ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

AUSBAO PYMBLE PTY LTD

ON

PRELIMINARY STAGE 2 ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

AT

1, 1A, 3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

22 MAY 2015 **REF: E24192Krpt2**

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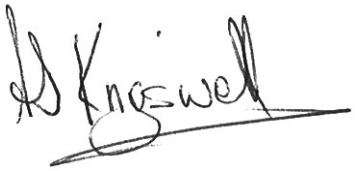

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EXECUTIVE SUMMARY

Ausbao Pymble Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS) to undertake a Preliminary Stage 2 Environmental Site Assessment (PESA) for the proposed residential development at 1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble.

The Report forms part of the Land and Environment Court of NSW (L&E Court) Proceedings No.10834 of 2013. The proceedings relate to the refusal by the Planning Assessment Commission (PAC), as delegate of the Minister for Planning (Minister), of the Major Project Application (MP 10_0219) for a multi-unit residential development at 1, 1A & 5 Avon Road and 4 & 8 Beechworth Road, Pymble (Site).

On 5 December 2014, the Land and Environment Court ordered that a Concept Plan approval be issued in respect of the development of the Site, and the PAC issued the Concept Plan Approval on 19 December 2014. The proceedings No.10834 of 2013 relating to the Major Project Application were stood over following the Court's order regarding the Concept Plan and the PAC's subsequent issue of the Concept Plan Approval.

EIS understand that the current proposed development, as described by drawings prepared by Marchese Partners (Rev S) will comprise three multi-storey residential building blocks on the Avon Road side of the drainage gully and four residential dwellings on the Beechworth Road side of the gully.

The proposed multi-storey buildings will vary in height from five residential levels (part of Building 1) to nine residential levels (Building 4). Basement car parking is proposed beneath the Buildings 1, 3 and 4 as shown on selected reference drawings prepared by Marchese partners.

Maximum excavation depths below existing ground level vary due to the existing topography and basement layout. For Building 1 and Building 3 the lowest basemen level is RL+126 (Drawing no MP 22.03 revS), such that maximum depth of excavation will be about 20m. For Building 4 the access corridor from the car parking area is at RL+132 (drawing no MP 22.05 revS), resulting in a maximum excavation of approximately 14m. Access to the car parking levels below these buildings is via a driveway off Avon Road to below the southern end of Building 1. Excavation for Building 3 below the driveway will be to about 13m depth below existing ground level at an offset of about 12m from the boundary to No 7 Avon Road.

The proposed four residential houses are located off Beechworth Road and each have a building footprint of 250 square metres. The existing dwelling at No. 1 Avon Road is to be retained.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 scope of work included the following:

- Review of previous investigation reports prepared by EIS for the site;
- A site inspection to identify Areas of Environmental Concern (AEC);
- 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.

Samples for this investigation were obtained from 26 sampling points as shown on the attached Figure 2. This density is approximately 72% of the minimum sampling density recommended by the EPA. Selected soil samples obtained during the investigation were analysed for a range of Contaminants of Primary Concern (CoPC) as outlined in the report. The laboratory results were assessed against the SAC.

Summary of Results

An elevated concentration of lead was identified in the BH31 0-0.2m sample above the HIL-A criteria. However, the statistical analysis of the fill soil lead results met the SAC and therefore the risk to the identified human receptors was considered to be very low.

Asbestos fibres were not detected in any of the soil samples analysed for the ESA. Asbestos fibres were detected in a FCF sampled from the ground surface in the North West corner of the site (Sample Ref: S1).

The ESA has identified lead and B(a)P TEQ as CoPC associated with the fil above the health based SAC. The CoPC were above the SAC adopted for this investigation and may pose a risk to site receptors. EIS are of the opinion that the risk posed to human receptors is low but will require remediation and/or management. Only one B(a)P TEQ result was elevated therefore this may represent a minor hotspot.

TRH >C16-C34 (F2) and B(a)P have been identified as CoPC associated with the fill above the ecological SAC. The CoPC were above the EAC adopted for this investigation and may pose a risk to environmental receptors.

Environmental receptors on-site include proposed landscaped areas between buildings. Off-site receptors include surface water runoff into drainage channel.

EIS are of the opinion that the risk posed to on-site environmental receptors is low. Only two of the forty five samples exceeded the ecological criteria for B(a)P and only one sample exceeded the ecological criteria for TRH >C16-C34 (F3). There were no obvious impacts on site flora.

EIS are of the opinion that the elevated concentrations of heavy metals (copper and zinc) detected in the groundwater samples are typical of urban/regional groundwater conditions and are most likely associated leaking water infrastructure. No elevated copper or zinc soil concentrations above the soil HIL SAC were detected during the soil sampling program.

EIS note that the groundwater pH was outside of the ANZECC 2000 range. Again this has been attributed to regional issues.

Based on the results of the assessment, EIS are of the opinion that the groundwater PCC pose a low risk to the receptors identified in the CSM and groundwater remediation is not required.

The source of the PAHs and heavy metals including lead in the fill samples is considered to be associated with the ash and slag inclusions encountered in the fill matrix. The natural soil samples analysed below the fill profile were not impacted by the contaminants.

The demolition of the former house (number 4 Beechworth) in the north western section of the site could have resulted in remnant FCF on the ground surface.

Based on a review of the field logs and the laboratory data, EIS are of the opinion that the soil contamination is confined to the fill material at the site. The fill ranges in depth from approximately 0.2m to 2m bgl as shown on the attached Figure 2.

A B(a)P TEQ hot spot has been identified around the surface of BH5. Further investigation around this location should be undertaken to obtain a better understanding of the extent of the contamination and to better assess the hotspot.

Data Gaps

The assessment has identified the following data gaps:

- Areas beneath the existing buildings have not been included in the assessment;
- Areas of dense vegetation prevented the systematic sampling pattern. Ten of the proposed sampling locations have not been assessed; and
- Dense vegetation prevented an inspection of the majority of the ground surface at the site for FCF.

Conclusion

EIS consider that the site can be made suitable for the proposed development provided that the following recommendations are implemented to address the data gaps and to minimise/better manage/characterise the risks:

1. Address the data gaps identified in Section 10.3 as part of an additional ESA;

2. Prepare a Remediation Action Plan (RAP) to outline remedial measures for the site;

3. Prepare a Validation Assessment (VA) report on completion of remediation;

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.

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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

Ausbao Pymble Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS)[1] to undertake a Preliminary Stage 2 Environmental Site Assessment (PESA) for the proposed residential development at 1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble.

The Report forms part of the Land and Environment Court of NSW (L&E Court) Proceedings No.10834 of 2013. The proceedings relate to the refusal by the Planning Assessment Commission (PAC), as delegate of the Minister for Planning (Minister), of the Major Project Application (MP 10_0219) for a multi-unit residential development at 1, 1A & 5 Avon Road and 4 & 8 Beechworth Road, Pymble (Site).

On 5 December 2014, the Land and Environment Court ordered that a Concept Plan approval be issued in respect of the development of the Site, and the PAC issued the Concept Plan Approval on 19 December 2014. The proceedings No.10834 of 2013 relating to the Major Project Application were stood over following the Court's order regarding the Concept Plan and the PAC's subsequent issue of the Concept Plan Approval.

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

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed residential development.

1.1 Proposed Development Details

EIS understand that the current proposed development, as described by drawings prepared by Marchese Partners (Rev S) will comprise three multi-storey residential building blocks on the Avon Road side of the drainage gully and four residential dwellings on the Beechworth Road side of the gully.

The proposed multi-storey buildings will vary in height from five residential levels (part of Building 1) to nine residential levels (Building 4). Basement car parking is proposed beneath the Buildings 1, 3 and 4 as shown on selected reference drawings prepared by Marchese partners.

Maximum excavation depths below existing ground level vary due to the existing topography and basement layout. For Building 1 and Building 3 the lowest basemen level is RL+126 (Drawing no MP 22.03 revS), such that maximum depth of excavation will be about 20m. For Building 4 the access corridor from the car parking area is at RL+132 (drawing no MP 22.05 revS), resulting in a maximum excavation of approximately 14m. Access to the car parking levels below these buildings is via a driveway off Avon Road to below the southern end of Building 1. Excavation for Building 3 below the

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

driveway will be to about 13m depth below existing ground level at an offset of about 12m from the boundary to No 7 Avon Road.

The proposed four residential houses are located off Beechworth Road and each have a building footprint of 250 square metres. The existing dwelling at No. 1 Avon Road is to be retained.

1.2 Objectives

The assessment objectives are to:

- Assess the potential for 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/landuse.

1.3 Scope of Work

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP8690K2.1) of 20 March 2015 and written acceptance from the client of 23 March 2015.

The scope of work included the following:

- Review of previous investigation reports prepared by EIS for the site;
- A site inspection to identify Areas of Environmental Concern (AEC);
- 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.

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]

[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)

Guidelines/Regulations
Guidelines for the NSW Site Auditor Scheme, 2nd Edition 2006[5]
National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended 2013[6]

[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 SITE INFORMATION

2.1 Background

2.1.1 Stage 1 Environmental Site Assessment (EIS, 2012[7])

EIS was commissioned by JW Neale Pty Ltd (Receivers and Managers Appointed) in 2010 to undertake a Stage 1 ESA for the proposed multi-storey residential development at 1, 1A & 5 Avon Road, 1 Arilla Road, 4 & 8 Beechworth Road, Pymble NSW. Marchese Partners on behalf of JW Neale Pty Ltd (Receivers and Managers Appointed) commissioned EIS in 2012 to amend the previous Stage 1 environmental assessment report, on the provision that the property identified as 1 Arilla Road, Pymble (Lot 7 in DP15541) was no longer considered to be part of the proposed development area.

The key issues identified in the stage 1 ESA included:

- The site has been used for residential purposes since 1930;
- A small orchard was located in the central section of the site prior to 1930 and up until 1961;
- Council records indicate that 4 Beechworth Road was formerly used as a vehicle repair yard in the early 1990's;
- Two separate residential buildings were demolished in the north western section of the site between 1986 and 1994;
- There are no recorded notices listed on the NSW DECCW CLM or POEO register; and
- WorkCover have no records of underground storage tank licenses issued for the site.

Based on the scope of work undertaken for this investigation a number of potential contamination issues had been identified at this site. These included:

- The terraced gardens may have been constructed using imported fill material. The material used as backfill in Sydney in the early part of the twentieth century commonly contained a large proportion of ash/slag waste from coal burning. As a result this material commonly contains elevated concentrations of polycyclic aromatic hydrocarbons and heavy metals;
- The orchard identified in the south section of the site may have been treated with pesticides. Prior to 1945 the pesticides would have been of various heavy metals preparations, after 1945 organochlorine pesticides became common;
- The houses and structures at the site (both standing and demolished) may have contained hazardous building materials such as asbestos. Sub-floor areas of the houses may have been treated with pesticides; and
- The creek running through the site could have been a pathway for potential offsite contaminant sources (e.g. the railway) impacting on the site.

Based on the scope of the work undertaken EIS considered that the site could be made suitable for the proposed development provided that:

[7] EIS, (2012), *Report to JW Neale Pty Ltd (Receivers and Managers Appointed) on Stage 1 Environmental Site Assessment for Proposed Multi-Storey Residential Development at 5 Avon Road, Pymble, NSW.* (Report Ref: E24192KrptRev1.2, dated December 2012) (referred to as EIS 2012 Report)

- An investigation is undertaken of the site that includes sampling and analysis. Ideally this should be undertaken after the vegetation has been cleared from the site;
- A waste classification is assigned to any fill material that is excavated for offsite disposal;
- In the event that any significant contamination is encountered a Remedial Action Plan (RAP) is prepared; and
- A hazardous building materials survey of the site buildings and structures is undertaken prior to demolition.

2.2 Site Identification

Table 2-1: Site Identification

Site Address, Lot & Deposited Plan:	1 Avon Road, Pymble (Lot 1, DP 583803) 1A Avon Road, Pymble (Lot 2, DP 583803) 5 Avon Road, Pymble (Lot 2, DP205504) 4 Beechworth Road, Pymble (Lot 1, DP403072) 8 Beechworth Road, Pymble (Lot 3, DP403072)
Current Land Use:	Residential
Proposed Land Use:	Residential
Local Government Authority (LGA):	Ku-ring-gai Council
Current Zoning:	R2 Low Density Residential, R3 Medium Density Residential & E4 Environmental Living
Site Area (m^2):	26,000
Geographical Location (MGA) (approx.):	N: 626407 E: 332704
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location and Regional Setting

The site is located in a predominantly residential area of Pymble. The site is bounded by the North Shore Railway line to the north, Avon Road to the east and Beechworth Road to the west.

2.4 Topography

The site is located within steep sloping regional topography with the site itself located on a south west facing and south east facing hillside. A drainage gully which drains in a south west direction is located between the two hillsides.

2.5 Site Inspection

A walkover inspection of the site was undertaken by EIS on 29 April 2015. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken.

At the time of the inspection, the site was occupied by a number of residential premises. The entire site was heavily vegetated with some areas of the site inaccessible.

In the north east section of the site was an existing two storey brick dwelling (No 1 Avon Road). Access to the premises was via a walkway from Avon Road which ran parallel to the railway. What appeared to have once been a driveway to the property was covered by numerous small stockpiles which extended up to the existing building. The stockpiles consisted of clayey sand fill with sandstone cobbles and were probably dumped on the site illegally. Landscaped areas with sandstone terraced areas were observed around the building. An in ground swimming pool was located to the south of the building. A disused tennis court was located in the gully area towards the southern end of the site. The tennis court area appears to have been formed by cutting into the hillside slopes and filling close to the drainage gully. The tennis court was very overgrown.

The eastern section of the site was occupied by two separate single storey brick and weather board dwellings (No 3 & 5 Avon Road). At the time of the investigation No. 5 was in very poor dilapidated condition. Towards the north of No. 3 was an in ground swimming pool.

A two storey residential brick and weatherboard dwelling (No 8 Beechworth Road) was located in the west section of the site. This building was a battle-axe block behind No 6 Beechworth Road and built on relatively flat ground, however the site slope steepened towards the east. The eastern section which the house was constructed on appeared to have been filled to accommodate the natural topography of the hillside. What appeared to be an oil tank (possibly used for heating) was observed mounted on the wall towards the south east corner of the building.

A level grassed area was located towards the north western corner of the site which was behind No 2 Beechworth Road. This area of the site steepened towards the east and was densely overgrown. Building materials were observed on the ground surface of the steep slope towards the east. The 2012 report indicated that fibre cement fragments (FCF) were evident within the building materials. A FCF was observed and sampled during the current investigation in the same area.

The site was bound by residential properties to the east, south and west. The site was partly bounded by Avon Road to the east and Beechworth Road to the west. The site was bound by the

North Shore Railway line to the north. Approximately 100 m beyond the North Shore Railway were residential premises beyond which was the Pacific Highway.

2.6 Surrounding Land Use

The immediate surrounds included the following landuses:

- North – Railway corridor
- South – Residential landuses
- East – educational and residential landuses
- West – residential landuses.

2.7 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment. A brief summary of the relevant information is presented below:

Table 2-2: Summary of Relevant Services

Service	Location	Potential Migratory Pathway
Sewer	The Sydney Water plan indicates a sewer passing through the site from both the north east and north west and joining towards the centre of the southern boundary of the site.	The backfill around the sewer could act as a potential migratory pathway.

2.8 Regional Geology

A review of the regional geological map of Sydney (1983[8]) indicates that the site is underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

2.9 Hydrogeology

A review of groundwater bore records available on the NSW Office of Water[9] (NOW) online database was undertaken for the Stage 1 ESA. The search was limited to registered bores located within a radius of approximately 1km of the site.

Three groundwater bores were registered for monitoring purposes approximately 150m up-gradient to the north east of the site. Three bores located down gradient and approximately 600m to 900m south west of the site were registered for irrigation purposes.

A review of the regional geology and groundwater bore information indicates that the subsurface condition at the site is expected to consist of residual soils overlying relatively shallow bedrock. The

[8] Department of Mineral Resources, (1983), *1:100,000 Geological Map of Sydney (Series 9130).*
[9] http://www.waterinfo.nsw.gov.au/gw/

occurrence of groundwater that could be utilised as a resource for beneficial use is considered to be relatively low under such conditions. A perched aquifer in the subsurface may be present.

2.10 Receiving Water Bodies

The site location and regional topography indicates that excess surface water flows have the potential to enter the drainage gully located in the centre of the site. This water body can be a potential receptor.

4 CONCEPTUAL SITE MODEL (CSM)

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

Table 4-1: 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; receiving water bodies; others identified in the above sections.
Fuel Storage Facilities –Leakage and spillage of petroleum hydrocarbons could have resulted in site contamination with the former use of number 4 Beechworth Road as a vehicle repair yard in the early 1990s. The storage of suspected oil for heating on the southern wall of number 8 Beechworth Road.	Lead, TRH, BTEXN and PAHs	Direct Contact – dermal contact; ingestion; and inhalation of dust and vapours. Media - soil, groundwater and vapour.	Human Receptors – As Above Environmental Receptors – As Above
Use of Pesticides – a small orchard was located in the central section of the site prior to 1930 and up until 1961. The use of pesticides during this period 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

AEC / Extent	PCC/CoPC	Potential Exposure Pathway and Media	Potential Receptors
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. The aerial photographs indicate that former buildings at the site were demolished. The use of hazardous building material in the former buildings could have resulted in potential contamination.	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

5 SAMPLING, ANALYSIS AND QUALITY PLAN

5.1 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[10])* and the NSW DEC document *The Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006[11])*.

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

Table 5-1: DQOs – Seven Steps

Step	Input
State the Problem	The CSM and Stage 1 ESA 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. The EIS project team will include: project principal (PP) and/or project associate (PA); project engineer/scientist (PE); and field engineer/scientist (FE) as outlined in the quality recorded checklist maintained for the project in accordance with our ISO 9001 certification.
Identify the Decisions/ Goal of the Study	The data collection is project specific and has been designed based on the following information: • Review of previous Stage 1 ESA prepared by EIS including site history; • AEC, PCC, receptors, pathways and medium identified in the PCSM; • 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:

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

Step	Input
	➢ Health Screening Levels (HSLs) – elevated point source contamination associated with petroleum hydrocarbons can pose a vapour risk to receptors; and ➢ Groundwater Investigation Levels (GILs) – elevated GILs can indicate a wider groundwater contamination risk.
Identify Information Inputs	The following information will be collected: • Soil samples based on subsurface conditions; • Groundwater samples from monitoring wells; • Surface water samples from receiving water bodies identified at the site; • Fibre Cement Fragments (FCF) in the vicinity of the sampling points; • 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 as shown in Figure 2. Fill has been identified as an AEC. The source of fill has not been established. Fill is considered to be heterogeneous material with PCC occurring in random pockets or layers. The presence of PCC in between sampling points cannot be measured. The areas excluded from the investigation are outlined in the data gaps.
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 Spike (TS), Trip Blanks (TB) and Field Rinsate (FR) samples. Non-compliance to be documented in the report; • The following acceptance criteria will be used to assess the primary 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

Step	Input
	- 10-140% recovery acceptable for VOCs; ➢ Surrogate spike recovery: - 60-140% recovery acceptable for general organics; and - 10-140% recovery acceptable for VOCs; ➢ Blanks: 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. 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.

5.2 Soil Sampling Plan and Methodology

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

Table 5-2: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	The NSW EPA Contaminated Sites Sampling Design Guidelines (1995[12]) 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 36 evenly spaced sampling points for this site with an area of approximately 26,000m^2. Samples for this investigation were obtained from 26 sampling points as shown on the attached Figure 2. This density is approximately 72% of the minimum sampling density recommended by the EPA.

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

Aspect	Input
	The stockpile at the north east section of the site was estimated to be approximately 70m^3. Three samples were obtained from the stockpile. This meets the density recommended in the NEPM 2013.
Sampling Plan	The sampling locations were placed on a systematic plan with a grid spacing of approximately 30m between sampling locations. A systematic plan was considered suitable to address potential contaminants associated with the fill material. A fill stockpile was located in the central section of the site. Distribution of contamination in the stockpile was considered to be random. Adopting a grid for stockpiles was not considered practical as the stockpile was less than 75m^3. Hence a random sampling plan was adopted
Exclusion Areas (Data Gaps)	Sampling was not undertaken in inaccessible areas of the site such as beneath existing buildings and dense overgrown vegetation. These areas have been excluded from the investigation.
Sampling Equipment	Soil samples were obtained on 30/4/15, 1/5/15, 4/5/15 & 5/5/15 in accordance with the standard sampling procedure (SSP) attached in the appendices. Sampling locations were set out using a hand held GPS unit (with an accuracy of ±5m). 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: • Hydraulically operated drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) sampler or directly from the auger when conditions did not allow use of the SPT sampler; and • Hand equipment in hard to access areas.
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. Additional samples were obtained when relatively deep fill (>0.5m) was encountered. Samples were also obtained when there was a distinct change in lithology or based on the observations made during the investigation. 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.

Aspect	Input
	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 calibration records are attached in the appendices. 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	The decontamination procedure adopted during sampling is outlined in the SSP. Where applicable, the sampling equipment was decontaminated using a scrubbing brush and potable water and Decon 90 solution (phosphate free detergent) followed by rinsing with potable water. Rinsate samples were obtained during the decontamination process as part of the field QA/QC. 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.

5.3 Groundwater Sampling Plan and Methodology

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

Table 5-3: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Groundwater monitoring wells were installed in 2 selected boreholes (BH9 and BH31) spread across the site as shown on Figure 2. The drainage creek was also sampled. The monitoring well locations were chosen based on subsurface conditions encountered

Aspect	Input
	during the investigation and to target potential contamination sources where applicable.
Exclusion Areas (Data Gaps)	Sampling was not undertaken in inaccessible areas of the site such as beneath existing buildings. These areas have been excluded from the investigation.
Monitoring Well Installation Procedure	The monitoring well construction details are documented on the appropriate borehole logs attached in the appendices. The monitoring wells were installed to depths of approximately 5.5 to 6m below ground level. The installation depth was designed to make an assessment of shallow perched groundwater conditions. The wells were constructed as follows: • A 50mm diameter Class 18 PVC casing and machine slotted screen; • A 2mm sand filter pack was used around the screen section for groundwater infiltration; • A bentonite seal/plug was used on top of the slotted section to seal the wells; • A gatic cover was installed at the surface with a concrete plug to limit the inflow of surface water.
Monitoring Well Development	The monitoring wells were developed on 4/5/15 using a submersible electrical pump. A minimum of 3 well volumes was removed or the wells were pumped dry in slow recharging conditions. The following parameters were monitored using calibrated field instruments (see SSP): • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. The field monitoring records and calibration data are attached in the appendices.
Groundwater Sampling	The monitoring wells were allowed to recharge for approximately 5 to 7 days after development. Groundwater samples were obtained on 11/5/15. Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) using an inter-phase probe electronic dip meter. The samples were obtained using a peristaltic pump. During sampling, the following parameters were monitored using calibrated field instruments (see SSP): • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. Steady state conditions were 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%.

Aspect	Input
	Groundwater samples were obtained directly from the single use PVC tubing and placed in the sample containers. The use of low-flow sampling techniques (such as a micro-purge or peristaltic pump) generally provides for an increased confidence of accuracy, and in particular, improves the likelihood that the sample is representative of general aquifer conditions due to much lower aquifer disturbance during sampling. Duplicate samples were 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. Groundwater removed from the wells during development and sampling was transported to EIS in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal. The field monitoring record and calibration data are attached in the appendices.
Decontaminant and Sample Preservation	The decontamination procedure adopted during sampling is outlined in the SSP attached in the appendices. During development, the pump was flushed between monitoring wells with potable water (single-use tubing was used for each well). Sampling was undertaken using a peristaltic pump. The pump tubing was discarded after each sampling event and replaced therefore no decontamination procedure was considered necessary. 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.

5.4 Analytical Schedule

The analytical schedule is outlined in the following table:

Table 5-4: Analytical Schedule

PCC/CoPC	Fill Samples	Natural Soil Samples	Stockpile Samples	Groundwater Samples
Heavy Metals	34	12	3	3
TRH/BTEXN	34	11	3	3

PCC/CoPC	Fill Samples	Natural Soil Samples	Stockpile Samples	Groundwater Samples
PAHs	34	11	3	3
OCPs/OPPs	23	7	3	Na
PCBs	23	7	3	Na
Asbestos	34	1	3	Na
pH/CEC/Clay Content (%)	4	Na	Na	Na
pH/EC/hardness	Na	Na	Na	3
TCLP Metals	7	Na	Na	Na
TCLP PAHs	2	Na	Na	Na
Asbestos in Fibre Cement Fragments (FCF)	1	Na	Na	Na

5.4.1 Laboratory Analysis

The samples were analysed by the NATA Accredited laboratory/s 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 5-5: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	127448, 127448-A 7 127766
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	6246

6 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 6-1: 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.
Ecological Assessment Criteria (EAC) (NEPM 2013)	The EAC criteria for 'urban residential and public open space (URPOS)' exposure setting have been adopted. The EILs for selected metals have been derived as follows: • The ABC values for high traffic (25th percentiles) areas for old suburbs of NSW published in Olszowy et. al. (1995[13]) has been adopted for this assessment; and • Selected fill samples obtained from the surficial profile (<2m) across the site were analysed for pH, CEC and clay content. The average pH, CEC and clay content values were used to calculate the ACL.
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[14]) 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[15]) require an assessment of environmental values including: **1. Aquatic Ecosystems:** The closest receiving water body in the vicinity of the site is a drainage channel

[13] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

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

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

Guideline	Applicability
	located towards the centre of the site. This water body predominantly sustains a freshwater ecosystem. Hence the freshwater water trigger values presented in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000[16]) 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. **3. <u>Buildings and Structures:</u>** An assessment of the risk posed by contaminated groundwater towards built structures has not been undertaken for this assessment. In the event elevated levels of contaminants are present, this can be addressed in the Tier 1/2 Risk assessment.

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

7 INVESTIGATION RESULTS

7.1 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 7-1: Summary of Subsurface Conditions

Profile	Description (m in bgl)
Pavement	Asphaltic Concrete (AC) pavement was encountered at the surface of BH4 only.
Fill	Fill material was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.2 to 2.0m. BH5, BH18, BH22, BH23 and BH26 were terminated in the fill at a maximum depth of approximately 1.0m. The fill typically comprised of: silty clay; silty sandy gravel; gravelly silty clay; silty clayey gravel; sandy clay; clayey sand and silty sand. The fill contained inclusions of: ash; slag; roots; root fibres; bricks; tiles; igneous, sandstone, shale and ironstone gravels.
Natural Soil	Natural silty clay was encountered in the majority of the boreholes underlying the fill.
Bedrock	Shale bedrock was encountered underlying the fill or natural silty clay in BH1 to BH3. BH9, BH31, BH32, BH35 and BH36.
Groundwater	Groundwater seepage was encountered in BH9 and BH20 at depths of 2.5m and 0.5m during drilling. Groundwater seepage was not encountered in the remaining boreholes during drilling. Groundwater monitoring wells were installed in BH9 and BH31. The SWL noted in these boreholes during sampling on 11/5/15 is outlined in the section below.

7.2 Field Screening

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

Table 7-2: Summary of Field Screening

Aspect	Details (m in bgl)
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0ppm to 94ppm equivalent isobutylene. These results indicate PID detectable VOCs. Samples with elevated PID readings were analysed for TRH and BTEXN.
Groundwater Depth	Groundwater seepage was encountered in boreholes BH9 and BH20 during drilling at

Aspect	Details (m in bgl)
& Flow	depths of approximately 2.5 to 0.5m. The remaining boreholes were dry during and a short time after completion of drilling. SWLs measured in the monitoring wells installed at the site ranged from 2.14 to 4.62m. Based on the topography of the site we have assumed that groundwater would flow towards the drainage channel located in the centre of the site.
Groundwater Field Parameters	Field measurements recorded during sampling are as follows: - pH ranged from 5.36 to 5.49; - EC ranged from 951µS/cm to 805µS/cm; - Eh ranged from 102.7mV to 126.0mV; and - DO ranged from 3.7ppm to 3.0ppm.
LNAPLs petroleum hydrocarbons	Free phase LNAPLs were not detected using the interphase probe during groundwater sampling.

7.3 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. Statistical calculations undertaken on the results using ProUCL (version 5) are attached in the appendices. A summary of the results assessed against the SAC is presented below.

Table 7-3: Summary of Soil Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**HILs:** The lead result of 640mg/kg in the BH31 0-0.2m sample was above the HIL-A criteria of 300mg/kg. All remaining heavy metal results were below the HIL-A criteria. Summary of Statistical Calculation: The result is below 250% of the SAC and inside the acceptance criteria outlined in Section 4.1. The 95% UCL was calculated using the lead data from the fill soil samples. The 95% UCL for lead was 97.11mg/kg which is below the HIL-A criterion of 300mg/kg. The Standard Deviation (SD) was inside the acceptance criteria outlined in Section 4.1. **EILs:** All heavy metal results were below the EIL-UR&POS criteria. **WC:** The lead results of 120mg/kg, 160mg/kg, 130mg/kg, 180mg/kg, 640mg/kg, 120mg/kg and 110mg/kg in the BH9 1.7-1.95m, BH25 0-0.15m, BH26 0-0.2m, BH27 0-0.3m, BH31 0-0.2m,

Analyte	Results Compared to SAC
	BH35 0-0.2m and BH36 0-0.2m samples respectively exceeded the CT1 criteria. The nickel results of 100mg/kg and 78mg/kg in the BH3 0-0.1m and BH9 0-0.3m respectively were above the CT1 criteria. All remaining heavy metal results were less than the CT1 and SCC1 criteria. TCLP leachates were prepared from the above elevated samples and analysed for lead or nickel. The results were less than the TCLP1 criteria.
TRH	**HSLs:** All TRH results were below the HSL-A criteria. **ESLs:** The >C16-C34 (F3) result of 590mg/kg in the BH9 0-0.3m sample exceeded the ESL criteria of 300mg/kg. All remaining TRH results were below the ESL-URPOS criteria. **WC:** All TRH results were less than the relevant CT1 and SCC1 criteria.
BTEXN	**HSLs:** All BTEXN results were below the HSL-A criteria. **ESLs:** All BTEXN results were below the ESL-URPOS criteria. **WC:** All BTEX results were less than the relevant CT1 and SCC1 criteria.
PAHs	**HILs:** The benzo(a)pyrene TEQ result of 13mg/kg in the BH5 0-0.3m sample was above the HIL-A criteria. All remaining PAH results were below the HIL-A criteria. Summary of Statistical Calculation: The B(a)P TEQ result of 13mg/kg in the BH5 0-0.3m sample is above 250% of the SAC and outside the acceptance criteria outlined in Section 4.1. The 95% UCL was calculated using the B(a)P TEQ data from the fill soil samples. The 95% UCL for B(a)P TEQ was 1.68mg/kg which is below the HIL-A criterion of 3mg/kg. The Standard Deviation (SD) was inside the acceptance criteria outlined in section 4.1. **HSLs:** All naphthalene results were below the HSL-A criteria. **ESLs:** The benzo(a)pyrene results of 3.1mg/kg and 0.76mg/kg in the BH5 0-0.3m and BH34 0-0.2m was above the ESL-URPOS criteria of 0.7mg/kg. all remaining benzo(a)pyrene results were less than the ESL-URPOS criteria. **EILs:**

Analyte	Results Compared to SAC
	All naphthalene results were below the EIL-URPOS criteria. **WC:** The benzo(a)pyrene result of 9.1mg/kg in the BH5 0-0.3m sample exceeded the CT1 criteria. All remaining PAH results were less than the relevant CT1 and SCC1 criteria. TCLP leachates were prepared from the above elevated sample and analysed for PAHs. The results were less than the TCLP1 criteria.
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 soil samples analysed for the investigation. Asbestos fibres were detected in the material sample obtained from the ground surface and analysed for the investigation.

7.4 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 7-4: Summary of Groundwater Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**GIL-ANZECC-Fresh:** Elevated concentrations of individual metals were encountered above the GIL-ANZECC criteria as outlined below:

Analyte	Sample	GIL	Concentration
Copper	MW9	1.4µg/L	2µg/L (MW9)
	MW31		2µg/L (MW31)
	Creek		3µg/L (Creek)

Analyte	Results Compared to SAC
	Zinc: MW9, MW31, Creek — 8µg/L — 58µg/L (MW9), 70µg/L (MW31), 10µg/L (Creek)
TRH & BTEXN	**GIL-ANZECC-Fresh:** All BTEXN results were below the GIL-ANZECC criteria. **HSLs:** All TRH and BTEXN results were below the GIL-HSL A criteria.
PAHs	**GIL-ANZECC-Fresh:** All PAH results were below the GIL-ANZECC criteria. **HSLs:** All naphthalene results were below the GIL-HSL A criteria.
Other Parameters	The results for pH, EC, TDS and hardness are summarised below: • pH ranged from 5.4 to 7; • EC ranged from 430µS/cm to 1,000µS/cm; and • Hardness ranged from 26$CaCO_3$/L to 90mg$CaCO_3$/L

8 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 8-1: 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;
- The investigation was undertaken by trained staff in accordance with the SSP; and
- Documentation maintained during the field work is attached in the appendices where applicable.

Laboratory Considerations:

- Selected samples were analysed for a range of PCC/CoPC.
- All samples were analysed by NATA registered laboratory/s 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;
- The climate conditions encountered during the field work were noted on the site description record maintained in the job file; and
- 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/s for all analysis (other than those outlined above);
- All primary, intra-laboratory duplicates and other QA/QC samples were analysed by the same laboratory; and
- The same units were used by the laboratory/s for all of the analysis.

Representativeness

Field Considerations:

- The investigation was designed to obtain appropriate media encountered during the field work as

outlined in the SAQP (proposal). 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 inter and intra-laboratory duplicates, trip blanks (TB), field rinsate (FR) and tip spikes (TS) 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 5.1.**

Intra-laboratory RPD Results:

Soil Samples at a frequency of 11% of the primary samples:

- Dup 2 is a soil duplicate of primary sample BH24 0-0.3m
- Dup 3 is a soil duplicate of primary sample BH35 0-0.2m

Groundwater Samples at a frequency of 33% of the primary samples:

- Dup A is a groundwater duplicate of primary sample MW9

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

The RPD values for a range of individual heavy metals were outside the acceptance criteria. Values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogenous matrices.

Inter-laboratory RPD Results:

Soil Samples at a frequency of 11% of the primary samples:

- Dup 1 is a soil duplicate of primary sample BH34 0-0.2m
- Dup 5 is a soil duplicate of primary sample BH14 0-0.2m

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

The RPD value for lead in the Dup 1 sample was significantly elevated. As a result the sample was re-analysed. The second RPD calculation based on the re analysis was acceptable. The high lead result in the Dup 1 sample was considered an anomaly and was not representative of the actual lead contamination in the sample.

Trip Spike (TS):
One groundwater TS were analysed for BTEX at a frequency of one spike per batch of volatiles. The results are presented in the attached report tables.

The results ranged from 97% to 105% and indicated that field preservation methods were appropriate.

Field Rinsate (FR):
Four FR samples obtained from the field equipment decontamination process were analysed for BTEX. The results are presented in the attached report tables.

All results were below the PQL which indicates that cross-contamination artefacts associated with sampling equipment was not present.

Trip Blank (TB):
One soil TB were analysed for BTEX at a frequency of one blank per batch of volatiles. 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 reports;
- A review of the report/s indicates the following comments noted by the laboratory/s:

Envirolab Report 6246 – The laboratory RPD acceptance criteria was exceeded in one sample for lead. The duplicate is outside the acceptable %RPD, reanalysis indicates possible sample heterogeneity for Dup 1.

9 WASTE CLASSIFICATION OF SOIL FOR OFF-SITE DISPOSAL

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

Table 9-1: Waste Classification

Site Extent / Material Type	Classification	Disposal Option
Fill material over 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 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.

10 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.

An elevated concentration of lead was identified in the BH31 0-0.2m sample above the HIL-A criteria. However, the statistical analysis of the fill soil lead results met the SAC and therefore the risk to the identified human receptors was considered to be very low.

Asbestos fibres were not detected in any of the soil samples analysed for the ESA. Asbestos fibres were detected in a FCF sampled from the ground surface in the North West corner of the site (Sample Ref: S1)

The assessment has identified the following contamination issues at the site:

Table 10-1: Tier 1 Risk Assessment and Review of CSM

Contaminant of Primary Concern (CoPC)	Receptor and Exposure Pathway	Discussion and Risk Rating
B(a)P TEQ	Human Receptors: Dermal Contact, ingestion and inhalation via dust	The CoPC were above the SAC adopted for this investigation and may pose a risk to site receptors. EIS are of the opinion that the risk posed to human receptors is low but will require remediation and/or management. Only one B(a)P TEQ result was elevated therefore this may represent a minor hotspot.
Asbestos in FCF	Human Receptors: Inhalation of airborne asbestos fibres	The investigation encountered FCF containing asbestos. During sampling the FCF were assessed to be in good conditions and could not be broken by hand pressure. Hence the material was assessed to be 'non-friable' based on field information. EIS are of the opinion that the risk posed to human receptors is low to moderate and will require remediation and/or management.

Contaminant of Primary Concern (CoPC)	Receptor and Exposure Pathway	Discussion and Risk Rating
TRH >C16-C34 (F3) and B(a)P	Environmental Receptors: Direct exposure to plants and animals	The CoPC were above the EAC adopted for this investigation and may pose a risk to environmental receptors. Environmental receptors on-site include proposed landscaped areas between buildings. Off-site receptors include surface water runoff into drainage channel. EIS are of the opinion that the risk posed to on-site environmental receptors is low. Only two of the forty five samples exceeded the ecological criteria for B(a)P and only one sample exceeded the ecological criteria for TRH >C16-C34 (F3). There were no obvious impacts on site flora.

10.1 Source and Extent of Contamination

10.1.1 Sources

The source of the PAHs and heavy metals including lead in the fill samples is considered to be associated with the ash and slag inclusions encountered in the fill matrix. The natural soil samples analysed below the fill profile were not impacted by the contaminants.

The demolition of the former house (number 4 Beechworth) in the north western section of the site could have resulted in remnant FCF on the ground surface.

10.1.2 Known Extent

Based on a review of the field logs and the laboratory data, EIS are of the opinion that the soil contamination is confined to the fill material at the site. The fill ranges in depth from approximately 0.2m to 2m bgl as shown on the attached Figure 2.

A B(a)P TEQ hot spot has been identified around the surface of BH5. Further investigation around this location should be undertaken to obtain a better understanding of the extent of the contamination and to better assess the hotspot.

10.1.3 Unknown Extent

Sampling was not undertaken beneath the existing buildings and densely overgrown vegetated areas. The extent of contamination beneath the buildings is currently unknown.

10.1.4 Hazardous Building Materials in Existing Buildings

There is a possibility of the presence of hazardous building materials in the existing buildings at the site. This is considered to pose a relatively low risk to the receptors provided that the demolition works are undertaken in accordance with the relevant codes and standards. EIS have undertaken a Hazardous Building Material Assessment (HAZMAT) of the current buildings on the site.

10.1.5 Groundwater

EIS are of the opinion that the elevated concentrations of heavy metals (copper and zinc) detected in the groundwater samples are typical of urban/regional groundwater conditions and are most likely associated leaking water infrastructure. No elevated copper or zinc soil concentrations above the soil HIL SAC were detected during the soil sampling program.

EIS note that the groundwater pH was outside of the ANZECC 2000 range. Again this has been attributed to regional issues.

Based on the results of the assessment, EIS are of the opinion that the groundwater PCC pose a low risk to the receptors identified in the CSM and groundwater remediation is not required.

Dewatering will be required as part of the basement construction. Dewatering and/or groundwater disposal approvals should be sought from the relevant authorities. Treatment of the groundwater may be required. A suitably qualified dewatering contactor should be appointed to provide any recommendations for treatment of the groundwater for dewatering.

10.2 Fate and Transport of Contaminants

The potential fate and transport of PCC/CoPC identified at the site is summarised in the following table:

Table 10-2: Fate and Transport of PCC/CoPC

PCC/CoPC	Fate and Transport
Non-volatile contaminants including: metals, heavy fraction PAHs and asbestos	With the exception of asbestos, non-volatile contaminants are predominantly confined to the soil and groundwater medium. The mobility of these contaminants varies depending on: the nature and type of contaminant present (e.g. leachability, viscosity etc.); soil type/porosity; surface water infiltration; groundwater levels; and the rate of groundwater movement. **Presence of Ash and Slag** Non-volatile contaminants associated with ash and slag waste (some heavy metals, heavy fraction PAHs, and sometimes heavy fraction TPHs) are bound within a relatively insoluble matrix. Slag and ash is usually formed as a by-product of combustion at high temperatures which 'locks in' the contaminants within the matrix.

PCC/CoPC	Fate and Transport
	Presence of Asbestos The potential transport of asbestos fibres is associated with the disturbance of asbestos contaminated soils and release of fibres into the atmosphere. This is likely to occur during excavation works. A number of studies have found that soils effectively filter out asbestos fibres and retain them within the soil matrix. The studies concluded that there is no significant migration of asbestos fibres, either through soil or groundwater. **Site Conditions** Surface water has the potential to infiltrate into the subsurface at the subject site via garden beds, grassed areas, unlined water retention facilities etc. Surface water infiltration could increase the migration potential of certain contaminants. Excess surface water has the potential to run-off into the drainage channel located to the centre of the site.

10.3 Data Gaps

The assessment has identified the following data gaps:

- Areas beneath the existing buildings have not been included in the assessment;
- Areas of dense vegetation prevented the systematic sampling pattern. Ten of the proposed sampling locations have not been assessed; and
- Dense vegetation prevented an inspection of the majority of the ground surface at the site for FCF.

11 CONCLUSION

EIS consider that the report objectives outlined in **Section 1.2** have been addressed.

Based on the scope of works undertaken, EIS are of the opinion that the CoPC identified at the site pose a risk to the receptors.

EIS consider that the site can be made suitable for the proposed development provided that the following recommendations are implemented to address the data gaps and to minimise/better manage/characterise the risks:

1. Address the data gaps identified in **Section 10.3** as part of an additional ESA**;**

2. Prepare a Remediation Action Plan (RAP) to outline remedial measures for the site;

3. Prepare a Validation Assessment (VA) report on completion of remediation;

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.

11.1 Regulatory Requirement

The regulatory requirements applicable for the site are outlined in the following table:

Table 11-1: Regulatory Requirement

Guideline	Applicability
Duty to Report Contamination 2009[17]	The requirement to notify the NSW EPA regarding site contamination should be assessed once the results of the additional investigation work have been reviewed and a remedial strategy (if necessary) has been selected. Please note that in the event the recommendations for additional work and remediation/management are not undertaken, there may be justification to notify the EPA. EIS can be contacted for further advice regarding notification.
POEO Act 1997	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.

[17] NSW Department of Environment and Climate Change, (2009), *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997.* (referred to as Duty to Report Contamination 2009)

Guideline	Applicability
Work Health and Safety Code of Practice 2011[18]	Sites contaminated with asbestos become a 'workplace' when work is carried out there and require a register and asbestos management plan.
Dewatering Consent	In the event groundwater is intercepted during excavation works, dewatering may be required. Council, NSW Office of Water (NOW) and other relevant approvals (from discharge authorities like Sydney Water etc.) should be obtained prior to the commencement of dewatering.

[18] WorkCover NSW, (2011), *WHS Regulation: Code of Practice – How to Manage and Control Asbestos in the Workplace.*

12 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

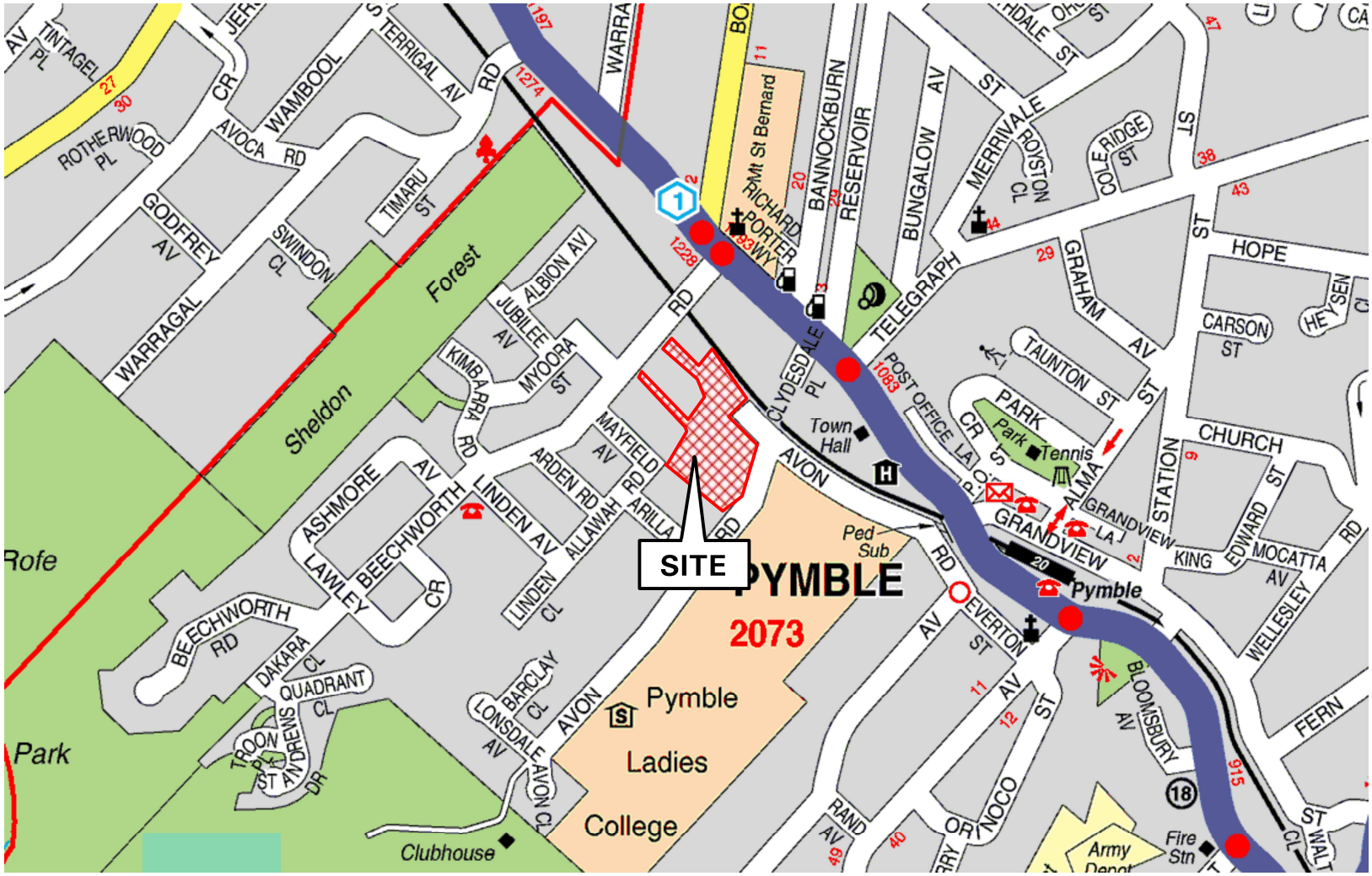
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other 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

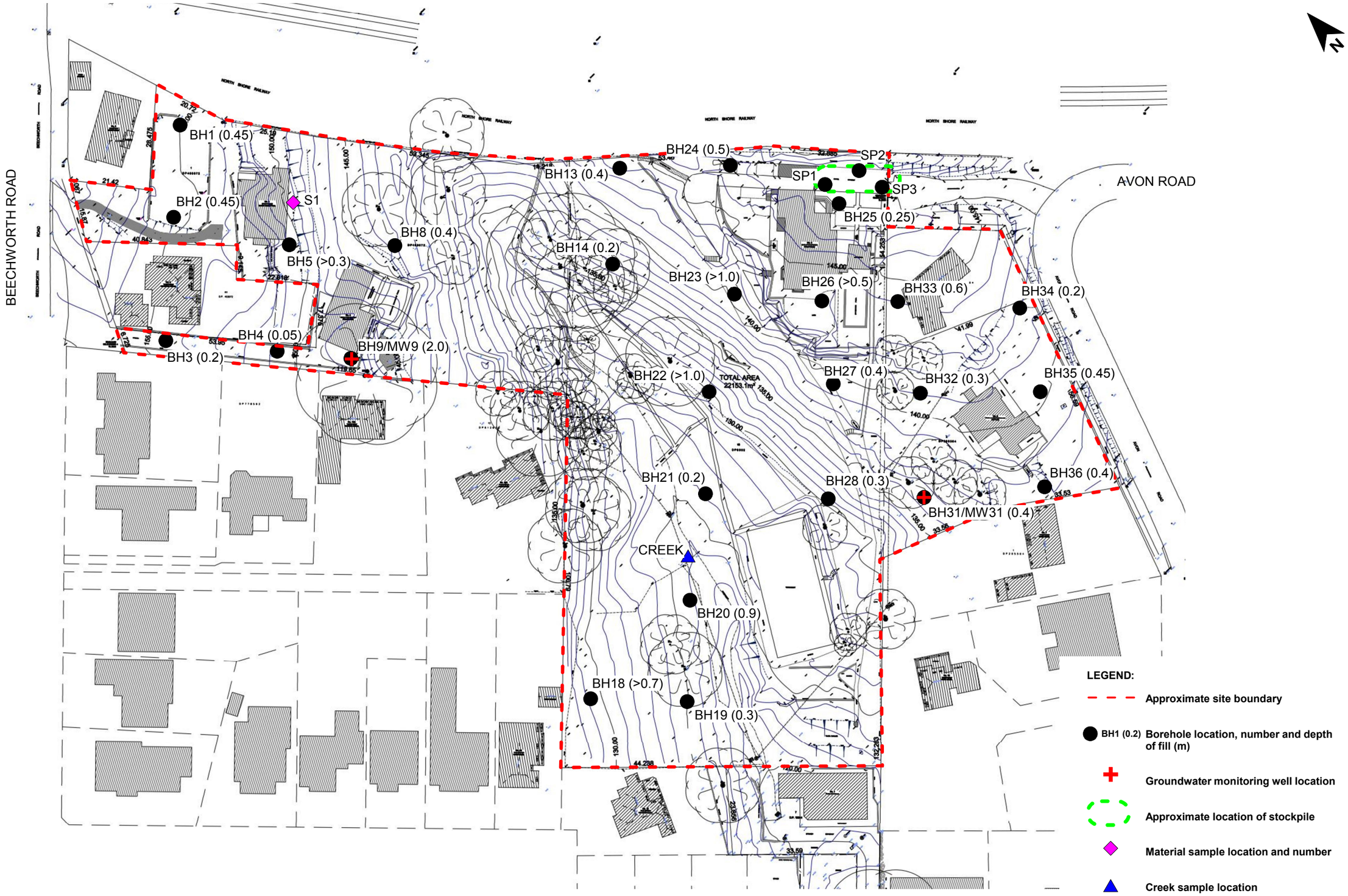


NOTES:
Figure has been recreated from UBD on disc (version 7.1) and http://maps.six.nsw.gov.au/.

Figure is not to scale. UBD Map ref: 174 F1, F2 & G2

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

ENVIRONMENTAL INVESTIGATION SERVICES	Project Number: **E24192K**	Title: **SITE LOCATION PLAN**
	Figure: **1**	Address: **1, 1A, 3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW**



LEGEND:

- Approximate site boundary
- BH1 (0.2) Borehole location, number and depth of fill (m)
- Groundwater monitoring well location
- Approximate location of stockpile
- Material sample location and number
- Creek sample location

NOTES:
Figure has been recreated from the supplied survey plan

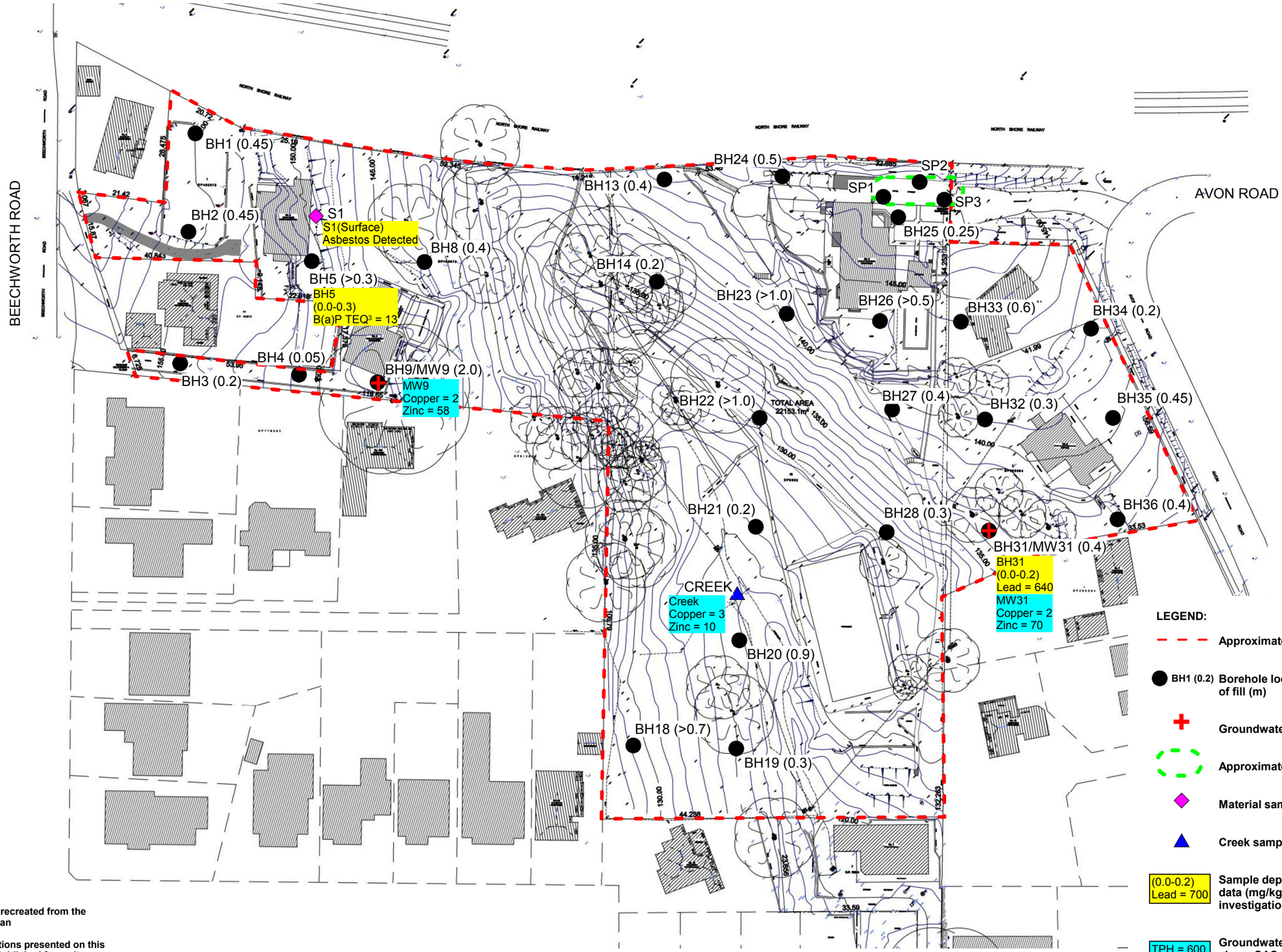
The borehole locations presented on this plan have been established from site measurements only and should not be construed as survey points. The fill depths include the pavement thickness where pavement was encountered.

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

Approximate Scale (m): 0 10 20 30 40 50

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E24192K	**SAMPLE LOCATION PLAN**
Figure: **2**	Address: **1, 1A, 3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW**



NOTES:
Figure 3 has been recreated from the supplied survey plan

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.

Contamination data shown on this plan are only those contaminants that exceeded the SAC.

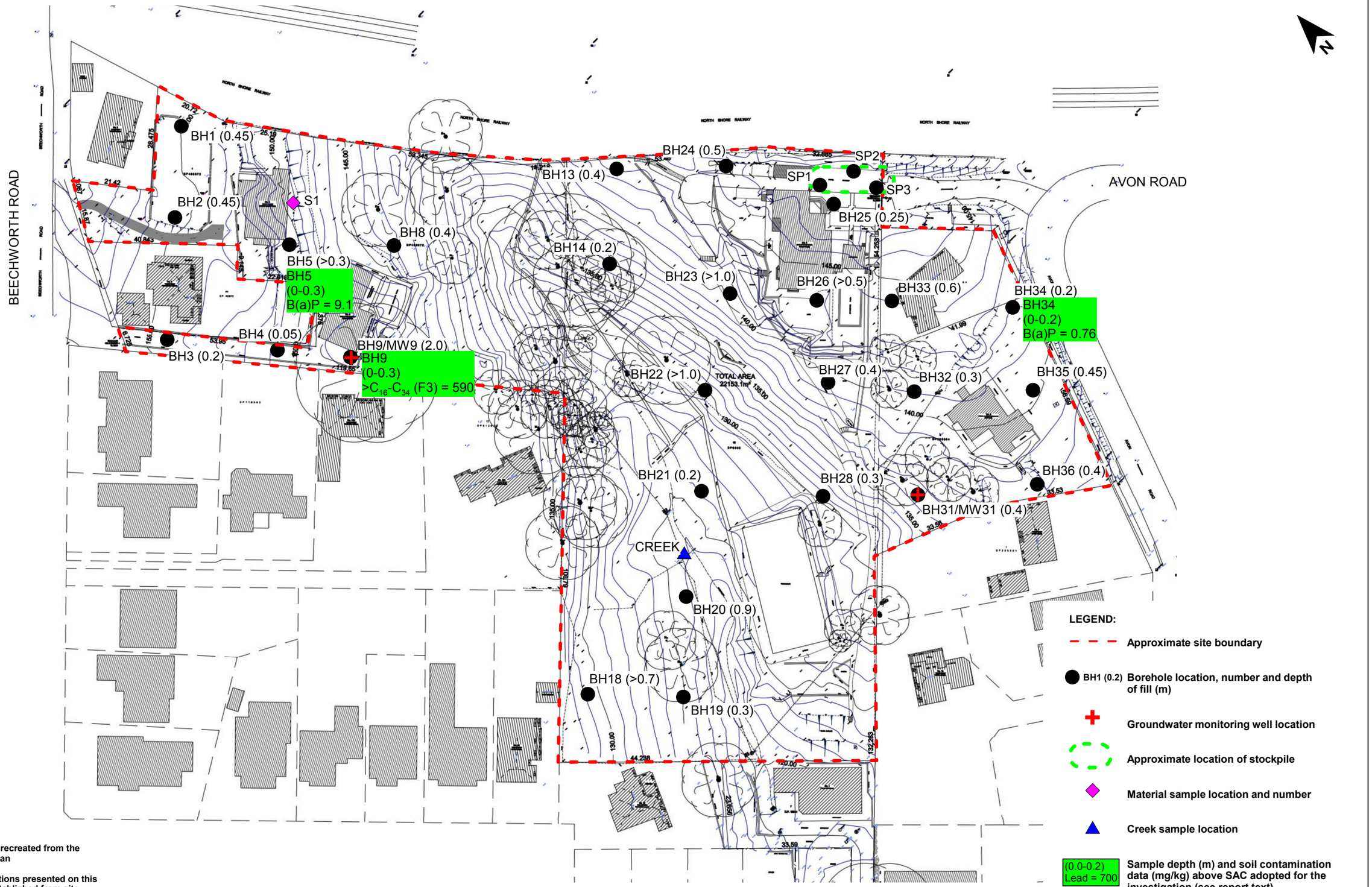
LEGEND:

- **Approximate site boundary**
- **BH1 (0.2) Borehole location, number and depth of fill (m)**
- **Groundwater monitoring well location**
- **Approximate location of stockpile**
- **Material sample location and number**
- **Creek sample location**
- **(0.0-0.2) Lead = 700 Sample depth (m) and soil contamination data (mg/kg) above SAC adopted for the investigation (see report text)**
- **TPH = 600 Lead = 700 Groundwater contamination data (ug/L) above SAC adopted for the investigation (see report text)**

Approximate Scale (m): 0 10 20 30 40 50

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E24192K	HILs & GILs SITE CONTAMINATION DATA PLAN
Figure: 3	Address: 1, 1A, 3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW



NOTES:
Figure 4 has been recreated from the supplied survey plan

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.

Contamination data shown on this plan are only those contaminants that exceeded the SAC.

Approximate Scale (m): 0 10 20 30 40 50

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E24192K	EIL-URPOS & ESL-URPOS SITE CONTAMINATION DATA PLAN
Figure: 4	Address: 1, 1A, 3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

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: silty clay	6	LPQL	10	13	28	LPQL	5	25	0.07	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH2	0-0.2	Fill: silty clay	4	LPQL	10	15	54	LPQL	5	58	0.86	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH2	0.5-0.8	Shale	LPQL	LPQL	6	31	24	LPQL	5	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH3	0-0.1	Fill: silty sandy gravel	LPQL	0.4	57	33	15	LPQL	100	54	0.12	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH4	0.05-0.15	Silty Clay	5	LPQL	13	32	21	LPQL	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH5	0-0.3	Fill: gravelly silty clay	5	LPQL	10	41	38	LPQL	10	60	79	**13**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH8	0-0.3	Fill: silty clay	7	LPQL	16	23	48	LPQL	9	48	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH8	0.5-0.8	Silty Clay	6	LPQL	16	20	25	LPQL	7	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH9	0-0.3	Fill: silty clayey gravel	LPQL	0.5	65	30	23	LPQL	78	54	1.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH9	0.5-0.75	Fill: silty clay	LPQL	LPQL	11	33	64	LPQL	7	60	4.7	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH9	1.7-1.95	Fill: silty clay	8	0.4	14	37	120	LPQL	8	130	7.6	0.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH13	0-0.3	Fill: silty clay	6	0.5	18	24	52	LPQL	6	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH14	0-0.2	Fill: silty clay	8	LPQL	15	66	52	0.1	6	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH18	0-0.1	Fill: silty clay	7	LPQL	14	22	51	0.1	8	80	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH18	0.3-0.6	Fill: silty clay	9	LPQL	15	28	22	LPQL	9	51	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH19	0-0.2	Fill: silty clay	7	LPQL	14	14	27	LPQL	8	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH20	0-0.2	Fill: silty clay	28	0.4	16	25	38	LPQL	10	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH20	0.3-0.5	Fill: silty clay	9	LPQL	15	22	21	LPQL	9	34	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH21	0-0.2	Fill: silty clay	11	0.4	14	22	59	0.1	15	73	0.05	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH21	0.3-0.5	Silty Clay	6	LPQL	15	13	19	LPQL	7	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH22	0-0.3	Fill: silty clay	5	LPQL	16	20	38	LPQL	11	46	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH22	0.5-0.7	Fill: silty clay	7	LPQL	12	14	15	LPQL	5	25	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH23	0-0.3	Fill: silty clay	5	LPQL	12	21	88	LPQL	6	64	0.28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH23	0.6-0.9	Fill: silty clay	5	LPQL	12	28	46	LPQL	4	38	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH24	0-0.3	Fill: silty clay	5	LPQL	11	21	57	LPQL	6	71	0.28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH24	0.5-0.6	Silty Clay	5	LPQL	7	22	23	LPQL	2	17	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH25	0-0.15	Fill: silty sand	LPQL	0.5	44	12	160	1.1	3	55	0.31	LPQL	LPQL	LPQL	LPQL	2.5	LPQL	0.5	LPQL	LPQL	LPQL	Not Detected
BH25	0.15-0.25	Fill: silty sandy gravel	6	LPQL	28	16	46	0.3	7	29	1.3	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH26	0-0.2	Fill: sandy clay	6	LPQL	33	20	130	0.1	4	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH26	0.2-0.5	Fill: silty clay	5	LPQL	17	23	63	LPQL	5	33	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH27	0-0.3	Fill: silty clay	7	0.6	19	65	180	0.1	7	180	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH27	0.5-0.7	Silty Clay	7	LPQL	14	34	28	LPQL	2	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH28	0-0.2	Fill: silty clay	6	0.4	13	17	26	LPQL	7	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH28	0.3-0.5	Silty Clay	6	LPQL	15	16	17	LPQL	8	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH31	0-0.2	Fill: silty clay	10	0.7	19	69	**640**	0.2	9	380	0.31	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH31	0.5-0.8	Silty Clay	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH32	0-0.2	Fill: silty clay	6	LPQL	13	25	79	LPQL	7	60	1.8	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH33	0-0.2	Fill: silty sand	7	0.6	27	120	50	0.2	14	190	2.4	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH33	0.3-0.5	Fill: silty clay	5	LPQL	15	30	31	LPQL	6	33	0.6	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH33	0.6-0.9	Silty Clay	5	LPQL	15	33	22	LPQL	7	21	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH33	1-1.2	Silty Clay	6	LPQL	15	37	26	LPQL	5	22	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH34	0-0.2	Fill: clayey sand	4	LPQL	13	24	61	LPQL	5	50	8	1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH34	0.3-0.5	Silty Clay	11	LPQL	12	46	26	LPQL	3	16	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH35	0-0.2	Fill: silty clay	5	0.4	16	25	120	LPQL	6	140	6.8	0.8	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH36	0-0.2	Fill: gravelly silty clay	6	LPQL	11	32	110	LPQL	3	55	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH36	0.5-0.7	Shale	8	LPQL	6	32	16	LPQL	3	14	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
SP1	-	Stockpiled Soil	LPQL	LPQL	8	7	42	LPQL	2	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.3	LPQL	0.5	LPQL	LPQL	Not Detected
SP2	-	Stockpiled Soil	LPQL	LPQL	8	6	39	LPQL	1	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2	LPQL	0.2	LPQL	LPQL	Not Detected
SP3	-	Stockpiled Soil	LPQL	LPQL	7	4	8	LPQL	2	14	LPQL	LPQL	LPQL	LPQL	LPQL	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
S1	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Detected**
Total Number of Samples			48	48	48	48	49	48	48	48	48	48	37	37	37	37	37	37	37	37	37	39
Maximum Value			28	0.7	65	120	640	1.1	100	380	79	13	LPQL	LPQL	LPQL	2.5	0.3	0.5	0.5	LPQL	LPQL	NC
Statistical Analysis on Fill Samples																						
Number of Fill Samples [4]			NC	NC	NC	NC	34	NC	NC	NC	NC	34	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mean Value [4]			NC	NC	NC	NC	78	NC	NC	NC	NC	0.91	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation [4]			NC	NC	NC	NC	107.4	NC	NC	NC	NC	2.1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
% UCL [4]			NC	NC	NC	NC	95	NC	NC	NC	NC	95	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
UCL Value [4]			NC	NC	NC	NC	97.11	NC	NC	NC	NC	1.647	NC	NC	NC	NC	NC	NC	NC	NC	NC	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
4 - Statistical calculation undertaken using ProUCL version 5.0 (USEPA). Statistical calculation has only been undertaken using data from fill samples

Concentration above the SAC **VALUE** Standard deviation exceeds data assessment criteria VALUE

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons	UCL: Upper Level Confidence Limit on Mean Value
B(a)P: Benzo(a)pyrene	HILs: Health Investigation Levels
PQL: Practical Quantitation Limit	NA: Not Analysed
LPQL: Less than PQL	NC: Not Calculated
OPP: Organophosphorus Pesticides	NSL: No Set Limit
OCP: Organochlorine Pesticides	SAC: Site Assessment Criteria
PCBs: Polychlorinated Biphenyls	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: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	0.5-0.8	Shale	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH3	0-0.1	Fill: silty sandy gravel	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0.05-0.15	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0-0.3	Fill: gravelly silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH8	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH8	0.5-0.8	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	0-0.3	Fill: silty clayey gravel	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	0.5-0.75	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH9	1.7-1.95	Fill: silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH13	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH14	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH18	0-0.1	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH18	0.3-0.6	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH19	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	1	0
BH20	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH20	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH21	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH21	0.3-0.5	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH22	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH22	0.5-0.7	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH23	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH23	0.6-0.9	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH24	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH24	0.5-0.6	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH25	0-0.15	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH25	0.15-0.25	Fill: silty sandy gravel	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH26	0-0.2	Fill: sandy clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH26	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH27	0-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH27	0.5-0.7	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH28	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	4.3
BH28	0.3-0.5	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	94
BH31	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH32	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	1.1
BH33	0-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	9.1
BH33	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	LPQL	55	LPQL	LPQL	LPQL	LPQL	LPQL	20.3
BH33	0.6-0.9	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	2.8
BH33	1-1.2	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	40.8
BH34	0-0.2	Fill: clayey sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH34	0.3-0.5	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH35	0-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH36	0-0.2	Fill: gravelly silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH36	0.5-0.7	Shale	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					45	45	45	45	45	45	45	45
Maximum Value					LPQL	55	LPQL	LPQL	LPQL	LPQL	1	94

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: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH2	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH2	0.5-0.8	Shale	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH3	0-0.1	Fill: silty sandy gravel	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH4	0.05-0.15	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH5	0-0.3	Fill: gravelly silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH8	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH8	0.5-0.8	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH9	0-0.3	Fill: silty clayey gravel	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH9	0.5-0.75	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH9	1.7-1.95	Fill: silty clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
BH13	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH14	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH18	0-0.1	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH18	0.3-0.6	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH19	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH20	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH20	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH21	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH21	0.3-0.5	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH22	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH22	0.5-0.7	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH23	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH23	0.6-0.9	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH24	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH24	0.5-0.6	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH25	0-0.15	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH25	0.15-0.25	Fill: silty sandy gravel	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH26	0-0.2	Fill: sandy clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH26	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH27	0-0.3	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH27	0.5-0.7	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH28	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH28	0.3-0.5	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH31	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH32	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH33	0-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH33	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH33	0.6-0.9	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH33	1-1.2	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH34	0-0.2	Fill: clayey sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH34	0.3-0.5	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH35	0-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH36	0-0.2	Fill: gravelly silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH36	0.5-0.7	Shale	0m to < 1m	Clay	50	280	0.7	480	NL	110	5

EIS

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: silty clay	6	LPQL	10	13	28	LPQL	5	25	0.07	0.07	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH2	0-0.2	Fill: silty clay	4	LPQL	10	15	54	LPQL	5	58	0.86	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH2	0.5-0.8	Shale	LPQL	LPQL	6	31	24	LPQL	5	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH3	0-0.1	Fill: silty sandy gravel	LPQL	0.4	57	33	15	LPQL	**100**	54	0.12	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	320	320	LPQL	LPQL	LPQL	LPQL	Not Detected
BH4	0.05-0.15	Silty Clay	5	LPQL	13	32	21	LPQL	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH5	0-0.3	Fill: gravelly silty clay	5	LPQL	10	41	38	LPQL	10	60	79	**9.1**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	240	200	440	LPQL	LPQL	LPQL	LPQL	Not Detected
BH8	0-0.3	Fill: silty clay	7	LPQL	16	23	48	LPQL	9	48	0.06	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH8	0.5-0.8	Silty Clay	6	LPQL	16	20	25	LPQL	7	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH9	0-0.3	Fill: silty clayey gravel	LPQL	0.5	65	30	23	LPQL	**78**	54	1.1	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	120	680	800	LPQL	LPQL	LPQL	LPQL	Not Detected
BH9	0.5-0.75	Fill: silty clay	LPQL	LPQL	11	33	64	LPQL	7	60	4.7	0.4	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH9	1.7-1.95	Fill: silty clay	8	0.4	14	37	**120**	LPQL	8	130	7.6	0.67	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH13	0-0.3	Fill: silty clay	6	0.5	18	24	52	LPQL	6	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH14	0-0.2	Fill: silty clay	8	LPQL	15	66	52	0.1	6	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH18	0-0.1	Fill: silty clay	7	LPQL	14	22	51	0.1	8	80	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH18	0.3-0.6	Fill: silty clay	9	LPQL	15	28	22	LPQL	9	51	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH19	0-0.2	Fill: silty clay	7	LPQL	14	14	27	LPQL	8	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH20	0-0.2	Fill: silty clay	28	0.4	16	25	38	LPQL	10	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH20	0.3-0.5	Fill: silty clay	9	LPQL	15	22	21	LPQL	9	34	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH21	0-0.2	Fill: silty clay	11	0.4	14	22	59	0.1	15	73	0.05	0.05	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH21	0.3-0.5	Silty Clay	6	LPQL	15	13	19	LPQL	7	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH22	0-0.3	Fill: silty clay	5	LPQL	16	20	38	LPQL	11	46	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH22	0.5-0.7	Fill: silty clay	7	LPQL	12	14	15	LPQL	5	25	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH23	0-0.3	Fill: silty clay	5	LPQL	12	21	88	LPQL	6	64	0.28	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH23	0.6-0.9	Fill: silty clay	5	LPQL	12	28	46	LPQL	4	38	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH24	0-0.3	Fill: silty clay	5	LPQL	11	21	57	LPQL	6	71	0.28	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH24	0.5-0.6	Silty Clay	5	LPQL	7	22	23	LPQL	2	17	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH25	0-0.15	Fill: silty sand	LPQL	0.5	44	12	**160**	1.1	3	55	0.31	0.07	LPQL	LPQL	LPQL	3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH25	0.15-0.25	Fill: silty sandy gravel	6	LPQL	28	16	46	0.3	7	29	1.3	0.1	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH26	0-0.2	Fill: sandy clay	6	LPQL	33	20	**130**	0.1	4	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH26	0.2-0.5	Fill: silty clay	5	LPQL	17	23	63	LPQL	5	33	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH27	0-0.3	Fill: silty clay	7	0.6	19	65	**180**	0.1	7	180	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH27	0.5-0.7	Silty Clay	7	LPQL	14	34	28	LPQL	2	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH28	0-0.2	Fill: silty clay	6	0.4	13	17	26	LPQL	7	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH28	0.3-0.5	Silty Clay	6	LPQL	15	16	17	LPQL	8	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH31	0-0.2	Fill: silty clay	10	0.7	19	69	**640**	0.2	9	380	0.31	0.07	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH32	0-0.2	Fill: silty clay	6	LPQL	13	25	79	LPQL	7	60	1.8	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH33	0-0.2	Fill: silty sand	7	0.6	27	120	50	0.2	14	190	2.4	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	150	220	370	LPQL	LPQL	LPQL	LPQL	Not Detected
BH33	0.3-0.5	Fill: silty clay	5	LPQL	15	30	31	LPQL	6	33	0.6	0.1	NA	NA	NA	NA	NA	LPQL	LPQL	100	LPQL	100	LPQL	LPQL	LPQL	LPQL	Not Detected
BH33	0.6-0.9	Silty Clay	5	LPQL	15	33	22	LPQL	7	21	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH33	1-1.2	Silty Clay	6	LPQL	15	37	26	LPQL	5	22	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH34	0-0.2	Fill: clayey sand	4	LPQL	13	24	61	LPQL	5	50	8	0.76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	110	110	LPQL	LPQL	LPQL	LPQL	Not Detected
BH34	0.3-0.5	Silty Clay	11	LPQL	12	46	26	LPQL	3	16	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH35	0-0.2	Fill: silty clay	5	0.4	16	25	**120**	LPQL	6	140	6.8	0.6	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH36	0-0.2	Fill: gravelly silty clay	6	LPQL	11	32	**110**	LPQL	3	55	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH36	0.5-0.7	Shale	8	LPQL	6	32	16	LPQL	3	14	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
SP1	-	Stockpiled Soil	LPQL	LPQL	8	7	42	LPQL	2	42	LPQL	LPQL	LPQL	LPQL	LPQL	0.8	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
SP2	-	Stockpiled Soil	LPQL	LPQL	8	6	39	LPQL	1	35	LPQL	LPQL	LPQL	LPQL	LPQL	0.4	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
SP3	-	Stockpiled Soil	LPQL	LPQL	7	4	8	LPQL	2	14	LPQL	LPQL	LPQL	LPQL	LPQL	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
S1	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Detected**
Total Number of samples			48	48	48	48	48	48	48	48	48	48	37	37	37	37	37	48	48	48	48	48	48	48	48	48	39
Maximum Value			28	0.7	65	120	640	1.1	100	380	79	9.1	LPQL	LPQL	LPQL	3	LPQL	LPQL	LPQL	240	680	800	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

SOIL LABORATORY TCLP RESULTS

All data in mg/L unless stated otherwise

			Lead	Nickel	B(a)P
PQL - Envirolab Services			0.03	0.02	0.001
TCLP1 - General Solid Waste [1]			5	2	0.04
TCLP2 - Restricted Solid Waste [1]			20	8	0.16
TCLP3 - Hazardous Waste [1]			>20	>8	>0.16
Sample Reference	**Sample Depth**	**Sample Description**			
BH3	0-0.1	Fill: silty sandy gravel	NA	0.06	NA
BH5	0-0.3	Fill: gravelly silty clay	NA	NA	LPQL
BH9	0-0.3	Fill: silty clayey gravel	NA	0.1	NA
BH9	1.7-1.95	Fill: silty clay	LPQL	NA	NA
BH25	0-0.15	Fill: silty sand	LPQL	NA	NA
BH26	0-0.2	Fill: sandy clay	0.06	NA	NA
BH27	0-0.3	Fill: silty clay	0.05	NA	NA
BH31	0-0.2	Fill: silty clay	0.1	NA	NA
BH35	0-0.2	Fill: silty clay	LPQL	NA	NA
BH36	0-0.2	Fill: gravelly silty clay	0.04	NA	NA
Total Number of samples			7	2	1
Maximum Value			0.1	0.1	LPQL

Explanation:

1 - NSW EPA Waste Classification Guidelines (2014)

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

B(a)P: Benzo(a)pyrene

NC: Not Calculated

NA: Not Analysed

TCLP: Toxicity Characteristics Leaching Procedure

TABLE E

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	GIL - ADWG [2]	SAMPLES		
				MW9	MW31	Creek
Inorganic Compounds and Parameters						
pH	0.1	6.5 - 8.5[i]	6.5 - 8.5[d]	**6**	**5.4**	7
Electrical Conductivity (µS/cm)	1	NSL	NSL	670	1000	430
Hardness (mgCaCo3/L)	3	NSL	200[d]	90	26	77
Metals						
Arsenic (As lll)	1	24	10	LPQL	LPQL	LPQL
Cadmium	0.1	0.2	2	LPQL	LPQL	LPQL
Chromium (total)	2	1[a^]	50[a^]	LPQL	LPQL	LPQL
Copper	1	1.4	2000	**2**	**2**	**3**
Lead	1	3.4	10	LPQL	LPQL	LPQL
Total Mercury (inorganic)	0.05	0.06	1	LPQL	LPQL	LPQL
Nickel	1	11	20	1	6	LPQL
Zinc	1	8	3000[d]	**58**	**70**	**10**
Total Recoverable Hydrocarbons (TRH)						
C_6-C_{10} (F1)	25	NSL	NSL	LPQL	LPQL	LPQL
>C_{10}-C_{16} (F2)	50	NSL	NSL	82	LPQL	LPQL
>C_{16}-C_{34} (F3)	100	NSL	NSL	LPQL	LPQL	LPQL
>C_{34}-C_{40} (F4)	100	NSL	NSL	LPQL	LPQL	LPQL
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)						
Benzene	1	950	1	LPQL	LPQL	LPQL
Toluene	1	180[a]	800	LPQL	LPQL	LPQL
Ethylbenzene	1	80[a]	300	LPQL	LPQL	LPQL
m+p-xylene	2	75[m]	NSL	LPQL	LPQL	LPQL
o-xylene	1	350[a]	NSL	LPQL	LPQL	LPQL
Total xylenes	2	NSL	600	LPQL	LPQL	LPQL
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	0.1	16[a]	0.14 [b]	LPQL	LPQL	LPQL
Acenaphthylene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Acenaphthene	0.1	NSL	400 [b]	LPQL	LPQL	LPQL
Fluorene	0.1	NSL	220 [b]	LPQL	LPQL	LPQL
Phenanthrene	0.1	0.6[c]	NSL	LPQL	LPQL	LPQL
Anthracene	0.1	0.01[c]	1300 [b]	LPQL	LPQL	LPQL
Fluoranthene	0.1	1[c]	630 [b]	LPQL	LPQL	LPQL
Pyrene	0.1	NSL	87 [b]	LPQL	LPQL	LPQL
Benzo(a)anthracene	0.1	NSL	0.029 [b]	LPQL	LPQL	LPQL
Chrysene	0.1	NSL	2.9 [b]	LPQL	LPQL	LPQL
Benzo(b,j+k)fluoranthene	0.2	NSL	0.029 [br]	LPQL	LPQL	LPQL
Benzo(a)pyrene	0.1	0.1[c]	0.01	LPQL	LPQL	LPQL
Indeno(1,2,3-c,d)pyrene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Dibenzo(a,h)anthracene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Benzo(g,h,i)perylene	0.1	NSL	NSL	LPQL	LPQL	LPQL

Explanation:

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

2 - NHMRC Australian Drinking Water Guidelines (ADWG 2011)

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

b - In the absence of Australian guidelines, the USEPA Region 9 Screening Levels for tapwater have been adopted as a preliminary screening tool

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

d - In the absence of a health guideline the aesthetic guideline concentration has been quoted

g - Guideline value only. The guideline criteria for this analyte should be checked with the local authority.

i - ANZECC 2000 - Level for NSW Lowland Rivers.

j - ANZECC 2000 - Level for South-East Australian Estuaries

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

r - The more conservative value for Benzo(b)fluoranthene has been adopted

a^ - The GIL for Cr VI has been adopted as a conservative measure

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 F
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	PID [2]
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**								
MW9	2.14	2m to <4m	Clay	LPQL	82	LPQL	LPQL	LPQL	LPQL	LPQL	0
MW31	4.62	4m to <8m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Creek	0	0m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
FALSE											
Total Number of Samples				3	3	3	3	3	3	3	3
Maximum Value				LPQL	82	LPQL	LPQL	LPQL	LPQL	LPQL	0

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	PQL: Practical Quantitation Limit
HSLs: Health Screening Levels	LPQL: Less than PQL
NA: Not Analysed	SAC: Site Assessment Criteria
NC: Not Calculated	NEPM: National Environmental Protection Measure
NL: Not Limiting	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**							
MW9	2.14	2m to <4m	Clay	NL	NL	5000	NL	NL	NL	NL
MW31	4.62	4m to <8m	Clay	NL	NL	5000	NL	NL	NL	NL
Creek	0	0m to <2m	Clay	SSA	SSA	SSA	NL	NL	NL	NL

EIS

TABLE G
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									
				pH	CEC (cmol$_c$/kg)	Clay Content (% clay)	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				-	1	-	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	13	28	NSL	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH1	0-0.2	Fill: silty clay	Fine	NA	NA	NA	6	10	13	28	5	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.07
BH2	0-0.2	Fill: silty clay	Fine	NA	NA	NA	4	10	15	54	5	58	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.1
BH2	0.5-0.8	Shale	Fine	NA	NA	NA	LPQL	6	31	24	5	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0-0.1	Fill: silty sandy gravel	Coarse	8.8	24	14	LPQL	57	33	15	100	54	LPQL	LPQL	LPQL	LPQL	250	380	LPQL	LPQL	LPQL	LPQL	LPQL
BH4	0.05-0.15	Silty Clay	Fine	NA	NA	NA	5	13	32	21	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH5	0-0.3	Fill: gravelly silty clay	Fine	NA	NA	NA	5	10	41	38	10	60	LPQL	LPQL	LPQL	LPQL	400	130	LPQL	LPQL	LPQL	LPQL	9.1
BH8	0-0.3	Fill: silty clay	Fine	NA	NA	NA	7	16	23	48	9	48	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.06
BH8	0.5-0.8	Silty Clay	Fine	NA	NA	NA	6	16	20	25	7	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH9	0-0.3	Fill: silty clayey gravel	Coarse	8.5	23	14	LPQL	65	30	23	78	54	LPQL	LPQL	LPQL	LPQL	590	750	LPQL	LPQL	LPQL	LPQL	0.1
BH9	0.5-0.75	Fill: silty clay	Fine	NA	NA	NA	LPQL	11	33	64	7	60	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.4
BH9	1.7-1.95	Fill: silty clay	Fine	NA	NA	NA	8	14	37	120	8	130	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.67
BH13	0-0.3	Fill: silty clay	Fine	NA	NA	NA	6	18	24	52	6	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH14	0-0.2	Fill: silty clay	Fine	NA	NA	NA	8	15	66	52	6	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH18	0-0.1	Fill: silty clay	Fine	NA	NA	NA	7	14	22	51	8	80	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH18	0.3-0.6	Fill: silty clay	Fine	NA	NA	NA	9	15	28	22	9	51	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH19	0-0.2	Fill: silty clay	Fine	NA	NA	NA	7	14	14	27	8	57	1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH20	0-0.2	Fill: silty clay	Fine	NA	NA	NA	28	16	25	38	10	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH20	0.3-0.5	Fill: silty clay	Fine	NA	NA	NA	9	15	22	21	9	34	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH21	0-0.2	Fill: silty clay	Fine	NA	NA	NA	11	14	22	59	15	73	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.05
BH21	0.3-0.5	Silty Clay	Fine	NA	NA	NA	6	15	13	19	7	20	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH22	0-0.3	Fill: silty clay	Fine	NA	NA	NA	5	16	20	38	11	46	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH22	0.5-0.7	Fill: silty clay	Fine	NA	NA	NA	7	12	14	15	5	25	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH23	0-0.3	Fill: silty clay	Fine	NA	NA	NA	5	12	21	88	6	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.06
BH23	0.6-0.9	Fill: silty clay	Fine	NA	NA	NA	5	12	28	46	4	38	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH24	0-0.3	Fill: silty clay	Fine	NA	NA	NA	5	11	21	57	6	71	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.06
BH24	0.5-0.6	Silty Clay	Fine	NA	NA	NA	5	7	22	23	2	17	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH25	0-0.15	Fill: silty sand	Coarse	NA	NA	NA	LPQL	44	12	160	3	55	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.07
BH25	0.15-0.25	Fill: silty sandy gravel	Coarse	NA	NA	NA	6	28	16	46	7	29	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.1
BH26	0-0.2	Fill: sandy clay	Fine	NA	NA	NA	6	33	20	130	4	49	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH26	0.2-0.5	Fill: silty clay	Fine	NA	NA	NA	5	17	23	63	5	33	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH27	0-0.3	Fill: silty clay	Fine	NA	NA	NA	7	19	65	180	7	180	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH27	0.5-0.7	Silty Clay	Fine	NA	NA	NA	7	14	34	28	2	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH28	0-0.2	Fill: silty clay	Fine	NA	NA	NA	6	13	17	26	7	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH28	0.3-0.5	Silty Clay	Fine	NA	NA	NA	6	15	16	17	8	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH31	0-0.2	Fill: silty clay	Fine	6.8	20	38	10	19	69	640	9	380	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.07
BH32	0-0.2	Fill: silty clay	Fine	NA	NA	NA	6	13	25	79	7	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2
BH33	0-0.2	Fill: silty sand	Coarse	6.6	26	28	7	27	120	50	14	190	LPQL	LPQL	LPQL	LPQL	280	130	LPQL	LPQL	LPQL	LPQL	0.2
BH33	0.3-0.5	Fill: silty clay	Fine	NA	NA	NA	5	15	30	31	6	33	LPQL	NA	LPQL	55	120	LPQL	LPQL	LPQL	LPQL	LPQL	0.1
BH33	0.6-0.9	Silty Clay	Fine	NA	NA	NA	5	15	33	22	7	21	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH33	1-1.2	Silty Clay	Fine	NA	NA	NA	6	15	37	26	5	22	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH34	0-0.2	Fill: clayey sand	Coarse	NA	NA	NA	4	13	24	61	5	50	LPQL	LPQL	LPQL	LPQL	100	LPQL	LPQL	LPQL	LPQL	LPQL	6.76
BH34	0.3-0.5	Silty Clay	Fine	NA	NA	NA	11	12	46	26	3	16	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH35	0-0.2	Fill: silty clay	Fine	NA	NA	NA	5	16	25	120	6	140	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.6
BH36	0-0.2	Fill: gravelly silty clay	Fine	NA	NA	NA	6	11	32	110	3	55	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH36	0.5-0.7	Shale	Fine	NA	NA	NA	8	6	32	16	3	14	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of Samples				4	4	2	45	45	45	45	45	45	45	34	45	45	45	45	45	45	45	45	45
Maximum Value				8.8	26	38	28	65	120	640	100	380	1	0	0	55	590	750	0	0	0	0	9.1

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 old 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
UCL: Upper Level Confidence Limit on Mean Value
ESLs: Ecological Screening Levels
NA: Not Analysed
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									
				pH	CEC (cmol$_c$/kg)	Clay Content (% clay)	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				-	1	-	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	13	28	NSL	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH1	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH2	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH2	0.5-0.8	Shale	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH3	0-0.1	Fill: silty sandy gravel	Coarse	8.8	24	14	100	413	248	1100	355	1082	710	180	180	120	300	2800	50	85	70	105	0.7
BH4	0.05-0.15	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH5	0-0.3	Fill: gravelly silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH8	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH8	0.5-0.8	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH9	0-0.3	Fill: silty clayey gravel	Coarse	8.5	23	14	100	413	248	1100	355	1082	710	180	180	120	300	2800	50	85	70	105	0.7
BH9	0.5-0.75	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH9	1.7-1.95	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH13	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH14	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH18	0-0.1	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH18	0.3-0.6	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH19	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH20	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH20	0.3-0.5	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH21	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH21	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH22	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH22	0.5-0.7	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH23	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH23	0.6-0.9	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH24	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH24	0.5-0.6	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH25	0-0.15	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	300	2800	50	85	70	105	0.7
BH25	0.15-0.25	Fill: silty sandy gravel	Coarse	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	300	2800	50	85	70	105	0.7
BH26	0-0.2	Fill: sandy clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH26	0.2-0.5	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH27	0-0.3	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH27	0.5-0.7	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH28	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH28	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH31	0-0.2	Fill: silty clay	Fine	6.8	20	38	100	413	238	1100	275	822	710	180	180	120	1300	5600	60	105	125	45	0.7
BH32	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH33	0-0.2	Fill: silty sand	Coarse	6.6	26	28	100	413	248	1100	355	1002	710	180	180	120	300	2800	50	85	70	105	0.7
BH33	0.3-0.5	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH33	0.6-0.9	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH33	1-1.2	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	--	180	120	1300	5600	60	105	125	45	0.7
BH34	0-0.2	Fill: clayey sand	Coarse	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	300	2800	50	85	70	105	0.7
BH34	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH35	0-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH36	0-0.2	Fill: gravelly silty clay	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7
BH36	0.5-0.7	Shale	Fine	NA	NA	NA	100	203	88	1100	35	192	710	180	180	120	1300	5600	60	105	125	45	0.7

TABLE H
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 = BH24 0-0.3m	Arsenic	4	5	5	5.0	0
Dup Ref = Dup 2	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	11	10	10.5	10
Envirolab Report: 127488	Copper	1	21	17	19.0	21
	Lead	1	57	53	55.0	7
	Mercury	0.1	LPQL	LPQL	NC	NC
	Nickel	1	6	5	5.5	18
	Zinc	1	71	63	67.0	12
	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	0.1	LPQL	0.1	67
	Pyrene	0.1	0.1	LPQL	0.1	67
	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	0.05	0.06	0.05	0.1	18
	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
	Total OCPs	0.1	LPQL	LPQL	NC	NC
	Total OPPs	0.1	LPQL	LPQL	NC	NC
	Total PCBs	0.1	LPQL	LPQL	NC	NC
	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	LPQL	LPQL	NC	NC
	TRH >C_{34}-C_{40} (F4)	100	LPQL	LPQL	NC	NC
	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 I
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 = BH35 0-0.2m	Arsenic	4	6	4	5.0	40
Dup Ref = Dup 3	Cadmium	0.4	LPQL	0.4	0.3	67
	Chromium	1	13	14	13.5	7
Envirolab Report: 127448	Copper	1	25	25	25.0	0
	Lead	1	79	130	104.5	49
	Mercury	0.1	LPQL	0.1	0.1	67
	Nickel	1	7	6	6.5	15
	Zinc	1	60	150	105.0	86
	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	0.6	0.8	0.7	29
	Anthracene	0.1	0.1	0.1	0.1	0
	Fluoranthene	0.1	1.4	1.4	1.4	0
	Pyrene	0.1	1.3	1.3	1.3	0
	Benzo(a)anthracene	0.1	0.6	0.6	0.6	0
	Chrysene	0.1	0.6	0.6	0.6	0
	Benzo(b,j+k)fluoranthene	0.2	1	1	1.0	0
	Benzo(a)pyrene	0.05	0.6	0.61	0.6	2
	Indeno(123-cd)pyrene	0.1	0.3	0.3	0.3	0
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	0.4	0.3	0.4	29
	Benzo(a)pyrene TEQ	0.5	0.8	0.8	0.8	0
	Total OCPs	0.1	LPQL	LPQL	NC	NC
	Total OPPs	0.1	LPQL	LPQL	NC	NC
	Total PCBs	0.1	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	25	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	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 J
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH34 0-0.2m	Arsenic	4	4	4	4	4.0	0
Dup Ref = Dup 1	Cadmium	0.4	0.4	LPQL	LPQL	NC	NC
	Chromium	1	1	13	24	18.5	59
Envirolab Report: 127448	Copper	1	1	24	23	23.5	4
Envirolab VIC Report: 6246	Lead	1	1	61	600	330.5	163
	Mercury	0.1	0.1	LPQL	LPQL	NC	NC
	Nickel	1	1	5	6	5.5	18
	Zinc	1	1	50	79	64.5	45
	Naphthalene	0.1	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	0.1	0.7	0.3	0.5	80
	Anthracene	0.1	0.1	0.1	LPQL	0.1	67
	Fluoranthene	0.1	0.1	1.5	0.7	1.1	73
	Pyrene	0.1	0.1	1.3	0.6	1.0	74
	Benzo(a)anthracene	0.1	0.1	0.7	0.3	0.5	80
	Chrysene	0.1	0.1	0.7	0.4	0.6	55
	Benzo(b,j+k)fluoranthene	0.2	0.2	1	0.6	0.8	50
	Benzo(a)pyrene	0.05	0.05	0.76	0.5	0.6	41
	Indeno(123-cd)pyrene	0.1	0.1	0.4	0.2	0.3	67
	Dibenzo(ah)anthracene	0.1	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	0.1	0.5	0.2	0.4	86
	Benzo(a)pyrene TEQ	0.5	0.5	1	0.6	0.8	50
	Total OCPs	0.1	0.1	LPQL	LPQL	NC	NC
	Total OPPs	0.1	0.1	LPQL	LPQL	NC	NC
	Total PCBs	0.1	0.1	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	25	25	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	50	LPQL	LPQL	NC	NC
	TRH >C16-C34 (F3)	100	100	LPQL	LPQL	NC	NC
	TRH >C34-C40 (F4)	100	100	LPQL	LPQL	NC	NC
	Benzene	0.5	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	2	LPQL	LPQL	NC	NC
	o-xylene	1	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 K
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH14 0-0.2m	Arsenic	4	4	8	7	7.5	13
Dup Ref = Dup 5	Cadmium	0.4	0.4	LPQL	LPQL	NC	NC
	Chromium	1	1	15	14	14.5	7
Envirolab Report: 127448	Copper	1	1	66	46	56.0	36
Envirolab VIC Report: 6246	Lead	1	1	52	44	48.0	17
	Mercury	0.1	0.1	0.1	LPQL	0.1	67
	Nickel	1	1	6	5	5.5	18
	Zinc	1	1	53	44	48.5	19
	Naphthalene	0.1	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	0.1	LPQL	LPQL	NC	NC
	Anthracene	0.1	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	0.1	LPQL	LPQL	NC	NC
	Pyrene	0.1	0.1	LPQL	LPQL	NC	NC
	Benzo(a)anthracene	0.1	0.1	LPQL	LPQL	NC	NC
	Chrysene	0.1	0.1	LPQL	LPQL	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	0.2	LPQL	LPQL	NC	NC
	Benzo(a)pyrene	0.05	0.05	LPQL	LPQL	NC	NC
	Indeno(123-cd)pyrene	0.1	0.1	LPQL	LPQL	NC	NC
	Dibenzo(ah)anthracene	0.1	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	0.1	LPQL	LPQL	NC	NC
	Benzo(a)pyrene TEQ	0.5	0.5	LPQL	LPQL	NC	NC
	Total OCPs	0.1	0.1	LPQL	LPQL	NC	NC
	Total OPPs	0.1	0.1	LPQL	LPQL	NC	NC
	Total PCBs	0.1	0.1	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	25	25	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	50	LPQL	LPQL	NC	NC
	TRH >C16-C34 (F3)	100	100	LPQL	LPQL	NC	NC
	TRH >C34-C40 (F4)	100	100	LPQL	LPQL	NC	NC
	Benzene	0.5	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	2	LPQL	LPQL	NC	NC
	o-xylene	1	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 L
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH34 0-0.2m	Lead	1	1	61	73	67.0	18
Dup Ref = Dup 1							
Envirolab Report: 127448							
Envirolab VIC Report: 6246							

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 M
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 = MW9	Arsenic	1	LPQL	LPQL	NC	NC
Dup Ref = Dup A	Cadmium	0.1	LPQL	0.1	0	67
	Chromium	1	LPQL	LPQL	NC	NC
Envirolab Report: 127766	Copper	1	2	2	2	0
	Lead	1	LPQL	LPQL	NC	NC
	Mercury	0.5	LPQL	LPQL	NC	NC
	Nickel	1	1	2	2	67
	Zinc	1	58	59	59	2
	TRH C6-C10 (F1)	10	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	82	68	75	19
	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 N
SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TBS[s] 4/05/2015 127448	FR1[w] 30/04/2015 127448	FR2[w] 1/05/2015 127448	FR3[w] 5/05/2015 127448	TSW[w] 11/05/2015 127766
	mg/kg	µg/L	mg/kg	µg/L	µg/L	µg/L	% Recovery
Benzene	1	1	LPQL	LPQL	LPQL	LPQL	103
Toluene	1	1	LPQL	LPQL	LPQL	LPQL	105
Ethylbenzene	1	1	LPQL	LPQL	LPQL	LPQL	101
m+p-xylene	2	2	LPQL	LPQL	LPQL	LPQL	103
o-xylene	1	1	LPQL	LPQL	LPQL	LPQL	97

Explanation:

[w] Sample type (water)

[s] Sample type (sand)

BTEX concentrations in trip spikes are presented as % recovery

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

ENVIRONMENTAL LOG

Borehole No. **1** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK308 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres and fine to medium grained ironstone gravel.	MC>PL			GRASS COVER
	■				N = 27 15,12,15			-	SHALE: light grey, with iron indurated bands and clay bands.	XW	EL		VERY LOW 'TC' BIT RESISTACE
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **2** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK308 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres and fine to medium grained ironstone and shale gravel.	MC>PL			GRASS COVER
	■				N = 25 12,10,15			-	SHALE: light grey, with iron indurated bands and clay bands.	XW	EL		VERY LOW 'TC' BIT RESISTACE
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **3** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK308 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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					N = 24 8,11,13	0		-	FILL: Silty sandy gravel, fine to medium grained igneous and quartz, brown, trace of brick, tile and slag fragments.	M			
									SHALE: light grey, with iron indurated bands and clay bands.	XW	EL		VERY LOW 'TC' BIT RESISTACE
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

Borehole No. **4** **1/1**

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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	ASPHALTIC CONCRETE: 50mm.t SILTY CLAY: high plasticity, brown and light brown, trace of ash and fine to medium grained ironstone gravel.	MC>PL			POSSIBLY FILL RESIDUAL
									SILTY CLAY: high plasticity, orange brown and light brown, trace of ash and fine to medium grained ironstone gravel.				
						1			END OF BOREHOLE AT 0.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **5** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 4-5-15 **Datum:**

Logged/Checked by: G.F./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: Gravelly silty clay, medium to high plasticity, light brown, orange brown and grey, fine to medium grained shale, ironstone and sandstone gravel, trace of ash and roots.	MC>PL			GRASS AND VINE COVER
									END OF BOREHOLE AT 0.3m				HAND AUGER REFUSAL
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **8** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 4-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, glass and fine to medium grained ironstone gravel.	MC>PL			GRASS AND VINE COVER
								CH	SILTY CLAY: high plasticity, orange brown, trace of ash and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.9m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **9** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK308 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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 clayey gravel, fine to medium grained igneous, grey, trace of ash and slag.	M			GRASS AND VINE COVER
	■		■		N = 4 2,1,3				FILL: Silty clay, medium to high plasticity, brown, trace of ash.	MC>PL			
						1							
	■		■		N = 3 2,1,2				as above, but trace of fine to coarse grained shale gravel.				
11-▼15	■		■			2		CL-CH	SILTY CLAY: medium to high plasticity, red brown mottled light grey.	MC>PL			
▼	■				N = 18 5,7,11				as above, but light grey mottled red brown, trace of fine to medium grained ironstone gravel.				MONITORING WELL INSTALLED TO 6m DEPTH, CLASS 18 50mm DIA. MACHINE SLOTTED PVC FROM 6m TO 3m, CASING FROM 3m TO SURFACE, 2mm SAND FILTER PACK FROM 6m TO 2m, BENTONITE SEAL FROM 2m TO 1.5m, BACKFILLED WITH SAND (OR CUTTINGS) TO SURFACE AND COMPLETED WITH A GATIC COVER AND LOCKABLE CAP
						3							
						4							
						5							
						6		-	SHALE: grey, with iron indurated bands.	DW	VL-L		LOW 'TC' BIT RESISTANCE
									END OF BOREHOLE AT 6.0m				
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **13** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres and fine to medium grained shale and ironstone gravel.	MC>PL			BARK COVER
								CH	SILTY CLAY: high plasticity, orange brown and light brown.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.9m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **14** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, dark brown, trace of roots.	MC>PL			GRASS COVER
	■							CH	SILTY CLAY: high plasticity, orange brown and light brown, trace of ash and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
									END OF BOREHOLE AT 0.7m				
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **18** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, dark brown, trace of roots and fine to medium grained ironstone gravel.	MC≈PL			LEAF AND BARK COVER
									FIL: Silty clay, medium plasticity, orange brown, light grey and light brown, trace of fine to medium grained shale and ironstone gravel.				
						1			END OF BOREHOLE AT 0.7m				HAND AUGER REFUSAL
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **19** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of roots fibres, ash and fine to medium grained ironstone gravel.	MC>PL			LEAF COVER
	■							CH	SILTY CLAY: high plasticity, orange brown and light brown, trace of ash and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.9m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **20** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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
ON COMPLETION	■		■			0			FILL: Silty clay, medium plasticity, dark brown, trace of roots, fine to medium grained sand and fine to medium grained ironstone gravel.	MC>PL			
									FILL: Silty clay, high plasticity, brown, light grey and red brown, trace of ash and fine to medium grained shale and ironstone gravel.				
	■					1		SM		W			ALLUVIAL
	■							CH	SILTY SAND: fine to medium grained, orange brown, trace of clay fines and fine to medium grained quartz gravel.	MC>PL			RESIDUAL
									SILTY CLAY: high plasticity, light grey mottled red brown, trace of fine to medium grained ironstone gravel.				
						2			END OF BOREHOLE AT 1.3m				
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **21** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, dark brown, trace of ash, wood chips, roots and fine to medium grained ironstone gravel.	MC>PL			LEAF COVER
	■							CL-CH	SILTY CLAY: medium to high plasticity, light brown and brown, trace of ash and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.7m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **22** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, roots and fine to medium grained ironstone gravel.	MC>PL			GRASS COVER
						1			FILL: Silty clay, medium plasticity, orange brown, light grey and light brown, with fine to coarse grained shale and ironstone gravel, trace of ash.				
									END OF BOREHOLE AT 1.0m				HAND AUGER REFUSAL
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **23** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres, fine to medium grained shale, ironstone and sandstone gravel.	MC>PL			GRASS COVER
	■		■						FILL: Silty clay, medium to high plasticity, brown, orange brown and grey, trace of fine to coarse grained shale and ironstone gravel.				
						1			END OF BOREHOLE AT 1.0m				HAND AUGER REFUSAL
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **24** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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, trace of root fibres, ash and fine to medium grained ironstone gravel.	MC>PL			GRASS COVER
								CH	SILTY CLAY: high plasticity, light grey mottled red brown, trace roots and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.6m				HAND AUGER REFUSAL
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **25** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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 sand, fine to medium grained, brown, with root fibres.	M			GRASS COVER
	■							CH	FILL: Sandy silty gravel, fine to medium grained, dark grey and brown, slag gravel, trace of clay.	MC>PL			RESIDUAL
						1			SILTY CLAY: high plasticity, light brown and orange brown, trace of fine to medium grained ironstone gravel.				HAND AUGER REFUSAL
									END OF BOREHOLE AT 0.6m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **26** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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: Sandy clay, low plasticity, brown, trace of root fibres.	MC>PL			GRASS COVER
									FILL: Silty clay, medium to high plasticity, brown, light grey and orange brown, trace of ash and fine to medium grained ironstone and shale gravel.				HAND AUGER REFUSAL
						1			END OF BOREHOLE AT 0.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **27** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres and fine to medium grained ironstone gravel.	MC>PL			GRASS AND VINE COVER
	■							CH	SILTY CLAY: high plasticity, orange brown and light grey, trace of roots.	MC>PL			RESIDUAL
						1			END OF BOREHOLE AT 0.9m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **28** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 5-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of fine to medium grained ironstone and shale gravel, ash and root fibres.	MC>PL			LEAF COVER
	■							CH		MC>PL			POSSIBLY FILL
									SILTY CLAY: high plasticity, light brown, trace of roots, ash and fine to medium grained ironstone gravel.				HAND AUGER REFUSAL
						1			END OF BOREHOLE AT 0.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **31** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of ash, root fibres, fine to medium grained ironstone, shale and sandstone gravel.	MC>PL			GRASS COVER
	■				N > 8 5,8/150mm			CH		MC>PL			RESIDUAL
					REFUSAL	1		-	SILTY CLAY: high plasticity, orange brown and light brown, trace of roots and fine to medium grained ironstone gravel. SHALE: grey, with iron indurated bands.	DW	VL		VERY LOW TO LOW 'TC' BIT RESISTANCE
▼ 11-5-15						2							
						3							
						4							MONITORING WELL INSTALLED TO 5.5m DEPTH, CLASS 18 50mm DIA. MACHINE SLOTTED PVC FROM 5.5m TO 2.5m, CASING FROM 2.5m TO SURFACE, 2mm SAND FILTER PACK FROM 5.5m TO 0.5m, BENTONITE SEAL FROM 0.5m TO 0m, BACKFILLED WITH SAND (OR CUTTINGS) TO SURFACE AND COMPLETED WITH A GATIC COVER AND LOCKABLE CAP
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **32** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of roots, ash and fine to medium grained ironstone gravel.	MC>PL			GRASS COVER
								CH		MC>PL			RESIDUAL
	■				N = 7 2,3,4				SILTY CLAY: high plasticity, orange brown and light brown, trace of roots and fine to medium grained ironstone gravel.				
						1		-	SHALE: grey.	DW	VL-L		VERY LOW TO LOW 'TC' BIT RESISTANCE
	■								END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **33** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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 sand, fine to medium grained, brown, trace of roots and clay nodules.	D			WOODCHIPS COVER
										MC>PL			
								CL-CH	FILL: Silty clay, medium plasticity, brown, trace of ash, root fibres and fine to medium grained ironstone gravel.	MC>PL			POSSIBLY FILL
						1		CH	SILTY CLAY: medium to high plasticity, brown, with ash, trace of roots.				
									SILTY CLAY: high plasticity, light brown and orange brown, trace of fine to medium grained ironstone gravel.				
									END OF BOREHOLE AT 1.3m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **34** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 30-4-15 **Datum:**

Logged/Checked by: G.F./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: Clayey sand, fine to medium grained, dark brown, trace of roots.	M			GRASS COVER
	■							CH	SILTY CLAY: high plasticity, orange, brown and light brown, trace of roots.	MC>PL			RESIDUAL
									END OF BOREHOLE AT 0.7m				
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **35** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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, trace of roots, ash and fine to medium grained ironstone gravel.	MC>PL			VINE COVER
	■				N = 5 2,2,3			CH	SILTY CLAY: high plasticity, orange brown and light brown, trace of roots and fine to medium grained ironstone gravel.	MC>PL			RESIDUAL
	■					1		-	SHALE: light grey.	DW	VL		VERY LOW 'TC' BIT RESISTANCE
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **36** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: AUSBAO PYMBLE PTY LTD

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Location: 1,1A,3 & 5 AVON ROAD AND 4 & 8 BEECHWORTH ROAD, PYMBLE, NSW

Job No. E24192K **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 1-5-15 **Datum:**

Logged/Checked by: G.F./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: Gravelly silty clay, medium plasticity, brown, orange brown and grey, fine to coarse grained shale and ironstone gravel, trace of roots and ash.	MC>PL			GRASS COVER
	■							-	SHALE: light grey, with iron indurated bands.	DW	VL		VERY LOW 'TC' BIT RESISTANCE
						1			END OF BOREHOLE AT 1.0				
						2							
						3							
						4							
						5							
						6							
						7							

EXPLANATORY NOTES – ENVIRONMENTAL LOGS

INTRODUCTION

These notes have been provided to supplement the environmental report with regards to drilling and field logging. Not all notes are necessarily relevant to all reports. Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and manmade processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies involve gathering and assimilating limited facts about these characteristics and properties in order to understand the ground on a particular site under certain conditions. These conditions are directly relevant only to the ground at the place where, and time when, the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, the SAA Site Investigation Code. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geotechnical practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached Unified Soil Classification Table qualified by the grading of other particles present (e.g. sandy clay) as set out below (note that unless stated in the report, the soil classification is based on a qualitative field assessment, not laboratory testing):

Soil Classification	Particle Size
Clay	less than 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2mm
Gravel	2 to 60mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose	less than 4
Loose	4 – 10
Medium dense	10 – 30
Dense	30 – 50
Very Dense	greater than 50

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, laboratory testing or engineering examination. The strength terms are defined as shown in the following table:

Classification	Unconfined Compressive Strength kPa
Very Soft	less than 25
Soft	25 – 50
Firm	50 – 100
Stiff	100 – 200
Very Stiff	200 – 400
Hard	Greater than 400
Friable	Strength not attainable – soil crumbles

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'Shale' is used to describe thinly bedded to laminated siltstone.

DRILLING OR EXCAVATION METHODS

The following is a brief summary of drilling and excavation methods currently adopted by the Company, and some comments on their use and application. All except test pits and hand auger drilling require the use of a mechanical drilling rig.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descend into the pit. The depth of penetration is limited to approximately 3m for a backhoe and up to 6m for an excavator. Limitations of test pits include problems associated with disturbance and difficulty of reinstatement; and the consequent effects on nearby structures. Care must be taken if construction is to be carried out near test pit locations to either properly re-compact the backfill during construction, or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Premature refusal of the hand augers can occur on a variety of materials such as fill, hard clay, gravel or ironstone, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and in-situ testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock fragments. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (e.g. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as CORE LOSS. The locations of losses are determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the top end of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" – Test F3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as: N = 13 (4, 6, 7)
- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as: N>30 (15, 30/40mm)

The results of the test can be related empirically to the engineering properties of the soil. Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, the test results are shown on the borehole logs in brackets.

A modification to the SPT test is where the same driving system is used with a solid 60 tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as "Nc" on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The attached explanatory notes define the terms and symbols used in preparation of the logs.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than "straight line"

variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open;
- A localised perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after stabilising at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (e.g. bricks, concrete, plastic, slag/ash, steel etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. If the volume and quality of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classifications and rocks strengths indicated on the environmental logs unless noted in the report.

SITE ANOMALIES

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, EIS should be notified immediately.

GRAPHIC LOG SYMBOLS FOR SOIL AND ROCKS

SOIL


FILL


TOPSOIL


CLAY (CL, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CH)


SILTY CLAY (CL, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML)


PEAT AND ORGANIC SOILS

ROCK


CONGLOMERATE


SANDSTONE


SHALE


SILTSTONE, MUDSTONE, CLAYSTONE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

DEFECTS AND INCLUSIONS


CLAY SEAM


SHEARED OR CRUSHED SEAM


BRECCIATED OR SHATTERED SEAM/ZONE


IRONSTONE GRAVEL


ORGANIC MATERIAL

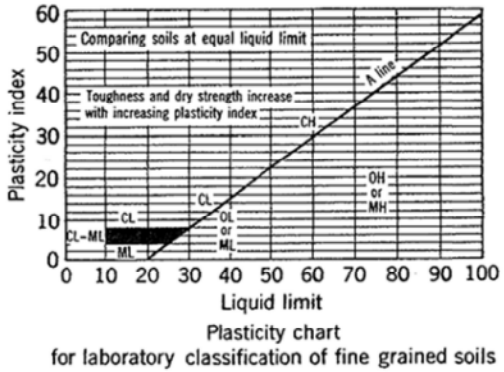
OTHER MATERIALS


CONCRETE


BITUMINOUS CONCRETE, COAL


COLLUVIUM

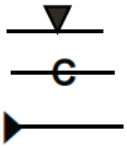
Field Identification Procedures (Excluding particles larger than 75 μm and basing fractions on estimated weights)						Group Symbols [a]	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria
Coarse-grained soils More than half of material is *larger* than 75 μm sieve size[b] (The 75 μm sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than 4 mm sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes			*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: *Silty sand*, gravelly; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (*SM*)	Use grain size curve in identifying the fractions as given under field identification Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows: Less than 5% *GW, GP, SW, SP* More than 12% *GM, GC, SM, SC* 5% to 12% *Borderline* cases requiring use of dual symbols $C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *GW* Atterberg limits below "A" line, or *PI* less than 4 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits above "A" line, with *PI* greater than 7
			Predominantly one size or a range of sizes with some intermediate sizes missing			*GP*	Poorly graded gravels, gravel-sand mixtures, little or no fines		
		Gravels with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures see *ML* below)			*GM*	Silty gravels, poorly graded gravel-sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)			*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures		
	Sands More than half of coarse fraction is smaller than 4 mm sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes			*SW*	Well graded sands, gravelly sands, little or no fines		$C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *SW* Atterberg limits below "A" line or *PI* less than 5 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits below "A" line with *PI* greater than 7
			Predominantly one size or a range of sizes with some intermediate sizes missing			*SP*	Poorly graded sands, gravelly sands, little or no fines		
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see *ML* below)			*SM*	Silty sands, poorly graded sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)			*SC*	Clayey sands, poorly graded sand-clay mixtures		
Fine-grained soils More than half of material is *smaller* than 75 μm sieve size	Identification Procedures on Fraction Smaller than 380 μm Sieve Size		Dry Strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)				
	Silts and clays liquid limit less than 50		None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (*ML*)	
			Medium to high	None to very slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			Slight to medium	Slow	Slight	*OL*	Organic silts and organic silt-clays of low plasticity		
	Silts and clays liquid limit greater than 50		Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays		
			Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity		
Highly Organic Soils			Readily identified by colour, odour, spongy feel and frequently by fibrous texture			*Pt*	Peat and other highly organic soils		



Plasticity chart
for laboratory classification of fine grained soils

Note: 1 Soils possessing characteristics of two groups are designated by combinations of group symbols (eg. GW-GC, well graded gravel-sand mixture with clay fines).
2 Soils with liquid limits of the order of 35 to 50 may be visually classified as being of medium plasticity.

LOG SYMBOLS

LOG COLUMN	SYMBOL	DEFINITION
Groundwater Record		Standing water level. Time delay following completion of drilling may be shown. Extent of borehole collapse shortly after drilling. Groundwater seepage into borehole or excavation noted during drilling or excavation.
Samples	ES U50 DB DS ASB ASS SAL	Soil sample taken over depth indicated, for environmental analysis. Undisturbed 50mm diameter tube sample taken over depth indicated. Bulk disturbed sample taken over depth indicated. Small disturbed bag sample taken over depth indicated. Soil sample taken over depth indicated, for asbestos screening. Soil sample taken over depth indicated, for acid sulfate soil analysis. Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual show blows per 150mm penetration. 'R' as noted below.
	N_c = 5 7 3 R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60 degree solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of Undrained Shear Strength. Photoionisation detector reading in ppm (Soil sample heads pace test).
Moisture (Cohesive Soils) (Cohesionless)	MC > PL MC ≈ PL MC < PL D M W	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. DRY – Runs freely through fingers. MOIST – Does not run freely but no free water visible on soil surface. WET – Free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt H ( )	VERY SOFT – Unconfined compressive strength less than 25kPa SOFT – Unconfined compressive strength 25-5 0kPa FIRM – Unconfined compressive strength 50-1 00kPa STIFF – Unconfined compressive strength 100- 200kPa VERY STIFF – Unconfined compressive strength 200- 400kPa HARD – Unconfined compressive strength greater than 400kPa Bracketed symbol indicates estimated consistency based o n tactile examination or other tests.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (ID) Range (%)** / **SPT ' N' Value Range (Blows/300mm)** Very Loose <15 / 0-4 Loose 15-35 / 4-10 Medium Dense 35-65 / 10-30 Dense 65-85 / 30-50 Very Dense >85 / >50 Bracketed symbol indicates estimated density based on ease of drilling or other tests.
Hand Penetrometer Readings	300 250	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise
Remarks	'V' bit 'TC' bit T_{60}	Hardened steel 'V' shaped bit. Tungsten carbide wing bit. Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.

LOG SYMBOLS CONTINUED

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the bedding. The test procedure is described by the International Journal of Rock Mechanics, Mining and Geomechanics Abstract Volume 22, No 2, 1985.

TERM	SYMBOL	Is (50) MPa	FIELD GUIDE
Extremely Low:	EL	0.03	Easily remoulded by hand to a material with soil properties.
Very Low:	VL	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.
Low:	L	0.3	A piece of core 150 mm long x 50mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
Medium Strength:	M	1	A piece of core 150 mm long x 50mm dia. can be broken by hand with difficulty. Readily scored with knife.
High:	H	3	A piece of core 150 mm long x 50mm dia. core cannot be broken by hand, can be slightly scratched or scored with knife; rock rings under hammer.
Very High:	VH	10	A piece of core 150 mm long x 50mm dia. may be broken with hand-held pick after more than one blow. Cannot be scratched with pen knife; rock rings under hammer.
Extremely High:	EH		A piece of core 150 mm long x 50mm dia. is very difficult to break with h and-held hammer . Rings when struck with a hammer.

ROCK STRENGTH

ABBREVIATION	DESCRIPTION	NOTES
Be	Bedding Plane Parting	Defect orientations measured relative to the normal to (i.e. relative to horizontal for vertical holes)
CS	Clay Seam	
J	Joint	
P	Planar	
Un	Undulating	
S	Smooth	
R	Rough	
IS	Iron stained	
XWS	Extremely Weathered Seam	
Cr	Crushed Seam	
60t	Thickness of defect in millimetres	

Appendix B: Laboratory Report/s & COC Documents

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

CERTIFICATE OF ANALYSIS 127448

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Goeff Fletcher

Sample log in details:

Your Reference:	**E24192K, Pymble**
No. of samples:	67 Soils, 3 waters, 1 Material
Date samples received / completed instructions received	5/5/2015 / 5/5/2015

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:	12/05/15 / 11/05/15
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:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	93	91	97	104	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-14
Your Reference	----------	BH5	BH8	BH8	BH9	BH9
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0.5-0.75
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	97	94	83	95	97

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-15	127448-18	127448-20	127448-22	127448-23
Your Reference	----------	BH9	BH13	BH14	BH18	BH18
Depth	----------	1.7-1.95	0-0.3	0-0.2	0-0.1	0.3-0.6
Date Sampled		1/05/2015	30/04/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	95	94	93	107

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-24	127448-26	127448-27	127448-30	127448-31
Your Reference	----------	BH19	BH20	BH20	BH21	BH21
Depth	----------	0-0.2	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	104	90	102	104

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-32	127448-33	127448-34	127448-35	127448-36
Your Reference	----------	BH22	BH22	BH23	BH23	BH24
Depth	----------	0-0.3	0.5-0.7	0-0.3	0.6-0.9	0-0.3
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	97	94	87	104	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-37	127448-38	127448-39	127448-41	127448-42
Your Reference	----------	BH24	BH25	BH25	BH26	BH26
Depth	----------	0.5-0.6	0-0.15	0.15-0.25	0-0.2	0.2-0.5
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	96	91	94	88	99

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-43	127448-44	127448-45	127448-46	127448-47
Your Reference	----------	BH27	BH27	BH28	BH28	BH31
Depth	----------	0-0.3	0.5-0.7	0-0.2	0.3-0.5	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	5/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	87	98	90

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-50	127448-53	127448-54	127448-55	127448-56
Your Reference	----------	BH32	BH33	BH33	BH33	BH33
Depth	----------	0-0.2	0-0.2	0.3-0.5	0.6-0.9	1-1.2
Date Sampled		1/05/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	98	88	98	99	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	127448-57	127448-58	127448-59	127448-62	127448-63
Your Reference	----------	BH34	BH34	BH35	BH36	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0.5-0.7
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ 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	%	97	99	95	98	105

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	127448-64	127448-65	127448-67
Your Reference	----------	Dup2	Dup3	TBS
Depth	----------	-	-	-
Date Sampled		30/04/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	[NA]
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	[NA]
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	101	96	107

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
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	320	<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	250	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	380	<100
Surrogate o-Terphenyl	%	69	80	83	82	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-14
Your Reference	----------	BH5	BH8	BH8	BH9	BH9
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0.5-0.75
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	240	<100	<100	120	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	200	<100	<100	680	<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	400	<100	<100	590	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	130	<100	<100	750	<100
Surrogate o-Terphenyl	%	86	83	82	83	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-15	127448-18	127448-20	127448-22	127448-23
Your Reference	----------	BH9	BH13	BH14	BH18	BH18
Depth	----------	1.7-1.95	0-0.3	0-0.2	0-0.1	0.3-0.6
Date Sampled		1/05/2015	30/04/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
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	%	81	83	82	83	85

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-24	127448-26	127448-27	127448-30	127448-31
Your Reference	----------	BH19	BH20	BH20	BH21	BH21
Depth	----------	0-0.2	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	81	82	83	84	82

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-32	127448-33	127448-34	127448-35	127448-36
Your Reference	----------	BH22	BH22	BH23	BH23	BH24
Depth	----------	0-0.3	0.5-0.7	0-0.3	0.6-0.9	0-0.3
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	83	83	81	82	83

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-37	127448-38	127448-39	127448-41	127448-42
Your Reference	----------	BH24	BH25	BH25	BH26	BH26
Depth	----------	0.5-0.6	0-0.15	0.15-0.25	0-0.2	0.2-0.5
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	81	78	81	82	82

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-43	127448-44	127448-45	127448-46	127448-47
Your Reference	----------	BH27	BH27	BH28	BH28	BH31
Depth	----------	0-0.3	0.5-0.7	0-0.2	0.3-0.5	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	5/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	78	85	81	80	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-50	127448-53	127448-54	127448-55	127448-56
Your Reference	----------	BH32	BH33	BH33	BH33	BH33
Depth	----------	0-0.2	0-0.2	0.3-0.5	0.6-0.9	1-1.2
Date Sampled		1/05/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	150	100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	220	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	55	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	55	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	280	120	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	130	<100	<100	<100
Surrogate o-Terphenyl	%	88	87	80	83	78

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	127448-57	127448-58	127448-59	127448-62	127448-63
Your Reference	----------	BH34	BH34	BH35	BH36	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0.5-0.7
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
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	110	<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	%	86	76	81	82	76

svTRH (C10-C40) in Soil			
Our Reference:	UNITS	127448-64	127448-65
Your Reference	----------	Dup2	Dup3
Depth	----------	-	-
Date Sampled		30/04/2015	1/05/2015
Type of sample		Soil	Soil
Date extracted	-	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100
Surrogate o-Terphenyl	%	81	89

PAHs in Soil						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
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	0.2	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	<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	0.07	0.1	<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	0.070	0.86	NIL (+)VE	0.12	NIL (+)VE
Surrogate p-Terphenyl-d14	%	96	96	100	100	98

PAHs in Soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-14
Your Reference	----------	BH5	BH8	BH8	BH9	BH9
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0.5-0.75
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	1.2	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.0	<0.1	<0.1	0.2	0.4
Anthracene	mg/kg	1.2	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	13	<0.1	<0.1	0.2	0.9
Pyrene	mg/kg	14	<0.1	<0.1	0.2	0.9
Benzo(a)anthracene	mg/kg	8.4	<0.1	<0.1	0.1	0.4
Chrysene	mg/kg	7.6	<0.1	<0.1	0.2	0.4
Benzo(b,j+k)fluoranthene	mg/kg	13	<0.2	<0.2	<0.2	0.7
Benzo(a)pyrene	mg/kg	9.1	0.06	<0.05	0.1	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	4.6	<0.1	<0.1	<0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	1.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	3.9	<0.1	<0.1	0.1	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	13	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	13	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	13	<0.5	<0.5	<0.5	0.7
Total Positive PAHs	mg/kg	79	0.060	NIL (+)VE	1.1	4.7
Surrogate p-Terphenyl-d14	%	101	101	100	102	103

PAHs in Soil						
Our Reference:	UNITS	127448-15	127448-18	127448-20	127448-22	127448-23
Your Reference	----------	BH9	BH13	BH14	BH18	BH18
Depth	----------	1.7-1.95	0-0.3	0-0.2	0-0.1	0.3-0.6
Date Sampled		1/05/2015	30/04/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
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	0.9	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.5	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	1.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.7	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.6	<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	0.67	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	<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	0.3	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.9	<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	1	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	7.6	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98	99	100	95	100

PAHs in Soil						
Our Reference:	UNITS	127448-24	127448-26	127448-27	127448-30	127448-31
Your Reference	----------	BH19	BH20	BH20	BH21	BH21
Depth	----------	0-0.2	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
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	0.05	NIL (+)VE
Surrogate p-Terphenyl-d14	%	99	100	102	102	98

PAHs in Soil						
Our Reference:	UNITS	127448-32	127448-33	127448-34	127448-35	127448-36
Your Reference	----------	BH22	BH22	BH23	BH23	BH24
Depth	----------	0-0.3	0.5-0.7	0-0.3	0.6-0.9	0-0.3
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	6/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
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	0.06	<0.05	0.06
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	0.28	NIL (+)VE	0.28
Surrogate p-Terphenyl-d14	%	103	98	99	101	96

PAHs in Soil						
Our Reference:	UNITS	127448-37	127448-38	127448-39	127448-41	127448-42
Your Reference	----------	BH24	BH25	BH25	BH26	BH26
Depth	----------	0.5-0.6	0-0.15	0.15-0.25	0-0.2	0.2-0.5
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
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	0.3	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	0.3	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.3	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.07	0.1	<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	0.31	1.3	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98	91	96	100	99

PAHs in Soil						
Our Reference:	UNITS	127448-43	127448-44	127448-45	127448-46	127448-47
Your Reference	----------	BH27	BH27	BH28	BH28	BH31
Depth	----------	0-0.3	0.5-0.7	0-0.2	0.3-0.5	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	5/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
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	0.07
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	0.31
Surrogate p-Terphenyl-d14	%	95	101	99	97	64

PAHs in Soil						
Our Reference:	UNITS	127448-50	127448-53	127448-54	127448-55	127448-56
Your Reference	----------	BH32	BH33	BH33	BH33	BH33
Depth	----------	0-0.2	0-0.2	0.3-0.5	0.6-0.9	1-1.2
Date Sampled		1/05/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
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	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.3	0.4	0.2	<0.1	<0.1
Pyrene	mg/kg	0.3	0.4	0.2	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	0.2	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	0.4	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	0.2	0.1	<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	0.2	<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	1.8	2.4	0.60	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	124	102	104	99	95

PAHs in Soil						
Our Reference:	UNITS	127448-57	127448-58	127448-59	127448-62	127448-63
Your Reference	----------	BH34	BH34	BH35	BH36	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0.5-0.7
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
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	0.7	<0.1	0.6	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.5	<0.1	1.4	0.1	<0.1
Pyrene	mg/kg	1.3	<0.1	1.3	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.7	<0.1	0.6	<0.1	<0.1
Chrysene	mg/kg	0.7	<0.1	0.6	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	1	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.76	<0.05	0.60	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	<0.1	0.3	<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	0.5	<0.1	0.4	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.0	<0.5	0.8	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.0	<0.5	0.8	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.1	<0.5	0.9	<0.5	<0.5
Total Positive PAHs	mg/kg	8.0	NIL (+)VE	6.8	0.10	NIL (+)VE
Surrogate p-Terphenyl-d14	%	104	98	100	105	94

PAHs in Soil			
Our Reference:	UNITS	127448-64	127448-65
Your Reference	----------	Dup2	Dup3
Depth	----------	-	-
Date Sampled		30/04/2015	1/05/2015
Type of sample		Soil	Soil
Date extracted	-	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.8
Anthracene	mg/kg	<0.1	0.1
Fluoranthene	mg/kg	<0.1	1.4
Pyrene	mg/kg	<0.1	1.3
Benzo(a)anthracene	mg/kg	<0.1	0.6
Chrysene	mg/kg	<0.1	0.6
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	1
Benzo(a)pyrene	mg/kg	0.05	0.61
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.8
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.9
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.9
Total Positive PAHs	mg/kg	0.05	7.1
Surrogate p-Terphenyl-d14	%	106	103

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	85	85	86	86	84

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-18
Your Reference	----------	BH5	BH8	BH8	BH9	BH13
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0-0.3
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	84	85	88	89	86

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-20	127448-22	127448-24	127448-26	127448-30
Your Reference	----------	BH14	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.1	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	85	92	86	87	88

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-31	127448-32	127448-34	127448-36	127448-37
Your Reference	----------	BH21	BH22	BH23	BH24	BH24
Depth	----------	0.3-0.5	0-0.3	0-0.3	0-0.3	0.5-0.6
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	86	87	87	87	88

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-38	127448-41	127448-43	127448-44	127448-45
Your Reference	----------	BH25	BH26	BH27	BH27	BH28
Depth	----------	0-0.15	0-0.2	0-0.3	0.5-0.7	0-0.2
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	0.4	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	2.5	<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	%	96	88	82	88	86

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-46	127448-47	127448-50	127448-53	127448-57
Your Reference	----------	BH28	BH31	BH32	BH33	BH34
Depth	----------	0.3-0.5	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	1/05/2015	1/05/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	84	83	97	94	96

Organochlorine Pesticides in soil						
Our Reference:	UNITS	127448-58	127448-59	127448-62	127448-63	127448-64
Your Reference	----------	BH34	BH35	BH36	BH36	Dup2
Depth	----------	0.3-0.5	0-0.2	0-0.2	0.5-0.7	-
Date Sampled		30/04/2015	1/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	86	90	93	84	102

Organochlorine Pesticides in soil		
Our Reference:	UNITS	127448-65
Your Reference	----------	Dup3
Depth	----------	-
Date Sampled		1/05/2015
Type of sample		Soil
Date extracted	-	06/05/2015
Date analysed	-	07/05/2015
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	%	99

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	85	85	86	86	84

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-18
Your Reference	----------	BH5	BH8	BH8	BH9	BH13
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0-0.3
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	84	85	88	89	86

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-20	127448-22	127448-24	127448-26	127448-30
Your Reference	----------	BH14	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.1	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	85	92	86	87	88

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-31	127448-32	127448-34	127448-36	127448-37
Your Reference	----------	BH21	BH22	BH23	BH24	BH24
Depth	----------	0.3-0.5	0-0.3	0-0.3	0-0.3	0.5-0.6
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	87	87	87	88

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-38	127448-41	127448-43	127448-44	127448-45
Your Reference	----------	BH25	BH26	BH27	BH27	BH28
Depth	----------	0-0.15	0-0.2	0-0.3	0.5-0.7	0-0.2
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	81	88	82	88	86

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-46	127448-47	127448-50	127448-53	127448-57
Your Reference	----------	BH28	BH31	BH32	BH33	BH34
Depth	----------	0.3-0.5	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	1/05/2015	1/05/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	%	84	83	97	94	96

Organophosphorus Pesticides						
Our Reference:	UNITS	127448-58	127448-59	127448-62	127448-63	127448-64
Your Reference	----------	BH34	BH35	BH36	BH36	Dup2
Depth	----------	0.3-0.5	0-0.2	0-0.2	0.5-0.7	-
Date Sampled		30/04/2015	1/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
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	90	93	84	102

Organophosphorus Pesticides		
Our Reference:	UNITS	127448-65
Your Reference	----------	Dup3
Depth	----------	-
Date Sampled		1/05/2015
Type of sample		Soil
Date extracted	-	06/05/2015
Date analysed	-	07/05/2015
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	%	99

PCBs in Soil						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	85	85	86	86	84

PCBs in Soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-18
Your Reference	----------	BH5	BH8	BH8	BH9	BH13
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0-0.3
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	84	85	88	89	86

PCBs in Soil						
Our Reference:	UNITS	127448-20	127448-22	127448-24	127448-26	127448-30
Your Reference	----------	BH14	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.1	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	85	92	86	87	88

PCBs in Soil						
Our Reference:	UNITS	127448-31	127448-32	127448-34	127448-36	127448-37
Your Reference	----------	BH21	BH22	BH23	BH24	BH24
Depth	----------	0.3-0.5	0-0.3	0-0.3	0-0.3	0.5-0.6
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	87	87	87	88

PCBs in Soil						
Our Reference:	UNITS	127448-38	127448-41	127448-43	127448-44	127448-45
Your Reference	----------	BH25	BH26	BH27	BH27	BH28
Depth	----------	0-0.15	0-0.2	0-0.3	0.5-0.7	0-0.2
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	81	88	82	88	86

PCBs in Soil						
Our Reference:	UNITS	127448-46	127448-47	127448-50	127448-53	127448-57
Your Reference	----------	BH28	BH31	BH32	BH33	BH34
Depth	----------	0.3-0.5	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		5/05/2015	1/05/2015	1/05/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	84	83	97	94	96

PCBs in Soil						
Our Reference:	UNITS	127448-58	127448-59	127448-62	127448-63	127448-64
Your Reference	----------	BH34	BH35	BH36	BH36	Dup2
Depth	----------	0.3-0.5	0-0.2	0-0.2	0.5-0.7	-
Date Sampled		30/04/2015	1/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015	07/05/2015	07/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	90	93	84	102

PCBs in Soil		
Our Reference:	UNITS	127448-65
Your Reference	----------	Dup3
Depth	----------	-
Date Sampled		1/05/2015
Type of sample		Soil
Date extracted	-	06/05/2015
Date analysed	-	07/05/2015
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Surrogate TCLMX	%	99

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	6	4	<4	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.4	<0.4
Chromium	mg/kg	10	10	6	57	13
Copper	mg/kg	13	15	31	33	32
Lead	mg/kg	28	54	24	15	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	5	5	100	7
Zinc	mg/kg	25	58	26	54	22

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-14
Your Reference	----------	BH5	BH8	BH8	BH9	BH9
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0.5-0.75
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	5	7	6	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.5	<0.4
Chromium	mg/kg	10	16	16	65	11
Copper	mg/kg	41	23	20	30	33
Lead	mg/kg	38	48	25	23	64
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	9	7	78	7
Zinc	mg/kg	60	48	33	54	60

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-15	127448-18	127448-20	127448-22	127448-23
Your Reference	----------	BH9	BH13	BH14	BH18	BH18
Depth	----------	1.7-1.95	0-0.3	0-0.2	0-0.1	0.3-0.6
Date Sampled		1/05/2015	30/04/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	8	6	8	7	9
Cadmium	mg/kg	0.4	0.5	<0.4	<0.4	<0.4
Chromium	mg/kg	14	18	15	14	15
Copper	mg/kg	37	24	66	22	28
Lead	mg/kg	120	52	52	51	22
Mercury	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Nickel	mg/kg	8	6	6	8	9
Zinc	mg/kg	130	47	53	80	51

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-24	127448-26	127448-27	127448-30	127448-31
Your Reference	----------	BH19	BH20	BH20	BH21	BH21
Depth	----------	0-0.2	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	7	28	9	11	6
Cadmium	mg/kg	<0.4	0.4	<0.4	0.4	<0.4
Chromium	mg/kg	14	16	15	14	15
Copper	mg/kg	14	25	22	22	13
Lead	mg/kg	27	38	21	59	19
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	8	10	9	15	7
Zinc	mg/kg	57	68	34	73	20

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-32	127448-33	127448-34	127448-35	127448-36
Your Reference	----------	BH22	BH22	BH23	BH23	BH24
Depth	----------	0-0.3	0.5-0.7	0-0.3	0.6-0.9	0-0.3
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	5	7	5	5	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	12	12	12	11
Copper	mg/kg	20	14	21	28	21
Lead	mg/kg	38	15	88	46	57
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	5	6	4	6
Zinc	mg/kg	46	25	64	38	71

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-37	127448-38	127448-39	127448-41	127448-42
Your Reference	----------	BH24	BH25	BH25	BH26	BH26
Depth	----------	0.5-0.6	0-0.15	0.15-0.25	0-0.2	0.2-0.5
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	5	<4	6	6	5
Cadmium	mg/kg	<0.4	0.5	<0.4	<0.4	<0.4
Chromium	mg/kg	7	44	28	33	17
Copper	mg/kg	22	12	16	20	23
Lead	mg/kg	23	160	46	130	63
Mercury	mg/kg	<0.1	1.1	0.3	0.1	<0.1
Nickel	mg/kg	2	3	7	4	5
Zinc	mg/kg	17	55	29	49	33

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-43	127448-44	127448-45	127448-46	127448-47
Your Reference	----------	BH27	BH27	BH28	BH28	BH31
Depth	----------	0-0.3	0.5-0.7	0-0.2	0.3-0.5	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	5/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	7	7	6	6	10
Cadmium	mg/kg	0.6	<0.4	0.4	<0.4	0.7
Chromium	mg/kg	19	14	13	15	19
Copper	mg/kg	65	34	17	16	69
Lead	mg/kg	180	28	26	17	640
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	7	2	7	8	9
Zinc	mg/kg	180	15	32	18	380

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-50	127448-53	127448-54	127448-55	127448-56
Your Reference	----------	BH32	BH33	BH33	BH33	BH33
Depth	----------	0-0.2	0-0.2	0.3-0.5	0.6-0.9	1-1.2
Date Sampled		1/05/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	6	7	5	5	6
Cadmium	mg/kg	<0.4	0.6	<0.4	<0.4	<0.4
Chromium	mg/kg	13	27	15	15	15
Copper	mg/kg	25	120	30	33	37
Lead	mg/kg	79	50	31	22	26
Mercury	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	7	14	6	7	5
Zinc	mg/kg	60	190	33	21	22

Acid Extractable metals in soil						
Our Reference:	UNITS	127448-57	127448-58	127448-59	127448-62	127448-63
Your Reference	----------	BH34	BH34	BH35	BH36	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0.5-0.7
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015	06/05/2015	06/05/2015	06/05/2015
Arsenic	mg/kg	4	11	5	6	8
Cadmium	mg/kg	<0.4	<0.4	0.4	<0.4	<0.4
Chromium	mg/kg	13	12	16	11	6
Copper	mg/kg	24	46	25	32	32
Lead	mg/kg	61	26	120	110	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	3	6	3	3
Zinc	mg/kg	50	16	140	55	14

Acid Extractable metals in soil			
Our Reference:	UNITS	127448-64	127448-65
Your Reference	----------	Dup2	Dup3
Depth	----------	-	-
Date Sampled		30/04/2015	1/05/2015
Type of sample		Soil	Soil
Date digested	-	06/05/2015	06/05/2015
Date analysed	-	06/05/2015	06/05/2015
Arsenic	mg/kg	5	4
Cadmium	mg/kg	<0.4	0.4
Chromium	mg/kg	10	14
Copper	mg/kg	17	25
Lead	mg/kg	53	130
Mercury	mg/kg	<0.1	0.1
Nickel	mg/kg	5	6
Zinc	mg/kg	63	150

Moisture						
Our Reference:	UNITS	127448-1	127448-3	127448-4	127448-5	127448-8
Your Reference	----------	BH1	BH2	BH2	BH3	BH4
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.1	0.05-0.15
Date Sampled		1/05/2015	1/05/2015	1/05/2015	1/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	22	21	14	13	20

Moisture						
Our Reference:	UNITS	127448-10	127448-11	127448-12	127448-13	127448-14
Your Reference	----------	BH5	BH8	BH8	BH9	BH9
Depth	----------	0-0.3	0-0.3	0.5-0.8	0-0.3	0.5-0.75
Date Sampled		4/05/2015	4/05/2015	4/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	16	25	23	10	19

Moisture						
Our Reference:	UNITS	127448-15	127448-18	127448-20	127448-22	127448-23
Your Reference	----------	BH9	BH13	BH14	BH18	BH18
Depth	----------	1.7-1.95	0-0.3	0-0.2	0-0.1	0.3-0.6
Date Sampled		1/05/2015	30/04/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	24	26	34	25	20

Moisture						
Our Reference:	UNITS	127448-24	127448-26	127448-27	127448-30	127448-31
Your Reference	----------	BH19	BH20	BH20	BH21	BH21
Depth	----------	0-0.2	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	27	26	21	27	19

Moisture						
Our Reference:	UNITS	127448-32	127448-33	127448-34	127448-35	127448-36
Your Reference	----------	BH22	BH22	BH23	BH23	BH24
Depth	----------	0-0.3	0.5-0.7	0-0.3	0.6-0.9	0-0.3
Date Sampled		5/05/2015	5/05/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	27	13	24	17	19

Moisture						
Our Reference:	UNITS	127448-37	127448-38	127448-39	127448-41	127448-42
Your Reference	----------	BH24	BH25	BH25	BH26	BH26
Depth	----------	0.5-0.6	0-0.15	0.15-0.25	0-0.2	0.2-0.5
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	20	29	21	23	22

Moisture						
Our Reference:	UNITS	127448-43	127448-44	127448-45	127448-46	127448-47
Your Reference	----------	BH27	BH27	BH28	BH28	BH31
Depth	----------	0-0.3	0.5-0.7	0-0.2	0.3-0.5	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	5/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	27	25	23	20	31

Moisture						
Our Reference:	UNITS	127448-50	127448-53	127448-54	127448-55	127448-56
Your Reference	----------	BH32	BH33	BH33	BH33	BH33
Depth	----------	0-0.2	0-0.2	0.3-0.5	0.6-0.9	1-1.2
Date Sampled		1/05/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	27	28	26	30	21

Moisture						
Our Reference:	UNITS	127448-57	127448-58	127448-59	127448-62	127448-63
Your Reference	----------	BH34	BH34	BH35	BH36	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0.5-0.7
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015	7/05/2015	7/05/2015	7/05/2015
Moisture	%	27	24	29	21	9.5

Moisture			
Our Reference:	UNITS	127448-64	127448-65
Your Reference	----------	Dup2	Dup3
Depth	----------	-	-
Date Sampled		30/04/2015	1/05/2015
Type of sample		Soil	Soil
Date prepared	-	6/05/2015	6/05/2015
Date analysed	-	7/05/2015	7/05/2015
Moisture	%	18	29

Asbestos ID - soils						
Our Reference:	UNITS	127448-1	127448-3	127448-5	127448-8	127448-10
Your Reference	----------	BH1	BH2	BH3	BH4	BH5
Depth	----------	0-0.2	0-0.2	0-0.1	0.05-0.15	0-0.3
Date Sampled		1/05/2015	1/05/2015	1/05/2015	4/05/2015	4/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 45g	Approx 40g	Approx 15g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-11	127448-13	127448-14	127448-15	127448-18
Your Reference	----------	BH8	BH9	BH9	BH9	BH13
Depth	----------	0-0.3	0-0.3	0.5-0.75	1.7-1.95	0-0.3
Date Sampled		4/05/2015	1/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 40g	Approx 20g	Approx 30g	Approx 35g	Approx 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-20	127448-22	127448-23	127448-24	127448-26
Your Reference	----------	BH14	BH18	BH18	BH19	BH20
Depth	----------	0-0.2	0-0.1	0.3-0.6	0-0.2	0-0.2
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	5/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 30g	Approx 30g	Approx 45g	Approx 15g	Approx 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-27	127448-30	127448-32	127448-33	127448-34
Your Reference	----------	BH20	BH21	BH22	BH22	BH23
Depth	----------	0.3-0.5	0-0.2	0-0.3	0.5-0.7	0-0.3
Date Sampled		5/05/2015	5/05/2015	5/05/2015	5/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 60g	Approx 30g	Approx 30g	Approx 40g	Approx 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-35	127448-36	127448-38	127448-39	127448-41
Your Reference	----------	BH23	BH24	BH25	BH25	BH26
Depth	----------	0.6-0.9	0-0.3	0-0.15	0.15-0.25	0-0.2
Date Sampled		30/04/2015	30/04/2015	30/04/2015	30/04/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 30g	Approx 40g	Approx 30g	Approx 45g	Approx 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-42	127448-43	127448-45	127448-47	127448-50
Your Reference	----------	BH26	BH27	BH28	BH31	BH32
Depth	----------	0.2-0.5	0-0.3	0-0.2	0-0.2	0-0.2
Date Sampled		30/04/2015	30/04/2015	5/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 35g	Approx 30g	Approx 40g	Approx 35g	Approx 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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	127448-53	127448-54	127448-57	127448-59	127448-62
Your Reference	----------	BH33	BH33	BH34	BH35	BH36
Depth	----------	0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.2
Date Sampled		30/04/2015	30/04/2015	30/04/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Sample mass tested	g	Approx 35g	Approx 40g	Approx 30g	Approx 30g	Approx 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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

BTEX in Water				
Our Reference:	UNITS	127448-68	127448-69	127448-70
Your Reference	----------	FR1	FR2	FR3
Depth	----------	-	-	-
Date Sampled		30/04/2015	1/05/2015	5/05/2015
Type of sample		Water	Water	Water
Date extracted	-	06/05/2015	06/05/2015	06/05/2015
Date analysed	-	07/05/2015	07/05/2015	07/05/2015
Benzene	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	95	99	98
Surrogate toluene-d8	%	92	97	101
Surrogate 4-BFB	%	101	104	105

Asbestos ID - materials		
Our Reference:	UNITS	127448-71
Your Reference	----------	S1
Depth	----------	-
Date Sampled		4/05/2015
Type of sample		Material
Date analysed	-	11/05/2015
Mass / Dimension of Sample	-	75x40x5mm
Sample Description	-	Brown compressed fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected

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.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			6/05/2015	127448-1	6/05/2015 || 6/05/2015	LCS-1	6/05/2015
Date analysed	-			6/05/2015	127448-1	6/05/2015 || 6/05/2015	LCS-1	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	127448-1	<25 || <25	LCS-1	113%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	127448-1	<25 || <25	LCS-1	113%
Benzene	mg/kg	0.2	Org-016	<0.2	127448-1	<0.2 || <0.2	LCS-1	114%
Toluene	mg/kg	0.5	Org-016	<0.5	127448-1	<0.5 || <0.5	LCS-1	113%
Ethylbenzene	mg/kg	1	Org-016	<1	127448-1	<1 || <1	LCS-1	112%
m+p-xylene	mg/kg	2	Org-016	<2	127448-1	<2 || <2	LCS-1	112%
o-Xylene	mg/kg	1	Org-016	<1	127448-1	<1 || <1	LCS-1	108%
naphthalene	mg/kg	1	Org-014	<1	127448-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	114	127448-1	93 || 97 || RPD: 4	LCS-1	114%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-1	06/05/2015
Date analysed	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-1	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	127448-1	<50 || <50	LCS-1	107%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	127448-1	<100 || <100	LCS-1	109%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	127448-1	<100 || <100	LCS-1	85%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	127448-1	<50 || <50	LCS-1	107%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	127448-1	<100 || <100	LCS-1	109%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	127448-1	<100 || <100	LCS-1	85%
Surrogate o-Terphenyl	%		Org-003	88	127448-1	69 || 63 || RPD: 9	LCS-1	90%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			6/05/2015	127448-1	6/05/2015 || 6/05/2015	LCS-1	6/05/2015
Date analysed	-			7/05/2015	127448-1	6/05/2015 || 6/05/2015	LCS-1	6/05/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	100%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	107%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	105%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	108%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	111%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	LCS-1	98%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	127448-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	127448-1	0.07 || <0.05	LCS-1	116%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	104	127448-1	96 || 101 || RPD: 5	LCS-1	102%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-1	06/05/2015
Date analysed	-			07/05/2015	127448-1	07/05/2015 || 07/05/2015	LCS-1	07/05/2015
HCB	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	103%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	103%
Heptachlor	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	98%
delta-BHC	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	104%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	109%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	116%
Dieldrin	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	110%
Endrin	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	115%
pp-DDD	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	127%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	LCS-1	121%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	95	127448-1	85 || 86 || RPD: 1	LCS-1	99%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-1	06/05/2015
Date analysed	-			07/05/2015	127448-1	07/05/2015 || 07/05/2015	LCS-1	07/05/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	121%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	97%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	91%
Dimethoate	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	105%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	87%
Malathion	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	90%
Parathion	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	LCS-1	106%
Ronnel	mg/kg	0.1	Org-008	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-008	95	127448-1	85 || 86 || RPD: 1	LCS-1	88%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-1	06/05/2015
Date analysed	-			07/05/2015	127448-1	07/05/2015 || 07/05/2015	LCS-1	07/05/2015
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	LCS-1	112%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	127448-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	95	127448-1	85 || 86 || RPD: 1	LCS-1	89%

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	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-3	06/05/2015
Date analysed	-			06/05/2015	127448-1	06/05/2015 || 06/05/2015	LCS-3	06/05/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	127448-1	6 || 5 || RPD: 18	LCS-3	109%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	127448-1	<0.4 || <0.4	LCS-3	102%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	127448-1	10 || 11 || RPD: 10	LCS-3	104%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	127448-1	13 || 13 || RPD: 0	LCS-3	105%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	127448-1	28 || 31 || RPD: 10	LCS-3	101%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	127448-1	<0.1 || <0.1	LCS-3	99%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	127448-1	5 || 5 || RPD: 0	LCS-3	102%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	127448-1	25 || 28 || RPD: 11	LCS-3	100%

QUALITY CONTROL BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2015	[NT]	[NT]	LCS-W1	06/05/2015
Date analysed	-			07/05/2015	[NT]	[NT]	LCS-W1	07/05/2015
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	104%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	122%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	110%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	100%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	112%
Surrogate Dibromofluoromethane	%		Org-016	100	[NT]	[NT]	LCS-W1	107%
Surrogate toluene-d8	%		Org-016	95	[NT]	[NT]	LCS-W1	109%
Surrogate 4-BFB	%		Org-016	103	[NT]	[NT]	LCS-W1	101%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	6/05/2015 || 6/05/2015	LCS-2	6/05/2015
Date analysed	-	127448-18	6/05/2015 || 6/05/2015	LCS-2	7/05/2015
$TRHC_6 - C_9$	mg/kg	127448-18	<25 || <25	LCS-2	102%
$TRHC_6 - C_{10}$	mg/kg	127448-18	<25 || <25	LCS-2	102%
Benzene	mg/kg	127448-18	<0.2 || <0.2	LCS-2	102%
Toluene	mg/kg	127448-18	<0.5 || <0.5	LCS-2	101%
Ethylbenzene	mg/kg	127448-18	<1 || <1	LCS-2	101%
m+p-xylene	mg/kg	127448-18	<2 || <2	LCS-2	102%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
o-Xylene	mg/kg	127448-18	<1 || <1	LCS-2	99%
naphthalene	mg/kg	127448-18	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	127448-18	95 || 93 || RPD: 2	LCS-2	101%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	06/05/2015 || 06/05/2015	LCS-2	06/05/2015
Date analysed	-	127448-18	06/05/2015 || 06/05/2015	LCS-2	07/05/2015
$TRHC_{10}$ - C_{14}	mg/kg	127448-18	<50 || <50	LCS-2	113%
$TRHC_{15}$ - C_{28}	mg/kg	127448-18	<100 || <100	LCS-2	117%
$TRHC_{29}$ - C_{36}	mg/kg	127448-18	<100 || <100	LCS-2	101%
$TRH>C_{10}$-C_{16}	mg/kg	127448-18	<50 || <50	LCS-2	113%
$TRH>C_{16}$-C_{34}	mg/kg	127448-18	<100 || <100	LCS-2	117%
$TRH>C_{34}$-C_{40}	mg/kg	127448-18	<100 || <100	LCS-2	101%
Surrogate o-Terphenyl	%	127448-18	83 || 83 || RPD: 0	LCS-2	101%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	6/05/2015 || 6/05/2015	LCS-2	6/05/2015
Date analysed	-	127448-18	6/05/2015 || 6/05/2015	LCS-2	6/05/2015
Naphthalene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	101%
Acenaphthylene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	107%
Phenanthrene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	106%
Anthracene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	111%
Pyrene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	113%
Benzo(a)anthracene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	127448-18	<0.1 || <0.1	LCS-2	99%
Benzo(b,j+k)fluoranthene	mg/kg	127448-18	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	127448-18	<0.05 || <0.05	LCS-2	115%
Indeno(1,2,3-c,d)pyrene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	127448-18	99 || 97 || RPD: 2	LCS-2	106%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	06/05/2015 || 06/05/2015	LCS-2	06/05/2015
Date analysed	-	127448-18	07/05/2015 || 07/05/2015	LCS-2	07/05/2015
HCB	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	127448-18	<0.1 || <0.1	LCS-2	97%
gamma-BHC	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	127448-18	<0.1 || <0.1	LCS-2	103%
Heptachlor	mg/kg	127448-18	<0.1 || <0.1	LCS-2	98%
delta-BHC	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	127448-18	<0.1 || <0.1	LCS-2	98%
Heptachlor Epoxide	mg/kg	127448-18	<0.1 || <0.1	LCS-2	99%
gamma-Chlordane	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	127448-18	<0.1 || <0.1	LCS-2	105%
Dieldrin	mg/kg	127448-18	<0.1 || <0.1	LCS-2	99%
Endrin	mg/kg	127448-18	<0.1 || <0.1	LCS-2	103%
pp-DDD	mg/kg	127448-18	<0.1 || <0.1	LCS-2	114%
Endosulfan II	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	127448-18	<0.1 || <0.1	LCS-2	107%
Methoxychlor	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-18	86 || 83 || RPD: 4	LCS-2	97%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	06/05/2015 || 06/05/2015	LCS-2	06/05/2015
Date analysed	-	127448-18	07/05/2015 || 07/05/2015	LCS-2	07/05/2015
Azinphos-methyl (Guthion)	mg/kg	127448-18	<0.1 || <0.1	LCS-2	117%
Bromophos-ethyl	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	127448-18	<0.1 || <0.1	LCS-2	102%
Chlorpyriphos-methyl	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	127448-18	<0.1 || <0.1	LCS-2	94%
Dimethoate	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	127448-18	<0.1 || <0.1	LCS-2	97%
Fenitrothion	mg/kg	127448-18	<0.1 || <0.1	LCS-2	91%
Malathion	mg/kg	127448-18	<0.1 || <0.1	LCS-2	94%
Parathion	mg/kg	127448-18	<0.1 || <0.1	LCS-2	116%
Ronnel	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-18	86 || 83 || RPD: 4	LCS-2	93%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-18	06/05/2015 || 06/05/2015	LCS-2	06/05/2015
Date analysed	-	127448-18	07/05/2015 || 07/05/2015	LCS-2	07/05/2015
Aroclor 1016	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	127448-18	<0.1 || <0.1	LCS-2	118%
Aroclor 1260	mg/kg	127448-18	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	127448-18	86 || 83 || RPD: 4	LCS-2	94%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	127448-18	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Date analysed	-	127448-18	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Arsenic	mg/kg	127448-18	6 || 7 || RPD: 15	127448-3	87%
Cadmium	mg/kg	127448-18	0.5 || <0.4	127448-3	89%
Chromium	mg/kg	127448-18	18 || 14 || RPD: 25	127448-3	89%
Copper	mg/kg	127448-18	24 || 33 || RPD: 32	127448-3	107%
Lead	mg/kg	127448-18	52 || 81 || RPD: 44	127448-3	78%
Mercury	mg/kg	127448-18	<0.1 || <0.1	127448-3	106%
Nickel	mg/kg	127448-18	6 || 7 || RPD: 15	127448-3	88%
Zinc	mg/kg	127448-18	47 || 67 || RPD: 35	127448-3	76%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	6/05/2015 || 6/05/2015	127448-3	6/05/2015
Date analysed	-	127448-36	6/05/2015 || 6/05/2015	127448-3	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	127448-36	<25 || <25	127448-3	96%
TRHC$_6$ - C$_{10}$	mg/kg	127448-36	<25 || <25	127448-3	96%
Benzene	mg/kg	127448-36	<0.2 || <0.2	127448-3	96%
Toluene	mg/kg	127448-36	<0.5 || <0.5	127448-3	96%
Ethylbenzene	mg/kg	127448-36	<1 || <1	127448-3	96%
m+p-xylene	mg/kg	127448-36	<2 || <2	127448-3	96%
o-Xylene	mg/kg	127448-36	<1 || <1	127448-3	93%
naphthalene	mg/kg	127448-36	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	127448-36	102 || 103 || RPD: 1	127448-3	94%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Date analysed	-	127448-36	07/05/2015 || 07/05/2015	127448-3	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	127448-36	<50 || <50	127448-3	113%
TRHC$_{15}$ - C$_{28}$	mg/kg	127448-36	<100 || <100	127448-3	110%
TRHC$_{29}$ - C$_{36}$	mg/kg	127448-36	<100 || <100	127448-3	106%
TRH>C$_{10}$-C$_{16}$	mg/kg	127448-36	<50 || <50	127448-3	113%
TRH>C$_{16}$-C$_{34}$	mg/kg	127448-36	<100 || <100	127448-3	110%
TRH>C$_{34}$-C$_{40}$	mg/kg	127448-36	<100 || <100	127448-3	106%
Surrogate o-Terphenyl	%	127448-36	83 || 82 || RPD: 1	127448-3	96%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	6/05/2015 || 6/05/2015	127448-3	6/05/2015
Date analysed	-	127448-36	7/05/2015 || 7/05/2015	127448-3	6/05/2015
Naphthalene	mg/kg	127448-36	<0.1 || <0.1	127448-3	97%
Acenaphthylene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	127448-36	<0.1 || <0.1	127448-3	104%
Phenanthrene	mg/kg	127448-36	<0.1 || <0.1	127448-3	105%
Anthracene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	127448-36	0.1 || <0.1	127448-3	107%
Pyrene	mg/kg	127448-36	0.1 || <0.1	127448-3	108%
Benzo(a)anthracene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	127448-36	<0.1 || <0.1	127448-3	94%
Benzo(b,j+k)fluoranthene	mg/kg	127448-36	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	127448-36	0.06 || 0.05 || RPD: 18	127448-3	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(g,h,i)perylene	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	127448-36	96 || 99 || RPD: 3	127448-3	100%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Date analysed	-	127448-36	07/05/2015 || 07/05/2015	127448-3	07/05/2015
HCB	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	127448-36	<0.1 || <0.1	127448-3	95%
gamma-BHC	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	127448-36	<0.1 || <0.1	127448-3	102%
Heptachlor	mg/kg	127448-36	<0.1 || <0.1	127448-3	99%
delta-BHC	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	127448-36	<0.1 || <0.1	127448-3	97%
Heptachlor Epoxide	mg/kg	127448-36	<0.1 || <0.1	127448-3	98%
gamma-Chlordane	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	127448-36	<0.1 || <0.1	127448-3	105%
Dieldrin	mg/kg	127448-36	<0.1 || <0.1	127448-3	98%
Endrin	mg/kg	127448-36	<0.1 || <0.1	127448-3	103%
pp-DDD	mg/kg	127448-36	<0.1 || <0.1	127448-3	114%
Endosulfan II	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	127448-36	<0.1 || <0.1	127448-3	108%
Methoxychlor	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-36	87 || 88 || RPD: 1	127448-3	93%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Date analysed	-	127448-36	07/05/2015 || 07/05/2015	127448-3	07/05/2015
Azinphos-methyl (Guthion)	mg/kg	127448-36	<0.1 || <0.1	127448-3	87%
Bromophos-ethyl	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	127448-36	<0.1 || <0.1	127448-3	91%
Chlorpyriphos-methyl	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	127448-36	<0.1 || <0.1	127448-3	83%
Dimethoate	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	127448-36	<0.1 || <0.1	127448-3	99%
Fenitrothion	mg/kg	127448-36	<0.1 || <0.1	127448-3	91%
Malathion	mg/kg	127448-36	<0.1 || <0.1	127448-3	77%
Parathion	mg/kg	127448-36	<0.1 || <0.1	127448-3	105%
Ronnel	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-36	87 || 88 || RPD: 1	127448-3	89%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-36	06/05/2015 || 06/05/2015	127448-3	06/05/2015
Date analysed	-	127448-36	07/05/2015 || 07/05/2015	127448-3	07/05/2015
Aroclor 1016	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	127448-36	<0.1 || <0.1	127448-3	108%
Aroclor 1260	mg/kg	127448-36	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	127448-36	87 || 88 || RPD: 1	127448-3	90%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	127448-36	06/05/2015 || 06/05/2015	LCS-4	06/05/2015
Date analysed	-	127448-36	06/05/2015 || 06/05/2015	LCS-4	06/05/2015
Arsenic	mg/kg	127448-36	5 || 5 || RPD: 0	LCS-4	100%
Cadmium	mg/kg	127448-36	<0.4 || <0.4	LCS-4	93%
Chromium	mg/kg	127448-36	11 || 13 || RPD: 17	LCS-4	96%
Copper	mg/kg	127448-36	21 || 19 || RPD: 10	LCS-4	97%
Lead	mg/kg	127448-36	57 || 58 || RPD: 2	LCS-4	91%
Mercury	mg/kg	127448-36	<0.1 || <0.1	LCS-4	103%
Nickel	mg/kg	127448-36	6 || 6 || RPD: 0	LCS-4	93%
Zinc	mg/kg	127448-36	71 || 81 || RPD: 13	LCS-4	92%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-54	6/05/2015 || 6/05/2015	127448-37	6/05/2015
Date analysed	-	127448-54	7/05/2015 || 7/05/2015	127448-37	6/05/2015
TRHC$_6$ - C$_9$	mg/kg	127448-54	<25 || <25	127448-37	94%
TRHC$_6$ - C$_{10}$	mg/kg	127448-54	<25 || <25	127448-37	94%
Benzene	mg/kg	127448-54	<0.2 || <0.2	127448-37	94%
Toluene	mg/kg	127448-54	<0.5 || <0.5	127448-37	94%
Ethylbenzene	mg/kg	127448-54	<1 || <1	127448-37	94%
m+p-xylene	mg/kg	127448-54	<2 || <2	127448-37	95%
o-Xylene	mg/kg	127448-54	<1 || <1	127448-37	92%
naphthalene	mg/kg	127448-54	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	127448-54	98 || 88 || RPD: 11	127448-37	94%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-54	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Date analysed	-	127448-54	07/05/2015 || 07/05/2015	127448-37	07/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	127448-54	<50 || <50	127448-37	110%
TRHC$_{15}$ - C$_{28}$	mg/kg	127448-54	100 || <100	127448-37	113%
TRHC$_{29}$ - C$_{36}$	mg/kg	127448-54	<100 || <100	127448-37	77%
TRH>C$_{10}$-C$_{16}$	mg/kg	127448-54	55 || <50	127448-37	110%
TRH>C$_{16}$-C$_{34}$	mg/kg	127448-54	120 || <100	127448-37	113%
TRH>C$_{34}$-C$_{40}$	mg/kg	127448-54	<100 || <100	127448-37	77%
Surrogate o-Terphenyl	%	127448-54	80 || 87 || RPD: 8	127448-37	96%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-54	6/05/2015 || 6/05/2015	127448-37	6/05/2015
Date analysed	-	127448-54	7/05/2015 || 7/05/2015	127448-37	7/05/2015
Naphthalene	mg/kg	127448-54	<0.1 || <0.1	127448-37	95%
Acenaphthylene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	127448-54	<0.1 || <0.1	127448-37	92%
Phenanthrene	mg/kg	127448-54	<0.1 || <0.1	127448-37	95%
Anthracene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	127448-54	0.2 || 0.2 || RPD: 0	127448-37	101%
Pyrene	mg/kg	127448-54	0.2 || 0.2 || RPD: 0	127448-37	103%
Benzo(a)anthracene	mg/kg	127448-54	<0.1 || 0.1	[NR]	[NR]
Chrysene	mg/kg	127448-54	0.1 || 0.1 || RPD: 0	127448-37	90%
Benzo(b,j+k)fluoranthene	mg/kg	127448-54	<0.2 || 0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	127448-54	0.1 || 0.1 || RPD: 0	127448-37	105%
Indeno(1,2,3-c,d)pyrene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(g,h,i)perylene	mg/kg	127448-54	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	127448-54	104 || 102 || RPD: 2	127448-37	99%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Date analysed	-	127448-63	07/05/2015 || 07/05/2015	127448-37	07/05/2015
HCB	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	127448-63	<0.1 || <0.1	127448-37	95%
gamma-BHC	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	127448-63	<0.1 || <0.1	127448-37	101%
Heptachlor	mg/kg	127448-63	<0.1 || <0.1	127448-37	95%
delta-BHC	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	127448-63	<0.1 || <0.1	127448-37	96%
Heptachlor Epoxide	mg/kg	127448-63	<0.1 || <0.1	127448-37	96%
gamma-Chlordane	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	127448-63	<0.1 || <0.1	127448-37	104%
Dieldrin	mg/kg	127448-63	<0.1 || <0.1	127448-37	98%
Endrin	mg/kg	127448-63	<0.1 || <0.1	127448-37	100%
pp-DDD	mg/kg	127448-63	<0.1 || <0.1	127448-37	112%
Endosulfan II	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	127448-63	<0.1 || <0.1	127448-37	106%
Methoxychlor	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-63	84 || 94 || RPD: 11	127448-37	91%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Date analysed	-	127448-63	07/05/2015 || 07/05/2015	127448-37	07/05/2015
Azinphos-methyl (Guthion)	mg/kg	127448-63	<0.1 || <0.1	127448-37	95%
Bromophos-ethyl	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	127448-63	<0.1 || <0.1	127448-37	92%
Chlorpyriphos-methyl	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	127448-63	<0.1 || <0.1	127448-37	84%
Dimethoate	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	127448-63	<0.1 || <0.1	127448-37	101%
Fenitrothion	mg/kg	127448-63	<0.1 || <0.1	127448-37	77%
Malathion	mg/kg	127448-63	<0.1 || <0.1	127448-37	84%
Parathion	mg/kg	127448-63	<0.1 || <0.1	127448-37	108%
Ronnel	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	127448-63	84 || 94 || RPD: 11	127448-37	95%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Date analysed	-	127448-63	07/05/2015 || 07/05/2015	127448-37	07/05/2015
Aroclor 1016	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	127448-63	<0.1 || <0.1	127448-37	111%
Aroclor 1260	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	127448-63	84 || 94 || RPD: 11	127448-37	97%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	127448-54	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Date analysed	-	127448-54	06/05/2015 || 06/05/2015	127448-37	06/05/2015
Arsenic	mg/kg	127448-54	5 || 5 || RPD: 0	127448-37	82%
Cadmium	mg/kg	127448-54	<0.4 || <0.4	127448-37	89%
Chromium	mg/kg	127448-54	15 || 15 || RPD: 0	127448-37	87%
Copper	mg/kg	127448-54	30 || 28 || RPD: 7	127448-37	82%
Lead	mg/kg	127448-54	31 || 32 || RPD: 3	127448-37	88%
Mercury	mg/kg	127448-54	<0.1 || <0.1	127448-37	86%
Nickel	mg/kg	127448-54	6 || 7 || RPD: 15	127448-37	83%
Zinc	mg/kg	127448-54	33 || 37 || RPD: 11	127448-37	71%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	6/05/2015 || 6/05/2015	127448-55	6/05/2015
Date analysed	-	127448-63	7/05/2015 || 7/05/2015	127448-55	7/05/2015
TRHC$_6$ - C$_9$	mg/kg	127448-63	<25 || <25	127448-55	99%
TRHC$_6$ - C$_{10}$	mg/kg	127448-63	<25 || <25	127448-55	99%
Benzene	mg/kg	127448-63	<0.2 || <0.2	127448-55	98%
Toluene	mg/kg	127448-63	<0.5 || <0.5	127448-55	98%
Ethylbenzene	mg/kg	127448-63	<1 || <1	127448-55	100%
m+p-xylene	mg/kg	127448-63	<2 || <2	127448-55	99%
o-Xylene	mg/kg	127448-63	<1 || <1	127448-55	96%
naphthalene	mg/kg	127448-63	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	127448-63	105 || 104 || RPD: 1	127448-55	96%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	06/05/2015 || 06/05/2015	127448-55	06/05/2015
Date analysed	-	127448-63	06/05/2015 || 06/05/2015	127448-55	07/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	127448-63	<50 || <50	127448-55	106%
TRHC$_{15}$ - C$_{28}$	mg/kg	127448-63	<100 || <100	127448-55	106%
TRHC$_{29}$ - C$_{36}$	mg/kg	127448-63	<100 || <100	127448-55	86%
TRH>C$_{10}$-C$_{16}$	mg/kg	127448-63	<50 || <50	127448-55	106%
TRH>C$_{16}$-C$_{34}$	mg/kg	127448-63	<100 || <100	127448-55	106%
TRH>C$_{34}$-C$_{40}$	mg/kg	127448-63	<100 || <100	127448-55	86%
Surrogate o-Terphenyl	%	127448-63	76 || 80 || RPD: 5	127448-55	96%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	127448-63	6/05/2015 || 6/05/2015	127448-55	6/05/2015
Date analysed	-	127448-63	7/05/2015 || 7/05/2015	127448-55	7/05/2015
Naphthalene	mg/kg	127448-63	<0.1 || <0.1	127448-55	96%
Acenaphthylene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	127448-63	<0.1 || <0.1	127448-55	95%
Phenanthrene	mg/kg	127448-63	<0.1 || <0.1	127448-55	97%
Anthracene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	127448-63	<0.1 || <0.1	127448-55	101%
Pyrene	mg/kg	127448-63	<0.1 || <0.1	127448-55	102%
Benzo(a)anthracene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	127448-63	<0.1 || <0.1	127448-55	91%
Benzo(b,j+k)fluoranthene	mg/kg	127448-63	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	127448-63	<0.05 || <0.05	127448-55	102%
Indeno(1,2,3-c,d)pyrene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(g,h,i)perylene	mg/kg	127448-63	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	127448-63	94 || 99 || RPD: 5	127448-55	98%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	127448-38	06/05/2015 || 06/05/2015
Date analysed	-	127448-38	07/05/2015 || 07/05/2015
HCB	mg/kg	127448-38	<0.1 || <0.1
alpha-BHC	mg/kg	127448-38	<0.1 || <0.1
gamma-BHC	mg/kg	127448-38	<0.1 || <0.1
beta-BHC	mg/kg	127448-38	<0.1 || <0.1
Heptachlor	mg/kg	127448-38	<0.1 || <0.1
delta-BHC	mg/kg	127448-38	<0.1 || <0.1
Aldrin	mg/kg	127448-38	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	127448-38	<0.1 || <0.1
gamma-Chlordane	mg/kg	127448-38	<0.1 || <0.1
alpha-chlordane	mg/kg	127448-38	<0.1 || <0.1
Endosulfan I	mg/kg	127448-38	<0.1 || <0.1
pp-DDE	mg/kg	127448-38	0.4 || 0.3 || RPD: 29
Dieldrin	mg/kg	127448-38	2.5 || 2.6 || RPD: 4
Endrin	mg/kg	127448-38	<0.1 || <0.1
pp-DDD	mg/kg	127448-38	<0.1 || <0.1
Endosulfan II	mg/kg	127448-38	<0.1 || <0.1
pp-DDT	mg/kg	127448-38	0.1 || 0.1 || RPD: 0
Endrin Aldehyde	mg/kg	127448-38	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	127448-38	<0.1 || <0.1
Methoxychlor	mg/kg	127448-38	<0.1 || <0.1
Surrogate TCMX	%	127448-38	96 || 64 || RPD: 40

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	127448-63	06/05/2015 || 06/05/2015	LCS-5	06/05/2015
Date analysed	-	127448-63	06/05/2015 || 06/05/2015	LCS-5	06/05/2015
Arsenic	mg/kg	127448-63	8 || 10 || RPD: 22	LCS-5	112%
Cadmium	mg/kg	127448-63	<0.4 || <0.4	LCS-5	102%
Chromium	mg/kg	127448-63	6 || 6 || RPD: 0	LCS-5	106%
Copper	mg/kg	127448-63	32 || 32 || RPD: 0	LCS-5	108%
Lead	mg/kg	127448-63	16 || 16 || RPD: 0	LCS-5	101%
Mercury	mg/kg	127448-63	<0.1 || <0.1	LCS-5	92%
Nickel	mg/kg	127448-63	3 || 3 || RPD: 0	LCS-5	102%
Zinc	mg/kg	127448-63	14 || 12 || RPD: 15	LCS-5	100%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-3	06/05/2015
Date analysed	-	[NT]	[NT]	LCS-3	06/05/2015
TRHC$_6$ - C$_9$	mg/kg	[NT]	[NT]	LCS-3	114%
TRHC$_6$ - C$_{10}$	mg/kg	[NT]	[NT]	LCS-3	114%
Benzene	mg/kg	[NT]	[NT]	LCS-3	114%
Toluene	mg/kg	[NT]	[NT]	LCS-3	114%
Ethylbenzene	mg/kg	[NT]	[NT]	LCS-3	113%
m+p-xylene	mg/kg	[NT]	[NT]	LCS-3	115%
o-Xylene	mg/kg	[NT]	[NT]	LCS-3	109%
naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	LCS-3	110%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-3	06/05/2015
Date analysed	-	[NT]	[NT]	LCS-3	06/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	[NT]	[NT]	LCS-3	98%
TRHC$_{15}$ - C$_{28}$	mg/kg	[NT]	[NT]	LCS-3	88%
TRHC$_{29}$ - C$_{36}$	mg/kg	[NT]	[NT]	LCS-3	116%
TRH>C$_{10}$-C$_{16}$	mg/kg	[NT]	[NT]	LCS-3	98%
TRH>C$_{16}$-C$_{34}$	mg/kg	[NT]	[NT]	LCS-3	88%
TRH>C$_{34}$-C$_{40}$	mg/kg	[NT]	[NT]	LCS-3	116%
Surrogate o-Terphenyl	%	[NT]	[NT]	LCS-3	94%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-3	6/05/2015
Date analysed	-	[NT]	[NT]	LCS-3	7/05/2015
Naphthalene	mg/kg	[NT]	[NT]	LCS-3	98%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	LCS-3	95%
Phenanthrene	mg/kg	[NT]	[NT]	LCS-3	99%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	LCS-3	103%
Pyrene	mg/kg	[NT]	[NT]	LCS-3	105%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	LCS-3	93%
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	LCS-3	108%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	LCS-3	103%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	127448-55	06/05/2015
Date analysed	-	[NT]	[NT]	127448-55	06/05/2015
Arsenic	mg/kg	[NT]	[NT]	127448-55	82%
Cadmium	mg/kg	[NT]	[NT]	127448-55	85%
Chromium	mg/kg	[NT]	[NT]	127448-55	85%
Copper	mg/kg	[NT]	[NT]	127448-55	89%
Lead	mg/kg	[NT]	[NT]	127448-55	78%
Mercury	mg/kg	[NT]	[NT]	127448-55	89%
Nickel	mg/kg	[NT]	[NT]	127448-55	84%
Zinc	mg/kg	[NT]	[NT]	127448-55	78%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	LCS-6	06/05/2015
Date analysed	-	[NT]	[NT]	LCS-6	06/05/2015
Arsenic	mg/kg	[NT]	[NT]	LCS-6	109%
Cadmium	mg/kg	[NT]	[NT]	LCS-6	103%
Chromium	mg/kg	[NT]	[NT]	LCS-6	105%
Copper	mg/kg	[NT]	[NT]	LCS-6	107%
Lead	mg/kg	[NT]	[NT]	LCS-6	99%
Mercury	mg/kg	[NT]	[NT]	LCS-6	93%
Nickel	mg/kg	[NT]	[NT]	LCS-6	101%
Zinc	mg/kg	[NT]	[NT]	LCS-6	100%

Report Comments:

Asbestos-ID in soil; Sample 127448-24

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics 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	Goeff Fletcher

Sample Login Details	
Your Reference	E24192K, Pymble
Envirolab Reference	127448
Date Sample Received	05/05/2015
Date Instructions Received	05/05/2015
Date Results Expected to be Reported	12/05/2015

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	67 Soils, 3 waters, 1 Material
Turnaround Time Requested	Standard
Temperature on receipt (°C)	7.0
Cooling Method	Ice Pack
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 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
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Sample Id	Acid Extractable metals in soil	Asbestos ID - materials	Asbestos ID - soils	BTEX in Water	Organochlorine Pesticides in soil	Organophosphorus Pesticides	PAHs in Soil	PCBs in Soil	svTRH (C10-C40) in Soil	vTRH(C6-C10)/BTEXN in Soil	On Hold
BH1-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH1-0.5-0.9											✓
BH2-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH2-0.5-0.8	✓				✓	✓	✓	✓	✓	✓	
BH3-0-0.1	✓		✓		✓	✓	✓	✓	✓	✓	
BH3-0.3-0.75											✓
BH3-1.3-1.5											✓
BH4-0.05-0.15	✓		✓		✓	✓	✓	✓	✓	✓	
BH4-0.3-0.5											✓
BH5-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH8-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH8-0.5-0.8	✓				✓	✓	✓	✓	✓	✓	
BH9-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH9-0.5-0.75	✓		✓				✓		✓	✓	
BH9-1.7-1.95	✓		✓				✓		✓	✓	
BH9-2-2.2											✓
BH9-2.7-3.0											✓
BH13-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH13-0.5-0.7											✓
BH14-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH14-0.3-0.5											✓
BH18-0-0.1	✓		✓		✓	✓	✓	✓	✓	✓	
BH18-0.3-0.6	✓		✓				✓		✓	✓	
BH19-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH19-0.4-0.6											✓
BH20-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH20-0.3-0.5	✓		✓				✓		✓	✓	
BH20-0.9-1.1											✓
BH20-1.1-1.3											✓
BH21-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH21-0.3-0.5	✓				✓	✓	✓	✓	✓	✓	
BH22-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH22-0.5-0.7	✓		✓				✓		✓	✓	
BH23-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH23-0.6-0.9	✓		✓				✓		✓	✓	
BH24-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH24-0.5-0.6	✓				✓	✓	✓	✓	✓	✓	
BH25-0-0.15	✓		✓		✓	✓	✓	✓	✓	✓	

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

BH25-0.15-0.25	✓		✓				✓		✓	✓	
BH25-0.3-0.6											✓
BH26-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH26-0.2-0.5	✓		✓				✓		✓	✓	
BH27-0-0.3	✓		✓		✓	✓	✓	✓	✓	✓	
BH27-0.5-0.7	✓				✓	✓	✓	✓	✓	✓	
BH28-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH28-0.3-0.5	✓				✓	✓	✓	✓	✓	✓	
BH31-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH31-0.5-0.8											✓
BH31-1.3-1.5											✓
BH32-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH32-0.5-0.7											✓
BH32-1.3-1.5											✓
BH33-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH33-0.3-0.5	✓		✓				✓		✓	✓	
BH33-0.6-0.9	✓						✓		✓	✓	
BH33-1-1.2	✓						✓		✓	✓	
BH34-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH34-0.3-0.5	✓				✓	✓	✓	✓	✓	✓	
BH35-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH35-0.5-0.8											✓
BH35-1.3-1.5											✓
BH36-0-0.2	✓		✓		✓	✓	✓	✓	✓	✓	
BH36-0.5-0.7	✓				✓	✓	✓	✓	✓	✓	
Dup2	✓				✓	✓	✓	✓	✓	✓	
Dup3	✓				✓	✓	✓	✓	✓	✓	
Dup4											✓
TBS										✓	
FR1				✓							
FR2				✓							
FR3				✓							
S1		✓									

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E24192K Date Results Required: STANDARD Page: 1 of 3	ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Geoff Fletcher

Location: Pymble
Sampler: GF + JS

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a				BTEX	Asbestos			
1/5/15	1	BH1	0-0.2	G,A	0	Fill				X								
	2	↓	0.5-0.9	G	0	Shale												
	3	BH2	0-0.2	G,A	0	Fill				X								
	4	↓	0.5-0.8	G	0	Shale			X									
	5	BH3	0-0.1	G,A	0	Fill				X								
	6	↓	0.3-0.75	↓	0	Shale												
↓	7	↓	1.3-1.5	G	0	↓												
4/5/15	8	BH4	0.05-0.15	G,A	0	Clay				X								
	9	↓	0.3-0.5	G	0	↓												
	10	BH5	0-0.3	G,A	0	Fill				X								
	11	BH8	0-0.3	↓	0	↓				X								
↓	12	↓	0.5-0.8	G	0	Clay			X									
1/5/15	13	BH9	0-0.3	G,A	0	Fill				X								
	14		0.5-0.75		0			X										
	15		1.7-1.95		0	↓		X										
	16		2-2.2	↓	0	Clay												
↓	17	↓	2.7-3.0	G	0	↓												
30/4/15	18	BH13	0-0.3	G,A	0	Fill				X								
↓	19	↓	0.5-0.7	G	0	Clay												
5/5/15	20	BH14	0-0.2	G,A	0	Fill				X								
	21	↓	0.3-0.5	G	0	Clay												
	22	BH18	0-0.1	G,A	0	Fill				X								
	23	↓	0.3-0.6	G	0	↓		X										
	24	BH19	0-0.2	G,A	0	↓				X								
↓	25	↓	0.4-0.6	G	0	Clay												

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

Job No: 127448
Date Received: 5/5/15
Time Received: 16:15
Received by: JYH
Temp: Cool / Ambient 7.0°C
Cooling: Ice / Icepack
Security: Intact / Broken / None

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	5/5/15	3:50pm		5/5/15

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E24192K Date Results Required: STANDARD Page: 2 of 3	ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Geoff Fletcher

Location: Pymble
Sampler: GF + JS

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref: 127448	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a				BTEX	Asbestos			
5/5/15	26	BH20	0-0.2	G,A	0	Fill				X								
	27		0.3-0.5		0			X										
	28		0.9-1.1	G	0	Sand												
	29		1.1-1.3		0	Clay												
	30	BH21	0-0.2	G,A	0	Fill				X								
	31		0.3-0.5	G	0	Clay			X									
	32	BH22	0-0.3	G,A	0	Fill				X								
	33		0.5-0.7		0			X										
3/4/15	34	BH23	0-0.3		0					X								
	35		0.6-0.9		0			X										
	36	BH24	0-0.3		0					X								
	37		0.5-0.6	G	0	Clay			X									
	38	BH25	0-0.15	G,A	0	Fill				X								
	39		0.15-0.25		0			X										
	40		0.3-0.6	G	0	Clay												
	41	BH26	0-0.2	G,A	0	Fill				X								
	42		0.2-0.5		0			X										
	43	BH27	0-0.3		0					X								
	44		0.5-0.7	G	0	Clay			X									
5/5/15	45	BH28	0-0.2	G,A	4.3	Fill				X								
	46		0.3-0.5	G	44	Clay			X									
1/5/15	47	BH31	0-0.2	G,A	0	Fill				X								
	48		0.5-0.8	G	0	Clay												
	49		1.3-1.5		0	Shale												
	50	BH32	0-0.2	G,A	1.1	Fill				X								

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	5/5/15	3:50pm		5/5/15

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E24192K	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: 3 of 3	Attention: Geoff Fletcher
Attention: Aileen		

Location: Pymble — Sample Preserved in Esky on Ice

Sampler: GF + JS — Tests Required

Date Sampled	Lab Ref: 127448	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a				BTEX	Asbestos			
1/5/15	51	BH32	0.5–0.7	G	0	Clay												
↓	52	↓	1.3–1.5	↓	0	Shale												
30/4/15	53	BH33	0–0.2	G,A	9.1	Fill				X								
↓	54	↓	0.3–0.5	↓	20.3	↓		X										
↓	55	↓	0.6–0.9	↓	2.8	Clay	X											
↓	56	↓	1–1.2	G	40.8	↓	X											
↓	57	BH34	0–0.2	G,A	0	Fill				X								
↓	58	↓	0.3–0.5	G	0	Clay			X									
1/5/15	59	BH35	0–0.2	G,A	0	Fill				X								
↓	60	↓	0.5–0.8	G	0	Clay												
↓	61	↓	1.3–1.5	↓	0	Shale												
↓	62	BH36	0–0.2	G,A	0	Fill				X								
↓	63	↓	0.5–0.7	G	0	Shale			X									
30/4/15	—	Dup1	—	↓	—	Soil			X	←					Send to MELB			
↓	64	Dup2	—	↓	—	↓			X									
1/5/15	65	Dup3	—	↓	—	↓			X									
↓	66	Dup4	—	↓	—	↓												
5/5/15	—	Dup5	—	↓	—	↓			X	←					Send to MELB			
4/5/15	67	TB5		↓	—	↓								X				
30/4/15	68	FR1		V	—	Water								X				
1/5/15	69	FR2		↓	—	↓								X				
5/5/15	70	FR3		↓	—	↓								X				
4/5/15	71	S1	—	A	—	Material									X			

Remarks (comments/detection limits required):
Please Send Dup1 & Dup5 to Envirolab Melbourne

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
[signature]	5/5/15	3:50pm	[signature]	6/5/15

ENVIROLAB SERVICES
A division of Envirolab Group
ENVIROLAB GROUP

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 6246

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

Attention: Geoff Fletcher

Sample log in details:

Your Reference:	**E24192K - Pymble**
No. of samples:	2 Soils
Date samples received / completed instructions received	07/05/2015 / 07/05/2015

This report replaces the one issued on the 13/05/2015 with the inclusion of lead duplicate and triplicate results for DUP1.

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:	13/05/15 / 14/05/15
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:

Analisa Mathrick
Laboratory Supervisor

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH(C6-C10)/BTEXN in Soil			
Our Reference:	UNITS	6246-1	6246-2
Your Reference	----------	DUP1	DUP5
Date Sampled	----------	30/04/2015	5/05/2015
Type of sample		Soil	Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
vTRH C_6 - C_9	mg/kg	<25	<25
vTRH C_6 - C_{10}	mg/kg	<25	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	80	90

TRH Soil C10-C40 NEPM Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	6246-1 DUP 1 30/04/2015 Soil	6246-2 DUP 5 5/05/2015 Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50
TRH >C_{10}-C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16}-C_{34}	mg/kg	<100	<100
TRH >C_{34}-C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	76	74

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	6246-1 DUP 1 30/04/2015 Soil	6246-2 DUP 5 5/05/2015 Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	0.7	<0.1
Pyrene	mg/kg	0.6	<0.1
Benzo(a)anthracene	mg/kg	0.3	<0.1
Chrysene	mg/kg	0.4	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	0.6	<0.2
Benzo(a)pyrene	mg/kg	0.50	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1
Total +ve PAH's	mg/kg	3.8	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.6	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.7	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	0.7	<0.5
Surrogate p-Terphenyl-d_{14}	%	67	64

OCP in Soil			
Our Reference:	UNITS	6246-1	6246-2
Your Reference	----------	DUP 1	DUP 5
Date Sampled	----------	30/04/2015	5/05/2015
Type of sample		Soil	Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
alpha-BHC	mg/kg	<0.1	<0.1
Hexachlorobenzene	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	91	86

OP in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	6246-1 DUP 1 30/04/2015 Soil	6246-2 DUP 5 5/05/2015 Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
Azinphos-methyl	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Dichlorovos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Surrogate TCMX	%	91	86

PCBs in Soil			
Our Reference:	UNITS	6246-1	6246-2
Your Reference	----------	DUP 1	DUP 5
Date Sampled	----------	30/04/2015	5/05/2015
Type of sample		Soil	Soil
Date extracted	-	08/05/2015	08/05/2015
Date analysed	-	09/05/2015	09/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	91	86

Acid Extractable metals in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	6246-1 DUP1 30/04/2015 Soil	6246-2 DUP5 5/05/2015 Soil	6246-3 DUP1- Triplicate 30/04/2015 Soil
Date digested	-	08/05/2015	08/05/2015	13/05/2015
Date analysed	-	08/05/2015	08/05/2015	14/05/2015
Arsenic	mg/kg	4	7	[NA]
Cadmium	mg/kg	<0.4	<0.4	[NA]
Chromium	mg/kg	24	14	[NA]
Copper	mg/kg	23	46	[NA]
Lead	mg/kg	600	44	73
Mercury	mg/kg	<0.1	<0.1	[NA]
Nickel	mg/kg	6	5	[NA]
Zinc	mg/kg	79	44	[NA]

Moisture			
Our Reference:	UNITS	6246-1	6246-2
Your Reference	----------	DUP1	DUP5
Date Sampled	----------	30/04/2015	5/05/2015
Type of sample		Soil	Soil
Date prepared	-	8/05/2015	8/05/2015
Date analysed	-	11/05/2015	11/05/2015
Moisture	%	28	33

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. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
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. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore" Total +ve TRH" is simply a sum of the positive individual TRH fractions.
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-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	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. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-015	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
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 deg C for a minimum of 12 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	6246-1	08/05/2015 || 08/05/2015	LCS	08/05/2015
Date analysed	-			09/05/2015	6246-1	09/05/2015 || 09/05/2015	LCS	09/05/2015
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	6246-1	<25 || <25	LCS	104%
vTRH C_6 - C_{10}	mg/kg	25	Org-016	<25	6246-1	<25 || <25	LCS	85%
Benzene	mg/kg	0.2	Org-016	<0.2	6246-1	<0.2 || <0.2	LCS	92%
Toluene	mg/kg	0.5	Org-016	<0.5	6246-1	<0.5 || <0.5	LCS	92%
Ethylbenzene	mg/kg	1	Org-016	<1	6246-1	<1 || <1	LCS	94%
m+p-xylene	mg/kg	2	Org-016	<2	6246-1	<2 || <2	LCS	91%
o-Xylene	mg/kg	1	Org-016	<1	6246-1	<1 || <1	LCS	95%
naphthalene	mg/kg	1	Org-014	<1	6246-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	83	6246-1	80 || 99 || RPD: 21	LCS	118%

QUALITY CONTROL TRH Soil C10-C40 NEPM	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	[NT]	[NT]	LCS	08/05/2015
Date analysed	-			09/05/2015	[NT]	[NT]	LCS	09/05/2015
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS	101%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS	100%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS	100%
TRH >C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS	101%
TRH >C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS	102%
TRH >C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS	100%
Surrogate o-Terphenyl	%		Org-003	76	[NT]	[NT]	LCS	93%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	[NT]	[NT]	LCS	08/05/2015
Date analysed	-			09/05/2015	[NT]	[NT]	LCS	09/05/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	97%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	104%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	96%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	100%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	102%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS	116%
Benzo(b,j&k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012	66	[NT]	[NT]	LCS	108%

QUALITY CONTROL OCP in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	[NT]	[NT]	LCS	08/05/2015
Date analysed	-			09/05/2015	[NT]	[NT]	LCS	09/05/2015
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	101%
Hexachlorobenzene	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	102%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	93%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	89%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	103%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	107%
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	97%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	83%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	84%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	106%
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS	91%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL OCP in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Surrogate TCMX	%		Org-005	86	[NT]	[NT]	LCS	95%
QUALITY CONTROL OP in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	[NT]	[NT]	LCS	08/05/2015
Date analysed	-			09/05/2015	[NT]	[NT]	LCS	09/05/2015
Azinphos-methyl	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	LCS	110%
Chlorpyrifos-methyl	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	LCS	120%
Diazinon	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Dichlorovos	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	LCS	113%
Fenitrothion	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	LCS	121%
Malathion	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Parathion	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-015	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-015	86	[NT]	[NT]	LCS	95%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/05/2015	[NT]	[NT]	LCS	08/05/2015
Date analysed	-			09/05/2015	[NT]	[NT]	LCS	09/05/2015
Aroclor 1016	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS	107%
Aroclor 1260	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-015	86	[NT]	[NT]	LCS	95%

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	-			08/05/2015	6246-3	13/05/2015 || 13/05/2015	LCS-1	08/05/2015
Date analysed	-			08/05/2015	6246-3	14/05/2015 || 14/05/2015	LCS-1	08/05/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	100%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-1	99%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	102%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	6246-3	73 || 61 || RPD: 18	LCS-1	101%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	98%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	100%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	103%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

Report Comments:

#Metals: The duplicate is outside acceptable %RPD, reanalysis indicates possible sample heterogeneity for DUP1.

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched 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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenc

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.

A division of Envirolab Group

Envirolab Services Pty Ltd - Melbourne
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melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC NSW 1670

ph: 02 9888 5000
Fax: 02 9888 5001

Attention: Geoff Fletcher

Sample log in details:

Your reference:	**E24192K - Pymble**
Envirolab Reference:	**6246**
Date received:	07/05/2015
Date results expected to be reported:	**13/05/15**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	2 Soils
Turnaround time requested:	Standard
Temperature on receipt	10.5C
Cooling Method:	Ice Pack
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. Other samples such as filters, tubes and air toxics cans may be used entirely during testing.

Contact details:

Please direct any queries to Analisa Mathrick on amathrick@envirolab.com.au or Chris De Luca on cdeluca@envirolab.com.au
ph: 03 9763 2500 fax: 03 9763 2633

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E24192K	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		Attention: Geoff Fletcher
Attention: Aileen	Page: 3 of 3	

Location: Pymble

Sampler: GF + JS

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref: 127448	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a	BTEX	Asbestos
1/5/15	51	BH32	0.5-0.7	G	0	Clay						
↓	52	↓	1.3-1.5	↓	0	Shale						
30/4/15	53	BH33	0-0.2	G,A	9.1	Fill				X		
	54		0.3-0.5	↓	20.3	↓		X				
	55		0.5-0.9	↓	2.3	Clay	X					
	56	↓	1-1.2	G	40.3	↓	X					
	57	BH34	0-0.2	G,A	0	Fill				X		
	58	↓	0.3-0.5	G	0	clay			X			
1/5/15	59	BH35	0-0.2	G,A	0	Fill				X		
	60		0.5-0.8	G	0	clay						
	61	↓	1.3-1.5	↓	0	Shale						
	62	BH36	0-0.2	G,A	0	Fill				X		
	62	↓	0.5-0.7	G	0	Shale			X			
30/4/15		D01	—		—	So.1			X	←		Send to MEL
↓	64	D02	—		—				X			
1/5/15	65	D03	—		—				X			
↓	66	D04	—		—							
5/5/15		D05	—		—				X	←		Send to MEL
4/5/15	67	TB5		↓	—						X	
30/4/15	68	FR1		V	—	Water					X	
1/5/15	69	FR2			/						X	
5/5/15	70	FR3			/						X	
4/5/15	71	S1	—	A	—	Marked						X

ENVIROLAB GROUP

Envirolab Services
1a Dalmore Drive
Caribbean Park
Scoresby VIC 3179
Ph: (03) 9763 2500

Job No: 62460

Date Received: 7/5/15

Time Received: 12:00

Received by: MS

Temp: Cool/Ambient 10.5°C

Cooling: Ice/Icepack

Security: Intact/Broken/None

Remarks (comments/detection limits required):
Please Send Dup1 + Dup5 to Envirolab Melbourne

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	5/5/15	3:50pm		6/5/15

Relinquished by: PT 6/5/15 12:00 (ENS)

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

CERTIFICATE OF ANALYSIS 127766

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

Attention: Geoff F

Sample log in details:

Your Reference:	**E24192K, Pymble**
No. of samples:	3 Soils, 5 Water
Date samples received / completed instructions received	11/5/2015 / 11/5/2015

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:	18/05/15 / 15/05/15
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 Water						
Our Reference:	UNITS	127766-1	127766-2	127766-3	127766-4	127766-8
Your Reference	----------	MW9	MW31	Creek	Dup A	TSW
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015	11/05/2015	11/05/2015
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/05/2015	12/05/2015	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015	13/05/2015	13/05/2015
TRHC$_6$ - C$_9$	µg/L	<10	<10	<10	<10	[NA]
TRHC$_6$ - C$_{10}$	µg/L	<10	<10	<10	<10	[NA]
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	103%
Toluene	µg/L	<1	<1	<1	<1	105%
Ethylbenzene	µg/L	<1	<1	<1	<1	101%
m+p-xylene	µg/L	<2	<2	<2	<2	103%
o-xylene	µg/L	<1	<1	<1	<1	97%
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	108	108	108	109	107
Surrogate toluene-d8	%	102	102	102	103	101
Surrogate 4-BFB	%	100	99	104	99	104

svTRH (C10-C40) in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	127766-1 MW9 11/05/2015 Water	127766-2 MW31 11/05/2015 Water	127766-3 Creek 11/05/2015 Water	127766-4 Dup A 11/05/2015 Water
Date extracted	-	12/05/2015	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015	12/05/2015
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	µg/L	110	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100	<100	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	82	<50	<50	68
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	82	<50	<50	68
TRH>C$_{16}$ - C$_{34}$	µg/L	<100	<100	<100	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100	<100	<100	<100
Surrogate o-Terphenyl	%	95	93	91	87

PAHs in Water - Low Level Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	127766-1 MW9 11/05/2015 Water	127766-2 MW31 11/05/2015 Water	127766-3 Creek 11/05/2015 Water
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015
Naphthalene	µg/L	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	102	97	105

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	127766-1 MW9 11/05/2015 Water	127766-2 MW31 11/05/2015 Water	127766-3 Creek 11/05/2015 Water	127766-4 Dup A 11/05/2015 Water
Date prepared	-	12/05/2015	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015	12/05/2015
Arsenic-Dissolved	µg/L	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	2	2	3	2
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	1	6	<1	2
Zinc-Dissolved	µg/L	58	70	10	59

Cations in water Dissolved				
Our Reference:	UNITS	127766-1	127766-2	127766-3
Your Reference	----------	MW9	MW31	Creek
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Water	Water	Water
Date digested	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015
Calcium - Dissolved	mg/L	19	5.0	20
Magnesium - Dissolved	mg/L	10	3.2	6.9
Hardness	mgCaCO3/L	90	26	77

Miscellaneous Inorganics				
Our Reference:	UNITS	127766-1	127766-2	127766-3
Your Reference	----------	MW9	MW31	Creek
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Water	Water	Water
Date prepared	-	11/05/2015	11/05/2015	11/05/2015
Date analysed	-	11/05/2015	11/05/2015	11/05/2015
pH	pH Units	6.0	5.4	7.0
Electrical Conductivity	µS/cm	670	1,000	430

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	114	95	102

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100
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	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100
Surrogate o-Terphenyl	%	87	92	83

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	127766-5 SP1 11/05/2015 Soil	127766-6 SP2 11/05/2015 Soil	127766-7 SP3 11/05/2015 Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015
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	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	104	96	100

Organochlorine Pesticides in soil				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.4	0.2	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	0.3	0.2	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	0.3
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	95	100

Organophosphorus Pesticides				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	95	100

PCBs in Soil				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	105	95	100

Acid Extractable metals in soil				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date digested	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	12/05/2015	12/05/2015	12/05/2015
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	8	8	7
Copper	mg/kg	7	6	4
Lead	mg/kg	42	39	8
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	2	1	2
Zinc	mg/kg	42	35	14

Moisture				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date prepared	-	12/05/2015	12/05/2015	12/05/2015
Date analysed	-	13/05/2015	13/05/2015	13/05/2015
Moisture	%	12	12	8.3

Asbestos ID - soils				
Our Reference:	UNITS	127766-5	127766-6	127766-7
Your Reference	----------	SP1	SP2	SP3
Date Sampled	----------	11/05/2015	11/05/2015	11/05/2015
Type of sample		Soil	Soil	Soil
Date analysed	-	14/05/2015	14/05/2015	14/05/2015
Sample mass tested	g	Approx. 50g	Approx. 45g	Approx. 70g
Sample Description	-	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
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

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-013	Water samples are analysed directly 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.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
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.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing 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. 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.
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.

Method ID	Methodology Summary

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	-			12/05/2015	[NT]	[NT]	LCS-W1	12/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-W1	13/05/2015
TRHC$_{6}$ - C$_{9}$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	107%
TRHC$_{6}$ - C$_{10}$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	107%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	110%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	109%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	104%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	105%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	106%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	96	[NT]	[NT]	LCS-W1	94%
Surrogate toluene-d8	%		Org-016	100	[NT]	[NT]	LCS-W1	100%
Surrogate 4-BFB	%		Org-016	100	[NT]	[NT]	LCS-W1	103%

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	-			12/05/2015	127766-1	12/05/2015 || 12/05/2015	LCS-W1	12/05/2015
Date analysed	-			12/05/2015	127766-1	12/05/2015 || 12/05/2015	LCS-W1	12/05/2015
TRHC$_{10}$ - C$_{14}$	µg/L	50	Org-003	<50	127766-1	<50 || <50	LCS-W1	98%
TRHC$_{15}$ - C$_{28}$	µg/L	100	Org-003	<100	127766-1	110 || 100 || RPD: 10	LCS-W1	89%
TRHC$_{29}$ - C$_{36}$	µg/L	100	Org-003	<100	127766-1	<100 || <100	LCS-W1	75%
TRH>C$_{10}$ - C$_{16}$	µg/L	50	Org-003	<50	127766-1	82 || 81 || RPD: 1	LCS-W1	98%
TRH>C$_{16}$ - C$_{34}$	µg/L	100	Org-003	<100	127766-1	<100 || <100	LCS-W1	89%
TRH>C$_{34}$ - C$_{40}$	µg/L	100	Org-003	<100	127766-1	<100 || <100	LCS-W1	75%
Surrogate o-Terphenyl	%		Org-003	84	127766-1	95 || 92 || RPD: 3	LCS-W1	75%

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	-			12/05/2015	127766-1	12/05/2015 || 12/05/2015	LCS-W1	12/05/2015
Date analysed	-			12/05/2015	127766-1	12/05/2015 || 12/05/2015	LCS-W1	12/05/2015
Naphthalene	µg/L	0.2	Org-012 subset	<0.2	127766-1	<0.2 || <0.2	LCS-W1	89%
Acenaphthylene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	86%
Phenanthrene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	92%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	91%
Pyrene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	93%
Benzo(a)anthracene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	85%
Benzo(b,j+k) fluoranthene	µg/L	0.2	Org-012 subset	<0.2	127766-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	LCS-W1	110%
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012 subset	<0.1	127766-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	97	127766-1	102 || 99 || RPD: 3	LCS-W1	107%

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	-			[NT]	[NT]	[NT]	LCS-W1	12/05/2015
Date analysed	-			[NT]	[NT]	[NT]	LCS-W1	12/05/2015
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	99%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	96%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	90%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	104%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	100%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	95%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	92%

QUALITY CONTROL Cations in water Dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			12/05/2015	[NT]	[NT]	LCS-W1	12/05/2015
Date analysed	-			12/05/2015	[NT]	[NT]	LCS-W1	12/05/2015
Calcium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-W1	106%
Magnesium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-W1	107%
Hardness	mgCaCO3/L	3		[NT]	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			11/05/2015	[NT]	[NT]	LCS-W1	11/05/2015
Date analysed	-			11/05/2015	[NT]	[NT]	LCS-W1	11/05/2015
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-W1	101%
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	LCS-W1	99%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	106%
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	106%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	129%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	127%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	79%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	83%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	96%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	[NT]	[NT]	LCS-1	94%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	108%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	116%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	110%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	108%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	116%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	110%
Surrogate o-Terphenyl	%		Org-003	80	[NT]	[NT]	LCS-1	98%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	89%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	94%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	91%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	91%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	95%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	87%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-1	98%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	98	[NT]	[NT]	LCS-1	96%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-1	13/05/2015
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	88%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	100%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	98%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	94%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	116%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	106%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	114%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	118%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	123%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	94%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	105	[NT]	[NT]	LCS-1	93%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-1	13/05/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	88%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	115%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	94%
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	93%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	103%
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	93%
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	112%
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-008	105	[NT]	[NT]	LCS-1	105%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/05/2015	[NT]	[NT]	LCS-1	12/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-1	13/05/2015
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-1	113%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	105	[NT]	[NT]	LCS-1	97%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			12/05/2015	[NT]	[NT]	LCS-8	12/05/2015
Date analysed	-			12/05/2015	[NT]	[NT]	LCS-8	12/05/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-8	101%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-8	94%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-8	97%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-8	97%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-8	92%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-8	97%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-8	94%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-8	93%

Report Comments:

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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics 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:

Environmental Investigation Services
PO Box 976
North Ryde BC NSW 1670

ph: 02 9888 5000
Fax: 02 9888 5001

Attention: Geoff F

Sample log in details:

Your reference:	**E24192K, Pymble**
Envirolab Reference:	**127766**
Date received:	11/5/2015
Date results expected to be reported:	**18/05/15**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	3 Soils, 4 Water
Turnaround time requested:	Standard
Temperature on receipt (°C)	7.4
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

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

Contact details:

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

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E24192K	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		Attention: Geoff Fletcher
Attention: Aileen	Page: 1 of 1	

Location:	Pymble	Sample Preserved in Esky on Ice
Sampler:	GF	Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 6a	Combo 3L	Combo 1m	pH / EC	BTEX	Hardness
11/05/2015	1	MW9	G1, V, H, PVC	-	Water		X		X		X
11/05/2015	2	MW31	G1, V, H, PVC	-	Water		X		X		X
11/05/2015	3	Creek	G1, V, H, PVC	-	Water		X		X		X
11/05/2015	4	Dup A	G1, V, H	-	Water			X			
11/05/2015	MB	TSW	V	-	Water					X	
11/05/2015	5	SP1	G,A	-	Soil	X					
11/05/2015	6	SP2	G,A	-	Soil	X					
11/05/2015	7	SP3	G,A	-	Soil	X					

ENVIROLAB

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

Job No: 127766
Date Received: 11/5/15
Time Received: 16:40
Received by: JYH
Temp: Cool/Ambient
Cooling: Ice/Icepack 7.4°
Security: Intact/Broken/None

Remarks (comments/detection limits required):
Water
All analysis PQLs to ANZECC (2000) Detection Limits Please

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

Relinquished By:	Date:	Time:	Received By:	Date:
	11/5/15	4:00pm		11/5/15.

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

CERTIFICATE OF ANALYSIS 127448-A

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

Attention: Geoff Fletcher

Sample log in details:

Your Reference:	**E24192K, Pymble**
No. of samples:	Additional testing on soils
Date samples received / completed instructions received	5/5/2015 / 12/05/15

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:	19/05/15 / 19/05/15
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

Misc Inorg - Soil					
Our Reference:	UNITS	127448-A-5	127448-A-13	127448-A-47	127448-A-53
Your Reference	----------	BH3	BH9	BH31	BH33
Depth	----------	0-0.1	0-0.3	0-0.2	0-0.2
Date Sampled		1/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	15/05/2015	15/05/2015	15/05/2015	15/05/2015
Date analysed	-	15/05/2015	15/05/2015	15/05/2015	15/05/2015
pH 1:5 soil:water	pH Units	8.8	8.5	6.8	6.6
Clay in soils <2um	% (w/w)	14	14	38	28

CEC Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	127448-A-5 BH3 0-0.1 1/05/2015 Soil	127448-A-13 BH9 0-0.3 1/05/2015 Soil	127448-A-47 BH31 0-0.2 1/05/2015 Soil	127448-A-53 BH33 0-0.2 30/04/2015 Soil
Date extracted	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015
Date analysed	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015
Exchangeable Ca	meq/100g	20	18	15	20
Exchangeable K	meq/100g	0.3	0.4	1.0	0.6
Exchangeable Mg	meq/100g	3.8	3.8	3.2	4.7
Exchangeable Na	meq/100g	0.12	0.11	<0.1	0.67
Cation Exchange Capacity	meq/100g	24	23	20	26

Metals in TCLP USEPA1311						
Our Reference:	UNITS	127448-A-5	127448-A-10	127448-A-13	127448-A-15	127448-A-38
Your Reference	----------	BH3	BH5	BH9	BH9	BH25
Depth	----------	0-0.1	0-0.3	0-0.3	1.7-1.95	0-0.15
Date Sampled		1/05/2015	4/05/2015	1/05/2015	1/05/2015	30/04/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015	14/05/2015
Date analysed	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015	14/05/2015
pH of soil for fluid# determ.	pH units	8.7	6.5	8.7	7.2	5.9
pH of soil for fluid # determ. (acid)	pH units	1.7	1.7	1.6	1.7	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.3	4.9	5.1	4.9	4.9
Lead in TCLP	mg/L	[NA]	[NA]	[NA]	<0.03	<0.03
Nickel in TCLP	mg/L	0.06	[NA]	0.1	[NA]	[NA]

Metals in TCLP USEPA1311						
Our Reference:	UNITS	127448-A-41	127448-A-43	127448-A-47	127448-A-59	127448-A-62
Your Reference	----------	BH26	BH27	BH31	BH35	BH36
Depth	----------	0-0.2	0-0.3	0-0.2	0-0.2	0-0.2
Date Sampled		30/04/2015	30/04/2015	1/05/2015	1/05/2015	1/05/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015	14/05/2015
Date analysed	-	14/05/2015	14/05/2015	14/05/2015	14/05/2015	14/05/2015
pH of soil for fluid# determ.	pH units	5.9	6.7	6.8	6.6	7.3
pH of soil for fluid # determ. (acid)	pH units	1.7	1.7	1.6	1.7	1.6
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	4.9	4.9	4.9	4.9	4.9
Lead in TCLP	mg/L	0.06	0.05	0.1	<0.03	0.04

PAHs in TCLP (USEPA 1311)		
Our Reference:	UNITS	127448-A-10
Your Reference	----------	BH5
Depth	----------	0-0.3
Date Sampled		4/05/2015
Type of sample		Soil
Date extracted	-	13/05/2015
Date analysed	-	13/05/2015
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98

Acid Extractable metals in soil		
Our Reference:	UNITS	127448-A-48
Your Reference	----------	BH31
Depth	----------	0.5-0.8
Date Sampled		1/05/2015
Type of sample		Soil
Date digested	-	13/05/2015
Date analysed	-	13/05/2015
Lead	mg/kg	19

Moisture		
Our Reference:	UNITS	127448-A-48
Your Reference	----------	BH31
Depth	----------	0.5-0.8
Date Sampled		1/05/2015
Type of sample		Soil
Date prepared	-	13/05/2015
Date analysed	-	14/05/2015
Moisture	%	22

Method ID	Methodology Summary
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.
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2um reported.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soil based on Rayment and Lyons 2011.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311 and in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012 subset	Leachates are extracted with Dichloromethane and analysed by 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.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			[NT]	[NT]	[NT]	LCS-1	15/05/2015
Date analysed	-			[NT]	[NT]	[NT]	LCS-1	18/05/2015
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	102%
Clay in soils <2um	% (w/w)		AS1289.3.6.3	[NT]	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/05/2015	127448-A-47	14/05/2015 || 14/05/2015	LCS-1	14/05/2015
Date analysed	-			14/05/2015	127448-A-47	14/05/2015 || 14/05/2015	LCS-1	14/05/2015
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	127448-A-47	15 || 16 || RPD: 6	LCS-1	102%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	127448-A-47	1.0 || 1.1 || RPD: 10	LCS-1	103%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	127448-A-47	3.2 || 3.3 || RPD: 3	LCS-1	100%
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	127448-A-47	<0.1 || <0.1	LCS-1	104%
Cation Exchange Capacity	meq/100g	1	Metals-009	<1.0	127448-A-47	20 || 21 || RPD: 5	[NR]	[NR]
QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/05/2015	127448-A-47	14/05/2015 || 14/05/2015	LCS-1	14/05/2015
Date analysed	-			14/05/2015	127448-A-47	14/05/2015 || 14/05/2015	LCS-1	14/05/2015
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	127448-A-47	0.1 || 0.1 || RPD: 0	LCS-1	90%
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	LCS-1	92%
QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/05/2015	[NT]	[NT]	LCS-W1	13/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-W1	13/05/2015
Naphthalene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	85%
Acenaphthylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	78%
Phenanthrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	80%

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	79%
Pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	81%
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	77%
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	93	[NT]	[NT]	LCS-W1	104%

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	-			13/05/2015	[NT]	[NT]	LCS-10	13/05/2015
Date analysed	-			13/05/2015	[NT]	[NT]	LCS-10	13/05/2015
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-10	89%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	127448-A-59	14/05/2015
Date analysed	-	[NT]	[NT]	127448-A-59	14/05/2015
Lead in TCLP	mg/L	[NT]	[NT]	127448-A-59	97%
Nickel in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]

Report Comments:

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics 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.

Aileen Hie

From: Geoff Fletcher <GFletcher@jkgroup.net.au>
Sent: Tuesday, 12 May 2015 10:31 AM
To: Aileen Hie
Subject: Additonal Testing 127448 (E24192K Pymble)

Importance: High

Hi Aileen,

Could we please schedule the following additional testing on a standard turnaround time:

- 127448-5 BH3 0-0.1m pH, CEC, Clay content and TCLP Nickel;
- 127448-10 BH5 0-0.3m TCLP B(a)P;
- 127448-13 BH9 0-0.3m pH, CEC, Clay content and TCLP Nickel;
- 127448-15 BH9 1.7-1.95m TCLP Lead;
- 127448-38 BH25 0-0.15m TCLP Lead;
- 127448-41 BH26 0-0.2m TCLP Lead;
- 127448-43 BH27 0-0.3m TCLP Lead;
- 127448-47 BH31 0-0.2 pH, CEC, Clay content and TCLP Lead;
- 127448-48 BH31 0.5-0.8m for Lead;
- 127448-53 BH33 0-0.2m pH, CEC and Clay content;
- 127448-59 BH35 0-0.2m TCLP Lead; and
- 127448-62 BH36 0-0.2m TCLP Lead.

127448 A
std T/A
due 19/5

Regards,

Geoff Fletcher
Environmental Scientist

GFletcher@jkgroup.net.au
www.jkgroup.net.au

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Appendix C: 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[19].
- 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.

[19] 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[20]) methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (H. Keith 1991[21]).

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

[21] 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:

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

Appendix D: Calculation Sheets

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation	12/05/2015 3:31:55 PM										
5	From File	WorkSheet.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	lead											
12												
13	General Statistics											
14	Total Number of Observations					34		Number of Distinct Observations				28
15								Number of Missing Observations				0
16	Minimum					15		Mean				78
17	Maximum					640		Median				51.5
18	SD					107.4		Std. Error of Mean				18.41
19	Coefficient of Variation					1.376		Skewness				4.618
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.484		Shapiro Wilk GOF Test				
23	5% Shapiro Wilk Critical Value					0.933		Data Not Normal at 5% Significance Level				
24	Lilliefors Test Statistic					0.287		Lilliefors GOF Test				
25	5% Lilliefors Critical Value					0.152		Data Not Normal at 5% Significance Level				
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL							95% UCLs (Adjusted for Skewness)				
30	95% Student's-t UCL					109.2		95% Adjusted-CLT UCL (Chen-1995)				123.9
31								95% Modified-t UCL (Johnson-1978)				111.6
32												
33	Gamma GOF Test											
34	A-D Test Statistic					1.506		Anderson-Darling Gamma GOF Test				
35	5% A-D Critical Value					0.766		Data Not Gamma Distributed at 5% Significance Level				
36	K-S Test Statistic					0.216		Kolmogrov-Smirnoff Gamma GOF Test				
37	5% K-S Critical Value					0.154		Data Not Gamma Distributed at 5% Significance Level				
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)					1.484		k star (bias corrected MLE)				1.373
42	Theta hat (MLE)					52.56		Theta star (bias corrected MLE)				56.82
43	nu hat (MLE)					100.9		nu star (bias corrected)				93.35
44	MLE Mean (bias corrected)					78		MLE Sd (bias corrected)				66.57
45								Approximate Chi Square Value (0.05)				72.07
46	Adjusted Level of Significance					0.0422		Adjusted Chi Square Value				71.14
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					101		95% Adjusted Gamma UCL (use when n<50)				102.3
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.948		Shapiro Wilk Lognormal GOF Test				
53	5% Shapiro Wilk Critical Value					0.933		Data appear Lognormal at 5% Significance Level				
54	Lilliefors Test Statistic					0.145		Lilliefors Lognormal GOF Test				
55	5% Lilliefors Critical Value					0.152		Data appear Lognormal at 5% Significance Level				
56	Data appear Lognormal at 5% Significance Level											
57												

58	Lognormal Statistics										
59				Minimum of Logged Data	2.708			Mean of logged Data	3.983		
60				Maximum of Logged Data	6.461			SD of logged Data	0.772		
61											
62	Assuming Lognormal Distribution										
63				95% H-UCL	97.11			90% Chebyshev (MVUE) UCL	102.8		
64				95% Chebyshev (MVUE) UCL	117			97.5% Chebyshev (MVUE) UCL	136.7		
65				99% Chebyshev (MVUE) UCL	175.3						
66											
67	Nonparametric Distribution Free UCL Statistics										
68	Data appear to follow a Discernible Distribution at 5% Significance Level										
69											
70	Nonparametric Distribution Free UCLs										
71				95% CLT UCL	108.3			95% Jackknife UCL	109.2		
72				95% Standard Bootstrap UCL	108			95% Bootstrap-t UCL	153.1		
73				95% Hall's Bootstrap UCL	223.2			95% Percentile Bootstrap UCL	111.2		
74				95% BCA Bootstrap UCL	130.5						
75				90% Chebyshev(Mean, Sd) UCL	133.2			95% Chebyshev(Mean, Sd) UCL	158.3		
76				97.5% Chebyshev(Mean, Sd) UCL	193			99% Chebyshev(Mean, Sd) UCL	261.2		
77											
78	Suggested UCL to Use										
79				95% H-UCL	97.11						
80											
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
84	For additional insight the user may want to consult a statistician.										
85											
86	ProUCL computes and outputs H-statistic based UCLs for historical reasons only.										
87	H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.										
88	It is therefore recommended to avoid the use of H-statistic based 95% UCLs.										
89	Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.										
90											
91	B(a)P TEQ										
92											
93	General Statistics										
94				Total Number of Observations	34			Number of Distinct Observations	6		
95				Number of Detects	5			Number of Non-Detects	29		
96				Number of Distinct Detects	5			Number of Distinct Non-Detects	1		
97				Minimum Detect	0.6			Minimum Non-Detect	0.5		
98				Maximum Detect	13			Maximum Non-Detect	0.5		
99				Variance Detects	29.67			Percent Non-Detects	85.29%		
100				Mean Detects	3.26			SD Detects	5.447		
101				Median Detects	0.9			CV Detects	1.671		
102				Skewness Detects	2.232			Kurtosis Detects	4.985		
103				Mean of Logged Detects	0.345			SD of Logged Detects	1.256		
104											
105	Normal GOF Test on Detects Only										
106				Shapiro Wilk Test Statistic	0.579			Shapiro Wilk GOF Test			
107				5% Shapiro Wilk Critical Value	0.762			Detected Data Not Normal at 5% Significance Level			
108				Lilliefors Test Statistic	0.461			Lilliefors GOF Test			
109				5% Lilliefors Critical Value	0.396			Detected Data Not Normal at 5% Significance Level			
110	Detected Data Not Normal at 5% Significance Level										
111											
112	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
113				Mean	0.906			Standard Error of Mean	0.404		
114				SD	2.109			95% KM (BCA) UCL	1.647		

115				95% KM (t) UCL	1.59			95% KM (Percentile Bootstrap) UCL			1.635
116				95% KM (z) UCL	1.571			95% KM Bootstrap t UCL			8.085
117				90% KM Chebyshev UCL	2.119			95% KM Chebyshev UCL			2.668
118				97.5% KM Chebyshev UCL	3.431			99% KM Chebyshev UCL			4.929
119											
120				Gamma GOF Tests on Detected Observations Only							
121				A-D Test Statistic	1.056	Anderson-Darling GOF Test					
122				5% A-D Critical Value	0.7	Detected Data Not Gamma Distributed at 5% Significance Level					
123				K-S Test Statistic	0.462	Kolmogrov-Smirnoff GOF					
124				5% K-S Critical Value	0.367	Detected Data Not Gamma Distributed at 5% Significance Level					
125				Detected Data Not Gamma Distributed at 5% Significance Level							
126											
127				Gamma Statistics on Detected Data Only							
128				k hat (MLE)	0.72	k star (bias corrected MLE)	0.421				
129				Theta hat (MLE)	4.53	Theta star (bias corrected MLE)	7.74				
130				nu hat (MLE)	7.196	nu star (bias corrected)	4.212				
131				MLE Mean (bias corrected)	3.26	MLE Sd (bias corrected)	5.023				
132											
133				Gamma Kaplan-Meier (KM) Statistics							
134				k hat (KM)	0.185	nu hat (KM)	12.55				
135				Approximate Chi Square Value (12.55, α)	5.592	Adjusted Chi Square Value (12.55, β)	5.363				
136				95% Gamma Approximate KM-UCL (use when n>=50)	2.033	95% Gamma Adjusted KM-UCL (use when n<50)	2.12				
137											
138				Gamma ROS Statistics using Imputed Non-Detects							
139				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
140				GROS may not be used when kstar of detected data is small such as < 0.1							
141				For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
142				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
143				Minimum	0.01	Mean	0.488				
144				Maximum	13	Median	0.01				
145				SD	2.227	CV	4.565				
146				k hat (MLE)	0.228	k star (bias corrected MLE)	0.228				
147				Theta hat (MLE)	2.139	Theta star (bias corrected MLE)	2.144				
148				nu hat (MLE)	15.51	nu star (bias corrected)	15.48				
149				MLE Mean (bias corrected)	0.488	MLE Sd (bias corrected)	1.023				
150						Adjusted Level of Significance (β)	0.0422				
151				Approximate Chi Square Value (15.48, α)	7.595	Adjusted Chi Square Value (15.48, β)	7.322				
152				95% Gamma Approximate UCL (use when n>=50)	0.994	95% Gamma Adjusted UCL (use when n<50)	1.031				
153											
154				Lognormal GOF Test on Detected Observations Only							
155				Shapiro Wilk Test Statistic	0.698	Shapiro Wilk GOF Test					
156				5% Shapiro Wilk Critical Value	0.762	Detected Data Not Lognormal at 5% Significance Level					
157				Lilliefors Test Statistic	0.408	Lilliefors GOF Test					
158				5% Lilliefors Critical Value	0.396	Detected Data Not Lognormal at 5% Significance Level					
159				Detected Data Not Lognormal at 5% Significance Level							
160											
161				Lognormal ROS Statistics Using Imputed Non-Detects							
162				Mean in Original Scale	0.5	Mean in Log Scale	-4.927				
163				SD in Original Scale	2.225	SD in Log Scale	3.32				
164				95% t UCL (assumes normality of ROS data)	1.146	95% Percentile Bootstrap UCL	1.247				
165				95% BCA Bootstrap UCL	1.696	95% Bootstrap t UCL	5.372				
166				95% H-UCL (Log ROS)	57.93						
167											
168				DL/2 Statistics							
169				DL/2 Normal		DL/2 Log-Transformed					
170				Mean in Original Scale	0.693	Mean in Log Scale	-1.132				
171				SD in Original Scale	2.183	SD in Log Scale	0.761				

	A	B	C	D	E	F	G	H	I	J	K	L
172				95% t UCL (Assumes normality)		1.326					95% H-Stat UCL	0.575
173	DL/2 is not a recommended method, provided for comparisons and historical reasons											
174												
175	Nonparametric Distribution Free UCL Statistics											
176	Data do not follow a Discernible Distribution at 5% Significance Level											
177												
178	Suggested UCL to Use											
179				95% KM (BCA) UCL		1.647						
180												
181	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
182	Recommendations are based upon data size, data distribution, and skewness.											
183	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
184	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
185												

Appendix E: Field Work Documents

Groundwater Monitoring Well Development Report

Client:	Ausbao Pymble Pty Ltd	**Job No.:**	E24192K
Project:	Proposed Residential Development	**Well No.:**	MW 9
Location:	1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble, NSW	**Depth (m):**	6m

WELL FINISH DETAILS

X	**Gatic Cover**		**Standpipe**		**PVC Pipe**

WELL DEVELOPMENT DETAILS

Method:	Blue Pump	**SWL – Before: (m)**	1.98
Date:	1/5/15	**Time – Before:**	2:15pm
Undertaken By:	GF	**SWL – After: (m)**	
Total Vol. Removed:	8L	**Time – After:**	
PID Reading (ppm):	—		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
2	20.3	7.2	450	4.93	174.9
5	18.2	1.3	491.6	4.96	176.6
8	18.1	1.4	486.4	5.06	168.3

Comments: Water very silty. Pumped effectively dry after 8L

Tested By:	GF	**Remarks:**
Date Tested:	4/5/15	- All measurements are corrected to ground level
Checked By:	[illegible]	- All stated Volumes are in Litres
Date:	22/5/15	- SWL is an abbreviation for standing water level
		- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%
		- Minimum 3 monitoring well volumes are purged

Groundwater Monitoring Well Development Report

Client:	Ausbao Pymble Pty Ltd	**Job No.:**	E24192K
Project:	Proposed Residential Development	**Well No.:**	MW31
Location:	1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble, NSW	**Depth (m):**	5.50

WELL FINISH DETAILS

X	**Gatic Cover**		**Standpipe**		**PVC Pipe**

WELL DEVELOPMENT DETAILS

Method:	Blue Pump	**SWL – Before: (m)**	5.42m
Date:	~~1/5/15~~ 4/5/15	**Time – Before:**	1:45pm
Undertaken By:	GF	**SWL – After: (m)**	
Total Vol. Removed:	—	**Time – After:**	
PID Reading (ppm):	—		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)

Comments:

Tested By:	GF
Date Tested:	4/5/15
Checked By:	[illegible]
Date:	22/5/15

Remarks:

- All measurements are corrected to ground level
- All stated Volumes are in Litres
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%
- Minimum 3 monitoring well volumes are purged

Groundwater Sampling Report

EIS

Client:	Ausbao Pymble Pty Ltd	**Job No.:**	E24192K
Project:	Proposed Residential Development	**Well No.:**	MW9
Location:	1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble, NSW	**Depth (m):**	6.00

WELL FINISH

X	**Gatic Cover**		**Standpipe**		**PVC Pipe**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	2.14
Date:	11/5/15	**Time – Before:**	12:56
Undertaken By:	GF	**Total Vol Removed:**	2
Pump Program No:		**PID (ppm):**	—

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
14:00			2.13					
14:05		Flowcell	2.27	17.9	3.2	950	5.49	102.7
14:07			2.38	17.9	3.7	951	5.43	117.7
14:11		1	2.53	17.8	3.2	949	5.36	124.8
14:14			2.62	17.8	3.0	942	5.36	125.8
14:16				17.8	3.1	922	5.37	126.0
14:17				17.8	3.2	905	5.39	125.7
14:18				17.8	3.2	892	5.40	125.6
14:19			2.81	17.8	3.4	863	5.42	125.7
14:20				17.8	3.6	828	5.44	125.6
14:21		2		17.8	3.7	805	5.46	125.7
			→ start Sampling.					

Containers Used/Comments Wat Silty. No Freephase detected with Interface Probe.
2 x 500ml Amber, 1x HNO_3, 2 x Vial, 1x 250ml Pre
Dup A 1x 500ml amber, 2x vials, 1x HNO_3.

Tested By: GF	**Remarks:**
Date Tested: 11/5/15	- All measurements are corrected to ground level
Checked By: [illegible]	- SWL is an abbreviation for standing water level
Date: 22/5/15	- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

Groundwater Sampling Report

Client:	Ausbao Pymble Pty Ltd	**Job No.:**	E24192K
Project:	Proposed Residential Development	**Well No.:**	MW31
Location:	1, 1A, 3 & 5 Avon Road and 4 & 8 Beechworth Road, Pymble, NSW	**Depth (m):**	5.50

WELL FINISH

X	**Gatic Cover**		**Standpipe**		**PVC Pipe**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	4.62
Date:	11/5/15	**Time – Before:**	14:00
Undertaken By:	GF	**Total Vol Removed:**	
Pump Program No:		**PID (ppm):**	—

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
start	sampling	due to	low SWL.					

Containers Used/Comments NO ~~free~~ phase detected with Interface Probe.

2 x 500ml amber, 2 x vials, 1 x HNO_3, 1 x 250ml PVC

Tested By: GF	**Remarks:**
Date Tested: 11/5/15	- All measurements are corrected to ground level
Checked By: [signature]	- SWL is an abbreviation for standing water level
Date: 22/5/15	- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

***** Calibrate: ORP

Date 11/05/15 DD/MM/YY

Time 12:55:31 24-hour

User ID: GF

Cal Solution Value: 239.279999 ORP mV

Sensor Value: 239.300003 ORP mV

Temperature 19.500000 °C

Offset 44.230009

Calibrate Status Calibrated

***** Calibrate: pH

Date 11/05/15 DD/MM/YY

Time 12:54:11 24-hour

User ID: GF

Buffer Value 7.023014 pH

Sensor Value: -35.299999 pH mV

Temperature 19.749994 °C

Buffer Value 4.001713 pH

Sensor Value: 128.899994 pH mV

Temperature 19.649988 °C

Slope 55.340338 mV/pH

Slope 93.606797 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 11/05/15 DD/MM/YY

Time 12:50:17 24-hour

User ID: GF

Method Conductance

Cal Value: 1248.000000 C-uS/cm

Sensor Value: 1248.000000 C-uS/cm

Temperature Ref. 20.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 19.500000 °C

Cal Cell Constant: 4.919540

Calibrate Status Calibrated

***** Calibrate: DO

Date 11/05/15 DD/MM/YY

Time 12:48:37 24-hour

User ID: GF

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.264259 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.264259 Auto

Temperature 18.500000 °C

Barometer 752.900024 mmHg

Calibrate Status Calibrated

***** Calibrate: ORP

Date 04/05/15 DD/MM/YY

Time 15:00:00 24-hour

User ID: GF

Cal Solution Value: 238.240005 ORP mV

Sensor Value: 231.399994 ORP mV

Temperature 20.200001 °C

Offset 44.250013

Calibrate Status Calibrated

***** Calibrate: pH

Date 04/05/15 DD/MM/YY

Time 14:59:35 24-hour

User ID: GF

Buffer Value 7.021807 pH

Sensor Value: -34.900002 pH mV

Temperature 20.149988 °C

Buffer Value 4.002100 pH

Sensor Value: 129.500000 pH mV

Temperature 20.450006 °C

Slope 55.286472 mV/pH

Slope 93.515683 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 04/05/15 DD/MM/YY

Time 14:55:16 24-hour

User ID: GF

Method Conductance

Cal Value: 1302.000000 C-uS/cm

Sensor Value: 1310.000000 C-uS/cm

Temperature Ref. 20.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 20.100000 °C

Cal Cell Constant: 4.919538

Calibrate Status Calibrated

***** Calibrate: DO

Date 04/05/15 DD/MM/YY

Time 14:54:40 24-hour

User ID: GF

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.899619 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.899619 Auto

Temperature 21.299999 °C

Barometer 747.400024 mmHg

Calibrate Status Calibrated

Timestamp	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	ORP_1 (mV)	pH_1 (Units)	Temperature (C)	Site	Folder	Unit ID
4/05/2015 15:14	55.2	8.9	213.3	4.62	20.5	E24192K	MW09	EIS YSI2
4/05/2015 15:15	504	1.2	173.8	5.02	18.1	E24192K	MW09	EIS YSI2
11/05/2015 14:04	990	3.2	97.7	5.5	17.9	E24192K	MW9	EIS YSI2
11/05/2015 14:05	520	6	122	5.29	17.9	E24192K	MW9	EIS YSI2
11/05/2015 14:06	992	3.6	115.4	5.46	17.9	E24192K	MW9	EIS YSI2
11/05/2015 14:07	991	3.6	118.8	5.43	17.9	E24192K	MW9	EIS YSI2
11/05/2015 14:08	991	3.4	121.2	5.41	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:09	991	3.4	123.1	5.39	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:10	990	3.3	124.4	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:11	989	3.1	125.1	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:12	989	3	125.3	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:13	985	3	125.5	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:14	981	3	125.6	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:15	974	3.1	125.7	5.37	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:16	960	3.1	125.9	5.39	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:17	940	3.2	125.6	5.4	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:18	912	3.3	125.6	5.42	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:19	883	3.5	125.6	5.43	17.8	E24192K	MW9	EIS YSI2
11/05/2015 14:20	853	3.6	125.7	5.45	17.8	E24192K	MW9	EIS YSI2