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Analytical Report Number : 14-61767

Project / Site name: Lancaster Park

Your job number: 2540

Your order number: 2540

Report Issue Number: 1

Samples Analysed: 4 soil samples

Samples received on: 22/10/2014

Samples instructed on: 22/10/2014

Analysis completed by: 30/10/2014

Report issued on: 30/10/2014

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Thurstan Plummer
Organics Technical Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

Excel copies of reports are only valid when accompanied by this PDF certificate.

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Lab Sample Number				384064	384065	384066	384067	
Sample Reference				TP1	TP1	TP2	TP2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.00-1.00	1.30-1.70	0.00-0.70	1.40-1.80	
Date Sampled				20/10/2014	20/10/2014	20/10/2014	20/10/2014	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	24	19	9.5	12	
Total mass of sample received	kg	0.001	NONE	0.72	0.84	0.81	0.81	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile- Loose fibres	-	Chrysotile- Loose fibres	Chrysotile- Hard/cement type material	
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Detected	

General Inorganics

pH	pH Units	N/A	MCERTS	7.9	7.7	7.8	7.8	
Total Cyanide	mg/kg	1	MCERTS	3	< 1	< 1	4	
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	
Total Sulphate as SO ₄	mg/kg	100	ISO 17025	2800	1200	970	1400	
Water Soluble Sulphate (Soil Equivalent)	g/l	0.0025	MCERTS	0.14	0.11	0.12	0.35	
Water Soluble Sulphate as SO ₄ (2:1)	mg/kg	2.5	MCERTS	140	110	120	350	
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.072	0.056	0.059	0.18	
Sulphide	mg/kg	1	MCERTS	5.7	6.8	1.9	3.3	
Total Sulphur	mg/kg	100	NONE	1400	1300	710	720	
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.030	0.024	0.017	0.030	

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.1	8.6	4.9	14	
Acenaphthylene	mg/kg	0.1	MCERTS	0.21	< 0.10	< 0.10	2.6	
Acenaphthene	mg/kg	0.1	MCERTS	1.1	19	21	39	
Fluorene	mg/kg	0.1	MCERTS	0.64	9.8	14	30	
Phenanthrene	mg/kg	0.1	MCERTS	7.8	79	110	230	
Anthracene	mg/kg	0.1	MCERTS	1.7	18	28	53	
Fluoranthene	mg/kg	0.1	MCERTS	14	120	180	320	
Pyrene	mg/kg	0.1	MCERTS	12	94	150	280	
Benzo(a)anthracene	mg/kg	0.1	MCERTS	6.2	48	74	130	
Chrysene	mg/kg	0.05	MCERTS	6.7	47	74	130	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	8.2	62	91	160	
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	2.7	20	37	61	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	6.2	46	83	149	
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	3.0	21	34	59	
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.40	3.2	5.5	9.4	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.3	22	39	71	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	77.0	618	946	1730	
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	59	65	15	19	
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.7	0.5	0.8	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	0.4	0.4	0.5	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	23	16	42	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	370	180	77	120	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	1300	200	130	410	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	90	73	22	32	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	550	130	89	130	



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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Stone content

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
384064	TP1	None Supplied	0.00-1.00	Brown sandy topsoil with gravel.
384065	TP1	None Supplied	1.30-1.70	Brown sandy topsoil with gravel.
384066	TP2	None Supplied	0.00-0.70	Brown sandy topsoil with gravel.
384067	TP2	None Supplied	1.40-1.80	Brown sandy topsoil with gravel.

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Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 dphenylcarbazine followed by colorimetry.	In-house method	L080-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Thiocyanate in soil	Determination of thiocyanate in soil by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by spectrophotometer.	In-house method	L049-PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	ISO 17025
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.