



Douglas Partners

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Report on
Detailed Site Investigation for Contamination

Aberdeen Valley Fair
172 - 186 Macqueen Street, Aberdeen

Prepared for
Enef Investments Pty Ltd

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Integrated Practical Solutions



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Executive Summary

This report presents the results of a detailed site investigation (DSI) for contamination undertaken for the proposed Aberdeen Valley Fair retail and service centre to be constructed at 172 - 186 Macqueen Street, Aberdeen. The site is identified as Lots 113 and 114 in DP631908, as shown on Drawing 1 in Appendix D.

The assessment comprised a review of the preliminary site investigation undertaken on the site by DP, together with subsurface investigation and laboratory testing of retrieved samples from the areas of environmental concern identified in the preliminary investigation.

The assessment has been undertaken with reference to the National Environment Protection (Assessment of Site Contamination) Measure 1999 amended 2013 (NEPC 2013) and the State Environmental Planning Policy No 55 – Remediation of Land.

The results of the PSI indicate the absence of gross contaminating activities at the site. Several minor sources of potential contamination were identified at the site including the following:

- Imported filling within the carpark and building surrounds which may contain a range of contaminants subject to the source;
- Possible hydrocarbon, heavy metal and nutrient impacts from the grease traps if leakage has occurred;
- Possible presence of asbestos-containing materials (ACM) in localised stockpile comprising building materials (concrete and metal);
- Possible localised hydrocarbon impact within the existing carpark laneway area from drips / spills;
- Possible pesticide, heavy metal, hydrocarbon impacts from pesticide / herbicide application.

During the course of the work, an additional area of environmental concern was identified. This comprised the possible presence of an effluent disposal area within the central and northern area of the site.

A targeted subsurface investigation and sampling programme was undertaken to target these areas of environmental concern. Thirty-five (35) samples were submitted to the laboratory for testing for a range of possible contaminants. The results were compared against NEPM for Health Based Investigation / Screening Levels, Ecological Investigation / Screening Levels, Total Petroleum Hydrocarbon Management Limits for a conservative residential land use. All samples tested were below the relevant criteria.

The site is considered to be suitable for the intended use, based on the results of the assessment. Due to the previous development history on parts of the site, it is recommended that an unexpected finds protocol is incorporated in conjunction with construction activities during the site development as a precautionary measure.

The soil samples tested were within the maximum concentrations for General Solid Waste (Ref 4).

In summary, the existing filling was classified as General Solid Waste for disposal to a licensed landfill. If material from the area around Bores 106 and 107 are to be removed from site to a licensed landfill, additional sampling and testing (including leachate testing for PFOS and PFHxS) should be undertaken to confirm the suitability for General Solid Waste.

Selected fill materials not containing anthropogenic inclusions such as concrete or brick fragments may also be suitable for classification as Excavated Natural Material (ENM), although additional sampling and testing would be required once further details of the proposed earthworks are known.

The underlying natural soils, described as orange brown clay and the underlying bedrock would be classified VENM, subject to appropriate segregation of upper fill materials.

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Report on Detailed Site Investigation for Contamination

Aberdeen Valley Fair

172 - 186 Macqueen Street, Aberdeen

1. Introduction

This report presents the results of a detailed site investigation (DSI) for contamination undertaken for the proposed Aberdeen Valley Fair retail and service centre to be constructed at 172 - 186 Macqueen Street, Aberdeen. The work was undertaken for Enef Investments Pty Ltd and was undertaken with reference with Douglas Partners Pty Ltd (DP) proposal NCL170665 dated 8 November 2017.

It is understood that the project is in the concept phase at present and the current investigation is required as part of the development application process.

The investigation was undertaken to target potential contamination sources identified in the Douglas Partners Pty Ltd (DP) preliminary site investigation (PSI – Ref 1). The PSI comprised a brief site history review, a desktop review of published geological and soil landscape maps, review of the results of the boreholes and test pits from the geotechnical investigation, development of a conceptual site model (CSM), and the preparation of this report.

The DSI comprised the following:

- Checking for underground services at proposed test locations;
- Excavation of seventeen (17) test pits at targeted locations;
- Drilling of eight boreholes at targeted locations;
- Laboratory testing of selected samples for a range of potential contaminants; and
- Preparation of this report which present the results of the investigation.

The DSI for the site was undertaken with reference to NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (August 2011) (Ref 2) and the National Environment Protection (Site Contamination) Measure 1999 (amended 2013 – NEPM 2013) (Ref 3).

For the purpose of the assessment, a copy of the proposed general arrangement plan (Option 2A) by DWP Suters was provided (Project No 203596, Dwg A005, Issue C, undated).

2. Site Description

The site is located at 172 to 186 Macqueen Street, Aberdeen and is identified as Lots 113 and 114 in DP631908, as shown on Drawing 1 in Appendix D.

The proposed development includes the construction of a new supermarket, service centre, bottle shop and specialty retailers together with a bulky goods centre at the rear of the site and internal pavements.

Based on the existing site topography, it is expected that cuts and fills for bulk earthworks will be minimal across the site. Excavations of up to 3 m to 4 m depth, however, are expected to be required for the installation of underground storage tanks for the service centre.

Pavements are expected to be required for driveways, delivery areas and car parking.

The provided general arrangement plan indicates that access to the site will be via driveways from Perth Street to the north, and Macqueen Street (two separate driveways) to the west. Significant landscaping is proposed around the perimeter of the site, as well as around buildings and pavement areas.

It is assumed that the proposed structures will likely comprise concrete tilt-up panel or similar construction, with structures generally in the order of one to two stories in height.

Structural loads were not known at this time.

Drawing 2 from Ref 1 is included in Appendix D and shows the proposed site layout.

3. Geology and Hydrogeology

Reference to the 1:100,000 NSW Hunter Coalfield geology map indicates that the majority of the site is underlain by the Singleton Supergroup of the Wittingham Coal Measures, which typically comprises coal seams, laminite, tuff, claystone, siltstone, sandstone and conglomerate. The north eastern portion of the site however is mapped as being underlain by Branxton Formation of the Maitland Group of rocks, which typically comprises conglomerate, sandstone and siltstone.

The regional groundwater flow regime is assumed to generally be towards the Hunter River (located approximately 500 m west of the site).

An on-line records search of groundwater wells registered with the NSW Office of Water (NOW) indicated that the nearest registered groundwater wells (GW064250 and GW059213) are located approximately 200 m south-west and 300 m north-west of the site. No information was given regarding the details and use of these groundwater wells.

Reference to the acid sulphate soil risk map, prepared by the Department of Land and Water Conservation (DLWC) indicates that the site is not mapped within an acid sulphate soil risk area.

4. Background

DP has previously undertaken a PSI at the site, the results of which are contained in Ref 1. The previous investigation included the excavation of three pits and six bores. Logs from the previous geotechnical investigation are provided in Appendix A.

Pertinent information from the PSI is provided as follows:

- The buildings were erected on the site approximately 25 to 30 years ago;
- Before the buildings were erected the site was used for cattle and horse grazing;
- Prior to construction of the school, the site appears to have been undeveloped (i.e. bushland);
- The titles search indicated the site had several land uses ranging from possible agriculture in the early 1900s to commercial retail over Lot 113 to date.

The results of the PSI indicate the absence of gross contaminating activities at the site. Several minor sources of potential contamination were identified at the site including the following:

- Imported filling within the carpark and building surrounds which may contain a range of contaminants subject to the source;
- Possible hydrocarbon, heavy metal and nutrient impacts from the grease traps if leakage has occurred;
- Possible presence of asbestos containing materials (ACM) in localised stockpile comprising building materials (concrete and metal);
- Possible localised hydrocarbon impact within the existing carpark laneway area from drips / spills;
- Possible pesticide, heavy metal, hydrocarbon impacts from pesticide / herbicide application.

These areas of environmental concern are shown on Drawing 1 in Appendix D.

5. Conceptual Site Model

A Conceptual Site Model (CSM) has been prepared for the investigation area with reference to the National Environment Protection (Assessment of Site Contamination) Measure 1999 amended 2013 (NEPC 2013) Schedule B2 (Ref 2). The CSM identifies potential contaminant sources and contaminants of concern, contaminant release mechanisms, exposure pathways and potential receptors.

Table 1: Conceptual Site Model

Known and Potential Primary Sources	Primary Release Mechanism	Secondary Release Mechanism	Potential Impacted Media	Contaminants of Concern	Exposure Pathway	Potential Receptors	
						Current	Future
Possible imported filling within the site	Placement of filling on-site	Long-term leaching of contaminants via runoff, rain water infiltration / percolation or exposure/disturbance during proposed development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Pesticides, PCB, asbestos	Dermal contact, inhalation (dust/vapours), ingestion	Site users, site workers, Consultants, trespassers, surface water bodies, groundwater, neighbouring properties.	Potential site users, site workers, maintenance workers, construction workers, consultants, trespassers, surface water bodies, neighbouring properties, groundwater
Car parking	Spills and leaks, hydrocarbon sources	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil or cracks/joints in asphalt or exposure/disturbance during proposed development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals	Dermal contact, inhalation (dust/vapours), ingestion		
Pesticide use for gardens and paddock areas	Application of pesticides	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil exposure/disturbance during proposed development	Soil, groundwater, surface water	Pesticides, TRH, BTEX, PAH, Metals,	Dermal contact, inhalation (dust/vapours), ingestion		
Grease traps associated with existing land use	Spills and leaks	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil exposure/disturbance during proposed development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Nutrients	Dermal contact, inhalation (dust/vapours), ingestion		
Localised dumped filling / opportunistic dumping	Placement of filling on-site	Long-term leaching of contaminants via runoff, rain water infiltration / percolation or exposure/disturbance during proposed development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Pesticides, PCB, asbestos	Dermal contact, inhalation (dust/vapours), ingestion		

6. Field Work Methods

6.1 Sampling Rationale

Potential sources of site contamination identified in the PSI (Ref 1) comprised imported filling (source unknown) and pesticides use / storage on-site. A targeted site investigation was conducted to investigate these sources of potential contamination.

A judgemental sampling procedure was conducted for the targeted investigation to assess the above-mentioned potential contamination issues. Table 2, below, outlines the adopted sampling and testing plan for the investigation.

Table 2: Adopted Sampling and Test Plan

Identified Area of Environmental Concern	Approximate Area (ha)	Analytes	Methodology	Number of sampling locations	Pits/ Bores
Carpark and building surrounds – imported filling, hydrocarbon impact from drips / spills	0.35	Contamination Suite	Bores	6	101 to 105 and 108
Grease Trap	-	Contamination Suite Nutrient Suite PFAS (2 no.)	Bores	2	106 and 107
Localised stockpiled material in north-eastern part of site	-	Contamination Suite	Pits	2	211 and 212
Empty Drum / Metal Sheeting	-	Contamination Suite	Pits	2	215 to 217
Open Shed / Shelter	0.002	Contamination Suite	Pits	2	206 to 207
Possible pesticide / heavy metal / hydrocarbon impact in grassed paddock areas	3.5	Contamination Suite CEC (2 no.)	Pits	10	201 – 205, 208 to 210, 213 and 214

Further investigation (Pit 213) and testing for microbiological organisms and nutrients was undertaken in a possible effluent disposal area identified during the field work phase of the present investigation.

6.2 Methods

Field work was conducted on 29 and 30 November 2017 and included the following:

- Seventeen (17) test pits (Pits 201 to 217); and
- Eight test bores (Bores 101 to 108).

The approximate location of the pits and bores (current and previous investigations) are shown on Drawing 1 in Appendix D.

Soil samples were selected for analysis on the basis of the likely presence of contamination, based on material type, visual or olfactory evidence of possible contamination (i.e. odour or staining), proximity to a known source of contamination, and whether generally representative of soil/fill conditions.

The pits were excavated using a 5 tonne excavator fitted with a 300 mm wide bucket. The bores were drilled using a 4WD push tube rig.

Table 3, below, provides a summary of field work for the present investigation.

Table 3: Summary of Field Work

Pit/Bore	Area of Site	Investigation Method	Depth of Investigation (m)
101	Pavement Area	Pit	0.7
102	Pavement Area	Pit	0.7
103	Pavement Area	Pit	0.75
104	Pavement Area	Pit	0.7
105	Pavement Area	Pit	0.75
106	Grease Trap	Pit	1.6
107	Grease Trap	Pit	1.5
108	Pavement Area	Pit	0.8
201	Broad Spaced Sampling	Bore	0.8
202	Broad Spaced Sampling	Bore	0.7
203	Broad Spaced Sampling	Bore	0.7
204	Broad Spaced Sampling	Bore	0.7
205	Broad Spaced Sampling	Bore	0.45
206	Open Shed	Bore	0.35
207	Open Shed	Bore	0.7
208	Broad Spaced Sampling	Bore	0.7
209	Broad Spaced Sampling	Bore	0.7
210	Broad Spaced Sampling	Bore	0.55
211	Localised Stockpile in north-eastern corner	Bore	0.5
212	Localised Stockpile in north-eastern corner	Bore	0.5
213	Broad Spaced sampling/possible effluent disposal area	Bore	1.15
214	Broad spaced sampling	Bore	0.7
215	Empty Drums / Metal sheeting	Bore	0.4
216	Empty Drums / Metal sheeting	Bore	0.4
217	Empty Drums / Metal sheeting	Bore	0.1

Samples were collected and selected for environmental laboratory analysis based on material type, and visual or olfactory evidence of possible contamination.

The general sampling procedure comprised:

- Decontamination of all sampling equipment (where used) using a 3% solution of phosphate free detergent (Decon 90) and tap water prior to collecting each sample;
- The use of new disposable gloves for each sampling event;
- Transfer of samples into laboratory-prepared jars and capping immediately;
- Collection of replicate samples for Quality Assurance / Quality Control (QA / QC) purposes;
- Collection of replicate soil samples in zip-lock plastic bags at each depth for Photo-ionisation Detector (PID) screening;
- Labelling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- Placement of the sample jars and replicate sample bags into a cooled, insulated and sealed container with ice for transport to the laboratory; and
- Use of chain of custody (C-O-C) documentation ensuring that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of the completed forms are provided in Appendix C.

Replicate samples collected in zip-lock bags were screened for the presence of volatile organic compounds (VOCs) using a calibrated MiniRAE Lite PID, with a 10.6 eV lamp, calibrated to 100 ppm Isobutylene.

Following completion of drilling, all bores and pits were reinstated using excavated spoil, which was compacted using the excavation/drilling equipment and manual tamping.

6.3 Data Quality Objectives (DQOs)

The scope of the PSI was devised generally in accordance with the seven step data quality objective (DQO) process, as documented in Appendix B, Schedule B2, National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure 2013 (NEPC 2013). The DQO process is outlined in Table 4.

Table 4: Data Quality Objectives

DQO	Achievement Evaluation Procedure
Step 1 – State the problem	Possible presence, extent and level of contamination
Step 2 – Identify the decision	Assess whether the site is suitable for the intended land use from a contamination perspective Refer Section 9 for adopted site assessment criteria
Step 3 - Identify the inputs to the decision	Site history review from previous investigation Selection of appropriate contaminants of concern Field and laboratory QA/QC data to assess the suitability of the environmental data for the assessment
Step 4 – Define the Boundary of the Assessment	As defined in Section 2 and shown on Drawing 1.
Step 5 – Develop of decision rule	Selected soil samples were analysed for the contaminants of concern as outlined in Section 5. The field and laboratory data was assessed as reliable by reference to the Data Quality Indicators (DQI) as outlined in Step 7.
Step 6 – Specify the acceptance criteria	The site assessment criteria was developed through reference to NEPC 1999 (amended 2013). The acceptance limits for laboratory QA/QC parameters were based on the laboratory reported acceptance limits and those stated in NEPC 1999.
Step 7 – Optimise the design for obtaining data	Design was optimised by the development of a plan for sample collection, handling and analysis, including undertaking quality assurance and quality control measures to allow assessment of the suitability of the data collected. Measurement to assess the project DQOs using data quality indicators (DQIs) as follows: Completeness – completion of field and laboratory chain of custody documentation, use of experienced field staff, compliance with holding times and documentation correct Comparability – consistent sampling procedures, use of NATA certified laboratory and experienced field staff Representativeness – appropriate media sampled Precision - Analysis of field and laboratory replicates and achievement of acceptable RPDs, acceptable levels for laboratory QC criteria Accuracy – Analysis of field duplicates, matrix spikes and surrogate spikes

6.4 Quality Assurance / Quality Control

6.4.1 Field QA / QC

Quality assurance (QA) and quality control (QC) procedures were adopted throughout the field sampling programme and comprised the following:

- Analysis of three field replicate samples;
- Following standard operating procedures;
- Storage of samples under secure, temperature controlled conditions; and
- Use of chain of custody documentation for the handling, transport and delivery of samples to the selected laboratory.

6.4.2 Laboratory QA/QC

The NATA accredited chemical laboratories undertook in-house QA/QC procedures involving the routine testing of:

- Reagent blanks;
- Spike recovery analysis;
- Laboratory duplicate analysis;
- Analysis of control standards;
- Calibration standards and blanks; and
- Statistical analysis of QC data.

7. Field Work Results

7.1 Subsurface Conditions

The results of the subsurface investigation are shown in the borehole and test pit logs report sheets in Appendix A, together with notes defining classification methods and descriptive terms.

The boreholes and pits encountered relatively uniform conditions over the site. The general subsurface profile is summarised as follows:

Unit 1.1 (Pavement Filling)	Generally brown-grey sandy gravel filling;
Unit 1.2 (Filling)	Generally silty gravel, sandy gravelly clay or gravel filling;
Unit 2 (Residual Clay)	Hard dark brown, brown and brown mottled white clay or silty clay.

Similar conditions were encountered during the previous investigation on the site, although possibly extremely weathered conglomerate (excavated as sandy gravel) was encountered from Bore 1 and Pits 7 to 9 below about 1 m depth.

Table 5 provides a summary of subsurface conditions encountered in the bores and pits.

Table 5: Summary of Subsurface Conditions

Bore/Pit	Depth of Investigation ⁽¹⁾ (m)	Depth to Base of Each Unit (m)		
		Unit 1.1 (Pavement Filling)	Unit 1.2 (Filling)	Unit 2 (residual Clay)
101	0.7	0.2	NE	>0.7
102	0.7	0.18	NE	>0.7
103	0.75	0.17	NE	>0.75
104	0.7	0.06	NE	>0.7
105	0.75	0.18	NE	>0.75
106	1.6	NE	0.4	>1.6
107	1.5	0.4	0.55	>1.5
108	0.8	NE	0.2	>0.8
201	0.8	NE	0.1	>0.8
202	0.7	NE	0.08	>0.7
203	0.7	NE	0.15	>0.7
204	0.7	NE	0.08	>0.7
205	0.45	NE	NE	>0.45
206	0.35	NE	NE	>0.35
207	0.7	NE	NE	>0.7
208	0.7	NE	NE	>0.7
209	0.7	NE	NE	>0.7
210	0.55	NE	NE	>0.55
211	0.5	NE	NE	>0.5
212	0.5	NE	NE	>0.5
213	1.15	NE	0.2	>1.15
214	0.7	NE	NE	>0.7
215	0.4	NE	NE	>0.4
216	0.4	NE	NE	>0.4
217	0.1	NE	>0.1	NE
Previous Investigation (Ref 1)				
1	3.8	NE	NE	2.0 ⁽²⁾
2	4.45	NE	NE	>4.45
3	4.87	NE	NE	>4.87
4	3.0	NE	NE	>3.0
5	3.0	NE	NE	>3.0
6	3.0	NE	NE	>3.0
7	2.7	NE	NE	2.0 ⁽²⁾
8	2.3	0.25	NE	1.3 ⁽²⁾
9	2.8	0.25	NE	1.3 ⁽²⁾

Notes to Table 5: NE – Not encountered

(1) below existing ground level

(2) possible completely weathered conglomerate encountered at this depth

No free groundwater was observed either within the pits while they remained open or during drilling of the bores. It should be noted that groundwater levels are affected by factors such as climatic conditions and soil permeability and will therefore vary with time.

7.2 Contaminant Observations

Observations of potential contamination during field work for the current assessment are summarised below in Table 6.

Table 6: Potential Contaminant Observations during Field Work

Potential Contaminant Observation	Test Bore / Depth Range
Roadbase Gravel Materials	Bores 101 to 105 and 107 to up to 0.2 m depth
Possible Effluent Disposal Area	Pit 213 (rounded cobbles and gravel) to 0.9 m depth

The results of PID screening on soil samples are shown on the logs in Appendix C. PID screening suggested the absence of gross volatile hydrocarbon impact (i.e. <1 ppm) in the samples screened.

There was no visual or olfactory evidence (i.e. staining or odours) to suggest the presence of gross contamination within the soils investigated.

8. Revised Conceptual Site Model

Following field work, the preliminary Conceptual Site Model (CSM) was revised as shown in Table 7 based on the observations made during the field work. Additional sampling and testing was undertaken in the possible effluent disposal area (Pit 213).

Table 7: Revised Conceptual Site Model

Known and Potential Primary Sources (and relevant test locations)	Primary Release Mechanism	Secondary Release Mechanism	Potential Impacted Media	Contaminants of Concern	Exposure Pathway	Potential Receptors	
						Current	Future
Possible imported filling within the site (all test locations)	Placement of filling on-site	Long-term leaching of contaminants via runoff, rain water infiltration / percolation or exposure/disturbance during development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Pesticides, PCB, asbestos	Dermal contact, inhalation (dust/vapours), ingestion	Site users, site workers, Consultants, trespassers, surface water bodies, groundwater, neighbouring properties.	Potential site users, site workers, maintenance workers, construction workers, consultants, trespassers, surface water bodies, neighbouring properties, groundwater
Car parking (Bores 101 to 108)	Spills and leaks, hydrocarbon sources	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil or cracks in wearing course or exposure/disturbance during development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals	Dermal contact, inhalation (dust/vapours), ingestion		
Pesticide use for gardens and paddock areas (all locations)	Application of pesticides	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil exposure/disturbance during development	Soil, groundwater, surface water	Pesticides, TRH, BTEX, PAH, Metals,	Dermal contact, inhalation (dust/vapours), ingestion		
Grease traps associated with existing land use (Bores 106 and 107)	Spills and leaks	Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil exposure/disturbance during development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Nutrients	Dermal contact, inhalation (dust/vapours), ingestion		
Localised dumped filling / opportunistic dumping (all locations)	Placement of filling on-site	Long-term leaching of contaminants via runoff, rain water infiltration / percolation or exposure/disturbance during development	Soil, groundwater, surface water	TRH, BTEX, PAH, Metals, Pesticides, PCB, asbestos	Dermal contact, inhalation (dust/vapours), ingestion		
Possible Effluent Disposal Area (Pit 213)	Disposal of effluent	Long-term leaching of contaminants via runoff, rain water infiltration / percolation or exposure/disturbance during development	Soil, groundwater, surface water	Nutrients, Faecal Coliforms, E-coli	Dermal contact, inhalation (dust/vapours), ingestion		

9. Site Assessment Criteria

9.1 Introduction

The proposed development includes the construction of a new supermarket, service centre, bottle shop and specialty retailers together with a bulky good centre at the rear of the site and internal pavements. It is understood that earthworks including up to 4 m of cut and fill will be required for the proposed development.

The assessment and characterisation of the material on the site and the results of laboratory testing have been compared to the following guidelines:

- National Environmental Protection Council (NEPC), “National Environmental Protection (Assessment of Site Contamination) Measures” (NEPM), 1999 (amended 2013) [Ref 3];
- NSW EPA, 'Waste Classification Guidelines, Part 1: Classifying Waste', November 2014 [Ref 4];
- NSW EPA, Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 “The Excavated Natural Material Order 2014” [Ref 5];
- NSW OEH, ‘Draft PFAS Screening Criteria (May 2014), May 2017 (Ref 6); and
- NSW EPA, “Environmental Guidelines, Use and Disposal of Biosolids Products (Ref 7).

For comparison to the NEPM guidelines, the investigation and screening levels applied in the current investigation comprise levels adopted for a generic residential land use (HIL-A, HSLA-B) and commercial land use (HIL-D, HSL-D and commercial) scenarios .

9.2 Health Investigation and Screening Levels

The generic health investigation levels (HIL) and health screening levels (HSL) are considered to be appropriate for the assessment of contamination at the site. The adopted soil HIL and HSL for the potential contaminants of concern are presented in Table 8.

Table 8: HIL and HSL in mg/kg Unless Otherwise Indicated

Contaminants		HIL- A	HIL-D	HSL- AB⁴	HSL- D⁴
Metals	Arsenic	100	3000	NC	NC
	Cadmium	20	900	NC	NC
	Chromium (VI)	100	3600	NC	NC
	Copper	100	3600	NC	NC
	Lead	300	1500	NC	NC
	Manganese	3800	60000	NC	NC
	Mercury (inorganic)	40	730	NC	NC
	Nickel	400	6000	NC	NC
	Zinc	7400	400000	NC	NC
PAH	Benzo(a)pyrene TEQ ¹	3	40	NC	NC
	Naphthalene	NC	NC	0.8	3
	Total PAH	300	4000	NC	NC
TRH	C6 – C10 (less BTEX) [F1]	NC	NC	45	260
	>C10-C16 (less Naphthalene) [F2]	NC	NC	110	NL
	>C16-C34 [F3]	NC	NC	NC	NC
	>C34-C40 [F4]	NC	NC	NC	NC
BTEX	Benzene	NC	NC	0.5	3
	Toluene	NC	NC	160	NL
	Ethylbenzene	NC	NC	55	NL
	Xylenes	NC	NC	40	230
OCP	Aldrin + Dieldrin	6	45	NC	NC
	Chlordane	50	530	NC	NC
	DDT+DDE+DDD	240	3600	NC	NC
	Endosulfan	270	2000	NC	NC
	Endrin	10	100	NC	NC
	Heptachlor	6	50	NC	NC
	HCB	10	80	NC	NC
	Methoxychlor	300	2500	NC	NC
OPP	Chlorpyrifos	160	2000	NC	NC
PCB²		1	7	NC	NC
PFAS, PFOA and PFHxS	PFOS + PFHxS	NC	NC	0.009	20
	PFOA	NC	NC	0.1	100
	PFOS	NC	NC	NC	NC
	PFHxS	NC	NC	NC	NC

Notes to Table 8:

- Sum of carcinogenic PAHs
 - Non dioxin-like PCBs only.
 - The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.
 - The HSL have been calculated for a potential vapour intrusion pathway, a conservative sand soil (based on nature of filling) and an assumed depth to contamination of 0 m to <1 m.
- NC – No Criteria.

As shown in Table 8 the adopted HSLs are predicated on a potential vapour intrusion pathway. Although possible direct contact pathways are present at the site, and construction worker receptors, the corresponding HSLs are significantly higher than those for the vapour intrusion pathway and are therefore not drivers for further assessment and / or remediation. As such the direct contact and intrusive maintenance worker HSLs have not been listed.

9.3 Ecological Investigation Levels

EIL and Added Contaminant Limits (ACLs), where appropriate, have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. The adopted EIL, derived using the *Interactive (Excel) Calculation Spreadsheet* (Standing Council on Environment and Water (SCEW) website (<http://www.scew.gov.au/node/941>)) are shown in the following Table 9.

Table 9: EIL in mg/kg

Analyte		EIL (Urban Residential)	EIL (Commercial)	Comments
Metals	Arsenic	100	160	Adopted parameters pH = 5 CEC = 40 cmol/kg; assumed clay content [50%] Organic content 1% "Aged" (>2 years) source of contamination High traffic volumes in NSW
	Copper	110	160	
	Nickel	160	430	
	Chromium III	690	1100	
	Lead	1100	1800	
	Zinc	310	410	
PAH	Naphthalene	170	370	
OCP	DDT	180	640	

9.4 Ecological Screening Levels

ESL are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. The adopted ESL are shown in the following Table 10.

Table 10: ESL in mg/kg

Analyte		ESL¹ (Residential)	ESL² Commerical/Industrial)	Comments
TRH	C6 – C10 (less BTEX) [F1]	180*	215*	All ESLs are low reliability apart from those marked with * which are moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	170*	
	>C16-C34 [F3]	300	1700	
	>C34-C40 [F4]	2800	3300	
BTEX	Benzene	50	75	
	Toluene	85	135	
	Ethylbenzene	70	165	
	Xylenes	105	180	
PAH	Benzo(a)pyrene	0.7	1.4	
PFAS, PFOA and PFHxS	PFOS + PFHxS	NC		
	PFOA Indirect (direct)	NC (17)	NC (48)	
	PFOS Indirect (direct)	0.01 (32)	0.14 (60)	
	PFHxS	NC		

Notes to Table 10:

1. The ESL have been calculated for a coarse soil based on a conservative sand soil and Urban residential.
 2. The ESL have been calculated for a coarse soil based on a conservative sand soil and commercial and industrial.
- NC – No Criteria

9.5 Management Limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards;
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits from Schedule B1 of NEPC (2013) are shown in the following Table 11.

Table 11: Management Limits in mg/kg

Analyte		Management Limit	
TRH	$C_6 - C_{10}$ (F1) [#]	700	The management limits have been calculated for a conservative coarse sand
	$>C_{10} - C_{16}$ (F2) [#]	1000	
	$>C_{16} - C_{34}$ (F3)	2500	
	$>C_{34} - C_{40}$ (F4)	10000	

Notes to Table 11:

Separate management limits for BTEX and naphthalene are not available hence these have not been subtracted from the relevant fractions to obtain F1 and F2

9.6 Asbestos In Soil

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both Fibrous Asbestos (FA) and Asbestos Fines (AF) materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

A detailed asbestos assessment was not undertaken as part of these works. Therefore the presence or absence of asbestos at a limit of reporting of 0.1 g/kg has been adopted for this assessment as an initial screen.

9.7 Waste Classification

The results of chemical testing were also compared against NSW EPA Waste Classification Guidelines (2014) (Ref 4) for a preliminary assessment of possible off-site disposal options to a licenced facility.

For potential beneficial reuse, the results of chemical testing were also compared against the NSW EPA ENM RRO criteria (Ref 5).

For assessment of the natural soils for Virgin Excavation Natural Material (VENM) the NSW Environment Protection Authority (EPA) currently, has not issued any official threshold criteria. In absence of such criteria, the results were compared against the ENM RRO (Ref 5).

10. Laboratory Testing

Laboratory testing for preliminary waste classification purposes was undertaken by Envirolab Services, a National Association of Testing Authorities, Australia (NATA) registered laboratory. Analytical Methods used are shown on the laboratory sheets in Appendix B.

A total of thirty-five (35) (including 3 duplicates) were selected for analysis for the following potential contaminants:

- Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc, Manganese, Iron);
- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Polychlorinated Biphenyls (PCBs);
- Organochlorine (OCP) and Organophosphate (OPP) Pesticides; and
- Asbestos.

A sample of the soil from within the probable former effluent disposal area was also tested for the following analytes:

- E-coli;
- Faecal coliforms.

Two representative samples of the natural soil were also tested for cation exchange capacity to assist with establishment of appropriate EILs.

Two samples taken from Bores 106 and 107, located in the proximity of the grease trap were also tested for the following analytes:

- PFAS, PFOA and PFHxS;
- Nitrite as N
- Nitrate as N,
- Total Kjeldahl Nitrogen (TKN); and
- Phosphate as P.

The detailed results of chemical analysis on the tested samples are presented in the laboratory report sheets in Appendix B, and are summarised in Table 12 to Table 18 below.

Based on a review of the report QC results, it is considered that the laboratory test data obtained are reliable and useable for this assessment.

Table 12: Laboratory Results for Metals in Soil

Bore/Pit	Depth (m)	Fill or Natural (F/N)	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Fe	Mn
101	0.0-0.05	F	<4	<0.4	22	24	3	<0.1	38	22	22000	430
101	0.25-0.3	N	<4	<0.4	42	19	10	<0.1	26	25	26000	580
102	0.0-0.1	F	4	<0.4	8	8	6	<0.1	11	26	16000	210
D1 (102)	0.0-0.1-	F	4	<0.4	9	10	7	<0.1	14	28	16000	230
103	0.0-0.05	F	5	<0.4	4	3	6	<0.1	5	17	9100	130
103	0.25-0.3	N	<4	<0.4	44	21	9	<0.1	29	28	27000	440
104	0.0-0.05	F	<4	<0.4	9	17	3	<0.1	22	19	14000	190
105	0.0-0.1	F	<4	<0.4	14	15	3	<0.1	25	28	19000	270
106	0.0-0.1	F	<4	<0.4	15	19	5	<0.1	20	73	20000	250
106	0.5-0.6	N	<4	<0.4	34	18	6	<0.1	27	21	23000	550
107	0.0-0.1	F	<4	<0.4	14	28	4	<0.1	21	45	24000	250
107	0.6-0.7	N	<4	<0.4	45	23	8	<0.1	32	30	32000	790
108	0.0-0.1	F	<4	<0.4	21	18	8	<0.1	20	53	22000	360
108	0.25-0.3	N	<4	<0.4	31	14	5	<0.1	21	16	21000	420
D2 (108)	0.25-0.3	N	<4	<0.4	26	12	4	<0.1	20	14	17000	490
201	0.0-0.05	F	<4	<0.4	13	8	6	<0.1	8	17	14000	240
201	0.2-0.25	N	<4	<0.4	48	22	8	<0.1	33	31	30000	620
D3 (201)	0.2-0.25	N	<4	<0.4	49	23	8	<0.1	34	31	30000	660
203	0.0-0.05	F	<4	<0.4	19	12	6	<0.1	17	30	17000	400
203	0.25-0.3	N	<4	<0.4	51	21	9	<0.1	30	28	30000	520
204	0.0-0.05	F	<4	<0.4	44	23	9	<0.1	32	37	28000	580
204	0.1-0.15	N	<4	<0.4	45	21	8	<0.1	33	28	29000	650
205	0.0-0.05	N	<4	<0.4	41	21	9	<0.1	30	28	26000	690
205	0.25-0.3	N	<4	<0.4	45	22	8	<0.1	33	33	28000	660
207	0.0-0.05	N	<4	<0.4	45	20	9	<0.1	29	28	28000	670
208	0.0-0.05	N	<4	<0.4	26	15	6	<0.1	24	17	15000	920
211	0.0-0.05	N	7	<0.4	38	27	15	<0.1	33	51	25000	850
212	0.0-0.05	N	<4	<0.4	40	23	9	<0.1	31	37	25000	770
212	0.4-0.45	N	<4	<0.4	42	21	8	<0.1	30	34	26000	650
213	0.3-0.35	N	<4	<0.4	9	5	2	<0.1	8	12	6900	140
213	0.95-1.0	N	<4	<0.4	44	18	9	<0.1	29	38	29000	640
214	0.0-0.05	N	<4	<0.4	42	22	10	<0.1	35	34	27000	730
215	0.0-0.05	N	<4	<0.4	36	20	11	<0.1	27	39	25000	530
217	0.0-0.05	N	<4	<0.4	31	15	9	<0.1	22	160	28000	330
Laboratory PQL			4	N	1	1	1	1	0.1	1	1	1
Average Concentration (filling)			4	0.4	16	15	6	0.1	19	33	18425	295
Average Concentration (natural)			4	0.4	39	19	8	0.1	28	35	25177	605
Maximum Concentration (filling)			5	0.4	44	28	9	0.1	38	73	28000	580
Maximum Concentration (natural)			7	0.4	51	27	15	0.1	35	160	32000	920
General Solid Waste (CT1/SCC1*)			100	20	100	NC	100	4	40	NC	NC	NC
Restricted Solid Waste (CT2/SCC2*)			400	80	400	NC	400	16	160	NC	NC	NC
ENM Order (2014) – Absolute Maximum Concentration			40	1	150	200	100	NC	60	NC	NC	NC
ENM Order (2014) – Maximum Average Concentration			20	0.5	75	100	50	NC	30	NC	NC	NC
NEPM 2013 HILs Res A soil			100	20	100	240000	1500	40	400	7400	NC	3800
NEPM 2013 EILs Res/Open Space Aged			100	110	690	80	NC	1100	310	310	NC	NC

Notes to Table 12:

All results in mg/kg on a dry weight basis, except TCLP which is in mg/L

CT - Concentration Threshold SCC - Specific Contaminant Concentration

NC - No Criteria

NT - Not Tested

PID - Photoionisation Detector

PQL - Practical Quantitation Limits

Table 13: Laboratory Results for TRH, BTEX in Soil

Bore/Pit	TRH											Napthalene	BTEX			
	Depth (m)	PID (ppm)	Fill or Natural (F/N)	C ₆ - C ₉	C ₁₀ - C ₁₄	C ₁₅ - C ₂₈	C ₂₉ - C ₃₆	F1 (C ₈ - C ₁₀)	F2 (>C ₁₀ - C ₁₈)	F3 (>C ₁₈ - C ₃₄)	F4 (>C ₃₄ - C ₄₀)		Benzene	Toluene	Ethyl Benzene	Xylene
101	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
101	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
102	0.0-0.1	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
D1 (102)	0.0-0.1-	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
103	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
103	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
104	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
105	0.0-0.1	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
106	0.0-0.1	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
106	0.5-0.6	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
107	0.0-0.1	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
107	0.6-0.7	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
108	0.0-0.1	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
108	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
D2 (108)	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
201	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
201	0.2-0.25	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
D3 (201)	0.2-0.25	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
203	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
203	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
204	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
204	0.1-0.15	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
205	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
205	0.25-0.3	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
207	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
208	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
209	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
210	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
211	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
212	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
212	0.4-0.45	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
213	0.3-0.35	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
213	0.95-1.0	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
214	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
215	0.0-0.05	<10	N	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
217	0.0-0.05	<10	F	<25	<50	<100	<100	<25	<50	<100	<100	<1	<0.2	<0.5	<1	<3
Laboratory PQL				25	50	100	100	25	50	100	100	0.1	0.2	0.5	1	3
Average Concentration (fill and natural)				<25	<50			<25	<50	<100	<100	<0.1	<100	<100	<0.2	<0.5
Maximum Concentration (fill and natural)				<25	<50			<25	<50	<100	<100	<0.1	<100	<100	<0.2	<0.5
General Solid Waste (CT1)				650	10000 total			NC	NC	NC	NC	NC	10	288	600	80
Restricted Solid Waste (CT2)				2600	40000 total			NC	NC	NC	NC	NC	40	1152	2400	200
ENM RRO 2014 – Abs Max				NC	500			NC	NC	NC	NC	NC	0.5	65	25	NC
ENM RRO 2014 – Max Ave				NC	250			NC	NC	NC	NC	NC	NC	NC	NC	NC
NEPM 2013 ESLs Residential, Coarse Soil				NC	NC			180	120	300	2800	NC	50	85	70	105
NEPM HSL A/B – Low / High density residential				NC	NC			45	110	NC	NC	0.8	0.5	160	55	40
Management Limits for TPH in coarse soils				NC	NC			700	1000	2500	10000	NC	NC	NC	NC	NC

Notes to
Table 13:
All results in mg/kg on a dry weight basis CT - Concentration Threshold NC - No Criteria
PID - Photoionisation Detector PQL - Practical Quantitation Limits
ESL apply from the ground surface to 2 m depth below the finished surface
Soil HSLs for vapour intrusion (mg/kg) based on clay soils with a contamination source within 1 m depth.

Table 14: Laboratory Results for PAH, OCP and OPP

Bore/Pit	Depth (m)	Fill or Natural (F/N)	Total Positive PAH	B(a)P	B(a)P (TEQ)	Total PCB ⁽²⁾	Total OPP	Chlorpyrifos	Total OCP	Aldrin + Dieldrin	Chlordane	DDT	Heptachlor
101	0.0-0.05	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
101	0.25-0.3	N	1.9	0.2	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
102	0.0-0.1	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
D1 (102)	0.0-0.1-	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
103	0.0-0.05	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
103	0.25-0.3	N	2.1	0.2	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
104	0.0-0.05	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
105	0.0-0.1	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
106	0.0-0.1	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
106	0.5-0.6	N	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
107	0.0-0.1	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
107	0.6-0.7	N	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
108	0.0-0.1	F	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
108	0.25-0.3	N	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
D2 (108)	0.25-0.3	N	<0.05	<0.05	<0.5	<0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
201	0.0-0.05	F	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
201	0.2-0.25	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
D3 (201)	0.2-0.25	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
203	0.0-0.05	F	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
203	0.25-0.3	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
204	0.0-0.05	F	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
204	0.1-0.15	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
205	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
205	0.25-0.3	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
207	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
208	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
209	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
210	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
211	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
212	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
212	0.4-0.45	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
213	0.3-0.35	F	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
213	0.95-1.0	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
214	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
215	0.0-0.05	N	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
217	0.0-0.05	F	<0.05	<0.05	<0.5	0.7	<1.2	<0.1	<2	<0.2	<0.1	<0.1	<0.1
Laboratory PQL			0.05	0.05	0.5	0.1 ea	0.1 ea	0.1	0.1 ea	0.1 ea	0.1	0.1	0.1
General Solid Waste (CT1)			200	0.8	NC	50	250	4	250	NC	NC	NC	NC
Restricted Solid Waste (CT2)			800	3.2	NC	50	1000	16	1000	NC	NC	NC	NC
<u>ENM RRO 2014 – Abs Max</u>			<u>40</u>	<u>1</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>
<u>ENM RRO 2014 – Max Ave</u>			<u>20</u>	<u>0.5</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>NC</u>
EIL/ESL Residential⁽¹⁾			NC	0.7	NC	NC	NC	NC	NC	NC	NC	180	NC
NEPM HIL A			300	NC	3	1	NC	160	NC	6	50	NC	6

Notes to Table 14

All results in mg/kg on a dry weight basis

CT - Concentration Threshold

NA - Not Applicable

PID - Photoionisation Detector

PQL - Practical Quantitation Limits

Total PAH - Sum of positive and PQL values

1 - Health Based Criteria for Residential Land Use

2- PCB HILs relates to non-dioxin-like PCB only

Table 15: Laboratory Results of Asbestos Testing

Bore/Pit	Depth (m)	Description	Asbestos*
101	0.0-0.05	Filling	Not detected
101	0.25-0.3	Natural Clay	Not detected
102	0.0-0.1	Filling	Not detected
D1 (102)	0.0-0.1-	Filling	Not detected
103	0.0-0.05	Filling	Not detected
103	0.25-0.3	Natural Clay	Not detected
104	0.0-0.05	Natural Clay	Not detected
105	0.0-0.1	Filling	Not detected
106	0.0-0.1	Filling	Not detected
106	0.5-0.6	Natural Clay	Not detected
107	0.0-0.1	Filling	Not detected
107	0.6-0.7	Natural Clay	Not detected
108	0.0-0.1	Filling	Not detected
108	0.25-0.3	Natural Clay	Not detected
D2 (108)	0.25-0.3	Natural Clay	Not detected
201	0.0-0.05	Filling	Not detected
201	0.2-0.25	Natural Clay	Not detected
D3 (201)	0.2-0.25	Natural Clay	Not detected
203	0.0-0.05	Filling	Not detected
203	0.25-0.3	Natural Clay	Not detected
204	0.0-0.05	Filling	Not detected
204	0.1-0.15	Natural Clay	Not detected
205	0.0-0.05	Natural Clay	Not detected
205	0.25-0.3	Natural Clay	Not detected
207	0.0-0.05	Natural Clay	Not detected
208	0.0-0.05	Natural Clay	Not detected
209	0.0-0.05	Natural Clay	Not detected
210	0.0-0.05	Natural Clay	Not detected
211	0.0-0.05	Natural Clay	Not detected
212	0.0-0.05	Natural Clay	Not detected
212	0.4-0.45	Natural Clay	Not detected
213	0.3-0.35	Filling	Not detected
213	0.95-1.0	Natural Clay	Not detected
214	0.0-0.05	Natural Clay	Not detected
215	0.0-0.05	Natural Clay	Not detected
217	0.0-0.05	Filling	Not detected

Notes to Table 15:

*Not detected at the reporting limit of 0.1g/kg

Table 16: Laboratory Results of Cation Exchange Capacity Testing

Bore	Depth (m)	Exchangeable Analytes (meq/100g)				Cation Exchange Capacity (meq/100g)
		Ca	K	Mg	Na	
201	0.25 – 0.3	31	0.5	15	2.3	49
203	0.2 – 0.25	28	0.3	14	1.9	44

Note to Table 16:

1 meq/100g = 1 cmol/kg

Table 17: Laboratory Results of Micro-biological Testing

Bore	Depth (m)	E-coli ⁽¹⁾⁽²⁾ (MPN/g)	Faecal Coliforms ⁽¹⁾⁽²⁾ (MPN/g)
213	0.3 – 0.35	<2	<2
Adopted assessment criteria		<100 g	<100 g

Notes to Table 17:

1 Based on Stabilisation of Grade A Microbiological Standards (Ref 7)

2 MPN – Most Probably Number

Table 18: Laboratory Results of Inorganic Compounds, PFOS and PFOA

Bore/Pit	Depth (m)	Nitrate as N	Nitrite as N	TKN	Total Nitrogen	Phosphate as P (mg/kg)	PFOS + PFHxS (mg/kg)	PFOA (mg/kg)	PFOS (mg/kg)	PFHxS (mg/kg)
106	0.0 – 0.1	25	0.6	1600	1600	11	<0.0007	<0.0001	0.006	<0.0001
106	0.5 – 0.6	0.7	<0.1	830	830	<0.5	<0.0006	<0.0001	0.005	<0.0001
107	0.0 – 0.1	4	0.3	900	900	8.5	<0.0003	<0.0001	0.002	<0.0001
107	0.6 – 0.7	0.5	<0.1	480	480	<0.5	<0.0039	0.001	0.0029	<0.0001
Laboratory PQL		0.5	0.1	10	10	0.5	-	0.0001	0.0001	0.0001
NSW EPA General Solid Waste SSC1 (TCLP1)		NC	NC	NC	NC	NC	1.8 (0.05)	18.0 (0.5)	NC	NC
Human health screening criteria: residential		NC	NC	NC	NC	NC	0.009	0.1	NC	NC
Ecological Screening criteria (indirect): residential		NC	NC	NC	NC	NC	NC	NC	0.01	NC
Ecological screening criteria (direct): urban residential		NC	NC	NC	NC	NC	NC	17	32	NC

11. Comments

11.1 Contamination Status

Thirty-five (35) soil samples (including three field replicate) were analysed for the suite of testing outlined in Section 10. The results were compared against NEPM for Health Based Investigation / Screening Levels, Ecological Investigation / Screening Levels, Total Petroleum Hydrocarbon Management Limits for a conservative residential land use as discussed in Section 9.

All samples tested were below the relevant criteria for:

- Health investigation and screening levels;
- Ecological investigation and screening levels; and
- Total petroleum hydrocarbon management limits

There was no obvious visual or olfactory evidence of gross contamination (i.e. no obvious staining or odour) observed at the surface or within the investigation bores and pits.

The laboratory results were generally consistent with the visual and olfactory “screening” that suggested the absence of gross contamination within the test bores.

Although hazardous building materials (HBM) including asbestos, were not observed within the bores and pits, owing to the presence of structures on the site there is a risk of HBM in unobserved or untested parts of the site.

The site is considered to be suitable for the intended use, based on the results of the assessment. Due to the previous development history on parts of the site, it is recommended that an unexpected finds protocol is incorporated in conjunction with construction activities during development as a precautionary measure.

Although the results of testing within the possible effluent disposal area did not indicate elevated microbiological activity or nutrients, this area should be further inspected and possibly tested during removal.

11.2 Preliminary Waste Classification

The soil samples tested were below the maximum permissible concentrations for General Solid Waste (Ref 4).

In summary, based on the site historical information, site investigations and preliminary laboratory testing, the following waste classifications are provided:

Existing Filling

The fill materials tested are classified General Solid Waste (GSW) with reference to NSW EPA Waste Classification guidelines (Ref 4). It is noted an addendum to Ref 4 published in 2014 requires assessment of PFAS and PFOS compounds to be undertaken using both specific contaminant concentrations and leachable concentrations. At this stage, only specific contaminant concentrations have been undertaken and hence if material from the area around Bores 106 and 107 are to be removed from site to a licensed landfill, additional sampling and testing (including leachate testing for PFOS and PFHxS) should be undertaken to confirm the suitability for General Solid Waste.

Selected fill materials not containing anthropogenic inclusions such as concrete or brick fragments may also be suitable for classification as Excavated Natural Material (ENM), although additional sampling and testing would be required once further details of the proposed earthworks are known. The results of the contamination testing undertaken during the present investigation and further testing should then be compared against the Excavated Natural Material Order (Ref 5).

It is recommended that during construction an inspection regime should be implemented to identify any areas of filling which may warrant further assessment. In this regard, it is noted that assessment of materials under covered areas (i.e. pavements and building slabs) was not possible during the present investigation. The inspection regime should include the following:

- Stripping of the overlying filling over the excavation area;
- Inspection of the exposed soils by a geo-environmental engineer to assess for the presence of material which may affect the waste classification;
- Supplementary laboratory testing of soil for characterisation (where required);
- Regular inspections and testing during construction to ensure that the excavated materials are appropriately handled and that material different to those encountered during the investigation are appropriately assessed; and
- Implementation of an unexpected finds protocol if and when necessary.

Natural Soils and Bedrock

The underlying natural soils, described as orange brown clay and the underlying bedrock would be classified VENM, subject to appropriate segregation of upper fill materials. VENM would be suitable for off-site re-use from a contamination standpoint, subject to prior acceptance by the receptor site/relevant authority to receive the material. The natural soils and bedrock should not be mixed/cross contaminated with non-VENM materials (e.g. overlying filling, topsoil or anthropogenic inclusions). During construction an unexpected finds protocol should be implemented for the site to outline how to handle, assess and dispose of any materials different to those observed during the investigation which may be encountered during the proposed works.

12. References

1. Douglas Partners Pty Ltd, "Report on Geotechnical Assessment and Preliminary Site Investigation (Contamination), Aberdeen Valley Fair Retail and Service Centre, 172 – 186 Macqueen Street, Aberdeen", Project 91087.00 dated June 2017.

2. NSW EPA Contaminated Sites (2011), 'Guidelines for Consultants Reporting on Contaminated Sites', August 2011.
3. National Environment Protection Council (2013), "National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013", 11 April 2013.
4. NSW EPA, 'Waste Classification Guidelines, Part 1: Classifying Waste', November 2014.
5. NSW EPA, Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 "The Excavated Natural Material Order 2014".
6. The NSW Office of Environmental Heritage (OEH), 'Draft PFAS Screening Criteria (May 2014), May 2017 (EPA, 2017).
7. NSW EPA, "Environmental Guidelines, Use and Disposal of Biosolids Products", December 2000.

13. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 172-186 Macquene Street, Aberdeen with reference to DP's proposal NCL170665 dated 8 November 2017 and acceptance received from Enef Investments Pty Ltd dated 8 November 2017. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Enef Investments Pty Ltd and dwp Suters for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report
Sampling Methods
Soil Descriptions
Symbols and Abbreviations
Test Pit Logs – Pits 201 to 217
Borehole Logs – Bores 101 to 108
Logs from Previous Investigation

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

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

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

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

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole 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. They may not be the same at the time of construction as are indicated in the report; 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 first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or 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 a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this 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, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud 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 the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils 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 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm 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 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726-1993, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 - 5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General



Asphalt



Road base



Concrete



Filling

Soils



Topsoil



Peat



Clay



Silty clay



Sandy clay



Gravelly clay



Shaly clay



Silt



Clayey silt



Sandy silt



Sand



Clayey sand



Silty sand



Gravel



Sandy gravel



Cobbles, boulders



Talus

Sedimentary Rocks



Boulder conglomerate



Conglomerate



Conglomeratic sandstone



Sandstone



Siltstone



Laminite



Mudstone, claystone, shale

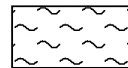


Coal

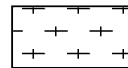


Limestone

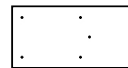
Metamorphic Rocks



Slate, phyllite, schist

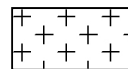


Gneiss

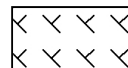


Quartzite

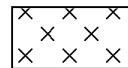
Igneous Rocks



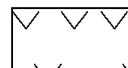
Granite



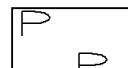
Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia




Porphyry

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301140
NORTHING: 6438492

PIT No: 201
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.1	FILLING - Generally comprising brown silty gravel, with rounded gravel up to 60mm in size, abundant rootlets, humid		E	0.0		PID<1					
				E	0.05							
		SILTY CLAY - Hard, dark brown silty clay, M<Wp		E	0.2		PID<1					
					0.25							
					0.5		pp >600					
					0.7		pp >600					
	0.8	Pit discontinued at 0.8m, limit of investigation										
1												
2												
3												
4												

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301119
NORTHING: 6348377

PIT No: 202
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.08	FILLING - Generally comprising brown sandy gravel filling, with fine to coarse grained sand rounded gravel and trace to some clay, humid CLAY - Hard, dark brown clay, with some silt, trace fine grained sand, M<Wp		E	0.0		PID<1					
				E	0.05		PID<1					
				E	0.15							
					0.2		pp >600					
					0.3							
					0.5		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301169
NORTHING: 6438367

PIT No: 203
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	FILLING - Generally comprising brown sandy gravelly clay filling, with fine to coarse grained sand, rounded gravel up to 60mm insize, humid		E	0.0		PID<1					
				E	0.05							
		CLAY - Hard brown, clay trace to some fine grained sand, M<Wp		U	0.25		PID<1					
					0.3		pp >600					
					0.4		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation			0.6		pp >600					
1												
2												
3												
4												

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2



SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test $s(50)$ (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test $s(50)$ (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301290
NORTHING: 6438383

PIT No: 204
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.08	FILLING - Generally comprising brown sandy clay filling, with fine to coarse grained sand and some rounded gravel up to 40mm in size, humid		D, E	0.0		PID<1					
	E			0.05	pp >600							
				0.1	PID<1							
				0.15								
				0.2								
	0.3	SILTY CLAY - Hard dark brown silty clay, M<Wp CLAY - Hard brown clay, M<Wp			0.4	pp >600						
				0.5	pp >600							
				0.65	PID<1							
	0.7	Pit discontinued at 0.7m, limit of investigation			E	0.7						
	1											
2												
3												
4												

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macqueen Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301231
NORTHING: 6438363

PIT No: 205
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

[illegible]

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)




Douglas Partners
Geotechnics | Environment | Groundwater

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301231
NORTHING: 6438366

PIT No: 206
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.35	CLAY - Hard brown clay, trace fine to medium grained sand, M<Wp		E	0.0 0.05 0.1		PID<1 pp >600					
		W		0.2 0.25 0.3	PID<1 pp >600							
		Pit discontinued at 0.35m, limit of investigation										
	1								1			
	2								2			
	3								3			
	4								4			

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
- ☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W _s	Water seep	S	Standard penetration test
E	Environmental sample	W _L	Water level	V	Shear vane (kPa)




TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301295
NORTHING: 6438337

PIT No: 207
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.15	CLAY - Hard brown clay, M<Wp		E	0.0		PID<1					
					0.05		pp >600					
					0.1							
		CLAY - Hard brown mottled white clay, trace some fine grained sand, M<Wp		E	0.2		pp >600					
					0.25		PID<1					
					0.4		pp >600					
					0.5		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test (s(50)) (MPa)
		PL(D)	Point load diametral test (s(50)) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301360
NORTHING: 6438351

PIT No: 208
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.13	SILTY CLAY - Hard dark brown / brown silty clay, M<Wp		E	0.0		PID<1					
					0.05		pp >600					
					0.1							
				E	0.2		PID<1					
		CLAY - Hard, dark brown clay, M<Wp			0.25		pp >600					
					0.3							
					0.5		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2


SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301351
NORTHING: 6438402

PIT No: 209
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		CLAY - Hard dark brown clay, with some silt, trace fine grained sand, M<Wp		E	0.0		PID<1					
					0.05							
					0.2		pp >600					
				E	0.3		PID<1					
					0.35							
					0.5		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

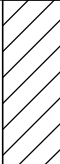
SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test (s(50)) (MPa)
		PL(D)	Point load diametral test (s(50)) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301319
NORTHING: 6438430

PIT No: 210
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		CLAY - Hard, dark brown clay, trace some fine grained sand, M<Wp		E	0.0		PID<1					
					0.05							
					0.2		pp >600					
				E	0.3		PID<1					
					0.35							
					0.4		pp >600					
	0.55	Pit discontinued at 0.55m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2


SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301360
NORTHING: 6438466

PIT No: 211
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		CLAY - Hard, dark brown clay, trace fine grained sand, M<Wp		E	0.0		PID<1					
					0.05							
				E	0.2		pp >600					
					0.25		PID<1					
					0.3							
					0.4		pp >600					
	0.5	Pit discontinued at 0.5m, limit of investigation										
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2


SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301396
NORTHING: 6438474

PIT No: 212
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		CLAY - Hard dark brown clay, trace some fine grained gravel sand, M<Wp		E	0.0		PID<1					
				E	0.05		pp >600					
				E	0.1							
	0.5	Pit discontinued at 0.5m, limit of investigation		E	0.4		pp >600					
					0.45		PID<1					
					0.5							
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2



SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50)) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50)) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301291
NORTHING: 6438456

PIT No: 213
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.2	FILLING - Generally comprising brown, silty sand gravelly filling, with fine to coarse grained sand and rounded gravel up to 60mm in size, humid		E	0.0 0.05		PID<1					
		FILLING - Generally comprising grey-brown rounded gravel and cobbles gravel fraction up to 60mm in size cobbles up to 150mm insize, humid		E	0.3 0.35		PID<1					
	0.9	CLAY - Hard, brown clay, with trace to some fine to medium grained sand, M<Wp		E	0.91 1.0		PID<1					
	1.15	Pit discontinued at 1.15m, limit of investigation										
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2


SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301257
NORTHING: 6438400

PIT No: 214
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
		CLAY - Hard, dark brown clay, M<Wp		E	0.0		PID<1					
					0.05							
					0.3		pp >600					
	0.5	CLAY - Hard, brown clay, trace to some fine grained sand, M<Wp		E	0.5		pp >600					
	0.7	Pit discontinued at 0.7m, limit of investigation			0.55		PID<1					
					0.6							
1												
2												
3												
4												

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test $s(50)$ (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test $s(50)$ (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macqueen Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301207
NORTHING: 6438428

PIT No: 215
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

[illegible]

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
- ☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macqueen Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301207
NORTHING: 6438431

PIT No: 216
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

[illegible]

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS:

- ☐ Sand Penetrometer AS1289.6.3.3
- ☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



TEST PIT LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301207
NORTHING: 6430429

PIT No: 217
PROJECT No: 91087.01
DATE: 30/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
	0.1	FILLING - Generally comprising brown / grey clay filling, with some silt, M<Wp Pit discontinued at 0.1m, limit of investigation		E	0.0 0.05		PID<1					
	1											
	2											
	3											
	4											

RIG: 5 Tonne excavated with 300mm toothed bucket

LOGGED: Benson

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater whilst pit remained open

REMARKS: within well

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2


SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test $s(50)$ (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test $s(50)$ (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301147
NORTHING: 6438412
DIP/AZIMUTH: 90°/--

BORE No: 101
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.2	FILLING - Generally comprising brown-grey sandy gravel filling with fine to coarse grained sand and subangular to subrounded gravel up to 20mm in size, trace to some clay, humid		E	0.0		PID<1			
					0.05					
		SILTY CLAY - Hard, brown clay with trace fine to medium grained sand, M<Wp		E	0.25		PID<1			
					0.3					
					0.4		pp >600			
					0.6		pp >600			
	0.7	Bore discontinued at 0.7m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.7m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND


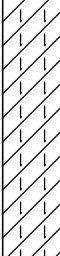
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301118
NORTHING: 6438411
DIP/AZIMUTH: 90°/--

BORE No: 102
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.18	FILLING - Generally comprising brown-grey sandy gravel filling with fine to coarse grained sand and subangular to subrounded gravel up to 20mm in size, trace to some clay, humid		E	0.01		PID<1			
					0.1					
		SILTY CLAY - Hard, brown clay with trace fine to medium grained sand, M<Wp		E	0.2		pp >600 PID<1			
					0.25					
					0.4		pp >600			
	0.7	Bore discontinued at 0.7m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.7m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND



A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301120
NORTHING: 6438450
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.17	FILLING - Generally comprising brown-grey sandy gravel filling with fine to coarse grained sand and subangular to subrounded gravel up to 20mm in size, trace to some clay, humid		E	0.0 0.05		PID<1			
		CLAY - Hard, brown clay with some fine to medium grained sand, trace suangular to subrounded gravel up to 5mm in size, M<Wp		E	0.25 0.3		PID<1			
					0.5		pp >600			
				E	0.6 0.65		PID<1			
					0.7		pp >600			
	0.75	Bore discontinued at 0.75m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.75m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

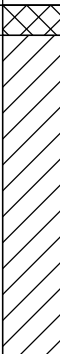
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301152
NORTHING: 6438462
DIP/AZIMUTH: 90°/--

BORE No: 104
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.06	FILLING - Generally comprising brown-grey sandy gravel filling with fine to coarse grained sand and subangular to subrounded gravel up to 20mm in size, trace to some clay, humid CLAY - Hard, brown clay with some silt, trace to some fine grained sand, M<Wp		E	0.0		PID<1			
					0.05					
				E	0.15		pp >600 PID<1			
					0.2					
					0.5		pp >600			
	0.7	Bore discontinued at 0.7m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.7m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301182
NORTHING: 6438453
DIP/AZIMUTH: 90°/--

BORE No: 105
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.18	FILLING - Generally comprising brown-grey sandy gravel filling with fine to coarse grained sand and subangular to subrounded gravel up to 20mm in size, trace to some clay, humid		E	0.0		PID<1			
					0.1					
		SILTY CLAY - Hard, dark brown silty clay, trace fine to medium grained sand, M<Wp		E	0.2		PID<1			
					0.25		pp >600			
					0.3					
					0.5		pp >600			
				E	0.6		PID<1			
	0.75	From 0.7m, brown			0.65					
		Bore discontinued at 0.75m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.75m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macqueen Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301187
NORTHING: 6438440
DIP/AZIMUTH: 90°/--

BORE No: 106
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.1	FILLING - Generally comprising dark brown silty sand filling with fine to medium grained sand, abundant rootlets, humid		E	0.0		PID<1			
					0.1					
		FILLING - Generally comprising grey silty sand filling with fine to coarse grained sand with some subangular to subrounded gravel up to 10mm in size, humid		E	0.2		PID<1			
					0.3					
	0.4	SILTY CLAY - Hard, dark brown silty clay with trace to some fine to coarse grained sand, M<Wp								
				E	0.5		PID<1			
					0.6					
					0.7		pp >600			
					0.9		pp >600			
				E	1.1		PID<1			
					1.15					
					1.2		pp >600			
					1.5		pp >600			
	1.6	Bore discontinued at 1.6m, limit of investigation								
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 1.6m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS: Sample compressed, hole dipped to 1.6m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test (s(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test (s(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macqueen Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301187
NORTHING: 6438438
DIP/AZIMUTH: 90°/--

BORE No: 107
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

[illegible]

DRILLER: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 1.5m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS: Sample compressed, hole dipped to 1.5m

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)





BOREHOLE LOG

CLIENT: ENEF Investments Pty Ltd
PROJECT: Targeted Contamination Assessment
LOCATION: 172-176 Macquene Street, Aberdeen

SURFACE LEVEL: --
EASTING: 301187
NORTHING: 6438385
DIP/AZIMUTH: 90°/--

BORE No: 108
PROJECT No: 91087.01
DATE: 29/11/2017
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.2	FILLING - Generally comprising brown-orange-grey sandy gravelly clay filling with fine to coarse grained sand subangular to subrounded gravel up to 60mm in size, humid		E	0.0		PID<1			
					0.1					
		CLAY - Hard, dark brown clay with trace fine to medium grained sand, M<Wp		E	0.25		PID<1			
					0.3					
					0.4		pp >600			
		From 0.6m, brown			0.6		pp >600			
	0.8	Bore discontinued at 0.8m, limit of investigation								
	1									
	2									

RIG: 4WD Push Tube Rig

DRILLER: Benson

LOGGED: Benson

CASING: Uncased

TYPE OF BORING: 63mm push tube to 0.8m depth

WATER OBSERVATIONS: No free groundwater whilst bore remained open

REMARKS:

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	>	Water seep
E	Environmental sample	≡	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test (s(50) (MPa)
		PL(D)	Point load diametral test (s(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

Appendix B

Laboratory Report Sheets
Quality Assurance/Quality Control Assessment

CERTIFICATE OF ANALYSIS 181319

Client Details

Client	Douglas Partners Newcastle
Attention	Michael Gawn
Address	Box 324 Hunter Region Mail Centre, Newcastle, NSW, 2310

Sample Details

Your Reference	<u>91087.01, Targeted Contamination Assessment</u>
Number of Samples	19 Soil
Date samples received	05/12/2017
Date completed instructions received	05/12/2017

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	12/12/2017
Date of Issue	12/12/2017
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Asbestos Approved By

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David Springer, General Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	08/12/2017	08/12/2017	08/12/2017	08/12/2017	08/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	101	89	101	96	94

vTRH(C6-C10)/BTEXN in Soil

Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	08/12/2017	08/12/2017	08/12/2017	08/12/2017	08/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	91	84	95	94

vTRH(C6-C10)/BTEXN in Soil

Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	08/12/2017	08/12/2017	08/12/2017	08/12/2017	08/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	97	92	117	90

svTRH (C10-C40) in Soil

Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	88	88	86	87

svTRH (C10-C40) in Soil

Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	90	91	87	88	89

svTRH (C10-C40) in Soil						
Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	86	89	88	86	87

PAHs in Soil						
Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.4	<0.1	<0.1	0.5
Pyrene	mg/kg	<0.1	0.4	<0.1	<0.1	0.5
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	0.2
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	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05	<0.05	0.2
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	0.2
Total +ve PAH's	mg/kg	<0.05	1.9	<0.05	<0.05	2.1
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
Surrogate <i>p</i> -Terphenyl-d14	%	94	94	93	92	99

PAHs in Soil						
Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate p-Terphenyl-d14	%	92	96	91	97	90

PAHs in Soil						
Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate p-Terphenyl-d14	%	95	92	94	93	95

Organochlorine Pesticides in soil						
Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	108	102	102	93	100

Organochlorine Pesticides in soil						
Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	94	105	99	96	100

Organochlorine Pesticides in soil						
Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	101	104	105	95

Organophosphorus Pesticides

Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	108	102	102	93	100

Organophosphorus Pesticides

Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	94	105	99	96	100

Organophosphorus Pesticides

Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	100	101	104	105	95

PCBs in Soil						
Our Reference	UNITS	181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference		101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	108	102	102	93	100

PCBs in Soil						
Our Reference	UNITS	181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference		104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	94	105	99	96	100

PCBs in Soil						
Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	100	101	104	105	95

Acid Extractable metals in soil

Our Reference		181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference	UNITS	101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Arsenic	mg/kg	<4	<4	4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	22	42	8	4	44
Copper	mg/kg	24	19	8	3	21
Lead	mg/kg	3	10	6	6	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	38	26	11	5	29
Zinc	mg/kg	22	25	26	17	28
Iron	mg/kg	22,000	26,000	16,000	9,100	27,000
Manganese	mg/kg	430	580	210	130	440

Acid Extractable metals in soil

Our Reference		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	14	15	34	14
Copper	mg/kg	17	15	19	18	28
Lead	mg/kg	3	3	5	6	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	22	25	20	27	21
Zinc	mg/kg	19	28	73	21	45
Iron	mg/kg	14,000	19,000	20,000	23,000	24,000
Manganese	mg/kg	190	270	250	550	250
Phosphorus	mg/kg	[NA]	[NA]	800	110	690

Acid Extractable metals in soil

Our Reference		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Arsenic	mg/kg	<4	<4	<4	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	45	21	31	9	26
Copper	mg/kg	23	18	14	10	12
Lead	mg/kg	8	8	5	7	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	32	20	21	14	20
Zinc	mg/kg	30	53	16	28	14
Iron	mg/kg	32,000	22,000	21,000	16,000	17,000
Manganese	mg/kg	790	360	420	230	490
Phosphorus	mg/kg	100	[NA]	[NA]	[NA]	[NA]

Acid Extractable metals in soil

Our Reference		181319-20
Your Reference	UNITS	107 - [TRIPLICATE]
Depth		0.0-0.1
Date Sampled		29/11/2017
Type of sample		Soil
Date prepared	-	06/12/2017
Date analysed	-	06/12/2017
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	12
Copper	mg/kg	14
Lead	mg/kg	3
Mercury	mg/kg	<0.1
Nickel	mg/kg	19
Zinc	mg/kg	43
Iron	mg/kg	21,000
Manganese	mg/kg	210
Phosphorus	mg/kg	680

Moisture						
Our Reference	UNITS	181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference		101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Moisture	%	4.0	19	5.9	7.1	19

Moisture						
Our Reference	UNITS	181319-6	181319-7	181319-8	181319-9	181319-10
Your Reference		104	105	106	106 P	106
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Moisture	%	3.0	4.1	11	11	22

Moisture						
Our Reference	UNITS	181319-11	181319-12	181319-13	181319-14	181319-15
Your Reference		106 P	107	107 P	107	107 P
Depth		0.5-0.6	0.0-0.1	0.0-0.1	0.6-0.7	0.6-0.7
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Moisture	%	20	5.4	4.5	28	34

Moisture					
Our Reference	UNITS	181319-16	181319-17	181319-18	181319-19
Your Reference		108	108	D1	D2
Depth		0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Moisture	%	4.7	21	5.7	19

Asbestos ID - soils						
Our Reference	UNITS	181319-1	181319-2	181319-3	181319-4	181319-5
Your Reference		101	101	102	103	103
Depth		0.0-0.05	0.25-0.3	0.0-0.1	0.0-0.05	0.25-0.3
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Sample mass tested	g	Approx. 55g	Approx. 25g	Approx. 45g	Approx. 40g	Approx. 55g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown sandy 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		181319-6	181319-7	181319-8	181319-10	181319-12
Your Reference	UNITS	104	105	106	106	107
Depth		0.0-0.05	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Sample mass tested	g	Approx. 45g	Approx. 55g	Approx. 20g	Approx. 30g	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		181319-14	181319-16	181319-17	181319-18	181319-19
Your Reference	UNITS	107	108	108	D1	D2
Depth		0.6-0.7	0.0-0.1	0.25-0.3	-	-
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Sample mass tested	g	Approx. 30g	Approx. 50g	Approx. 45g	Approx. 40g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown sandy 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

Misc Inorg - Soil					
Our Reference		181319-8	181319-10	181319-12	181319-14
Your Reference	UNITS	106	106	107	107
Depth		0.0-0.1	0.5-0.6	0.0-0.1	0.6-0.7
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Nitrate as N in soil	mg/kg	25	0.7	4	0.5
Nitrite as N in soil	mg/kg	0.6	<0.1	0.3	<0.1
TKN in soil	mg/kg	1,600	830	900	480
Total Nitrogen in soil	mg/kg	1,600	830	900	480
Phosphate as P in soil	mg/kg	11	<0.5	8.5	<0.5

PFAs in Soils Short					
Our Reference		181319-9	181319-11	181319-13	181319-15
Your Reference	UNITS	106 P	106 P	107 P	107 P
Depth		0.0-0.1	0.5-0.6	0.0-0.1	0.6-0.7
Date Sampled		29/11/2017	29/11/2017	29/11/2017	29/11/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	11/12/2017	06/12/2017	06/12/2017	06/12/2017
Date analysed	-	11/12/2017	06/12/2017	06/12/2017	06/12/2017
Perfluorohexanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.6	0.5	0.2	2.9
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	1.0
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate ¹³ C ₈ PFOS	%	89	86	83	89
Surrogate ¹³ C ₂ PFOA	%	87	91	94	88

Method ID	Methodology Summary
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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-055	Nitrate - determined colourimetrically. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Soils are analysed following a water extraction.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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-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 (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. 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-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
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.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	<p>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.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ 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. 'EQ 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. 'EQ 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. <p>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.</p>
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	<p>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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>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.</p>
Org-035D	<p>Soil samples are extracted with basified Methanol. Waters are directly injected and/or concentrated after SPE. Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are NOT corrected for Surrogates (mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample).</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>
Org-035D_2	<p>Soil samples are extracted with basified Methanol. Waters are directly injected and/or concentrated after SPE. Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are NOT corrected for Surrogates (mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample).</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			08/12/2017	1	08/12/2017	08/12/2017		08/12/2017	08/12/2017
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	101	88
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	101	88
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	103	90
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	95	83
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	101	89
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	103	89
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	103	89
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	94	1	101	82	21	99	90

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	08/12/2017	08/12/2017		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	12	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	12	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	12	94	99	5	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	89	110
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	111	104
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	114	89
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	89	110
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	111	104
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	114	89
Surrogate o-Terphenyl	%		Org-003	119	1	91	91	0	94	88

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	12	89	88	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			07/12/2017	1	06/12/2017	06/12/2017		07/12/2017	06/12/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	85	85
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	92	89
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	90	88
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	86	83
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	92	89
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	94	93
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	86	82
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	97	1	94	93	1	102	94

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	07/12/2017	07/12/2017		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	12	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	12	90	90	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	102
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	103	105
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	90
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	97
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	98	99
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	108	112
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	104	108
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	92
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	99	103
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	90
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	101	1	108	94	14	107	106

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	12	100	99	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	82	85
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	84	79
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	90	94
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	97	95
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	74	76
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	98	95
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	92	96
Surrogate TCMX	%		Org-008	101	1	108	94	14	93	101

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	12	100	99	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date extracted	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	100	100
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	101	1	108	94	14	93	101

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	12	100	99	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-2
Date prepared	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	1	06/12/2017	06/12/2017		06/12/2017	06/12/2017
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	116	87
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	105	92
Chromium	mg/kg	1	Metals-020	<1	1	22	14	44	114	109
Copper	mg/kg	1	Metals-020	<1	1	24	18	29	113	117
Lead	mg/kg	1	Metals-020	<1	1	3	1	100	106	91
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	108	97
Nickel	mg/kg	1	Metals-020	<1	1	38	27	34	108	104
Zinc	mg/kg	1	Metals-020	<1	1	22	17	26	111	99
Iron	mg/kg	1	Metals-020	<1	1	22000	17000	26	113	#
Manganese	mg/kg	1	Metals-020	<1	1	430	280	42	99	106
Phosphorus	mg/kg	10	Metals-020	<10	12	690	650	6	104	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Date analysed	-			[NT]	12	06/12/2017	06/12/2017		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	12	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	12	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	12	14	12	15	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	12	28	14	67	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	12	4	4	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	12	21	19	10	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	12	45	49	9	[NT]	[NT]
Iron	mg/kg	1	Metals-020	[NT]	12	24000	23000	4	[NT]	[NT]
Manganese	mg/kg	1	Metals-020	[NT]	12	250	230	8	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			07/12/2017	8	07/12/2017	07/12/2017		07/12/2017	[NT]
Date analysed	-			07/12/2017	8	07/12/2017	07/12/2017		07/12/2017	[NT]
Nitrate as N in soil	mg/kg	0.5	Inorg-055	<0.5	8	25	26	4	109	[NT]
Nitrite as N in soil	mg/kg	0.1	Inorg-055	<0.1	8	0.6	0.7	15	111	[NT]
TKN in soil	mg/kg	10	Inorg-062	<10	8	1600	1200	29	92	[NT]
Total Nitrogen in soil	mg/kg	10	Inorg-055/062	<10	8	1600	1200	29	92	[NT]
Phosphate as P in soil	mg/kg	0.5	Inorg-060	<0.5	8	11	11	0	99	[NT]

QUALITY CONTROL: PFAs in Soils Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	181319-11
Date prepared	-			06/12/2017	9	11/12/2017	11/12/2017		06/12/2017	06/12/2017
Date analysed	-			06/12/2017	9	11/12/2017	11/12/2017		06/12/2017	06/12/2017
Perfluorohexanesulfonic acid	µg/kg	0.1	Org-035D	<0.1	9	<0.1	<0.1	0	116	99
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-035D	<0.1	9	0.6	0.9	40	112	111
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-035D	<0.1	9	<0.1	<0.1	0	115	115
6:2 FTS	µg/kg	0.1	Org-035D	<0.1	9	<0.1	<0.1	0	122	112
8:2 FTS	µg/kg	0.1	Org-035D	<0.1	9	<0.1	<0.1	0	107	96
Surrogate ¹³ C ₈ PFOS	%		Org-035D	84	9	89	86	3	89	89
Surrogate ¹³ C ₂ PFOA	%		Org-035D_2	93	9	87	84	4	89	90

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	

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.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 181319-12 for Cu. Therefore a triplicate result has been issued as laboratory sample number 181319-20.

Acid Extractable Metals in Soil:

Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.

CERTIFICATE OF ANALYSIS 181186

Client Details

Client	Douglas Partners Newcastle
Attention	Michael Gawn
Address	Box 324 Hunter Region Mail Centre, Newcastle, NSW, 2310

Sample Details

Your Reference	<u>91087.01, Targeted Contamination Assessment</u>
Number of Samples	21 Soil
Date samples received	01/12/2017
Date completed instructions received	01/12/2017

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	08/12/2017
Date of Issue	14/12/2017
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Asbestos Approved By

Analysed by Asbestos Approved Identifier: Lucy Zhu
 Authorised by Asbestos Approved Signatory: Paul Ching

Results Approved By

Dragana Tomas, Senior Chemist
 Long Pham, Team Leader, Metals
 Nancy Zhang, Assistant Lab Manager
 Paul Ching, Senior Analyst
 Steven Luong, Senior Chemist

Authorised By



David Springer, General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference	UNITS	181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference		Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	110	112	110	100	109

vTRH(C6-C10)/BTEXN in Soil						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	112	108	122	119	118

vTRH(C6-C10)/BTEXN in Soil						
Our Reference	UNITS	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	116	116	116	111	114

vTRH(C6-C10)/BTEXN in Soil						
Our Reference	UNITS	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C 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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	112	109	117	100	119

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	05/12/2017
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	115

svTRH (C10-C40) in Soil						
Our Reference	UNITS	181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference		Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	89	90	87	89

svTRH (C10-C40) in Soil						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	87	85	82	81	82

svTRH (C10-C40) in Soil

Our Reference		181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference	UNITS	Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	79	84	81	84	79

svTRH (C10-C40) in Soil

Our Reference		181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference	UNITS	Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	77	80	80	81	81

svTRH (C10-C40) in Soil		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	80

PAHs in Soil						
Our Reference		181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference	UNITS	Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate <i>p</i> -Terphenyl-d14	%	96	98	98	96	97

PAHs in Soil						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate p-Terphenyl-d14	%	96	96	94	101	95

PAHs in Soil						
Our Reference	UNITS	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate p-Terphenyl-d14	%	93	94	100	94	95

PAHs in Soil						
Our Reference	UNITS	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
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
Surrogate p-Terphenyl-d14	%	95	95	100	96	96

PAHs in Soil		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	04/12/2017
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	96

Organochlorine Pesticides in soil						
Our Reference		181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference	UNITS	Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	108	102	95	98

Organochlorine Pesticides in soil						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	91	98	118	99

Organochlorine Pesticides in soil						
Our Reference	UNITS	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	90	97	88	95

Organochlorine Pesticides in soil						
Our Reference	UNITS	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	97	101	102	93

Organochlorine Pesticides in soil		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	04/12/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	93

Organophosphorus Pesticides						
Our Reference		181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference	UNITS	Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	103	108	102	95	98

Organophosphorus Pesticides						
Our Reference		181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference	UNITS	Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	93	91	98	118	99

Organophosphorus Pesticides

Our Reference		181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference	UNITS	Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	111	90	97	88	95

Organophosphorus Pesticides

Our Reference		181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference	UNITS	Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	96	97	101	102	93

Organophosphorus Pesticides		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	04/12/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyrifos	mg/kg	<0.1
Chlorpyrifos-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	%	93

PCBs in Soil						
Our Reference	UNITS	181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference		Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	103	108	102	95	98

PCBs in Soil						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	93	91	98	118	99

PCBs in Soil						
Our Reference	UNITS	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	111	90	97	88	95

PCBs in Soil						
Our Reference	UNITS	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	96	97	101	102	93

PCBs in Soil		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date extracted	-	04/12/2017
Date analysed	-	04/12/2017
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
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCLMX	%	93

Acid Extractable metals in soil

Our Reference		181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference	UNITS	Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Arsenic	mg/kg	7	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	38	40	42	31	36
Copper	mg/kg	27	23	21	15	20
Lead	mg/kg	15	9	8	9	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	33	31	30	22	27
Zinc	mg/kg	51	37	34	160	39
Iron	mg/kg	25,000	25,000	26,000	28,000	25,000
Manganese	mg/kg	850	770	650	330	530

Acid Extractable metals in soil

Our Reference		181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference	UNITS	Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	41	45	9	44	19
Copper	mg/kg	21	22	5	18	12
Lead	mg/kg	9	8	2	9	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	30	33	8	29	17
Zinc	mg/kg	28	33	12	38	30
Iron	mg/kg	26,000	28,000	6,900	29,000	17,000
Manganese	mg/kg	690	660	140	640	400

Acid Extractable metals in soil

Our Reference		181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference	UNITS	Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	51	13	48	44	45
Copper	mg/kg	21	8	22	23	21
Lead	mg/kg	9	6	8	9	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	30	8	33	32	33
Zinc	mg/kg	28	17	31	37	28
Iron	mg/kg	30,000	14,000	30,000	28,000	29,000
Manganese	mg/kg	520	240	620	580	650

Acid Extractable metals in soil

Our Reference		181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference	UNITS	Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	45	26	45	46	42
Copper	mg/kg	20	15	21	21	22
Lead	mg/kg	9	6	9	9	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	29	24	33	33	35
Zinc	mg/kg	28	17	38	40	34
Iron	mg/kg	28,000	15,000	27,000	27,000	27,000
Manganese	mg/kg	670	920	770	700	730

Acid Extractable metals in soil			
Our Reference		181186-21	181186-22
Your Reference	UNITS	D3	Pit 213 - [TRIPLICATE]
Depth		-	0.3-0.35
Date Sampled		30/11/2017	30/11/2017
Type of sample		Soil	Soil
Date prepared	-	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	49	14
Copper	mg/kg	23	9
Lead	mg/kg	8	<1
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	34	18
Zinc	mg/kg	31	9
Iron	mg/kg	30,000	6,800
Manganese	mg/kg	660	120

Moisture						
Our Reference	UNITS	181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference		Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Moisture	%	8.7	7.7	14	17	9.5

Moisture						
Our Reference	UNITS	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Moisture	%	14	14	0.4	17	3.6

Moisture						
Our Reference	UNITS	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Moisture	%	12	3.4	13	9.9	16

Moisture						
Our Reference	UNITS	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/12/2017	04/12/2017	04/12/2017	04/12/2017	04/12/2017
Date analysed	-	05/12/2017	05/12/2017	05/12/2017	05/12/2017	05/12/2017
Moisture	%	13	14	13	12	13

Moisture		
Our Reference		181186-21
Your Reference	UNITS	D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date prepared	-	04/12/2017
Date analysed	-	05/12/2017
Moisture	%	16

Asbestos ID - soils						
Our Reference	UNITS	181186-1	181186-2	181186-3	181186-4	181186-5
Your Reference		Pit 211	Pit 212	Pit 212	Pit 217	Pit 215
Depth		0.0-0.05	0.0-0.05	0.4-0.45	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 45g	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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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	181186-6	181186-7	181186-8	181186-9	181186-10
Your Reference		Pit 205	Pit 205	Pit 213	Pit 213	Pit 203
Depth		0.0-0.05	0.25-0.3	0.3-0.35	0.95-1.0	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 70g	Approx. 30g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown 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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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	181186-11	181186-12	181186-13	181186-14	181186-15
Your Reference		Pit 203	Pit 201	Pit 201	Pit 204	Pit 204
Depth		0.25-0.3	0.0-0.05	0.2-0.25	0.0-0.05	0.1-0.15
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Sample mass tested	g	Approx. 30g	Approx. 40g	Approx. 35g	Approx. 35g	Approx. 35g
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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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	181186-16	181186-17	181186-18	181186-19	181186-20
Your Reference		Pit 207	Pit 208	Pit 209	Pit 210	Pit 214
Depth		0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05	0.0-0.05
Date Sampled		30/11/2017	30/11/2017	30/11/2017	30/11/2017	30/11/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	07/12/2017	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 35g	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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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	181186-21
Your Reference		D3
Depth		-
Date Sampled		30/11/2017
Type of sample		Soil
Date analysed	-	07/12/2017
Sample mass tested	g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

CEC			
Our Reference		181186-11	181186-13
Your Reference	UNITS	Pit 203	Pit 201
Depth		0.25-0.3	0.2-0.25
Date Sampled		30/11/2017	30/11/2017
Type of sample		Soil	Soil
Date prepared	-	05/12/2017	05/12/2017
Date analysed	-	05/12/2017	05/12/2017
Exchangeable Ca	meq/100g	28	31
Exchangeable K	meq/100g	0.3	0.5
Exchangeable Mg	meq/100g	14	15
Exchangeable Na	meq/100g	1.9	2.3
Cation Exchange Capacity	meq/100g	44	49

Micro testing in soil		
Our Reference	UNITS	181186-8
Your Reference		Pit 213
Depth		0.3-0.35
Date Sampled		30/11/2017
Type of sample		Soil
Date testing started	-	02/12/2017
Date testing completed	-	02/12/2017
Faecal Coliforms in soil	MPN/100g	<200
E. coli	MPN/100g	<200

Method ID	Methodology Summary
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.
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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-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 (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. 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-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
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.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	<p>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.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ 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. 'EQ 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. 'EQ 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. <p>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.</p>
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	<p>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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>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.</p>

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			05/12/2017	1	05/12/2017	05/12/2017		05/12/2017	05/12/2017
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	104	105
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	104	105
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	103	103
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	99	99
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	113	113
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	102	104
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	98	98
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	111	1	110	115	4	107	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	05/12/2017	05/12/2017		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	11	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	11	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	11	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	11	116	118	2	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	05/12/2017	05/12/2017		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	21	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	21	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	21	115	114	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			04/12/2017	1	05/12/2017	05/12/2017		05/12/2017	05/12/2017
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	110	97
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	111	106
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	121	103
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	110	97
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	111	106
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	121	103
Surrogate o-Terphenyl	%		Org-003	78	1	85	89	5	94	89

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	05/12/2017	05/12/2017		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	11	79	84	6	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	05/12/2017	05/12/2017		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	21	80	77	4	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	91	91
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	95	95
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	94	95
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	90	90
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	95	96
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	104	102
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	94	94
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	98	1	96	99	3	117	118

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	11	93	95	2	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	21	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	21	96	95	1	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	101
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	107	108
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	92
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	94
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	96	97
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	112	115
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	102	104
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	89
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	103	106
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	90
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	110	1	103	94	9	108	111

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	11	111	99	11	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	21	93	100	7	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	88	79
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	86	80
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	86
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	102	89
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	79	69
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	98	90
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	99	90
Surrogate TCMX	%		Org-008	110	1	103	94	9	95	87

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	11	111	99	11	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	21	93	100	7	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date extracted	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	102	103
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	110	1	103	94	9	95	87

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	11	111	99	11	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	21	93	100	7	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	181186-2
Date prepared	-			04/12/2017	1	04/12/2017	04/12/2017		04/12/2017	04/12/2017
Date analysed	-			05/12/2017	1	05/12/2017	05/12/2017		05/12/2017	05/12/2017
Arsenic	mg/kg	4	Metals-020	<4	1	7	7	0	118	71
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	113	91
Chromium	mg/kg	1	Metals-020	<1	1	38	37	3	117	109
Copper	mg/kg	1	Metals-020	<1	1	27	27	0	115	112
Lead	mg/kg	1	Metals-020	<1	1	15	14	7	113	92
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	107	101
Nickel	mg/kg	1	Metals-020	<1	1	33	31	6	111	97
Zinc	mg/kg	1	Metals-020	<1	1	51	47	8	114	100
Iron	mg/kg	1	Metals-020	<1	1	25000	24000	4	108	#
Manganese	mg/kg	1	Metals-020	<1	1	850	830	2	106	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	11	05/12/2017	05/12/2017		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	51	48	6	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	21	20	5	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	9	8	12	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	30	30	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	28	28	0	[NT]	[NT]
Iron	mg/kg	1	Metals-020	[NT]	11	30000	28000	7	[NT]	[NT]
Manganese	mg/kg	1	Metals-020	[NT]	11	520	590	13	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	21	05/12/2017	05/12/2017		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	21	49	40	20	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	21	23	17	30	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	21	8	7	13	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	21	34	26	27	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	21	31	23	30	[NT]	[NT]
Iron	mg/kg	1	Metals-020	[NT]	21	30000	24000	22	[NT]	[NT]
Manganese	mg/kg	1	Metals-020	[NT]	21	660	460	36	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	8	04/12/2017	04/12/2017		[NT]	[NT]
Date analysed	-			[NT]	8	05/12/2017	05/12/2017		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	8	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	8	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	8	9	4	77	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	8	5	5	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	8	2	<1	67	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	8	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	8	8	16	67	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	8	12	10	18	[NT]	[NT]
Iron	mg/kg	1	Metals-020	[NT]	8	6900	7300	6	[NT]	[NT]
Manganese	mg/kg	1	Metals-020	[NT]	8	140	73	63	[NT]	[NT]

Client Reference: 91087.01, Targeted Contamination Assessment

QUALITY CONTROL: CEC					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/12/2017	[NT]	[NT]	[NT]	[NT]	05/12/2017	[NT]
Date analysed	-			05/12/2017	[NT]	[NT]	[NT]	[NT]	05/12/2017	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	

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.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 181186-8 for Cr, Ni and Mn. Therefore a triplicate result has been issued as laboratory sample number 181186-22.

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

Note: Samples 181186-1 to 21 were sub-sampled from jars provided by the client.

Acid Extractable metals in soil: # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Faecal Coliform & E.Coli analysed by Sonic Food & Water Testing. Report No.W1722576.

Quality Assurance / Quality Control Assessment
Report on Detailed Site Investigation (Contamination)
Aberdeen Valley Fair
172 – 186 Macqueen Street, Aberdeen

Quality Assurance (QA) was maintained by:

- Compliance with a Project Quality Plan written for the objectives of the study;
- Using qualified engineers/scientists to undertake the field supervision and sampling;
- Following the Douglas Partners Pty Ltd (DP) operating procedures for sampling, field testing and decontamination as presented in Table 1;
- Using NATA registered laboratories for sample testing that generally utilise standard laboratory methods of the US EPA, the APHA and NSW EPA.

Table 1: Field Procedures

Abbreviation	Procedure Name
FPM LOG	Logging
FPM DECONT	Decontamination of Personnel and Equipment
FPM ENVID	Sample Identification, Handling, Transport and Storage of Contamination Samples
FPM PIDETC	Operation of Field Analysers
FPM ENVSAMP	Sampling of Contaminated Soils

Note to Table 1:

From DP Field Procedures Manual

Quality Control (QC) of the laboratory programme was achieved by the following means:

- Method blanks - the laboratory ran reagent blanks to confirm the equipment and standards used were uncontaminated;
- Laboratory replicates - the laboratory split samples internally and conducted tests on separate extracts;
- Laboratory spikes - samples were spiked by the laboratory with a known concentration of contaminants and subsequently tested for percent recovery.

Discussion

A. Sample Handling and Holding Times

A review of the laboratory reports and chain of custody forms associated with the Supplementary Contamination Assessment indicates the following:

- Samples were received chilled and in good order;
- Samples received were appropriately preserved for all tests;
- VOC/SVOC samples were received in Teflon sealed containers;
- Volatile samples were received with zero headspace;
- PFOS, PFAS and PFxHs samples were received in the appropriate containers;
- Samples were received within recommended holding times.

B. Method Blanks

All method blanks returned results lower than the laboratory detection limit, therefore are acceptable.

C. Laboratory Replicates

The average RPD for individual contaminants ranged from 0% to 50%, with the exception of several metal concentration results. These elevated RPDs may be as a result of differences between small detected concentrations of the metals and are therefore considered to be acceptable.

D. Laboratory Spikes

Recoveries in the order of 70% to 130% are generally considered to be acceptable for inorganic material and 60% to 140% for organic material. The average percent recovery for individual contaminants ranged from 74% to 122%, which is within the quality control objectives. The results should however be qualified and may slightly under-estimate or over-estimate contaminant concentrations in certain samples (ie biased low or high respectively).

Conclusions

Laboratory replicates were not conducted by the laboratory for this report, however, were analysed at a frequency to meet or exceed NEPM requirements (ie in batches of 20 samples). The duplicate samples (D1 – 102/0.0-0.1, D2 – 108/0.25-0.3 and D3 – 201/0.2-0.25) RPD for the batch were within the laboratory acceptance criteria.

The accuracy and precision of the soil testing procedures, as inferred by the laboratory QA/QC data is considered to be of sufficient standard to allow the data reported to be used in interpret site contamination conditions.

Appendix C

Chain of Custody (Field and Despatch)
Sample Receipts

Project No: 91087.01				Suburb: Aderdeen				To: Lab name			
Project Name: Targeted Contamination Assessment				Order Number							
Project Manager: MPG				Sampler: CTB				Attn: Jacinta Hurst			
Emails:				Phone:							
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>				Email: michael.gawn@douglaspartners.com.au							
Prior Storage: <input type="checkbox"/> Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved				Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)							

Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes									Notes/preservation
			S - soil W - water	G - glass P - plastic	Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ID	Cation Exchange Capacity	E-coli	Faecal coliforms	
Pit 211/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 212/0.0 - 0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 212/0.4 - 0.45		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 217/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 215/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 205/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 205/0.25-0.3		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 213/0.3-0.35		30/11/17	S	G	•	•	•	•		•		•	•	Combo 6A + E-coli
Pit 213/0.95-1.0		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 203/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 203/0.25-0.3		30/11/17	S	G	•	•	•	•		•	•			Combo 6A + CEC
Pit 201/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 201/0.2-0.25		30/11/17	S	G	•	•	•	•		•	•			Combo 6A + CEC
Pit 204/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 204/0.1-0.15		30/11/17	S	G	•	•	•	•		•				Combo 6A
PQL (S) mg/kg												ANZECC PQLs req'd for all water analytes <input type="checkbox"/>		
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit										Lab Report/Reference No:				
Metals to Analyse: 8HM unless specified here: 10 common HM														
Total number of samples in container:				Relinquished by: MPG		Transported to laboratory by:								
Send Results to: Douglas Partners Pty Ltd				Address:						Phone:			Fax:	
Signed:				Received by:						Date & Time:				

Project No: 91087.01				Suburb: Aderdeen				To: Lab name			
Project Name: Targeted Contamination Assessment				Order Number							
Project Manager: MPG				Sampler: CTB				Attn: Jacinta Hurst			
Emails:				Phone:							
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>				Email: michael.gawn@douglaspartners.com.au							
Prior Storage: <input type="checkbox"/> Esky <input type="checkbox"/> Fridge <input type="checkbox"/> Shelved				Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)							

Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes									Notes/preservation
			S - soil W - water	G - glass P - plastic	Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ID	Cation Exchange Capacity	E-coli	Faecal coliforms	
Pit 207/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 208/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 209/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 209/0.3-0.35		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 210/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
Pit 214/0.0-0.05		30/11/17	S	G	•	•	•	•		•				Combo 6A
D3		30/11/17	S	G	•	•	•	•		•				Combo 6A
PQL (S) mg/kg														ANZECC PQLs req'd for all water analytes <input type="checkbox"/>
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit										Lab Report/Reference No:				
Metals to Analyse: 8HM unless specified here: 10 common HM														
Total number of samples in container:				Relinquished by: MPG				Transported to laboratory by:						
Send Results to: Douglas Partners Pty Ltd				Address:						Phone:			Fax:	
Signed:				Received by:						Date & Time:				

Project No: 91087.01				Suburb: Aderdeen				To: Lab name			
Project Name: Targeted Contamination Assessment				Order Number							
Project Manager: MPG				Sampler: CTB				Attn: Jacinta Hurst			
Emails:								Phone:			
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>				Email: <u>michael.gawn@douglaspartners.com.au</u>							
Prior Storage: <input type="checkbox"/> Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved				Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)							


Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes									Notes/preservation	
			S - soil W - water	G - glass P - plastic	Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ID	Cation Exchange Capacity	E-coli	Faecal coliforms		
181186 Pit 211/0.0-0.05	1	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 212/0.0 - 0.05	2	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 212/0.4 - 0.45	3	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 217/0.0-0.05	4	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 215/0.0-0.05	5	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 205/0.0-0.05	6	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 205/0.25-0.3	7	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 213/0.3-0.35	8	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + E-coli
Pit 213/0.95-1.0	9	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 203/0.0-0.05	10	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 203/0.25-0.3	11	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + CEC
Pit 201/0.0-0.05	12	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 201/0.2-0.25	13	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + CEC
Pit 204/0.0-0.05	14	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 204/0.1-0.15	15	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
PQL (S) mg/kg															ANZECC PQLs req'd for all water analytes <input type="checkbox"/>
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit Metals to Analyse: 8HM unless specified here: 10 common HM															Lab Report/Reference No:
Total number of samples in container:					Relinquished by: MPG					Transported to laboratory by:					
Send Results to: Douglas Partners Pty Ltd					Address					Phone:					Fax:
Signed: <i>ABradley</i>					Received by: ELS					Date & Time: 01/12/17 10:30					

 Labelled
 as 0.3-
 0.75

Send out

 Labelled
 AS
 0.15-0.2

Project No: 91087.01				Suburb: Aderdeen				To: Lab name			
Project Name: Targeted Contamination Assessment				Order Number							
Project Manager: MPG				Sampler: CTB				Attn: Jacinta Hurst			
Emails:								Phone:			
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>								Email: michael.gawn@douglaspartners.com.au			
Prior Storage: <input type="checkbox"/> Esky <input type="checkbox"/> Fridge <input type="checkbox"/> Shelved				Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)							

Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes									Notes/preservation	
			S - soil W - water	G - glass P - plastic	Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ID	Cation Exchange Capacity	E-coli	Faecal coliforms		
Pit 207/0.0-0.05	16	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 208/0.0-0.05	17	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 209/0.0-0.05	18	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 209/0.3-0.35	19	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 210/0.0-0.05	20	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
Pit 214/0.0-0.05	21	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
D3	22	30/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
					 EnviroLab Services 12 Ashley St Chateau NSW 2067 Ph: (02) 9910 6200										
					Job No: 181186										
					Date Received: 01/12/17										
					Time Received: 10:30										
					Received by: AB										
					Temp: Cool/Ambient										
					Cooling: Ice/Icepack										
					Security: Intact/Broken/None										
PQL (S) mg/kg												ANZECC PQLs req'd for all water analytes <input type="checkbox"/>			
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit Metals to Analyse: 8HM unless specified here: 10 common HM														Lab Report/Reference No:	
Total number of samples in container:				Relinquished by: MPG				Transported to laboratory by:							
Send Results to: Douglas Partners Pty Ltd				Address				Phone:				Fax:			
Signed: <i>AB</i>				Received by: ELS				Date & Time: 01/12/17 10:30							

not sent
AB
01/12/17

Project No: 91087.01			Suburb: Aderdeen			To: Lab name		
Project Name: Targeted Contamination Assessment			Order Number 133757					
Project Manager: MPG			Sampler: CTB			Attn: Jacinta Hurst		
Emails:						Phone:		
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>						Email: michael.gawn@douglaspartners.com.au		
Prior Storage: <input type="checkbox"/> Esky <input type="checkbox"/> Fridge <input type="checkbox"/> Shelved			Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)					

Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes										Notes/preservation
			S - soil W - water	G - glass P - plastic	Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ID	Total Nitrogen - TKN + NO2 + NO3	Total Phosphate	PFAS short suite		
101 / 0.0-0.05	1	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
101 / 0.25-0.3	2	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
102 / 0.0-0.1	3	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
103 / 0.0-0.05	4	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
103 / 0.25-0.3	5	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
104 / 0.0-0.05	6	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
105 / 0.0-0.1	7	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A
106 / 0.2-0.3	8	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + P + N
106 P / 0.2-0.3	9	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	PFAS Short Suite
106 / 0.5-0.6	10	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + P + N
106 P / 0.5-0.6	11	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	PFAS Short Suite
107 / 0.0-0.1	12	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + P + N
107 P / 0.0-0.1	13	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	PFAS Short Suite
107 / 0.6 - 0.7	14	29/11/17	S	G	.	.	.	.	.	.	.	.	.	.	Combo 6A + P + N
PQL (S) mg/kg															ANZECC PQLs req'd for all water analytes <input type="checkbox"/>
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit Metals to Analyse: 8HM unless specified here: 10 common HM															Lab Report/Reference No:
Total number of samples in container:			Relinquished by: MPG			Transported to laboratory by:									
Send Results to: Douglas Partners Pty Ltd			Address			Phone:			Fax:						
Signed: [Signature]			Received by: ELS / AB			Date & Time: 05/12/17 10:00									

Job no: 181319

Rev4/October2016

Appendix D

Drawing 1 – Test Location Plan
Drawing 2 – Proposed Development Layout



Legend

- Borehole Locations (present investigation)
- Test Pit Coordinates (present investigation)
- Approximate Test Pit Location (previous investigation)
- Approximate Borehole Location (previous investigation)
- Possible Effluent Site
- Site Boundary
- Isolated filling

Drawing adapted from general arrangement plan by dwp Suters (Project 203596, Dwg A005, Issue C, undated)



Legend

- ✦ Approximate Test Pit Location
- ✦ Approximate Borehole Location

Drawing adapted from general arrangement plan by dwp Suters (Project 203596, Dwg A005, Issue C, undated)

