

Appendix D - Laboratory Test Data

Geotechnical Laboratory Test Results
Chemical Laboratory Analysis Results

To Follow
i2 Reports
19-37047-2
19-37050-1
19-37740-1
19-37741-1
19-38993-2
19-39000-1
19-39487-1
19-39709-1



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Analytical Report Number : 19-37047

Replaces Analytical Report Number : 19-37047, issue no. 1

Project / Site name:	Stanborough Park	Samples received on:	11/04/2019
Your job number:	GE22715	Samples instructed on:	11/04/2019
Your order number:		Analysis completed by:	26/04/2019
Report Issue Number:	2	Report issued on:	29/04/2019
Samples Analysed:	2 leachate samples - 10 soil samples		

Signed:

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

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

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

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

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

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4041



Environmental Science

Analytical Report Number: 19-37047

Project / Site name: Stanborough Park

Lab Sample Number	1198862	1198863	1198864	1198865	1198866
Sample Reference	TP102	TP104	TP104	TP105	TP106
Sample Number	ES2	ES2	ES3	ES5	ES2
Depth (m)	0.50-0.50	0.45-0.45	0.80-0.80	0.90-0.90	0.40-0.40
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	9.0
Total mass of sample received	kg	0.001	NONE	1.8	1.5
				1.7	2.0
				2.0	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.5	8.1	-	11.0	10.9
Total Sulphate as SO ₄	mg/kg	50	MCERTS	360	-	-	1100	4000
Sulphide	mg/kg	1	MCERTS	< 1.0	-	-	1.2	1.5
Total Chloride	mg/kg	5	NONE	140	-	-	71	35
Total Sulphur	mg/kg	50	MCERTS	150	-	-	510	1800
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4	0.7	-	0.3	0.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.3	-	0.24	0.26
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.26	-	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	2.8	-	0.55	0.87
Pyrene	mg/kg	0.05	MCERTS	< 0.05	2.5	-	0.55	0.89
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.2	-	0.33	0.58
Chrysene	mg/kg	0.05	MCERTS	< 0.05	1.1	-	0.39	0.41
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.4	-	0.48	0.62
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.69	-	0.14	0.30
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.3	-	0.39	0.50
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.65	-	0.17	0.28
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.18	-	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.67	-	0.23	0.30

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	14.1	-	3.47	5.10
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Environmental Science

Analytical Report Number: 19-37047

Project / Site name: Stanborough Park

Lab Sample Number	1198862	1198863	1198864	1198865	1198866
Sample Reference	TP102	TP104	TP104	TP105	TP106
Sample Number	ES2	ES2	ES3	ES5	ES2
Depth (m)	0.50-0.50	0.45-0.45	0.80-0.80	0.90-0.90	0.40-0.40
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
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	16	13	-	11	13
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.8	-	0.6	2.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	25	-	26	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	21	-	18	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	85	-	19	32
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	16	-	21	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.8	< 1.0	-	< 1.0	1.3
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	59	77	-	60	77

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	3.3	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	6.5	-	< 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	< 8.0	29	-	< 8.0	28
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	46	-	< 10	34

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.2	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	7.5	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	24	-	< 10	13
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	25	-	< 10	54
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	59	-	< 10	67

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	-	-	0.003	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	0.043	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	0.61	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	0.14	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	1.5	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	2.1	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	2.2	-	-

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	-	-	6.6	-	-
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Analytical Report Number: 19-37047
Project / Site name: Stanborough Park

Lab Sample Number	1198867	1198868	1198907	1198908	1198909			
Sample Reference	TP108	TP109	TP105	TP106	TP109			
Sample Number	ES2	ES2	ES4	ES3	ES1			
Depth (m)	0.25-0.25	0.35-0.35	0.50-0.50	0.60-0.60	0.15-0.15			
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	-	-	-
Moisture Content	%	N/A	NONE	14	14	-	-	-
Total mass of sample received	kg	0.001	NONE	1.2	1.3	-	-	-

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	8.1	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	340	-	-	-
Sulphide	mg/kg	1	MCERTS	-	< 1.0	-	-	-
Total Chloride	mg/kg	5	NONE	-	110	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	130	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.9	0.4	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	0.74	< 0.05	-	-	-
Pyrene	mg/kg	0.05	MCERTS	0.73	< 0.05	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.59	< 0.05	-	-	-
Chrysene	mg/kg	0.05	MCERTS	0.44	< 0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.0	< 0.05	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.29	< 0.05	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.72	< 0.05	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.41	< 0.05	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.12	< 0.05	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.48	< 0.05	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.53	< 0.80	-	-	-
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Environmental Science

Analytical Report Number: 19-37047
Project / Site name: Stanborough Park

Lab Sample Number				1198867	1198868	1198907	1198908	1198909
Sample Reference				TP108	TP109	TP105	TP106	TP109
Sample Number				ES2	ES2	ES4	ES3	ES1
Depth (m)				0.25-0.25	0.35-0.35	0.50-0.50	0.60-0.60	0.15-0.15
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	11	16	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	1.5	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	37	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	21	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	16	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	31	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.6	< 1.0	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	50	63	-	-	-

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
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	0.001	MCERTS	< 0.001	< 0.001	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
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	27	< 10	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	34	< 10	-	-	-

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-
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Analytical Report Number: 19-37047
Project / Site name: Stanborough Park
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1198866	TP106	0.40-0.40	130	Loose Fibres	Chrysotile	< 0.001	< 0.001
1198867	TP108	0.25-0.25	122	Loose Fibres	Chrysotile	< 0.001	< 0.001
1198908	TP106	0.60-0.60	141	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number: 19-37047
 Project / Site name: Stanborough Park

Lab Sample Number				1198869	1198870			
Sample Reference				TP102	TP109			
Sample Number				ES3	ES3			
Depth (m)				0.70-0.70	1.30-1.30			
Date Sampled				Deviating	Deviating			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

Total Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Complex Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Sulphate as SO ₄	mg/l	0.1	ISO 17025	13.3	4.4			
Chloride	mg/l	0.15	ISO 17025	0.40	0.91			
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	20			
Total Organic Carbon (TOC)	mg/l	0.1	NONE	5.32	5.18			
Hardness - Total	mgCaCO ₃ /l	1	NONE	42.9	60.8			

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.3	< 1.1			
Boron (dissolved)	µg/l	10	ISO 17025	30	52			
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08			
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4			
Copper (dissolved)	µg/l	0.7	ISO 17025	3.1	2.2			
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5			
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.6	1.6			
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0			
Zinc (dissolved)	µg/l	0.4	ISO 17025	5.6	4.9			
Calcium (dissolved)	mg/l	0.012	ISO 17025	16	22			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	0.97	1.3			

Analytical Report Number : 19-37047

Project / Site name: Stanborough Park

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1198862	TP102	ES2	0.50-0.50	Brown clay and sand with gravel and vegetation.
1198863	TP104	ES2	0.45-0.45	Brown clay and sand with gravel and vegetation.
1198864	TP104	ES3	0.80-0.80	Brown sand with gravel and stones.
1198865	TP105	ES5	0.90-0.90	Brown clay and sand with gravel and stones.
1198866	TP106	ES2	0.40-0.40	Brown loam and clay with gravel and vegetation.
1198867	TP108	ES2	0.25-0.25	Brown loam and clay with gravel and vegetation.
1198868	TP109	ES2	0.35-0.35	Brown loam and clay with gravel and vegetation.
1198907	TP105	ES4	0.50-0.50	-
1198908	TP106	ES3	0.60-0.60	-
1198909	TP109	ES1	0.15-0.15	-



4041



Environmental Science

Analytical Report Number : 19-37047

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
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
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and 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
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride in leachate	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
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
Complex cyanide in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L040-PL	W	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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 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 2, 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	MCERTS

Iss No 19-37047-2 Stanborough Park GE22715

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

Page 9 of 11

Analytical Report Number : 19-37047

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in leachate	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	ISO 17025
Total Hardness of leachates	Determination of hardness in leachates by calculation from calcium and magnesium.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	NONE
Total organic carbon (Automated) 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""	L009-PL	D	MCERTS
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
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	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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

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

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

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP102	2	S	19-37047	1198862	a			
TP102	3	L	19-37047	1198869	a			
TP104	2	S	19-37047	1198863	a			
TP104	3	S	19-37047	1198864	a			
TP105	4	S	19-37047	1198907	a			
TP105	5	S	19-37047	1198865	a			
TP106	2	S	19-37047	1198866	a			
TP106	3	S	19-37047	1198908	a			
TP108	2	S	19-37047	1198867	a			
TP109	1	S	19-37047	1198909	a			
TP109	2	S	19-37047	1198868	a			
TP109	3	L	19-37047	1198870	a			



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Analytical Report Number : 19-37050

Project / Site name:	Stanborough Park	Samples received on:	11/04/2019
Your job number:	GE22715	Samples instructed on:	11/04/2019
Your order number:		Analysis completed by:	25/04/2019
Report Issue Number:	1	Report issued on:	25/04/2019
Samples Analysed:	3 leachate samples - 3 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results							
Report No:	19-37050						
				Client: HARRIGROUP			
Location	Stanborough Park						
Lab Reference (Sample Number)	1198896 / 1198897			Landfill Waste Acceptance Criteria			
Sampling Date				Limits			
Sample ID	TP105 4			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	0.50-0.50						
Solid Waste Analysis							
TOC (%)**	0.7			3%	5%	6%	
Loss on Ignition (%) **	3.1			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	0.16			1	--	--	
Mineral Oil (mg/kg)	33			500	--	--	
Total PAH (WAC-17) (mg/kg)	6.9			100	--	--	
pH (units)**	10.8			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	44			--	To be evaluated	To be evaluated	
Eluate Analysis							
	10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0021		0.0194	0.5	2	25	
Barium *	0.0230		0.209	20	100	300	
Cadmium *	< 0.0001		< 0.0008	0.04	1	5	
Chromium *	0.0036		0.033	0.5	10	70	
Copper *	0.050		0.45	2	50	100	
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *	0.0010		0.0093	0.5	10	30	
Nickel *	0.0099		0.090	0.4	10	40	
Lead *	0.0019		0.018	0.5	10	50	
Antimony *	< 0.0017		< 0.017	0.06	0.7	5	
Selenium *	< 0.0040		< 0.040	0.1	0.5	7	
Zinc *	0.0049		0.044	4	50	200	
Chloride *	2.1		19	800	4000	25000	
Fluoride	0.17		1.6	10	150	500	
Sulphate *	34		310	1000	20000	50000	
TDS*	250		2300	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010		< 0.10	1	-	-	
DOC	15.9		145	500	800	1000	
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	90						
Moisture (%)	10						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results							
Report No:	19-37050						
				Client: HARRIGROUP			
Location	Stanborough Park						
Lab Reference (Sample Number)	1198898 / 1198899			Landfill Waste Acceptance Criteria			
Sampling Date				Limits			
Sample ID	TP106 3			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	0.60-0.60						
Solid Waste Analysis							
TOC (%)**	0.5			3%	5%	6%	
Loss on Ignition (%) **	3.0			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	0.93			1	--	--	
Mineral Oil (mg/kg)	< 10			500	--	--	
Total PAH (WAC-17) (mg/kg)	6.7			100	--	--	
pH (units)**	11.1			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	100			--	To be evaluated	To be evaluated	
Eluate Analysis							
	10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	< 0.0011		< 0.0110	0.5	2	25	
Barium *	0.0589		0.493	20	100	300	
Cadmium *	< 0.0001		< 0.0008	0.04	1	5	
Chromium *	0.0035		0.029	0.5	10	70	
Copper *	0.010		0.084	2	50	100	
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *	< 0.0004		< 0.0040	0.5	10	30	
Nickel *	0.0032		0.027	0.4	10	40	
Lead *	< 0.0010		< 0.010	0.5	10	50	
Antimony *	< 0.0017		< 0.017	0.06	0.7	5	
Selenium *	< 0.0040		< 0.040	0.1	0.5	7	
Zinc *	0.0024		0.020	4	50	200	
Chloride *	2.0		17	800	4000	25000	
Fluoride	0.14		1.1	10	150	500	
Sulphate *	33		280	1000	20000	50000	
TDS*	390		3300	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	0.010		< 0.10	1	-	-	
DOC	6.18		51.8	500	800	1000	
Leach Test Information							
Stone Content (%)	39						
Sample Mass (kg)	2.0						
Dry Matter (%)	87						
Moisture (%)	13						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results							
Report No:	19-37050						
				Client: HARRIGROUP			
Location	Stanborough Park						
Lab Reference (Sample Number)	1198900 / 1198901			Landfill Waste Acceptance Criteria			
Sampling Date				Limits			
Sample ID	TP109 1			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	0.15-0.15						
Solid Waste Analysis							
TOC (%)**	3.4			3%	5%	6%	
Loss on Ignition (%) **	6.6			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	< 0.007			1	--	--	
Mineral Oil (mg/kg)	< 10			500	--	--	
Total PAH (WAC-17) (mg/kg)	13			100	--	--	
pH (units)**	7.9			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	5.4			--	To be evaluated	To be evaluated	
Eluate Analysis							
	10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0056		0.0516	0.5	2	25	
Barium *	0.0105		0.0968	20	100	300	
Cadmium *	< 0.0001		< 0.0008	0.04	1	5	
Chromium *	< 0.0004		< 0.0040	0.5	10	70	
Copper *	0.0069		0.064	2	50	100	
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *	0.0029		0.0273	0.5	10	30	
Nickel *	0.0021		0.019	0.4	10	40	
Lead *	0.0013		0.012	0.5	10	50	
Antimony *	< 0.0017		< 0.017	0.06	0.7	5	
Selenium *	< 0.0040		< 0.040	0.1	0.5	7	
Zinc *	0.0030		0.028	4	50	200	
Chloride *	1.4		13	800	4000	25000	
Fluoride	1.1		10	10	150	500	
Sulphate *	3.7		35	1000	20000	50000	
TDS*	81		750	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010		< 0.10	1	-	-	
DOC	8.79		81.3	500	800	1000	
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	92						
Moisture (%)	8.2						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



4041



Environmental Science

Analytical Report Number : 19-37050

Project / Site name: Stanborough Park

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1198896	TP105	4	0.50-0.50	Brown loam and sand with gravel and vegetation.
1198898	TP106	3	0.60-0.60	Brown clay and sand with gravel and stones.
1198900	TP109	1	0.15-0.15	Brown loam and clay with gravel and vegetation.



4041



Environmental Science

Analytical Report Number : 19-37050

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as received, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	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"	L033B-PL	W	ISO 17025
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 leachate by ICP-OES	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
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	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	L080-PL	W	ISO 17025
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	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 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. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE

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

Page 6 of 8



4041



Environmental Science

Analytical Report Number : 19-37050**Project / Site name: Stanborough Park****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) 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™	L009-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 30°C.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP105	4	L	19-37050	1198897	a			
TP105	4	S	19-37050	1198896	a			
TP106	3	L	19-37050	1198899	a			
TP106	3	S	19-37050	1198898	a			
TP109	1	L	19-37050	1198901	a			
TP109	1	S	19-37050	1198900	a			



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Analytical Report Number : 19-37740

Project / Site name:	Stanborough Park	Samples received on:	16/04/2019
Your job number:	GL22715	Samples instructed on:	16/04/2019
Your order number:		Analysis completed by:	25/04/2019
Report Issue Number:	1	Report issued on:	25/04/2019
Samples Analysed:	3 leachate samples - 7 soil samples		

Signed:

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

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

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

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

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

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4041



Environmental Science

Analytical Report Number: 19-37740

Project / Site name: Stanborough Park

Lab Sample Number	1202537			1202538		1202539		1202540		1202541	
Sample Reference	WS101			WS103		WS105		WS108		WS111	
Sample Number	ES2			ES2		ES1		ES3		ES1	
Depth (m)	0.60-0.60			0.40-0.40		0.20-0.20		0.60-0.60		0.20-0.20	
Date Sampled	12/04/2019			12/04/2019		12/04/2019		12/04/2019		12/04/2019	
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	36	< 0.1			
Moisture Content	%	N/A	NONE	13	9.2	8.2	5.8	8.1			
Total mass of sample received	kg	0.001	NONE	0.77	1.1	1.2	1.3	1.4			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Amosite	-	-	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	-	Not-detected			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	-	-			
General Inorganics											
pH - Automated	pH Units	N/A	MCERTS	10.6	8.8	11.2	-	8.4			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	6000	320	6100	260	680			
Sulphide	mg/kg	1	MCERTS	34	< 1.0	1.0	< 1.0	< 1.0			
Total Chloride	mg/kg	5	NONE	35	< 5	71	35	35			
Total Sulphur	mg/kg	50	MCERTS	2500	180	2700	160	390			
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.6	0.4	0.3	-	1.6			

Analytical Report Number: 19-37740
Project / Site name: Stanborough Park

Lab Sample Number	1202537	1202538	1202539	1202540	1202541
Sample Reference	WS101	WS103	WS105	WS108	WS111
Sample Number	ES2	ES2	ES1	ES3	ES1
Depth (m)	0.60-0.60	0.40-0.40	0.20-0.20	0.60-0.60	0.20-0.20
Date Sampled	12/04/2019	12/04/2019	12/04/2019	12/04/2019	12/04/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Speciated PAHs

Compound	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.2	-	0.55
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	-	0.52
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.58	-	0.25
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.45	-	0.29
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.51	-	0.31
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.32	-	0.19
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.47	-	0.27
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.23	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	5.37	-	2.38
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Heavy Metals / Metalloids

Compound	mg/kg	1	MCERTS	12	9.1	14	-	14
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	9.1	14	-	14
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.8	1.7	-	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	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	22	23	25	-	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36	13	20	-	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	43	17	27	-	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	17	18	-	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	-	1.1
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	59	55	-	61

Monoaromatics & Oxygenates

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

Analytical Report Number: 19-37740
Project / Site name: Stanborough Park

Lab Sample Number	1202537	1202538	1202539	1202540	1202541
Sample Reference	WS101	WS103	WS105	WS108	WS111
Sample Number	ES2	ES2	ES1	ES3	ES1
Depth (m)	0.60-0.60	0.40-0.40	0.20-0.20	0.60-0.60	0.20-0.20
Date Sampled	12/04/2019	12/04/2019	12/04/2019	12/04/2019	12/04/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	13	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	36	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	10	< 8.0	14	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	100	< 8.0	91	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	110	< 10	150	-	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	8.4	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	25	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	36	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	77	< 10	120	-	37
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	85	< 10	190	-	45

Analytical Report Number: 19-37740
Project / Site name: Stanborough Park

Lab Sample Number				1202545	1202546			
Sample Reference				WS108	WS109			
Sample Number				ES2	ES2			
Depth (m)				0.30-0.30	0.40-0.40			
Date Sampled				12/04/2019	12/04/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	-	-			
Moisture Content	%	N/A	NONE	-	-			
Total mass of sample received	kg	0.001	NONE	-	-			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	-			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-			
Sulphide	mg/kg	1	MCERTS	-	-			
Total Chloride	mg/kg	5	NONE	-	-			
Total Sulphur	mg/kg	50	MCERTS	-	-			
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-			

Analytical Report Number: 19-37740
Project / Site name: Stanborough Park

Lab Sample Number				1202545	1202546				
Sample Reference				WS108	WS109				
Sample Number				ES2	ES2				
Depth (m)				0.30-0.30	0.40-0.40				
Date Sampled				12/04/2019	12/04/2019				
Time Taken				None Supplied	None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						
Speciated PAHs									
Naphthalene	mg/kg	0.05	MCERTS	-	-				
Acenaphthylene	mg/kg	0.05	MCERTS	-	-				
Acenaphthene	mg/kg	0.05	MCERTS	-	-				
Fluorene	mg/kg	0.05	MCERTS	-	-				
Phenanthrene	mg/kg	0.05	MCERTS	-	-				
Anthracene	mg/kg	0.05	MCERTS	-	-				
Fluoranthene	mg/kg	0.05	MCERTS	-	-				
Pyrene	mg/kg	0.05	MCERTS	-	-				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-				
Chrysene	mg/kg	0.05	MCERTS	-	-				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-				
Total PAH									
Speciated Total EPA-16 PAHs				mg/kg	0.8	MCERTS	-	-	
Heavy Metals / Metalloids									
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-				
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-				
Monoaromatics & Oxygenates									
Benzene	ug/kg	1	MCERTS	-	-				
Toluene	ug/kg	1	MCERTS	-	-				
Ethylbenzene	ug/kg	1	MCERTS	-	-				
p & m-xylene	ug/kg	1	MCERTS	-	-				
o-xylene	ug/kg	1	MCERTS	-	-				
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-				

Analytical Report Number: 19-37740
 Project / Site name: Stanborough Park

Lab Sample Number				1202545	1202546			
Sample Reference				WS108	WS109			
Sample Number				ES2	ES2			
Depth (m)				0.30-0.30	0.40-0.40			
Date Sampled				12/04/2019	12/04/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			



Analytical Report Number: 19-37740
Project / Site name: Stanborough Park
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1202537	WS101	0.60-0.60	109	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number: 19-37740
 Project / Site name: Stanborough Park

Lab Sample Number				1202542	1202543	1202544		
Sample Reference				WS108	WS109	WS111		
Sample Number				ES4	ES4	ES2		
Depth (m)				1.50-1.50	1.50-1.50	0.50-0.50		
Date Sampled				12/04/2019	12/04/2019	12/04/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Complex Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Sulphate as SO ₄	mg/l	0.1	ISO 17025	4.4	59.2	13.8		
Chloride	mg/l	0.15	ISO 17025	2.4	1.3	1.1		
Ammoniacal Nitrogen as N	µg/l	15	NONE	36	9600	33		
Total Organic Carbon (TOC)	mg/l	0.1	NONE	7.18	6.12	5.90		
Hardness - Total	mgCaCO ₃ /l	1	NONE	54.8	193	77.4		

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.5	7.3	< 1.1		
Boron (dissolved)	µg/l	10	ISO 17025	< 10	25	29		
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08		
Chromium (dissolved)	µg/l	0.4	ISO 17025	2.8	< 0.4	1.0		
Copper (dissolved)	µg/l	0.7	ISO 17025	6.7	3.0	20		
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	2.1		
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.1	1.1	1.8		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0		
Zinc (dissolved)	µg/l	0.4	ISO 17025	8.7	2.9	5.8		
Calcium (dissolved)	mg/l	0.012	ISO 17025	20	74	28		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	1.2	1.8	1.9		



Analytical Report Number : 19-37740

Project / Site name: Stanborough Park

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1202537	WS101	ES2	0.60-0.60	Light brown sand with gravel and plastic.
1202538	WS103	ES2	0.40-0.40	Light brown clay and sand with gravel.
1202539	WS105	ES1	0.20-0.20	Light brown sand with gravel.
1202540	WS108	ES3	0.60-0.60	Light brown sandy clay with gravel and stones.
1202541	WS111	ES1	0.20-0.20	Brown loam and sand with vegetation and gravel.
1202545	WS108	ES2	0.30-0.30	-
1202546	WS109	ES2	0.40-0.40	-



4041



Environmental Science

Analytical Report Number : 19-37740

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
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
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and 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
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride in leachate	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
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
Complex cyanide in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L040-PL	W	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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 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 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS

Iss No 19-37740-1 Stanborough Park GL22715

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



4041



Environmental Science

Analytical Report Number : 19-37740

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in leachate	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	ISO 17025
Total Hardness of leachates	Determination of hardness in leachates by calculation from calcium and magnesium.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	NONE
Total organic carbon (Automated) 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""	L009-PL	D	MCERTS
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
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	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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

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

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

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS105	1	S	19-37740	1202539	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS105	1	S	19-37740	1202539	b	TPHCWG (Soil)	L088/76-PL	b



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Analytical Report Number : 19-37741

Project / Site name:	Stanborough Park	Samples received on:	16/04/2019
Your job number:	GL22715	Samples instructed on:	16/04/2019
Your order number:		Analysis completed by:	30/04/2019
Report Issue Number:	1	Report issued on:	30/04/2019
Samples Analysed:	2 10:1 WAC Samples		

Signed:

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

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

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

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

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

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Waste Acceptance Criteria Analytical Results							
Report No:	19-37741						
				Client: HARRIGROUP			
Location	Stanborough Park						
Lab Reference (Sample Number)	1202547 / 1202548			Landfill Waste Acceptance Criteria			
Sampling Date	12/04/2019			Limits			
Sample ID	WS108 2			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	0.30-0.30						
Solid Waste Analysis							
TOC (%)**	1.1			3%	5%	6%	
Loss on Ignition (%) **	3.3			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	< 0.007			1	--	--	
Mineral Oil (mg/kg)	< 10			500	--	--	
Total PAH (WAC-17) (mg/kg)	< 0.9			100	--	--	
pH (units)**	7.7			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	1.0			--	To be evaluated	To be evaluated	
Eluate Analysis							
	10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0070		0.0662	0.5	2	25	
Barium *	0.0073		0.0699	20	100	300	
Cadmium *	< 0.0001		< 0.0008	0.04	1	5	
Chromium *	0.0019		0.018	0.5	10	70	
Copper *	0.0038		0.036	2	50	100	
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *	< 0.0004		< 0.0040	0.5	10	30	
Nickel *	0.0010		0.0094	0.4	10	40	
Lead *	0.0018		0.017	0.5	10	50	
Antimony *	< 0.0017		< 0.017	0.06	0.7	5	
Selenium *	< 0.0040		< 0.040	0.1	0.5	7	
Zinc *	0.0040		0.038	4	50	200	
Chloride *	1.1		10	800	4000	25000	
Fluoride	0.20		1.9	10	150	500	
Sulphate *	1.6		15	1000	20000	50000	
TDS*	31		290	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010		< 0.10	1	-	-	
DOC	6.89		65.5	500	800	1000	
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.3						
Dry Matter (%)	96						
Moisture (%)	3.6						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results							
Report No:	19-37741						
				Client: HARRIGROUP			
Location	Stanborough Park						
Lab Reference (Sample Number)	1202549 / 1202550			Landfill Waste Acceptance Criteria			
Sampling Date	12/04/2019			Limits			
Sample ID	WS109 2			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)	0.40-0.40						
Solid Waste Analysis							
TOC (%)**	1.0			3%	5%	6%	
Loss on Ignition (%) **	2.8			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	< 0.007			1	--	--	
Mineral Oil (mg/kg)	< 10			500	--	--	
Total PAH (WAC-17) (mg/kg)	< 0.9			100	--	--	
pH (units)**	7.6			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	5.6			--	To be evaluated	To be evaluated	
Eluate Analysis							
	10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0018		0.0160	0.5	2	25	
Barium *	0.0074		0.0675	20	100	300	
Cadmium *	< 0.0001		< 0.0008	0.04	1	5	
Chromium *	0.0006		0.0051	0.5	10	70	
Copper *	0.0038		0.035	2	50	100	
Mercury *	< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *	0.0008		0.0071	0.5	10	30	
Nickel *	< 0.0003		< 0.0030	0.4	10	40	
Lead *	0.0046		0.042	0.5	10	50	
Antimony *	< 0.0017		< 0.017	0.06	0.7	5	
Selenium *	< 0.0040		< 0.040	0.1	0.5	7	
Zinc *	0.0016		0.015	4	50	200	
Chloride *	1.2		11	800	4000	25000	
Fluoride	0.82		7.5	10	150	500	
Sulphate *	1.6		15	1000	20000	50000	
TDS*	64		590	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010		< 0.10	1	-	-	
DOC	5.80		52.9	500	800	1000	
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	88						
Moisture (%)	12						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



4041



Environmental Science

Analytical Report Number : 19-37741

Project / Site name: Stanborough Park

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1202547	WS108	ES2	0.30-0.30	Brown loam and sand with gravel.
1202549	WS109	ES2	0.40-0.40	Brown loam and sand with gravel and vegetation.



4041



Environmental Science

Analytical Report Number : 19-37741

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as received, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	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"	L0338-PL	W	ISO 17025
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 leachate by ICP-OES	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
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	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	L080-PL	W	ISO 17025
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	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 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. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE

Iss No 19-37741-1 Stanborough Park GL22715

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

Page 5 of 6



4041



Environmental Science

Analytical Report Number : 19-37741**Project / Site name: Stanborough Park****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) 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™	L009-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 30°C.



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Analytical Report Number : 19-38993

Replaces Analytical Report Number : 19-38993, issue no. 1

Project / Site name:	Stanborough Park	Samples received on:	26/04/2019
Your job number:	GL22715	Samples instructed on:	26/04/2019
Your order number:		Analysis completed by:	09/05/2019
Report Issue Number:	2	Report issued on:	09/05/2019
Samples Analysed:	14 soil samples - 3 leachate samples		

Signed: _____

Zina Abdul Razzak
Assistant Quality/Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number	1210042	1210043	1210044	1210045	1210046
Sample Reference	TP102	TP105	TP106	WS101	WS106
Sample Number	ES1	ES1	ES1	ES1	ES3
Depth (m)	0.13-0.13	0.02-0.02	0.20-0.20	0.40-0.40	0.60-0.60
Date Sampled	08/04/2019	08/04/2019	08/04/2019	12/04/2019	10/04/2019
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
Moisture Content	%	N/A	NONE	-	20
Total mass of sample received	kg	0.001	NONE	-	1.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	-	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.002	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.002	-	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	11.1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Total Chloride	mg/kg	5	NONE	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-	-	0.5

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	0.48
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.95
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.91
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	0.51
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	0.30
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.32
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	0.27
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	0.36
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-	-	4.10
-----------------------------	-------	-----	--------	---	---	---	---	------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	20
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	1.5
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	-	-	-	-	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	45



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number	1210042				1210043				1210044				1210045				1210046			
Sample Reference	TP102				TP105				TP106				WS101				WS106			
Sample Number	ES1				ES1				ES1				ES1				ES3			
Depth (m)	0.13-0.13				0.02-0.02				0.20-0.20				0.40-0.40				0.60-0.60			
Date Sampled	08/04/2019				08/04/2019				08/04/2019				12/04/2019				10/04/2019			
Time Taken	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status																	

Monoaromatics & Oxygenates

Compound	Units	Limit of detection	Accreditation Status												
Benzene	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
o-xylene	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS												
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-	-	-	-	-	-	-	-

PCBs

PCB Congener 077	mg/kg	0.001	NONE												
PCB Congener 081	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 105	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 114	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 123	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 126	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 156	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 157	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 167	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 169	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
PCB Congener 189	mg/kg	0.001	NONE	-	-	-	-	-	-	-	-	-	-	-	-
Total PCBs	mg/kg	0.012	NONE	-	-	-	-	-	-	-	-	-	-	-	-



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number	1210047	1210048	1210049	1210051	1210053			
Sample Reference	WS109	HP1	TP101	TP103	TP107			
Sample Number	ES3	ES1	ES2	ES1	ES2			
Depth (m)	0.70-0.70	0.20-0.20	0.50-0.50	0.20-0.20	0.40-0.40			
Date Sampled	12/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019			
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	9.6	13	7.8	8.1	5.5
Total mass of sample received	kg	0.001	NONE	0.44	1.7	1.3	1.2	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	7.9	8.4	9.3	7.8
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	870	-	-	250
Sulphide	mg/kg	1	MCERTS	-	< 1.0	-	-	1.1
Total Chloride	mg/kg	5	NONE	-	280	-	-	390
Total Sulphur	mg/kg	50	MCERTS	-	560	-	-	190
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.9	3.8	0.8	2.8	0.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.40	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.13	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.2	0.51	0.75	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.99	0.48	0.80	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.68	0.23	0.51	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.55	0.28	0.36	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.52	0.24	0.45	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.47	0.23	0.36	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.61	0.23	0.48	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.26	< 0.05	0.25	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.46	< 0.05	0.42	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	6.23	2.20	4.38	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	10	13	11	13
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	1.1	0.9	2.0	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.4	0.3	< 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	21	18	24	18	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	17	31	19	6.0
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	36	25	23	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	12	19	13	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.7	< 1.0	1.7	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	59	110	54	29



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number	1210047	1210048	1210049	1210051	1210053
Sample Reference	WS109	HP1	TP101	TP103	TP107
Sample Number	ES3	ES1	ES2	ES1	ES2
Depth (m)	0.70-0.70	0.20-0.20	0.50-0.50	0.20-0.20	0.40-0.40
Date Sampled	12/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Monoaromatics & Oxygenates					
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	5.2	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	11	< 10	12	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	47	13	40	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	59	16	57	< 10

PCBs

PCB Congener 077	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 081	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 105	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 114	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 123	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 126	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 156	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 157	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 167	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 169	mg/kg	0.001	NONE	-	-	-	-	-
PCB Congener 189	mg/kg	0.001	NONE	-	-	-	-	-
Total PCBs	mg/kg	0.012	NONE	-	-	-	-	-



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number	1210055	1210056	1210057	1210058			
Sample Reference	TP110	TP110	WS102	WS108			
Sample Number	ES1	ES3	ES3	ES3			
Depth (m)	0.20-0.20	0.60-0.60	1.00-1.30	0.60-0.60			
Date Sampled	23/04/2019	23/04/2019	10/04/2019	12/04/2019			
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	39	36
Moisture Content	%	N/A	NONE	12	9.5	6.1	5.8
Total mass of sample received	kg	0.001	NONE	1.8	1.7	1.2	1.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	8.1	8.2	6.9
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1000	-	-	-
Sulphide	mg/kg	1	MCERTS	1.1	-	-	-
Total Chloride	mg/kg	5	NONE	71	-	-	-
Total Sulphur	mg/kg	50	MCERTS	640	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.3	2.9	0.3	0.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.4	0.47	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.30	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	4.6	1.6	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	4.2	1.6	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.9	0.78	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	2.4	0.96	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.6	1.1	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.5	0.44	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4	0.89	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	0.48	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.37	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.0	0.73	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	25.0	9.05	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	23	9.3	36
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.3	0.4	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.4	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	23	23	25	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	76	18	17	7.4
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	45	14	7.9
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	20	33	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.8	< 1.0	1.8	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	60	42	27



4041



Environmental Science

Analytical Report Number: 19-38993

Project / Site name: Stanborough Park

Lab Sample Number				1210055	1210056	1210057	1210058	
Sample Reference				TP110	TP110	WS102	WS108	
Sample Number				ES1	ES3	ES3	ES3	
Depth (m)				0.20-0.20	0.60-0.60	1.00-1.30	0.60-0.60	
Date Sampled				23/04/2019	23/04/2019	10/04/2019	12/04/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
				Monoaromatics & Oxygenates				
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	9.3	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	28	24	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100	62	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	130	95	< 10	< 10	

PCBs

PCB Congener 077	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 081	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 105	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 114	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 118	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 123	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 126	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 156	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 157	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 167	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 169	mg/kg	0.001	NONE	-	-	-	-	
PCB Congener 189	mg/kg	0.001	NONE	-	-	-	-	
Total PCBs	mg/kg	0.012	NONE	-	-	-	-	



Analytical Report Number: 19-38993
Project / Site name: Stanborough Park
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1210044	TP106	0.20-0.20	132	Bitumen	Chrysotile	0.002	0.002
1210046	WS106	0.60-0.60	119	Bitumen	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.



Analytical Report Number: 19-38993
Project / Site name: Stanborough Park

Lab Sample Number				1210050	1210052	1210054		
Sample Reference				TP101	TP103	TP107		
Sample Number				ES3	ES2	ES3		
Depth (m)				0.70-0.70	0.50-0.50	0.70-0.70		
Date Sampled				23/04/2019	23/04/2019	23/04/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	8.1	8.1	8.0		
Sulphate as SO ₄	mg/l	0.1	ISO 17025	10.4	6.5	1.0		
Hardness - Total	mgCaCO ₃ /l	1	NONE	17.4	38.8	25.8		

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 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	< 0.2		
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	4.4	< 1.1	3.9		
Boron (dissolved)	µg/l	10	ISO 17025	< 10	19	< 10		
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08		
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.0	0.7	1.9		
Copper (dissolved)	µg/l	0.7	ISO 17025	1.7	3.9	< 0.7		
Lead (dissolved)	µg/l	1	ISO 17025	3.4	3.6	2.5		
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.2	1.1	2.4		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0		
Zinc (dissolved)	µg/l	0.4	ISO 17025	4.3	8.5	3.6		
Calcium (dissolved)	mg/l	0.012	ISO 17025	5.9	14	9.4		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	0.62	0.83	0.55		

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

TPH5 (C6 - C10)	µg/l	10	NONE	< 10	< 10	< 10		
TPH5 (C10 - C20)	µg/l	10	NONE	< 10	< 10	< 10		
TPH5 (C20 - C30)	µg/l	10	NONE	< 10	< 10	< 10		
TPH5 (C30 - C40)	µg/l	10	NONE	< 10	< 10	< 10		
TPH5 (C6 - C40)	µg/l	10	NONE	< 10	< 10	< 10		



4041



Environmental Science

Analytical Report Number : 19-38993**Project / Site name: Stanborough Park**

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1210042	TP102	ES1	0.13-0.13	-
1210043	TP105	ES1	0.02-0.02	-
1210044	TP106	ES1	0.20-0.20	-
1210045	WS101	ES1	0.40-0.40	Light brown sandy clay with gravel.
1210046	WS106	ES3	0.60-0.60	Light brown clay and sand with gravel and brick.
1210047	WS109	ES3	0.70-0.70	Brown clay and sand with gravel.
1210048	HP1	ES1	0.20-0.20	Brown loam and sand with gravel and vegetation.
1210049	TP101	ES2	0.50-0.50	Brown clay and loam with gravel.
1210051	TP103	ES1	0.20-0.20	Brown loam and sand with gravel and vegetation.
1210053	TP107	ES2	0.40-0.40	Brown sandy clay with gravel.
1210055	TP110	ES1	0.20-0.20	Brown loam and sand with gravel and vegetation.
1210056	TP110	ES3	0.60-0.60	Brown loam and sand with gravel and vegetation.
1210057	WS102	ES3	1.00-1.30	Brown clay and loam with gravel and stones.
1210058	WS108	ES3	0.60-0.60	Light brown sandy clay with gravel and stones.



4041



Environmental Science

Analytical Report Number : 19-38993

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and 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 (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX in leachates (Monoaromatics)	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
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 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 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
PCBs WHO 12 in soil	Determination of PCBs (WHO-12 Congeners) by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in 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	L102B-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

Iss No 19-38993-2 Stanborough Park GL22715

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

Page 11 of 13



4041



Environmental Science

Analytical Report Number : 19-38993**Project / Site name: Stanborough Park****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil ^{***}	L039-PL	W	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total Hardness of leachates	Determination of hardness in leachates by calculation from calcium and magnesium.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	NONE
Total organic carbon (Automated) 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 ^{***}	L009-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	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	MCERTS
TPH5 (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 with silica gel split/clean up.	L088/76-PL	W	MCERTS

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

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

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

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP101	2	S	19-38993	1210049	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP101	2	S	19-38993	1210049	b	Speciated EPA-16 PAHs in soil	L064-PL	b
TP101	2	S	19-38993	1210049	b	TPHCWG (Soil)	L088/76-PL	b
TP103	1	S	19-38993	1210051	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP103	1	S	19-38993	1210051	b	Speciated EPA-16 PAHs in soil	L064-PL	b
TP103	1	S	19-38993	1210051	b	TPHCWG (Soil)	L088/76-PL	b
WS102	3	S	19-38993	1210057	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS106	3	S	19-38993	1210046	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS108	3	S	19-38993	1210058	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS109	3	S	19-38993	1210047	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c



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Analytical Report Number : 19-39000

Project / Site name:	Stanborough Park	Samples received on:	26/04/2019
Your job number:	GE22715	Samples instructed on:	26/04/2019
Your order number:		Analysis completed by:	07/05/2019
Report Issue Number:	1	Report issued on:	07/05/2019
Samples Analysed:	7 water samples		

Signed:

Katarzyna Lewicka
Head of Reporting Section
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 19-39000
 Project / Site name: Stanborough Park

Lab Sample Number	1210088				1210089				1210090				1210091				1210092			
Sample Reference	WS101				WS102				WS103				WS105				WS107			
Sample Number	EW				EW				EW				EW				EW			
Depth (m)	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Date Sampled	26/04/2019				26/04/2019				26/04/2019				26/04/2019				26/04/2019			
Time Taken	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status																	

General Inorganics

	pH Units	N/A	ISO 17025	7.8	11.4	6.8	9.3	7.2
Sulphate as SO ₄	µg/l	45	ISO 17025	50000	22200	98700	91000	13700
Sulphate as SO ₄	mg/l	0.045	ISO 17025	50.0	22.2	98.7	91.0	13.7
Total Sulphur	µg/l	15	NONE	17000	7400	33000	30000	4600
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	16	38	29	35	24
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	660	250	3300	250	< 15
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	8.77	6.60	10.1	8.44	3.97
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	184	98.3	411	405	259

Speciated PAHs

	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
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	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
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Analytical Report Number: 19-39000
 Project / Site name: Stanborough Park

Lab Sample Number	1210088				1210089				1210090				1210091				1210092			
Sample Reference	WS101				WS102				WS103				WS105				WS107			
Sample Number	EW				EW				EW				EW				EW			
Depth (m)	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Date Sampled	26/04/2019				26/04/2019				26/04/2019				26/04/2019				26/04/2019			
Time Taken	None Supplied				None Supplied				None Supplied				None Supplied				None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status																	

Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	1210088	1210089	1210090	1210091	1210092
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.80	4.56	2.83	3.11	0.30
Boron (dissolved)	µg/l	10	ISO 17025	53	12	50	47	22
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.09	0.08	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	69	39	150	150	99
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.8	4.5	0.6	0.6	0.4
Copper (dissolved)	µg/l	0.5	ISO 17025	1.9	28	< 0.5	< 0.5	1.2
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	0.7	0.2	0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	2.6	0.028	8.6	8.7	3.1
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	0.08	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.6	14	11	11	2.4
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.3	2.8	2.2	2.1	2.0
Zinc (dissolved)	µg/l	0.5	ISO 17025	6.3	1.2	7.1	7.1	1.3

Monoaromatics & Oxygenates

Parameter	Units	Limit of detection	Accreditation Status	1210088	1210089	1210090	1210091	1210092
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

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	1210088	1210089	1210090	1210091	1210092
TPH5 (C6 - C10)	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
TPH5 (C10 - C20)	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
TPH5 (C20 - C30)	µg/l	10	NONE	180	< 10.0	< 10.0	99.0	< 10.0
TPH5 (C30 - C40)	µg/l	10	NONE	87.0	< 10.0	< 10.0	50.0	< 10.0
TPH5 (C6 - C40)	µg/l	10	NONE	267	< 10.0	< 10.0	149	< 10.0

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



Analytical Report Number: 19-39000
Project / Site name: Stanborough Park

Lab Sample Number				1210093	1210094			
Sample Reference				WS108	WS109			
Sample Number				EW	EW			
Depth (m)				None Supplied	None Supplied			
Date Sampled				26/04/2019	26/04/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.3	7.2			
Sulphate as SO ₄	µg/l	45	ISO 17025	27500	18700			
Sulphate as SO ₄	mg/l	0.045	ISO 17025	27.5	18.7			
Total Sulphur	µg/l	15	NONE	9200	6200			
Sulphide	µg/l	5	NONE	< 5.0	< 5.0			
Chloride	mg/l	0.15	ISO 17025	18	18			
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	10000	17000			
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	16.0	17.3			
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	309	444			

Speciated PAHs

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16			
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Analytical Report Number: 19-39000
Project / Site name: Stanborough Park

Lab Sample Number				1210093	1210094			
Sample Reference				WS108	WS109			
Sample Number				EW	EW			
Depth (m)				None Supplied	None Supplied			
Date Sampled				26/04/2019	26/04/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.82	1.66			
Boron (dissolved)	µg/l	10	ISO 17025	23	15			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.04	0.06			
Calcium (dissolved)	mg/l	0.012	ISO 17025	120	170			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.9			
Copper (dissolved)	µg/l	0.5	ISO 17025	2.9	2.3			
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	1.8			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	4.0	4.7			
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05			
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.7	11			
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.7	2.9			
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.3	7.7			

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			

Petroleum Hydrocarbons

TPH5 (C6 - C10)	µg/l	10	NONE	< 10.0	< 10.0			
TPH5 (C10 - C20)	µg/l	10	NONE	< 10.0	< 10.0			
TPH5 (C20 - C30)	µg/l	10	NONE	< 10.0	< 10.0			
TPH5 (C30 - C40)	µg/l	10	NONE	< 10.0	< 10.0			
TPH5 (C6 - C40)	µg/l	10	NONE	< 10.0	< 10.0			

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



Analytical Report Number : 19-39000

Project / Site name: Stanborough Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (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 in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX in water (Monoaromatics)	Determination of BTEX in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L0738-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
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, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
pH at 20oC in water (automated)	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	L099-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	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
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
Total Sulphur in water	Determination of total sulphur in water by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	NONE
TPH5 (Waters)	Determination of dichloromethane extractable hydrocarbons in water 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 30oC.



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Analytical Report Number : 19-39487

Project / Site name:	Stanborough	Samples received on:	01/05/2019
Your job number:	GE22715	Samples instructed on:	01/05/2019
Your order number:		Analysis completed by:	09/05/2019
Report Issue Number:	1	Report issued on:	09/05/2019
Samples Analysed:	1 water sample		

Signed:

Zina Abdul Razzak
Assistant Quality/Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 19-39487

Project / Site name: Stanborough

Lab Sample Number				1212446				
Sample Reference				WS104				
Sample Number				EW1				
Depth (m)				None Supplied				
Date Sampled				30/04/2019				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.2				
Sulphate as SO ₄	µg/l	45	ISO 17025	28900				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	28.9				
Total Sulphur	µg/l	15	NONE	9600				
Sulphide	µg/l	5	NONE	< 5.0				
Chloride	mg/l	0.15	ISO 17025	26				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	490				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	2.12				
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	331				

Speciated PAHs

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16				
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Analytical Report Number: 19-39487

Project / Site name: Stanborough

Lab Sample Number				1212446				
Sample Reference				WS104				
Sample Number				EW1				
Depth (m)				None Supplied				
Date Sampled				30/04/2019				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.40				
Boron (dissolved)	µg/l	10	ISO 17025	32				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02				
Calcium (dissolved)	mg/l	0.012	ISO 17025	130				
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Copper (dissolved)	µg/l	0.5	ISO 17025	1.7				
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	3.2				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.2				
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.9				
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.4				

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

TPH5 (C6 - C10)	µg/l	10	NONE	< 10.0				
TPH5 (C10 - C20)	µg/l	10	NONE	< 10.0				
TPH5 (C20 - C30)	µg/l	10	NONE	< 10.0				
TPH5 (C30 - C40)	µg/l	10	NONE	< 10.0				
TPH5 (C6 - C40)	µg/l	10	NONE	< 10.0				

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



Analytical Report Number : 19-39487

Project / Site name: Stanborough

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (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 in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX in water (Monoaromatics)	Determination of BTEX in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L0738-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
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, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
pH at 20oC in water (automated)	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	L099-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	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
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
Total Sulphur in water	Determination of total sulphur in water by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	NONE
TPH5 (Waters)	Determination of dichloromethane extractable hydrocarbons in water 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 30oC.



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Analytical Report Number : 19-39709

Project / Site name:	Stanborough Park	Samples received on:	03/05/2019
Your job number:	GL22715	Samples instructed on:	03/05/2019
Your order number:	PO-33543-GB	Analysis completed by:	10/05/2019
Report Issue Number:	1	Report issued on:	10/05/2019
Samples Analysed:	5 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 19-39709
Project / Site name: Stanborough Park
Your Order No: PO-33543-GB

Lab Sample Number	1213680	1213681	1213682	1213683	1213684			
Sample Reference	TP101	TP103	TP107	TP110	TP110			
Sample Number	1	3	2	1	4			
Depth (m)	0.10-0.20	1.40-1.40	0.50-0.50	0.50-0.50	0.90-0.90			
Date Sampled	30/04/2019	30/04/2019	30/04/2019	30/04/2019	30/04/2019			
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	21
Moisture Content	%	N/A	NONE	6.0	11	4.9	12	12
Total mass of sample received	kg	0.001	NONE	0.31	0.22	2.0	1.8	2.0

General Inorganics

	pH Units	N/A	MCERTS					
pH - Automated				8.0	8.1	8.2	8.1	8.5
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.022	0.11	0.012	0.011	0.014



Analytical Report Number : 19-39709

Project / Site name: Stanborough Park

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1213680	TP101	1	0.10-0.20	Brown clay and loam with gravel and vegetation.
1213681	TP103	3	1.40-1.40	Brown clay and sand with gravel.
1213682	TP107	2	0.50-0.50	Brown sandy clay with gravel and vegetation.
1213683	TP110	1	0.50-0.50	Brown loam and clay with gravel and vegetation.
1213684	TP110	4	0.90-0.90	Light brown sandy clay with gravel and stones.



4041



Environmental Science

Analytical Report Number : 19-39709**Project / Site name: Stanborough Park****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

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.**