04/2015
Azinphos-methyl (Guthion)	mg/kg	126167-21	<0.1 || <0.1	126167-3	75%
Bromophos-ethyl	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	126167-21	<0.1 || <0.1	126167-3	104%
Chlorpyriphos-methyl	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	126167-21	<0.1 || <0.1	126167-3	81%
Dimethoate	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	126167-21	<0.1 || <0.1	126167-3	93%
Fenitrothion	mg/kg	126167-21	<0.1 || <0.1	126167-3	87%
Malathion	mg/kg	126167-21	<0.1 || <0.1	126167-3	81%
Parathion	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	126167-21	84 || 87 || RPD: 4	126167-3	85%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	09/04/2015 || 09/04/2015	126167-3	09/04/2015
Arochlor 1016	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	126167-21	<0.1 || <0.1	126167-3	103%
Arochlor 1260	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	126167-21	84 || 87 || RPD: 4	126167-3	90%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	126167-12	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Date analysed	-	126167-12	08/04/2015 || 08/04/2015	LCS-2	08/04/2015
Arsenic	mg/kg	126167-12	6 || 8 || RPD: 29	LCS-2	119%
Cadmium	mg/kg	126167-12	<0.4 || <0.4	LCS-2	107%
Chromium	mg/kg	126167-12	14 || 16 || RPD: 13	LCS-2	114%
Copper	mg/kg	126167-12	18 || 21 || RPD: 15	LCS-2	114%
Lead	mg/kg	126167-12	15 || 17 || RPD: 12	LCS-2	108%
Mercury	mg/kg	126167-12	<0.1 || <0.1	LCS-2	105%
Nickel	mg/kg	126167-12	5 || 6 || RPD: 18	LCS-2	109%
Zinc	mg/kg	126167-12	19 || 22 || RPD: 15	LCS-2	100%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	126167-26	08/04/2015
Date analysed	-	[NT]	[NT]	126167-26	08/04/2015
Arsenic-Dissolved	µg/L	[NT]	[NT]	126167-26	113%
Cadmium-Dissolved	µg/L	[NT]	[NT]	126167-26	95%
Chromium-Dissolved	µg/L	[NT]	[NT]	126167-26	96%
Copper-Dissolved	µg/L	[NT]	[NT]	126167-26	83%
Lead-Dissolved	µg/L	[NT]	[NT]	126167-26	93%
Mercury-Dissolved	µg/L	[NT]	[NT]	[NR]	[NR]
Nickel-Dissolved	µg/L	[NT]	[NT]	126167-26	83%
Zinc-Dissolved	µg/L	[NT]	[NT]	126167-26	89%
QUALITY CONTROL Miscellaneous Inorganics	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	126167-26	08/04/2015
Date analysed	-	[NT]	[NT]	126167-26	08/04/2015
pH	pH Units	[NT]	[NT]	[NR]	[NR]
Electrical Conductivity	µS/cm	[NT]	[NT]	[NR]	[NR]
Hardness	mgCaCO 3/L	[NT]	[NT]	[NR]	[NR]
Calcium - Dissolved	mg/L	[NT]	[NT]	126167-26	78%
Magnesium - Dissolved	mg/L	[NT]	[NT]	126167-26	#
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	09/04/2015 || 09/04/2015	126167-3	09/04/2015
$TRHC_6 - C_9$	mg/kg	126167-21	<25 || <25	126167-3	93%
$TRHC_6 - C_{10}$	mg/kg	126167-21	<25 || <25	126167-3	93%
Benzene	mg/kg	126167-21	<0.2 || <0.2	126167-3	87%
Toluene	mg/kg	126167-21	<0.5 || <0.5	126167-3	90%
Ethylbenzene	mg/kg	126167-21	<1 || <1	126167-3	91%
m+p-xylene	mg/kg	126167-21	<2 || <2	126167-3	99%
o-Xylene	mg/kg	126167-21	<1 || <1	126167-3	88%
naphthalene	mg/kg	126167-21	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	126167-21	100 || 100 || RPD: 0	126167-3	101%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	09/04/2015 || 09/04/2015	126167-3	09/04/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	126167-21	<50 || <50	126167-3	82%
TRHC$_{15}$ - C$_{28}$	mg/kg	126167-21	<100 || <100	126167-3	85%
TRHC$_{29}$ - C$_{36}$	mg/kg	126167-21	<100 || <100	126167-3	117%
TRH>C$_{10}$-C$_{16}$	mg/kg	126167-21	<50 || <50	126167-3	82%
TRH>C$_{16}$-C$_{34}$	mg/kg	126167-21	<100 || <100	126167-3	85%
TRH>C$_{34}$-C$_{40}$	mg/kg	126167-21	<100 || <100	126167-3	117%
Surrogate o-Terphenyl	%	126167-21	84 || 87 || RPD: 4	126167-3	86%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Naphthalene	mg/kg	126167-21	<0.1 || <0.1	126167-3	90%
Acenaphthylene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	126167-21	<0.1 || <0.1	126167-3	84%
Phenanthrene	mg/kg	126167-21	<0.1 || <0.1	126167-3	86%
Anthracene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	126167-21	<0.1 || <0.1	126167-3	86%
Pyrene	mg/kg	126167-21	<0.1 || <0.1	126167-3	90%
Benzo(a)anthracene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	126167-21	<0.1 || <0.1	126167-3	80%
Benzo(b,j+k)fluoranthene	mg/kg	126167-21	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	126167-21	<0.05 || <0.05	126167-3	98%
Indeno(1,2,3-c,d)pyrene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	126167-21	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	126167-21	89 || 93 || RPD: 4	126167-3	97%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Date analysed	-	126167-21	08/04/2015 || 08/04/2015	126167-3	08/04/2015
Arsenic	mg/kg	126167-21	6 || 7 || RPD: 15	126167-3	108%
Cadmium	mg/kg	126167-21	<0.4 || <0.4	126167-3	105%
Chromium	mg/kg	126167-21	15 || 15 || RPD: 0	126167-3	110%
Copper	mg/kg	126167-21	28 || 28 || RPD: 0	126167-3	130%
Lead	mg/kg	126167-21	34 || 37 || RPD: 8	126167-3	106%
Mercury	mg/kg	126167-21	<0.1 || <0.1	126167-3	95%
Nickel	mg/kg	126167-21	7 || 8 || RPD: 13	126167-3	107%
Zinc	mg/kg	126167-21	74 || 76 || RPD: 3	126167-3	121%

Report Comments:

MISC_INORG: # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteriae has been exceeded for 126167-1 for Ni and Zn. Therefore a triplicate result has been issued as laboratory sample number 126167-30.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Asbestos 126167-21: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.

Asbestos ID was analysed by Approved Identifier: Lulu Guo
Asbestos ID was authorised by Approved Signatory: Lulu Guo

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

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

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

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

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

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	Para Bokalawela

Sample Login Details	
Your Reference	E27532KG, Edmondson Park
Envirolab Reference	126167
Date Sample Received	07/04/2015
Date Instructions Received	07/04/2015
Date Results Expected to be Reported	14/04/2015

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	4 waters 25 soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	17.9
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

ENVIROLAB SERVICES

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
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www.envirolabservices.com.au

Sample Id	Acid Extractable metals in soil	Asbestos ID - soils	Calcium - Dissolved	Electrical Conductivity	Hardness	HM in water - dissolved	Magnesium - Dissolved	Organochlorine Pesticides in soil	Organophosphorus Pesticides	PAHs in Soil	PAHs in Water - Low Level	PCBs in Soil	pH	svTRH (C10-C40) in Soil	svTRH (C10-C40) in Water	vTRH(C6-C10)/BTEXN in Soil	vTRH(C6-C10)/BTEXN in Water	On Hold
BH1-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH1-0.4-0.6	✓									✓				✓		✓		
BH2-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH2-1.0-1.2	✓									✓				✓		✓		
BH3-0-02	✓	✓						✓	✓	✓		✓		✓		✓		
BH3-0.6-0.8	✓									✓				✓		✓		
BH4-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH4-0.4-0.6	✓									✓				✓		✓		
BH5-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH5-0.8-1.0	✓									✓				✓		✓		
BH6-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH6-0.4-0.6	✓									✓				✓		✓		
BH7-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH7-1.0-1.2	✓									✓				✓		✓		
BH8-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH8-0.5-0.7	✓									✓				✓		✓		
BH9-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH9-0.2-0..4	✓									✓				✓		✓		
BH10-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH10-0.5-0.7	✓									✓				✓		✓		
BH11-0-0.2	✓	✓						✓	✓	✓		✓		✓		✓		
BH11-0.2-0.4	✓									✓				✓		✓		
DUP1	✓									✓				✓		✓		
TB1																✓		
GW1			✓	✓	✓	✓	✓				✓		✓		✓		✓	
DUP2			✓	✓	✓	✓	✓				✓		✓		✓		✓	
TB2																	✓	
DUP2																		✓
FR																	✓	

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E27532KG	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067	Date Results Required: Standard	MACQUARIE PARK, NSW 2113
P: (02) 99106200		P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201	Page: 1 of 1	Attention: Para Bokalawela
Attention: Aileen		

Location:	Edmondson Park	Sample Preserved in Esky on Ice
Sampler:	PB	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	Combo 6a	Combo 3	Combo 3L	pH / EC	Hardness	BTEX
1/04/2015	1	BH1	0-0.2	G & A	Fill -Clay	X					
1/04/2015	2	BH1	0.4-0.6	G	Nat - Clay		X				
1/04/2015	3	BH2	0-0.2	G & A	Fill -Clay	X					
1/04/2015	4	BH2	1.0-1.2	G	Nat - Clay		X				
1/04/2015	5	BH3	0-0.2	G & A	Fill -Clay	X					
1/04/2015	6	BH3	0.6-0.8	G	Nat - Clay		X				
1/04/2015	7	BH4	0-0.2	G & A	Fill -Clay	X					
1/04/2015	8	BH4	0.4-0.6	G	Nat - Clay		X				
1/04/2015	9	BH5	0-0.2	G & A	Fill -Clay	X					
1/04/2015	10	BH5	0.8-1.0	G	Nat - Clay		X				
1/04/2015	11	BH6	0-0.2	G & A	Fill -Clay	X					
1/04/2015	12	BH6	0.4-0.6	G	Nat - Clay		X				
1/04/2015	13	BH7	0-0.2	G & A	Fill -Clay	X					
1/04/2015	14	BH7	1.0-1.2	G	Nat - Clay		X				
1/04/2015	15	BH8	0-0.2	G & A	Fill -Clay	X					
1/04/2015	16	BH8	0.5-0.7	G	Nat - Clay		X				
1/04/2015	17	BH9	0-0.2	G & A	Fill -Clay	X					
1/04/2015	18	BH9	0.2-0.4	G	Nat - Clay		X				
1/04/2015	19	BH10	0-0.2	G & A	Fill -Clay	X					
1/04/2015	20	BH10	0.5-0.7	G	Nat - Clay		X				
1/04/2015	21	BH11	0-0.2	G & A	Fill -Clay	X					
1/04/2015	22	BH11	0.2-0.4 (0.5-0.7)	G	Nat - Clay		X				
1/04/2015	23	Dup1	-	G	Soil		X				
1/04/2015	24	TB1	-	G	Sand						X
7/04/2015	25	GW1	-	G1, V, H & PVC	Water			X	X	X	
7/04/2015	26	Dup2	-	G1, V, H & PVC	Water			X	X	X	
7/04/2015	27	TB2		V	Water						X
7/04/2015	~~29~~	FR DR		V	Water						X
		Extra									
	28	Dup 2									

ENVIROLAB — Environmental Services, 12 Ashley St, Chatswood NSW 2067, Ph: (02) 9910 6200

Job No: 126167

Date Received: 7/4/15

Time Received: 13:00

Received by: CBR

Temp: Cool/Ambient 17.9°

Cooling: Ice/Icepack

Security: Intact/Broken/None

Remarks (comments/detection limits required):

Sample Containers:
G1 - 500mL Amber Glass Bottle G - 250mg Glass Jar V - BTEX Vial H - HNO3 Wash PVC
PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag

Relinquished By:	Date:	Time:	Received By:	Date:
Para Bokalawela	7-Apr-15	13.00	CBR	7/4/15

Appendix B: Report Explanatory Notes

STANDARD SAMPLING PROCEDURE

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by EIS.

The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

Soil Sampling

- Prepare a borehole/test pit log or made a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the EIS job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-1993[14].
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

Decontamination Procedures for Soil Sampling Equipment

- All sampling equipment should be decontaminated between every sampling location. This excludes single use PVC tubing used for push tubes etc. Equipment and materials required for the decontamination include:
  - Phosphate free detergent (Decon 90);
  - Potable water;
  - Stiff brushes; and
  - Plastic sheets.

[14] Standards Australia, (1993), *Geotechnical Site Investigations.* (AS1726-1993)

- Ensure the decontamination materials are clean prior to proceeding with the decontamination.
- Fill both buckets with clean potable water and add phosphate free detergent to one bucket.
- In the bucket containing the detergent, scrub the sampling equipment until all the material attached to the equipment has been removed.
- Rinse sampling equipment in the bucket containing potable water.
- Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes, then the equipment should not be used until it has been thoroughly cleaned.

Groundwater Sampling

Groundwater samples are more sensitive to contamination than soil samples and therefore adhesion to this protocol is particularly important to obtain reliable, reproducible results. The recommendations detailed in AS/NZS 5667.1:1998 are considered to form a minimum standard.

The basis of this protocol is to maintain the security of the borehole and obtain accurate and representative groundwater samples. The following procedure should be used for collection of groundwater samples from previously installed groundwater monitoring wells.

- After monitoring well installation, at least three bore volumes should be pumped from the monitoring wells (well development) to remove any water introduced during the drilling process and/or the water that is disturbed during installation of the monitoring well. This should be completed prior to purging and sampling.
- Groundwater monitoring wells should then be left to recharge for at least three days before purging and sampling. Prior to purging or sampling, the condition of each well should observed and any anomalies recorded on the field data sheets. The following information should be noted: the condition of the well, noting any signs of damage, tampering or complete destruction; the condition and operation of the well lock; the condition of the protective casing and the cement footing (raised or cracked); and, the presence of water between protective casing and well.
- Take the groundwater level from the collar of the piezometer/monitoring well using an electronic dip meter. The collar level should be taken (if required) during the site visit using a dumpy level and staff.
- Purging and sampling of piezometers/monitoring wells is done on the same site visit when using micro-purge (or other low flow) techniques.
- Layout and organize all equipment associated with groundwater sampling in a location where they will not interfere with the sampling procedure and will not pose a risk of contaminating samples. Equipment generally required includes:
    - Micropore filtration system or Stericup single-use filters (for heavy metals samples);
    - Filter paper for Micropore filtration system; Bucket with volume increments;
    - Sample containers: teflon bottles with 1 ml nitric acid, 75mL glass vials with 1 mL hydrochloric acid, 1 L amber glass bottles;
    - Bucket with volume increments;
    - Flow cell;
    - pH/EC/Eh/T meters;
    - Plastic drums used for transportation of purged water;
    - Esky and ice;
    - Nitrile gloves;
    - Distilled water (for cleaning);
    - Electronic dip meter;

- Low flow pump pack and associated tubing; and
- Groundwater sampling forms.

- If single-use stericup filtration is not used, clean the Micropore filtration system thoroughly with distilled water prior to use and between each sample. Filter paper should be changed between samples. 0.45um filter paper should be placed below the glass fibre filter paper in the filtration system.
- Ensure all non-disposable sampling equipment is decontaminated or that new disposable equipment is available prior to any work commencing at a new location. The procedure for decontamination of groundwater equipment is outlined at the end of this section.
- Disposable gloves should be used whenever samples are taken to protect the sampler and to assist in avoidance of contamination.
- Groundwater samples are obtained from the monitoring wells using low flow/micro-purge sampling equipment to reduce the disturbance of the water column and loss of volatiles.
- During pumping to purge the well, the pH, temperature, conductivity, dissolved oxygen, redox potential and groundwater levels are monitored (where possible) using calibrated field instruments to assess the development of steady state conditions. Steady state conditions are generally considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%.
- All measurements are recorded on specific data sheets.
- Once steady state conditions are considered to have been achieved, groundwater samples are obtained directly from the pump tubing and placed in appropriate glass bottles, BTEX vials or plastic bottles.
- All samples are preserved in accordance with water sampling requirements detailed in the NEPM 2013 and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice as outlined in the report text.
- Record the sample on the appropriate log in accordance with AS1726:1993. At the end of each water sampling complete a chain of custody form.

Decontamination Procedures for Groundwater Sampling Equipment

- All equipment associated with the groundwater sampling procedure (other than single-use items) should be decontaminated between every sampling location.
- The following equipment and materials are required for the decontamination procedure:
  - Phosphate free detergent;
  - Potable water;
  - Distilled water; and
  - Plastic Sheets or bulk bags (plastic bags).
- Fill one bucket with clean potable water and phosphate free detergent, and one bucket with distilled water.
- Flush potable water and detergent through pump head. Wash sampling equipment and pump head using brushes in the bucket containing detergent until all materials attached to the equipment are removed.
- Flush pump head with distilled water.
- Change water and detergent solution after each sampling location.
- Rinse sampling equipment in the bucket containing distilled water.
- Place cleaned equipment on clean plastic sheets.
- If all materials are not removed by this procedure that equipment should not be used until it has been thoroughly cleaned

QA/QC DEFINITIONS

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994[15]) methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (H. Keith 1991[16]).

Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection limit (MDL) for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations.

"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit" Keith 1991.

Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD). Acceptable targets for precision in this report will be less than 50% RPD for concentrations greater than ten times the PQL, less than 75% RPD for concentrations between five and ten times the PQL and less than 100% RPD for concentrations that are less than five times the PQL.

Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured. The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes.

The proximity of an averaged result to the true value, where all random errors have been statistically removed. Accuracy is measured by percent recovery. Acceptable limits for accuracy generally lie between 70% to 130% recoveries. Certain laboratory methods may allow for values that lie outside these limits.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

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[15] US EPA, (1994), *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[16] Keith., H, (1991), *Environmental Sampling and Analysis, A Practical Guide.*

Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms; Sample receipt form;
- All sample results reported; All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

Comparability

Comparability is the evaluation of the similarity of conditions (eg. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

Blanks

The purpose of laboratory and field blanks is to check for artifacts and interferences that may arise during sampling and analysis.

Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$