

CORED BOREHOLE LOG

Client: DESIGNINC SYDNEY PTY LTD
Project: PROPOSED REDEVELOPMENT OF ULTIMO PUBLIC SCHOOL
Location: ULTIMO PUBLIC SCHOOL, QUARRY ROAD, ULTIMO, NSW

Job No.: 30361SB **Core Size:** NMLC **R.L. Surface:** ~10.6 m
Date: 10/4/17 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** M.S./D.B.

Water Loss/Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	DEFECT DETAILS	
									DEFECT SPACING (mm)	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating.
								EL-0.03 VL-0.1 L-0.3 M-1 H-3 VH-10 EH	500 300 100 50 30 10	Specific General
			7		START CORING AT 3.94m					
			4		SANDSTONE: fine to medium grained, dark red brown, with quartz inclusions.	DW	H			
			6		as above, but yellow brown mottled red brown and light grey.					
			5							
			5		as above, but light grey, with dark brown laminae and yellow brown bands, bedded at 0-15°.	SW	M			(4.98m) J, 80°, Un, R
			6							(5.63m) XWS, 5°, 2 mm.t
										(5.83m) XWS, 15°, 2 mm.t
			4		as above, but yellow brown and light grey mottled red brown, bedded at 5-20°.		H			(6.80m) Be, 5°, P, R
			7		END OF BOREHOLE AT 6.98 m					
			3							
			8							
			2							
			9							
			1							



Borehole No.
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BOREHOLE LOG

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Project: PROPOSED REDEVELOPMENT OF ULTIMO PUBLIC SCHOOL
Location: ULTIMO PUBLIC SCHOOL, QUARRY ROAD, ULTIMO, NSW

Job No.: 30361SB **Method:** SPIRAL AUGER **R.L. Surface:** ~15.7 m
Date: 12/4/17 **Datum:** AHD
Plant Type: JK205 **Logged/Checked By:** M.S./D.B.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
DRY ON COMPLETION OF AUGERING										SYNTHETIC SURFACE: 15mm.t	M			APPEAR MODERATELY COMPACTED
					N = 13 5,7,6	15	1			FILL: Sandy gravel, fine grained igneous, dark grey.				
										FILL: Silty sand, fine to medium grained, dark brown.				
										as above, but brown and grey, with fine to medium grained sandstone gravel, fine grained igneous gravel and slag.				
					N = 14 7,7,7	14	2			as above, but trace of glass, brick and metal fragments.				
						13	3			FILL: Silty sand, fine to medium grained, dark brown, trace of fine to coarse grained sandstone gravel, brick fragments, slag and ash.				
					N = 17 7,11,6	12	4			FILL: Silty sand, fine to medium grained, dark brown and grey, with fine to coarse gained igneous and sandstone gravel.				
						11	5							
					N = 14 8,8,6	10	6			as above, but with sandstone cobbles, trace of clay.				
ON COMPLETION OF CORING						9								
					N = 17 7,9,8									

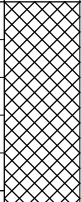


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BOREHOLE LOG

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Date: 12/4/17 **Datum:** AHD
Plant Type: JK205 **Logged/Checked By:** M.S./D.B.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
							8		-	FILL: Silty sand, fine to medium grained, dark brown and grey, with cobble sized igneous gravel, trace of clay.	M			
							8		-	SANDSTONE: fine to medium grained, light grey and yellow brown.	DW	M		MODERATE 'TC' BIT RESISTANCE
							7			REFER TO CORED BOREHOLE LOG				
							9							
							6							
							10							
							5							
							11							
							4							
							12							
							3							
							13							
							2							

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Job No.: 30361SB **Core Size:** NMLC **R.L. Surface:** ~15.7 m
Date: 12/4/17 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** M.S./D.B.

Water Loss/Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	DEFECT DETAILS	
									DEFECT SPACING (mm)	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating.
					START CORING AT 8.30m					
			7		SANDSTONE: fine to medium grained, light grey mottled yellow brown, with dark brown laminae, bedded at 0-15°, with quartz inclusions.	SW	M - H			(8.47m) XWS, 0°, 25 mm.t
			9				H			
					as above, but light grey and yellow brown.					(9.22m) Be, 0°, P, R
			6							
			10							
			5							(10.39m) J, 65°, P, R
			11							(11.00m) XWS, 5°, 20 mm.t
					END OF BOREHOLE AT 11.37 m					
			4							
			12							
			3							
			13							
			2							
			14							
			1							

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BOREHOLE LOG

Client: DESIGNINC SYDNEY PTY LTD
Project: PROPOSED REDEVELOPMENT OF ULTIMO PUBLIC SCHOOL
Location: ULTIMO PUBLIC SCHOOL, QUARRY ROAD, ULTIMO, NSW

Job No.: 30361SB **Method:** SPIRAL AUGER **R.L. Surface:** ~16 m
Date: 11/4/17 TO 12/4/17 **Datum:** AHD
Plant Type: JK205 **Logged/Checked By:** M.S./D.B.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
										FILL: Silty sand, fine to medium grained, brown, with sandstone cobbles and igneous and ironstone gravel.	M			
						8	8		-	SANDSTONE: fine to medium grained, light grey.	SW	M - H		HIGH 'TC' BIT RESISTANCE
										REFER TO CORED BOREHOLE LOG				
							7	9						
							6	10						
							5	11						
							4	12						
							3	13						

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Job No.: 30361SB **Core Size:** NMLC **R.L. Surface:** ~16 m
Date: 11/4/17 TO 12/4/17 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** M.S./D.B.

Water Loss Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX I _s (50)	DEFECT DETAILS	
									DEFECT SPACING (mm)	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating.
								EL-0.03 VL-0.1 L-0.3 M-1 H-3 VH-10 EH	500 300 100 50 30 10	Specific General
		8	8		START CORING AT 8.02m					
					SANDSTONE: fine to medium grained, light grey mottled red and yellow brown, with quartz inclusions.	SW	H			
					as above, but light grey, with dark brown laminae.					
			7	9						(8.99m) XWS, 5°, 20 mm.t
					as above, but light grey and brown.					(9.24m) XWS, 0°, 20 mm.t
			6	10						
					as above, but light grey, with dark brown laminae.					(10.18m) J, 50°, P, R
		5	11		END OF BOREHOLE AT 10.97 m					
			4	12						
			3	13						



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BOREHOLE LOG

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Job No.: 30361SB **Method:** SPIRAL AUGER **R.L. Surface:** ~15.9 m
Date: 11/4/17 **Datum:** AHD
Plant Type: JK205 **Logged/Checked By:** M.S./D.B.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
DRY ON COMPLETION OF AUGERING									-	SYNTHETIC SURFACE: 10mm.t CONCRETE: 120mm.t	D			6mm DIA. REINFORCEMENT, 80mm TOP COVER
					N > 7 4,7/ 50mm REFUSAL					FILL: Sandy gravel, fine to medium grained, sub angular igneous, dark grey.	M			
						15	1		-	FILL: Clayey sand, fine to coarse grained, dark brown, trace of fine to medium grained sandstone, igneous and concrete gravel. CONCRETE: 300mm.t	M			POTENTIAL VOID ABOUT 0.3m.t
					N = 14 6,7,7	14	2			FILL: Silty sand, fine to medium grained, dark brown, with fine to coarse grained ironstone and sandstone gravel, trace of brick fragments and clay.				APPEARS MODERATELY COMPACTED
						13	3							
					N = 20 4,7,13	12	4							
ON COMPLETION OF CORING					N = 17 7,9,8	11	5							
						10	6		-	SANDSTONE: fine to medium grained, yellow and red brown.	DW	M - H		HIGH 'TC' BIT RESISTANCE
					N=SPT 6/ 40mm REFUSAL					REFER TO CORED BOREHOLE LOG				
						9								

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									DEFECT SPACING (mm)	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating.
								EL-0.03 VL-0.1 L-0.3 M-1 H-3 VH-10 EH	500 300 100 50 30 10	Specific General
		10	6		START CORING AT 6.22m					
			9		SANDSTONE: fine to medium grained, red brown mottled light grey and yellow brown, bedded at 0-15°.	DW	H			
		8	8		as above, but light grey, with dark brown laminae, bedded at 0-20°.	FR				
		7	9							
					END OF BOREHOLE AT 9.08 m					
		6	10							
		5	11							
		4								

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EXPLANATORY NOTES – ENVIRONMENTAL LOGS

INTRODUCTION

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

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

DESCRIPTION AND CLASSIFICATION METHODS

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

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

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

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

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

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

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

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

DRILLING OR EXCAVATION METHODS

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

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

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

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

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

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

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

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

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

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

The test results are reported in the following form:

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

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

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

LOGS

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

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

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

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

GROUNDWATER

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

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

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

FILL

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

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

LABORATORY TESTING

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

SITE ANOMALIES

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

GRAPHIC LOG SYMBOLS FOR SOIL AND ROCKS

SOIL	ROCK	DEFECTS AND INCLUSIONS
 FILL	 CONGLOMERATE	 CLAY SEAM
 TOPSOIL	 SANDSTONE	 SHEARED OR CRUSHED SEAM
 CLAY (CL, CH)	 SHALE	 BRECCIATED OR SHATTERED SEAM/ZONE
 SILT (ML, MH)	 SILTSTONE, MUDSTONE, CLAYSTONE	 IRONSTONE GRAVEL
 SAND (SP, SW)	 LIMESTONE	 ORGANIC MATERIAL
 GRAVEL (GP, GW)	 PHYLLITE, SCHIST	
 SANDY CLAY (CL, CH)	 TUFF	
 SILTY CLAY (CL, CH)	 GRANITE, GABBRO	
 CLAYEY SAND (SC)	 DOLERITE, DIORITE	
 SILTY SAND (SM)	 BASALT, ANDESITE	
 GRAVELLY CLAY (CL, CH)	 QUARTZITE	
 CLAYEY GRAVEL (GC)		
 SANDY SILT (ML)		
 PEAT AND ORGANIC SOILS		
		OTHER MATERIALS
		 CONCRETE
		 BITUMINOUS CONCRETE, COAL
		 COLLUVIUM

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

Determine percentages of gravel and sand from grain size curve

Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows:

Less than 5% GW, GP, SW, SP
More than 5% GM, GC, SM, SC
Borderline cases requiring use of dual symbols

Use grain size curve in identifying the fractions as given under field identification

Plasticity index

Comparing soils at equal liquid limit

Toughness and dry strength increase with increasing plasticity index

A line

CH

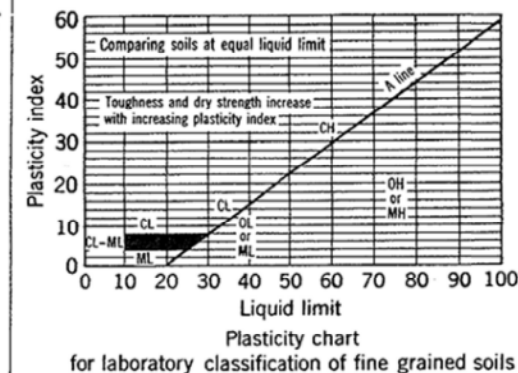
OH or MH

Liquid limit

Plasticity chart for laboratory classification of fine grained soils

Determine percentages of gravel and sand from grain size curve
Depending on percentage of fines (fraction smaller than 75 µm sieve size) coarse grained soils are classified as follows:
Less than 5% GW, GP, SW, SP
More than 5% GM, GC, SM, SC
Borderline cases requiring use of dual symbols

Use grain size curve in identifying the fractions as given under field identification



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

LOG SYMBOLS

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

LOG SYMBOLS CONTINUED

ROCK STRENGTH

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

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

ROCK STRENGTH

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

Appendix B: Laboratory Reports & COC Documents



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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

165375

Client:

Environmental Investigation Services

PO Box 976

North Ryde BC

NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:

E30361KH, Ultimo

No. of samples:

52 soils, 1 water

Date samples received / completed instructions received

18/04/17 / 18/04/17

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:

26/04/17 / 26/04/17

Date of Preliminary Report:

Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing

Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
General Manager



Envirolab Reference: 165375

Revision No: R 00

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-1 BH1	165375-2 BH1	165375-3 BH1	165375-6 BH2	165375-8 BH2
Depth	-----	0-0.1	1-1.2	1.5-1.95	0.4-0.5	1-1.2
Date Sampled		12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	105	98	92	102

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-9 BH2	165375-10 BH2	165375-11 BH3	165375-12 BH3	165375-14 BH3
Depth	-----	1.5-1.95	2.5-2.8	0.1-0.3	0.5-0.95	1.5-1.95
Date Sampled		13/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	93	96	114	99

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-17 BH3	165375-18 BH3	165375-19 BH4	165375-20 BH4	165375-22 BH4
Depth	-----	6-6.45	7.5-7.95	0.1-0.2	0.6-0.95	1.5-1.95
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	129	123	102	87	95

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-23 BH4	165375-24 BH5	165375-25 BH5	165375-27 BH5	165375-28 BH5
Depth	-----	3-3.45	0.2-0.4	0.5-0.95	1.5-1.95	3-3.45
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	98	100	99	116

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-29 BH6	165375-30 BH6	165375-32 BH6	165375-33 BH6	165375-35 BH6
Depth	-----	0.05-0.15	0.5-0.95	1.5-1.95	3-3.45	6-6.45
Date Sampled		11/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	113	102	102	100	90

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-36 BH7	165375-37 BH7	165375-39 BH7	165375-42 BH7	165375-44 BH8
Depth	-----	0.05-0.1	0.4-0.5	1.5-1.95	6-6.45	0.5-0.7
Date Sampled		11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	90	107	102	117

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-45 BH8	165375-47 BH8	165375-48 Dup 1	165375-49 Dup 2	165375-50 TB
Depth	-----	1.5-1.95	4.5-4.95	-	-	-
Date Sampled		11/04/2017	11/04/2017	10/04/2017	12/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	[NA]
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	[NA]
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	105	114	102	101	98

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	165375-51 TS
Depth	-----	-
Date Sampled		10/04/2017
Type of sample		Soil
Date extracted	-	19/04/2017
Date analysed	-	20/04/2017
Benzene	mg/kg	106%
Toluene	mg/kg	104%
Ethylbenzene	mg/kg	101%
m+p-xylene	mg/kg	101%
o-Xylene	mg/kg	99%
Surrogate aaa-Trifluorotoluene	%	94

svTRH (C10-C40) in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- - -----	165375-1 BH1 0-0.1 12/04/2017 Soil	165375-2 BH1 1-1.2 12/04/2017 Soil	165375-3 BH1 1.5-1.95 12/04/2017 Soil	165375-6 BH2 0.4-0.5 13/04/2017 Soil	165375-8 BH2 1-1.2 13/04/2017 Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	86	81	83	82	82

svTRH (C10-C40) in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- - -----	165375-9 BH2 1.5-1.95 13/04/2017 Soil	165375-10 BH2 2.5-2.8 13/04/2017 Soil	165375-11 BH3 0.1-0.3 10/04/2017 Soil	165375-12 BH3 0.5-0.95 10/04/2017 Soil	165375-14 BH3 1.5-1.95 10/04/2017 Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	130	110	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	110	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	61	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	61	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	100	200	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	160	200	<50
Surrogate o-Terphenyl	%	81	81	87	83	82

svTRH (C10-C40) in Soil Our Reference: Your Reference	UNITS ----- -	165375-17 BH3	165375-18 BH3	165375-19 BH4	165375-20 BH4	165375-22 BH4
Depth	-----	6-6.45	7.5-7.95	0.1-0.2	0.6-0.95	1.5-1.95
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	80	82	82	81

svTRH (C10-C40) in Soil Our Reference: Your Reference	UNITS ----- -	165375-23 BH4	165375-24 BH5	165375-25 BH5	165375-27 BH5	165375-28 BH5
Depth	-----	3-3.45	0.2-0.4	0.5-0.95	1.5-1.95	3-3.45
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	80	82	84	81

svTRH (C10-C40) in Soil	UNITS	165375-29	165375-30	165375-32	165375-33	165375-35
Our Reference:	-----	BH6	BH6	BH6	BH6	BH6
Your Reference	-					
Depth	-----	0.05-0.15	0.5-0.95	1.5-1.95	3-3.45	6-6.45
Date Sampled		11/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	370	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	300	<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	590	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	190	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	780	<50	<50	<50
Surrogate o-Terphenyl	%	80	90	82	82	83

svTRH (C10-C40) in Soil	UNITS	165375-36	165375-37	165375-39	165375-42	165375-44
Our Reference:	-----	BH7	BH7	BH7	BH7	BH8
Your Reference	-					
Depth	-----	0.05-0.1	0.4-0.5	1.5-1.95	6-6.45	0.5-0.7
Date Sampled		11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	100	<50	<50	<50
Surrogate o-Terphenyl	%	82	79	81	83	81

svTRH (C10-C40) in Soil					
Our Reference:	UNITS	165375-45	165375-47	165375-48	165375-49
Your Reference	-----	BH8	BH8	Dup 1	Dup 2
	-				
Depth	-----	1.5-1.95	4.5-4.95	-	-
Date Sampled		11/04/2017	11/04/2017	10/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	82	81	81	80

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-1 BH1	165375-2 BH1	165375-3 BH1	165375-6 BH2	165375-8 BH2
Depth	-----	0-0.1	1-1.2	1.5-1.95	0.4-0.5	1-1.2
Date Sampled		12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
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	0.6	0.2	<0.1	0.5	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	0.8	0.5	<0.1	0.7	0.6
Pyrene	mg/kg	0.7	0.6	<0.1	0.8	0.7
Benzo(a)anthracene	mg/kg	0.2	0.3	<0.1	0.3	0.3
Chrysene	mg/kg	0.3	0.3	<0.1	0.3	0.3
Benzo(b,j+k)fluoranthene	mg/kg	0.4	0.6	<0.2	0.5	0.4
Benzo(a)pyrene	mg/kg	0.1	0.3	<0.05	0.3	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	0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	3.3	3.2	<0.05	3.8	3.2
Surrogate p-Terphenyl-d14	%	102	98	98	100	104

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-9 BH2	165375-10 BH2	165375-11 BH3	165375-12 BH3	165375-14 BH3
Depth	-----	1.5-1.95	2.5-2.8	0.1-0.3	0.5-0.95	1.5-1.95
Date Sampled		13/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	0.2	<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	0.9	1.4	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.3	0.4	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	2.0	3.3	<0.1
Pyrene	mg/kg	<0.1	<0.1	2.2	3.5	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	1.0	1.7	<0.1
Chrysene	mg/kg	<0.1	<0.1	1.0	1.6	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	2	3.0	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.98	1.7	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.5	0.8	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.6	1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.4	2.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.4	2.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.4	2.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	12	19	<0.05
Surrogate p-Terphenyl-d14	%	100	97	101	100	104

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-17 BH3	165375-18 BH3	165375-19 BH4	165375-20 BH4	165375-22 BH4
Depth	-----	6-6.45	7.5-7.95	0.1-0.2	0.6-0.95	1.5-1.95
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Naphthalene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.7	<0.1	<0.1	0.4	0.2
Anthracene	mg/kg	0.2	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	0.7	0.2	0.2	0.9	0.3
Pyrene	mg/kg	0.7	0.2	0.3	1	0.3
Benzo(a)anthracene	mg/kg	0.3	0.1	0.1	0.5	0.1
Chrysene	mg/kg	0.3	0.1	0.1	0.5	0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	<0.2	0.3	0.9	0.2
Benzo(a)pyrene	mg/kg	0.2	0.07	0.1	0.51	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	<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	0.3	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5
Total +ve PAH's	mg/kg	3.8	0.64	1.3	5.5	1.4
Surrogate p-Terphenyl-d14	%	100	105	97	105	97

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-23 BH4	165375-24 BH5	165375-25 BH5	165375-27 BH5	165375-28 BH5
Depth	-----	3-3.45	0.2-0.4	0.5-0.95	1.5-1.95	3-3.45
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	0.2	0.2
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	0.3	0.1	1.2	1.3	1.6
Anthracene	mg/kg	<0.1	<0.1	0.4	0.3	0.4
Fluoranthene	mg/kg	0.5	0.6	1.8	2.6	2.1
Pyrene	mg/kg	0.5	0.7	1.9	2.6	2.1
Benzo(a)anthracene	mg/kg	0.2	0.4	0.9	1.3	1.2
Chrysene	mg/kg	0.2	0.4	0.9	1.2	1.0
Benzo(b,j+k)fluoranthene	mg/kg	0.3	0.7	1	2	2
Benzo(a)pyrene	mg/kg	0.2	0.4	0.83	1.1	1.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	0.4	0.4	0.4
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	0.5	0.5	0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.5	1.2	1.6	1.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.5	1.2	1.6	1.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.5	1.2	1.6	1.6
Total +ve PAH's	mg/kg	2.2	3.9	11	14	13
Surrogate p-Terphenyl-d14	%	126	103	103	101	102

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-29 BH6	165375-30 BH6	165375-32 BH6	165375-33 BH6	165375-35 BH6
Depth	-----	0.05-0.15	0.5-0.95	1.5-1.95	3-3.45	6-6.45
Date Sampled		11/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Naphthalene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	1.4	0.3	0.2	0.2
Acenaphthene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	6.3	1.2	0.9	0.8
Anthracene	mg/kg	<0.1	2.2	0.4	0.3	0.3
Fluoranthene	mg/kg	0.1	17	3.2	2.0	1.6
Pyrene	mg/kg	0.1	19	3.4	2.1	1.7
Benzo(a)anthracene	mg/kg	<0.1	9.8	1.7	1.1	0.9
Chrysene	mg/kg	<0.1	9.3	1.5	0.9	0.7
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	15	2.5	1	1
Benzo(a)pyrene	mg/kg	0.05	8.9	1.5	0.88	0.70
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	3.7	0.6	0.3	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	1	0.2	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	4.4	0.7	0.4	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	13	2.2	1.3	0.9
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	13	2.2	1.3	0.9
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	13	2.2	1.3	0.9
Total +ve PAH's	mg/kg	0.3	98	17	11	8.8
Surrogate p-Terphenyl-d14	%	97	99	101	103	107

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-36 BH7	165375-37 BH7	165375-39 BH7	165375-42 BH7	165375-44 BH8
Depth	-----	0.05-0.1	0.4-0.5	1.5-1.95	6-6.45	0.5-0.7
Date Sampled		11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
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	0.5	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	0.3	1.0	0.1
Pyrene	mg/kg	0.2	0.1	0.3	1.0	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.2	0.5	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.3	0.7	<0.2
Benzo(a)pyrene	mg/kg	0.06	<0.05	0.2	0.4	0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	<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	0.2	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5
Total +ve PAH's	mg/kg	0.4	0.1	1.6	5.1	0.3
Surrogate p-Terphenyl-d14	%	98	96	104	104	101

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	165375-45 BH8	165375-47 BH8	165375-48 Dup 1	165375-49 Dup 2
Depth	-----	1.5-1.95	4.5-4.95	-	-
Date Sampled		11/04/2017	11/04/2017	10/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.5	0.5	0.2	<0.1
Anthracene	mg/kg	0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.3	0.7	0.6	0.2
Pyrene	mg/kg	1.3	0.7	0.7	0.2
Benzo(a)anthracene	mg/kg	0.7	0.4	0.4	<0.1
Chrysene	mg/kg	0.6	0.3	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	1	0.5	0.7	<0.2
Benzo(a)pyrene	mg/kg	0.51	0.3	0.4	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.3	0.1	0.2	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.7	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.7	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.7	<0.5	0.5	<0.5
Total +ve PAH's	mg/kg	6.7	3.7	3.8	0.4
Surrogate p-Terphenyl-d14	%	104	101	105	100

Organochlorine Pesticides in soil	UNITS	165375-1	165375-8	165375-11	165375-20	165375-24
Our Reference:	-----	BH1	BH2	BH3	BH4	BH5
Your Reference	-					
Depth	-----	0-0.1	1-1.2	0.1-0.3	0.6-0.95	0.2-0.4
Date Sampled		12/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
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	%	99	96	92	95	95

Organochlorine Pesticides in soil				
Our Reference:	UNITS	165375-29	165375-37	165375-45
Your Reference	-----	BH6	BH7	BH8
	-			
Depth	-----	0.05-0.15	0.4-0.5	1.5-1.95
Date Sampled		11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	99

Organophosphorus Pesticides	UNITS	165375-1	165375-8	165375-11	165375-20	165375-24
Our Reference:	-----	BH1	BH2	BH3	BH4	BH5
Your Reference	-					
Depth	-----	0-0.1	1-1.2	0.1-0.3	0.6-0.95	0.2-0.4
Date Sampled		12/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
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	%	99	96	92	95	95

Organophosphorus Pesticides	UNITS	165375-29	165375-37	165375-45
Our Reference:	-----	BH6	BH7	BH8
Your Reference	-			
Depth	-----	0.05-0.15	0.4-0.5	1.5-1.95
Date Sampled		11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	99

PCBs in Soil Our Reference: Your Reference	UNITS ----- -	165375-1 BH1	165375-8 BH2	165375-11 BH3	165375-20 BH4	165375-24 BH5
Depth	-----	0-0.1	1-1.2	0.1-0.3	0.6-0.95	0.2-0.4
Date Sampled		12/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
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	%	99	96	92	95	95

PCBs in Soil Our Reference: Your Reference	UNITS ----- -	165375-29 BH6	165375-37 BH7	165375-45 BH8
Depth	-----	0.05-0.15	0.4-0.5	1.5-1.95
Date Sampled		11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	97	96	99

Acid Extractable metals in soil	UNITS	165375-1	165375-2	165375-3	165375-6	165375-8
Our Reference:	-----	BH1	BH1	BH1	BH2	BH2
Your Reference	-					
Depth	-----	0-0.1	1-1.2	1.5-1.95	0.4-0.5	1-1.2
Date Sampled		12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	<4	5	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	18	5	18	15
Copper	mg/kg	43	57	4	41	55
Lead	mg/kg	33	59	20	18	19
Mercury	mg/kg	<0.1	0.3	<0.1	0.1	0.1
Nickel	mg/kg	11	16	<1	74	110
Zinc	mg/kg	48	65	3	100	94

Acid Extractable metals in soil	UNITS	165375-9	165375-10	165375-11	165375-12	165375-14
Our Reference:	-----	BH2	BH2	BH3	BH3	BH3
Your Reference	-					
Depth	-----	1.5-1.95	2.5-2.8	0.1-0.3	0.5-0.95	1.5-1.95
Date Sampled		13/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	5	4	5	5	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	14	15	14	10
Copper	mg/kg	8	13	48	58	78
Lead	mg/kg	19	13	110	110	290
Mercury	mg/kg	0.2	<0.1	0.5	0.6	0.3
Nickel	mg/kg	1	5	8	6	3
Zinc	mg/kg	17	44	130	110	120

Acid Extractable metals in soil						
Our Reference:	UNITS	165375-17	165375-18	165375-19	165375-20	165375-22
Your Reference	-----	BH3	BH3	BH4	BH4	BH4
	-					
Depth	-----	6-6.45	7.5-7.95	0.1-0.2	0.6-0.95	1.5-1.95
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	6	<4	<4	4	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	9	6	18	16
Copper	mg/kg	24	4	5	26	42
Lead	mg/kg	99	27	15	89	53
Mercury	mg/kg	0.4	0.2	<0.1	0.4	0.4
Nickel	mg/kg	6	1	2	11	21
Zinc	mg/kg	50	39	18	92	41

Acid Extractable metals in soil						
Our Reference:	UNITS	165375-23	165375-24	165375-25	165375-27	165375-28
Your Reference	-----	BH4	BH5	BH5	BH5	BH5
	-					
Depth	-----	3-3.45	0.2-0.4	0.5-0.95	1.5-1.95	3-3.45
Date Sampled		10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	<4	<4	<4	5	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	14	20	17	19
Copper	mg/kg	20	27	27	110	49
Lead	mg/kg	89	42	36	170	80
Mercury	mg/kg	0.3	0.2	0.1	1.5	0.4
Nickel	mg/kg	13	8	24	14	17
Zinc	mg/kg	59	39	43	100	50

Acid Extractable metals in soil						
Our Reference:	UNITS	165375-29	165375-30	165375-32	165375-33	165375-35
Your Reference	-----	BH6	BH6	BH6	BH6	BH6
	-					
Depth	-----	0.05-0.15	0.5-0.95	1.5-1.95	3-3.45	6-6.45
Date Sampled		11/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	<4	11	9	7	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	12	13	12	13
Copper	mg/kg	220	64	46	110	13
Lead	mg/kg	10	130	310	400	61
Mercury	mg/kg	1.5	0.4	1.8	2.1	0.3
Nickel	mg/kg	6	10	13	5	5
Zinc	mg/kg	43	160	420	200	28

Acid Extractable metals in soil						
Our Reference:	UNITS	165375-36	165375-37	165375-39	165375-42	165375-44
Your Reference	-----	BH7	BH7	BH7	BH7	BH8
	-					
Depth	-----	0.05-0.1	0.4-0.5	1.5-1.95	6-6.45	0.5-0.7
Date Sampled		11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	<4	<4	5	5	26
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	26	9	15	20
Copper	mg/kg	150	21	13	22	10
Lead	mg/kg	10	14	89	98	32
Mercury	mg/kg	0.1	<0.1	0.2	0.6	0.3
Nickel	mg/kg	6	10	4	7	4
Zinc	mg/kg	41	51	60	120	54

Acid Extractable metals in soil						
Our Reference:	UNITS	165375-45	165375-47	165375-48	165375-49	165375-54
Your Reference	-----	BH8	BH8	Dup 1	Dup 2	BH3 -
	-					[TRIPLICATE]
Depth	-----	1.5-1.95	4.5-4.95	-	-	6-6.45
Date Sampled		11/04/2017	11/04/2017	10/04/2017	12/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Arsenic	mg/kg	5	6	4	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	16	14	3	18
Copper	mg/kg	19	34	18	190	29
Lead	mg/kg	110	90	38	9	120
Mercury	mg/kg	2.4	0.4	0.1	<0.1	0.5
Nickel	mg/kg	2	9	8	6	5
Zinc	mg/kg	25	54	20	42	60

Acid Extractable metals in soil		
Our Reference:	UNITS	165375-55
Your Reference	-----	BH6 -
	-	[TRIPLICATE]
Depth	-----	0.05-0.15
Date Sampled		11/04/2017
Type of sample		Soil
Date prepared	-	19/04/2017
Date analysed	-	19/04/2017
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	3
Copper	mg/kg	180
Lead	mg/kg	9
Mercury	mg/kg	2.6
Nickel	mg/kg	6
Zinc	mg/kg	42

Moisture Our Reference: Your Reference	UNITS ----- -	165375-1 BH1	165375-2 BH1	165375-3 BH1	165375-6 BH2	165375-8 BH2
Depth Date Sampled Type of sample	----- ----- -----	0-0.1 12/04/2017 Soil	1-1.2 12/04/2017 Soil	1.5-1.95 12/04/2017 Soil	0.4-0.5 13/04/2017 Soil	1-1.2 13/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	9.0	9.0	14	9.6	8.3

Moisture Our Reference: Your Reference	UNITS ----- -	165375-9 BH2	165375-10 BH2	165375-11 BH3	165375-12 BH3	165375-14 BH3
Depth Date Sampled Type of sample	----- ----- -----	1.5-1.95 13/04/2017 Soil	2.5-2.8 13/04/2017 Soil	0.1-0.3 10/04/2017 Soil	0.5-0.95 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	12	12	8.2	10	9.9

Moisture Our Reference: Your Reference	UNITS ----- -	165375-17 BH3	165375-18 BH3	165375-19 BH4	165375-20 BH4	165375-22 BH4
Depth Date Sampled Type of sample	----- ----- -----	6-6.45 10/04/2017 Soil	7.5-7.95 10/04/2017 Soil	0.1-0.2 10/04/2017 Soil	0.6-0.95 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	9.3	15	9.7	8.2	7.0

Moisture Our Reference: Your Reference	UNITS ----- -	165375-23 BH4	165375-24 BH5	165375-25 BH5	165375-27 BH5	165375-28 BH5
Depth Date Sampled Type of sample	----- ----- -----	3-3.45 10/04/2017 Soil	0.2-0.4 10/04/2017 Soil	0.5-0.95 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil	3-3.45 10/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	8.0	15	12	8.5	6.7

Moisture Our Reference: Your Reference	UNITS ----- -	165375-29 BH6	165375-30 BH6	165375-32 BH6	165375-33 BH6	165375-35 BH6
Depth Date Sampled Type of sample	----- ----- -----	0.05-0.15 11/04/2017 Soil	0.5-0.95 12/04/2017 Soil	1.5-1.95 12/04/2017 Soil	3-3.45 12/04/2017 Soil	6-6.45 12/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	7.5	11	9.0	5.8	5.5

Moisture Our Reference: Your Reference	UNITS ----- -	165375-36 BH7	165375-37 BH7	165375-39 BH7	165375-42 BH7	165375-44 BH8
Depth Date Sampled Type of sample	----- ----- -----	0.05-0.1 11/04/2017 Soil	0.4-0.5 11/04/2017 Soil	1.5-1.95 11/04/2017 Soil	6-6.45 11/04/2017 Soil	0.5-0.7 11/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	6.7	14	4.2	6.7	7.5

Moisture Our Reference: Your Reference	UNITS ----- -	165375-45 BH8	165375-47 BH8	165375-48 Dup 1	165375-49 Dup 2
Depth Date Sampled Type of sample	----- ----- -----	1.5-1.95 11/04/2017 Soil	4.5-4.95 11/04/2017 Soil	- 10/04/2017 Soil	- 12/04/2017 Soil
Date prepared	-	19/04/2017	19/04/2017	19/04/2017	19/04/2017
Date analysed	-	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Moisture	%	8.5	7.2	7.2	7.3

Asbestos ID - soils Our Reference: Your Reference	UNITS ----- -	165375-1 BH1	165375-2 BH1	165375-3 BH1	165375-6 BH2	165375-8 BH2
Depth Date Sampled Type of sample	----- ----- -----	0-0.1 12/04/2017 Soil	1-1.2 12/04/2017 Soil	1.5-1.95 12/04/2017 Soil	0.4-0.5 13/04/2017 Soil	1-1.2 13/04/2017 Soil
Date analysed	-	24/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Sample mass tested	g	Approx. 45g	Approx. 20g	Approx. 35g	Approx. 30g	Approx. 55g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Beige 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: Your Reference	UNITS ----- -	165375-9 BH2	165375-11 BH3	165375-12 BH3	165375-14 BH3	165375-19 BH4
Depth Date Sampled Type of sample	----- ----- -----	1.5-1.95 13/04/2017 Soil	0.1-0.3 10/04/2017 Soil	0.5-0.95 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil	0.1-0.2 10/04/2017 Soil
Date analysed	-	24/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Sample mass tested	g	Approx. 25g	Approx. 40g	Approx. 75g	Approx. 50g	Approx. 40g
Sample Description	-	Red coarse- grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Beige 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: Your Reference	UNITS ----- -	165375-20 BH4	165375-22 BH4	165375-23 BH4	165375-24 BH5	165375-27 BH5
Depth Date Sampled Type of sample	----- ----- -----	0.6-0.95 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil	3-3.45 10/04/2017 Soil	0.2-0.4 10/04/2017 Soil	1.5-1.95 10/04/2017 Soil
Date analysed	-	24/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Sample mass tested	g	Approx. 70g	Approx. 60g	Approx. 40g	Approx. 35g	Approx. 60g
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: Your Reference	UNITS ----- -	165375-28 BH5	165375-29 BH6	165375-30 BH6	165375-33 BH6	165375-36 BH7
Depth Date Sampled Type of sample	----- ----- -----	3-3.45 10/04/2017 Soil	0.05-0.15 11/04/2017 Soil	0.5-0.95 12/04/2017 Soil	3-3.45 12/04/2017 Soil	0.05-0.1 11/04/2017 Soil
Date analysed	-	24/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Sample mass tested	g	Approx. 35g	Approx. 45g	Approx. 55g	Approx. 55g	Approx. 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference:	UNITS	165375-37	165375-39	165375-44	165375-45	165375-47
Your Reference	-----	BH7	BH7	BH8	BH8	BH8
	-					
Depth	-----	0.4-0.5	1.5-1.95	0.5-0.7	1.5-1.95	4.5-4.95
Date Sampled		11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Sample mass tested	g	Approx. 40g	Approx. 30g	Approx. 75g	Approx. 50g	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 Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

BTEX in Water Our Reference: Your Reference	UNITS ----- -	165375-52 FR
Depth Date Sampled Type of sample	----- -	- 12/04/2017 Water
Date extracted	-	19/04/2017
Date analysed	-	19/04/2017
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	101
Surrogate toluene-d8	%	94
Surrogate 4-BFB	%	99

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
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. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
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-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-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-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
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.

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

Client Reference: E30361KH, Ultimo

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base Duplicate %RPD		
Date extracted	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	165375-1	<25 <25	LCS-1	95%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	165375-1	<25 <25	LCS-1	95%
Benzene	mg/kg	0.2	Org-016	<0.2	165375-1	<0.2 <0.2	LCS-1	81%
Toluene	mg/kg	0.5	Org-016	<0.5	165375-1	<0.5 <0.5	LCS-1	90%
Ethylbenzene	mg/kg	1	Org-016	<1	165375-1	<1 <1	LCS-1	102%
m+p-xylene	mg/kg	2	Org-016	<2	165375-1	<2 <2	LCS-1	102%
o-Xylene	mg/kg	1	Org-016	<1	165375-1	<1 <1	LCS-1	102%
naphthalene	mg/kg	1	Org-014	<1	165375-1	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	112	165375-1	100 109 RPD: 9	LCS-1	108%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base Duplicate %RPD		
Date extracted	-			18/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	165375-1	<50 <50	LCS-1	98%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	165375-1	<100 <100	LCS-1	93%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	165375-1	<100 <100	LCS-1	106%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	165375-1	<50 <50	LCS-1	98%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	165375-1	<100 <100	LCS-1	93%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	165375-1	<100 <100	LCS-1	106%
Surrogate o-Terphenyl	%		Org-003	85	165375-1	86 84 RPD: 2	LCS-1	96%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base Duplicate %RPD		
Date extracted	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	LCS-1	101%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	LCS-1	98%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	165375-1	0.6 0.5 RPD: 18	LCS-1	104%
Anthracene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	165375-1	0.8 0.7 RPD: 13	LCS-1	112%
Pyrene	mg/kg	0.1	Org-012	<0.1	165375-1	0.7 0.6 RPD: 15	LCS-1	112%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	165375-1	0.2 0.2 RPD: 0	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	165375-1	0.3 0.5 RPD: 50	LCS-1	100%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	165375-1	0.4 0.4 RPD: 0	[NR]	[NR]

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base Duplicate %RPD		
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	165375-1	0.1 0.1 RPD: 0	LCS-1	91%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	165375-1	0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	165375-1	0.1 0.1 RPD: 0	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	101	165375-1	102 104 RPD: 2	LCS-1	108%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base Duplicate %RPD		
Date extracted	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
HCB	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	96%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	103%
Heptachlor	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	102%
delta-BHC	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	94%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	104%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	121%
Dieldrin	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	108%
Endrin	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	101%
pp-DDD	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	106%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	LCS-1	73%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	99	165375-1	99 97 RPD: 2	LCS-1	124%

Client Reference: E30361KH, Ultimo

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base Duplicate %RPD		
Date extracted	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	85%
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	83%
Dimethoate	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	91%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	98%
Malathion	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	75%
Parathion	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	112%
Ronnel	mg/kg	0.1	Org-008	<0.1	165375-1	<0.1 <0.1	LCS-1	84%
Surrogate TCMX	%		Org-008	99	165375-1	99 97 RPD: 2	LCS-1	97%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base Duplicate %RPD		
Date extracted	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	165375-1	0.1 0.1 RPD: 0	LCS-1	114%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	165375-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	99	165375-1	99 97 RPD: 2	LCS-1	97%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base Duplicate %RPD		
Date prepared	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Date analysed	-			19/04/2017	165375-1	19/04/2017 19/04/2017	LCS-1	19/04/2017
Arsenic	mg/kg	4	Metals-020	<4	165375-1	<4 <4	LCS-1	124%
Cadmium	mg/kg	0.4	Metals-020	<0.4	165375-1	<0.4 <0.4	LCS-1	106%
Chromium	mg/kg	1	Metals-020	<1	165375-1	13 14 RPD: 7	LCS-1	113%
Copper	mg/kg	1	Metals-020	<1	165375-1	43 51 RPD: 17	LCS-1	116%
Lead	mg/kg	1	Metals-020	<1	165375-1	33 33 RPD: 0	LCS-1	110%
Mercury	mg/kg	0.1	Metals-021	<0.1	165375-1	<0.1 <0.1	LCS-1	121%
Nickel	mg/kg	1	Metals-020	<1	165375-1	11 10 RPD: 10	LCS-1	105%
Zinc	mg/kg	1	Metals-020	<1	165375-1	48 48 RPD: 0	LCS-1	104%
QUALITY CONTROL BTEX in Water	UNITS	PQL	METHOD	Blank				
Date extracted	-			19/04/2017				
Date analysed	-			19/04/2017				
Benzene	µg/L	1	Org-016	<1				
Toluene	µg/L	1	Org-016	<1				
Ethylbenzene	µg/L	1	Org-016	<1				
m+p-xylene	µg/L	2	Org-016	<2				
o-xylene	µg/L	1	Org-016	<1				
Surrogate Dibromofluoromethane	%		Org-016	102				
Surrogate toluene-d8	%		Org-016	95				
Surrogate 4-BFB	%		Org-016	95				
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	165375-17		19/04/2017 19/04/2017		LCS-2	19/04/2017	
Date analysed	-	165375-17		19/04/2017 19/04/2017		LCS-2	19/04/2017	
TRHC ₆ - C ₉	mg/kg	165375-17		<25 <25		LCS-2	101%	
TRHC ₆ - C ₁₀	mg/kg	165375-17		<25 <25		LCS-2	101%	
Benzene	mg/kg	165375-17		<0.2 <0.2		LCS-2	93%	
Toluene	mg/kg	165375-17		<0.5 <0.5		LCS-2	103%	
Ethylbenzene	mg/kg	165375-17		<1 <1		LCS-2	102%	
m+p-xylene	mg/kg	165375-17		<2 <2		LCS-2	103%	
o-Xylene	mg/kg	165375-17		<1 <1		LCS-2	103%	
naphthalene	mg/kg	165375-17		<1 <1		[NR]	[NR]	
Surrogate aaa- Trifluorotoluene	%	165375-17		129 120 RPD: 7		LCS-2	106%	

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QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-17	19/04/2017 19/04/2017	LCS-2	18/04/2017
Date analysed	-	165375-17	19/04/2017 19/04/2017	LCS-2	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	165375-17	<50 <50	LCS-2	104%
TRHC ₁₅ - C ₂₈	mg/kg	165375-17	<100 <100	LCS-2	99%
TRHC ₂₉ - C ₃₆	mg/kg	165375-17	<100 <100	LCS-2	91%
TRH>C ₁₀ -C ₁₆	mg/kg	165375-17	<50 <50	LCS-2	104%
TRH>C ₁₆ -C ₃₄	mg/kg	165375-17	<100 <100	LCS-2	99%
TRH>C ₃₄ -C ₄₀	mg/kg	165375-17	<100 <100	LCS-2	91%
Surrogate o-Terphenyl	%	165375-17	81 83 RPD: 2	LCS-2	94%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-17	19/04/2017 19/04/2017	LCS-2	19/04/2017
Date analysed	-	165375-17	19/04/2017 19/04/2017	LCS-2	19/04/2017
Naphthalene	mg/kg	165375-17	0.2 0.2 RPD: 0	LCS-2	101%
Acenaphthylene	mg/kg	165375-17	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	165375-17	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	165375-17	<0.1 <0.1	LCS-2	97%
Phenanthrene	mg/kg	165375-17	0.7 0.9 RPD: 25	LCS-2	105%
Anthracene	mg/kg	165375-17	0.2 0.2 RPD: 0	[NR]	[NR]
Fluoranthene	mg/kg	165375-17	0.7 0.8 RPD: 13	LCS-2	110%
Pyrene	mg/kg	165375-17	0.7 0.8 RPD: 13	LCS-2	108%
Benzo(a)anthracene	mg/kg	165375-17	0.3 0.4 RPD: 29	[NR]	[NR]
Chrysene	mg/kg	165375-17	0.3 0.4 RPD: 29	LCS-2	101%
Benzo(b,j,k)fluoranthene	mg/kg	165375-17	0.4 0.5 RPD: 22	[NR]	[NR]
Benzo(a)pyrene	mg/kg	165375-17	0.2 0.3 RPD: 40	LCS-2	89%
Indeno(1,2,3-c,d)pyrene	mg/kg	165375-17	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	165375-17	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	165375-17	0.1 0.1 RPD: 0	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	165375-17	100 98 RPD: 2	LCS-2	102%

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QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	165375-17	19/04/2017 19/04/2017	LCS-2	19/04/2017
Date analysed	-	165375-17	19/04/2017 19/04/2017	LCS-2	19/04/2017
Arsenic	mg/kg	165375-17	6 8 RPD: 29	LCS-2	122%
Cadmium	mg/kg	165375-17	<0.4 <0.4	LCS-2	101%
Chromium	mg/kg	165375-17	18 20 RPD: 11	LCS-2	111%
Copper	mg/kg	165375-17	24 30 RPD: 22	LCS-2	112%
Lead	mg/kg	165375-17	99 92 RPD: 7	LCS-2	106%
Mercury	mg/kg	165375-17	0.4 0.4 RPD: 0	LCS-2	117%
Nickel	mg/kg	165375-17	6 11 RPD: 59	LCS-2	102%
Zinc	mg/kg	165375-17	50 47 RPD: 6	LCS-2	101%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
TRHC ₆ - C ₉	mg/kg	165375-29	<25 <25	165375-8	99%
TRHC ₆ - C ₁₀	mg/kg	165375-29	<25 <25	165375-8	99%
Benzene	mg/kg	165375-29	<0.2 <0.2	165375-8	89%
Toluene	mg/kg	165375-29	<0.5 <0.5	165375-8	99%
Ethylbenzene	mg/kg	165375-29	<1 <1	165375-8	101%
m+p-xylene	mg/kg	165375-29	<2 <2	165375-8	102%
o-Xylene	mg/kg	165375-29	<1 <1	165375-8	102%
naphthalene	mg/kg	165375-29	<1 <1	[NR]	[NR]
Surrogate aaa- Trifluorotoluene	%	165375-29	113 102 RPD: 10	165375-8	111%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	165375-29	<50 <50	165375-8	96%
TRHC ₁₅ - C ₂₈	mg/kg	165375-29	<100 <100	165375-8	99%
TRHC ₂₉ - C ₃₆	mg/kg	165375-29	<100 <100	165375-8	92%
TRH>C ₁₀ -C ₁₆	mg/kg	165375-29	<50 <50	165375-8	96%
TRH>C ₁₆ -C ₃₄	mg/kg	165375-29	<100 <100	165375-8	99%
TRH>C ₃₄ -C ₄₀	mg/kg	165375-29	<100 <100	165375-8	92%
Surrogate o-Terphenyl	%	165375-29	80 82 RPD: 2	165375-8	82%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Naphthalene	mg/kg	165375-29	<0.1 <0.1	165375-8	97%
Acenaphthylene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	165375-29	<0.1 <0.1	165375-8	91%
Phenanthrene	mg/kg	165375-29	<0.1 0.1	165375-8	88%
Anthracene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	165375-29	0.1 0.2 RPD: 67	165375-8	96%
Pyrene	mg/kg	165375-29	0.1 0.2 RPD: 67	165375-8	100%
Benzo(a)anthracene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	165375-29	<0.1 0.1	165375-8	91%
Benzo(b,j+k)fluoranthene	mg/kg	165375-29	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	165375-29	0.05 0.07 RPD: 33	165375-8	89%
Indeno(1,2,3-c,d)pyrene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	165375-29	97 99 RPD: 2	165375-8	100%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
HCB	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	165375-29	<0.1 <0.1	165375-8	95%
gamma-BHC	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	165375-29	<0.1 <0.1	165375-8	99%
Heptachlor	mg/kg	165375-29	<0.1 <0.1	165375-8	100%
delta-BHC	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	165375-29	<0.1 <0.1	165375-8	90%
Heptachlor Epoxide	mg/kg	165375-29	<0.1 <0.1	165375-8	99%
gamma-Chlordane	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	165375-29	<0.1 <0.1	165375-8	116%
Dieldrin	mg/kg	165375-29	<0.1 <0.1	165375-8	104%
Endrin	mg/kg	165375-29	<0.1 <0.1	165375-8	98%
pp-DDD	mg/kg	165375-29	<0.1 <0.1	165375-8	104%
Endosulfan II	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	165375-29	<0.1 <0.1	165375-8	77%

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QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%	165375-29	97 99 RPD: 2	165375-8	119%
QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Azinphos-methyl (Guthion)	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	165375-29	<0.1 <0.1	165375-8	86%
Chlorpyrifos-methyl	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Diazinon	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Dichlorvos	mg/kg	165375-29	<0.1 <0.1	165375-8	90%
Dimethoate	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	165375-29	<0.1 <0.1	165375-8	97%
Fenitrothion	mg/kg	165375-29	<0.1 <0.1	165375-8	96%
Malathion	mg/kg	165375-29	<0.1 <0.1	165375-8	78%
Parathion	mg/kg	165375-29	<0.1 <0.1	165375-8	109%
Ronnel	mg/kg	165375-29	<0.1 <0.1	165375-8	83%
Surrogate TCMX	%	165375-29	97 99 RPD: 2	165375-8	95%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Aroclor 1016	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	165375-29	<0.1 <0.1	165375-8	115%
Aroclor 1260	mg/kg	165375-29	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%	165375-29	97 99 RPD: 2	165375-8	95%

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QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Date analysed	-	165375-29	19/04/2017 19/04/2017	165375-8	19/04/2017
Arsenic	mg/kg	165375-29	<4 <4	165375-8	90%
Cadmium	mg/kg	165375-29	<0.4 <0.4	165375-8	79%
Chromium	mg/kg	165375-29	3 4 RPD: 29	165375-8	91%
Copper	mg/kg	165375-29	220 140 RPD: 44	165375-8	107%
Lead	mg/kg	165375-29	10 10 RPD: 0	165375-8	70%
Mercury	mg/kg	165375-29	1.5 <0.1	165375-8	116%
Nickel	mg/kg	165375-29	6 6 RPD: 0	165375-8	77%
Zinc	mg/kg	165375-29	43 45 RPD: 5	165375-8	71%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Date analysed	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
TRHC ₆ - C ₉	mg/kg	165375-47	<25 <25	165375-30	101%
TRHC ₆ - C ₁₀	mg/kg	165375-47	<25 <25	165375-30	101%
Benzene	mg/kg	165375-47	<0.2 <0.2	165375-30	92%
Toluene	mg/kg	165375-47	<0.5 <0.5	165375-30	101%
Ethylbenzene	mg/kg	165375-47	<1 <1	165375-30	104%
m+p-xylene	mg/kg	165375-47	<2 <2	165375-30	105%
o-Xylene	mg/kg	165375-47	<1 <1	165375-30	104%
naphthalene	mg/kg	165375-47	<1 <1	[NR]	[NR]
Surrogate aaa- Trifluorotoluene	%	165375-47	114 108 RPD: 5	165375-30	104%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Date analysed	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	165375-47	<50 <50	165375-30	114%
TRHC ₁₅ - C ₂₈	mg/kg	165375-47	<100 <100	165375-30	110%
TRHC ₂₉ - C ₃₆	mg/kg	165375-47	<100 <100	165375-30	102%
TRH>C ₁₀ -C ₁₆	mg/kg	165375-47	<50 <50	165375-30	114%
TRH>C ₁₆ -C ₃₄	mg/kg	165375-47	<100 <100	165375-30	110%
TRH>C ₃₄ -C ₄₀	mg/kg	165375-47	<100 <100	165375-30	102%
Surrogate o-Terphenyl	%	165375-47	81 80 RPD: 1	165375-30	90%

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QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Date analysed	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Naphthalene	mg/kg	165375-47	<0.1 <0.1	165375-30	100%
Acenaphthylene	mg/kg	165375-47	<0.1 0.1	[NR]	[NR]
Acenaphthene	mg/kg	165375-47	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	165375-47	<0.1 <0.1	165375-30	95%
Phenanthrene	mg/kg	165375-47	0.5 0.6 RPD: 18	165375-30	70%
Anthracene	mg/kg	165375-47	0.1 0.2 RPD: 67	[NR]	[NR]
Fluoranthene	mg/kg	165375-47	0.7 0.9 RPD: 25	165375-30	72%
Pyrene	mg/kg	165375-47	0.7 1 RPD: 35	165375-30	73%
Benzo(a)anthracene	mg/kg	165375-47	0.4 0.5 RPD: 22	[NR]	[NR]
Chrysene	mg/kg	165375-47	0.3 0.4 RPD: 29	165375-30	82%
Benzo(b,j,k)fluoranthene	mg/kg	165375-47	0.5 0.7 RPD: 33	[NR]	[NR]
Benzo(a)pyrene	mg/kg	165375-47	0.3 0.4 RPD: 29	165375-30	120%
Indeno(1,2,3-c,d)pyrene	mg/kg	165375-47	0.1 0.1 RPD: 0	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	165375-47	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	165375-47	0.1 0.2 RPD: 67	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	165375-47	101 108 RPD: 7	165375-30	104%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Date analysed	-	165375-47	19/04/2017 19/04/2017	165375-30	19/04/2017
Arsenic	mg/kg	165375-47	6 6 RPD: 0	165375-30	99%
Cadmium	mg/kg	165375-47	<0.4 <0.4	165375-30	96%
Chromium	mg/kg	165375-47	16 22 RPD: 32	165375-30	116%
Copper	mg/kg	165375-47	34 47 RPD: 32	165375-30	101%
Lead	mg/kg	165375-47	90 80 RPD: 12	165375-30	71%
Mercury	mg/kg	165375-47	0.4 0.4 RPD: 0	165375-30	99%
Nickel	mg/kg	165375-47	9 13 RPD: 36	165375-30	99%
Zinc	mg/kg	165375-47	54 50 RPD: 8	165375-30	73%

QUALITY CONTROL BTEX in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-W1	19/04/2017
Date analysed	-	[NT]	[NT]	LCS-W1	19/04/2017
Benzene	µg/L	[NT]	[NT]	LCS-W1	96%
Toluene	µg/L	[NT]	[NT]	LCS-W1	96%
Ethylbenzene	µg/L	[NT]	[NT]	LCS-W1	99%
m+p-xylene	µg/L	[NT]	[NT]	LCS-W1	99%
o-xylene	µg/L	[NT]	[NT]	LCS-W1	99%
Surrogate Dibromofluoromethane	%	[NT]	[NT]	LCS-W1	99%
Surrogate toluene-d8	%	[NT]	[NT]	LCS-W1	100%
Surrogate 4-BFB	%	[NT]	[NT]	LCS-W1	101%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 165375-17 for Ni. Therefore a triplicate result has been issued as laboratory sample number 165375-54.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 165375-29 for Hg. Therefore a triplicate result has been issued as laboratory sample number 165375-55.

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 165375-3, 6, 9, 24 were sub-sampled from jars provided by the client.

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

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

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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.

SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	Todd Hore

Sample Login Details	
Your Reference	E30361KH, Ultimo
Envirolab Reference	165375
Date Sample Received	18/04/2017
Date Instructions Received	18/04/2017
Date Results Expected to be Reported	26/04/2017

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	52 soils, 1 water
Turnaround Time Requested	Standard
Temperature on receipt (°C)	20.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

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

Please direct any queries to:

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

Sample and Testing Details on following page

[illegible]

Sample Id	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils	BTEX in Water	On Hold
BH7-1.5-1.95	✓	✓	✓				✓	✓		
BH7-3-3.45										✓
BH7-4.5-4.95										✓
BH7-6-6.45	✓	✓	✓				✓			
BH8-0.15-0.3										✓
BH8-0.5-0.7	✓	✓	✓				✓	✓		
BH8-1.5-1.95	✓	✓	✓	✓	✓	✓	✓	✓		
BH8-3-3.45										✓
BH8-4.5-4.95	✓	✓	✓				✓	✓		
Dup 1	✓	✓	✓				✓			
Dup 2	✓	✓	✓				✓			
TB	✓									
TS	✓									
FR									✓	
BH4-0.2-0.4										✓

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job Number: E30361KH Date Results Required: STANDARD Page: 1 / 2		FROM: ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore	
---	--	--	--	---	--



Location: Ultimo							Sample Preserved in Esky on Ice									
Sampler: MS							Tests Required									
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos	
12/04/2017	1	BH1	0-0.1	G, A	0	Fill				X						
12/04/2017	2	BH1	1-1.2	G, A	0	Fill		X								
12/04/2017	3	BH1	1.5-1.95	G, A	0	Natural		X								
12/04/2017	4	BH1	2.8-3	G, A	0	Natural										
12/04/2017	5	BH2	0.1-0.2	G, A	0	Fill										
13/04/2017	6	BH2	0.4-0.5	G, A	0	Fill		X								
13/04/2017	7	BH2	0.5-0.95	G, A	0	Fill										
13/04/2017	8	BH2	1-1.2	G, A	0	Fill				X						
13/04/2017	9	BH2	1.5-1.95	G, A	0	Fill		X								
13/04/2017	10	BH2	2.5-2.8	G, A	0	Natural	X									
10/04/2017	11	BH3	0.1-0.3	G, A	0	Fill				X						
10/04/2017	12	BH3	0.5-0.95	G, A	0	Fill		X								
10/04/2017	13	BH3	1-1.2	G, A	0	Fill										
10/04/2017	14	BH3	1.5-1.95	G, A	0	Fill		X								
10/04/2017	15	BH3	3-3.2	G, A	0	Fill										
10/04/2017	16	BH3	4.5-4.95	G, A	0	Fill										
10/04/2017	17	BH3	6-6.45	G, A	0	Fill	X									
10/04/2017	18	BH3	7.5-7.95	G, A	0	Natural	X									
10/04/2017	19	BH4	0.1-0.2	G, A	0	Fill		X								
10/04/2017	20	BH4	0.6-0.95	G, A	0	Fill				X						
10/04/2017	21	BH4	1.2-1.4	G, A	0	Fill										
10/04/2017	22	BH4	1.5-1.95	G, A	0	Fill		X								
10/04/2017	23	BH4	3-3.45	G, A	0	Fill		X								
10/04/2017	24	BH5	0.2-0.4	G, A	0	Fill				X						
10/04/2017	25	BH5	0.5-0.95	G, A	0	Fill	X									
10/04/2017	26	BH5	1-1.2	G, A	0	Fill										

Remarks (comments/detection limits required): 		Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	
Relinquished By: 	Date: 18/4/17	Time: 12.30pm	Received By: AZ
		Date: 18/04/17	Date: 14/10

Envirolab Services
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9910 6200
 Job No: 165375
 Date Received: 18/4
 Time Received: 14:10
 Received by: AZ
 Temp: Cool/Ambient
 Coding: Ice/Idpack
 Security: Intact/Broken/None

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job E30361KH Number: Date Results STANDARD Required: Page: 2 / 2	FROM: ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore
---	---	---

Location: Ultimo	Sample Preserved in Esky on Ice
Sampler: MS	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos				
10/04/2017	27	BH5	1.5-1.95	G, A	0	Fill		X											
10/04/2017	28	BH5	3-3.45	G, A	0	Fill		X											
11/04/2017	29	BH6	0.05-0.15	G, A	0	Fill				X									
12/04/2017	30	BH6	0.5-0.95	G, A	0	Fill		X											
12/04/2017	31	BH6	1-1.2	G, A	0	Fill													
12/04/2017	32	BH6	1.5-1.95	G, A	0	Fill	X												
12/04/2017	33	BH6	3-3.45	G, A	0	Fill		X											
12/04/2017	34	BH6	4.5-4.95	G, A	0	Fill													
12/04/2017	35	BH6	6-6.45	G, A	0	Fill	X												
11/04/2017	36	BH7	0.05-0.1	G, A	0	Fill		X											
11/04/2017	37	BH7	0.4-0.5	G, A	0	Fill				X									
11/04/2017	38	BH7	1-1.2	G, A	0	Fill													
11/04/2017	39	BH7	1.5-1.95	G, A	0	Fill		X											
11/04/2017	40	BH7	3-3.45	G, A	0	Fill													
11/04/2017	41	BH7	4.5-4.95	G, A	0	Fill													
11/04/2017	42	BH7	6-6.45	G, A	0	Fill	X												
11/04/2017	43	BH8	0.15-0.3	G, A	0	Fill													
11/04/2017	44	BH8	0.5-0.7	G, A	0	Fill		X											
11/04/2017	45	BH8	1.5-1.95	G, A	0	Fill				X									
11/04/2017	46	BH8	3-3.45	G, A	0	Fill													
11/04/2017	47	BH8	4.5-4.95	G, A	0	Fill		X											
10/04/2017	48	Dup 1			0	Soil	X												
12/04/2017	49	Dup 2			0	Soil	X												
13/04/2017	50	Dup 3			0	Soil	X												
11/04/2017	51	TB			-	Soil								X					
10/04/2017	52	TS			-	Soil								X					
12/04/2017	53	FR			-	Water								X					

Remarks (comments/detection limits required):
 Please forward Dup 3 as Inter-lab duplicate - Combo #3 is TRH/BTEX/PAH/HM(8)

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

Relinquished By: <i>the</i>	Date: 18/4/17	Time: 12.30pm	Received By: AZ	Date: 18/4/17
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Extra: ~~53~~ BH4 0.2-0.4 A. 100417
 53
 AZ 18/4.



12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

165375-A

Client:

Environmental Investigation Services

PO Box 976

North Ryde BC

NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:

E30361KH, Ultimo

No. of samples:

Additional Testing on 11 Soils

Date samples received / completed instructions received

18/04/17 / 27/04/17

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:

4/05/17 / 3/05/17

Date of Preliminary Report:

Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing

Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
General Manager

Envirolab Reference: 165375-A

Revision No: R 00



Misc Inorg - Soil				
Our Reference:	UNITS	165375-A-8	165375-A-29	165375-A-32
Your Reference	-----	BH2	BH6	BH6
	-			
Depth	-----	1-1.2	0.05-0.15	1.5-1.95
Date Sampled		13/04/2017	11/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
pH 1:5 soil:water	pH Units	9.7	9.3	8.3

Clay 50-120g Our Reference: Your Reference	UNITS ----- -	165375-A-8 BH2	165375-A-29 BH6	165375-A-32 BH6
Depth	-----	1-1.2	0.05-0.15	1.5-1.95
Date Sampled		13/04/2017	11/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	01/05/2017	01/05/2017	01/05/2017
Clay in soils <2µm	% (w/w)	6	4	15

CEC				
Our Reference:	UNITS	165375-A-8	165375-A-29	165375-A-32
Your Reference	-----	BH2	BH6	BH6
	-			
Depth	-----	1-1.2	0.05-0.15	1.5-1.95
Date Sampled		13/04/2017	11/04/2017	12/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
Exchangeable Ca	meq/100g	120	34	8.7
Exchangeable K	meq/100g	0.5	0.4	0.2
Exchangeable Mg	meq/100g	0.81	0.39	0.84
Exchangeable Na	meq/100g	0.17	<0.1	<0.1
Cation Exchange Capacity	meq/100g	123	34	9.8

Metals in TCLP USEPA 1311						
Our Reference:	UNITS	165375-A-6	165375-A-8	165375-A-11	165375-A-12	165375-A-14
Your Reference	-----	BH2	BH2	BH3	BH3	BH3
	-					
Depth	-----	0.4-0.5	1-1.2	0.1-0.3	0.5-0.95	1.5-1.95
Date Sampled		13/04/2017	13/04/2017	10/04/2017	10/04/2017	10/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
pH of soil for fluid# determ.	pH units	10.6	10.0	9.5	9.3	8.8
pH of soil TCLP (after HCl)	pH units	2.0	2.0	1.7	1.8	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	6.5	5.3	5.1	5.1	5.0
Lead in TCLP	mg/L	[NA]	[NA]	0.1	0.2	0.08
Nickel in TCLP	mg/L	<0.02	0.08	[NA]	[NA]	[NA]

Metals in TCLP USEPA 1311						
Our Reference:	UNITS	165375-A-27	165375-A-30	165375-A-32	165375-A-33	165375-A-45
Your Reference	-----	BH5	BH6	BH6	BH6	BH8
	-					
Depth	-----	1.5-1.95	0.5-0.95	1.5-1.95	3-3.45	1.5-1.95
Date Sampled		10/04/2017	12/04/2017	12/04/2017	12/04/2017	11/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
pH of soil for fluid# determ.	pH units	9.0	9.3	9.0	9.2	8.9
pH of soil TCLP (after HCl)	pH units	1.7	1.8	1.9	1.8	1.6
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.1	5.0	5.0	5.3	4.9
Lead in TCLP	mg/L	0.3	0.08	0.32	0.54	<0.03

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2µm reported.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITYCONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank				
Date prepared	-			02/05/2017				
Date analysed	-			02/05/2017				
pH 1:5 soil:water	pH Units		Inorg-001	[NT]				
QUALITYCONTROL Clay 50-120g	UNITS	PQL	METHOD	Blank				
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Clay in soils <2µm	% (w/w)		AS1289.3.6 .3	[NT]				
QUALITYCONTROL CEC	UNITS	PQL	METHOD	Blank				
Date prepared	-			02/05/2017				
Date analysed	-			02/05/2017				
Exchangeable Ca	meq/100 g	0.1	Metals-009	<0.1				
Exchangeable K	meq/100 g	0.1	Metals-009	<0.1				
Exchangeable Mg	meq/100 g	0.1	Metals-009	<0.1				
Exchangeable Na	meq/100 g	0.1	Metals-009	<0.1				
QUALITYCONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base Duplicate %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			28/04/2017	165375-A-6	28/04/2017 28/04/2017	LCS-W1	28/04/2017
Date analysed	-			28/04/2017	165375-A-6	28/04/2017 28/04/2017	LCS-W1	28/04/2017
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	LCS-W1	97%
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	165375-A-6	<0.02 0.02	LCS-W1	99%
QUALITYCONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	165375-A-32		28/04/2017 28/04/2017		165375-A-8	28/04/2017	
Date analysed	-	165375-A-32		28/04/2017 28/04/2017		165375-A-8	28/04/2017	
Lead in TCLP	mg/L	165375-A-32		0.32 0.32 RPD: 0		165375-A-8	93%	
Nickel in TCLP	mg/L	[NT]		[NT]		165375-A-8	95%	

Client Reference: E30361KH, Ultimo

QUALITYCONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	165375-A-8	02/05/2017 02/05/2017	LCS-1	02/05/2017
Date analysed	-	165375-A-8	02/05/2017 02/05/2017	LCS-1	02/05/2017
pH 1:5 soil:water	pH Units	165375-A-8	9.7 9.6 RPD: 1	LCS-1	102%
QUALITYCONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	LCS-1	02/05/2017
Date analysed	-	[NT]	[NT]	LCS-1	02/05/2017
Exchangeable Ca	meq/100 g	[NT]	[NT]	LCS-1	98%
Exchangeable K	meq/100 g	[NT]	[NT]	LCS-1	111%
Exchangeable Mg	meq/100 g	[NT]	[NT]	LCS-1	98%
Exchangeable Na	meq/100 g	[NT]	[NT]	LCS-1	107%

Report Comments:

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

INS: Insufficient sample for this test

NR: Test not required

<: Less than

PQL: Practical Quantitation Limit

RPD: Relative Percent Difference

>: Greater than

NT: Not tested

NA: Test not required

LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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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.

Aileen Hie

From: Todd Hore <THore@jkgroup.net.au>
Sent: Thursday, 27 April 2017 9:33 AM
To: Aileen Hie
Subject: 165375

Aileen,

could you please schedule the following additional analyses for the EIS project E30361KH, Ultimo:

- 165375-6 – TCLP nickel
- 165375-8 – TCLP nickel, pH, CEC, Clay Content
- 165375-11 – TCLP lead
- 165375-12 – TCLP lead
- 165375-14 – TCLP lead
- 165375-27 – TCLP lead
- 165375-29 – pH, CEC, Clay Content
- 165375-30 – TCLP lead
- 165375-32 – TCLP lead, pH, CEC, Clay Content
- 165375-33 – TCLP lead
- 165375-45 – TCLP lead

EnviroLab Ref: 165375A
Due: 4/5/17
Std TIA.

Please undertake the above on a standard turnaround.

Regards,

Todd Hore
Associate | Environmental Engineer

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ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS AND SCIENTISTS
PO Box 976, North Ryde BC NSW 1670
115 Wicks Rd, Macquarie Park NSW 2113

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envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

165375-B

Client:

Environmental Investigation Services

PO Box 976

North Ryde BC

NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:

E30361KH, Ultimo

No. of samples:

Additional Testing on 7 Soils

Date samples received / completed instructions received

18/04/17 / 23/05/17

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:

25/05/17 / 25/05/17

Date of Preliminary Report:

Not Issued

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Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
General Manager

Envirolab Reference: 165375-B

Revision No: R 00



PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- - -----	165375-B-11 BH3 0.1-0.3 10/04/2017 Soil	165375-B-12 BH3 0.5-0.95 10/04/2017 Soil	165375-B-25 BH5 0.5-0.95 10/04/2017 Soil	165375-B-27 BH5 1.5-1.95 10/04/2017 Soil	165375-B-28 BH5 3-3.45 10/04/2017 Soil
pH of soil for fluid# determ.	pH units	8.4	8.9	8.4	7.9	7.9
pH of soil TCLP (after HCl)	pH units	1.6	1.6	1.5	1.5	1.5
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.2	5.2	5.0	5.3	4.9
Date extracted	-	24/05/2017	24/05/2017	24/05/2017	24/05/2017	24/05/2017
Date analysed	-	25/05/2017	25/05/2017	25/05/2017	25/05/2017	25/05/2017
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(b)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	110	116	107	128	116

PAHs in TCLP (USEPA 1311)			
Our Reference:	UNITS	165375-B-30	165375-B-33
Your Reference	-----	BH6	BH6
	-		
Depth	-----	0.5-0.95	3-3.45
Date Sampled		12/04/2017	12/04/2017
Type of sample		Soil	Soil
pH of soil for fluid# determ.	pH units	8.5	8.7
pH of soil TCLP (after HCl)	pH units	1.5	1.5
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.0	5.0
Date extracted	-	24/05/2017	24/05/2017
Date analysed	-	25/05/2017	25/05/2017
Naphthalene in TCLP	mg/L	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001
Benzo(b)fluoranthene in TCLP	mg/L	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	113	108

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in TCLP (USEPA 1311)						Base II Duplicate II %RPD		
Date extracted	-			24/05/2017	[NT]	[NT]	LCS-W1	24/05/2017
Date analysed	-			25/05/2017	[NT]	[NT]	LCS-W1	25/05/2017
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	70%
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	74%
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	78%
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	90%
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	89%
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	77%
Benzo(b,j,k)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	70%
Indeno(1,2,3-c,d)pyrene -TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	85	[NT]	[NT]	LCS-W1	113%

Report Comments:

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

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

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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.

Aileen Hie

From: Todd Hore <THore@jkgroup.net.au>
Sent: Tuesday, 23 May 2017 11:55 AM
To: Aileen Hie
Subject: 165375

Aileen,

could you please schedule the following additional analyses for the EIS project E30361KH, Ultimo:

- 165375-11 – TCLP PAHs
- 165375-12 – TCLP PAHs
- 165375-25 – TCLP PAHs
- 165375-27 – TCLP PAHs
- 165375-28 – TCLP PAHs
- 165375-30 – TCLP PAHs
- 165375-32 – TCLP PAHs
- 165375-33 – TCLP PAHs

Please undertake the above on a **48HR** turnaround.

Regards,

Todd Hore
Associate | Environmental Engineer

EnviroLab Ref: 165375-B

Due: 25/5/17

2 day + 1A.

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F: +612 9888 5001
THore@jkgroup.net.au
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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS AND SCIENTISTS

PO Box 976, North Ryde BC NSW 1670

115 Wicks Rd, Macquarie Park NSW 2113

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email: lab@mpl.com.au
envirolab.com.au

Envirolab Services (WA) Pty Ltd trading as
MPL Laboratories | ABN 53 140 099 207

CERTIFICATE OF ANALYSIS 194747

Client:

Environmental Investigation Services

115 Wicks Road
MACQUARIE PARK
NSW 2113

Attention: T Hore

Sample log in details:

Your Reference:	<u>E30361KH</u>
No. of samples:	1 Sample
Date/Time samples received:	20/04/2017 / 09:40
Date completed instructions received:	20/04/2017
Location:	

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 pages of this report for any comments relating to the results.

Report Details:

Date results requested by:	27/04/17
Date of Preliminary Report:	Not issued
Issue Date:	27/04/17

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Tests not covered by NATA are denoted with *.

Results Approved By:

Joshua Lim
Operations Manager

MPL Reference: 194747
Revision No: R 00



svTRH(C10-C36) in soil		
Our Reference:	UNITS	194747-1
Your Reference	-----	Dup 3
Date Sampled	-----	13/04/2017
Type of sample		Soil
Date extracted	-	21/04/2017
Date analysed	-	22/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100
TRH>C ₁₀ - C ₁₆	mg/kg	<50
TRH>C ₁₀ -C ₁₆ less N (F2)	mg/kg	<50
TRH>C ₁₆ - C ₃₄	mg/kg	<100
TRH>C ₃₄ - C ₄₀	mg/kg	<100
Surrogate o-Terphenyl	%	95

vTRH(C6-C10)/MBTEXN in soil		
Our Reference:	UNITS	194747-1
Your Reference	-----	Dup 3
Date Sampled	-----	13/04/2017
Type of sample		Soil
Date extracted	-	21/04/2017
Date analysed	-	22/04/2017
TRHC ₆ - C ₉	mg/kg	<25
TRHC ₆ - C ₁₀	mg/kg	<25
TRHC ₆ -C ₁₀ less BTEX (F1)	mg/kg	<25
MTBE	mg/kg	<0.5
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	102

PAHs in Soil		
Our Reference:	UNITS	194747-1
Your Reference	-----	Dup 3
Date Sampled	-----	13/04/2017
Type of sample		Soil
Date extracted	-	21/04/2017
Date analysed	-	22/04/2017
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.3
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.6
Pyrene	mg/kg	0.7
Benzo(a)anthracene	mg/kg	0.2
Chrysene	mg/kg	0.3
Benzo(b,j,k)fluoranthene	mg/kg	0.4
Benzo(a)pyrene	mg/kg	0.26
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2
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
Total Positive PAHs	mg/kg	3.3
p-Terphenyl-D14	%	94

Acid Extractable metals in soil		
Our Reference:	UNITS	194747-1
Your Reference	-----	Dup 3
Date Sampled	-----	13/04/2017
Type of sample		Soil
Date digested	-	21/04/2017
Date analysed	-	24/04/2017
Arsenic	mg/kg	<2
Cadmium	mg/kg	<0.4
Chromium	mg/kg	17
Copper	mg/kg	55
Lead	mg/kg	15
Mercury	mg/kg	0.1
Nickel	mg/kg	120
Zinc	mg/kg	90

Moisture		
Our Reference:	UNITS	194747-1
Your Reference	-----	Dup 3
Date Sampled	-----	13/04/2017
Type of sample		Soil
Date prepared	-	21/04/2017
Date analysed	-	24/04/2017
Moisture	%	8.2

Method ID	Methodology Summary
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-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
ORG-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
ORG-012	For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
ORG-004	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
METALS-020	Metals in soil and water by ICP-OES.
METALS-021	Determination of Mercury by Cold Vapour AAS.
INORG-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C36) in soil						Base II Duplicate II %RPD		
Date extracted	-			21/04/2017	[NT]	[NT]	LCS-1	21/04/2017
Date analysed	-			22/04/2017	[NT]	[NT]	LCS-1	22/04/2017
TRHC ₁₀ - C ₁₄	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	94%
TRHC ₁₅ - C ₂₈	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	110%
TRHC ₂₉ - C ₃₆	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	107%
TRH>C ₁₀ - C ₁₆	mg/kg	50	ORG-003	<50	[NT]	[NT]	LCS-1	105%
TRH>C ₁₆ - C ₃₄	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	109%
TRH>C ₃₄ - C ₄₀	mg/kg	100	ORG-003	<100	[NT]	[NT]	LCS-1	107%
Surrogate o-Terphenyl	%		ORG-003	93	[NT]	[NT]	LCS-1	102%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/MBTEXN in soil						Base II Duplicate II %RPD		
Date extracted	-			21/04/2017	[NT]	[NT]	LCS-1	21/04/2017
Date analysed	-			22/04/2017	[NT]	[NT]	LCS-1	22/04/2017
TRHC ₆ - C ₉	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	99%
TRHC ₆ - C ₁₀	mg/kg	25	ORG-016	<25	[NT]	[NT]	LCS-1	99%
MTBE	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	LCS-1	96%
Toluene	mg/kg	0.5	ORG-016	<0.5	[NT]	[NT]	LCS-1	104%
Ethylbenzene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	96%
m+p-xylene	mg/kg	2	ORG-016	<2	[NT]	[NT]	LCS-1	99%
o-xylene	mg/kg	1	ORG-016	<1	[NT]	[NT]	LCS-1	96%
Naphthalene	mg/kg	1	ORG-016	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		ORG-016	87	[NT]	[NT]	LCS-1	96%

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			21/04/2017	[NT]	[NT]	LCS-1	21/04/2017
Date analysed	-			22/04/2017	[NT]	[NT]	LCS-1	22/04/2017
Naphthalene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	94%
Acenaphthylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	93%
Phenanthrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	93%
Anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	89%
Pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	89%
Benzo(a)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	LCS-1	121%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	ORG-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	ORG-012	<0.05	[NT]	[NT]	LCS-1	94%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	ORG-012	<0.1	[NT]	[NT]	[NR]	[NR]
p-Terphenyl-D ₁₄	%		ORG-012	82	[NT]	[NT]	LCS-1	88%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			21/04/2017	[NT]	[NT]	LCS-1	21/04/2017
Date analysed	-			24/04/2017	[NT]	[NT]	LCS-1	24/04/2017
Arsenic	mg/kg	2	METALS-020	<2	[NT]	[NT]	LCS-1	100%
Cadmium	mg/kg	0.4	METALS-020	<0.4	[NT]	[NT]	LCS-1	103%
Chromium	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	102%
Copper	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	109%
Lead	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	103%
Mercury	mg/kg	0.1	METALS-021	<0.1	[NT]	[NT]	LCS-1	114%
Nickel	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	104%
Zinc	mg/kg	1	METALS-020	<1	[NT]	[NT]	LCS-1	103%

QUALITY CONTROL	UNITS	PQL	METHOD	Blank
Moisture				
Date prepared	-			21/04/ 2017
Date analysed	-			24/04/ 2017
Moisture	%	0.1	INORG-008	<0.10

Report Comments:

Asbestos Signatories:

Asbestos was analysed by Approved Identifier: Not applicable for this job
Airborne fibres were analysed by Approved Counter: Not applicable for this job

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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.

SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	T Hore

Sample Login Details	
Your Reference	E30361KH
Envirolab Reference	194747
Date Sample Received	20/04/2017
Date Instructions Received	20/04/2017
Date Results Expected to be Reported	27/04/2017

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Sample
Turnaround Time Requested	Standard
Temperature on receipt (°C)	18.5
Cooling Method	Ice Pack
Sampling Date Provided	Yes

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

Please direct any queries to:

Joshua Lim	Meredith Conroy
Phone: 08 9317 2505	Phone: 08 9317 2505
Fax: 08 9317 4163	Fax: 08 9317 4163
Email: jlim@mpl.com.au	Email: mconroy@mpl.com.au

Sample and Testing Details on following page



Part of the Envirolab Group



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PO Box 4023 Myaree BC, Western Australia 6960
Tel: +61 8 9317 2505 / Fax: +61 8 9317 4163
email: laboratory@mpl.com.au
www.mpl.com.au
Envirolab Services (WA) Pty Ltd ABN 53 140 099 207

Sample Id	svTRH(C10-C36) in soil	vTRH(C6-C10)/MBTEXN in soil	PAHs in Soil	Acid Extractable metals in soil
Dup 3	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

165375

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job E30361KH Number: Date Results STANDARD Required: Page: 2/2		FROM: ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore	
---	--	---	--	---	--

Location: Ultimo		Sample Preserved in Esky on Ice													
Sampler: MS		Tests Required													
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 3a	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos
10/04/2017	27	BH5	1.5-1.95	G.A	0	Fill		X							
10/04/2017	28	BH5	3-3.45	G.A	0	Fill		X							
11/04/2017	29	BH6	0.05-0.15	G.A	0	Fill				X					
12/04/2017	30	BH6	0.5-0.95	G.A	0	Fill		X							
12/04/2017	31	BH6	1-1.2	G.A	0	Fill									
12/04/2017	32	BH6	1.5-1.95	G.A	0	Fill	X								
12/04/2017	33	BH6	3-3.45	G.A	0	Fill		X							
12/04/2017	34	BH6	4.5-4.95	G.A	0	Fill									
12/04/2017	35	BH6	6-6.45	G.A	0	Fill	X								
11/04/2017	36	BH7	0.05-0.1	G.A	0	Fill		X							
11/04/2017	37	BH7	0.4-0.5	G.A	0	Fill				X					
11/04/2017	38	BH7	1-1.2	G.A	0	Fill									
11/04/2017	39	BH7	1.5-1.95	G.A	0	Fill		X							
11/04/2017	40	BH7	3-3.45	G.A	0	Fill									
11/04/2017	41	BH7	4.5-4.95	G.A	0	Fill									
11/04/2017	42	BH7	6-6.45	G.A	0	Fill	X								
11/04/2017	43	BH8	0.15-0.3	G.A	0	Fill									
11/04/2017	44	BH8	0.5-0.7	G.A	0	Fill		X							
11/04/2017	45	BH8	1.5-1.95	G.A	0	Fill				X					
11/04/2017	46	BH8	3-3.45	G.A	0	Fill									
11/04/2017	47	BH8	4.5-4.95	G.A	0	Fill		X							
10/04/2017	48	Dup 1			0	Soil	X								
12/04/2017	49	Dup 2			0	Soil	X								
13/04/2017	50	Dup 3			0	Soil	X								
11/04/2017	51	TB			-	Soil								X	
10/04/2017	52	TS			-	Soil								X	
12/04/2017	53	FR			-	Water								X	

Empl	ENVIROLAB
Laboratories	
Job No. -	194747
Date Rec -	20-4
Time Rec -	940
Rec By -	ME
TAT Req -	SAME 1/2/3/ STD
Temp -	cool / ambient
Cooling -	ice / ice pack / None
Security Seal -	Yes / No

Remarks (comments/detection limits required):

Please forward Dup 3 as Inter-lab duplicate - Combo #3 is TRH/BTEX/PAH/HM(8)

Sample Containers:

G - 250mg Glass Jar

A - Ziplock Asbestos Bag

P - Plastic Bag

Relinquished By:

Date:

18/4/17

Time:

12.30pm

Received By:

AZ

Date:

18/4/17
14:10

Extra: BH4

53

0.2 to 0.4 A.

Relin. James - ELS 19/04 14:00 AZ/18/4

Appendix C: Report Explanatory Notes

STANDARD SAMPLING PROCEDURE (SSP)

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

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

Soil Sampling

- Prepare a borehole/test pit log or made a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the EIS job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-1993¹⁶.
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

Decontamination Procedures for Soil Sampling Equipment

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

¹⁶ Standards Australia, (1993), *Geotechnical Site Investigations*. (AS1726-1993)

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

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

Groundwater Sampling

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

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

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

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

Decontamination Procedures for Groundwater Sampling Equipment

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

QA/QC DEFINITIONS

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994¹⁷) methods and those described in *Environmental Sampling and Analysis, A Practical Guide*, (H. Keith 1991¹⁸).

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

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

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

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

Precision

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

Accuracy

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

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

Representativeness

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

¹⁷ US EPA, (1994), *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. (US EPA SW-846)

¹⁸ Keith., H, (1991), *Environmental Sampling and Analysis, A Practical Guide*.

Completeness

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

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

Comparability

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

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

Blanks

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

Matrix Spikes

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

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

Surrogate Spikes

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

Duplicates

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

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