

16 August, 2018

Neil Oliver
Inani Limited
TMS House
Cray Avenue
Orpington
Kent
BR5 3QB

By Email [REDACTED]

Dear Mr Oliver

CHURCH ALLOTMENTS, LITTLEHAMPTON SITE INVESTIGATION

Inani Limited are proposing develop an area of land located at Littlehampton, for residential development purposes.

An area adjacent to the Church has been assigned to remain as allotment usage within the proposed development plans. Idom Merebrook (Merebrook) were requested to come to site to test the area of topsoil in the allotment area to verify that it is chemically suitable for use.

Merebrook attended site on 31 July 2018 to supervise the excavation of eight machine-dug trial pits (MTP1 to MTP8) within the allotment area. A drawing showing the locations of the trial pits is appended to this report (ref: 18426h-304-001). Samples of topsoil and made ground to a maximum depth of 0.3 metres below ground level (m bgl) were collected from each trial pit location.

The eight samples were submitted to a UKAS/MCERTS accredited laboratory for a broad suite of contaminants. The results of the analysis are summarised in Table 1.

An initial screening exercise has been undertaken whereby contaminant concentrations recorded in soils have been assessed against *Suitable for Use Levels* (S4ULs) published in 2015 by LQM/CIEH¹. These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. In this report, S4ULs have been selected for allotment land use, assuming a soil organic matter of 1 %. For lead the DEFRA Category 4 Screening Level² has been used as this is based on updated toxicological data and a low risk to human health.

An additional set of phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth.

Table 1: Summary of Soils Chemical Analysis Results

CONTAMINANT	UNITS	MAX	MEAN	No of Tests	SCREENING LEVEL (SL)	No > SL*
HUMAN HEALTH RISK ASSESSMENT						
Asbestos in soil	-	Not-detected	-	6	Detected	0
pH	-	8	7.69	8	5 – 10	0

1 Nathanail, C. P., McCaffrey, C., Gillett, A. G., Ogden, R. C. and Nathanail, J. F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3100. All rights reserved. Includes August 2015 nickel update.

2 SP1010 *Development of Category 4 Screening Levels Main Report* (Dec 2013) and SP1010 *Policy Companion Document* (Mar 2014).

AN IDOM GROUP COMPANY

Idom Merebrook Ltd 1 Leonard Place, Wexham Road, Keston, Kent, BR2 6HQ

CONTAMINANT	UNITS	MAX	MEAN	No of Tests	SCREENING LEVEL (SL)	No > SL*
HUMAN HEALTH RISK ASSESSMENT						
Arsenic	mg.kg ⁻¹	18	13.95	8	43	0
Cadmium	mg.kg ⁻¹	0.7	0.26	8	1.9	0
Chromium (total)	mg.kg ⁻¹	29	21.50	8	18000	0
Hexavalent Chromium	mg.kg ⁻¹	< 4.0	-	8	1.8	0
Lead	mg.kg ⁻¹	230	111.88	8	80	5
Mercury	mg.kg ⁻¹	< 0.3	-	8	19	0
Nickel	mg.kg ⁻¹	20	17.25	8	53	0
Selenium	mg.kg ⁻¹	2.2	1.21	8	88	0
TPH Aliphatic >EC ₅ - EC ₆	mg.kg ⁻¹	< 0.001	-	8	1700	0
TPH Aliphatic >EC ₆ - EC ₈	mg.kg ⁻¹	< 0.001	-	8	5600	0
TPH Aliphatic >EC ₈ - EC ₁₀	mg.kg ⁻¹	< 0.001	-	8	770	0
TPH Aliphatic >EC ₁₀ - EC ₁₂	mg.kg ⁻¹	< 1.0	-	8	4400	0
TPH Aliphatic >EC ₁₂ - EC ₁₆	mg.kg ⁻¹	< 2.0	-	8	13000	0
TPH Aliphatic >EC ₁₆ - EC ₂₁	mg.kg ⁻¹	< 8.0	-	8	270000	0
TPH Aliphatic >EC ₂₁ - EC ₃₅	mg.kg ⁻¹	33	11.13	8	270000	0
TPH Aromatic >EC ₅ - EC ₇	mg.kg ⁻¹	< 0.001	-	8	27	0
TPH Aromatic >EC ₇ - EC ₈	mg.kg ⁻¹	< 0.001	-	8	51	0
TPH Aromatic >EC ₈ - EC ₁₀	mg.kg ⁻¹	< 0.001	-	8	21	0
TPH Aromatic >EC ₁₀ - EC ₁₂	mg.kg ⁻¹	< 1.0	-	8	31	0
TPH Aromatic >EC ₁₂ - EC ₁₆	mg.kg ⁻¹	< 2.0	-	8	57	0
TPH Aromatic >EC ₁₆ - EC ₂₁	mg.kg ⁻¹	94	27.75	8	110	0
TPH Aromatic >EC ₂₁ - EC ₃₅	mg.kg ⁻¹	330	97.00	8	820	0
Benzene	mg.kg ⁻¹	< 0.001	-	8	0.034	0
Toluene	mg.kg ⁻¹	< 0.001	-	8	51	0
Ethylbenzene	mg.kg ⁻¹	< 0.001	-	8	39	0
Xylene	mg.kg ⁻¹	< 0.002	-	8	67	0
Acenaphthene	mg.kg ⁻¹	< 0.05	-	8	85	0
Acenaphthylene	mg.kg ⁻¹	0.21	0.07	8	69	0
Anthracene	mg.kg ⁻¹	0.49	0.21	8	950	0
Benzo(a)anthracene	mg.kg ⁻¹	3.5	1.71	8	6.5	0
Benzo(a)pyrene	mg.kg ⁻¹	3.6	1.73	8	2.0	2
Benzo(b)fluoranthene	mg.kg ⁻¹	5.1	2.43	8	2.1	4
Benzo(ghi)perylene	mg.kg ⁻¹	2.6	1.16	8	470	0
Benzo(k)fluoranthene	mg.kg ⁻¹	1.6	0.84	8	75	0
Chrysene	mg.kg ⁻¹	3.0	1.45	8	9.4	0
Dibenz(ah)anthracene	mg.kg ⁻¹	0.58	0.18	8	0.27	1
Fluoranthene	mg.kg ⁻¹	4.8	2.56	8	130	0
Fluorene	mg.kg ⁻¹	< 0.05	-	8	67	0
Indeno(123-cd)pyrene	mg.kg ⁻¹	1.8	0.86	8	21	0
Naphthalene	mg.kg ⁻¹	< 0.05	-	8	10	0
Phenanthrene	mg.kg ⁻¹	1.7	0.91	8	38	0
Pyrene	mg.kg ⁻¹	4.1	2.19	8	270	0

CONTAMINANT	UNITS	MAX	MEAN	No of Tests	SCREENING LEVEL (SL)	No > SL*
HUMAN HEALTH RISK ASSESSMENT						
Phenol	mg.kg ⁻¹	< 1.0	-	8	42	0
PHYTOTOXICITY RISK ASSESSMENT						
	Units	Max	Mean	No of Test	Screening Level (SL)	No > SL
Copper	mg.kg ⁻¹	560	111.88	8	200	1
Nickel	mg.kg ⁻¹	20	17.25	8	110	0
Zinc	mg.kg ⁻¹	310	142.25	8	300	1

Several of the samples exceeded the screening levels for allotment use, both with regards to human health (lead and PAHs) and sustainable plant growth (copper and zinc). Soils are not therefore considered to be chemically suitable for the intended allotment use.

It is recommended that existing made ground is removed to 600 mm below finished levels and replaced with clean imported soils, which comply with the screening levels for allotment use. This thickness of clean cover is considered to sever the pathways, (including accidental ingestion, inhalation and absorption) between the contaminant source (residual made ground) and receptors (future site users).

I trust the above and attached is suitable for your current requirements. If you have any queries, please do not hesitate to contact me.

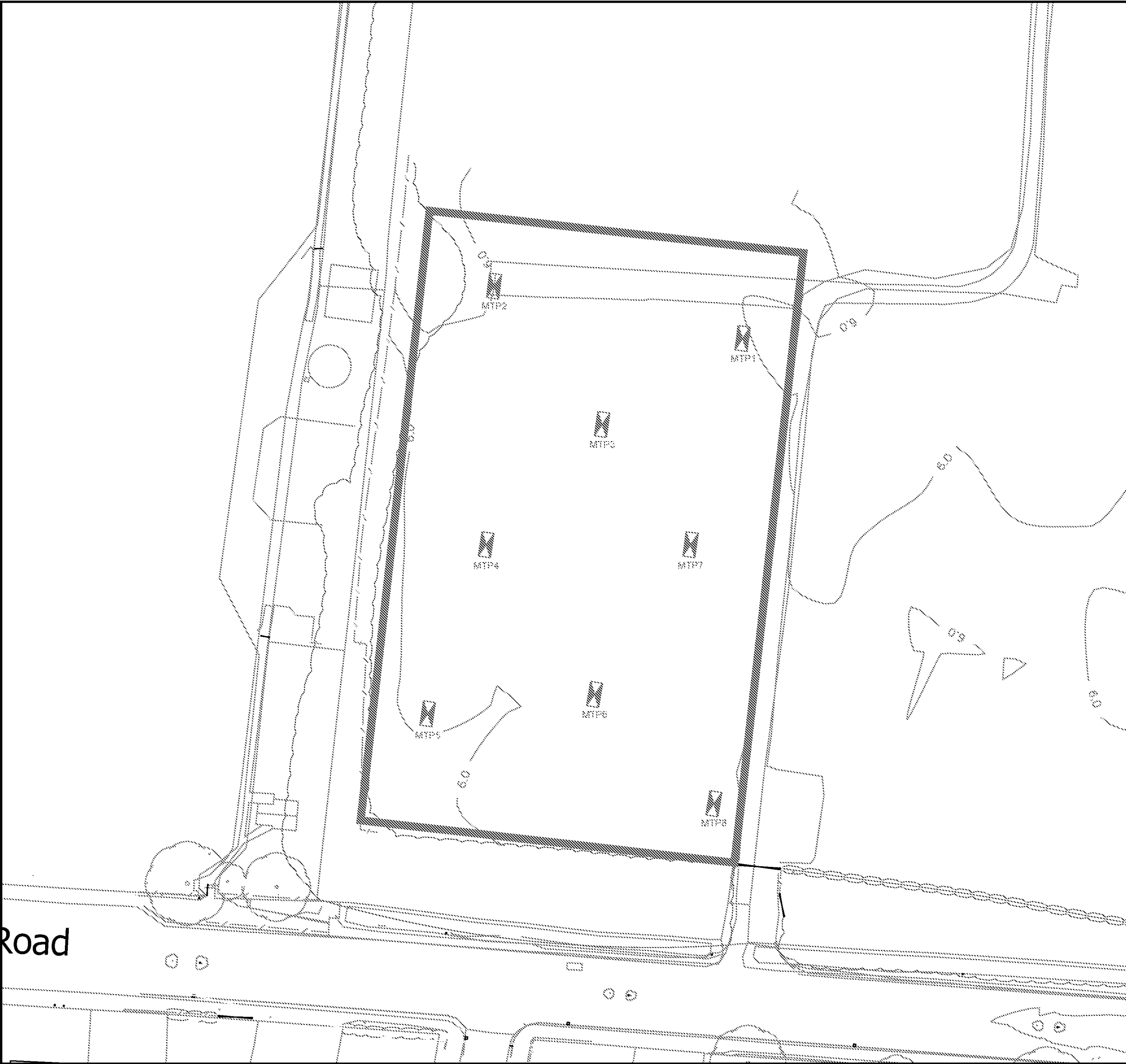
Yours sincerely



Jessica Smith
For Idom Merebrook Ltd

cc File

enc Drawing ref: 18426h-304-001
Chemical Laboratory Certificate ref: 18-95009-1



Legend

Site Boundary

Idom Trial Pit Locations with reference

First Issue	AUG 2018		-
	EMP	JSS	JSS
Issue Details	Dwn	Chd	App'd

Client/Project

Persimmon Homes
Church Allotments
Little Hampton

Dwg Title

Exploratory Hole Locations

Job No. 18426h	Dwg No. 18426h-304-001	Revision -
Scale N.T.S	Date AUG 2018	Frame Dimensions mm (A3) 400 x 280
Drawn EMP	Checked JSS	Approved JSS

London

Kent

Derbyshire

Cardiff

Manchester

Stirling

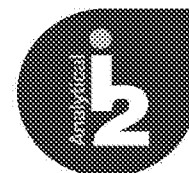
Birmingham

IDOM

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Merebrook
First Floor
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Westerham Road
Keston
BR2 6HQ



Environmental Science

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number : 18-95009

Project / Site name:	Church Allotments, Littlehampton	Samples received on:	03/08/2018
Your job number:	18426H	Samples instructed on:	03/08/2018
Your order number:	18-S2-FDO-LABS	Analysis completed by:	09/08/2018
Report Issue Number:	1	Report issued on:	09/08/2018
Samples Analysed:	8 soil samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

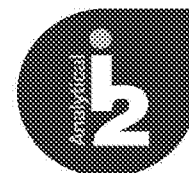
Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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



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Analytical Report Number: 18-95009

Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number	1014882	1014883	1014884	1014885	1014886
Sample Reference	MTP1	MTP3	MTP4	MTP4	MTP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.00-0.10	0.00-0.10	0.10-0.20	0.10-0.20
Date Sampled	31/07/2018	31/07/2018	31/07/2018	31/07/2018	31/07/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.2	7.4
Total mass of sample received	kg	0.001	NONE	1.0	0.99

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	7.8	7.4	7.8	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.031	0.016	0.021	0.011	0.012
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Organic Matter	%	0.1	MCERTS	4.7	5.2	7.9	3.3	4.0

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.68	0.93	< 0.05	1.1	0.94
Anthracene	mg/kg	0.05	MCERTS	0.12	0.21	< 0.05	0.23	0.19
Fluoranthene	mg/kg	0.05	MCERTS	1.6	2.4	0.49	3.3	2.2
Pyrene	mg/kg	0.05	MCERTS	1.4	2.0	0.45	2.8	1.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	1.4	0.32	2.0	1.4
Chrysene	mg/kg	0.05	MCERTS	1.0	1.3	0.32	1.5	1.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.5	1.7	0.54	2.5	2.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.69	0.79	0.14	1.0	0.69
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.2	1.3	0.37	1.9	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.60	0.63	< 0.05	0.91	0.78
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.20	< 0.05	0.25	0.22
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.79	0.81	< 0.05	1.2	1.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	10.7	13.7	2.63	18.8	14.4
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	13	9.6	14	14
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	18	18	20	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	28	23	30	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	77	59	150	92
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	16	14	18	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	120	73	89	120

Analytical Report Number: 18-95009

Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number				1014882	1014883	1014884	1014885	1014886
Sample Reference				MTP1	MTP3	MTP4	MTP4	MTP5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.00-0.10	0.00-0.10	0.10-0.20	0.10-0.20
Date Sampled				31/07/2018	31/07/2018	31/07/2018	31/07/2018	31/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

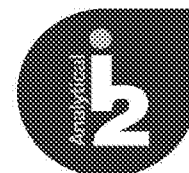
Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	< 10	16	< 10	29	16
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	57	36	14	67	85
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	66	53	18	96	100



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Analytical Report Number: 18-95009

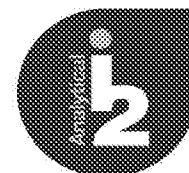
Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number				1014882	1014883	1014884	1014885	1014886
Sample Reference				MTP1	MTP3	MTP4	MTP4	MTP5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.00-0.10	0.00-0.10	0.10-0.20	0.10-0.20
Date Sampled				31/07/2018	31/07/2018	31/07/2018	31/07/2018	31/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Organochlorine Pesticides (OCP)								
Aldrin	ug/kg	10	NONE	-	< 10	-	-	-
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	-	< 10	-	-	-
BHC-beta	ug/kg	10	NONE	-	< 10	-	-	-
BHC-delta	ug/kg	10	NONE	-	< 10	-	-	-
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	-	< 10	-	-	-
Chlordane-cis	ug/kg	10	NONE	-	< 10	-	-	-
Chlordane-trans	ug/kg	10	NONE	-	< 10	-	-	-
Chlorothalonil	ug/kg	10	NONE	-	< 10	-	-	-
DDD-o,p'	ug/kg	1	NONE	-	2.1	-	-	-
DDD-p,p'	ug/kg	1	NONE	-	15	-	-	-
DDE-o, p'	ug/kg	1	NONE	-	2.0	-	-	-
DDE-p,p'	ug/kg	1	NONE	-	67	-	-	-
DDT-o,p'	ug/kg	1	NONE	-	20	-	-	-
DDT-p,p'	ug/kg	1	NONE	-	98	-	-	-
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	-	< 10	-	-	-
Dieldrin	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan I (alpha isomer)	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan II (beta isomer)	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan sulfate	ug/kg	10	NONE	-	< 10	-	-	-
Endrin	ug/kg	10	NONE	-	< 10	-	-	-
Endrin aldehyde	ug/kg	10	NONE	-	< 10	-	-	-
Endrin ketone	ug/kg	10	NONE	-	< 10	-	-	-
Heptachlor	ug/kg	10	NONE	-	< 10	-	-	-
Heptachlor exo-epoxide	ug/kg	10	NONE	-	< 10	-	-	-
Hexachlorobenzene	ug/kg	10	NONE	-	< 10	-	-	-
Hexachlorobutadiene	ug/kg	10	NONE	-	< 10	-	-	-
Isodrin	ug/kg	10	NONE	-	< 10	-	-	-
Methoxychlor, p,p'-	ug/kg	10	NONE	-	< 10	-	-	-
Pentachlorobenzene	ug/kg	10	NONE	-	< 10	-	-	-
Tecnazene	ug/kg	10	NONE	-	< 10	-	-	-
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	-	< 10	-	-	-
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	-	< 10	-	-	-
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	-	< 10	-	-	-
Trifluralin	ug/kg	10	NONE	-	< 10	-	-	-



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Environmental Science

Analytical Report Number: 18-95009

Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number				1014887	1014888	1014889		
Sample Reference				MTP6	MTP7	MTP8		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.00-0.10	0.20-0.30	0.20-0.30		
Date Sampled				31/07/2018	31/07/2018	31/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	9.6	5.8	6.2		
Total mass of sample received	kg	0.001	NONE	0.95	0.92	0.97		

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected		
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.6	7.6	7.7		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.017	0.016	0.031		
Sulphide	mg/kg	1	MCERTS	1.6	< 1.0	< 1.0		
Organic Matter	%	0.1	MCERTS	7.5	4.6	6.4		

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	0.21	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	1.5	0.34	1.7		
Anthracene	mg/kg	0.05	MCERTS	0.31	< 0.05	0.49		
Fluoranthene	mg/kg	0.05	MCERTS	4.8	1.0	4.7		
Pyrene	mg/kg	0.05	MCERTS	4.1	0.90	4.0		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.3	0.68	3.5		
Chrysene	mg/kg	0.05	MCERTS	3.0	0.78	2.5		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	5.1	1.1	4.7		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.4	0.42	1.6		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.6	0.77	3.2		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.7	0.37	1.8		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.58		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	0.59	2.6		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	31.2	6.96	31.3		
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	16	18		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	22	22		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	170	30	560		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	230	67	120		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	18	20		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.0	1.4	2.2		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	310	200	140		

Analytical Report Number: 18-95009

Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number				1014887	1014888	1014889		
Sample Reference				MTP6	MTP7	MTP8		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.00-0.10	0.20-0.30	0.20-0.30		
Date Sampled				31/07/2018	31/07/2018	31/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		

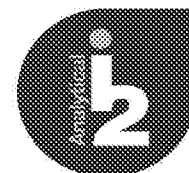
Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	33		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	36		

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	36	11	94		
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	140	47	330		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	180	58	420		



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Environmental Science

Analytical Report Number: 18-95009

Project / Site name: Church Allotments, Littlehampton

Your Order No: 18-S2-FDO-LABS

Lab Sample Number				1014887	1014888	1014889		
Sample Reference				MTP6	MTP7	MTP8		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.00-0.10	0.20-0.30	0.20-0.30		
Date Sampled				31/07/2018	31/07/2018	31/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Organochlorine Pesticides (OCP)								
Aldrin	ug/kg	10	NONE	< 10	-	-		
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	< 10	-	-		
BHC-beta	ug/kg	10	NONE	< 10	-	-		
BHC-delta	ug/kg	10	NONE	< 10	-	-		
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	< 10	-	-		
Chlordane-cis	ug/kg	10	NONE	< 10	-	-		
Chlordane-trans	ug/kg	10	NONE	< 10	-	-		
Chlorothalonil	ug/kg	10	NONE	< 10	-	-		
DDD-o,p'	ug/kg	1	NONE	12	-	-		
DDD-p,p'	ug/kg	1	NONE	80	-	-		
DDE-o, p'	ug/kg	1	NONE	2.5	-	-		
DDE-p,p'	ug/kg	1	NONE	35	-	-		
DDT-o,p'	ug/kg	1	NONE	11	-	-		
DDT-p,p'	ug/kg	1	NONE	54	-	-		
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	< 10	-	-		
Dieldrin	ug/kg	10	NONE	< 10	-	-		
Endosulfan I (alpha isomer)	ug/kg	10	NONE	< 10	-	-		
Endosulfan II (beta isomer)	ug/kg	10	NONE	< 10	-	-		
Endosulfan sulfate	ug/kg	10	NONE	< 10	-	-		
Endrin	ug/kg	10	NONE	< 10	-	-		
Endrin aldehyde	ug/kg	10	NONE	< 10	-	-		
Endrin ketone	ug/kg	10	NONE	< 10	-	-		
Heptachlor	ug/kg	10	NONE	< 10	-	-		
Heptachlor exo-epoxide	ug/kg	10	NONE	< 10	-	-		
Hexachlorobenzene	ug/kg	10	NONE	< 10	-	-		
Hexachlorobutadiene	ug/kg	10	NONE	< 10	-	-		
Isodrin	ug/kg	10	NONE	< 10	-	-		
Methoxychlor, p,p'	ug/kg	10	NONE	< 10	-	-		
Pentachlorobenzene	ug/kg	10	NONE	< 10	-	-		
Tecnazene	ug/kg	10	NONE	< 10	-	-		
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	< 10	-	-		
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	< 10	-	-		
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	< 10	-	-		
Trifluralin	ug/kg	10	NONE	< 10	-	-		

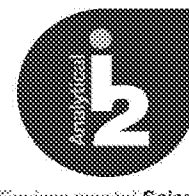
Analytical Report Number : 18-95009

Project / Site name: Church Allotments, Littlehampton

* 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 loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1014882	MTP1	None Supplied	0.20-0.30	Brown loam and sand with gravel and vegetation.
1014883	MTP3	None Supplied	0.00-0.10	Brown loam and sand with gravel and vegetation.
1014884	MTP4	None Supplied	0.00-0.10	Brown loam and sand with gravel and vegetation.
1014885	MTP4	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation.
1014886	MTP5	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation.
1014887	MTP6	None Supplied	0.00-0.10	Brown loam and sand with gravel and vegetation.
1014888	MTP7	None Supplied	0.20-0.30	Brown loam and sand with gravel and vegetation.
1014889	MTP8	None Supplied	0.20-0.30	Brown loam and sand with gravel and vegetation.



Environmental Science

Analytical Report Number : 18-95009

Project / Site name: Church Allotments, Littlehampton

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

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 dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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 2, 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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS
Organochlorine Pesticides in soil by GC MS/MS	Determination of Pesticides in soil by GC MS/MS	Organochlorine Pesticides in soil by GC MS/MS	L055B-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	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. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	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
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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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 30oC.

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