



APPENDIX C

CHEMICAL ANALYSES



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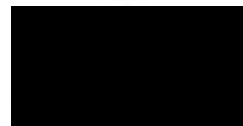
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Analytical Report Number : 15-68364

Project / Site name:	Graven Hill, Bicester	Samples received on:	11/03/2015
Your job number:	30378	Samples instructed on:	12/03/2015
Your order number:		Analysis completed by:	19/03/2015
Report Issue Number:	1	Report issued on:	19/03/2015
Samples Analysed:	16 soil samples		

Signed: 

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



Signed: _____

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

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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

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Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number	425164				425165		425166		425167		425168	
Sample Reference	TP518				TP518		TP520		TP520		TP529	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.25				1.20		0.25		1.10		0.50	
Date Sampled	02/03/2015				02/03/2015		02/03/2015		02/03/2015		10/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	24	16	26	18	8.1				
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.4	2.0	2.0				

General Inorganics

pH	pH Units	N/A	MCERTS	7.8	7.8	8.0	7.9	7.8

Speciated PAHs

	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.67
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.43
Fluorene	mg/kg	0.1	MCERTS	1.2	< 0.10	0.85	0.60	22
Phenanthrene	mg/kg	0.1	MCERTS	0.20	< 0.10	0.17	0.12	4.9
Anthracene	mg/kg	0.1	MCERTS	1.8	< 0.10	1.3	0.57	28
Fluoranthene	mg/kg	0.1	MCERTS	1.3	< 0.10	1.0	0.45	21
Pyrene	mg/kg	0.1	MCERTS	1.2	< 0.10	0.66	0.24	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.2	< 0.05	0.82	0.23	8.6
Chrysene	mg/kg	0.1	MCERTS	1.7	< 0.10	1.2	0.23	14
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.92	< 0.10	0.48	0.16	6.3
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	1.3	< 0.10	0.66	0.22	11
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.60	< 0.10	0.44	< 0.10	4.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.21	< 0.10	< 0.10	< 0.10	1.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.72	< 0.05	0.47	< 0.05	5.6
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	0.99
Coronene	mg/kg							

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	12.2	< 1.60	8.12	2.82	141



Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number	425164	425165	425166	425167	425168
Sample Reference	TP518	TP518	TP520	TP520	TP529
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.25	1.20	0.25	1.10	0.50
Date Sampled	02/03/2015	02/03/2015	02/03/2015	02/03/2015	10/03/2015
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Element	Unit	Limit	MCERTS	425164	425165	425166	425167	425168
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	19	19	16	5.8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	91	44	150	50	39
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	1.3	2.1	1.4	0.4
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.4	2.6	1.7	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	< 0.2	0.3	< 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	45	34	59	35	5.0
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	12	14	14	10	2.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36	27	72	29	11
Iron (aqua regia extractable)	mg/kg	40	MCERTS	52000	53000	55000	48000	8200
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	15	74	17	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.8	< 0.3	1.2	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	39	42	43	33	6.6
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	3.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	73	57	93	60	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	240	71	190	71	19

Monoaromatics

Compound	Unit	Limit	MCERTS	425164	425165	425166	425167	425168
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG	Unit	Limit	MCERTS	425164	425165	425166	425167	425168
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	2.8
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	16
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	41
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	60

TPH-CWG	Unit	Limit	MCERTS	425164	425165	425166	425167	425168
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	12
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	210
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	11	< 10	< 10	< 10	240
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	11	< 10	< 10	< 10	470



Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number	425169				425170		425171		425172		425173	
Sample Reference	TP529				TP515		TP526		TP532A		TP539	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	1.20				0.05		0.20		0.15		0.30	
Date Sampled	10/03/2015				06/03/2015		10/03/2015		05/03/2015		06/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	20	23	25	20	22				
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	

General Inorganics

pH	pH Units	N/A	MCERTS	7.9	7.8	7.6	7.5	7.2

Speciated PAHs

Compound	mg/kg	Limit of detection	Accreditation Status	< 0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene	0.05	0.05	MCERTS	< 0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	0.1	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	0.1	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	0.1	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.39	< 0.10	< 0.10	0.44
Anthracene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.18	< 0.10	< 0.10	< 0.10
Fluoranthene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.79	< 0.10	< 0.10	0.80
Pyrene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.59	< 0.10	< 0.10	0.63
Benzo(a)anthracene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.49	< 0.10	< 0.10	0.52
Chrysene	0.05	0.05	MCERTS	< 0.05	< 0.05	0.45	< 0.05	< 0.05	0.48
Benzo(b)fluoranthene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.49	< 0.10	< 0.10	0.62
Benzo(k)fluoranthene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.30	< 0.10	< 0.10	0.29
Benzo(a)pyrene	0.1	0.1	MCERTS	< 0.10	< 0.10	0.40	< 0.10	< 0.10	0.47
Indeno(1,2,3-cd)pyrene	0.1	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	0.1	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	0.05	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	0.05	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	4.08	< 1.60	4.25

Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number				425169	425170	425171	425172	425173
Sample Reference				TP529	TP515	TP526	TP532A	TP539
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	0.05	0.20	0.15	0.30
Date Sampled				10/03/2015	06/03/2015	10/03/2015	05/03/2015	06/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	9.9	9.0	6.2	16
Barium (aqua regia extractable)	mg/kg	1	MCERTS	76	81	81	49	100
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.7	1.6	1.3	1.6	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	2.7	2.7	1.2	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	< 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	66	51	37	60	42
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	11	15	9.1	13	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	40	29	36	34
Iron (aqua regia extractable)	mg/kg	40	MCERTS	44000	40000	32000	39000	46000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	25	34	13	66
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.9	3.5	2.2	3.1	1.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	55	45	34	55	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	59	53	41	46	61
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	110	96	110	95

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number				425174	425175	425176	425177	425178
Sample Reference				TP540A	TP540A	TP541	TP541	TP501
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.25	1.00	0.35	1.00	0.30
Date Sampled				04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015
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	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	27	19	39	21	17
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0

General Inorganics

pH	pH Units	N/A	MCERTS	7.4	7.4	7.0	7.5	7.7

Speciated PAHs

	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60



Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number				425174	425175	425176	425177	425178
Sample Reference				TP540A	TP540A	TP541	TP541	TP501
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.25	1.00	0.35	1.00	0.30
Date Sampled				04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	7.5	22	25	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	65	32	85	45	57
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.2	1.9	1.5	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	2.6	4.3	1.9	2.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 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	47	39	43	32	29
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	11	14	16	15	10
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	29	63	36	18
Iron (aqua regia extractable)	mg/kg	40	MCERTS	46000	39000	58000	66000	37000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	15	130	29	20
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.5	1.2	1.8	0.5	1.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	38	53	51	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	57	34	76	61	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	61	180	110	65

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	14	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	14	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-68364

Project / Site name: Graven Hill, Bicester

Lab Sample Number				425179				
Sample Reference				TP502				
Sample Number				None Supplied				
Depth (m)				0.30				
Date Sampled				05/03/2015				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	20				
Total mass of sample received	kg	0.001	NONE	2.0				

General Inorganics

pH	pH Units	N/A	MCERTS	7.6				
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10				
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10				
Fluorene	mg/kg	0.1	MCERTS	< 0.10				
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10				
Anthracene	mg/kg	0.1	MCERTS	< 0.10				
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10				
Pyrene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10				
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10				
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Coronene	mg/kg	0.05	NONE	< 0.05				

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60				
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Analytical Report Number: 15-68364
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	425179			
Sample Reference	TP502			
Sample Number	None Supplied			
Depth (m)	0.30			
Date Sampled	05/03/2015			
Time Taken	None Supplied			

Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
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Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.0			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	58			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2			
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30			
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	12			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21			
Iron (aqua regia extractable)	mg/kg	40	MCERTS	35000			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.1			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	82			

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10			



Analytical Report Number : 15-68364

Project / Site name: Graven Hill, Bicester

* 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.

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 *
425164	TP518	None Supplied	0.25	Brown clay and sand with gravel.
425165	TP518	None Supplied	1.20	Brown clay and sand with gravel.
425166	TP520	None Supplied	0.25	Brown clay and topsoil with gravel.
425167	TP520	None Supplied	1.10	Brown clay and sand with gravel.
425168	TP529	None Supplied	0.50	Light brown topsoil and clay with gravel.
425169	TP529	None Supplied	1.20	Light brown clay and sand with gravel.
425170	TP515	None Supplied	0.05	Brown clay and topsoil with gravel.
425171	TP526	None Supplied	0.20	Brown clay and topsoil with gravel.
425172	TP532A	None Supplied	0.15	Brown clay and sand.
425173	TP539	None Supplied	0.30	Brown clay and topsoil with gravel.
425174	TP540A	None Supplied	0.25	Brown clay and topsoil with gravel.
425175	TP540A	None Supplied	1.00	Light brown clay and sand.
425176	TP541	None Supplied	0.35	Brown clay and topsoil with gravel.
425177	TP541	None Supplied	1.00	Brown clay and sand.
425178	TP501	None Supplied	0.30	Brown clay and topsoil with gravel.
425179	TP502	None Supplied	0.30	Brown clay and topsoil with gravel.

Analytical Report Number : 15-68364

Project / Site name: Graven Hill, Bicester

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
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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-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 30°C.



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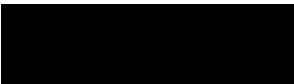
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Analytical Report Number : 15-68846

Project / Site name:	Graven Hill, Bicester	Samples received on:	13/03/2015
Your job number:	30378	Samples instructed on:	20/03/2015
Your order number:		Analysis completed by:	27/03/2015
Report Issue Number:	1	Report issued on:	27/03/2015
Samples Analysed:	18 soil samples		

Signe 
 Neil Donovan
 Environmental Forensics Manager
For & on behalf of i2 Analytical Ltd.

Signed: 
 Emma Winter
 Assistant Reporting 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 :

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

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Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428544		428545		428546		428547		428548	
Sample Reference	TP503		TP503		TP506		TP507		TP507	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.20		0.60		0.10		0.20		0.80	
Date Sampled	11/03/2015		11/03/2015		12/03/2015		12/03/2015		12/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	32	18	23	32	13		
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0		

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

General Inorganics

pH	pH Units	N/A	MCERTS	7.1	7.1	6.9	6.3	7.0
Organic Matter	%	0.1	MCERTS	4.9	0.8	2.2	5.1	0.1
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.8	0.4	1.3	2.9	< 0.1

Speciated PAHs

Compound	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60

Heavy Metals / Metalloids

Compound	mg/kg	1	MCERTS	8.8	8.4	11	6.6	11
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.8	8.4	11	6.6	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	54	49	64	40	42
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.9	1.1	1.1	0.6	0.8
Boron (water soluble)	mg/kg	0.2	MCERTS	3.1	< 0.2	1.0	1.6	3.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.4	0.3	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	39	34	26	27
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	6.6	7.4	8.3	4.7	8.5
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	18	19	20	18
Iron (aqua regia extractable)	mg/kg	40	MCERTS	27000	35000	38000	20000	30000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	37	14	21	24	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.8	1.1	1.4	0.8	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	24	26	13	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	44	40	29	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	83	100	90	50

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428544		428545		428546		428547		428548	
Sample Reference	TP503		TP503		TP506		TP507		TP507	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.20		0.60		0.10		0.20		0.80	
Date Sampled	11/03/2015		11/03/2015		12/03/2015		12/03/2015		12/03/2015	
Time Taken	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status							

Monoaromatics

Parameter	Units	Limit of detection	Accreditation Status	428544	428545	428546	428547	428548
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	428544	428545	428546	428547	428548
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	11	< 8.0	< 8.0	12	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	11	< 10	< 10	12	< 10

Parameter	Units	Limit of detection	Accreditation Status	428544	428545	428546	428547	428548
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428544				428545				428546				428547				428548			
Sample Reference	TP503				TP503				TP506				TP507				TP507			
Sample Number	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Depth (m)	0.20				0.60				0.10				0.20				0.80			
Date Sampled	11/03/2015				11/03/2015				12/03/2015				12/03/2015				12/03/2015			
Time Taken	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status																	

Analytical Report Number: 15-68846
Project / Site name: Graven Hill, Bicester

Lab Sample Number	428549		428550		428551		428552		428553		
Sample Reference	TP509		TP510		TP510		TP528		TP528		
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied		
Depth (m)	0.60		0.20		0.60		0.40		1.10		
Date Sampled	12/03/2015		12/03/2015		12/03/2015		11/03/2015		11/03/2015		
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	14	21	16	7.4	21			
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0			

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

General Inorganics

pH	pH Units	N/A	MCERTS	7.3	6.0	6.9	8.5	6.9
Organic Matter	%	0.1	MCERTS	0.5	2.3	0.4	1.2	1.2
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	1.3	0.2	0.7	0.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	4.4	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.82	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	8.9	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	7.4	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	3.5	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.3	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	3.9	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.0	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	3.2	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.7	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	2.3	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	41.4	< 1.60

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	7.7	12	6.8	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	98	42	88	110	73
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	0.6	1.0	1.5	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	2.0	< 0.2	< 0.2	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.3	0.3	0.3	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	29	33	13	58
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	20	5.7	12	6.7	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	25	19	20	27
Iron (aqua regia extractable)	mg/kg	40	MCERTS	44000	22000	37000	21000	53000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	27	14	13	20
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.0	0.9	0.7	1.7	1.0
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	20	28	17	44
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	29	42	36	66
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	70	88	66	45	120

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428549	428550	428551	428552	428553			
Sample Reference	TP509	TP510	TP510	TP528	TP528			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.60	0.20	0.60	0.40	1.10			
Date Sampled	12/03/2015	12/03/2015	12/03/2015	11/03/2015	11/03/2015			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	2.7	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	9.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	39	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	50	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	4.6	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	67	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	94	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	170	< 10



Analytical Report Number: 15-68846

Project / Site name: Graven Hill, Bicester

Lab Sample Number					428549	428550	428551	428552	428553
Sample Reference					TP509	TP510	TP510	TP528	TP528
Sample Number					None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)					0.60	0.20	0.60	0.40	1.10
Date Sampled					12/03/2015	12/03/2015	12/03/2015	11/03/2015	11/03/2015
Time Taken					None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						
VOCs									
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428549				428550				428551				428552				428553			
Sample Reference	TP509				TP510				TP510				TP528				TP528			
Sample Number	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Depth (m)	0.60				0.20				0.60				0.40				1.10			
Date Sampled	12/03/2015				12/03/2015				12/03/2015				11/03/2015				11/03/2015			
Time Taken	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status																	

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428554		428555		428556		428557		428558	
Sample Reference	TP544		TP544		TP546		TP549		TP552	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.60		1.20		0.30		0.30		0.20	
Date Sampled	12/03/2015		12/03/2015		12/03/2015		11/03/2015		11/03/2015	
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	17	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	12	18	24	21	29	29	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0	2.0	

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

General Inorganics

pH	pH Units	N/A	MCERTS	7.7	7.2	7.3	7.3	7.4
Organic Matter	%	0.1	MCERTS	0.2	< 0.1	2.1	1.8	4.9
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.1	< 0.1	1.2	1.0	2.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.0	2.6
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.38	0.59
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	5.0	7.0
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	4.1	6.0
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.5	3.6
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	2.5	3.2
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	3.7	4.7
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.4	1.7
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.7	3.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.7	1.9
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.21	0.28
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	2.1	2.5
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	28.2	37.6

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	7.0	9.7	8.4	8.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	43	40	49	61	78
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	0.9	0.9	1.0	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	3.7	2.5	2.6	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	0.4	0.7	0.5
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	51	37	59	59
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	9.7	8.6	7.2	9.5	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	33	25	49	72
Iron (aqua regia extractable)	mg/kg	40	MCERTS	37000	36000	37000	37000	41000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	13	13	25	27	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.1	2.4	1.7	4.2	3.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	49	46	24	37	38
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	35	38	48	44
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	74	90	92	120	130

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428554	428555	428556	428557	428558			
Sample Reference	TP544	TP544	TP546	TP549	TP552			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.60	1.20	0.30	0.30	0.20			
Date Sampled	12/03/2015	12/03/2015	12/03/2015	11/03/2015	11/03/2015			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	22	26	30
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	22	26	30
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	2.7	2.5
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	26	30
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	52	44
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	81	77

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428554				428555		428556		428557		428558	
Sample Reference	TP544				TP544		TP546		TP549		TP552	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.60				1.20		0.30		0.30		0.20	
Date Sampled	12/03/2015				12/03/2015		12/03/2015		11/03/2015		11/03/2015	
Time Taken	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status									
VOCs												
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1-Dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0				
Hexachlorbutadiene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	< 1.0				



Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428554	428555	428556	428557	428558
Sample Reference	TP544	TP544	TP546	TP549	TP552
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.60	1.20	0.30	0.30	0.20
Date Sampled	12/03/2015	12/03/2015	12/03/2015	11/03/2015	11/03/2015
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Analytical Report Number: 15-68846

Project / Site name: Graven Hill, Bicester

Lab Sample Number	428559		428560		428561	
Sample Reference	TP552		TP552		RC303	
Sample Number	None Supplied		None Supplied		None Supplied	
Depth (m)	0.50		1.10		0.30	
Date Sampled	11/03/2015		11/03/2015		12/03/2015	
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	28	19	21
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0

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

General Inorganics

pH	pH Units	N/A	MCERTS	6.2	6.7	7.0
Organic Matter	%	0.1	MCERTS	4.5	0.5	1.7
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.6	0.3	1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	2.0	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.51	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	4.6	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	4.1	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.9	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	1.8	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	2.0	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	1.1	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	2.0	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.96	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	22.1	< 1.60	< 1.60

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7	9.9	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	73	53	69
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.2	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	0.6	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.7	0.5
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	47	55	56
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	6.0	11	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	38	33	26
Iron (aqua regia extractable)	mg/kg	40	MCERTS	29000	43000	41000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	17	23
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.0	5.5	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	38	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	45	63
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110	93

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	428559	428560	428561		
Sample Reference	TP552	TP552	RC303		
Sample Number	None Supplied	None Supplied	None Supplied		
Depth (m)	0.50	1.10	0.30		
Date Sampled	11/03/2015	11/03/2015	12/03/2015		
Time Taken	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Monoaromatics					
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	25	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	43	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	68	< 10

Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				428559	428560	428561		
Sample Reference				TP552	TP552	RC303		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.50	1.10	0.30		
Date Sampled				11/03/2015	11/03/2015	12/03/2015		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
1,1-Dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-		
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-		
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-		
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-		
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-		
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-		
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-		



Analytical Report Number: 15-68846
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				428559	428560	428561		
Sample Reference				TP552	TP552	RC303		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.50	1.10	0.30		
Date Sampled				11/03/2015	11/03/2015	12/03/2015		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					



Analytical Report Number : 15-68846

Project / Site name: Graven Hill, Bicester

* 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.

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 *
428544	TP503	None Supplied	0.20	Brown topsoil and clay with vegetation.
428545	TP503	None Supplied	0.60	Light brown clay and sand.
428546	TP506	None Supplied	0.10	Brown clay and topsoil with vegetation.
428547	TP507	None Supplied	0.20	Brown topsoil and clay with vegetation.
428548	TP507	None Supplied	0.80	Light brown clay and sand.
428549	TP509	None Supplied	0.60	Light brown clay and sand with vegetation.
428550	TP510	None Supplied	0.20	Brown topsoil and clay with vegetation.
428551	TP510	None Supplied	0.60	Light brown clay and sand with vegetation.
428552	TP528	None Supplied	0.40	Black sandy gravel.**
428553	TP528	None Supplied	1.10	Grey clay and sand.
428554	TP544	None Supplied	0.60	Light brown clay and sand.
428555	TP544	None Supplied	1.20	Light grey clay and sand.
428556	TP546	None Supplied	0.30	Brown clay and sand with vegetation.
428557	TP549	None Supplied	0.30	Grey clay and sand with vegetation.
428558	TP552	None Supplied	0.20	Brown clay and topsoil with gravel and vegetation.
428559	TP552	None Supplied	0.50	Brown clay and topsoil with vegetation.
428560	TP552	None Supplied	1.10	Grey clay and sand with vegetation.
428561	RC303	None Supplied	0.30	Grey clay and sand.

**Non MCERTS matrix

Analytical Report Number : 15-68846

Project / Site name: Graven Hill, Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine 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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter 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	L023-PL	D	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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon in soil	Determination of organic matter 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	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-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.



David Owen

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Analytical Report Number : 15-68849

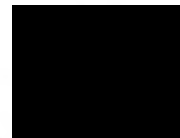
Project / Site name:	Graven Hill, Bicester	Samples received on:	13/03/2015
Your job number:	30378	Samples instructed on:	20/03/2015
Your order number:		Analysis completed by:	01/04/2015
Report Issue Number:	1	Report issued on:	01/04/2015
Samples Analysed:	4 wac multi samples		

Signed:



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

Signed:



Rexona Rahman
Reporting 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 :

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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Waste Acceptance Criteria Analytical Results							
Report No:	15-68849						
							Client: GEOENG
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	428568						
Sampling Date	12/03/2015						
Sample ID	TP509						
Depth (m)	0.60						
Solid Waste Analysis							
TOC (%)**	0.3				3%	5%	6%
Loss on Ignition (%) **	5.7				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	7.3				--	>6	--
Acid Neutralisation Capacity (mol / kg)	0.76				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.020	0.014		0.15	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0026	0.0015		0.016	0.5	10	70
Copper *	0.0066	0.0033		0.036	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		< 0.020	0.5	10	30
Nickel *	< 0.0010	< 0.0010		< 0.0050	0.4	10	40
Lead *	< 0.0050	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	< 0.0010	< 0.0010		< 0.020	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	4000	25000
Fluoride	0.33	0.29		3.0	10	150	500
Sulphate *	4.4	0.82		11	1000	20000	50000
TDS	30	10		120	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	9.5	8.8		88	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	86						
Moisture (%)	14						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.14						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited

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Waste Acceptance Criteria Analytical Results							
Report No:	15-68849						
							Client: GEOENG
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	428569						
Sampling Date	12/03/2015						
Sample ID	TP528						
Depth (m)	0.40						
Landfill Waste Acceptance Criteria							
Limits							
	Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill				
Solid Waste Analysis							
TOC (%)**	0.7				3%	5%	6%
Loss on Ignition (%) **	2.8				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	49				500	--	--
Total PAH (WAC-17) (mg/kg)	41				100	--	--
pH (units)**	8.5				--	>6	--
Acid Neutralisation Capacity (mol / kg)	6.8				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.083	0.057		0.61	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0023	< 0.0010		0.0060	0.5	10	70
Copper *	0.0040	< 0.0030		0.031	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0069	< 0.0030		0.022	0.5	10	30
Nickel *	< 0.0010	< 0.0010		< 0.0050	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.023	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	< 0.0010	< 0.0010		< 0.020	4	50	200
Chloride *	23	< 4.0		49	800	4000	25000
Fluoride	0.46	0.22		2.6	10	150	500
Sulphate *	160	18		410	1000	20000	50000
TDS	250	70		990	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	5.7	3.9		42	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	93						
Moisture (%)	7.4						
Stage 1							
Volume Eluate L2 (litres)	0.34						
Filtered Eluate VE1 (litres)	0.28						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Waste Acceptance Criteria Analytical Results							
Report No:	15-68849						
							Client: GEOENG
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	428570						
Sampling Date	12/03/2015						
Sample ID	TP544						
Depth (m)	0.60						
Landfill Waste Acceptance Criteria							
Limits							
	Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill				
Solid Waste Analysis							
TOC (%)**	0.1				3%	5%	6%
Loss on Ignition (%) **	4.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	1.5				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.023	0.0083		0.094	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0039	0.0022		0.023	0.5	10	70
Copper *	0.0030	< 0.0030		< 0.020	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		< 0.020	0.5	10	30
Nickel *	< 0.0010	< 0.0010		< 0.0050	0.4	10	40
Lead *	< 0.0050	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	< 0.0010	< 0.0010		< 0.020	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	4000	25000
Fluoride	0.70	0.63		6.4	10	150	500
Sulphate *	7.2	1.6		20	1000	20000	50000
TDS	50	20		220	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	3.5	4.9		48	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	88						
Moisture (%)	12						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.13						

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Waste Acceptance Criteria Analytical Results							
Report No:	15-68849						
							Client: GEOENG
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	428571						
Sampling Date	12/03/2015						
Sample ID	TP552						
Depth (m)	0.20						
Landfill Waste Acceptance Criteria							
Limits							
	Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill				
Solid Waste Analysis							
TOC (%)**	2.8				3%	5%	6%
Loss on Ignition (%) **	12				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	7.4				--	>6	--
Acid Neutralisation Capacity (mol / kg)	2.1				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.062	0.050		0.51	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0027	0.0012		0.013	0.5	10	70
Copper *	0.013	0.012		0.12	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.014	0.0093		0.095	0.5	10	30
Nickel *	< 0.0010	< 0.0010		< 0.0050	0.4	10	40
Lead *	0.0065	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0020	< 0.0010		< 0.020	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	4000	25000
Fluoride	0.76	0.78		7.8	10	150	500
Sulphate *	19	4.5		54	1000	20000	50000
TDS	160	100		1000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	11	8.0		82	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	71						
Moisture (%)	29						
Stage 1							
Volume Eluate L2 (litres)	0.30						
Filtered Eluate VE1 (litres)	0.11						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited



Analytical Report Number : 15-68849

Project / Site name: Graven Hill, Bicester

* 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.

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 *
428568	TP509	None Supplied	0.60	Light brown clay and sand with vegetation.
428569	TP528	None Supplied	0.40	Black sandy gravel. **
428570	TP544	None Supplied	0.60	Light brown clay and sand.
428571	TP552	None Supplied	0.20	Brown clay and topsoil with gravel and vegetation.

** Non MCerts Matrix

Analytical Report Number : 15-68849

Project / Site name: Graven Hill, Bicester

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
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of chloride in leachate by Gallery discrete analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L082-PL	W	ISO 17025
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	NONE
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
Mineral Oil in Soil	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
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
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Selected WAC-17 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	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L004-PL	W	NONE
Total organic carbon in soil	Determination of organic matter 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	MCERTS



Analytical Report Number : 15-68849

Project / Site name: Graven Hill, Bicester

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
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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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Analytical Report Number : 15-69338

Project / Site name:	Graven Hill , Bicester	Samples received on:	23/03/2015
Your job number:	30378	Samples instructed on:	01/04/2015
Your order number:		Analysis completed by:	08/04/2015
Report Issue Number:	1	Report issued on:	08/04/2015
Samples Analysed:	9 soil samples		

Signed: 

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

Signed: 

Rexona Rahman
 Reporting 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 :

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

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Samples were received with no indication of date sampled. The recommended holding time prior to analysis may have been exceeded. Results may not be valid should be interpreted with care.

Analytical Report Number: 15-69338

Project / Site name: Graven Hill , Bicester

Lab Sample Number	431158		431159		431160		431161		431162	
Sample Reference	CP101		CP101		CP109		CP109		CC401	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.25		0.50		0.25		0.50		0.40	
Date Sampled	19/03/2015		19/03/2015		Deviating		Deviating		19/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	19	20	27	20	7.1	7.1	
Total mass of sample received	kg	0.001	NONE	1.6	1.7	1.8	1.7	1.6	1.6	

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

General Inorganics

pH	pH Units	N/A	MCERTS	-	-	-	-	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	-
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	310	520	680	600	-
Total Chloride	mg/kg	5	NONE	27	34	37	30	-
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0	3.8	4.3	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	4.7
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	3.6
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	17
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	9.0
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	44
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	36
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	19
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	19
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	26
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	11
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	23
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	13
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.6
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	15

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	242

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.0	8.9	7.5	8.3	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	59	74	73	73	290
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.6	1.7	1.6	2.8
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	1.3	2.3	0.8	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.2	0.4
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	50	64	58	70
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	6.6	7.6	11	13	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	20	34	34	67
Iron (aqua regia extractable)	mg/kg	40	MCERTS	43000	40000	47000	55000	54000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	12	19	16	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.5	1.8	2.0	2.7	1.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	25	43	42	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	64	57	56	120
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	93	120	110	93

Analytical Report Number: 15-69338
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	431158		431159		431160		431161		431162	
Sample Reference	CP101		CP101		CP109		CP109		CC401	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.25		0.50		0.25		0.50		0.40	
Date Sampled	19/03/2015		19/03/2015		Deviating		Deviating		19/03/2015	
Time Taken	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status							

Monoaromatics

Parameter	Units	Limit of detection	Accreditation Status	431158	431159	431160	431161	431162
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	431158	431159	431160	431161	431162
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	4.3
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	25
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	61
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	13	< 8.0	< 8.0	110
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	13	< 10	< 10	200
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	84
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	480
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	1000
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	1600

Analytical Report Number: 15-69338
Project / Site name: Graven Hill , Bicester

Lab Sample Number	431163		431164		431165		431166	
Sample Reference	CC401		CC401		CC405		CC409	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.70		0.90		0.40		0.90	
Date Sampled	19/03/2015		19/03/2015		20/03/2015		19/03/2015	
Time Taken	None Supplied		None Supplied		None Supplied		None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	28	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	7.5	16	6.9	13	
Total mass of sample received	kg	0.001	NONE	1.7	1.6	1.7	1.4	

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

General Inorganics

pH	pH Units	N/A	MCERTS	8.4	8.0	8.1	7.8
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	-	-	-	-
Total Chloride	mg/kg	5	NONE	-	-	-	-
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	0.23	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	0.19	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.1	< 0.10	0.54	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.36	< 0.10	0.13	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	2.0	< 0.10	0.46	< 0.10
Pyrene	mg/kg	0.1	MCERTS	1.7	< 0.10	0.36	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.86	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	0.74	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.77	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.49	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.75	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.43	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.58	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	10.2	< 1.60	< 1.60	< 1.60

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	17	14	17
Barium (aqua regia extractable)	mg/kg	1	MCERTS	290	120	89	100
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	4.0	1.9	0.6	1.8
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	2.5	< 0.2	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	94	47	9.9	46
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	24	17	9.7	16
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	35	31	37
Iron (aqua regia extractable)	mg/kg	40	MCERTS	77000	65000	30000	47000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	43	26	4.7	31
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	3.0	1.1	1.2	1.2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	63	43	12	42
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	220	79	36	74
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	110	25	100

Analytical Report Number: 15-69338
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	431163	431164	431165	431166	
Sample Reference	CC401	CC401	CC405	CC409	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	0.70	0.90	0.40	0.90	
Date Sampled	19/03/2015	19/03/2015	20/03/2015	19/03/2015	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Monoaromatics					
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	5.1	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	5.8	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	12	9.5	12	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	12	20	12	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.3	< 2.0	3.2	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	12	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	28	< 10	14	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	42	< 10	17	< 10



Analytical Report Number : 15-69338

Project / Site name: Graven Hill , Bicester

* 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.

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 *
431158	CP101	None Supplied	0.25	Light brown clay.
431159	CP101	None Supplied	0.50	Light brown clay.
431160	CP109	None Supplied	0.25	Light brown clay.
431161	CP109	None Supplied	0.50	Light brown clay.
431162	CC401	None Supplied	0.40	Brown sandy topsoil with rubble and brick.
431163	CC401	None Supplied	0.70	Black topsoil and gravel with clinker and stones
431164	CC401	None Supplied	0.90	Brown clay and topsoil.
431165	CC405	None Supplied	0.40	Light brown sandy clay with gravel.
431166	CC409	None Supplied	0.90	Brown clay and topsoil.

Analytical Report Number : 15-69338

Project / Site name: Graven Hill , Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by spectrophotometry.	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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 30oC.



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Analytical Report Number : 15-69419

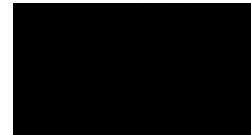
Project / Site name:	Graven Hill , Bicester	Samples received on:	27/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	09/04/2015
Report Issue Number:	1	Report issued on:	09/04/2015
Samples Analysed:	2 soil samples		

Signed:



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

Signed:



Rexona Rahman
Reporting 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 :

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

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Analytical Report Number: 15-69419

Project / Site name: Graven Hill , Bicester

Lab Sample Number				431531	431549			
Sample Reference				CP115	CP115			
Sample Number				None Supplied	None Supplied			
Depth (m)				1.50	2.20			
Date Sampled				26/03/2015	26/03/2015			
Time Taken				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	22	25			
Total mass of sample received	kg	0.001	NONE	0.94	0.94			

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

pH	pH Units	N/A	MCERTS	7.3	6.2			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1600	100000			
Total Chloride	mg/kg	5	NONE	85	320			
Organic Matter	%	0.1	MCERTS	2.0	2.2			
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.2	1.2			
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0			

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60			
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.8	5.9			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	39	29			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.0	1.3			
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.2			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.0	0.9			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	36			
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	22	5.0			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40	38			
Iron (aqua regia extractable)	mg/kg	40	MCERTS	56000	25000			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	22			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	5.0	4.6			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	73	34			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50	42			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	51			



Analytical Report Number: 15-69419

Project / Site name: Graven Hill , Bicester

Lab Sample Number				431531	431549			
Sample Reference				CP115	CP115			
Sample Number				None Supplied	None Supplied			
Depth (m)				1.50	2.20			
Date Sampled				26/03/2015	26/03/2015			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	12	2.4			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	55	9.8			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	31	9.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	98	22			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2.9	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	23	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	11	< 10			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	36	< 10			



Analytical Report Number : 15-69419

Project / Site name: Graven Hill , Bicester

* 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.

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 *
431531	CP115	None Supplied	1.50	Light brown clay.
431549	CP115	None Supplied	2.20	Brown clay.

Analytical Report Number : 15-69419

Project / Site name: Graven Hill , Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine 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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter 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	L023-PL	D	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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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 organic carbon in soil	Determination of organic matter 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	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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS



Analytical Report Number : 15-69419

Project / Site name: Graven Hill , Bicester

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
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by spectrophotometry.	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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 30oC.



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Analytical Report Number : 15-69420

Project / Site name:	Graven Hill, Bicester	Samples received on:	26/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	10/04/2015
Report Issue Number:	1	Report issued on:	10/04/2015
Samples Analysed:	17 soil samples		

Signed _____

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed: _____

Rexona Rahman
Reporting 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 :

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

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Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431532				431533		431534		431535		431536	
Sample Reference	HP703				HP703		HP704		HP704		HP707	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.20				0.50		0.20		0.40		0.20	
Date Sampled	25/03/2015				25/03/2015		25/03/2015		25/03/2015		25/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	21	28	31	23	31	31	31	31	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.47	

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

pH	pH Units	N/A	MCERTS	7.4	7.1	6.8	7.4	6.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1100	4000	1200	430	1100
Total Chloride	mg/kg	5	NONE	43	99	16	17	87
Organic Matter	%	0.1	MCERTS	1.4	5.9	4.4	1.5	4.8
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.8	3.4	2.6	0.9	2.8
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	11	4.0	2.4	2.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	17	15	13	15
Barium (aqua regia extractable)	mg/kg	1	MCERTS	72	110	110	96	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	2.1	2.0	2.1	2.0
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1.2	4.3	1.7	4.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.3	0.4	0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	61	51	58	51
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	16	12	15	20	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	41	40	26	38
Iron (aqua regia extractable)	mg/kg	40	MCERTS	50000	47000	44000	59000	44000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	290	41	18	44
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.9	1.3	1.9	1.2	1.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	42	41	45	49	42
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	58	98	75	89	76
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	130	140	120	130



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431532	431533	431534	431535	431536
Sample Reference				HP703	HP703	HP704	HP704	HP707
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.50	0.20	0.40	0.20
Date Sampled				25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Compound	Units	Limit of detection	Accreditation Status	431532	431533	431534	431535	431536
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	Units	Limit of detection	Accreditation Status	431532	431533	431534	431535	431536
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	2.9	< 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	15	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	18	< 10

TPH-CWG - Aromatic > EC5 - EC7	Units	Limit of detection	Accreditation Status	431532	431533	431534	431535	431536
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431537				431538		431539		431540		431541	
Sample Reference	SD01				SD02		SD03		SD04		SD05	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Date Sampled	25/03/2015				25/03/2015		25/03/2015		24/03/2015		24/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	44	53	53	50	42	42	42	42	
Total mass of sample received	kg	0.001	NONE	1.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	

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

pH	pH Units	N/A	MCERTS	7.3	7.3	7.2	7.3	7.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1000	860	920	1700	1300
Total Chloride	mg/kg	5	NONE	500	780	210	210	120
Organic Matter	%	0.1	MCERTS	4.4	5.0	6.2	5.7	3.6
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.5	2.9	3.6	3.3	2.1
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.17	0.19	0.23	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.2	1.4	0.69	0.82	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.22	0.29	0.18	0.15	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	6.9	6.6	4.7	2.1	< 0.10
Pyrene	mg/kg	0.1	MCERTS	6.3	5.9	4.5	2.1	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	3.9	3.6	3.2	1.1	< 0.10
Chrysene	mg/kg	0.05	MCERTS	4.2	4.0	2.9	1.2	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	5.1	6.5	5.2	1.3	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	3.5	2.3	2.2	1.0	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	5.6	4.9	4.4	1.2	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	3.2	3.3	2.9	0.65	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.32	0.41	0.24	0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.1	4.0	3.4	0.84	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	44.6	43.3	34.8	12.5	< 1.60
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	19	8.9	12	7.3
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	110	60	81	70
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.6	0.9	1.3	1.9
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	2.2	4.4	3.3	4.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.7	0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	4.3	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	57	49	24	29	47
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	12	11	8.0	8.2	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	59	65	34	43	48
Iron (aqua regia extractable)	mg/kg	40	MCERTS	46000	47000	28000	35000	43000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	93	86	30	20	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.2	2.0	1.3	2.6	3.8
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	36	24	28	94
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	77	70	34	38	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	190	120	98	180



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431537	431538	431539	431540	431541
Sample Reference				SD01	SD02	SD03	SD04	SD05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				25/03/2015	25/03/2015	25/03/2015	24/03/2015	24/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	4.8	4.3	2.4	2.1	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	18	20	15	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	99	110	70	23	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	120	130	87	26	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.1	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.4	< 2.0	< 2.0	2.8	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	38	39	39	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	87	100	130	18	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	130	140	170	22	< 10



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431542				431543		431544		431545		431546	
Sample Reference	SD06				SD07		CP114		CP115		CP115	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	None Supplied				None Supplied		0.25		0.25		0.50	
Date Sampled	24/03/2015				24/03/2015		25/03/2015		25/03/2015		25/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	52	62	20	26	9.9	26	26	26	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.4	2.0	2.0	2.0	2.0	2.0	

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

pH	pH Units	N/A	MCERTS	7.2	7.2	7.2	7.5	7.5
Total Cyanide	mg/kg	1	MCERTS	< 1	2	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1500	1400	670	860	1200
Total Chloride	mg/kg	5	NONE	230	530	13	18	57
Organic Matter	%	0.1	MCERTS	6.0	7.3	1.3	2.1	2.7
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.5	4.2	0.8	1.2	1.6
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0	3.1	3.0	4.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05	< 0.05	0.20
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.28	< 0.10	0.22	0.42
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.88	0.39	1.2	1.6
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.91	0.33	1.2	1.5
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.47	< 0.10	0.63	0.74
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.73	< 0.05	0.70	0.81
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.98	< 0.10	0.95	1.2
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.62	< 0.10	0.49	0.49
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.72	< 0.10	0.81	0.89
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.64	< 0.10	0.48	0.55
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.89	< 0.05	0.59	0.71

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	7.39	< 1.60	7.18	9.07
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	12	8.1	9.1	9.2
Barium (aqua regia extractable)	mg/kg	1	MCERTS	53	140	110	130	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	1.0	1.2	0.4	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	2.5	0.9	0.4	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	5.8	< 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	28	58	45	20	46
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	7.2	17	8.1	6.8	9.9
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	150	28	36	110
Iron (aqua regia extractable)	mg/kg	40	MCERTS	28000	34000	35000	24000	36000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	320	14	36	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.2	5.1	2.8	1.1	4.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	42	28	17	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	62	45	40	50
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	6800	82	74	240



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431542	431543	431544	431545	431546
Sample Reference				SD06	SD07	CP114	CP115	CP115
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	0.25	0.25	0.50
Date Sampled				24/03/2015	24/03/2015	25/03/2015	25/03/2015	25/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	4.2	< 2.0	4.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	78	< 8.0	19	13
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	20	1100	< 8.0	170	15
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	20	1200	< 10	190	28

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	17	< 10	15	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	230	< 10	170	24
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	240	< 10	190	24



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431547	431548		
Sample Reference				CP115	CP102		
Sample Number				None Supplied	None Supplied		
Depth (m)				1.00	0.25		
Date Sampled				25/03/2015	24/03/2015		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	27	< 0.1		
Moisture Content	%	N/A	NONE	20	20		
Total mass of sample received	kg	0.001	NONE	2.0	2.0		

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

pH	pH Units	N/A	MCERTS	7.4	7.3		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1		
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1200	470		
Total Chloride	mg/kg	5	NONE	87	19		
Organic Matter	%	0.1	MCERTS	2.2	0.8		
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.3	0.4		
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10		
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10		
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10		
Phenanthrene	mg/kg	0.1	MCERTS	3.0	< 0.10		
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10		
Fluoranthene	mg/kg	0.1	MCERTS	3.6	< 0.10		
Pyrene	mg/kg	0.1	MCERTS	3.5	< 0.10		
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.7	< 0.10		
Chrysene	mg/kg	0.05	MCERTS	1.3	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.7	< 0.10		
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.60	< 0.10		
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.2	< 0.10		
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.81	< 0.10		
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.11	< 0.10		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.89	< 0.05		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	18.4	< 1.60		
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.9	9.5		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	82	46		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	1.2		
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	0.5		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	31		
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	7.1	7.6		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	17		
Iron (aqua regia extractable)	mg/kg	40	MCERTS	28000	35000		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	11		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3		
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.3	1.6		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	25		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	43	46		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	92	86		



Analytical Report Number: 15-69420
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431547	431548			
Sample Reference				CP115	CP102			
Sample Number				None Supplied	None Supplied			
Depth (m)				1.00	0.25			
Date Sampled				25/03/2015	24/03/2015			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	7.5	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	830	3.7			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	4400	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	1900	< 8.0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	7100	< 10			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	250	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	1200	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	440	< 10			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	1900	< 10			



Analytical Report Number : 15-69420

Project / Site name: Graven Hill, Bicester

* 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.

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 *
431532	HP703	None Supplied	0.20	Light brown clay.
431533	HP703	None Supplied	0.50	Brown topsoil and clay with vegetation.
431534	HP704	None Supplied	0.20	Brown clay and topsoil with vegetation.
431535	HP704	None Supplied	0.40	Light brown clay.
431536	HP707	None Supplied	0.20	Brown topsoil and clay with vegetation.
431537	SD01	None Supplied	None Supplied	Brown clay and topsoil with vegetation.
431538	SD02	None Supplied	None Supplied	Black clay and topsoil with vegetation.
431539	SD03	None Supplied	None Supplied	Black topsoil and clay with vegetation.
431540	SD04	None Supplied	None Supplied	Brown topsoil and clay with vegetation.
431541	SD05	None Supplied	None Supplied	Light brown topsoil and clay with vegetation.
431542	SD06	None Supplied	None Supplied	Light brown topsoil and clay with vegetation.
431543	SD07	None Supplied	None Supplied	Black topsoil with vegetation.
431544	CP114	None Supplied	0.25	Light brown clay.
431545	CP115	None Supplied	0.25	Brown sandy topsoil with gravel and vegetation.
431546	CP115	None Supplied	0.50	Brown clay and topsoil with vegetation.
431547	CP115	None Supplied	1.00	Brown clay and sand with stones.
431548	CP102	None Supplied	0.25	Light brown clay with vegetation.



Analytical Report Number : 15-69420

Project / Site name: Graven Hill, Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine 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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter 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	L023-PL	D	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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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 organic carbon in soil	Determination of organic matter 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	MCERTS
Total sulphate (as SO4 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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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 300c.

Iss No 15-69420-1

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The results included within the report are representative of the samples submitted for analysis.

Page 11 of 11



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Analytical Report Number : 15-69421

Project / Site name:	Graven Hill , Bicester	Samples received on:	27/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	15/04/2015
Report Issue Number:	1	Report issued on:	15/04/2015
Samples Analysed:	2 wac multi samples		

Signed: 

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

Signed: 

Rexona Rahman
Reporting 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 :

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

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Waste Acceptance Criteria Analytical Results							
Report No:	15-69421						
				Client: GEOENG			
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	431550			Landfill Waste Acceptance Criteria			
Sampling Date	26/03/2015			Limits			
Sample ID	CP115			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	1.50						
Solid Waste Analysis							
TOC (%)**	< 0.1				3%	5%	6%
Loss on Ignition (%) **	4.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	110				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	7.3				--	>6	--
Acid Neutralisation Capacity (mol / kg)	0.81				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.078	0.053		0.55	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0051	0.0046		0.046	0.5	10	70
Copper *	0.0023	< 0.0030		< 0.020	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		0.026	0.5	10	30
Nickel *	0.0021	< 0.0010		0.0069	0.4	10	40
Lead *	0.0055	< 0.0050		0.036	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0054	0.0025		0.027	4	50	200
Chloride *	22	< 4.0		51	800	4000	25000
Fluoride	2.4	1.9		19	10	150	500
Sulphate *	230	63		780	1000	20000	50000
TDS	340	140		1600	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	14	7.9		84	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.94						
Dry Matter (%)	78						
Moisture (%)	22						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited

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Waste Acceptance Criteria Analytical Results							
Report No:	15-69421						
							Client: GEOENG
Location	Graven Hill , Bicester						
Lab Reference (Sample Number)	431551						
Sampling Date	26/03/2015						
Sample ID	CP115						
Depth (m)	2.20						
Landfill Waste Acceptance Criteria							
Limits							
	Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill				
Solid Waste Analysis							
TOC (%)**	1.2				3%	5%	6%
Loss on Ignition (%) **	8.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	24				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	6.2				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-0.42				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.097	0.018		0.25	20	100	300
Cadmium *	0.0013	0.0011		0.011	0.04	1	5
Chromium *	0.0039	0.0034		0.034	0.5	10	70
Copper *	0.017	0.016		0.16	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		< 0.020	0.5	10	30
Nickel *	0.022	0.017		0.17	0.4	10	40
Lead *	< 0.0050	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.010	0.0065		0.068	4	50	200
Chloride *	120	18		270	800	4000	25000
Fluoride	0.73	0.63		6.4	10	150	500
Sulphate *	1700	1500		15000	1000	20000	50000
TDS	1500	1200		12000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	6.4	2.7		30	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.94						
Dry Matter (%)	75						
Moisture (%)	25						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.15						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited



Analytical Report Number : 15-69421

Project / Site name: Graven Hill , Bicester

* 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.

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 *
431550	CP115	None Supplied	1.50	Light brown clay.
431551	CP115	None Supplied	2.20	Brown clay.

Analytical Report Number : 15-69421

Project / Site name: Graven Hill , Bicester

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
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of chloride in leachate by Gallery discrete analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L082-PL	W	ISO 17025
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	NONE
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
Mineral Oil in Soil	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
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
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Sociated WAC-17 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	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L004-PL	W	NONE



Analytical Report Number : 15-69421

Project / Site name: Graven Hill , Bicester

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
Total organic carbon in soil	Determination of organic matter 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	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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Analytical Report Number : 15-69423

Project / Site name:	Graven Hill, Bicester	Samples received on:	18/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	10/04/2015
Report Issue Number:	1	Report issued on:	10/04/2015
Samples Analysed:	9 soil samples		

Signed: 

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.


Signed: _____

Rexona Rahman
Reporting 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 :

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.

Analytical Report Number: 15-69423

Project / Site name: Graven Hill, Bicester

Lab Sample Number	431556				431557		431558		431559		431560	
Sample Reference	TP504				TP511		TP550		TP550		TP551	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.30				0.60		0.40		1.10		0.40	
Date Sampled	16/03/2015				16/03/2015		16/03/2015		16/03/2015		16/03/2015	
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	29	25	27	29	29	19	19	19	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	

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

pH	pH Units	N/A	MCERTS	6.6	5.6	7.3	6.2	6.9
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Chloride	mg/kg	5	NONE	-	-	-	-	-
Organic Matter	%	0.1	MCERTS	0.1	0.7	3.1	1.0	0.4
Total Organic Carbon (TOC)	%	0.1	MCERTS	< 0.1	0.4	1.8	0.6	0.2
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	6.2	8.9	8.7	8.5
Barium (aqua regia extractable)	mg/kg	1	MCERTS	140	70	58	86	58
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	1.7	1.1	0.9	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.4	0.7	0.8	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 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	27	63	38	48	44
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	24	9.7	7.3	5.2	6.2
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	37	27	39	21
Iron (aqua regia extractable)	mg/kg	40	MCERTS	43000	37000	31000	40000	32000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	19	22	19	9.0
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.5	4.0	1.8	2.4	2.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	46	35	24	18	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	49	40	33	48
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	110	85	51	64



Analytical Report Number: 15-69423
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431556				431557	431558	431559	431560
Sample Reference	TP504				TP511	TP550	TP550	TP551
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30				0.60	0.40	1.10	0.40
Date Sampled	16/03/2015				16/03/2015	16/03/2015	16/03/2015	16/03/2015
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Compound	Units	Limit of detection	Accreditation Status	431556	431557	431558	431559	431560
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-69423
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431556				431557	431558	431559	431560
Sample Reference	TP504				TP511	TP550	TP550	TP551
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30				0.60	0.40	1.10	0.40
Date Sampled	16/03/2015				16/03/2015	16/03/2015	16/03/2015	16/03/2015
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-



Analytical Report Number: 15-69423
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	431561				431562		431563		431564	
Sample Reference	TP554				RC304		CP108		CC419	
Sample Number	None Supplied				None Supplied		None Supplied		None Supplied	
Depth (m)	0.20				0.30		0.25		0.40	
Date Sampled	13/03/2015				13/03/2015		17/03/2015		18/03/2015	
Time Taken	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	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	24	20	25	11			
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0			

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

Parameter	Units	Limit of detection	Accreditation Status	431561	431562	431563	431564
pH	pH Units	N/A	MCERTS	7.1	7.0	7.2	7.2
Total Cyanide	mg/kg	1	MCERTS	-	-	< 1	-
Total Chloride	mg/kg	5	NONE	-	-	34	-
Organic Matter	%	0.1	MCERTS	1.4	2.2	1.7	0.7
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.8	1.3	1.0	0.4
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	3.0	-

Speciated PAHs

Parameter	Units	Limit of detection	Accreditation Status	431561	431562	431563	431564
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	35
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	26
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	130
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	43
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	190
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	160
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	82
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	75
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	91
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	31
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	80
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	38
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	8.7
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	44

Total PAH

Speciated Total EPA-16 PAHs	Units	Limit of detection	Accreditation Status	431561	431562	431563	431564
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	1030

Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	431561	431562	431563	431564
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7	17	12	15
Barium (aqua regia extractable)	mg/kg	1	MCERTS	83	97	230	280
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.9	1.8	1.7	1.0
Boron (water soluble)	mg/kg	0.2	MCERTS	2.8	2.2	0.9	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.5	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	55	47	55	15
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	19	21	21	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44	30	32	120
Iron (aqua regia extractable)	mg/kg	40	MCERTS	41000	45000	41000	31000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	35	33	75
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.8	1.4	1.4	1.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	73	44	48	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	47	75	67	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	130	120	62



Analytical Report Number: 15-69423
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431561	431562	431563	431564	
Sample Reference				TP554	RC304	CP108	CC419	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.30	0.25	0.40	
Date Sampled				13/03/2015	13/03/2015	17/03/2015	18/03/2015	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	2.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	49	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	110	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	170	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	330	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	4.1	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	270	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	1100	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	1900	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	3200	



Analytical Report Number: 15-69423
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431561	431562	431563	431564
Sample Reference				TP554	RC304	CP108	CC419
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.25	0.40
Date Sampled				13/03/2015	13/03/2015	17/03/2015	18/03/2015
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
VOCs							
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	-	-



Analytical Report Number : 15-69423

Project / Site name: Graven Hill, Bicester

* 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.

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 *
431556	TP504	None Supplied	0.30	Brown sandy topsoil with vegetation.
431557	TP511	None Supplied	0.60	Light brown clay.
431558	TP550	None Supplied	0.40	Brown clay and topsoil.
431559	TP550	None Supplied	1.10	Brown clay and sand.
431560	TP551	None Supplied	0.40	Light brown clay and sand with vegetation.
431561	TP554	None Supplied	0.20	Brown clay and sand with vegetation.
431562	RC304	None Supplied	0.30	Brown clay.
431563	CP108	None Supplied	0.25	Light brown clay and sand.
431564	CC419	None Supplied	0.40	Brown clay and topsoil with gravel and rubble.

Analytical Report Number : 15-69423

Project / Site name: Graven Hill, Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine 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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter 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	L023-PL	D	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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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 organic carbon in soil	Determination of organic matter 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	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by spectrophotometry.	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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 30oC.



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Analytical Report Number : 15-69424

Project / Site name:	Graven Hill, Bicester	Samples received on:	18/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	15/04/2015
Report Issue Number:	1	Report issued on:	15/04/2015
Samples Analysed:	1 wac multi sample		

Signed: 

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

Signed: 

Rexona Rahman
Reporting 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 :

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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Waste Acceptance Criteria Analytical Results							
Report No:	15-69424						
							Client: GEOENG
Location	Graven Hill, Bicester						
Lab Reference (Sample Number)	431565						
Sampling Date	16/03/2015						
Sample ID	TP550						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	1.8				3%	5%	6%
Loss on Ignition (%) **	5.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 1.6				100	--	--
pH (units)**	7.3				--	>6	--
Acid Neutralisation Capacity (mol / kg)	1.7				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.026	0.023		0.23	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0090	0.0054		0.057	0.5	10	70
Copper *	0.0033	< 0.0030		0.024	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0092	0.0056		0.060	0.5	10	30
Nickel *	0.0011	< 0.0010		< 0.0050	0.4	10	40
Lead *	0.0077	< 0.0050		0.026	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0075	0.0044		0.047	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	4000	25000
Fluoride	0.58	0.55		5.5	10	150	500
Sulphate *	10	3.0		37	1000	20000	50000
TDS	120	70		750	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.3	7.4		74	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	73						
Moisture (%)	27						
Stage 1							
Volume Eluate L2 (litres)	0.30						
Filtered Eluate VE1 (litres)	0.17						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited



Analytical Report Number : 15-69424

Project / Site name: Graven Hill, Bicester

* 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.

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 *
431565	TP550	None Supplied	0.40	Brown clay and topsoil.

Analytical Report Number : 15-69424

Project / Site name: Graven Hill, Bicester

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
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L0735-PL	W	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of chloride in leachate by Gallery discrete analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L082-PL	W	ISO 17025
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	NONE
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
Mineral Oil in Soil	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
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
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Seciated WAC-17 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	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L004-PL	W	NONE



Analytical Report Number : 15-69424

Project / Site name: Graven Hill, Bicester

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
Total organic carbon in soil	Determination of organic matter 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	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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Analytical Report Number : 15-69425

Project / Site name:	Graven Hill, Bicester	Samples received on:	24/03/2015
Your job number:	30378	Samples instructed on:	02/04/2015
Your order number:		Analysis completed by:	09/04/2015
Report Issue Number:	1	Report issued on:	09/04/2015
Samples Analysed:	2 soil samples		

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

Signed: 
 Rexona Rahman
 Reporting 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 :

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

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Analytical Report Number: 15-69425
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				431566	431567			
Sample Reference				CP103	CP105			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.25	0.25			
Date Sampled				23/03/2015	23/03/2015			
Time Taken				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	20	15		
	Total mass of sample received	kg	0.001	NONE	1.9	1.5		

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

pH	pH Units	N/A	MCERTS	7.3	7.1			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	640	140			
Total Chloride	mg/kg	5	NONE	18	45			
Organic Matter	%	0.1	MCERTS	1.2	0.1			
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.7	< 0.1			
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0			

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60			
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.1	13			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	59	62			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	1.0			
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	0.4			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	28			
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	7.3	9.8			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	21			
Iron (aqua regia extractable)	mg/kg	40	MCERTS	27000	31000			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.1	9.9			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.3	1.1			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	36			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	41	42			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72	45			

Analytical Report Number: 15-69425
 Project / Site name: Graven Hill, Bicester

Lab Sample Number		431566	431567				
Sample Reference		CP103	CP105				
Sample Number		None Supplied	None Supplied				
Depth (m)		0.25	0.25				
Date Sampled		23/03/2015	23/03/2015				
Time Taken		None Supplied	None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10		

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10		



Analytical Report Number : 15-69425

Project / Site name: Graven Hill, Bicester

* 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.

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 *
431566	CP103	None Supplied	0.25	Light brown topsoil and clay with vegetation.
431567	CP105	None Supplied	0.25	Light brown clay and sand.

Analytical Report Number : 15-69425

Project / Site name: Graven Hill, Bicester

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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations 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
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine 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 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter 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	L023-PL	D	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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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 organic carbon in soil	Determination of organic matter 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	MCERTS
Total sulphate (as SO4 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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by spectrophotometry.	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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 30oC.



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Analytical Report Number : 15-70066

Project / Site name:	Graven Hill, Bicester	Samples received on:	26/03/2015
Your job number:	30378	Samples instructed on:	17/04/2015
Your order number:		Analysis completed by:	24/04/2015
Report Issue Number:	1	Report issued on:	24/04/2015
Samples Analysed:	1 leachate sample - 3 soil samples		

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

Signed: 
 Rexona Rahman
 Reporting 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 :

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

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Analytical Report Number: 15-70066
Project / Site name: Graven Hill, Bicester

Lab Sample Number	435132	435133	435134			
Sample Reference	CP111	CP111	CP111			
Sample Number	None Supplied	None Supplied	None Supplied			
Depth (m)	0.25	0.50	1.00			
Date Sampled	18/03/2015	18/03/2015	18/03/2015			
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	14	7.4	20
Total mass of sample received	kg	0.001	NONE	1.4	1.5	1.6

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

General Inorganics

pH	pH Units	N/A	MCERTS	8.1	8.6	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	ISO 17025	1100	1300	1600
Total Chloride	mg/kg	5	NONE	14	< 5	78
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.43	0.23	0.16
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.48	< 0.10	0.15
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	1.6	0.37	0.55
Pyrene	mg/kg	0.1	MCERTS	1.7	0.36	0.50
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.4	0.20	0.33
Chrysene	mg/kg	0.05	MCERTS	1.3	0.24	0.27
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	2.1	0.36	0.46
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.60	0.19	0.13
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.4	0.27	0.35
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.80	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.12	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.81	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	12.6	2.22	2.90

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	7.0	5.3
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	37	42
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	0.3	0.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	< 0.2	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	4.6	17
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	21	4.1	5.8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	67	20	42
Iron (aqua regia extractable)	mg/kg	40	MCERTS	41000	9500	16000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	97	8.6	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	5.8	0.9	0.8
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	51	12	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	57	15	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	31	21	47

Analytical Report Number: 15-70066
 Project / Site name: Graven Hill, Bicester

Lab Sample Number		435132	435133	435134		
Sample Reference		CP111	CP111	CP111		
Sample Number		None Supplied	None Supplied	None Supplied		
Depth (m)		0.25	0.50	1.00		
Date Sampled		18/03/2015	18/03/2015	18/03/2015		
Time Taken		None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
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	2.2	< 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	20	31	69		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	20	33	69		

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
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	< 10	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	13	< 10	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	13	< 10	< 10		



Analytical Report Number: 15-70066
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				435135			
Sample Reference				CP111			
Sample Number				None Supplied			
Depth (m)				0.25			
Date Sampled				18/03/2015			
Time Taken				None Supplied			
Analytical Parameter (Leachate Analysis)		Units	Limit of detection	Accreditation Status			

General Inorganics

Sulphate as SO ₄	µg/l	100	ISO 17025	45200			
Chloride	mg/l	4	NONE	< 4.0			
Fluoride	µg/l	50	NONE	1000			

Phenols by GC-MS

Phenol	µg/l	0.05	NONE	0.85			
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05			
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05			
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05			
2,4-Dimethylphenol	µg/l	0.05	NONE	0.70			
2-Chlorophenol	µg/l	0.05	NONE	< 0.05			
2-Methylphenol	µg/l	0.05	NONE	1.0			
2-Nitrophenol	µg/l	0.05	NONE	< 0.05			
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05			
4-Methylphenol	µg/l	0.05	NONE	1.5			

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10			
Total Phenols (GC-MS)	µg/l	1	NONE	4.1			

Speciated PAHs

Naphthalene	µg/l	0.01	NONE	< 0.01			
Acenaphthylene	µg/l	0.01	NONE	< 0.01			
Acenaphthene	µg/l	0.01	NONE	< 0.01			
Fluorene	µg/l	0.01	NONE	< 0.01			
Phenanthrene	µg/l	0.01	NONE	< 0.01			
Anthracene	µg/l	0.01	NONE	< 0.01			
Fluoranthene	µg/l	0.01	NONE	< 0.01			
Pyrene	µg/l	0.01	NONE	< 0.01			
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01			
Chrysene	µg/l	0.01	NONE	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01			
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01			

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2			
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Analytical Report Number: 15-70066
 Project / Site name: Graven Hill, Bicester

Lab Sample Number	435135
Sample Reference	CP111
Sample Number	None Supplied
Depth (m)	0.25
Date Sampled	18/03/2015
Time Taken	None Supplied

Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status				
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	3.7			
Barium (dissolved)	µg/l	0.05	ISO 17025	65			
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2			
Boron (dissolved)	µg/l	10	ISO 17025	49			
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08			
Chromium (hexavalent)	µg/l	5	NONE	< 5.0			
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.2			
Copper (dissolved)	µg/l	0.7	ISO 17025	2.1			
Iron (dissolved)	mg/l	0.004	ISO 17025	0.14			
Lead (dissolved)	µg/l	1	ISO 17025	1.7			
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5			
Molybdenum (dissolved)	µg/l	0.4	ISO 17025	14			
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.1			
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0			
Vanadium (dissolved)	µg/l	1.7	ISO 17025	3.2			
Zinc (dissolved)	µg/l	0.4	ISO 17025	< 0.4			

Monoaromatics

Benzene	µg/l	1	NONE	< 1.0			
Toluene	µg/l	1	NONE	< 1.0			
Ethylbenzene	µg/l	1	NONE	< 1.0			
p & m-xylene	µg/l	1	NONE	< 1.0			
o-xylene	µg/l	1	NONE	< 1.0			

Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10			
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Analytical Report Number : 15-70066

Project / Site name: Graven Hill, Bicester

* 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.

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 *
435132	CP111	None Supplied	0.25	Black sandy topsoil with gravel and vegetation.
435133	CP111	None Supplied	0.50	Light grey clay and sand.
435134	CP111	None Supplied	1.00	Light grey clay.

Analytical Report Number : 15-70066

Project / Site name: Graven Hill, Bicester

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 in leachate	Determination of boron by acidification followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	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
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
BTEX in leachates	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073W-PL	W	NONE
Cations in soil by ICP-OES	Determination of cations 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
Chloride in leachate	Determination of chloride in leachate by titration against silver nitrate.	In-house method	L024-PL	W	NONE
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Fluoride in leachate	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination*	L033-PL	W	NONE
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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 by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
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 leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH in soil (automated)	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	L099-PL	D	MCERTS
Phenols, speciated, in leachate, by GCMS	Determination of speciated phenols in leachate by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE

Analytical Report Number : 15-70066

Project / Site name: Graven Hill, Bicester

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
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
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 in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
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
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate in soil by extraction in water followed by reaction with sodium salicylate in the presence of sulphuric acid. The reaction product is nitrosalicylic acid, which forms a yellow chromophore upon the addition of alkali, the intensity of which is measured by spectrophotometry.	In-house method based on Polish Standard Method PN-82/C-04579.08.	L078-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.



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Analytical Report Number : 15-70126

Project / Site name:	Graven Hill , Bicester	Samples received on:	17/04/2015
Your job number:	30378	Samples instructed on:	17/04/2015
Your order number:		Analysis completed by:	24/04/2015
Report Issue Number:	1	Report issued on:	24/04/2015
Samples Analysed:	10 water samples		

Signed: 

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

Signed: 

Rexona Rahman
Reporting 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 :

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

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Analytical Report Number: 15-70126
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	435547				435548				435549				435550				435551			
Sample Reference	CP107				CP108				CP110				CP111				CP115			
Sample Number	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Depth (m)	2.97				1.60				2.50				2.03				0.97			
Date Sampled	15/04/2015				15/04/2015				15/04/2015				15/04/2015				15/04/2015			
Time Taken	0930				1040				1100				1140				1745			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status																	

General Inorganics

pH	pH Units	N/A	ISO 17025	7.6	7.3	7.0	7.1	7.3
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Complex Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO ₄	µg/l	45	ISO 17025	2770000	1410000	1950000	1410000	1740000
Chloride	mg/l	0.15	ISO 17025	160	26	140	150	300
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	2900	990	1600	300	620
Nitrate as N	mg/l	0.25	ISO 17025	1.0	< 0.3	0.3	0.3	0.3
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	2140	1850	2100	1930	1350

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
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Analytical Report Number: 15-70126
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	435547				435548				435549				435550				435551			
Sample Reference	CP107				CP108				CP110				CP111				CP115			
Sample Number	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Depth (m)	2.97				1.60				2.50				2.03				0.97			
Date Sampled	15/04/2015				15/04/2015				15/04/2015				15/04/2015				15/04/2015			
Time Taken	0930				1040				1100				1140				1745			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status																	

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	3.80	1.29	4.15	2.88	7.38
Barium (dissolved)	µg/l	0.06	ISO 17025	59	52	60	61	91
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	2000	180	550	290	1200
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.11	0.14	0.04	0.18	0.18
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	38	27	37	23	0.6
Cobalt (dissolved)	µg/l	0.2	ISO 17025	13	14	7.6	9.1	4.7
Copper (dissolved)	µg/l	0.5	ISO 17025	69	25	29	22	4.5
Iron (dissolved)	mg/l	0.004	ISO 17025	0.46	0.95	0.71	0.41	0.34
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	0.8
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.30	0.11	0.34	0.17	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	80	47	48	52	10
Selenium (dissolved)	µg/l	0.6	ISO 17025	6.0	2.8	4.2	2.7	< 0.6
Vanadium (dissolved)	µg/l	0.2	ISO 17025	1.9	0.8	1.8	1.6	0.3
Zinc (dissolved)	µg/l	0.5	ISO 17025	9.2	8.1	6.9	8.6	6.5

Calcium (dissolved)	mg/l	0.012	ISO 17025	610	700	650	670	420
Magnesium (dissolved)	mg/l	0.005	ISO 17025	150	26	110	59	74

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-70126
 Project / Site name: Graven Hill , Bicester

Lab Sample Number				435552	435553	435554	435555	435556
Sample Reference				RC313	CP104	CP102	CP101	CP113
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.32	0.64	0.21	0.51	0.60
Date Sampled				15/04/2015	15/04/2015	15/04/2015	15/04/2015	15/04/2015
Time Taken				1330	1359	1640	1700	1730
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.4	7.4	7.3	7.3	7.2
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Complex Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO ₄	µg/l	45	ISO 17025	1200000	258000	1110000	988000	1700000
Chloride	mg/l	0.15	ISO 17025	94	8.5	21	14	48
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	420	26	260	280	400
Nitrate as N	mg/l	0.25	ISO 17025	0.3	< 0.3	0.3	< 0.3	0.4
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	667	445	960	978	1330

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
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Analytical Report Number: 15-70126
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	435552				435553		435554	435555	435556
Sample Reference	RC313				CP104		CP102	CP101	CP113
Sample Number	None Supplied				None Supplied		None Supplied	None Supplied	None Supplied
Depth (m)	0.32				0.64		0.21	0.51	0.60
Date Sampled	15/04/2015				15/04/2015		15/04/2015	15/04/2015	15/04/2015
Time Taken	1330				1359		1640	1700	1730
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status						

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	11.7	6.50	6.78	9.00	1.24
Barium (dissolved)	µg/l	0.06	ISO 17025	100	32	58	46	47
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	1700	230	410	620	570
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.4	1.6	0.4	0.6	18
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.0	0.7	1.6	0.9	1.8
Copper (dissolved)	µg/l	0.5	ISO 17025	1.9	3.7	4.5	2.3	25
Iron (dissolved)	mg/l	0.004	ISO 17025	0.71	0.82	0.29	0.54	1.6
Lead (dissolved)	µg/l	0.2	ISO 17025	1.6	1.9	1.2	0.6	0.4
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	0.65
Nickel (dissolved)	µg/l	0.5	ISO 17025	12	3.8	6.4	7.6	28
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	2.9	< 0.6	< 0.6	3.9
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.7	< 0.2	< 0.2	0.9
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.6	3.3	2.8	1.6	4.7

Calcium (dissolved)	mg/l	0.012	ISO 17025	200	160	320	340	420
Magnesium (dissolved)	mg/l	0.005	ISO 17025	41	8.4	38	34	67

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10



Analytical Report Number: 15-70126
 Project / Site name: Graven Hill , Bicester

Lab Sample Number	435552				435553	435554	435555	435556
Sample Reference	RC313				CP104	CP102	CP101	CP113
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.32				0.64	0.21	0.51	0.60
Date Sampled	15/04/2015				15/04/2015	15/04/2015	15/04/2015	15/04/2015
Time Taken	1330				1359	1640	1700	1730
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 15-70126

Project / Site name: Graven Hill , Bicester

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
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073W-PL	W	ISO 17025
Chloride in water	Determination of Chloride in water by Gallery Discrete Analyser based on reaction with mercury (II) thiocyanate and acid solution with iron (III) nitrate to form a red/brown iron (III) thiocyanate complex; followed by spectrophotometric measurement at a wavelength of 480 nm.	Methods for the Examination of Water and Associated Materials Chloride in Waters, Sewage and Effluents 1981.ISBN 0117516260 Accredited matrices: SW, PW, GW.	L082 B	W	ISO 17025
Complex cyanide in water	Determination of complex 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	NONE
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate in water by colorimetric assay. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L078-PL	W	ISO 17025
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L070-UK	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-UK	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073W-PL	W	ISO 17025

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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Analytical Report Number : 15-70164

Project / Site name:	Graven Hill, Bicester	Samples received on:	18/03/2015
Your job number:	30378	Samples instructed on:	17/04/2015
Your order number:		Analysis completed by:	27/04/2015
Report Issue Number:	1	Report issued on:	27/04/2015
Samples Analysed:	4 leachate samples		

Signed:



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

Signed:



Rexona Rahman
Reporting 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 :

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

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Analytical Report Number: 15-70164

Project / Site name: Graven Hill, Bicester

Lab Sample Number				435869	435870	435872		
Sample Reference				TP504	TP511	CP115		
Sample Number				431556	431557	431547		
Depth (m)				0.30	0.60	1.00		
Date Sampled				16/03/2015	16/03/2015	25/03/2015		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

Sulphate as SO ₄	µg/l	100	ISO 17025	25700	84300	22400		
Chloride	mg/l	0.15	ISO 17025	2.1	3.5	4.8		
Fluoride	µg/l	50	NONE	130	72	98		

Phenols by GC-MS

Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		

Total Phenols

Total Phenols (GC-MS)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
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Speciated PAHs

Naphthalene	µg/l	0.01	NONE	< 0.01	< 0.01	4.9		
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	NONE	< 0.01	< 0.01	0.61		
Fluorene	µg/l	0.01	NONE	< 0.01	< 0.01	0.40		
Phenanthrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	5.9		
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Analytical Report Number: 15-70164

Project / Site name: Graven Hill, Bicester

Lab Sample Number				435869	435870	435872		
Sample Reference				TP504	TP511	CP115		
Sample Number				431556	431557	431547		
Depth (m)				0.30	0.60	1.00		
Date Sampled				16/03/2015	16/03/2015	25/03/2015		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.6	2.3	1.1		
Barium (dissolved)	µg/l	0.05	ISO 17025	39	37	16		
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2		
Boron (dissolved)	µg/l	10	ISO 17025	90	69	60		
Cadmium (dissolved)	µg/l	0.08	ISO 17025	0.23	< 0.08	< 0.08		
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0		
Chromium (dissolved)	µg/l	0.4	ISO 17025	4.0	1.0	3.8		
Cobalt (dissolved)	µg/l	0.3	ISO 17025	1.5	< 0.3	1.4		
Copper (dissolved)	µg/l	0.7	ISO 17025	17	2.1	13		
Iron (dissolved)	mg/l	0.004	ISO 17025	2.1	0.25	1.8		
Lead (dissolved)	µg/l	1	ISO 17025	4.6	2.9	4.8		
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Molybdenum (dissolved)	µg/l	0.4	ISO 17025	0.5	22	1.9		
Nickel (dissolved)	µg/l	0.3	ISO 17025	9.3	2.3	9.3		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0		
Vanadium (dissolved)	µg/l	1.7	ISO 17025	3.5	< 1.7	< 1.7		
Zinc (dissolved)	µg/l	0.4	ISO 17025	23	4.1	11		

Monoaromatics

Benzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10		
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Analytical Report Number : 15-70164

Project / Site name: Graven Hill, Bicester

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
Boron in leachate	Determination of boron by acidification followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX in leachates	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073W-PL	W	NONE
Chloride in leachate	Determination of Chloride in leachate by Gallery Discrete Analyser based on reaction with mercury (II) thiocyanate and acid solution with iron (III) nitrate to form a red/brown iron (III) thiocyanate complex; followed by spectrophotometric measurement at a wavelength of 480 nm.	Methods for the Examination of Water and Associated Materials Chloride in Waters, Sewage and Effluents 1981.ISBN 0117516260 Accredited matrices: SW, PW, GW.	L082 B	W	ISO 17025
Fluoride in leachate	Determination of fluoride in leachate by 1:1 ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	NONE
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Phenols, speciated, in leachate, by GCMS	Determination of speciated phenols in leachate by extraction in hexane followed by GC-MS.	In-house method based on USEPA 8270	L070-PL	W	NONE
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	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.



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e: reception@i2analytical.com

Analytical Report Number : 15-70840

Project / Site name:	Graven Hill, Bicester	Samples received on:	23/03/2015
Your job number:	30378	Samples instructed on:	29/04/2015
Your order number:		Analysis completed by:	07/05/2015
Report Issue Number:	1	Report issued on:	07/05/2015
Samples Analysed:	13 soil samples		

Signed _____

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

Signed: _____

Emma Winter
 Assistant Reporting 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 :

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

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Analytical Report Number: 15-70840
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				439592	439593	439594	439595	439596
Sample Reference				TP508	TP508	TP521	TP521	TP505
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.60	0.30	1.00	0.30
Date Sampled				12/03/2015	12/03/2015	03/03/2015	03/03/2015	12/03/2015
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	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	22	22	27	17	18
Total mass of sample received	kg	0.001	NONE	2.0	1.8	1.7	1.7	2.0
General Inorganics								
pH	pH Units	N/A	MCERTS	6.8	8.2	6.9	7.7	7.6
Total Nitrogen (Kjeldahl)	mg/kg	5	NONE	3800	720	4000	830	550
Organic Matter	%	0.1	MCERTS	5.7	2.7	3.0	2.9	0.2
Phosphorus (available)	mg/l	1	NONE	10	23	12	3.9	5.1
Potassium (available)	mg/l	1	NONE	110	260	210	190	140
Heavy Metals / Metalloids								
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	32	49	24	13
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	42	49	36	28
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	91	63	160	68	97



Analytical Report Number: 15-70840
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				439597	439598	439599	439600	439601
Sample Reference				TP505	TP523	TP523	TP523	TP535
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80	0.20	0.60	1.00	0.05
Date Sampled				12/03/2015	09/03/2015	09/03/2015	09/03/2015	04/03/2015
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	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	20	18	20	27
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	1.8
General Inorganics								
pH	pH Units	N/A	MCERTS	8.1	7.6	7.9	7.9	7.0
Total Nitrogen (Kjeldahl)	mg/kg	5	NONE	100	1200	740	240	7700
Organic Matter	%	0.1	MCERTS	< 0.1	2.1	0.7	1.0	8.5
Phosphorus (available)	mg/l	1	NONE	3.7	3.9	1.4	1.0	8.4
Potassium (available)	mg/l	1	NONE	90	170	220	180	290
Heavy Metals / Metalloids								
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	33	27	39	28
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	41	47	54	44
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	44	120	94	110	88



Analytical Report Number: 15-70840
 Project / Site name: Graven Hill, Bicester

Lab Sample Number				439602	439603	439604		
Sample Reference				TP535	CP101	CP101		
Sample Number				None Supplied	431158	431159		
Depth (m)				1.00	0.25	0.50		
Date Sampled				04/03/2015	19/03/2015	19/03/2015		
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	16	19	20		
Total mass of sample received	kg	0.001	NONE	1.8	1.6	1.7		
General Inorganics								
pH	pH Units	N/A	MCERTS	7.5	7.5	7.3		
Total Nitrogen (Kjeldahl)	mg/kg	5	NONE	190	470	2700		
Organic Matter	%	0.1	MCERTS	0.1	0.2	3.2		
Phosphorus (available)	mg/l	1	NONE	2.5	5.2	2.9		
Potassium (available)	mg/l	1	NONE	160	56	92		
Heavy Metals / Metalloids								
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	13	18		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	17	28		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	70	100		



Analytical Report Number : 15-70840

Project / Site name: Graven Hill, Bicester

* 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.

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 *
439592	TP508	None Supplied	0.20	Brown topsoil and clay with gravel and vegetation.
439593	TP508	None Supplied	1.60	Brown clay.
439594	TP521	None Supplied	0.30	Brown clay and topsoil with vegetation.
439595	TP521	None Supplied	1.00	Light brown clay.
439596	TP505	None Supplied	0.30	Light brown clay.
439597	TP505	None Supplied	1.80	Light brown clay.
439598	TP523	None Supplied	0.20	Brown clay and topsoil with gravel and vegetation.
439599	TP523	None Supplied	0.60	Light brown clay and sand.
439600	TP523	None Supplied	1.00	Light brown clay and sand.
439601	TP535	None Supplied	0.05	Black clay and topsoil with gravel and vegetation.
439602	TP535	None Supplied	1.00	Light brown clay.
439603	CP101	431158	0.25	Light brown clay.
439604	CP101	431159	0.50	Light brown clay.

Analytical Report Number : 15-70840

Project / Site name: Graven Hill, Bicester

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
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and colorimetric determination.	In house method based on BS 7755-3.7:1995 &	L087-PL	D	NONE
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
Nitrogen (TKN)	Determination of total nitrogen by Kjeldahl method.	BS3882:2007	L087-PL	D	NONE
Organic matter 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	L023-PL	D	MCERTS
pH in soil (automated)	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	L099-PL	D	MCERTS
Phosphorus (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE
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 results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/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 30oC.

Hockridge, George

From: Sean Gregory <Sean.Gregory@Cherwell-DC.gov.uk>
Sent: 12 November 2014 12:56
To: Amos, Mark G
Cc: Stockwell, Richard W; Fairlie, Martin A C
Subject: Ground Investigation - Graven Hill, Bicester Planning Ref: 11/01494/OUT

Importance: High

Mark,

Thankyou for your email. I can confirm the preliminary site investigation proposals for the phase 1 land transfer area in your letter and its enclosures (reference EED13983-104-C-001-MA, dated 9 October 2014) are acceptable for my requirements. It is noted that there are several items in the notes section to be agreed with the MOD / DOI regarding the proposed investigation. If these agreements change the proposed site investigation locations or the reporting of the findings in line with best practise, can you let me know. Can you also send an email to confirm the site investigation locations prior to site investigation commencing.

Best regards,

Sean

Sean Gregory
Environmental Protection Officer
Cherwell District Council
Ext: 1622
Direct Dial: 01295 221622
mail to: sean.gregory@cherwell-dc.gov.uk
www.cherwell.gov.uk

From: Amos, Mark G [mailto:mark.amos@watermangroup.com]
Sent: 09 October 2014 15:34
To: Sean Gregory
Cc: Stockwell, Richard W; Fairlie, Martin A C
Subject: Ground Investigation - Graven Hill, Bicester Planning Ref: 11/01494/OUT

Dear Sean

Following my earlier email please find attached letter correspondence describing our intentions and rationale for a ground investigation at the MOD Bicester Site, Graven Hill, Bicester. We would like to engage Cherwell DC in advance of the site works. Supporting documentation can be downloaded from our file sharing webpage using the token below.

Should you have any comments, please do not hesitate to contact me.

Kind Regards

Mark

Mark Amos
Senior Consultant

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Reference: Graven Hill, Bicester

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Hockridge, George

From: Hampton, Craig <craig.hampton@environment-agency.gov.uk>
Sent: 11 November 2014 17:10
To: Amos, Mark G
Subject: RE: F.A.O Contaminated Land Officer - EA

Hi Mark

I have had a quick look at the proposed investigation. Obviously the site is predominantly unproductive strata and so there is very limited groundwater quality input. Also with cutbacks over the past year or so we are spending less time on lower risk sites. I think the scope looks fine I remember from earlier comments there are areas of fuel and solvent contamination identified by earlier investigations so provided that these will be addressed I am sure the SI will be fit for purpose. Below were some of my previous comments.

Craig Hampton

We have reviewed the phase 1 and phase 2 Land Quality Assessments (LQA) for sites A,C, D & E of the MoD bicester site produced by Entec. The results of the studies confirm that the majority of the site lies on clays namely unproductive strata and therefore they are of low sensitivity with respect to groundwater quality. Although elevated levels of contaminants such as petroleum hydrocarbons, chlorinated solvents, ammonium and sulphate have been identified at elevated levels, both within soil and groundwater, the low sensitivity should mean there is little potential risk from the proposed development to groundwater quality. Therefore the information provided is satisfactory for the EIA. Obviously as the development proceeds a higher intensity of investigation will be expected for specific phases which will help to fully characterise the site and this can be managed through appropriate planning conditions.

Our Nuclear Reg team have reviewed the radiological data and although there have been some detects generally the levels of radioactivity are low except for a solitary luminous dial. This material can be detected and removed so would not pose a significant problem unless present in large quantities for which there is no evidence at present.

The scoping report sets out that SuDS principles will be used and the small areas of the development sites which are delineated as flood zone two and three will be used as public space. We have no objections to this approach, but would like to provide guidance on what we will expect as the proposals develop.

1) All of the sites overlie mudstones principally the Peterborough and Stewartby members which are unproductive strata and are likely to have little or no groundwater. The only exception is site A which overlies superficial alluvium which is a secondary aquifer and may contain some groundwater which will contribute primarily to base flow to the nearby watercourses. So in summary from the perspective of groundwater quality these sites have low sensitivity. Any contamination detected on site if able to migrate will principally affect surface water receptors. So while we would wish to site investigations at the planning application stage and also see some groundwater quality results where it is encountered, because of the lack of sensitivity of the site we do not have any exceptional concerns that require further work at the EIA stage.

2) I am not aware of the pollution incident but expect it was a surface water incident perhaps EM know more.

3) The rail infrastructure will need to be investigated if it is to be redeveloped. Likewise most of it is on mudstone. The only issue might be the railway linking C site and Graven Hill which does pass over principal aquifer near Ambrosden. However it is only likely to be a strip of rail track so not expected to have a major impact. It is also not clear what will happen to the track as it lies between the areas destined for development.

4) We do not deal directly with radiological contamination but having consulted with the nuclear reg team they say they will be happy to review the LQAs when they come in but from the information provided they are not unduly concerned as the radioactivity is recorded as being below regulatory concern.

5) From a groundwater perspective given the low sensitivity no further information is required.

From: Amos, Mark G [mailto:mark.amos@watermangroup.com]
Sent: 07 November 2014 12:57
To: Hampton, Craig
Cc: Davies, Gillian
Subject: RE: F.A.O Contaminated Land Officer - EA

Hi Craig

Apologies I had thought I had sent this to you previously. Please find attached a letter regarding our intended scope of a ground investigation at MOD Bicester site.

If you have any comments regarding our intended scope please let me know, I would be happy to discuss any time.

Kind Regards

Kind Regards

1

Mark Amos
Senior Consultant

Waterman Energy, Environment & Design

DD: 0330 060 2249 Mob: 07789 818785

Merchants House, Wapping Road, Bristol, BS1 4RW. Tel. 0117 937 8200

From: Hampton, Craig [<mailto:craig.hampton@environment-agency.gov.uk>]

Sent: 07 October 2014 14:52

To: Amos, Mark G

Cc: Davies, Gillian

Subject: RE: F.A.O Contaminated Land Officer - EA

Hi Mark

I was involved in the original outline planning so if you would like to direct you enquiries to me. While I am happy to provide brief responses to your questions, you may be aware that since the outline permission was granted, the Environment Agency has introduced a system of payments for advice on planning. So depending on what you require I may have to refer you first to our sustainable places team who manage this process.

Craig Hampton

Technical Specialist

(Groundwater / Land Contamination)

Eur.Geol.,C.Geol., FGS, M.Sc, B.Sc(Hons)

Environment Agency

* Red Kite House, Howbery Park, Wallingford, Oxon OX10 8BD

Tel: 01491 828425 (Internal 7 25 8425) Fax: 01491 834 703

craig.hampton@environment-agency.gov.uk



We have a new email inbox for Groundwater Quality and Contaminated Land in West Thames.

Email GWCLWestThames@environment-agency.gov.uk with your requests and for advice.

From: Davies, Gillian

Sent: 07 October 2014 11:44

To: Hampton, Craig

Subject: FW: F.A.O Contaminated Land Officer - EA

From: Amos, Mark G [<mailto:mark.amos@watermangroup.com>]

Sent: 07 October 2014 11:15

To: Davies, Gillian

From: Amos, Mark G [<mailto:mark.amos@watermangroup.com>]
Sent: 07 October 2014 11:15
To: Davies, Gillian
Subject: F.A.O Contaminated Land Officer - EA

Dear Gillian

2

As just discussed I work for Waterman EED as an Environmental Consultant.

Waterman are working as Environmental Consultants for EC Harris on behalf of Cherwell District Council and the MOD on the development of MOD Bicester – Graven Hill. Planning for the development of Graven Hill has been submitted and approved (Ref: 11/01494/OUT) with number of conditions. I will be working towards discharging those conditions relating to ground contamination, therefore we will be conducting a detailed ground investigation at the site. I would like to engage with you regarding this ground investigation and intend on submitting a letter detailing our proposal and investigation method/rationale prior to our commencement at the site. I have a couple of questions prior to the submission of this letter that I would appreciate you answering.

Firstly could you confirm that you would be the point of contact for such enquiries and suitable person to receive such correspondence? Or if this is not the case could you inform me as to whom this person would be.

Secondly would there be any particular information that you would like to see included in the letter?

Kind Regards

Mark Amos
Senior Consultant

Waterman Energy, Environment & Design
www.watermangroup.com

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DD: 0330 060 2249 Mob: 07789 818785
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