

APPENDIX L

Imported Material Data

1. Class 6F5 Suppliers Data

Sample No.	D3625	2
Site Ref.	-	
Project Ref.	17 DAY 42	

CONSTITUENTS OF COARSE RECYCLED AGGREGATES
SHW710 – BS EN 933-11:2009

Client	Day Aggregates	Sampled By	AP
Scheme / Site	Day Aggregates August 2017 - Brentford		
Location	Sampled from stockpile at source		
Material Type	6F5 Capping	Date Sampled	02/08/2017
Material Spec.	SHW Class 6F5	Date Received	07/08/2017
Source	Day Aggregates, Brentford	Date Tested	16/08/2017

Test Results

Floating particles	FL	(Cm³/kg)	12.5
Concrete, concrete products, mortar, concrete masonry units	Rc	(%)	73
Unbound Aggregate, natural stone, hydraulically bound aggregate	Ru	(%)	12
Clay masonry units (brick & tiles), calcium silicate masonry units, aerated non-floating concrete	Rb	(%)	6.2
Bituminous material	Ra	(%)	3.7
Glass	Rg	(%)	2.0
Other materials Cohesive (clay & soils) Misc: Metals (ferrous & non-ferrous) Non-floating wood & plastics (Of Total sample prior to riffle & wash)	X	(%)	0.3

Drying temperature	(°C)	45.0
Retained 63mm	(%)	58.0
Passing 4mm	(%)	36.0

Remarks :

Client Name Day Aggregates
F.A.O. Mr L Reid
Transport Avenue
Great Western Road
Brentford
Middlesex
Postcode TW8 9HQ

Signed :

Date : 17/08/2017

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

ACS TESTING LIMITED SUMMARY OF ANALYSIS for Job No.17-84134**Client :** DAY Group Limited**Site :** Recycled - Batch Testing SampleCertificate Address Day Group Limited
Transport Avenue
Brentford
Middlesex
TW8 9HFContact Mr. Leighton Reid
Contact Telephone No. :
Contact e-mail Leighton.Reid@DayGroup.co.uk

Sample No.	Material Source	Clients Reference	Sample Location	Date Sampled	Sampled By	Date Received	Material Description	Clients Specification	Test Ref	Test Name
344157	Brentford	DAT846	DNS	08/06/2017	LR	15/06/2017	0/50mm Recycled Aggregate (White)	DNS	U012_MI BAA	MIBAAA 2:1 & 8:1 Leachate Suite

Certificate of Analysis

Certificate Number : 17-07009-Issue 1-Page: 1

Report Fao: Martin Slater
Site Address: Recycled - Batch Testing Sample
Customer Order No: 17-84134
Date of Sampling: 08/06/2017
Date Received: 16/06/2017
Report Date: 30/06/2017

Please find your certificates of test attached for your samples received in the laboratory on 16/06/2017 under our laboratory reference 17-07009.

Remarks:

Z - A Minor Deviation from the Test Method was necessary but this is deemed to have no impact on the Test Results, the Legitimacy of the method validation or the Accreditation Status of the Test Method

Results reviewed by:



David Redfern Technical Supervisor

Results approved by:



Mark Rowley Laboratory Manager

*Any opinions or interpretations indicated are outside the scope of our UKAS accreditation.
This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.
Excel copies of reports are valid only when accompanied by this PDF certificate.
Client's Sample Description / ACS Material Description are noted for reference only.*

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ACS Environmental Testing Limited
Registered in England and
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**Quality Testing & Materials Consultancy
to the
Construction Industry**

ACSE Sample Number 29474
Sample ID 344157 - 17-84134
Clients Sample Ref. DAT845
Location / Sample Depth (m) DNS
Time Sampled
Date Sampled 08/06/2017
Sample Deviating Codes cdfg
Client's Sample Description 0/50mm Recycled Aggregate (White)
ACS Testing Material Description 0/50mm Recycled Aggregate (White)
Principal Matrix (as received) GRAVEL

TEST VALUES

Mass of Undried Test Portion (Mw)	183	g	Volume of Leachant Used (L2)	0.342	litres
Mass of Dried Test Portion (Mp)	175	g	Volume of Leachant Used (L8)	1.202	litres
Moisture Content Ratio (MC)	4.4	%	Volume of Eluate (VE1)	0.290	litres
Dry Matter Content (DR)	95.7	%	Volume of Eluate (VE2)	1.337	litres

SOLIDS ANALYSIS

Analyte	Method	AS	Sample Condition for Analysis	Results
Total Organic Carbon (%)	MT/ACSE/102	*d	As received	1.49
Loss on ignition (%)	MT/ACSE/302	*g	Air dried at 30°C	6.4
Mineral oil (C10 - C40) (mg/kg)	MT/ACSE/105	*cfg	As received	163
pH (units)	MT/ACSE/301	*dfg	Air dried at 30°C	7.1

ELUATE ANALYSIS

Analyte	Method	AS	Concentration in Eluate (mg/l)		Amount Leached (mg/kg)	
Eluate Preparation	LP/ACSE/102	*				
Liquid : Solid Ratio (L/S)	LP/ACSE/101	*	L/S 2	L/S 8	L/S 2	L/S 10
pH (units)	MT/ACSE/301	*	10.9	11.8		
Temperature (°C)	MT/ACSE/301		20	20		
Conductivity (mS/m)	MT/ACSE/303	*	522	112		
Ammoniacal Nitrogen	MT/ACSE/203		0.131	0.024	0.262	0.417
Antimony	MT/ACSE/205	*	< 0.003	0.014	< 0.006	0.098
Arsenic	MT/ACSE/205	*	< 0.003	< 0.003	< 0.006	< 0.030
Barium	MT/ACSE/205	*	0.305	0.123	0.610	1.53
Boron	MT/ACSE/205		< 0.200	< 0.200	< 0.400	< 2.00
Bromide	SC		7.00	0.790	14.0	18.2
Cadmium	MT/ACSE/205	*	< 0.0003	< 0.0003	< 0.0006	< 0.003
Chloride	MT/ACSE/204	*	1510	102	3020	3360
Chromium (total)	MT/ACSE/205	*	0.267	0.053	0.534	0.885
Cobalt	MT/ACSE/205		0.001	< 0.001	0.003	< 0.010
Copper	MT/ACSE/205	*Z	0.921	0.119	1.84	2.52
Fluoride	MT/ACSE/204	*	< 0.01	0.16	< 0.010	1.30
Lead	MT/ACSE/205	*	< 0.004	0.010	< 0.008	0.073
Mercury	MT/ACSE/202	*	< 0.0001	< 0.0001	< 0.0002	< 0.0010
Molybdenum	MT/ACSE/205	*	0.116	0.0134	0.232	0.304
Nickel	MT/ACSE/205	*	0.0324	0.0090	0.065	0.129
Selenium	MT/ACSE/205	*	0.182	0.176	0.363	1.57
Sulphate	MT/ACSE/204	*	679	150	1360	2208
Tin	MT/ACSE/205		0.017	0.019	0.035	0.184
Vanadium	MT/ACSE/205		0.013	0.013	0.026	0.129
Zinc	MT/ACSE/205	*	< 0.002	< 0.002	< 0.004	< 0.020
Total dissolved solids	MT/ACSE/304	*	3740	500	7470	9795
Dissolved organic carbon	MT/ACSE/103	*	96.1	11.2	192	253

Comments: (comments are beyond the scope of UKAS accreditation)

Eluates prepared in accordance with BS EN 12457-3:2002*

Technical Information for Analytical Results

Analysis

* - denotes analysis covered by our UKAS accreditation
- denotes analysis covered by our MCERTS certification
AD = Sample tested in air dried condition.
AR = Sample tested in as-received condition.
D = Sample tested in dry condition.
L = Laboratory prepared leachate
SC = sub contracted

Where results are less than the limit of detection, the value of 0 is used in calculations.

For Phenol index, m- and p- cresol are reported as mixed isomers, calibrated with reference to a p-cresol reference solution.

The individual concentrations of m- and p- cresol cannot be quantified using this method, however, the result reported for the mixed isomers will be an over estimation of the true result in samples where m-cresol is present.

Deviating Codes

Deviating Samples

The use of any of the following symbols indicates that the sample was deviating and it is possible therefore that the results provided may not be representative of the sample taken.

a – The date and/or time of sampling has not been provided, therefore it is not known if the time lapse between sampling and analysis has exceeded the acceptable holding time(s). It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

b – No sampling time given (waters only) unable to confirm if samples are within acceptable holding times.

c – This test item was received in a container which has not been recommended; it is possible that the sample and/or analyte integrity has not been maintained and that results may be non-representative of the sample when taken.

d – On receipt, the temperature of the sample received was found to fall outside the recommendations of BS ISO 18512:2007. Soil Quality. Guidance on long and short term storage of soil samples.

e – The sample was received in a container that had been filled incorrectly which may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

f – The delay between Sampling and Sample Receipt is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

g – The delay between Sampling and Analysis is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

The following Additional Deviating Sample Codes may also be used.

I/S – Insufficient sample mass/volume received for accurate quantification of this analyte.

U/S – The sample received was deemed unsuitable for accurate determination of this analyte using the Test Methods available.

Deviating Methods

Z – A minor deviation from the Test Method was necessary but this is deemed to have had no impact on the Test Result, the legitimacy of the method validation or the Accreditation Status of the Test Method.

Y – A significant deviation from the Test Method was necessary which is deemed to have had no impact on the Test Result, however, due to a lack of sufficient supporting validation, the Accreditation Status of the Method has been removed.

W – The normal LOD of the instrument/method could not be attained, thus an elevated LOD or LOQ has been applied to the Test Data, however, the data reported meets the requirements of the Client and does not affect compliance with the specification limit (where applicable).

V – One of the QA/QC parameters failed, however, the increased implied Uncertainty associated with the Test Result meets the requirements of the Client and does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.2.9).

U – The precision acceptance criteria associated with the Test Method could not be met but the Test Result fulfils the Client's objectives and the elevated Uncertainty does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.8.10).

T – The Test Method used was supplied by the Client and involved a simple modification of a Test Method for which ACSE holds accreditation (Quality Manual, Section 18.3.8).

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**Quality Testing & Materials Consultancy
to the
Construction Industry**

2. Class 6F5 Site Test Data

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Analytical Report Number : 17-60426

Project / Site name:	Southall Western Access	Samples received on:	15/09/2017
Your job number:	CG-28308	Samples instructed on:	15/09/2017
Your order number:	4586	Analysis completed by:	21/09/2017
Report Issue Number:	1	Report issued on:	21/09/2017
Samples Analysed:	12 soil samples		

Signed:

Emma Winter
Assistant 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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Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				817101	817102	817103	817104	817105
Sample Reference				PM1	PM1	PM3	PM3	Canal Mound
Sample Number				S5	S6	S1	S2	S3
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				07/09/2017	07/09/2017	07/09/2017	07/09/2017	07/09/2017
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	5.9	8.1	4.4	8.3	7.3
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	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	11.5	11.0	11.4	11.3	11.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	11000	14000	12000	12000	11000
Organic Matter	%	0.1	MCERTS	0.9	1.4	1.1	2.1	1.1

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.36	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.10	0.12	0.16	0.31	0.16
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.36	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.69	0.83	0.94	3.1	1.1
Anthracene	mg/kg	0.05	MCERTS	0.19	0.28	< 0.05	0.82	0.26
Fluoranthene	mg/kg	0.05	MCERTS	1.5	2.1	1.7	6.8	2.2
Pyrene	mg/kg	0.05	MCERTS	1.3	2.0	1.5	6.2	2.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.54	0.78	0.81	3.3	0.97
Chrysene	mg/kg	0.05	MCERTS	0.55	0.99	1.0	2.4	1.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.62	1.0	1.2	4.0	1.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.39	0.73	0.63	1.8	0.69
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.65	1.1	0.97	3.3	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.28	0.44	0.47	1.3	0.47
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.13	0.38	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.30	0.53	0.57	1.6	0.59
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	7.0	11	10	36	12
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	8.4	8.9	17	15	12
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.8	9.4	15	12	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	140	170	200	210	190
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.49	0.58	0.35	0.54	0.42
Boron (water soluble)	mg/kg	0.2	MCERTS	3.3	3.8	1.4	3.9	3.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.0	1.7	1.8	1.7	1.6
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	24	28	42	37	34
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	29	42	38	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	180	290	220	180
Lead (aqua regia extractable)	mg/kg	1	MCERTS	56	120	240	190	86
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	17	19	20	47	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	2.2	< 1.0	2.9
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	35	28	34	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	280	450	390	620	410

Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number	817101	817102	817103	817104	817105
Sample Reference	PM1	PM1	PM3	PM3	Canal Mound
Sample Number	S5	S6	S1	S2	S3
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/09/2017	07/09/2017	07/09/2017	07/09/2017	07/09/2017
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	4.4	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	12	2.4	4.9	3.2	4.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	18	16	14	9.3	20
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	80	150	89	92	130
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	110	160	110	100	160

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	2.5	< 1.0	1.3	2.8	3.3
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.2	2.9	4.4	12	12
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	22	28	13	53	31
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	97	200	68	280	150
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	130	230	87	340	200



Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number	817106	817107	817108	817109	817110
Sample Reference	Haul	Lagoon 1	Lagoon 1	Lagoon 2	Lagoon 2
Sample Number	S4	ES1	ES2	ES1	ES2
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/09/2017	08/09/2017	08/09/2017	08/09/2017	08/09/2017
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	11	11
Total mass of sample received	kg	0.001	NONE	2.0	1.7

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	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	10.8	10.9	11.6	10.6	11.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	10000	17000	17000	16000	17000
Organic Matter	%	0.1	MCERTS	1.8	1.1	0.9	1.4	1.4

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.27	0.14	< 0.05	0.20	0.15
Acenaphthene	mg/kg	0.05	MCERTS	0.45	0.30	1.4	0.23	0.20
Fluorene	mg/kg	0.05	MCERTS	0.51	0.30	1.1	0.21	0.16
Phenanthrene	mg/kg	0.05	MCERTS	5.3	2.1	2.5	2.0	1.6
Anthracene	mg/kg	0.05	MCERTS	1.5	0.40	0.39	0.54	0.40
Fluoranthene	mg/kg	0.05	MCERTS	8.7	3.0	1.7	4.1	3.7
Pyrene	mg/kg	0.05	MCERTS	7.2	2.5	1.3	3.5	3.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.5	1.4	0.62	1.9	1.6
Chrysene	mg/kg	0.05	MCERTS	2.3	1.2	0.62	1.6	1.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.2	1.5	0.65	1.9	1.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.8	0.99	0.40	1.2	1.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.0	1.3	0.60	1.9	1.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.62	0.26	0.76	0.72
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.32	0.16	< 0.05	0.21	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	0.70	0.29	0.87	0.83
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	41	17	12	21	19
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	11	7.8	5.1	9.7	12
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7	6.5	15	10	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	220	140	95	160	190
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.47	0.34	0.37	0.41	0.41
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	3.4	3.1	3.8	2.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.9	1.0	0.7	1.3	1.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	33	23	20	29	29
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	24	20	29	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	220	91	82	310	130
Lead (aqua regia extractable)	mg/kg	1	MCERTS	180	78	63	94	97
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	36	23	16	38	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	2.4	1.5	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	27	24	31	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	540	280	190	360	430

Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				817106	817107	817108	817109	817110
Sample Reference				Haul	Lagoon 1	Lagoon 1	Lagoon 2	Lagoon 2
Sample Number				S4	ES1	ES2	ES1	ES2
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				07/09/2017	08/09/2017	08/09/2017	08/09/2017	08/09/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.3
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	2.6	2.3	4.1	9.7
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	9.5	23	15	11	21
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	82	100	77	51	110
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	92	130	95	66	140
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	2.3	< 1.0	2.6	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.9	3.1	14	8.9	5.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	65	27	20	42	33
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	190	77	53	190	120
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	270	110	90	240	160



Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				817111	817112			
Sample Reference				EYBPM	EYBPM			
Sample Number				ES1	ES2			
Depth (m)				None Supplied	None Supplied			
Date Sampled				08/09/2017	08/09/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	9.1	7.5			
Total mass of sample received	kg	0.001	NONE	1.6	1.7			

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	11.3	10.8			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	12000	8500			
Organic Matter	%	0.1	MCERTS	1.6	1.6			

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	0.66	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	0.63	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	0.68	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	0.73	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	6.8	0.90			
Anthracene	mg/kg	0.05	MCERTS	1.7	0.30			
Fluoranthene	mg/kg	0.05	MCERTS	13	2.0			
Pyrene	mg/kg	0.05	MCERTS	11	1.8			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.2	0.93			
Chrysene	mg/kg	0.05	MCERTS	4.0	0.83			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	5.7	0.94			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.0	0.75			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.8	1.0			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.7	0.43			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.58	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.0	0.49			
Coronene	mg/kg	0.05	NONE	1.6	< 0.05			

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	70	11			
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	15	10			
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	6.6			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	200	180			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.39	0.30			
Boron (water soluble)	mg/kg	0.2	MCERTS	3.4	3.1			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.7	1.3			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (III)	mg/kg	1	NONE	38	24			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	24			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	180	130			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	71			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	21			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	22			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	480	880			

Analytical Report Number: 17-60426

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				817111	817112			
Sample Reference				EYBPM	EYBPM			
Sample Number				ES1	ES2			
Depth (m)				None Supplied	None Supplied			
Date Sampled				08/09/2017	08/09/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
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	69	49			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	76	55			
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	2.7	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	16	4.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	110	24			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	360	120			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	480	140			



Analytical Report Number: 17-60426
Project / Site name: Southall Western Access
Your Order No: 4586

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
817109	Lagoon 2		140	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



Analytical Report Number : 17-60426

Project / Site name: Southall Western Access

* 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 *
817101	PM1	S5	None Supplied	Brown sandy loam with gravel.
817102	PM1	S6	None Supplied	Brown sandy loam with gravel and brick.
817103	PM3	S1	None Supplied	Light brown rubble.**
817104	PM3	S2	None Supplied	Brown sandy loam with gravel and rubble.
817105	Canal Mound	S3	None Supplied	Brown sandy loam with gravel and rubble.
817106	Haul	S4	None Supplied	Brown clay and gravel with clinker
817107	Lagoon 1	ES1	None Supplied	Brown gravelly clay with glass.
817108	Lagoon 1	ES2	None Supplied	Brown gravelly sand with rubble.
817109	Lagoon 2	ES1	None Supplied	Brown gravelly sand with rubble.
817110	Lagoon 2	ES2	None Supplied	Brown gravelly sand with rubble.
817111	EYBPM	ES1	None Supplied	Brown gravelly sand with rubble.
817112	EYBPM	ES2	None Supplied	Brown gravelly sand with rubble.

**Non MCerts matrix

Analytical Report Number : 17-60426

Project / Site name: Southall Western Access

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 ouse method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as 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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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

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

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

Iss No 17-60426-1 Southall Western Access CG-28308

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

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Analytical Report Number : 18-22293

Project / Site name:	Southall	Samples received on:	12/12/2018
Your job number:	CG-28308	Samples instructed on:	12/12/2018
Your order number:		Analysis completed by:	27/12/2018
Report Issue Number:	1	Report issued on:	27/12/2018
Samples Analysed:	16 soil samples		

Signed

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

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

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

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

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

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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	63	< 0.1
Moisture Content	%	N/A	NONE	10	13
Total mass of sample received	kg	0.001	NONE	1.8	1.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	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	10.9	7.8	10.6	8.2	10.0
Total Cyanide	mg/kg	1	MCERTS	< 1	15	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	8300	1400	8500	1300	6000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.67	0.057	0.81	0.28	0.72
Ammonia as NH ₃	mg/kg	0.5	MCERTS	0.6	37	3.7	6.6	< 0.5
Ammonium as NH ₄	mg/kg	0.5	MCERTS	0.7	40	4.0	7.0	< 0.5
Organic Matter	%	0.1	MCERTS	0.3	6.7	0.3	1.1	0.6

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.31	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.80	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05	0.68	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.37	< 0.05	0.67	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.33	5.0	0.69	7.5	0.94
Anthracene	mg/kg	0.05	MCERTS	< 0.05	1.4	0.19	2.1	0.26
Fluoranthene	mg/kg	0.05	MCERTS	0.75	14	1.1	7.9	2.0
Pyrene	mg/kg	0.05	MCERTS	0.68	11	0.96	6.6	1.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.51	7.8	0.71	4.0	1.2
Chrysene	mg/kg	0.05	MCERTS	0.43	7.3	0.61	3.3	0.93
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.83	14	0.98	4.2	1.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.24	5.1	0.32	1.8	0.66
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.57	11	0.66	3.6	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.36	7.6	0.40	1.8	0.81
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.6	< 0.05	0.40	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.41	8.3	0.40	1.9	0.89
Coronene	mg/kg	0.05	NONE	< 0.05	2.9	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	5.1	98	7.0	46	13
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
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

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	14	14	6.4	1.4	15
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	48	7.2	12	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	170	540	150	74	200
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.45	1.8	0.56	0.89	0.55
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	3.8	3.6	2.1	6.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.6	21	2.1	< 0.2	2.0
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	36	110	33	28	40
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	110	33	28	40
Copper (aqua regia extractable)	mg/kg	1	MCERTS	320	330	440	37	280
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	790	96	43	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	3.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	71	16	25	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.6	< 1.0	2.5
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	27	80	28	37	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	520	1100	260	82	500

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	3.7	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	22	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	460	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	490	< 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	3.2	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	14	9.5	18	9.4
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	130	27	63	23
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	16	690	88	69	100
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	25	840	130	150	130



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114489	1114490	1114491	1114492	1114493
Sample Reference	TP1-6F2	TP1-B	TP2-6F2	TP2-B	TP3-6F2
Sample Number	TP101F	TP102B	TP201	TP202	TP301
Depth (m)	0.10	0.70	0.10	1.00	0.10
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

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

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	12	16	11	14
Total mass of sample received	kg	0.001	NONE	1.5	1.7	1.6	1.7	1.6

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	8.3	10.2	8.2	10.3	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1800	14000	1800	10000	3000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.50	1.8	0.51	1.0	0.99
Ammonia as NH ₃	mg/kg	0.5	MCERTS	4.2	0.9	6.8	1.4	3.8
Ammonium as NH ₄	mg/kg	0.5	MCERTS	4.4	0.9	7.2	1.5	4.0
Organic Matter	%	0.1	MCERTS	1.4	0.7	1.4	0.8	1.0

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.7	1.1	0.70	0.75	0.45
Anthracene	mg/kg	0.05	MCERTS	0.53	0.33	0.20	0.22	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	4.6	2.4	1.8	2.1	1.2
Pyrene	mg/kg	0.05	MCERTS	3.9	2.1	1.5	1.9	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.4	1.4	1.1	1.2	0.72
Chrysene	mg/kg	0.05	MCERTS	1.6	1.1	0.73	0.77	0.59
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.0	1.8	1.3	1.7	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.74	0.49	0.39	0.43	0.29
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3	1.3	1.0	1.2	0.89
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.66	0.55	0.63	0.47
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	0.75	0.60	0.61	0.51
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	24	13	9.9	11	7.5
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
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								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	13	3.7	16	4.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	7.6	15	15	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	180	99	200	120
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.53	1.3	0.66	0.99
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	7.5	2.6	5.3	2.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	1.5	< 0.2	2.3	0.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	35	36	38	42	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	36	38	42	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	420	59	210	55
Lead (aqua regia extractable)	mg/kg	1	MCERTS	63	160	62	150	65
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	30	23	33	36	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.4	< 1.0	< 1.0	< 1.0	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	25	47	34	50
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	640	120	490	160

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	2.0	1.8	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	2.7	4.4	2.4	7.3	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	17	24	< 8.0	23	13
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	80	82	14	99	66
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	99	110	21	130	80

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	4.5	< 2.0	< 2.0	3.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	41	24	< 10	28	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	99	120	15	120	11
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140	150	20	150	13



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114494	1114495	1114496	1114497	1114498
Sample Reference				TP3-B	TP4-6F2	TP4-B	TP5-6F2	TP5-B
Sample Number				TP302	TP401	TP402	TP501	TP502
Depth (m)				0.90	0.20	1.10	0.30	0.60
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number	1114499	1114500	1114501	1114502	1114503
Sample Reference	TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number	TP601	TP602	TP701	TP702	TP801
Depth (m)	0.60	1.30	0.30	1.20	0.50
Date Sampled	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	15
Total mass of sample received	kg	0.001	NONE	1.7	1.7

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	10.2	8.6	11.0	8.4	11.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	11000	1800	14000	1300	13000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.0	0.40	0.63	0.21	0.46
Ammonia as NH ₃	mg/kg	0.5	MCERTS	1.0	5.3	3.1	3.7	1.4
Ammonium as NH ₄	mg/kg	0.5	MCERTS	1.1	5.6	3.3	3.9	1.5
Organic Matter	%	0.1	MCERTS	1.4	1.2	1.4	0.4	1.2

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.66	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.72	< 0.05	0.32
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.38	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4	< 0.05	0.29
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.47	9.3	< 0.05	2.7
Anthracene	mg/kg	0.05	MCERTS	0.45	0.15	2.7	< 0.05	0.77
Fluoranthene	mg/kg	0.05	MCERTS	3.7	1.1	12	0.38	4.8
Pyrene	mg/kg	0.05	MCERTS	3.4	0.98	9.4	0.30	4.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.4	0.55	6.6	0.21	2.6
Chrysene	mg/kg	0.05	MCERTS	1.6	0.52	3.4	0.18	1.8
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.8	0.82	5.1	0.25	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	0.30	2.3	0.13	0.90
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4	0.68	4.5	0.24	2.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	0.35	2.3	< 0.05	1.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.78	< 0.05	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	0.41	2.5	< 0.05	1.3
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	23	6.3	64	1.7	26
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114499	1114500	1114501	1114502	1114503
Sample Reference				TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number				TP601	TP602	TP701	TP702	TP801
Depth (m)				0.60	1.30	0.30	1.20	0.50
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
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								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	8.8	2.0	6.3	1.7	8.3
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	12	13	9.5	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	180	92	160	75	150
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.73	1.0	0.68	1.0	0.65
Boron (water soluble)	mg/kg	0.2	MCERTS	6.0	2.3	4.6	1.5	3.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.4	0.4	1.0	< 0.2	1.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	42	39	28	36	33
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	39	28	36	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	380	51	160	28	120
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	73	77	24	86
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.7	< 0.3	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	30	18	35	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	3.6	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	43	31	50	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300	110	250	89	300

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	4.8	< 2.0	15	< 2.0	7.8
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	26	< 8.0	55	< 8.0	32
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	160	< 8.0	220	< 8.0	150
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	200	< 10	290	< 10	190

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	5.0	< 1.0	1.8
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.1	< 2.0	40	< 2.0	11
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	32	12	250	< 10	61
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	130	18	720	< 10	200
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	160	30	1000	< 10	280



Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114499	1114500	1114501	1114502	1114503
Sample Reference				TP6-6F2	TP6-B	TP7-6F2	TP7-B	TP8-6F2
Sample Number				TP601	TP602	TP701	TP702	TP801
Depth (m)				0.60	1.30	0.30	1.20	0.50
Date Sampled				11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	1.5				

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	N/A	ISO 17025	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	9.8				
Total Cyanide	mg/kg	1	MCERTS	< 1				
Free Cyanide	mg/kg	1	MCERTS	< 1				
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3700				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.93				
Ammonia as NH ₃	mg/kg	0.5	MCERTS	20				
Ammonium as NH ₄	mg/kg	0.5	MCERTS	21				
Organic Matter	%	0.1	MCERTS	1.8				

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				
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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	0.91				
Anthracene	mg/kg	0.05	MCERTS	0.25				
Fluoranthene	mg/kg	0.05	MCERTS	2.1				
Pyrene	mg/kg	0.05	MCERTS	1.8				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.2				
Chrysene	mg/kg	0.05	MCERTS	0.88				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.7				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.53				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.79				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.84				
Coronene	mg/kg	0.05	NONE	< 0.05				

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	12				
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Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	5.2				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	130				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0				
Boron (water soluble)	mg/kg	0.2	MCERTS	3.5				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.8				
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2				
Chromium (III)	mg/kg	1	NONE	39				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	96				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220				

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	2.9				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	24				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	160				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	190				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	3.5				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	7.6				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	26				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140				

Analytical Report Number: 18-22293

Project / Site name: Southall

Lab Sample Number				1114504				
Sample Reference				TP8-B				
Sample Number				TP802				
Depth (m)				1.40				
Date Sampled				11/12/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				



Analytical Report Number: 18-22293

Project / Site name: Southall

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
1114490	TP1-B	0.70	158	Loose Fibres	Chrysotile	< 0.001	< 0.001

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

Analytical Report Number : 18-22293

Project / Site name: Southall

* 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 *
1114489	TP1-6F2	TP101F	0.10	Light brown loam and sand with stones and gravel.
1114490	TP1-B	TP102B	0.70	Brown loam and sand with vegetation and gravel.
1114491	TP2-6F2	TP201	0.10	Light brown loam and sand with gravel and rubble.
1114492	TP2-B	TP202	1.00	Brown loam and clay with stones and gravel
1114493	TP3-6F2	TP301	0.10	Light grey loam and sand with gravel and vegetation.
1114494	TP3-B	TP302	0.90	Brown clay and loam with vegetation and gravel
1114495	TP4-6F2	TP401	0.20	Light grey loam and sand with gravel and glass.
1114496	TP4-B	TP402	1.10	Brown clay and sand with gravel and vegetation.
1114497	TP5-6F2	TP501	0.30	Brown loam and sand with gravel and brick.
1114498	TP5-B	TP502	0.60	Brown loam and clay with gravel and vegetation.
1114499	TP6-6F2	TP601	0.60	Brown loam and sand with vegetation and gravel.
1114500	TP6-B	TP602	1.30	Brown clay and sand with vegetation and gravel
1114501	TP7-6F2	TP701	0.30	Brown loam and sand with gravel and glass.
1114502	TP7-B	TP702	1.20	Brown clay and sand with gravel and vegetation.
1114503	TP8-6F2	TP801	0.50	Brown loam and sand with rubble and gravel
1114504	TP8-B	TP802	1.40	Brown clay and sand with gravel and rubble.

Analytical Report Number : 18-22293

Project / Site name: Southall

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
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
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, 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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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 soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests ^{***}	L009-PL	D	MCERTS
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 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, 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

Iss No 18-22293-1 Southall CG-28308

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

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Analytical Report Number : 18-22293

Project / Site name: Southall

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 cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	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
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-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.

**Chris Gordon**

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Analytical Report Number : 18-73323

Project / Site name:	Southall Western Access	Samples received on:	17/01/2018
Your job number:	CG-28308	Samples instructed on:	19/01/2018
Your order number:		Analysis completed by:	29/01/2018
Report Issue Number:	1	Report issued on:	29/01/2018
Samples Analysed:	5 leachate samples - 10 soil samples		

Signed:

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

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

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

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

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Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891691	891692	891693	891694	891695
Sample Reference				6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	17	17	17	16	16
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.1

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

pH - Automated	pH Units	N/A	MCERTS	10.1	10.2	10.1	10.3	10.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	33000	35000	32000	37000	35000
Ammonium as NH ₄	mg/kg	0.5	MCERTS	2.4	4.3	2.7	2.2	2.1
Organic Matter	%	0.1	MCERTS	1.6	1.6	1.6	1.6	1.5

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.20	< 0.05	0.23	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.26	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.3	1.3	1.3	0.69	0.96
Anthracene	mg/kg	0.05	MCERTS	0.41	0.37	0.23	0.15	0.22
Fluoranthene	mg/kg	0.05	MCERTS	2.0	1.9	1.7	0.96	1.2
Pyrene	mg/kg	0.05	MCERTS	1.6	1.5	1.3	0.80	1.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.84	0.66	0.56	0.33	0.40
Chrysene	mg/kg	0.05	MCERTS	0.56	0.52	0.50	0.29	0.30
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.81	0.79	0.61	0.39	0.31
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.35	0.34	0.35	0.29	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.74	0.67	0.59	0.34	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.32	0.33	0.28	0.17	< 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	0.43	0.34	0.33	0.19	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	9.8	8.7	8.3	4.6	5.0
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	140	150	100	170	95
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	11	12	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	160	160	140	150	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.41	0.42	0.35	0.39	0.36
Boron (water soluble)	mg/kg	0.2	MCERTS	9.8	10	8.7	9.1	8.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	23	27	17	23	33
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	170	180	160	190	180
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	170	180	160	200	180
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4300	4200	3100	3800	4600
Lead (aqua regia extractable)	mg/kg	1	MCERTS	430	470	390	570	400
Lead (aqua regia extractable) %	mg/kg	1	MCERTS	430	470	390	570	400
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	110	150	110	160	140
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	29	25	27	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	6400	8300	6600	7600	6500

Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number	891691	891692	891693	891694	891695
Sample Reference	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number	ES1	ES2	ES3	ES4	ES5
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	2.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	4.0	< 2.0	2.4	3.8	7.8
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	11
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	30	41	35	43	58
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	39	48	44	55	79

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	3.4	< 1.0	< 1.0	< 1.0	2.1
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.0	< 2.0	5.2	< 2.0	7.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	16	< 10	13	< 10	11
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	58	21	49	19	39
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	86	28	67	24	60

VOCs

Trichloroethene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891696	891697	891698	891699	891700
Sample Reference				6F5	6F5	6F5	6F5	6F5
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	9.5	12	12	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.3	1.3

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

pH - Automated	pH Units	N/A	MCERTS	11.3	11.0	10.8	11.0	11.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	15000	17000	16000	17000	18000
Ammonium as NH ₄	mg/kg	0.5	MCERTS	-	-	-	-	-
Organic Matter	%	0.1	MCERTS	1.2	1.2	1.3	1.3	1.3

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.22	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.91	1.2	2.2	1.2
Anthracene	mg/kg	0.05	MCERTS	0.53	0.23	0.29	0.60	0.37
Fluoranthene	mg/kg	0.05	MCERTS	2.6	1.5	2.2	4.4	2.4
Pyrene	mg/kg	0.05	MCERTS	2.1	1.2	1.9	3.5	1.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.77	0.99	2.0	1.0
Chrysene	mg/kg	0.05	MCERTS	0.91	0.40	0.79	1.5	0.79
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	0.63	1.0	1.7	1.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.62	0.39	0.77	1.3	0.84
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	0.66	0.92	1.9	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.46	0.31	0.47	0.84	0.57
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.13	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	0.33	0.47	0.95	0.65
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	13	7.3	11	21	12
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	19	23	21	23	22
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	9.6	12	13	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	250	280	230	260	280
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.43	0.45	0.63	0.56	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	3.2	3.7	3.2	3.1	3.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.7	40	2.9	3.3	3.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	39	43	46	46	49
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	43	46	47	49
Copper (aqua regia extractable)	mg/kg	1	MCERTS	300	400	460	430	690
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	180	120	150	230
Lead (aqua regia extractable) %	mg/kg	1	MCERTS	200	180	120	150	230
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	25	33	28	31	54
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24	23	28	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	750	1100	750	910	910

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Project / Site name: Southall Western Access

Lab Sample Number				891696	891697	891698	891699	891700
Sample Reference				6F5	6F5	6F5	6F5	6F5
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.1	< 1.0	< 1.0	1.3
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	11	6.3	8.2	4.2
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	12	21	18	24	18
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	78	89	86	110	92
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	92	120	110	140	120

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	5.2	< 1.0	< 1.0	1.9	5.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.8	2.4	3.5	5.6	12
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	19	13	16	20	26
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	110	51	68	81	91
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140	67	88	110	130

VOCs

Trichloroethene	ug/kg	1	MCERTS	-	-	-	-	-
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Project / Site name: Southall Western Access

Lab Sample Number				891701	891702	891703	891704	891705
Sample Reference				6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	20	23	26	20	18
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	1.4	1.2	< 1.1	< 1.1
Barium (dissolved)	µg/l	0.05	ISO 17025	370	360	340	420	530
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	48	61	69	45	35
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	52	43	69	47	27
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	44	38	59	41	25
Copper (dissolved)	µg/l	0.7	ISO 17025	900	690	680	750	800
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	8.6	5.3	< 1.0	4.9
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070
Nickel (dissolved)	µg/l	0.3	ISO 17025	13	12	12	10	12
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	6.4	7.2	10	3.7	5.6
Zinc (dissolved)	µg/l	0.4	ISO 17025	27	19	45	26	49
Calcium (dissolved)	mg/l	0.012	ISO 17025	210	180	180	180	150



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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and 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 *
891691	6N-IBBA	ES1	None Supplied	Grey sand with gravel.
891692	6N-IBBA	ES2	None Supplied	Grey sandy clay with gravel.
891693	6N-IBBA	ES3	None Supplied	Grey sand with gravel.
891694	6N-IBBA	ES4	None Supplied	Grey sand with gravel.
891695	6N-IBBA	ES5	None Supplied	Grey sand with gravel.
891696	6F5	ES1	None Supplied	Brown sand with gravel and brick.
891697	6F5	ES2	None Supplied	Brown sand with gravel and brick.
891698	6F5	ES3	None Supplied	Brown clay and sand with gravel and brick.
891699	6F5	ES4	None Supplied	Brown clay and sand with gravel and brick.
891700	6F5	ES5	None Supplied	Brown sand with gravel.

Analytical Report Number : 18-73323

Project / Site name: Southall Western Access

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
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron 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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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 soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Hexavalent chromium in soil (Lower Level)	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
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025
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
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests ^{***}	L009-PL	D	MCERTS

Iss No 18-73323-1 Southall Western Access CG-28308

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

Page 8 of 9

Analytical Report Number : 18-73323

Project / Site name: Southall Western Access

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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-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.

**Anne Curtis**

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Analytical Report Number : 19-28000

Project / Site name:	Southall	Samples received on:	07/02/2019
Your job number:	CG-28308	Samples instructed on:	07/02/2019
Your order number:		Analysis completed by:	18/02/2019
Report Issue Number:	1	Report issued on:	18/02/2019
Samples Analysed:	4 soil samples		

Signed:

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

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

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

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

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

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Analytical Report Number: 19-28000

Project / Site name: Southall

Lab Sample Number				1150118	1150119	1150120	1150121	
Sample Reference				WGUC SW	EGUC SE Stockpile	HR TP1	HR TP2	
Sample Number				S1	S1	S1	S1	
Depth (m)				0.00	2.50	0.30	0.30	
Date Sampled				06/01/2019	06/01/2019	06/01/2019	06/01/2019	
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	31
Moisture Content				%	N/A	NONE	21	9.5
Total mass of sample received				kg	0.001	NONE	1.2	1.4
Asbestos in Soil				Type	N/A	ISO 17025	Not-detected	Not-detected
General Inorganics								
Free Cyanide (low level)				mg/kg	0.5	ISO 17025	< 0.5	< 0.5
Ammonia as NH ₃				mg/kg	0.5	MCERTS	< 0.5	< 0.5
Total Phenols								
Total Phenols (monohydric)				mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs								
Naphthalene				mg/kg	0.05	MCERTS	< 0.05	0.66
Benzo(a)pyrene				mg/kg	0.05	MCERTS	2.1	9.4
Heavy Metals / Metalloids								
Cadmium (aqua regia extractable)				mg/kg	0.2	MCERTS	1.4	0.9
Chromium (hexavalent)				mg/kg	4	MCERTS	< 4.0	< 4.0
Lead (aqua regia extractable)				mg/kg	1	MCERTS	77	110
Mercury (aqua regia extractable)				mg/kg	0.3	MCERTS	< 0.3	< 0.3
Monoaromatics & Oxygenates								
Benzene				µg/kg	1	MCERTS	< 1.0	< 1.0



Analytical Report Number : 19-28000

Project / Site name: Southall

* 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 *
1150118	WGUC SW	S1	0.00	Light brown clay and sand with gravel.
1150119	EGUC SE Stockpile	S1	2.50	Brown clay and sand with gravel and stones.
1150120	HR TP1	S1	0.30	Brown sand with gravel.
1150121	HR TP2	S1	0.30	Brown gravelly loam with vegetation.

Analytical Report Number : 19-28000

Project / Site name: Southall

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
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide (Low level) in soil	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 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
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

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 ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
EGUC SE Stockpile	S1	S	19-28000	1150119	c	Hexavalent chromium in soil	L080-PL	c
EGUC SE Stockpile	S1	S	19-28000	1150119	c	Ammonia as NH3 in soil	L082-PL	c
EGUC SE Stockpile	S1	S	19-28000	1150119	c	Ammoniacal Nitrogen as N in soil	L082-PL	c
EGUC SE Stockpile	S1	S	19-28000	1150119	c	BTEX in soil (Monoaromatics)	L073B-PL	c
EGUC SE Stockpile	S1	S	19-28000	1150119	c	Monohydric phenols in soil	L080-PL	c
EGUC SE Stockpile	S1	S	19-28000	1150119	c	Speciated EPA-16 PAHs in soil	L064-PL	c
HR TP1	S1	S	19-28000	1150120	c	Hexavalent chromium in soil	L080-PL	c
HR TP1	S1	S	19-28000	1150120	c	Ammonia as NH3 in soil	L082-PL	c
HR TP1	S1	S	19-28000	1150120	c	Ammoniacal Nitrogen as N in soil	L082-PL	c
HR TP1	S1	S	19-28000	1150120	c	BTEX in soil (Monoaromatics)	L073B-PL	c
HR TP1	S1	S	19-28000	1150120	c	Monohydric phenols in soil	L080-PL	c
HR TP1	S1	S	19-28000	1150120	c	Speciated EPA-16 PAHs in soil	L064-PL	c
HR TP2	S1	S	19-28000	1150121	c	Hexavalent chromium in soil	L080-PL	c
HR TP2	S1	S	19-28000	1150121	c	Ammonia as NH3 in soil	L082-PL	c
HR TP2	S1	S	19-28000	1150121	c	Ammoniacal Nitrogen as N in soil	L082-PL	c
HR TP2	S1	S	19-28000	1150121	c	BTEX in soil (Monoaromatics)	L073B-PL	c
HR TP2	S1	S	19-28000	1150121	c	Monohydric phenols in soil	L080-PL	c
HR TP2	S1	S	19-28000	1150121	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WGUC SW	S1	S	19-28000	1150118	c	Hexavalent chromium in soil	L080-PL	c
WGUC SW	S1	S	19-28000	1150118	c	Ammonia as NH3 in soil	L082-PL	c
WGUC SW	S1	S	19-28000	1150118	c	Ammoniacal Nitrogen as N in soil	L082-PL	c
WGUC SW	S1	S	19-28000	1150118	c	BTEX in soil (Monoaromatics)	L073B-PL	c
WGUC SW	S1	S	19-28000	1150118	c	Monohydric phenols in soil	L080-PL	c
WGUC SW	S1	S	19-28000	1150118	c	Speciated EPA-16 PAHs in soil	L064-PL	c



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Analytical Report Number : 19-35192

Project / Site name:	Southall	Samples received on:	29/03/2019
Your job number:	CG-28308	Samples instructed on:	29/03/2019
Your order number:	2445	Analysis completed by:	08/04/2019
Report Issue Number:	1	Report issued on:	08/04/2019
Samples Analysed:	9 soil samples - 3 water 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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Analytical Report Number: 19-35192

Project / Site name: Southall

Your Order No: 2445

Lab Sample Number				1189019	1189020	1189021	1189022	1189023
Sample Reference				TP1	TP2	TP3	TP4	TP5
Sample Number				RDE ES1	RDE ES2	RDW ES3	FCA ES4	FCA ES5
Depth (m)				0.30	0.10	0.20	0.20	0.10
Date Sampled				26/03/2019	26/03/2019	26/03/2019	26/03/2019	26/03/2019
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	%	0.001	NONE	21	14	20	21	19
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.3	1.2	1.2

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	7.1	8.1	7.9	8.0	8.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	1	1	< 1
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.18	0.44	0.93	0.13
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	6.1	< 0.5	< 0.5	0.8
Ammonia as NH ₃	mg/kg	0.5	MCERTS	-	-	-	-	-
Organic Matter	%	0.1	MCERTS	4.8	3.4	5.2	4.7	5.1

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	3.8	2.8	2.5	7.5
Chrysene	mg/kg	0.05	MCERTS	1.5	2.6	2.9	2.3	7.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.1	4.2	4.1	4.0	10
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.70	1.7	1.6	1.2	3.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.7	3.7	3.5	3.2	8.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.84	1.7	1.8	1.8	4.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32	0.42	< 0.05	0.94

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	16	19	23	20
Barium (aqua regia extractable)	mg/kg	1	MCERTS	220	250	210	220	260
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.7	1.3	1.5	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4	1.5	3.8	4.6	2.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	0.8	1.6	6.0	2.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	-	40	41	68	44
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	40	41	68	44
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	110	99	210	160
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	110	210	230	220
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.5	< 0.3	2.8	1.1	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	58	29	42	38
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50	100	59	61	54
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	210	260	400	330

Analytical Report Number: 19-35192

Project / Site name: Southall

Your Order No: 2445

Lab Sample Number	1189019	1189020	1189021	1189022	1189023
Sample Reference	TP1	TP2	TP3	TP4	TP5
Sample Number	RDE ES1	RDE ES2	RDW ES3	FCA ES4	FCA ES5
Depth (m)	0.30	0.10	0.20	0.20	0.10
Date Sampled	26/03/2019	26/03/2019	26/03/2019	26/03/2019	26/03/2019
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	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	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	1.7	4.0	< 1.0	9.1	4.7
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	5.3	7.8	< 2.0	31	14
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	12	18	< 8.0	43	14
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	53	62	< 8.0	280	93
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	72	91	< 10	370	130

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	3.8	< 1.0	4.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	2.6	10	18	15
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	19	27	24	34	59
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	42	40	36	100	91
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	63	70	74	160	170

TPH (C10 - C25)	mg/kg	10	MCERTS	60	84	48	220	160
TPH (C25 - C40)	mg/kg	10	MCERTS	98	92	26	400	170

Analytical Report Number: 19-35192

Project / Site name: Southall

Your Order No: 2445

Lab Sample Number				1189024	1189025	1189026	1189027	
Sample Reference				TP6	TP7	TP8	TP9	
Sample Number				C. PARK ES6	C. PARK ES7	C. PARK ES8	WYB ES9	
Depth (m)				0.00	0.20	0.20	0.30	
Date Sampled				26/03/2019	26/03/2019	26/03/2019	26/03/2019	
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	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	6.1	5.2	7.0	16	
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.2	1.2	

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	-	-	-	7.9	
Total Cyanide	mg/kg	1	MCERTS	-	-	-	< 1	
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.59	
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	-	-	-	< 0.5	
Ammonia as NH ₃	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	-	
Organic Matter	%	0.1	MCERTS	-	-	-	4.7	

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	2.3	< 0.05	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	2.2	
Chrysene	mg/kg	0.05	MCERTS	-	-	-	2.3	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	3.1	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	1.6	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	11	36	10	2.7	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	1.6	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	0.33	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	15	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	170	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	1.3	
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	3.8	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.4	2.7	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	-	-	< 1.2	
Chromium (III)	mg/kg	1	NONE	-	-	-	52	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	53	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	120	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	63	82	260	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	1.8	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	34	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	59	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	230	

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Lab Sample Number				1189024	1189025	1189026	1189027	
Sample Reference				TP6	TP7	TP8	TP9	
Sample Number				C. PARK ES6	C. PARK ES7	C. PARK ES8	WYB ES9	
Depth (m)				0.00	0.20	0.20	0.30	
Date Sampled				26/03/2019	26/03/2019	26/03/2019	26/03/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	1.8	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	6.8	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	27	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	170	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	210	

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	3.5	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	29	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	87	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	120	

TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	-	120	
TPH (C25 - C40)	mg/kg	10	MCERTS	-	-	-	230	



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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
1189027	TP9	0.30	138	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



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Lab Sample Number	1189028	1189029	1189030		
Sample Reference	EWYB	LAGOON	LAGOON		
Sample Number	IBC W1	IBC W2	BUND W3		
Depth (m)	None Supplied	None Supplied	None Supplied		
Date Sampled	26/03/2019	26/03/2019	26/03/2019		
Time Taken	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.0	8.1	9.2		
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	20	36	7.5		
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1		
Sulphate as SO ₄	µg/l	45	ISO 17025	520000	101000	1230000		
Chloride	mg/l	0.15	ISO 17025	1000	7100	580		
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	24000	46000	3400		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	113	159	44.0		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	460	910	130		
Total Suspended Solids	mg/l	2	ISO 17025	3000	1700	120		
Settleable Solids (Rapidly Settleable)	mg/l	2	NONE	325	10.0	40.0		
Settleable Solids - Total (1 hour)	mg/l	2	NONE	2670	1270	100		
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1450	440	1340		

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	7.7	1600	8.3		
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.43	< 0.01	0.59		
Acenaphthylene	µg/l	0.01	ISO 17025	0.33	< 0.01	0.09		
Acenaphthene	µg/l	0.01	ISO 17025	0.23	< 0.01	0.40		
Fluorene	µg/l	0.01	ISO 17025	0.19	< 0.01	0.16		
Phenanthrene	µg/l	0.01	ISO 17025	1.78	3.84	0.77		
Anthracene	µg/l	0.01	ISO 17025	0.30	0.94	0.22		
Fluoranthene	µg/l	0.01	ISO 17025	4.41	9.30	2.05		
Pyrene	µg/l	0.01	ISO 17025	4.11	8.42	1.90		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	1.94	3.95	0.82		
Chrysene	µg/l	0.01	ISO 17025	2.57	5.02	0.88		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	3.54	4.44	1.03		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	1.37	2.03	0.48		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	1.99	3.03	0.68		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	1.63	1.60	0.41		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.12		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	2.23	2.24	0.54		

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	27.1	44.8	11.1		
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Lab Sample Number	1189028	1189029	1189030		
Sample Reference	EWYB	LAGOON	LAGOON		
Sample Number	IBC W1	IBC W2	BUND W3		
Depth (m)	None Supplied	None Supplied	None Supplied		
Date Sampled	26/03/2019	26/03/2019	26/03/2019		
Time Taken	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	140	28	64		
Calcium (dissolved)	mg/l	0.012	ISO 17025	480	170	530		
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0		
Chromium (III)	µg/l	1	NONE	1.4	< 1.0	1.5		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	62	2.5	6.4		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0		
Antimony (dissolved)	µg/l	0.4	ISO 17025	5.0	2.9	4.3		
Arsenic (dissolved)	µg/l	0.15	ISO 17025	7.92	2.15	6.24		
Barium (dissolved)	µg/l	0.06	ISO 17025	170	230	85		
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1		
Boron (dissolved)	µg/l	10	ISO 17025	140	28	64		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05	0.03	0.07		
Calcium (dissolved)	mg/l	0.012	ISO 17025	480	170	530		
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0		
Chromium (III)	µg/l	1	NONE	1.4	< 1.0	1.5		
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.4	< 0.2	1.5		
Copper (dissolved)	µg/l	0.5	ISO 17025	1.5	< 0.5	42		
Lead (dissolved)	µg/l	0.2	ISO 17025	6.6	0.3	12		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	62	2.5	6.4		
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.12	0.27	0.23		
Nickel (dissolved)	µg/l	0.5	ISO 17025	37	28	7.8		
Selenium (dissolved)	µg/l	0.6	ISO 17025	U/S	U/S	U/S		
Vanadium (dissolved)	µg/l	0.2	ISO 17025	5.5	0.9	7.6		
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.2	< 0.5	7.2		

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	5.3	< 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		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	5.3	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	2.3	< 1.0	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	11	23	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	15	23	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	33	45	< 10		

Miscellaneous Organics

Petroleum Ether Extractable Matter	mg/l	4	NONE	< 4.0	< 4.0	< 4.0		
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U/S = Unsuitable Sample due to matrix interference

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and 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 *
1189019	TP1	RDE ES1	0.30	Brown clay with vegetation and chalk.
1189020	TP2	RDE ES2	0.10	Brown loam and clay with vegetation and gravel
1189021	TP3	RDW ES3	0.20	Brown loam and clay with gravel and chalk.
1189022	TP4	FCA ES4	0.20	Brown loam and clay with vegetation and gravel
1189023	TP5	FCA ES5	0.10	Brown loam and clay with vegetation and gravel
1189024	TP6	C. PARK ES6	0.00	Brown loam and sand with gravel.
1189025	TP7	C. PARK ES7	0.20	Brown loam and sand with gravel.
1189026	TP8	C. PARK ES8	0.20	Brown loam and sand with gravel and rubble.
1189027	TP9	WYB ES9	0.30	Brown loam and clay with gravel and vegetation.

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Project / Site name: Southall

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
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Ammoniacal Nitrogen as N in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
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 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
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 water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
chromium III in soil	In-house method by calculation from total Cr and Cr VI.	In-house method	L068-PL	D	NONE
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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
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
DRO C10-28 (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Free cyanide (Low level) in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025

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

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Project / Site name: Southall

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
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	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
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
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
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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Petroleum Ether Extractable Matter in water	Gravimetrically determined through extraction with petroleum ether.	In-house method	L060-PL	W	NONE
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
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
Settleable Solids (Rapidly Settleable) in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-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
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

Analytical Report Number : 19-35192

Project / Site name: Southall

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 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
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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total 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
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-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
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

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

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

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



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Analytical Report Number : 19-47039

Project / Site name:	Southall	Samples received on:	19/06/2019
Your job number:	CG-28308	Samples instructed on:	25/06/2019
Your order number:	2917	Analysis completed by:	04/07/2019
Report Issue Number:	1	Report issued on:	04/07/2019
Samples Analysed:	16 soil 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: 19-47039

Project / Site name: Southall

Your Order No: 2917

Lab Sample Number	1252905	1252906	1252907	1252908	1252909
Sample Reference	SP17B	SP17B	SP17B	SP17C	SP17A
Sample Number	1	2	3	1	1
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	0.20
Date Sampled	18/06/2019	18/06/2019	18/06/2019	18/06/2019	18/06/2019
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	-	-
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	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	0.001	0.001	0.004	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	0.001	0.001	0.004	< 0.001

General Inorganics

Free Cyanide (low level)	mg/kg	0.5	ISO 17025	-	-	-	-	-
Ammonia as NH ₃	mg/kg	0.5	MCERTS	-	-	-	-	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
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Analytical Report Number: 19-47039

Project / Site name: Southall

Your Order No: 2917

Lab Sample Number	1252910	1252911	1252912	1252913	1252914
Sample Reference	SP17A	PLTP2	PLTP2	PLTP1	PLTP1
Sample Number	2	1	2	1	2
Depth (m)	2.00	0.10	0.30	0.10	0.30
Date Sampled	18/06/2019	18/06/2019	18/06/2019	18/06/2019	18/06/2019
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	-	17
Total mass of sample received	kg	0.001	NONE	-	1.1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	0.001	< 0.001	< 0.001	< 0.001	< 0.001

General Inorganics

Free Cyanide (low level)	mg/kg	0.5	ISO 17025	-	< 0.5	< 0.5	< 0.5	< 0.5
Ammonia as NH ₃	mg/kg	0.5	MCERTS	-	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	-	0.67	< 0.05	0.37	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	6.6	4.6	4.5	6.7

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	3.7	1.6	6.7	3.8
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	< 4.0
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	270	160	320	390
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	1.7	0.9	2.2	1.2

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
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Analytical Report Number: 19-47039

Project / Site name: Southall

Your Order No: 2917

Lab Sample Number	1252915	1252916	1252917	1252918	1252919
Sample Reference	PLTP3	PLTP3	EYBN	EYBN	EYBS
Sample Number	1	2	1	2	1
Depth (m)	0.10	0.30	0.10	0.10	0.10
Date Sampled	18/06/2019	18/06/2019	18/06/2019	18/06/2019	18/06/2019
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
Moisture Content	%	N/A	NONE	18	11
Total mass of sample received	kg	0.001	NONE	1.2	1.1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

General Inorganics

Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonia as NH ₃	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	0.7	< 0.5

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	0.35	0.28	0.28	0.23	0.42
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.9	4.0	4.4	3.1	4.2

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.9	3.4	2.1	2.1	8.0
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Lead (aqua regia extractable)	mg/kg	1	MCERTS	250	280	220	270	270
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.7	1.3	1.5	1.9	1.8

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Analytical Report Number: 19-47039

Project / Site name: Southall

Your Order No: 2917

Lab Sample Number				1252920				
Sample Reference				WYBS				
Sample Number				1				
Depth (m)				0.10				
Date Sampled				18/06/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	18				
Total mass of sample received	kg	0.001	NONE	1.2				
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile				
Asbestos in Soil	Type	N/A	ISO 17025	Detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001				
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001				
General Inorganics								
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5				
Ammonia as NH ₃	mg/kg	0.5	MCERTS	< 0.5				
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.30				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4				
Heavy Metals / Metalloids								
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.0				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	240				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.7				
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0				



Analytical Report Number: **19-47039**
Project / Site name: **Southall**
Your Order No: **2917**

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
1252905	SP17B		139	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252906	SP17B		120	Loose Fibres	Chrysotile	0.001	0.001
1252907	SP17B		127	Loose Fibres	Chrysotile	0.001	0.001
1252908	SP17C		113	Loose Fibrous Debris	Chrysotile	0.004	0.004
1252909	SP17A	0.20	126	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252910	SP17A	2.00	122	Loose Fibres	Chrysotile	0.001	0.001
1252911	PLTP2	0.10	124	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252912	PLTP2	0.30	138	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252913	PLTP1	0.10	125	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252914	PLTP1	0.30	160	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252915	PLTP3	0.10	128	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252916	PLTP3	0.30	160	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252917	EYBN	0.10	119	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252918	EYBN	0.10	136	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252919	EYBS	0.10	138	Loose Fibres	Chrysotile	< 0.001	< 0.001
1252920	WYBS	0.10	142	Loose Fibres	Chrysotile	< 0.001	< 0.001



Analytical Report Number: 19-47039
Project / Site name: Southall
Your Order No: 2917

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

Analytical Report Number : 19-47039

Project / Site name: Southall

* 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 *
1252905	SP17B	1	None Supplied	-
1252906	SP17B	2	None Supplied	-
1252907	SP17B	3	None Supplied	-
1252908	SP17C	1	None Supplied	-
1252909	SP17A	1	0.20	-
1252910	SP17A	2	2.00	-
1252911	PLTP2	1	0.10	Brown loam and clay with gravel and vegetation.
1252912	PLTP2	2	0.30	Brown loam and clay with gravel and vegetation.
1252913	PLTP1	1	0.10	Brown loam and clay with gravel and vegetation.
1252914	PLTP1	2	0.30	Brown loam and clay with gravel and vegetation.
1252915	PLTP3	1	0.10	Brown loam and clay with gravel and vegetation.
1252916	PLTP3	2	0.30	Brown loam and clay with gravel and vegetation.
1252917	EYBN	1	0.10	Brown loam and clay with gravel and vegetation.
1252918	EYBN	2	0.10	Brown loam and clay with gravel and vegetation.
1252919	EYBS	1	0.10	Brown loam and clay with gravel and vegetation.
1252920	WYBS	1	0.10	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 19-47039

Project / Site name: Southall

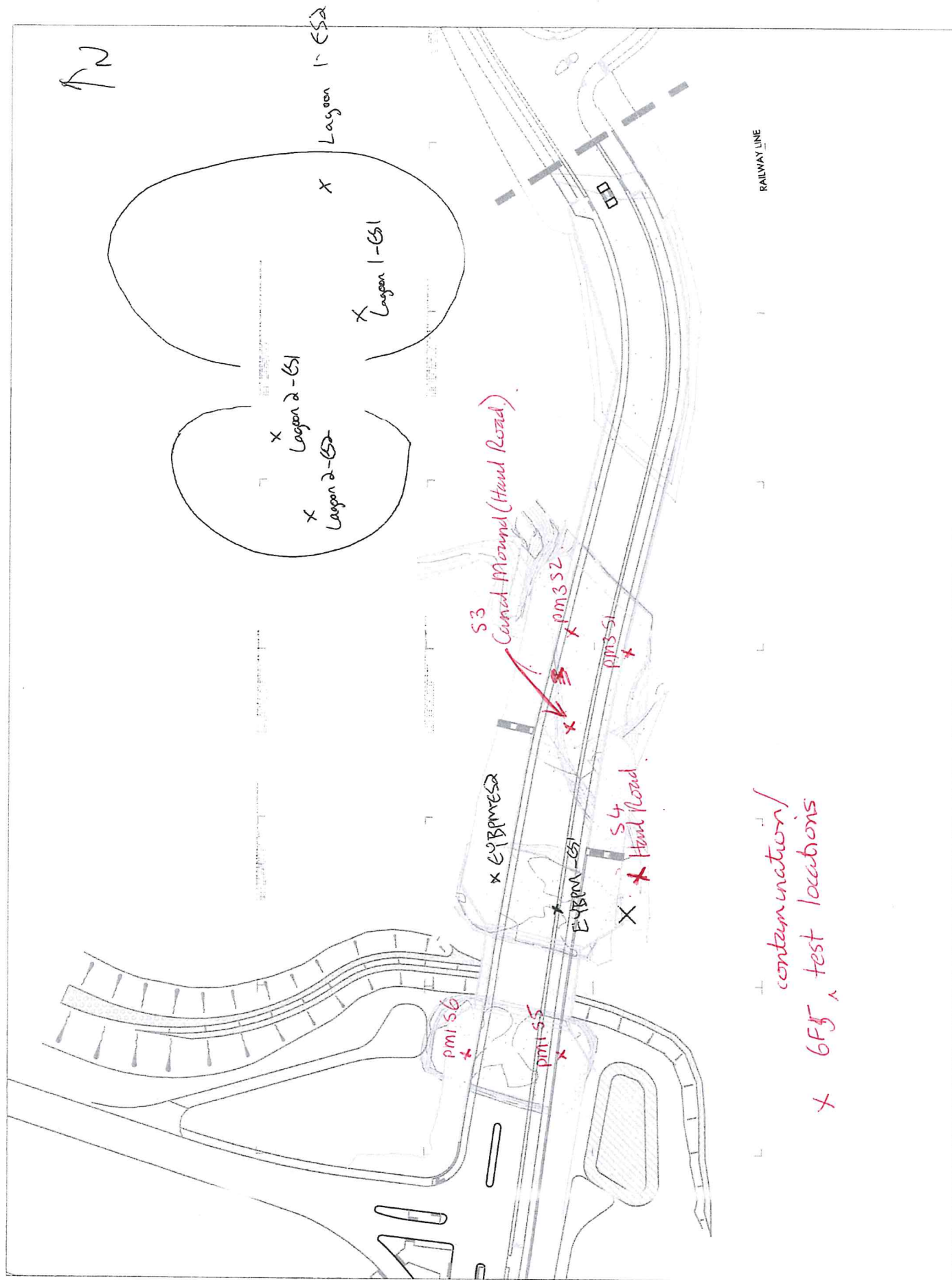
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonia as NH ₃ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide (Low level) in soil	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 in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
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

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.



contamination/
6F5, test locations

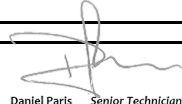
3. Class IBAA 6N Suppliers Data

**CERTIFICATE OF TEST - DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
(VIBRATING HAMMER METHOD)
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 4 : 1990 : CLAUSE 3.7**

Laboratory reference no(s) :	17-86672 - 360731	Head Office Certificate No : 360731-17-86672-S9
Client :	Day Group Limited	
Certificate address :	Transport Avenue, Brentford Middlesex, TW8 9HF	
Contract :	Brentford Yard	
Source of material (as indicated by client) :	Ex-Site	
Client reference/data :	Sample 1	
Location of sample on site :	Stockpile	
Borehole/pit no / depth	N/A @ N/A m	
Date sampled :	13/09/2017	
Sampled by :	TJH	
Date received :	13/09/2017	
Material description :	IBAA 0/4	
Total mass received :	193.27 kg	
Method of preparation :	BS 1377 : Part 1 & Part 4	
Variation from test procedure :	None	
Location & orientation of test specimen within original sample :	N/A	
Sampling certificate :	Yes - See Enclosed	
Client's indicated specification(s) :	DNS	

Material retained on 37.5mm test sieve :	0 %	
Material retained on 20.0mm test sieve :	0 %	
Mass of sample used in analysis :	6000 g	Separate Samples
Particle density :	2.65 Mg/m ³	Assumed Value
Maximum dry density :	1.60 Mg/m ³	
Optimum moisture content :	22 %	

Remarks : **None**

Tested by : JASMJKMSLSAS	Date tested : 18.09.2017	Approved : 	Date : 22/09/2017
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Daniel Paris Senior Technician

Bulk samples will be retained for a minimum of 21 days from date of receipt unless a written instruction is received within 14 days of receipt requesting sample retention

Any statement of compliance with a given specification relates only to the test covered by this certificate.

Opinions and interpretations, if stated, are not within the scope of our UKAS accreditation

This report shall not be reproduced, except in full, without prior written approval of the laboratory

Page 1 of 2

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Wales No. 4639658



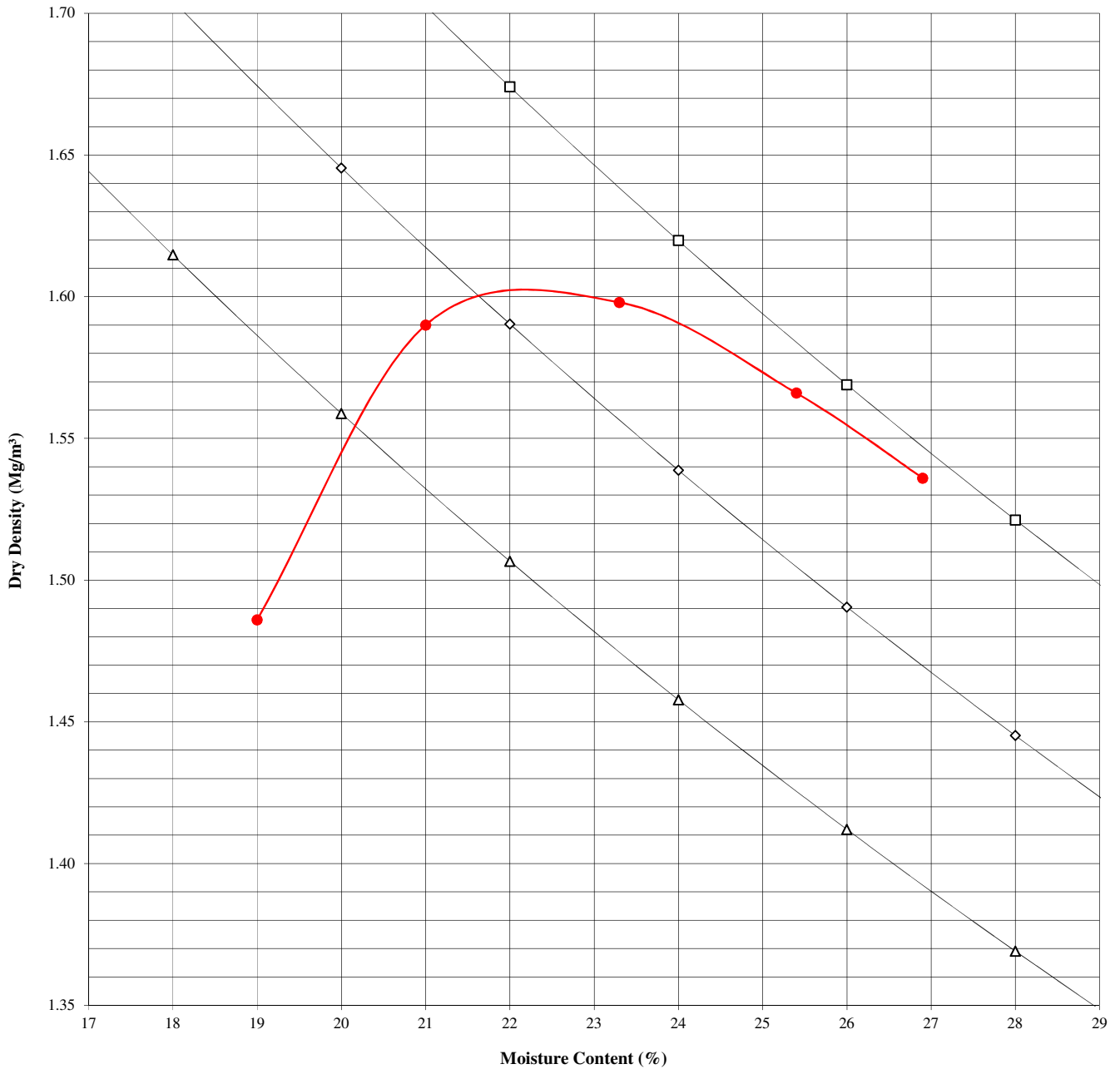
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Construction Industry*



A.C.S. TESTING
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP (VIBRATING HAMMER) GRAPH
B.S. 1377 : PART 4 : 1990 : CLAUSE 3.7

Laboratory Reference no: **17-86672 - 360731**

Particle Density = **2.65** Mg/m³



Maximum Dry Density	1.60	Mg/m ³
Optimum Moisture Content	22	%

ACS TESTING LIMITED SUMMARY OF ANALYSIS for Job No.17-86672**Client :** DAY Group Limited**Site :** Brentford YardCertificate Address Day Group Limited
Transport Avenue
Brentford
Middlesex
TW8 9HFContact Mr. Leighton Reid
Contact Telephone No. :
Contact e-mail Leighton.Reid@DayGroup.co.uk

Sample No.	Material Source	Clients Reference	Sample Location	Date Sampled	Sampled By	Date Received	Material Description	Clients Specification	Test Ref	Test Name
360731	Ex-Site	Sample 1	Stockpile	13/09/2017	TJH	13/09/2017	IBAA 0/4	DNS	S65	Large Shear Box - Modified CI 636

ACS Testing Ltd.
Unit 14 Blackhill Road West
Holton Heath Trading Park
Poole
Dorset
BH16 6LE

Date: 03 October 2017
Test Report Ref: STR 553024

Order No: T/2017/0211

Page 1 of 3

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Effective Angle of Internal Friction and Effective Cohesion in accordance with SHW Volume 1, Series 600, Clause 636 and
BS 1377: Part 7: 1990 (Using a 300mm x 300mm Shear Box)

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S68684
Client Ref. No:	360731
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	26/09/2017
Date of Start of Test:	29/09/2017
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	0/4mm IBAA
Target Specification:	N/A

Sample preparation:

Percentage of material > 20mm Removed before test =	0.0%
Percentage of material > 14mm and <20mm in sample prior to preparing =	0.0%
Percentage of material > 14mm and <20mm Removed before test =	0.0%
Maximum Percentage of material >14mm and <20mm Permitted in test sample :	15.0%

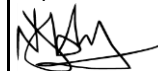
RESULTS:

See attached

Comments:

None

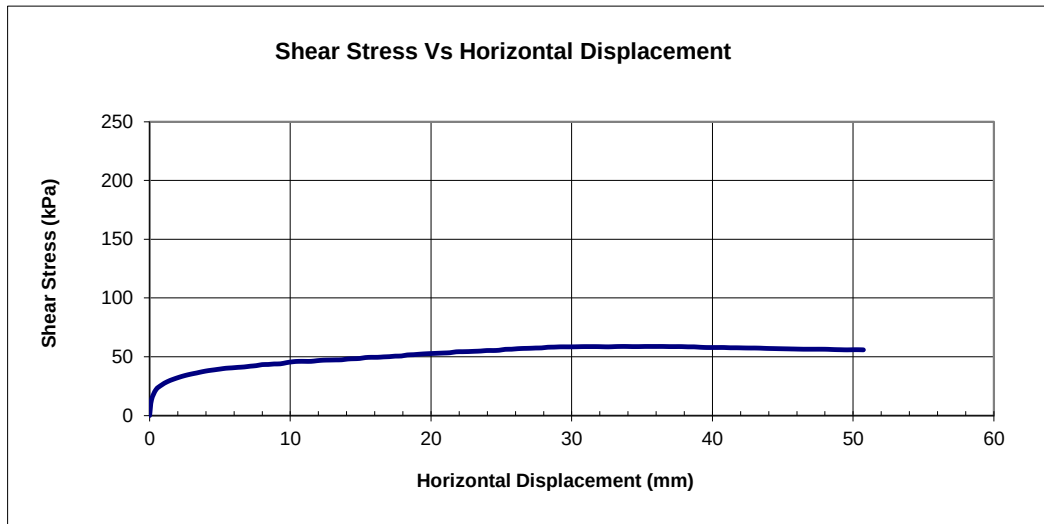
Report checked and approved by:



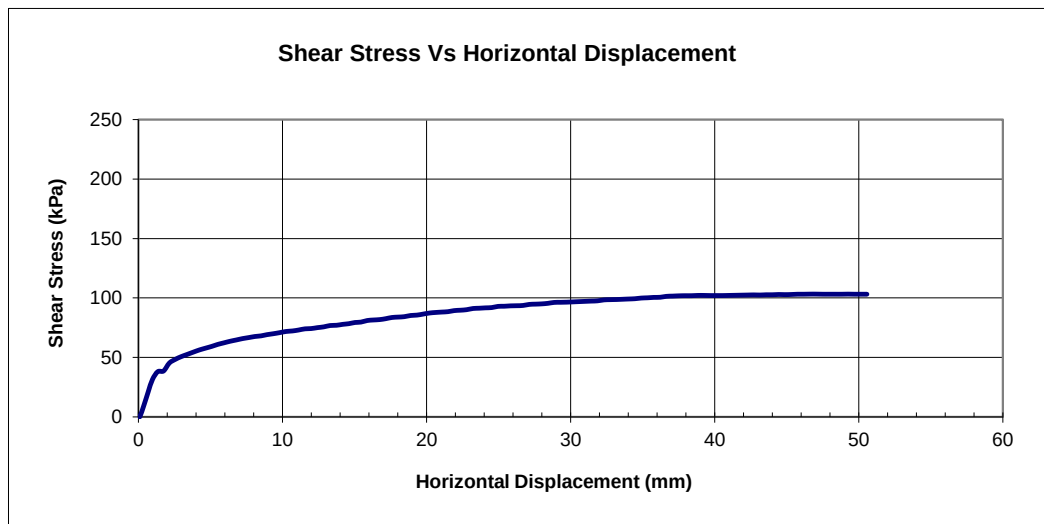
Nick Dumbarton
Aggregate Team Manager

Test Report Ref: STR 553024 - Page 2 of 3

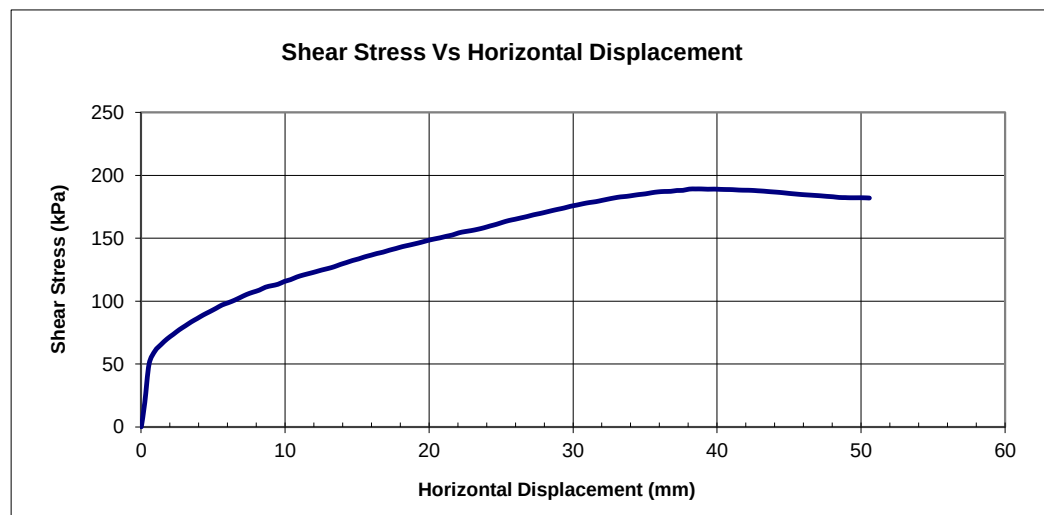
Normal Loading **50 kPa**



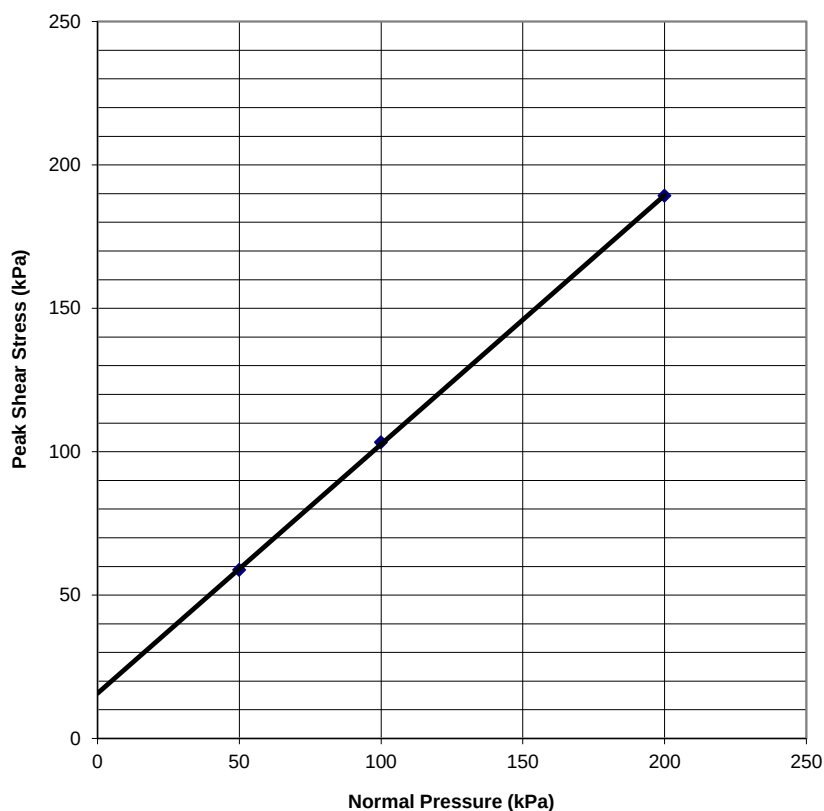
Normal Loading **100 kPa**



Normal Loading **200 kPa**



Angle of Shearing Resistance & Cohesion



Specimen Dimensions (mm)	300x300x150		
Height of Specimen	150	150	150
Normal Pressure (kPa)	50	100	200
Peak Shear Strength (kPa)	59	103	189
Effective Cohesion : c' =	16 kPa		
Effective Angle of friction : ϕ' =	41 °		
Rate of Displacement (mm/min)	1.7	1.7	1.7

Initial Bulk Density (Mg/m^3)	1.79	1.79	1.79
Moisture Content (%) ⁽¹⁾	22	22	22
Initial Dry Density (Mg/m^3)	1.47	1.47	1.47
% of Max Dry Density ⁽²⁾	92	92	92
Maximum Dry Density (Mg/m^3)	1.60		
Optimum Moisture Content (%)	22		
Particle Density (Mg/m^3)	2.5 Assumed		

(1) Test moisture content requirement: At optimum moisture content.

(2) Test density requirement: 90-94% of maximum dry density.

ACS TESTING LIMITED SUMMARY OF ANALYSIS for Job No.17-86690**Client :** DAY Group Limited**Site :** Leight ReidCertificate Address Day Group Limited
Transport Avenue
Brentford
Middlesex
TW8 9HFContact Mr. Leighton Reid
Contact Telephone No. :
Contact e-mail Leighton.Reid@DayGroup.co.uk

Sample No.	Material Source	Clients Reference	Sample Location	Date Sampled	Sampled By	Date Received	Material Description	Clients Specification	Test Ref	Test Name
360829	Day Aggregates Brentford	D3662	Sampled From Stockpile At Source	07/09/2017	Surrey	13/09/2017	0/32 IBAA	DNS	U012_MI BAA	MIBAAA 2:1 & 8:1 Leachate Suite

Certificate of Analysis

Certificate Number : 17-07466-Issue 1-Page: 1

Report Fao: Martin Slater
Site Address: Leight Reid
Customer Order No: 17-86690
Date of Sampling: 07/09/2017
Date Received: 14/09/2017
Report Date: 02/10/2017

Please find your certificates of test attached for your samples received in the laboratory on 14/09/2017 under our laboratory reference 17-07466.

Remarks:
None

Results reviewed by:



Lisa McWean Analyst

Results approved by:



David Redfern Technical Supervisor

*Any opinions or interpretations indicated are outside the scope of our UKAS accreditation.
This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.
Excel copies of reports are valid only when accompanied by this PDF certificate.
Client's Sample Description / ACS Material Description are noted for reference only.*

Head Office

Unit 14B
Blackhill Road West
Holton Heath Trading Park
Poole
Dorset BH16 6LE

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ACS Environmental Testing Limited
Registered in England and
Wales No. 6000065

**Quality Testing & Materials Consultancy
to the
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Certificate No. 17-07466-Issue 1-Page: 2

Site Address Leight Reid



ACSE Sample Number 30990
 Sample ID 360829 - 17-86690
 Clients Sample Ref. D3662
 Location / Sample Depth (m) Sampled From Stockpile At
 Time Sampled
 Date Sampled 07/09/2017
 Sample Deviating Codes
 Client's Sample Description 0/32 IBAA
 ACS Testing Material Description 0/32 IBAA
 Principal Matrix (as received) IBAA

TEST VALUES

Mass of Undried Test Portion (Mw)	177	g	Volume of Leachant Used (L2)	0.348	litres
Mass of Dried Test Portion (Mp)	175	g	Volume of Leachant Used (L8)	1.400	litres
Moisture Content Ratio (MC)	1.3	%	Volume of Eluate (VE1)	0.285	litres
Dry Matter Content (DR)	98.7	%	Volume of Eluate (VE2)	1.350	litres

SOLIDS ANALYSIS

Analyte	Method	AS	Sample Condition for Analysis	Results
Total Organic Carbon (%)	MT/ACSE/102		As received	0.90
Loss on ignition (%)	MT/ACSE/302		Air dried at 30°C	7.7
Mineral oil (C10 - C40) (mg/kg)	MT/ACSE/105		As received	< 50.0
pH (units)	MT/ACSE/301		Air dried at 30°C	10.4

ELUATE ANALYSIS

Analyte	Method	AS	Concentration in Eluate (mg/l)		Amount Leached (mg/kg)	
Eluate Preparation	LP/ACSE/102	*				
Liquid : Solid Ratio (L/S)	LP/ACSE/101	*	L/S 2	L/S 8	L/S 2	L/S 10
pH (units)	MT/ACSE/301	*	8.6	11.4		
Temperature (°C)	MT/ACSE/301		20	20		
Conductivity (mS/m)	MT/ACSE/303	*	1100	223		
Ammoniacal Nitrogen	MT/ACSE/203		0.150	0.110	0.300	1.17
Antimony	MT/ACSE/205	*	< 0.003	0.010	< 0.006	0.084
Arsenic	MT/ACSE/205	*	< 0.003	< 0.003	< 0.006	< 0.030
Barium	MT/ACSE/205	*	0.358	0.136	0.715	1.72
Boron	MT/ACSE/205		< 0.200	< 0.200	< 0.400	< 2.00
Bromide	SC		22.8	1.99	45.6	53.8
Cadmium	MT/ACSE/205	*	< 0.0003	< 0.0003	< 0.0006	< 0.003
Chloride	MT/ACSE/204	*	4550	363	9090	10400
Chromium (total)	MT/ACSE/205	*	0.274	0.071	0.548	1.04
Cobalt	MT/ACSE/205		< 0.001	< 0.001	< 0.002	< 0.010
Copper	MT/ACSE/205	*	1.50	0.233	3.01	4.40
Fluoride	MT/ACSE/204	*	< 0.01	0.15	< 0.010	1.25
Lead	MT/ACSE/205	*	< 0.004	< 0.004	< 0.008	< 0.040
Mercury	MT/ACSE/202	*	< 0.0001	< 0.0001	< 0.0002	< 0.0010
Molybdenum	MT/ACSE/205	*	0.202	0.0344	0.403	0.616
Nickel	MT/ACSE/205	*	0.0317	0.0095	0.063	0.131
Selenium	MT/ACSE/205	*	0.083	0.081	0.167	0.810
Sulphate	MT/ACSE/204	*	560	145	1120	2126
Tin	MT/ACSE/205		0.104	0.076	0.207	0.801
Vanadium	MT/ACSE/205		0.004	0.003	0.008	0.029
Zinc	MT/ACSE/205	*	< 0.002	0.011	< 0.004	0.095
Total dissolved solids	MT/ACSE/304	*	9100	1080	18200	23860
Dissolved organic carbon	MT/ACSE/103	*	124	14.8	249	326

Comments: (comments are beyond the scope of UKAS accreditation)

Eluates prepared in accordance with BS EN 12457-3:2002*

Technical Information for Analytical Results

Analysis

* - denotes analysis covered by our UKAS accreditation
- denotes analysis covered by our MCERTS certification
AD = Sample tested in air dried condition.
AR = Sample tested in as-received condition.
D = Sample tested in dry condition.
L = Laboratory prepared leachate
SC = sub contracted
All MCERTS certified test values reported on a dry weight basis.

Where results are less than the limit of detection, the value of 0 is used in calculations.

For Phenol index, m- and p- cresol are reported as mixed isomers, calibrated with reference to a p-cresol reference solution.
The individual concentrations of m- and p- cresol cannot be quantified using this method, however, the result reported for the mixed isomers will be an over estimation of the true result in samples where m-cresol is present.

Deviating Codes

Deviating Samples

The use of any of the following symbols indicates that the sample was deviating and it is possible therefore that the results provided may not be representative of the sample taken.

- a – The date and/or time of sampling has not been provided, therefore it is not known if the time lapse between sampling and analysis has exceeded the acceptable holding time(s). It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- b – No sampling time given (waters only) unable to confirm if samples are within acceptable holding times.
- c – This test item was received in a container which has not been recommended; it is possible that the sample and/or analyte integrity has not been maintained and that results may be non-representative of the sample when taken.
- d – On receipt, the temperature of the sample received was found to fall outside the recommendations of BS ISO 18512:2007. Soil Quality. Guidance on long and short term storage of soil samples.
- e – The sample was received in a container that had been filled incorrectly which may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- f – The delay between Sampling and Sample Receipt is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- g – The delay between Sampling and Analysis is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

The following Additional Deviating Sample Codes may also be used.

- I/S – Insufficient sample mass/volume received for accurate quantification of this analyte.
- U/S – The sample received was deemed unsuitable for accurate determination of this analyte using the Test Methods available.

Deviating Methods

- Z – A minor deviation from the Test Method was necessary but this is deemed to have had no impact on the Test Result, the legitimacy of the method validation or the Accreditation Status of the Test Method.
- Y – A significant deviation from the Test Method was necessary which is deemed to have had no impact on the Test Result, however, due to a lack of sufficient supporting validation, the Accreditation Status of the Method has been removed.
- W – The normal LOD of the instrument/method could not be attained, thus an elevated LOD or LOQ has been applied to the Test Data, however, the data reported meets the requirements of the Client and does not affect compliance with the specification limit (where applicable).
- V – One of the QA/QC parameters failed, however, the increased implied Uncertainty associated with the Test Result meets the requirements of the Client and does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.2.9).
- U – The precision acceptance criteria associated with the Test Method could not be met but the Test Result fulfils the Client's objectives and the elevated Uncertainty does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.8.10).
- T – The Test Method used was supplied by the Client and involved a simple modification of a Test Method for which ACSE holds accreditation (Quality Manual, Section 18.3.8).

Head Office

Unit 14B
Blackhill Road West
Holton Heath Trading Park
Poole
Dorset BH16 6LE

Tel 01202 628680
Fax 01202 628680

Registered Office

Unit 14B
Blackhill Road West
Holton Heath Trading Park
Poole
Dorset BH16 6LE
ACS Environmental Testing Limited
Registered in England and
Wales No. 6000065

**Quality Testing & Materials Consultancy
to the
Construction Industry**

ACS TESTING LIMITED SUMMARY OF ANALYSIS for Job No.17-86286**Client :** DAY Group Limited**Site :** Leight ReidCertificate Address Day Group Limited
Transport Avenue
Brentford
Middlesex
TW8 9HFContact Mr. Leighton Reid
Contact Telephone No. :
Contact e-mail Leighton.Reid@DayGroup.co.uk

Sample No.	Material Source	Clients Reference	Sample Location	Date Sampled	Sampled By	Date Received	Material Description	Clients Specification	Test Ref	Test Name
358231	Day Aggregates Brentford	D3648	Sampled From Stockpile At Source By SCC	02/08/2017	A.Palmer	30/08/2017	0/32 IBAA	DNS	U012_MI BAA	MIBAAA 2:1 & 8:1 Leachate Suite

Certificate of Analysis

Certificate Number : 17-07383-Issue 1-Page: 1

Report Fao: Martin Slater
Site Address: Leight Reid
Customer Order No: 17-86286
Date of Sampling: 02/08/2017
Date Received: 31/08/2017
Report Date: 18/09/2017

Please find your certificates of test attached for your samples received in the laboratory on 31/08/2017 under our laboratory reference 17-07383.

Remarks:
None

Results reviewed by:



Lisa McWean Analyst

Results approved by:



David Redfern Technical Supervisor

*Any opinions or interpretations indicated are outside the scope of our UKAS accreditation.
This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.
Excel copies of reports are valid only when accompanied by this PDF certificate.
Client's Sample Description / ACS Material Description are noted for reference only.*

Head Office

Unit 14B
Blackhill Road West
Holton Heath Trading Park
Poole
Dorset BH16 6LE

Registered Office

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Blackhill Road West
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ACS Environmental Testing Limited
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Wales No. 6000065

**Quality Testing & Materials Consultancy
to the
Construction Industry**

Certificate No. 17-07383-Issue 1-Page: 2

Site Address Leight Reid



ACSE Sample Number 30673
 Sample ID 358231 - 17-86286
 Clients Sample Ref. D3648
 Location / Sample Depth (m) Sampled From Stockpile At
 Time Sampled 1100
 Date Sampled 02/08/2017
 Sample Deviating Codes
 Client's Sample Description 0/32 IBAA
 ACS Testing Material Description 0/32 IBAA
 Principal Matrix (as received) IBAA

TEST VALUES

Mass of Undried Test Portion (Mw)	182	g	Volume of Leachant Used (L2)	0.343	litres
Mass of Dried Test Portion (Mp)	175	g	Volume of Leachant Used (L8)	1.400	litres
Moisture Content Ratio (MC)	3.9	%	Volume of Eluate (VE1)	0.307	litres
Dry Matter Content (DR)	96.3	%	Volume of Eluate (VE2)	1.325	litres

SOLIDS ANALYSIS

Analyte	Method	AS	Sample Condition for Analysis	Results
Total Organic Carbon (%)	MT/ACSE/102		As received	1.05
Loss on ignition (%)	MT/ACSE/302		Air dried at 30°C	9.5
Mineral oil (C10 - C40) (mg/kg)	MT/ACSE/105		As received	146
pH (units)	MT/ACSE/301		Air dried at 30°C	9.8

ELUATE ANALYSIS

Analyte	Method	AS	Concentration in Eluate (mg/l)		Amount Leached (mg/kg)	
Eluate Preparation	LP/ACSE/102	*				
Liquid : Solid Ratio (L/S)	LP/ACSE/101	*	L/S 2	L/S 8	L/S 2	L/S 10
pH (units)	MT/ACSE/301	*	8.8	10.9		
Temperature (°C)	MT/ACSE/301		20	20		
Conductivity (mS/m)	MT/ACSE/303	*	799	120		
Ammoniacal Nitrogen	MT/ACSE/203		0.101	0.024	0.202	0.375
Antimony	MT/ACSE/205	*	0.014	0.026	0.029	0.238
Arsenic	MT/ACSE/205	*	0.057	0.042	0.113	0.447
Barium	MT/ACSE/205	*	0.217	0.0982	0.435	1.19
Boron	MT/ACSE/205		0.482	0.294	0.963	3.27
Bromide	SC		12.5	0.970	25.0	29.9
Cadmium	MT/ACSE/205	*	< 0.0003	< 0.0003	< 0.0006	< 0.003
Chloride	MT/ACSE/204	*	2690	167	5390	6100
Chromium (total)	MT/ACSE/205	*	0.100	0.025	0.200	0.381
Cobalt	MT/ACSE/205		0.003	< 0.001	0.006	< 0.010
Copper	MT/ACSE/205	*	0.284	0.057	0.567	0.965
Fluoride	MT/ACSE/204	*	0.25	0.53	0.494	4.76
Lead	MT/ACSE/205	*	< 0.004	< 0.004	< 0.008	< 0.040
Mercury	MT/ACSE/202	*	< 0.0001	< 0.0001	< 0.0002	< 0.0010
Molybdenum	MT/ACSE/205	*	0.107	0.0177	0.215	0.334
Nickel	MT/ACSE/205	*	0.0075	0.0034	0.015	0.041
Selenium	MT/ACSE/205	*	0.068	0.016	0.137	0.249
Sulphate	MT/ACSE/204	*	1120	238	2250	3931
Tin	MT/ACSE/205		0.104	0.079	0.209	0.833
Vanadium	MT/ACSE/205		0.003	0.005	0.007	0.044
Zinc	MT/ACSE/205	*	< 0.002	0.002	< 0.004	< 0.020
Total dissolved solids	MT/ACSE/304	*	6280	790	12500	17520
Dissolved organic carbon	MT/ACSE/103	*	23.0	5.16	46.0	82.9

Comments: (comments are beyond the scope of UKAS accreditation)

Eluates prepared in accordance with BS EN 12457-3:2002*

Technical Information for Analytical Results

Analysis

* - denotes analysis covered by our UKAS accreditation
- denotes analysis covered by our MCERTS certification
AD = Sample tested in air dried condition.
AR = Sample tested in as-received condition.
D = Sample tested in dry condition.
L = Laboratory prepared leachate
SC = sub contracted
All MCERTS certified test values reported on a dry weight basis.

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For Phenol index, m- and p- cresol are reported as mixed isomers, calibrated with reference to a p-cresol reference solution.
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Deviating Codes

Deviating Samples

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- c – This test item was received in a container which has not been recommended; it is possible that the sample and/or analyte integrity has not been maintained and that results may be non-representative of the sample when taken.
- d – On receipt, the temperature of the sample received was found to fall outside the recommendations of BS ISO 18512:2007. Soil Quality. Guidance on long and short term storage of soil samples.
- e – The sample was received in a container that had been filled incorrectly which may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
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- U/S – The sample received was deemed unsuitable for accurate determination of this analyte using the Test Methods available.

Deviating Methods

- Z – A minor deviation from the Test Method was necessary but this is deemed to have had no impact on the Test Result, the legitimacy of the method validation or the Accreditation Status of the Test Method.
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- V – One of the QA/QC parameters failed, however, the increased implied Uncertainty associated with the Test Result meets the requirements of the Client and does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.2.9).
- U – The precision acceptance criteria associated with the Test Method could not be met but the Test Result fulfils the Client's objectives and the elevated Uncertainty does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.8.10).
- T – The Test Method used was supplied by the Client and involved a simple modification of a Test Method for which ACSE holds accreditation (Quality Manual, Section 18.3.8).

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**Quality Testing & Materials Consultancy
to the
Construction Industry**

4. Class IBAA 6N Site Test Data

**Chris Gordon**

Card Geotechnics Ltd
4 Godalming Business Centre
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Godalming
Surrey
GU7 1XW

t: 01483 310600
f: 01483 527285
e: ChrisG@cgl-uk.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 17-65606

Project / Site name:	Southall	Samples received on:	27/10/2017
Your job number:	CG-28308	Samples instructed on:	27/10/2017
Your order number:	4586	Analysis completed by:	01/11/2017
Report Issue Number:	1	Report issued on:	01/11/2017
Samples Analysed:	1 soil sample		

Signed:

Rexona Rahman
Customer Services 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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Analytical Report Number: 17-65606

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				845967				
Sample Reference				6N				
Sample Number				ES1				
Depth (m)				None Supplied				
Date Sampled				26/10/2017				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	1.4				

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile				
Asbestos in Soil	Type	N/A	ISO 17025	Detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.002				
Asbestos Quantification Total	%	0.001	ISO 17025	0.002				

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.5				
Total Cyanide	mg/kg	1	MCERTS	< 1				
Total Sulphate as SO ₄	mg/kg	50	MCERTS	31000				
Organic Matter	%	0.1	MCERTS	1.3				

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				
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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	1.1				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	1.4				
Pyrene	mg/kg	0.05	MCERTS	0.95				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.29				
Chrysene	mg/kg	0.05	MCERTS	0.29				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.39				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.11				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.27				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.15				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.19				
Coronene	mg/kg	0.05	NONE	< 0.05				

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	5.1				
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	97				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	190				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.44				
Boron (water soluble)	mg/kg	0.2	MCERTS	5.7				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	18				
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2				
Chromium (III)	mg/kg	1	NONE	120				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	120				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	2200				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	590				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	110				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	26				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	7200				

Analytical Report Number: 17-65606

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				845967				
Sample Reference				6N				
Sample Number				ES1				
Depth (m)				None Supplied				
Date Sampled				26/10/2017				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	16				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	20				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	14				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	16				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	31				



Analytical Report Number: 17-65606
Project / Site name: Southall
Your Order No: 4586

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
845967	6N		117	Loose Fibres	Chrysotile	0.002	0.002

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



Analytical Report Number : 17-65606

Project / Site name: Southall

* 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 *
845967	6N	ES1	None Supplied	Brown loam with gravel.

Analytical Report Number : 17-65606

Project / Site name: Southall

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 ouse method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests ^{***}	L009-PL	D	MCERTS
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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

Iss No 17-65606-1 Southall CG-28308

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

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Analytical Report Number : 17-65606

Project / Site name: Southall

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

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

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

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Analytical Report Number : 17-66340

Project / Site name:	Southall	Samples received on:	02/11/2017
Your job number:	CG-28308	Samples instructed on:	02/11/2017
Your order number:	4586	Analysis completed by:	07/11/2017
Report Issue Number:	1	Report issued on:	07/11/2017
Samples Analysed:	2 soil samples		

Signed:

Rexona Rahman
Customer Services 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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Analytical Report Number: 17-66340

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				850099	850100			
Sample Reference				EGUC-6N	EGUC-6N			
Sample Number				ES7	ES8			
Depth (m)				None Supplied	None Supplied			
Date Sampled				01/11/2017	01/11/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	17	12			
Total mass of sample received	kg	0.001	NONE	2.0	2.0			

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

pH - Automated	pH Units	N/A	MCERTS	10.3	10.1			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	25000	33000			
Organic Matter	%	0.1	MCERTS	1.2	1.2			

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0			
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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	< 0.05	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9			
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	100	130			
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	11			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	110			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.30	0.31			
Boron (water soluble)	mg/kg	0.2	MCERTS	3.5	9.2			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	17	17			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (III)	mg/kg	1	NONE	140	130			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	140	130			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	2900	3200			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	430	700			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	150	70			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24	24			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	6100	7300			

Analytical Report Number: 17-66340

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				850099	850100			
Sample Reference				EGUC-6N	EGUC-6N			
Sample Number				ES7	ES8			
Depth (m)				None Supplied	None Supplied			
Date Sampled				01/11/2017	01/11/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Monoaromatics

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	< 10	< 10			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10			



Analytical Report Number : 17-66340

Project / Site name: Southall

* 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 *
850099	EGUC-6N	ES7	None Supplied	Brown clay and loam with gravel.
850100	EGUC-6N	ES8	None Supplied	Grey gravelly clay.

Analytical Report Number : 17-66340

Project / Site name: Southall

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
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as 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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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

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

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

Iss No 17-66340-1 Southall CG-28308

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

Page 5 of 5

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Analytical Report Number : 17-68217

Project / Site name:	Southall	Samples received on:	02/11/2017
Your job number:	CG-28308	Samples instructed on:	21/11/2017
Your order number:	4586	Analysis completed by:	24/11/2017
Report Issue Number:	1	Report issued on:	24/11/2017
Samples Analysed:	3 leachate samples		

Signed:

Rexona Rahman
Customer Services 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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Analytical Report Number: 17-68217

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number	861303	861304	861305		
Sample Reference	EGUC-6N	EGUC-6N	6N		
Sample Number	ES7	ES8	ES1		
Depth (m)	None Supplied	None Supplied	None Supplied		
Date Sampled	01/11/2017	01/11/2017	26/10/2017		
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	11.0	10.5	11.4		
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Sulphate as SO ₄	µg/l	100	ISO 17025	193000	562000	188000		
Ammoniacal Nitrogen as N	µg/l	15	NONE	700	1200	1800		
Ammonium as NH ₄	µg/l	15	NONE	890	1500	2300		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	43.6	95.2	126		

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	16	22	42		
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Speciated PAHs

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

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2		
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	15	11	15		
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.0	< 1.1	1.3		
Barium (dissolved)	µg/l	0.05	ISO 17025	330	160	330		
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2		
Boron (dissolved)	µg/l	10	ISO 17025	31	< 10	18		
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08		
Chromium (hexavalent)	µg/l	5	NONE	12	240	43		
Chromium (III)	µg/l	1	NONE	12	< 1.0	8.3		
Chromium (dissolved)	µg/l	0.4	ISO 17025	24	170	51		
Copper (dissolved)	µg/l	0.7	ISO 17025	610	780	1200		
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	3.7		
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Nickel (dissolved)	µg/l	0.3	ISO 17025	9.3	14	22		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	5.7		
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	2.1		
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	23	23		
Calcium (dissolved)	mg/l	0.012	ISO 17025	190	240	130		



Analytical Report Number: 17-68217

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				861303	861304	861305		
Sample Reference				EGUC-6N	EGUC-6N	6N		
Sample Number				ES7	ES8	ES1		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				01/11/2017	01/11/2017	26/10/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		

VOCs

Trichloroethene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
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Analytical Report Number : 17-68217

Project / Site name: Southall

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
Ammonium as NH ₄ in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
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
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
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	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 leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH 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
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
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
Volatile organic compounds in leachate	Determination of volatile organic compounds in leachate by headspace GC-MS	In-house method based on USEPA8260	L073B-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.

Iss No 17-68217-1 Southall CG-28308

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

Page 4 of 4

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Analytical Report Number : 18-73323

Project / Site name:	Southall Western Access	Samples received on:	17/01/2018
Your job number:	CG-28308	Samples instructed on:	19/01/2018
Your order number:		Analysis completed by:	29/01/2018
Report Issue Number:	1	Report issued on:	29/01/2018
Samples Analysed:	5 leachate samples - 10 soil samples		

Signed:

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

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

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

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

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Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891691	891692	891693	891694	891695
Sample Reference				6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	17	17	17	16	16
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.1

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

pH - Automated	pH Units	N/A	MCERTS	10.1	10.2	10.1	10.3	10.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	33000	35000	32000	37000	35000
Ammonium as NH ₄	mg/kg	0.5	MCERTS	2.4	4.3	2.7	2.2	2.1
Organic Matter	%	0.1	MCERTS	1.6	1.6	1.6	1.6	1.5

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.20	< 0.05	0.23	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.26	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.3	1.3	1.3	0.69	0.96
Anthracene	mg/kg	0.05	MCERTS	0.41	0.37	0.23	0.15	0.22
Fluoranthene	mg/kg	0.05	MCERTS	2.0	1.9	1.7	0.96	1.2
Pyrene	mg/kg	0.05	MCERTS	1.6	1.5	1.3	0.80	1.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.84	0.66	0.56	0.33	0.40
Chrysene	mg/kg	0.05	MCERTS	0.56	0.52	0.50	0.29	0.30
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.81	0.79	0.61	0.39	0.31
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.35	0.34	0.35	0.29	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.74	0.67	0.59	0.34	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.32	0.33	0.28	0.17	< 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	0.43	0.34	0.33	0.19	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	9.8	8.7	8.3	4.6	5.0
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	140	150	100	170	95
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	11	12	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	160	160	140	150	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.41	0.42	0.35	0.39	0.36
Boron (water soluble)	mg/kg	0.2	MCERTS	9.8	10	8.7	9.1	8.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	23	27	17	23	33
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	170	180	160	190	180
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	170	180	160	200	180
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4300	4200	3100	3800	4600
Lead (aqua regia extractable)	mg/kg	1	MCERTS	430	470	390	570	400
Lead (aqua regia extractable) %	mg/kg	1	MCERTS	430	470	390	570	400
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	110	150	110	160	140
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	29	25	27	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	6400	8300	6600	7600	6500

Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number	891691	891692	891693	891694	891695
Sample Reference	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number	ES1	ES2	ES3	ES4	ES5
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	2.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	4.0	< 2.0	2.4	3.8	7.8
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	11
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	30	41	35	43	58
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	39	48	44	55	79

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	3.4	< 1.0	< 1.0	< 1.0	2.1
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.0	< 2.0	5.2	< 2.0	7.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	16	< 10	13	< 10	11
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	58	21	49	19	39
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	86	28	67	24	60

VOCs

Trichloroethene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891696	891697	891698	891699	891700
Sample Reference				6F5	6F5	6F5	6F5	6F5
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	9.5	12	12	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.3	1.3

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

pH - Automated	pH Units	N/A	MCERTS	11.3	11.0	10.8	11.0	11.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	15000	17000	16000	17000	18000
Ammonium as NH ₄	mg/kg	0.5	MCERTS	-	-	-	-	-
Organic Matter	%	0.1	MCERTS	1.2	1.2	1.3	1.3	1.3

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.22	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.91	1.2	2.2	1.2
Anthracene	mg/kg	0.05	MCERTS	0.53	0.23	0.29	0.60	0.37
Fluoranthene	mg/kg	0.05	MCERTS	2.6	1.5	2.2	4.4	2.4
Pyrene	mg/kg	0.05	MCERTS	2.1	1.2	1.9	3.5	1.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.77	0.99	2.0	1.0
Chrysene	mg/kg	0.05	MCERTS	0.91	0.40	0.79	1.5	0.79
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	0.63	1.0	1.7	1.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.62	0.39	0.77	1.3	0.84
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	0.66	0.92	1.9	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.46	0.31	0.47	0.84	0.57
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.13	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	0.33	0.47	0.95	0.65
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	13	7.3	11	21	12
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	19	23	21	23	22
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	9.6	12	13	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	250	280	230	260	280
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.43	0.45	0.63	0.56	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	3.2	3.7	3.2	3.1	3.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.7	40	2.9	3.3	3.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	39	43	46	46	49
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	43	46	47	49
Copper (aqua regia extractable)	mg/kg	1	MCERTS	300	400	460	430	690
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	180	120	150	230
Lead (aqua regia extractable) %	mg/kg	1	MCERTS	200	180	120	150	230
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	25	33	28	31	54
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24	23	28	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	750	1100	750	910	910

Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891696	891697	891698	891699	891700
Sample Reference				6F5	6F5	6F5	6F5	6F5
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.1	< 1.0	< 1.0	1.3
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	11	6.3	8.2	4.2
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	12	21	18	24	18
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	78	89	86	110	92
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	92	120	110	140	120

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	5.2	< 1.0	< 1.0	1.9	5.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.8	2.4	3.5	5.6	12
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	19	13	16	20	26
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	110	51	68	81	91
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140	67	88	110	130

VOCs

Trichloroethene	ug/kg	1	MCERTS	-	-	-	-	-
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Analytical Report Number: 18-73323

Project / Site name: Southall Western Access

Lab Sample Number				891701	891702	891703	891704	891705
Sample Reference				6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA	6N-IBBA
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	20	23	26	20	18
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	1.4	1.2	< 1.1	< 1.1
Barium (dissolved)	µg/l	0.05	ISO 17025	370	360	340	420	530
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	48	61	69	45	35
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	52	43	69	47	27
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	44	38	59	41	25
Copper (dissolved)	µg/l	0.7	ISO 17025	900	690	680	750	800
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	8.6	5.3	< 1.0	4.9
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070
Nickel (dissolved)	µg/l	0.3	ISO 17025	13	12	12	10	12
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	6.4	7.2	10	3.7	5.6
Zinc (dissolved)	µg/l	0.4	ISO 17025	27	19	45	26	49
Calcium (dissolved)	mg/l	0.012	ISO 17025	210	180	180	180	150



Analytical Report Number : 18-73323

Project / Site name: Southall Western Access

* 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 *
891691	6N-IBBA	ES1	None Supplied	Grey sand with gravel.
891692	6N-IBBA	ES2	None Supplied	Grey sandy clay with gravel.
891693	6N-IBBA	ES3	None Supplied	Grey sand with gravel.
891694	6N-IBBA	ES4	None Supplied	Grey sand with gravel.
891695	6N-IBBA	ES5	None Supplied	Grey sand with gravel.
891696	6F5	ES1	None Supplied	Brown sand with gravel and brick.
891697	6F5	ES2	None Supplied	Brown sand with gravel and brick.
891698	6F5	ES3	None Supplied	Brown clay and sand with gravel and brick.
891699	6F5	ES4	None Supplied	Brown clay and sand with gravel and brick.
891700	6F5	ES5	None Supplied	Brown sand with gravel.

Analytical Report Number : 18-73323

Project / Site name: Southall Western Access

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
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron 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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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 soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE
Hexavalent chromium in soil (Lower Level)	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
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025
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
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests ^{***}	L009-PL	D	MCERTS

Iss No 18-73323-1 Southall Western Access CG-28308

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

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Analytical Report Number : 18-73323

Project / Site name: Southall Western Access

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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-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.

**Chris Gordon**

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Analytical Report Number : 18-74149

Project / Site name:	Southall	Samples received on:	26/01/2018
Your job number:	CG-28308	Samples instructed on:	29/01/2018
Your order number:	4586	Analysis completed by:	02/02/2018
Report Issue Number:	1	Report issued on:	02/02/2018
Samples Analysed:	4 leachate samples - 4 soil samples		

Signed:

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

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

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

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

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Analytical Report Number: 18-74149

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				896704	896705	896706	896707	
Sample Reference				WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	
Sample Number				ES1	ES2	ES3	ES4	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				26/01/2018	26/01/2018	26/01/2018	26/01/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	15	12	14	14	
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.1	1.1	

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

pH - Automated	pH Units	N/A	MCERTS	10.2	10.4	10.3	10.5	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Total Sulphate as SO ₄	mg/kg	50	MCERTS	31000	22000	23000	34000	
Organic Matter	%	0.1	MCERTS	1.3	1.2	1.2	1.2	

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 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	< 0.05	< 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	< 0.05	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 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	< 0.05	< 0.05	
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9	< 0.9	< 0.9	
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Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	140	100	160	160	
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12	14	14	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	230	150	190	180	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.38	0.40	0.41	0.45	
Boron (water soluble)	mg/kg	0.2	MCERTS	7.5	6.0	6.6	5.9	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	19	13	14	33	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	
Chromium (III)	mg/kg	1	NONE	160	250	160	170	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	160	250	160	170	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	2500	3900	5400	3600	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	670	570	600	430	
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	160	220	170	310	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.4	1.7	1.9	1.8	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	34	35	35	38	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	6000	6600	6900	7500	

Analytical Report Number: 18-74149

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number	896704	896705	896706	896707	
Sample Reference	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	
Sample Number	ES1	ES2	ES3	ES4	
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled	26/01/2018	26/01/2018	26/01/2018	26/01/2018	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	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	25	18	33	9.6	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	26	18	33	< 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	1.8	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	5.3	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	11	26	< 10	27	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	15	38	< 10	28	



Analytical Report Number: 18-74149

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number	896708	896709	896710	896711	
Sample Reference	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	
Sample Number	ES1	ES2	ES3	ES4	
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled	26/01/2018	26/01/2018	26/01/2018	26/01/2018	
Time Taken	None Supplied	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	11.2	11.2	11.2	11.3	
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	
Sulphate as SO ₄	µg/l	100	ISO 17025	112000	135000	112000	131000	
Ammoniacal Nitrogen as N	µg/l	15	NONE	1300	1600	1300	1500	
Ammonium as NH ₄	µg/l	15	NONE	1700	2100	1700	2000	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	79.1	71.9	60.3	69.3	

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	38	39	28	32	
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Speciated PAHs

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

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	19	15	18	14	
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	< 1.1	< 1.1	< 1.1	
Barium (dissolved)	µg/l	0.05	ISO 17025	440	420	360	430	
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	
Boron (dissolved)	µg/l	10	ISO 17025	47	44	45	44	
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	
Chromium (hexavalent)	µg/l	5	NONE	20	22	26	22	
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Chromium (dissolved)	µg/l	0.4	ISO 17025	17	18	23	18	
Copper (dissolved)	µg/l	0.7	ISO 17025	1600	1500	1100	1500	
Lead (dissolved)	µg/l	1	ISO 17025	8.3	2.6	< 1.0	1.3	
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	
Nickel (dissolved)	µg/l	0.3	ISO 17025	27	24	18	22	
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	
Vanadium (dissolved)	µg/l	1.7	ISO 17025	5.2	< 1.7	< 1.7	< 1.7	
Zinc (dissolved)	µg/l	0.4	ISO 17025	18	26	27	18	
Calcium (dissolved)	mg/l	0.012	ISO 17025	200	220	190	190	



Analytical Report Number: 18-74149

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				896708	896709	896710	896711	
Sample Reference				WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	WYB-6N-IBAA	
Sample Number				ES1	ES2	ES3	ES4	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				26/01/2018	26/01/2018	26/01/2018	26/01/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	



Analytical Report Number : 18-74149

Project / Site name: Southall

* 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 *
896704	WYB-6N-IBAA	ES1	None Supplied	Grey sandy loam.
896705	WYB-6N-IBAA	ES2	None Supplied	Grey sandy loam with gravel.
896706	WYB-6N-IBAA	ES3	None Supplied	Grey sandy loam.
896707	WYB-6N-IBAA	ES4	None Supplied	Grey sandy loam.

Analytical Report Number : 18-74149

Project / Site name: Southall

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
Ammonium as NH ₄ in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the 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
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	NONE
Free cyanide in leachate	Determination of free 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
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE
Hexavalent chromium in soil (Lower Level)	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
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025

Iss No 18-74149-1 Southall CG-28308

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

Page 7 of 8

Analytical Report Number : 18-74149

Project / Site name: Southall

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
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. 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 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as 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
TPHCWG (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	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.

**Chris Gordon**

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Analytical Report Number : 18-75046

Project / Site name:	Southall Western Access	Samples received on:	06/02/2018
Your job number:	CG-28308	Samples instructed on:	06/02/2018
Your order number:	4586	Analysis completed by:	08/02/2018
Report Issue Number:	1	Report issued on:	08/02/2018
Samples Analysed:	1 soil sample		

Signed:

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

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

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

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

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Analytical Report Number: 18-75046

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				902028				
Sample Reference				Bulk 1 of 4				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				29/01/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	1.2				

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.6				
Total Sulphate as SO ₄	mg/kg	50	MCERTS	33000				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.21				
Total Sulphur	mg/kg	50	MCERTS	11000				



Analytical Report Number : 18-75046

Project / Site name: Southall Western Access

* 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 *
902028	Bulk 1 of 4	None Supplied	None Supplied	Brown loam and sand with gravel.

Analytical Report Number : 18-75046

Project / Site name: Southall Western Access

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
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

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.

5. Class 6N London Rock Group Site Test Data

**Chris Gordon**

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Analytical Report Number : 17-70131

Project / Site name:	Southall	Samples received on:	07/12/2017
Your job number:	CG-28308	Samples instructed on:	07/12/2017
Your order number:	4586	Analysis completed by:	14/12/2017
Report Issue Number:	1	Report issued on:	14/12/2017
Samples Analysed:	8 soil samples		

Signed:

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

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

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

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

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

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Analytical Report Number: 17-70131

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				872221	872222	872223	872224	872225
Sample Reference				EGUCF	EGUCF	EGUCF	EGUCF	LRG-6N
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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	8.0	6.7	7.9	6.4	2.1
Total mass of sample received	kg	0.001	NONE	1.3	1.4	1.4	1.3	1.6

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	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	7.2	7.1	7.1	7.1	8.7
Total Cyanide	mg/kg	1	MCERTS	5	5	4	5	< 1
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Sulphate as SO ₄	mg/kg	50	MCERTS	5900	4500	5300	4900	160
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	20	41	36	31	< 0.5
Organic Matter	%	0.1	MCERTS	0.3	0.3	0.3	0.3	< 0.1

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	0.36	0.31	0.35	0.32	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.34	0.32	0.50	0.32	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.19	0.15	0.20	0.13	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.60	0.49	0.95	0.40	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	3.4	2.9	4.7	2.9	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.82	0.68	1.1	0.78	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	3.1	2.7	3.6	2.9	< 0.05
Pyrene	mg/kg	0.05	MCERTS	3.1	2.9	3.9	3.0	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.2	1.2	1.7	1.3	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.4	1.3	1.5	1.3	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.83	0.72	1.2	0.86	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.59	0.65	0.63	0.55	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.80	0.78	1.1	0.94	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.25	0.28	0.55	0.36	< 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	0.45	0.42	0.66	0.54	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	18	16	23	17	< 0.9
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Analytical Report Number: 17-70131

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				872221	872222	872223	872224	872225
Sample Reference				EGUCF	EGUCF	EGUCF	EGUCF	LRG-6N
Sample Number				ES1	ES2	ES3	ES4	ES5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/12/2017	06/12/2017	06/12/2017	06/12/2017	06/12/2017
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

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	4.3	3.2	4.0	4.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	17	18	16	1.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	66	54	62	54	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.73	0.60	0.60	0.59	0.29
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	1.5	1.6	1.6	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	27	25	27	25	9.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	25	27	25	9.5
Copper (aqua regia extractable)	mg/kg	1	MCERTS	170	33	47	49	3.9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	28	32	30	4.2
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	26	28	24	23	6.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	45	42	39	37	10
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	94	120	100	12

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	1.9	< 1.0	3.0	1.7	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	5.3	6.6	2.3	3.9	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	12	11	< 8.0	12	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	12	< 8.0	< 8.0	11	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	31	23	12	29	< 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	4.1	5.2	< 1.0	1.8	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	18	16	11	11	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	47	47	47	50	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	66	63	44	60	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	140	130	100	120	< 10

Analytical Report Number: 17-70131

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				872226	872227	872228		
Sample Reference				LRG-6N	LRG-6N	LRG-6N		
Sample Number				ES6	ES7	ES8		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				06/12/2017	06/12/2017	06/12/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	2.6	3.6	2.6		
Total mass of sample received	kg	0.001	NONE	1.5	1.5	1.6		

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		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.9	8.8	8.3		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5		
Total Sulphate as SO ₄	mg/kg	50	MCERTS	170	81	140		
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5		
Organic Matter	%	0.1	MCERTS	< 0.1	< 0.1	< 0.1		

Total Phenols

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

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

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9	< 0.9		
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Analytical Report Number: 17-70131

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				872226	872227	872228		
Sample Reference				LRG-6N	LRG-6N	LRG-6N		
Sample Number				ES6	ES7	ES8		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				06/12/2017	06/12/2017	06/12/2017		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.7	2.1	1.1		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	15	11	8.9		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.26	0.28	0.24		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.3	0.4		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2		
Chromium (III)	mg/kg	1	NONE	7.9	8.7	8.2		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	7.8	8.7	8.1		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	3.7	4.2	2.9		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	5.9	4.6	3.4		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.3	7.4	6.0		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	10	10	7.1		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	15	15	12		

Monoaromatics

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

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10		



Analytical Report Number: 17-70131
Project / Site name: Southall
Your Order No: 4586

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
872223	EGUCF		126	Loose Fibres	Chrysotile	0.001	0.001

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



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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and 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 *
872221	EGUCF	ES1	None Supplied	Brown clay and sand with gravel.
872222	EGUCF	ES2	None Supplied	Brown clay and sand with gravel.
872223	EGUCF	ES3	None Supplied	Brown clay and sand with gravel.
872224	EGUCF	ES4	None Supplied	Brown clay and sand with gravel.
872225	LRG-6N	ES5	None Supplied	Brown sand with gravel and stones.
872226	LRG-6N	ES6	None Supplied	Brown sand with gravel.
872227	LRG-6N	ES7	None Supplied	Brown sand with gravel.
872228	LRG-6N	ES8	None Supplied	Brown sand with gravel.

Analytical Report Number : 17-70131

Project / Site name: Southall

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 soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method,10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
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, 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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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 (Low level) in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS
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 WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 17-70131

Project / Site name: Southall

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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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

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

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

6. Subbase Type 1 Suppliers Data

AGGREGATE GRADING & MOISTURE CONTENT TEST CERTIFICATE
BS EN 933-1:2012 & 1097-5:2008

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017	Road Number	-
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	15/11/2017

Sieve	Passing %	Specification
63mm	100	100
50mm	100	-
40mm	100	-
37.5mm	96	-
31.5mm	83	75 - 99
25mm	81	-
20mm	75	-
16mm	69	43 - 81
14mm	66	-
10mm	54	-
8mm	48	23 - 66
6.3mm	42	-
5mm	37	-
4mm	34	12 - 53
2mm	25	6 - 42
1.0mm	19	3 - 32
0.5mm	14	-
0.25mm	8	-
0.125mm	4	-
0.063mm	2.6	0 - 9.0
Grading of individual batches		
16 – 8mm	21	7 - 30
8 – 4mm	14	7 - 30
Method of Sieving	Wet By Difference	
Moisture Content %	4.5	

Aggregate Description: Recycled.

Remarks : Sample complies with the grading requirements.

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Signed :

Date : 23/11/2017

Postcode Kent
TN14 5EL

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

F.M.Conway
Heathrow Asphalt Plant
North Hyde Gardens
Hayes
Middlesex
UB3 4QR

GRADATION ANALYSIS TEST REPORT

for Product: 901/ Type 1 Sub Base CL:801

Supplier/ source: FM Conway - Heathrow

Material type: Drystone aggregate Test method: Wash grading to BS EN 933-1: 1997

SAMPLE INFORMATION

Sample number RA00083_01

Customer FMC Weather Sunny, warm.
Sampling Location Stockpile Asphalt Ra max 50 -
Glass Rg max 25 - Class X max 1
Sampled by G.R.Parker Tested by G.R.Parker

Sampled/ tested
Fri 26 May 2017/ 05-06-17
at 0801 hrs

SAMPLE ANALYSIS

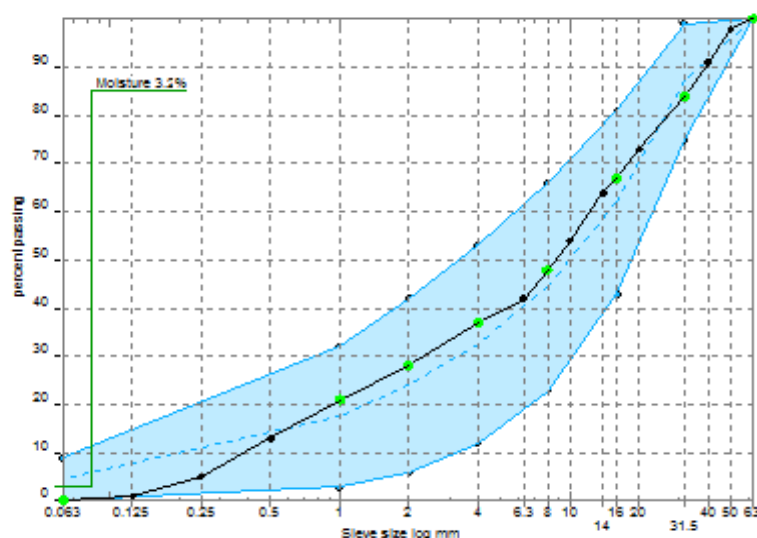
Sieve size	Percent passing	Specification limits	Complies ?
63mm	100	100 - 100	yes
50mm	98	-	-
40mm	91	-	-
31.5mm	84	75 - 99	yes
20mm	73	-	-
16mm	67	43 - 81	yes
14mm	64	-	-
10mm	54	-	-
8mm	48	23 - 66	yes
6.3mm	42	-	-
4mm	37	12 - 53	yes
2mm	28	6 - 42	yes
1mm	21	3 - 32	yes
0.500mm	13	-	-
0.250mm	5	-	-
0.125mm	1	-	-
0.063mm	0	0 - 9	yes
Moisture content %	3.2	not specified	-
Additional grading req.	Type 1 GSB table 8/5	pass or fail	yes
passing 16mm, ret 8mm	18	7 to 30	yes
passing 8mm, ret 4mm	11	7 to 30	yes

Parameters are evaluated to the accuracy of spec. limits

REMARKS

Compliance status ok

Category A of A-C includes secondary parameters



Signed _____

Date __/__/2017

F.M.Conway
Heathrow Asphalt Plant
North Hyde Gardens
Hayes
Middlesex
UB3 4QR

GRADATION ANALYSIS TEST REPORT

for Product: 901/ Type 1 Sub Base CL:801

Supplier/ source: FM Conway - Heathrow

Material type: Drystone aggregate Test method: Wash grading to BS EN 933-1: 1997

SAMPLE INFORMATION

Sample number RA00080_01

Customer - Weather Sunny, warm.
Sampling Location Stockpile Asphalt Ra max 50 -
Glass Rg max 25 - Class X max 1
Sampled by G.R.Parker Tested by G.R.Parker

Sampled/ tested
Fri 07 April 2017/ 08-04-17
at 1204 hrs

SAMPLE ANALYSIS

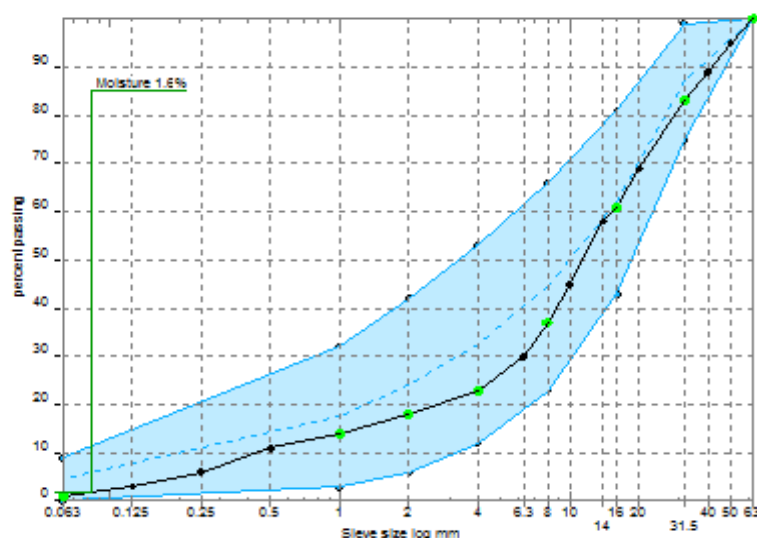
Sieve size	Percent passing	Specification limits	Complies ?
63mm	100	100 - 100	yes
50mm	95	-	-
40mm	89	-	-
31.5mm	83	75 - 99	yes
20mm	69	-	-
16mm	61	43 - 81	yes
14mm	58	-	-
10mm	45	-	-
8mm	37	23 - 66	yes
6.3mm	30	-	-
4mm	23	12 - 53	yes
2mm	18	6 - 42	yes
1mm	14	3 - 32	yes
0.500mm	11	-	-
0.250mm	6	-	-
0.125mm	3	-	-
0.063mm	1	0 - 9	yes
Moisture content %	1.6	not specified	-
Additional grading req.	Type 1 GSB table 8/5	pass or fail	yes
passing 16mm, ret 8mm	25	7 to 30	yes
passing 8mm, ret 4mm	14	7 to 30	yes

Parameters are evaluated to the accuracy of spec. limits

REMARKS

Compliance status ok

Category A of A-C includes secondary parameters



Signed _____

Date __/__/2017

LABORATORY TEST CERTIFICATE



Certificate No 16/1030 - 01

Client : **MATtest Southern Limited**
Unit 2, Glovers Court
Burymead Road
Hitchin
SG5 1RT

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

For The Attention Of : **Shaun Wilson**

Tel: 0141 774 4032
Fax: 0141 774 3552

Dear Sirs,

SIEVE ANALYSIS - BS EN 933 : Part 1 : 2012

email: info@mattest.org
Website: www.mattest.org

Introduction

We refer to bulk samples taken from FM Conway, Heathrow Asphalt Hayes and delivered to our laboratory on 03rd October 2016.

Material & Source

Sample Reference : Type 1
Sampled By : Client
Sampling Certificate : Not Supplied
Location : FM Conway, Heathrow Asphalt Hayes
Designation (d/D) : Type 1
Description : Recycled aggregate
Date Sampled : 27th September 2016
Date Tested : 03rd October 2016 Onwards
Source : FM Conway, Heathrow Asphalt Hayes

Test Results;

Sieve Size (mm)	Percentage Passing (%)	Specification	
		SHW Table 8/5	
		Lower %	Upper %
500.0	100	-	-
300.0	100	-	-
125.0	100	-	-
80.0	100	-	-
63.0	100	100	100
40.0	90	-	-
31.5	81	75	99
20.0	65	-	-
16.0	57	43	81
14.0	51	-	-
12.5	47	-	-
10.0	40	-	-
8.00	35	23	66
6.30	30	-	-
4.00	24	12	53
2.80	20	-	-
2.00	17	6	42
1.000	13	3	32
0.500	10	-	-
0.300	7	-	-
0.250	6	-	-
0.125	4	-	-
0.063	2.5	0	9

GRADING CLASSIFICATION (SHW TABLE 6/5 & SHW TABLE 8/5)			
Type 1 Sub-Base, 6A, 6E & 6R, 6F4, 6I, 6M, 6N, 6P,			
Grading classification proves the material has met the relevant grading requirements only. Further testing may be required to assess compliance with SHW.			
UNIFORMITY COEFFICIENT (SHW TABLE 6/1 NOTE 5)			
D10	D60	Specification	
0.500	17.500		
UNIFORMITY COEFFICIENT		35	- to -

WATER CONTENT (BS EN 1097 : PART 5 : 2008)	5.3 %
---	--------------

Remarks

Approved for Issue

T McLelland (Director)

Date 02/11/2016



MATtest Ltd.
10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Date: 21 October 2016
Test Report Ref: STR 486608

Order No: MATSC998
Page 1 of 1

Contract: FM Conway, Heathrow Asphalt Hayes - 15/1030

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Acid Soluble Sulfides of an Aggregate Sample
in accordance with **BS EN 1744-1 : 2009 : Clause 13**

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S60795
Client Ref. No:	16/1030 - 1
Date and Time of Sampling:	27/09/2016
Date of Receipt at Lab:	07/10/2016
Date of Start of Test:	19/10/2016
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Type 1
Target Specification:	N/A

RESULTS:

Sulfide Content as S (%) = 0.02

Comments

None

Certificate
Prepared by:-


Neil Hughes
Job Coordinator

Approved by: - 

Eric Goulden
Technical Manager

MATtest Ltd.
10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Date: 17 November 2016
Test Report Ref: STR 486604

Order No: MATSC998

Page 1 of 2

Contract: FM Conway, Heathrow Asphalt Hayes - 15/1030

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Frost Heave of Unbound Aggregate in accordance with **BS 812:**
Part 124: 2009 - Annex B (Use of Comparator Specimens)

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S60795
Client Ref. No:	16/1030 - 1
Date and Time of Sampling:	27/09/2016
Date of Receipt at Lab:	07/10/2016
Date of Start of Test:	17/10/2016
Sampling Location:	Unknown
Name of Source:	Unknown
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Type 1
Target Specification	SHW Series 800: clause 801.8

RESULTS:

Were any unrepresentative lumps present? No

Frost Heave Test Result:

Maximum Heave Observed in 96 hours (mm)		
Comparator Specimen 1	10.5	(nearest 0.5mm)
Comparator Specimen 2	16.0	(nearest 0.5mm)
Comparator Specimen 3	16.0	(nearest 0.5mm)
Mean	14.2	(nearest 0.1mm)
Test Specimen 1	8.5	(nearest 0.5mm)
Test Specimen 2	10.0	(nearest 0.5mm)
Test Specimen 3	9.5	(nearest 0.5mm)
Mean Frost Heave	9.3	(nearest 0.1mm)

In accordance with SHW Series 800: clause 801.8 the sample is classified as being
Non Frost Susceptible (mean frost heave $\leq$ 15mm)

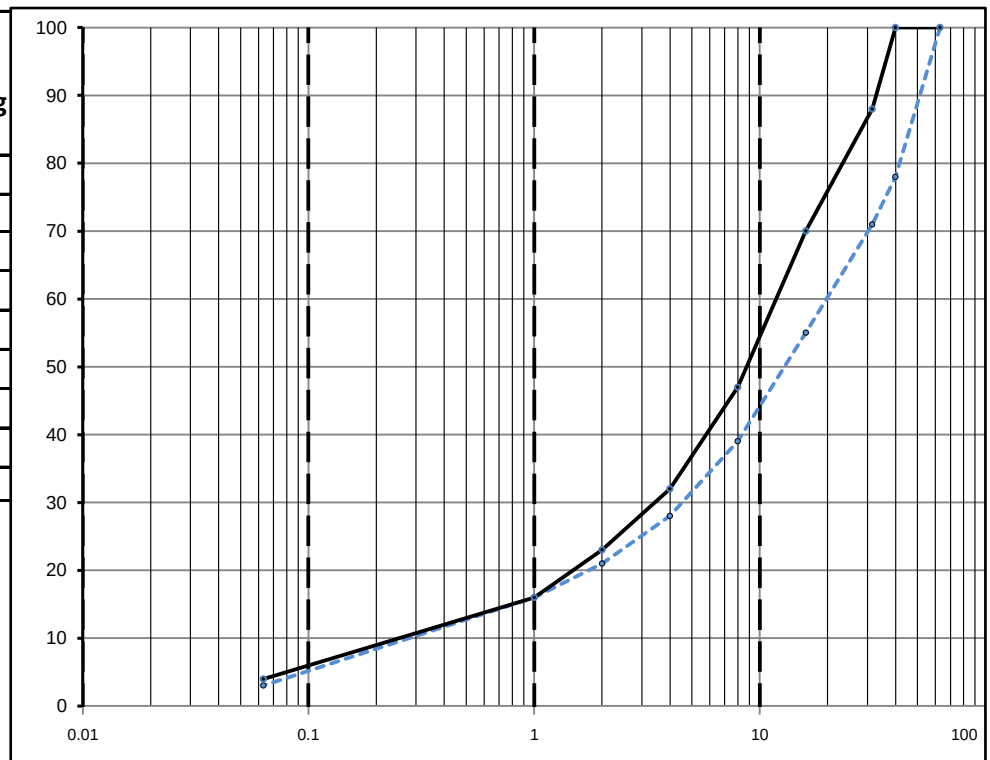
RESULTS CONTINUED:

Laboratory Dry Density & Water Content Test Result

Maximum Dry Density	2.03 Mg/m3
Optimum Water Content	9 %
Actual Dry Density	2.03 Mg/m3
Actual Water Content	8.9 %

Particle Size Distribution Test Result

BS Test Sieve Nominal Apperture	As Received Test Portion % Passing	Stable Test Portion % Passing
63.0 mm	100	100
40.0 mm	78	100
31.5 mm	71	88
16.0 mm	55	70
8.0 mm	39	47
4.0 mm	28	32
2.0 mm	21	23
1.0 mm	16	16
0.063 mm	3	4



Comments

None

Certificate
Prepared by:-

N. Hughes
Neil Hughes
Job Coordinator

Approved by: -

E. Goulden

Eric Goulden
Technical Manager

Sample No.	176044	3
Site Ref.		
Project Ref.	17 FMC 01	

RESISTANCE TO FRAGMENTATION (Los Angeles Abrasion - LA)
BS EN 1097-2:2010

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017		
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	23/11/2017

Test Results

Aggregate Type	Recycled.
Size Fraction 1 for Test Specimen	Pass 14mm – Retained 12.5mm
Size Fraction 2 for Test Specimen	Pass 12.5mm – Retained 10mm
LA Coefficient	19
Specification	LA ₅₀

Remarks :

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Signed :

Date : 24/11/2017

Kent
Postcode TN14 5EL

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

DETERMINATION OF THE RESISTANCE TO WEAR (MICRO-DEVAL)

BS EN 1097-1:2011

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017		
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	21/11/2017

Test Results

Rock Type	Recycled.	
Size Fraction 1 for Test Specimen	Pass 14mm – Retained 12.5mm	
Size Fraction 2 for Test Specimen	Pass 12.5mm – Retained 10mm	
Tested Condition	Wet	
	Test 1	Test 2
Test Results	15.5	14.5
Micro-Deval Coefficient	15	
Specification	M_{DE}	

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Signed :

Date : 24/11/2017

Postcode Kent
TN14 5EL

Authorised Signatories:

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician



Asset Planning Group
Highways Laboratory
Building G
Merrow Lane
Guildford
Surrey GU4 7BQ
Tel 01483 517430
Fax 01483 517445



0731

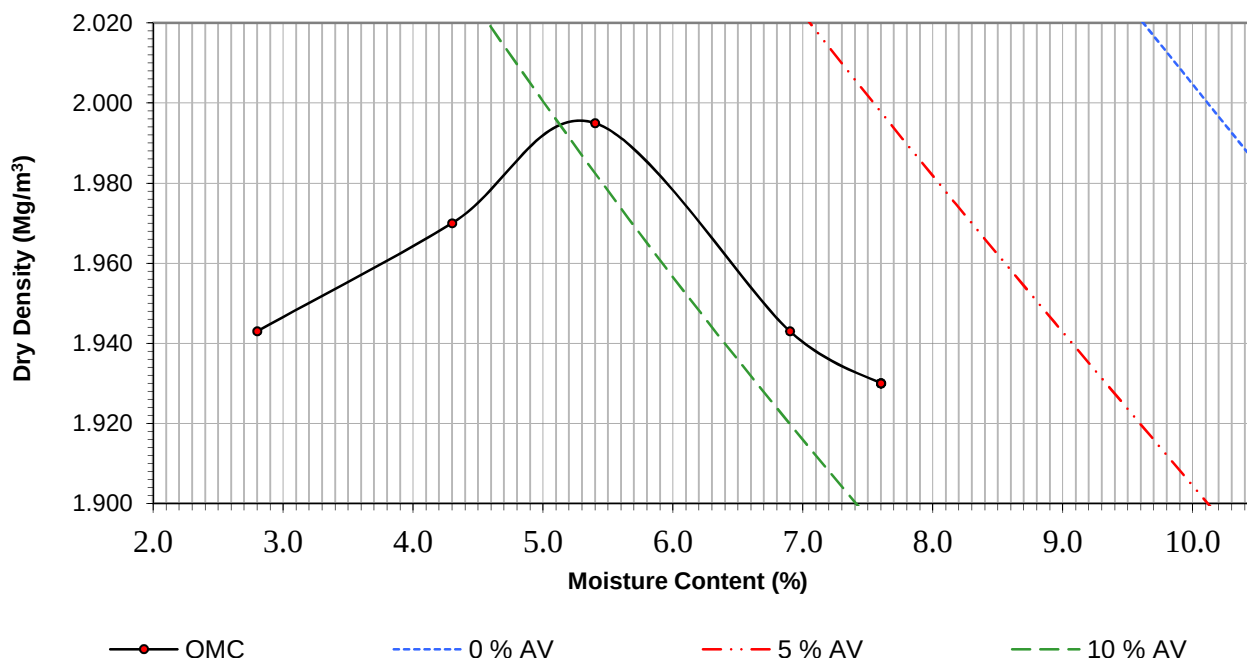
Lab No: 176044
Site Ref:
Project No: 17 FMC 01

CERTIFICATE OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377: Part 4: 1990, Method 3.7. Particle Density BS EN 1097-6:2013. Moisture Content BS 1377-2:1990
Vibrating Hammer

Client: F.M. Conways
Location: Client sampled
Material Type: Type 1
Material spec: SHW803
Supplier: F.M. Conways
Source: FM Conway, Heathrow

Date Sampled: 07/11/2017
Date Received: 07/11/2017
Date Tested: 21-22/11/2017



Method of preparation:	Riffled / Separate samples	Sample Description:	Type 1 / Recycled
Natural Moisture Content: %	4.5	Optimum Moisture Content: %	5.3
Maximum Dry Density: Mg/m³	1.995	Percentage retained 20mm:	25
Specific Gravity: Mg/m³	2.53	Percentage retained 37.5mm:	4
Remarks:			

Distribution: FM Conway
Mr Mark Flint
Vestry House
Sevenoaks
Kent
TN14 5EL

Signed:

Date of Issue: 22/11/2017

Authorised Signatories

P Parker - Compliance Team Leader / J Nicholls - Senior Technicians / J Tanzilli - Laboratory Team leader

This certificate refers only to the items tested and may not be reproduced except in full without written authority from the Materials Manager
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. If required, a sample certificate, where available, can be provided.

Sample No.	176044	5
Site Ref.		
Project Ref.	17 FMC 01	

PARTICLE DENSITY & WATER ABSORPTION TEST CERTIFICATE

BS 812:Part 2:1995

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017		
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	20-22/11/2017

Test Results

Oven Dried Basis	(Mg/m ³)	2.41
Saturated Surface Dried Basis	(Mg/m ³)	2.46
Apparent Relative Basis	(Mg/m ³)	2.53
Water Absorption	(%)	2.1
Mass of dry sample tested	(gms)	2236.9
Size Fraction & % of sample tested		31.5 – 4.0mm
Method used for determination		Pyknometer
Aggregate Type		Recycled.

Remarks :

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Signed :

Date : 23/11/2017

Postcode Kent
TN14 5EL

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

Sample No.	176044	16
Site Ref.		
Project Ref.	17 FMC 01	

LIQUID LIMIT & PLASTIC LIMIT TEST CERTIFICATE
BS 1377:Part 2:1990

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017	Road Number	-
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	28/11/2017

Test Results

Soil Description	Recycled.
Soil Equilibrated in Hours	14
Soil Classification	NON PLASTIC

Remarks

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Signed :

Date : 30/11/2017

Postcode Kent
TN14 5EL

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

LABORATORY TEST CERTIFICATE



Certificate No : 16/1030 - 05
To : Shaun Wilson
Client : MATtest Southern Limited
Unit 2, Glovers Court
Burymead Road
Hitchin
SG5 1RT

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032
Fax: 0141 774 3552

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

THERMAL AND WEATHERING PROPERTIES OF AGGREGATES - MAGNESIUM SULFATE TEST BS EN 1367 - 2 : 2009

Introduction

We refer to bulk samples taken from FM Conway, Heathrow Asphalt Hayes and delivered to our laboratory on 03rd October 2016.

Material & Source

Sample Reference : Type 1
Sampled By : Client
Sampling Certificate : Not Supplied
Location : FM Conway, Heathrow Asphalt Hayes
Designation (d/D) : Type 1
Description : Recycled aggregate
Date Sampled : 27th September 2016
Date Tested : 03rd October 2016 Onwards
Source : FM Conway, Heathrow Asphalt Hayes
Size Fraction : 10mm to 14mm

Test Results;

MAGNESIUM SULFATE SOUNDNESS VALUE - SAMPLE 1	5.7	%
MAGNESIUM SULFATE SOUNDNESS VALUE - SAMPLE 2	5.4	%
MAGNESIUM SULFATE SOUNDNESS VALUE	6	%

Remarks

Approved for Issue

T McLelland (Director)

Date 09/11/2016





Mark Flint
FM Conway Ltd
Conway House
Rochester Way
Dartford
Kent
DA1 3QY



QTS Environmental Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-60088

Site Reference: Heathrow

Project / Job Ref: Type 1 GSB

Order No: None Supplied

Sample Receipt Date: 13/06/2017

Sample Scheduled Date: 13/06/2017

Report Issue Number: 1

Reporting Date: 20/06/2017

Authorised by:

Russell Jarvis
Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Dave Ashworth
Deputy Quality Manager



QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTS Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Ammonium as NH ₄	mg/kg	< 0.5	NONE	< 0.5	< 0.5	< 0.5		
Ammonium as NH ₄	mg/l	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	< 0.2	0.2		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

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

Asbestos Analyst: Javeed Malik

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis ^(S)



QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	2.47	2.46	2.37		
Phenanthrene	mg/kg	< 0.1	MCERTS	29.30	36.10	29.40		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	5.99	6.55	6.39		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	6	11	15	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	10	18	26	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	119	152	206	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	135	181	247	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	3	4	4	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	44	56	50	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	160	189	177	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	311	508	625	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	519	757	855	
Total >C5 - C35	mg/kg	< 42	NONE	654	939	1102	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Volatile Organic Compounds (VOC)						
QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)						
QTS Environmental Report No: 17-60088	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273516	273517	273518		

Determinand	Unit	RL	Accreditation				
Phenol	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 17-60088

FM Conway Ltd

Site Reference: Heathrow

Project / Job Ref: Type 1 GSB

Order No: None Supplied

Reporting Date: 20/06/2017

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 273516	Sample 1	None Supplied	None Supplied	4	Brown sandy gravel with stones and concrete
^ 273517	Sample 2	None Supplied	None Supplied	4.9	Brown sandy gravel with stones and concrete
^ 273518	Sample 3	None Supplied	None Supplied	3.3	Brown sandy gravel with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

& samples received in inappropriate containers for hydrocarbon analysis

^ no sampling date provided; unable to confirm if samples are within acceptable holding times



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-60088

FM Conway Ltd

Site Reference: Heathrow

Project / Job Ref: Type 1 GSB

Order No: None Supplied

Reporting Date: 20/06/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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QTS Environmental Report No: 17-60109

Site Reference: Heathrow

Project / Job Ref: Type 1 GSB

Order No: None Supplied

Sample Receipt Date: 12/06/2017

Sample Scheduled Date: 14/06/2017

Report Issue Number: 1

Reporting Date: 20/06/2017

Authorised by:

Russell Jarvis
Associate Director of Client Services

Authorised by:

Dave Ashworth
Deputy Quality Manager

QTSE is the trading name of DETS Ltd, company registration number 03705645



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Leachate Analysis Certificate						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation					
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Ammonium as NH ₄	ug/l	< 50	NONE	< 50	< 50	< 50		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		

Subcontracted analysis ^(S)



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Leachate Analysis Certificate - Speciated PAH						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation					
Naphthalene	ug/l	< 0.01	NONE	0.40	0.20	0.16		
Phenanthrene	ug/l	< 0.01	NONE	2.30	5.20	3.80		



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Leachate Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70		
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70		
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140		



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Leachate Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation					
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1		
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Ethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
p & m-xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10		
o-xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10		



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Leachate Analysis Certificate - Volatile Organic Compounds (VOC)						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	



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Leachate Analysis Certificate - Semi Volatile Organic Compounds (SVOC)						
QTS Environmental Report No: 17-60109	Date Sampled	None Supplied	None Supplied	None Supplied		
FM Conway Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Heathrow	TP / BH No	Sample 1	Sample 2	Sample 3		
Project / Job Ref: Type 1 GSB	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 20/06/2017	QTSE Sample No	273615	273616	273617		

Determinand	Unit	RL	Accreditation				
Phenol	ug/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-60109

FM Conway Ltd

Site Reference: Heathrow

Project / Job Ref: Type 1 GSB

Order No: None Supplied

Reporting Date: 20/06/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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QTS Environmental Report No: 17-61528

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Sample Receipt Date: 13/07/2017

Sample Scheduled Date: 13/07/2017

Report Issue Number: 1

Reporting Date: 19/07/2017

Authorised by:

Kevin Old
Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis
Associate Director of Client Services



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Soil Analysis Certificate						
QTS Environmental Report No: 17-61528		Date Sampled	10/07/17			
FM Conway Ltd		Time Sampled	None Supplied			
Site Reference: HAP Type 1 GSB		TP / BH No	FW00658			
Project / Job Ref: None Supplied		Additional Refs	Sample 1			
Order No: None Supplied		Depth (m)	None Supplied			
Reporting Date: 19/07/2017		QTSE Sample No	279400			

Determinand	Unit	RL	Accreditation				
Asbestos Screen ⁽⁵⁾	N/a	N/a	ISO17025	Not Detected			
Free Cyanide	mg/kg	< 0.5	NONE	< 0.5			
Ammonium as NH ₄	mg/kg	< 0.5	NONE	< 0.5			
Ammonium as NH ₄	mg/l	< 0.05	NONE	< 0.05			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.7			
Mercury (Hg)	mg/kg	< 1	NONE	< 1			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

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

Asbestos Analyst: Javeed Malik

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis ⁽⁵⁾



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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279400				

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	1.22			
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.34			
Acenaphthene	mg/kg	< 0.1	MCERTS	2.10			
Fluorene	mg/kg	< 0.1	MCERTS	2.62			
Phenanthrene	mg/kg	< 0.1	MCERTS	22.80			
Anthracene	mg/kg	< 0.1	MCERTS	3.65			
Fluoranthene	mg/kg	< 0.1	MCERTS	28.90			
Pyrene	mg/kg	< 0.1	MCERTS	23			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	8.06			
Chrysene	mg/kg	< 0.1	MCERTS	6.05			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	6.72			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	3.12			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	5.60			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	3.06			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.52			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	2.60			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	120			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279400				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	22			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	46			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	278			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	346			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	26			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	107			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	490			
Aromatic (C5 - C35)	mg/kg	< 21	NONE	623			
Total >C5 - C35	mg/kg	< 42	NONE	969			

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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279400				

Determinand	Unit	RL	Accreditation				
Benzene	ug/kg	< 2	MCERTS	< 2			
Toluene	ug/kg	< 5	MCERTS	< 5			
Ethylbenzene	ug/kg	< 2	MCERTS	< 2			
p & m-xylene	ug/kg	< 2	MCERTS	< 2			
o-xylene	ug/kg	< 2	MCERTS	< 2			
MTBE	ug/kg	< 5	MCERTS	< 5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTS Sample No	279400				

Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5			
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5			
Chloromethane	ug/kg	< 10	MCERTS	< 10			
Chloroethane	ug/kg	< 5	MCERTS	< 5			
Bromomethane	ug/kg	< 10	MCERTS	< 10			
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5			
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5			
MTBE	ug/kg	< 5	MCERTS	< 5			
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5			
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5			
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5			
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5			
Chloroform	ug/kg	< 5	MCERTS	< 5			
Bromochloromethane	ug/kg	< 5	MCERTS	< 5			
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5			
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10			
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5			
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5			
Benzene	ug/kg	< 2	MCERTS	< 2			
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5			
Trichloroethene	ug/kg	< 5	MCERTS	< 5			
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5			
Dibromomethane	ug/kg	< 5	MCERTS	< 5			
TAME	ug/kg	< 5	MCERTS	< 5			
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5			
Toluene	ug/kg	< 5	MCERTS	< 5			
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5			
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10			
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5			
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5			
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5			
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5			
Chlorobenzene	ug/kg	< 5	MCERTS	< 5			
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5			
Ethyl Benzene	ug/kg	< 2	MCERTS	< 2			
m,p-Xylene	ug/kg	< 2	MCERTS	< 2			
o-Xylene	ug/kg	< 2	MCERTS	< 2			
Styrene	ug/kg	< 5	MCERTS	< 5			
Bromoform	ug/kg	< 10	MCERTS	< 10			
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5			
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5			
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5			
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5			
Bromobenzene	ug/kg	< 5	MCERTS	< 5			
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5			
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5			
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5			
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5			
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5			
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5			
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5			
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5			
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5			
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5			
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5			
1,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10			
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5			

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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTS Sample No	279400				

Determinand	Unit	RL	Accreditation				
Phenol	mg/kg	< 0.1	NONE	< 0.1			
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1			
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1			
0-Cresol	mg/kg	< 0.1	NONE	< 0.1			
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1			
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1			
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1			
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1			
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1			
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15			
Isophorone	mg/kg	< 0.1	NONE	< 0.1			
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1			
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15			
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1			
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15			
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1			
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	0.6			
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1			
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1			
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1			
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1			
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
4-Chloroaniline	mg/kg	< 0.15	NONE	< 0.15			
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1			
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1			
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1			
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1			
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1			
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1			
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenzofuran	mg/kg	< 0.1	MCERTS	1.5			
Azobenzene	mg/kg	< 0.1	NONE	< 0.1			
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1			
Carbazole	mg/kg	< 0.1	ISO17025	1.1			
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	MCERTS	< 0.15			
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1			

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Leachate Analysis Certificate						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279401				

Determinand	Unit	RL	Accreditation				
Free Cyanide	ug/l	< 5	NONE	< 5			
Ammonium as NH ₄	ug/l	< 50	NONE	< 50			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4			
Mercury	ug/l	< 0.05	ISO17025	< 0.05			

Subcontracted analysis ⁽⁵⁾



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Leachate Analysis Certificate - Speciated PAH						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279401				

Determinand	Unit	RL	Accreditation				
Naphthalene	ug/l	< 0.01	NONE	0.13			
Acenaphthylene	ug/l	< 0.01	NONE	0.08			
Acenaphthene	ug/l	< 0.01	NONE	0.60			
Fluorene	ug/l	< 0.01	NONE	0.49			
Phenanthrene	ug/l	< 0.01	NONE	1.10			
Anthracene	ug/l	< 0.01	NONE	< 0.01			
Fluoranthene	ug/l	< 0.01	NONE	0.38			
Pyrene	ug/l	< 0.01	NONE	0.28			
Benzo(a)anthracene	ug/l	< 0.01	NONE	0.09			
Chrysene	ug/l	< 0.01	NONE	0.08			
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	0.06			
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	0.03			
Benzo(a)pyrene	ug/l	< 0.01	NONE	0.05			
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01			
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01			
Benzo(ghi)perylene	ug/l	0.008	NONE	< 0.008			
Total EPA-16 PAHs	ug/l	< 0.01	NONE	3.37			



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Leachate Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279401				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10			
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10			
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10			
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70			
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10			
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10			
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10			
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70			
Total >C5 - C35	ug/l	< 140	NONE	< 140			



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Leachate Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 19/07/2017	QTSE Sample No	279401				

Determinand	Unit	RL	Accreditation				
Benzene	ug/l	< 1	ISO17025	< 1			
Toluene	ug/l	< 5	ISO17025	< 5			
Ethylbenzene	ug/l	< 5	ISO17025	< 5			
p & m-xylene	ug/l	< 10	ISO17025	< 10			
o-xylene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			



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Leachate Analysis Certificate - Volatile Organic Compounds (VOC)					
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17			
FM Conway Ltd	Time Sampled	None Supplied			
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658			
Project / Job Ref: None Supplied	Additional Refs	Sample 1			
Order No: None Supplied	Depth (m)	None Supplied			
Reporting Date: 19/07/2017	QTSE Sample No	279401			

Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5			
Vinyl Chloride	ug/l	< 5	ISO17025	< 5			
Chloromethane	ug/l	< 5	ISO17025	< 5			
Chloroethane	ug/l	< 5	ISO17025	< 5			
Bromomethane	ug/l	< 5	ISO17025	< 5			
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5			
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Chloroform	ug/l	< 5	ISO17025	< 5			
Bromochloromethane	ug/l	< 10	ISO17025	< 10			
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5			
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10			
Benzene	ug/l	< 1	ISO17025	< 1			
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Trichloroethene	ug/l	< 5	ISO17025	< 5			
Bromodichloromethane	ug/l	< 5	ISO17025	< 5			
Dibromomethane	ug/l	< 5	ISO17025	< 5			
TAME	ug/l	< 5	ISO17025	< 5			
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Toluene	ug/l	< 5	ISO17025	< 5			
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10			
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Tetrachloroethene	ug/l	< 5	ISO17025	< 5			
Dibromochloromethane	ug/l	< 5	ISO17025	< 5			
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5			
Chlorobenzene	ug/l	< 5	ISO17025	< 5			
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5			
Ethyl Benzene	ug/l	< 5	ISO17025	< 5			
m,p-Xylene	ug/l	< 10	ISO17025	< 10			
o-Xylene	ug/l	< 5	ISO17025	< 5			
Styrene	ug/l	< 5	ISO17025	< 5			
Bromoform	ug/l	< 10	ISO17025	< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5			
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10			
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5			
n-Propylbenzene	ug/l	< 5	ISO17025	< 5			
Bromobenzene	ug/l	< 5	ISO17025	< 5			
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5			
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5			
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5			
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
n-Butylbenzene	ug/l	< 5	ISO17025	< 5			
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
1,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10			
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5			



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Leachate Analysis Certificate - Semi Volatile Organic Compounds (SVOC)					
QTS Environmental Report No: 17-61528	Date Sampled	10/07/17			
FM Conway Ltd	Time Sampled	None Supplied			
Site Reference: HAP Type 1 GSB	TP / BH No	FW00658			
Project / Job Ref: None Supplied	Additional Refs	Sample 1			
Order No: None Supplied	Depth (m)	None Supplied			
Reporting Date: 19/07/2017	QTSE Sample No	279401			

Determinand	Unit	RL	Accreditation				
Phenol	ug/l	< 0.1	NONE	< 0.1			
1,2,4-Trichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2-Nitrophenol	ug/l	< 0.1	NONE	< 0.1			
Nitrobenzene	ug/l	< 0.1	NONE	< 0.1			
0-Cresol	ug/l	< 0.1	NONE	< 0.1			
bis(2-chloroethoxy)methane	ug/l	< 0.1	NONE	< 0.1			
bis(2-chloroethyl)ether	ug/l	< 0.1	NONE	< 0.1			
2,4-Dichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2-Chlorophenol	ug/l	< 0.1	NONE	< 0.1			
1,3-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
1,4-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
1,2-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2,4-Dimethylphenol	ug/l	< 0.1	NONE	< 0.1			
Isophorone	ug/l	< 0.1	NONE	< 0.1			
Hexachloroethane	ug/l	< 0.1	NONE	< 0.1			
p-Cresol	ug/l	< 0.1	NONE	< 0.1			
2,4,6-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2,4,5-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Chloro-3-methylphenol	ug/l	< 0.1	NONE	< 0.1			
2-Methylnaphthalene	ug/l	< 0.1	NONE	0.2			
Hexachlorocyclopentadiene	ug/l	< 0.1	NONE	< 0.1			
Hexachlorobutadiene	ug/l	< 0.1	NONE	< 0.1			
2,6-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1			
Dimethyl phthalate	ug/l	< 0.1	NONE	< 0.1			
2-Chloronaphthalene	ug/l	< 0.1	NONE	< 0.1			
4-Chloroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Nitrophenol	ug/l	< 0.1	NONE	< 0.1			
4-Chlorophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1			
3-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Bromophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1			
Hexachlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2,4-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1			
Diethyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Dibenzofuran	ug/l	< 0.1	NONE	< 0.1			
Azobenzene	ug/l	< 0.1	NONE	< 0.1			
Dibutyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Carbazole	ug/l	< 0.1	NONE	< 0.1			
bis(2-ethylhexyl)phthalate	ug/l	< 0.1	NONE	< 0.1			
Benzyl butyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Di-n-octyl phthalate	ug/l	< 0.1	NONE	< 0.1			



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Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 17-61528

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 19/07/2017

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
279400	FW00658	Sample 1	None Supplied	2.3	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/s}

& samples received in inappropriate containers for hydrocarbon analysis



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-61528

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 19/07/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-61528

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 19/07/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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QTS Environmental Report No: 17-64461

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Sample Receipt Date: 18/09/2017

Sample Scheduled Date: 19/09/2017

Report Issue Number: 1

Reporting Date: 25/09/2017

Authorised by:

Russell Jarvis
Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Dave Ashworth
Deputy Quality Manager



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Soil Analysis Certificate						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Ammonium as NH ₄	mg/kg	< 0.5	NONE	< 0.5				
Ammonium as NH ₄	mg/l	< 0.05	NONE	< 0.05				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	0.15				
Pyrene	mg/kg	< 0.1	MCERTS	0.13				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5				
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5				
Chloromethane	ug/kg	< 10	MCERTS	< 10				
Chloroethane	ug/kg	< 5	MCERTS	< 5				
Bromomethane	ug/kg	< 10	MCERTS	< 10				
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5				
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5				
MTBE	ug/kg	< 5	MCERTS	< 5				
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5				
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5				
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5				
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5				
Chloroform	ug/kg	< 5	MCERTS	< 5				
Bromochloromethane	ug/kg	< 5	MCERTS	< 5				
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5				
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10				
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5				
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5				
Benzene	ug/kg	< 2	MCERTS	< 2				
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5				
Trichloroethene	ug/kg	< 5	MCERTS	< 5				
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5				
Dibromomethane	ug/kg	< 5	MCERTS	< 5				
TAME	ug/kg	< 5	MCERTS	< 5				
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5				
Toluene	ug/kg	< 5	MCERTS	< 5				
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5				
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10				
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5				
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5				
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5				
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5				
Chlorobenzene	ug/kg	< 5	MCERTS	< 5				
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5				
Ethyl Benzene	ug/kg	< 2	MCERTS	< 2				
m,p-Xylene	ug/kg	< 2	MCERTS	< 2				
o-Xylene	ug/kg	< 2	MCERTS	< 2				
Styrene	ug/kg	< 5	MCERTS	< 5				
Bromoform	ug/kg	< 10	MCERTS	< 10				
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5				
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5				
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5				
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5				
Bromobenzene	ug/kg	< 5	MCERTS	< 5				
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5				
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5				
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5				
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5				
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5				
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5				
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5				
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5				
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5				
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5				
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5				
1,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10				
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Soil Analysis Certificate - Semi Volatile Organic Compounds (SVOC)						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTS Sample No	291362				

Determinand	Unit	RL	Accreditation	(n)				
Phenol	mg/kg	< 0.1	NONE	< 0.1				
1,2,4-Trichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
2-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1				
Nitrobenzene	mg/kg	< 0.1	MCERTS	< 0.1				
0-Cresol	mg/kg	< 0.1	NONE	< 0.1				
bis(2-chloroethoxy)methane	mg/kg	< 0.1	MCERTS	< 0.1				
bis(2-chloroethyl)ether	mg/kg	< 0.1	MCERTS	< 0.1				
2,4-Dichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1				
2-Chlorophenol	mg/kg	< 0.1	ISO17025	< 0.1				
1,3-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
1,4-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
1,2-Dichlorobenzene	mg/kg	< 0.1	ISO17025	< 0.1				
2,4-Dimethylphenol	mg/kg	< 0.15	ISO17025	< 0.15				
Isophorone	mg/kg	< 0.1	NONE	< 0.1				
Hexachloroethane	mg/kg	< 0.1	MCERTS	< 0.1				
p-Cresol	mg/kg	< 0.15	MCERTS	< 0.15				
2,4,6-Trichlorophenol	mg/kg	< 0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	< 0.15	MCERTS	< 0.15				
2-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Chloro-3-methylphenol	mg/kg	< 0.1	NONE	< 0.1				
2-Methylnaphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Hexachlorocyclopentadiene	mg/kg	< 0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	< 0.1	ISO17025	< 0.1				
2,6-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1				
Dimethyl phthalate	mg/kg	< 0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
4-Chloroaniline	mg/kg	< 0.15	NONE	< 0.15				
4-Nitrophenol	mg/kg	< 0.1	NONE	< 0.1				
4-Chlorophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1				
3-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Nitroaniline	mg/kg	< 0.1	NONE	< 0.1				
4-Bromophenyl phenyl ether	mg/kg	< 0.1	MCERTS	< 0.1				
Hexachlorobenzene	mg/kg	< 0.1	MCERTS	< 0.1				
2,4-Dinitrotoluene	mg/kg	< 0.1	MCERTS	< 0.1				
Diethyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenzofuran	mg/kg	< 0.1	MCERTS	< 0.1				
Azobenzene	mg/kg	< 0.1	NONE	< 0.1				
Dibutyl phthalate	mg/kg	< 0.1	ISO17025	< 0.1				
Carbazole	mg/kg	< 0.1	ISO17025	< 0.1				
bis(2-ethylhexyl)phthalate	mg/kg	< 0.15	MCERTS	< 0.15				
Benzyl butyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				
Di-n-octyl phthalate	mg/kg	< 0.1	MCERTS	< 0.1				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Leachate Analysis Certificate

QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291363				

Determinand	Unit	RL	Accreditation				
Free Cyanide	ug/l	< 5	NONE	< 5			
Ammonium as NH ₄	ug/l	< 50	NONE	< 50			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4			
Mercury	ug/l	< 0.05	ISO17025	< 0.05			

Subcontracted analysis ⁽⁵⁾



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Leachate Analysis Certificate - Speciated PAH						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291363				

Determinand	Unit	RL	Accreditation				
Naphthalene	ug/l	< 0.01	NONE	0.05			
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01			
Acenaphthene	ug/l	< 0.01	NONE	0.02			
Fluorene	ug/l	< 0.01	NONE	0.03			
Phenanthrene	ug/l	< 0.01	NONE	0.12			
Anthracene	ug/l	< 0.01	NONE	0.03			
Fluoranthene	ug/l	< 0.01	NONE	0.06			
Pyrene	ug/l	< 0.01	NONE	0.04			
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01			
Chrysene	ug/l	< 0.01	NONE	< 0.01			
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01			
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01			
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01			
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01			
Benzo(ghi)perylene	ug/l	0.008	NONE	< 0.008			
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.35			



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Leachate Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291363				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10			
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10			
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10			
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70			
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10			
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10			
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10			
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10			
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10			
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10			
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10			
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70			
Total >C5 - C35	ug/l	< 140	NONE	< 140			



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Leachate Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17				
FM Conway Ltd	Time Sampled	None Supplied				
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702				
Project / Job Ref: None Supplied	Additional Refs	Sample 1				
Order No: None Supplied	Depth (m)	None Supplied				
Reporting Date: 25/09/2017	QTSE Sample No	291363				

Determinand	Unit	RL	Accreditation				
Benzene	ug/l	< 1	ISO17025	< 1			
Toluene	ug/l	< 5	ISO17025	< 5			
Ethylbenzene	ug/l	< 5	ISO17025	< 5			
p & m-xylene	ug/l	< 10	ISO17025	< 10			
o-xylene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			



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Leachate Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-64461	Date Sampled	18/09/17			
FM Conway Ltd	Time Sampled	None Supplied			
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702			
Project / Job Ref: None Supplied	Additional Refs	Sample 1			
Order No: None Supplied	Depth (m)	None Supplied			
Reporting Date: 25/09/2017	QTSE Sample No	291363			

Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5			
Vinyl Chloride	ug/l	< 5	ISO17025	< 5			
Chloromethane	ug/l	< 5	ISO17025	< 5			
Chloroethane	ug/l	< 5	ISO17025	< 5			
Bromomethane	ug/l	< 5	ISO17025	< 5			
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5			
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Chloroform	ug/l	< 5	ISO17025	< 5			
Bromochloromethane	ug/l	< 10	ISO17025	< 10			
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5			
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10			
Benzene	ug/l	< 1	ISO17025	< 1			
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Trichloroethene	ug/l	< 5	ISO17025	< 5			
Bromodichloromethane	ug/l	< 5	ISO17025	< 5			
Dibromomethane	ug/l	< 5	ISO17025	< 5			
TAME	ug/l	< 5	ISO17025	< 5			
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Toluene	ug/l	< 5	ISO17025	< 5			
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10			
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Tetrachloroethene	ug/l	< 5	ISO17025	< 5			
Dibromochloromethane	ug/l	< 5	ISO17025	< 5			
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5			
Chlorobenzene	ug/l	< 5	ISO17025	< 5			
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5			
Ethyl Benzene	ug/l	< 5	ISO17025	< 5			
m,p-Xylene	ug/l	< 10	ISO17025	< 10			
o-Xylene	ug/l	< 5	ISO17025	< 5			
Styrene	ug/l	< 5	ISO17025	< 5			
Bromoform	ug/l	< 10	ISO17025	< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5			
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10			
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5			
n-Propylbenzene	ug/l	< 5	ISO17025	< 5			
Bromobenzene	ug/l	< 5	ISO17025	< 5			
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5			
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5			
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5			
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
n-Butylbenzene	ug/l	< 5	ISO17025	< 5			
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
1,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10			
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5			



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Leachate Analysis Certificate - Semi Volatile Organic Compounds (SVOC)					
QTS Environmental Report No: 17-64461	Date Sampled	18/09/17			
FM Conway Ltd	Time Sampled	None Supplied			
Site Reference: HAP Type 1 GSB	TP / BH No	FW00702			
Project / Job Ref: None Supplied	Additional Refs	Sample 1			
Order No: None Supplied	Depth (m)	None Supplied			
Reporting Date: 25/09/2017	QTSE Sample No	291363			

Determinand	Unit	RL	Accreditation				
Phenol	ug/l	< 0.1	NONE	< 0.1			
1,2,4-Trichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2-Nitrophenol	ug/l	< 0.1	NONE	< 0.1			
Nitrobenzene	ug/l	< 0.1	NONE	< 0.1			
0-Cresol	ug/l	< 0.1	NONE	< 0.1			
bis(2-chloroethoxy)methane	ug/l	< 0.1	NONE	< 0.1			
bis(2-chloroethyl)ether	ug/l	< 0.1	NONE	< 0.1			
2,4-Dichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2-Chlorophenol	ug/l	< 0.1	NONE	< 0.1			
1,3-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
1,4-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
1,2-Dichlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2,4-Dimethylphenol	ug/l	< 0.1	NONE	< 0.1			
Isophorone	ug/l	< 0.1	NONE	< 0.1			
Hexachloroethane	ug/l	< 0.1	NONE	< 0.1			
p-Cresol	ug/l	< 0.1	NONE	< 0.1			
2,4,6-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2,4,5-Trichlorophenol	ug/l	< 0.1	NONE	< 0.1			
2-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Chloro-3-methylphenol	ug/l	< 0.1	NONE	< 0.1			
2-Methylnaphthalene	ug/l	< 0.1	NONE	< 0.1			
Hexachlorocyclopentadiene	ug/l	< 0.1	NONE	< 0.1			
Hexachlorobutadiene	ug/l	< 0.1	NONE	< 0.1			
2,6-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1			
Dimethyl phthalate	ug/l	< 0.1	NONE	< 0.1			
2-Chloronaphthalene	ug/l	< 0.1	NONE	< 0.1			
4-Chloroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Nitrophenol	ug/l	< 0.1	NONE	< 0.1			
4-Chlorophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1			
3-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Nitroaniline	ug/l	< 0.1	NONE	< 0.1			
4-Bromophenyl phenyl ether	ug/l	< 0.1	NONE	< 0.1			
Hexachlorobenzene	ug/l	< 0.1	NONE	< 0.1			
2,4-Dinitrotoluene	ug/l	< 0.1	NONE	< 0.1			
Diethyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Dibenzofuran	ug/l	< 0.1	NONE	< 0.1			
Azobenzene	ug/l	< 0.1	NONE	< 0.1			
Dibutyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Carbazole	ug/l	< 0.1	NONE	< 0.1			
bis(2-ethylhexyl)phthalate	ug/l	< 0.1	NONE	< 0.1			
Benzyl butyl phthalate	ug/l	< 0.1	NONE	< 0.1			
Di-n-octyl phthalate	ug/l	< 0.1	NONE	< 0.1			



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Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 17-64461

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 25/09/2017

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
291362	FW00702	Sample 1	None Supplied	0.3	Grey concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

& samples received in inappropriate containers for hydrocarbon analysis



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-64461

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 25/09/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-64461

FM Conway Ltd

Site Reference: HAP Type 1 GSB

Project / Job Ref: None Supplied

Order No: None Supplied

Reporting Date: 25/09/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO ₄)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

CONSTITUENTS OF COARSE RECYCLED AGGREGATES
SHW710 – BS EN 933-11:2009

Client	F M Conway Limited	Sampled By	Client
Scheme / Site	FM Conway - Type 1 Testing Nov 2017		
Location	Not Known - Samples submitted by client		
Material Type	Type 1 Unbound Mixture for Subbase	Date Sampled	07/11/2017
Material Spec.	SHW 803	Date Received	07/11/2017
Source	F M Conway, Heathrow	Date Tested	16-22/11/2017

Test Results

Floating particles	FL	(Cm³/kg)	0.5
Concrete, concrete products, mortar, concrete masonry units	Rc	(%)	24
Unbound Aggregate, natural stone, hydraulically bound aggregate	Ru	(%)	16
Clay masonry units (brick & tiles), calcium silicate masonry units, aerated non-floating concrete	Rb	(%)	2.1
Bituminous material	Ra	(%)	56 *
Glass	Rg	(%)	0.0
Other materials Cohesive (clay & soils) Misc: Metals (ferrous & non-ferrous) Non-floating wood & plastics (Of Total sample prior to riffle & wash)	X	(%)	0.0

Drying temperature	(°C)	40
Retained 63mm	(%)	0
Passing 4mm	(%)	34.6

Remarks : Sample does not comply with SHW803 specification – Max bituminous content 50%

Client Name F M Conway Limited
F.A.O. Mark Flint
Vestry House
Sevenoaks

Kent
Postcode TN14 5EL

Signed :

Date : 23/11/2017

Authorised Signatories

P Parker / M Bustin	Compliance Team Leaders	J Nicholls	Senior Technician
J Tanzilli	Laboratory Team Leader	J Durrant	Senior Technician

7. Subbase Type 1 Site Test Data



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Analytical Report Number : 19-74500

Project / Site name:	Southall	Samples received on:	26/11/2019
Your job number:	CG-28308	Samples instructed on:	28/11/2019
Your order number:	3880	Analysis completed by:	09/12/2019
Report Issue Number:	1	Report issued on:	09/12/2019
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

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

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: 19-74500

Project / Site name: Southall

Your Order No: 3880

Lab Sample Number	1375616	1375617	1375618	1375619	1375620
Sample Reference	Conway Import Type S1	Conway Import Type S2	Lagoon Oil Spill S3	Lagoon Oil Spill S4	Lagoon Oil Spill S5
Sample Number	S1	S2	S3	S4	S5
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	25/11/2019	25/11/2019	25/11/2019	25/11/2019	25/11/2019
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
Moisture Content	%	N/A	NONE	11	8.5
Total mass of sample received	kg	0.001	NONE	23	23
				1.0	0.85

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

pH - Automated	pH Units	N/A	MCERTS	10.9	10.8	-	-	-
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3100	2900	-	-	-
Organic Matter	%	0.1	MCERTS	2.8	2.4	-	-	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.59	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.48	0.63	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	1.1	1.8	-	-	-
Fluorene	mg/kg	0.05	MCERTS	1.3	1.9	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	11	22	-	-	-
Anthracene	mg/kg	0.05	MCERTS	2.2	5.3	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	14	31	-	-	-
Pyrene	mg/kg	0.05	MCERTS	12	24	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.8	15	-	-	-
Chrysene	mg/kg	0.05	MCERTS	5.7	11	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	6.9	12	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.9	8.1	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.8	11	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.0	5.5	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.91	1.8	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.5	6.4	-	-	-
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	-	-

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	78	160	-	-	-
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Analytical Report Number: 19-74500

Project / Site name: Southall

Your Order No: 3880

Lab Sample Number	1375616	1375617	1375618	1375619	1375620
Sample Reference	Conway Import Type S1	Conway Import Type S2	Lagoon Oil Spill S3	Lagoon Oil Spill S4	Lagoon Oil Spill S5
Sample Number	S1	S2	S3	S4	S5
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	25/11/2019	25/11/2019	25/11/2019	25/11/2019	25/11/2019
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

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	4.4	3.5	-	-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	9.2	-	-	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	170	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.79	1.2	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.8	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	-	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	-	-
Chromium (III)	mg/kg	1	NONE	24	28	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	29	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	39	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	160	93	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	16	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	36	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	98	-	-	-

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	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	1.9	1.8	3.2	7.7	2.6
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	9.1	15	7.1	7.7	12
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	19	30	26	40	68
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	130	180	190	370	560
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	160	220	230	430	640

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	8.2	24	8.5	5.4	7.3
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	62	150	56	58	63
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	290	500	160	230	230
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	360	680	220	300	300

Analytical Report Number : 19-74500

Project / Site name: Southall

* 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 *
1375616	ay Import Ty	S1	None Supplied	Brown clay and sand with gravel.
1375617	ay Import Ty	S2	None Supplied	Brown clay and sand with gravel.
1375618	agoon Oil Spi	S3	None Supplied	Brown clay and sand with gravel and brick.
1375619	agoon Oil Spi	S4	None Supplied	Brown clay and sand with gravel and rubble.
1375620	agoon Oil Spi	S5	None Supplied	Brown sandy clay with gravel and brick.

Analytical Report Number : 19-74500

Project / Site name: Southall

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
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	L0738-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphencylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In-house method based on BS1377 Part 2, 1990, Classification tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS
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 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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	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.

*8. Topsoil Import - Tim O'Hare Verification Reports &
Bourne Amenity Suppliers Data*



TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Simon Whitlock
Kingston Landscape Group Ltd
Bridge Farm Nursery
Hospital Bridge Road
Twickenham
Middlesex TW2 6LH

25th July 2019
Our Ref: TOHA/19/9083/1/SS
Your Ref: KLG-005981

Dear Sirs

Topsoil Analysis Report: Southall Waterside, Western Access – Eversley Topsoil

We have completed the analysis of the topsoil sample recently submitted, referenced *EV-1*, and have pleasure reporting our findings.

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the sample has been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), together with the consideration of the sample's suitability for general landscape purposes. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification testing, validation testing or waste designation purposes.

SAMPLE EXAMINATION

The sample was described as a very dark grey (Munsell Colour 10YR 3/1), dry, friable, non-calcareous SANDY LOAM with a weakly developed, very fine to occasionally medium granular structure. The sample was slightly stony and contained occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

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www.toha.co.uk

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (sand, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *sandy loam* texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is satisfactory.

The stone content of the sample was low and compliant with the specification.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.1). This pH value would be considered suitable for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 µS/cm) given in BS3882:2015 – Table 1.

Organic Matter and Fertility Status

The sample was well supplied with organic matter and all major plant nutrients. The extractable potassium value (1992 mg/l) exceeds the maximum value specified in the British Standard for Topsoil (BS3882:2015 – Table 1).

The C:N ratio of the sample was acceptable for general landscape purposes.

Potential Contaminants

With reference to the supplied specification (Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*), of the potential contaminants determined, none exceeded their respective guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in BS3882:2015 – Table 1.

CONCLUSION

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the sample has been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), together with the consideration of the sample's suitability for general landscape purposes. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

From the soil examination and subsequent laboratory analysis, the topsoil was described as a strongly alkaline, non-saline, slightly stony, sandy loam with a weakly-developed structure. The sample contained sufficient reserves of organic matter and major plant nutrients, with a high level of extractable potassium. Of the potential contaminants determined, none exceeded their respective guideline values.

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes, provided species with a wide pH tolerance or those known to prefer alkaline soils are selected the soil's physical condition is maintained.

There is potential, with high potassium levels such as that found in this sample, that these levels may have an antagonistic effect on other soil nutrients, particularly magnesium. This can reduce nutrient uptake, leading to plant stress, particularly for establishing specimens. Irrigation of the topsoil may assist in reducing the levels of potassium in the topsoil, reducing the risk to plant establishment.

The topsoil was largely compliant with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*) and *Table 1: Western Access Capping Layer Soil Import Specification* with the exception of the slightly elevated extractable potassium value. On this occasion, this non-compliance is considered minor when reviewed in the context of all the other results.

RECOMMENDATIONS

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, resspreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

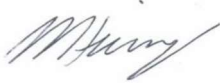
It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of *BS3882:2015*.

Further guidance on the management, preparation and handling of soils is provided in the DEFRA publication *Construction code of practice for the sustainable use of soils on construction sites*, 2009.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



Matthew Heins
BSc (Hons)
Soil Scientist



Ceri Spears
BSc MSc MSoilSci
Senior Associate

For & on behalf of Tim O'Hare Associates LLP



Client:	Kingston Landscape Group Ltd
Project:	Southall Waterside, Western Access
Job:	Imported Topsoil Analysis - Eversley Topsoil
Date:	25/07/2019
Job Ref No:	TOHA/19/9083/1/SS

Sample Reference		Accreditation
Clay (<0.002mm)	%	UKAS
Silt (0.002-0.063mm)	%	UKAS
Sand (0.063-2.0mm)	%	UKAS
Texture Class (UK Classification)	--	UKAS
Stones (2-20mm)	% DW	GLP
Stones (20-50mm)	% DW	GLP
Stones (>50mm)	% DW	GLP

pH Value (1:2.5 water extract)	units	UKAS
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS
Electrical Conductivity (1:2 CaSO ₄ extract)	uS/cm	UKAS
Exchangeable Sodium Percentage	%	UKAS
Organic Matter (LOI)	%	UKAS
Total Nitrogen (Dumas)	%	UKAS
C : N Ratio	ratio	UKAS
Extractable Phosphorus	mg/l	UKAS
Extractable Potassium	mg/l	UKAS
Extractable Magnesium	mg/l	UKAS

Total Arsenic (As)	mg/kg	MCERTS
Total Beryllium (Be)	mg/kg	MCERTS
Total Cadmium (Cd)	mg/kg	MCERTS
Total Chromium (Cr)	mg/kg	MCERTS
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS
Total Copper (Cu)	mg/kg	MCERTS
Total Lead (Pb)	mg/kg	MCERTS
Total Mercury (Hg)	mg/kg	MCERTS
Total Nickel (Ni)	mg/kg	MCERTS
Total Selenium (Se)	mg/kg	MCERTS
Total Vanadium (V)	mg/kg	MCERTS
Total Zinc (Zn)	mg/kg	MCERTS
Water Soluble Boron (B)	mg/kg	MCERTS
Total Cyanide (CN)	mg/kg	MCERTS
Total (mono) Phenols	mg/kg	MCERTS

Naphthalene	mg/kg	MCERTS
Acenaphthylene	mg/kg	MCERTS
Acenaphthene	mg/kg	MCERTS
Fluorene	mg/kg	MCERTS
Phenanthrene	mg/kg	MCERTS
Anthracene	mg/kg	MCERTS
Fluoranthene	mg/kg	MCERTS
Pyrene	mg/kg	MCERTS
Benz(a)anthracene	mg/kg	MCERTS
Chrysene	mg/kg	MCERTS
Benzo(b)fluoranthene	mg/kg	MCERTS
Benzo(k)fluoranthene	mg/kg	MCERTS
Benzo(a)pyrene	mg/kg	MCERTS
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS
Dibenzo(a,h)anthracene	mg/kg	MCERTS
Benzo(g,h,i)perylene	mg/kg	MCERTS
Total PAHs (sum USEPA16)	mg/kg	MCERTS

Aliphatic TPH >C5 - C6	mg/kg	MCERTS
Aliphatic TPH >C6 - C8	mg/kg	MCERTS
Aliphatic TPH >C8 - C10	mg/kg	MCERTS
Aliphatic TPH >C10 - C12	mg/kg	MCERTS
Aliphatic TPH >C12 - C16	mg/kg	MCERTS
Aliphatic TPH >C16 - C21	mg/kg	MCERTS
Aliphatic TPH >C21 - C35	mg/kg	MCERTS
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS
Aromatic TPH >C5 - C7	mg/kg	MCERTS
Aromatic TPH >C7 - C8	mg/kg	MCERTS
Aromatic TPH >C8 - C10	mg/kg	MCERTS
Aromatic TPH >C10 - C12	mg/kg	MCERTS
Aromatic TPH >C12 - C16	mg/kg	MCERTS
Aromatic TPH >C16 - C21	mg/kg	MCERTS
Aromatic TPH >C21 - C35	mg/kg	MCERTS
Aromatic TPH (C5 - C35)	mg/kg	MCERTS

Aliphatic and Aromatic TPH >C5 - C10	mg/kg	MCERTS
Aliphatic and Aromatic TPH >C10 - C35	mg/kg	MCERTS

Asbestos Screen	--	ISO 17025
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SL = SANDY LOAM

Visual Examination

The sample was described as a very dark grey (Munsell Colour 10YR 3/1), dry, friable, non-calcareous SANDY LOAM with a weakly developed, very fine to occasionally medium granular structure. The sample was slightly stony and contained occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

Results of analysis should be read in conjunction with the report they were issued with

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EV-1
10
11
79
SL
4
0
0

8.1
1158
3127
4.1
7.6
0.32
14
103
1992
258

13
0.48
< 0.2
25
< 4.0
18
21
< 0.3
18
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53
50
3.4
< 1
< 1

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< 10
< 10

< 1.0
< 10

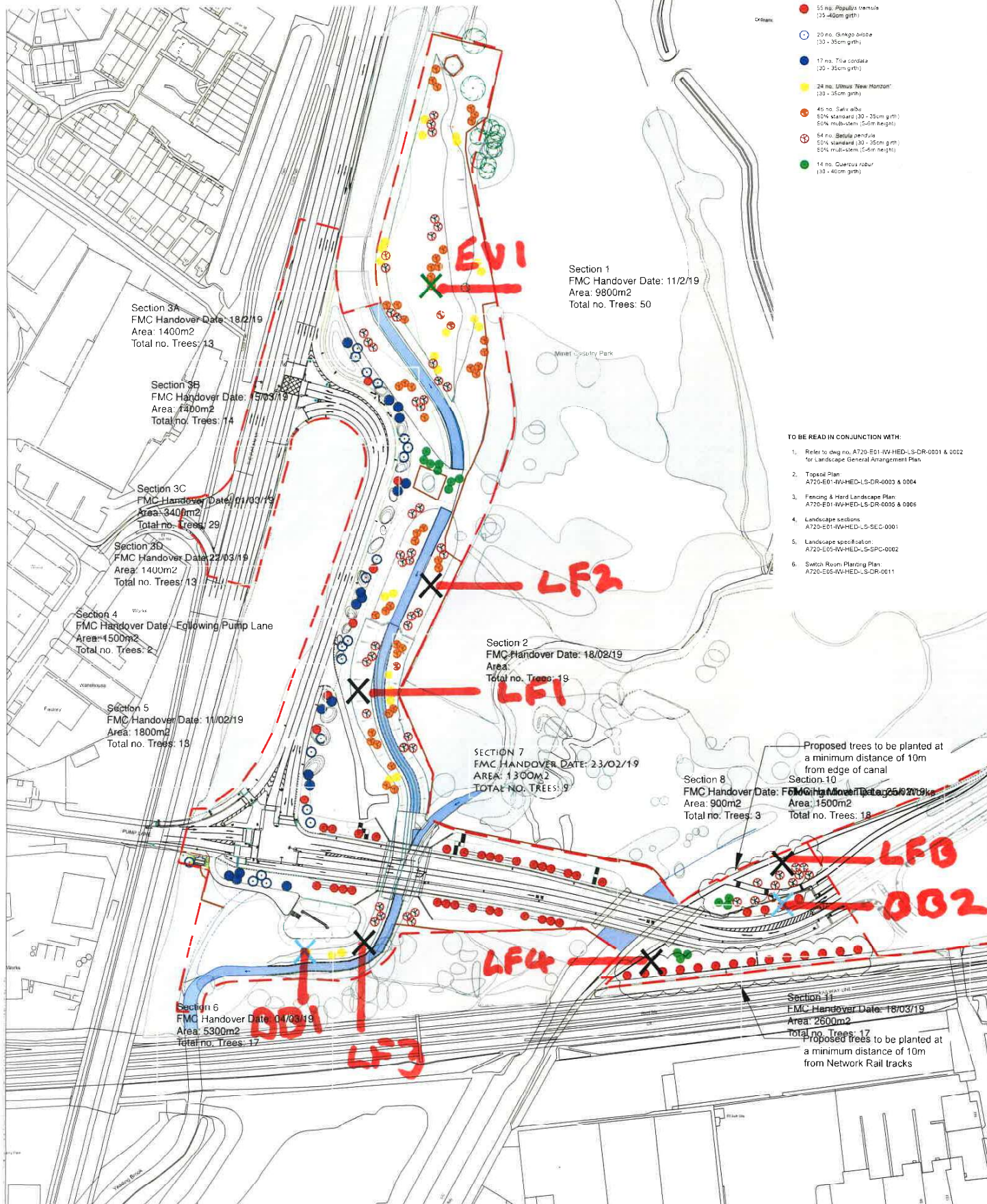
Not-detected

Matthew Heins
Matthew Heins
BSc (Hons)
Soil Scientist

X:EVERSLEY - 1 NO.

X:BAT & BALL - 2 NO.

X:LOW FERTILITY - 5 NO.





TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Simon Whitlock
Kingston Landscape Group Ltd
Bridge Farm Nursery
Hospital Bridge Road
Twickenham
Middlesex, TW2 6LH

22nd August 2019

Our Ref: TOHA/19/9083/2/SS/Rev.1

Your Ref: KLG-005981

Dear Sirs

Topsoil Analysis Report: Southall Waterside, Western Access – Bat & Ball Topsoil

We have completed the analysis of the topsoil samples recently submitted, referenced *BB-1* and *BB-2*, and have pleasure reporting our findings.

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the samples have been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), together with the consideration of the samples' suitability for general landscape purposes. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

This report presents the results of analysis for the samples submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification testing, validation testing or waste designation purposes.

SAMPLE EXAMINATION

The samples were reasonably consistent in appearance and were described as very dark grey (Munsell Colour 10YR 3/1), moist to slightly moist, friable, non-calcareous LOAMY SANDS to SANDS with weakly developed, very fine to medium sub-angular blocky structures*. The samples were slightly stony and contained frequent organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

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www.toha.co.uk

ANALYTICAL SCHEDULE

The samples were submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (sand, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

Sample *BB-1* fell into the *sand* texture class and would be described as light in texture. Such soils typically have good aeration and drainage properties, but can possess poor water and nutrient retention capacities. As a consequence they often have a greater risk of excessive leaching and drought, particularly during prolonged dry periods.

Sample *BB-2* fell into the *loamy sand* texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is satisfactory.

The samples were virtually stone-free and as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The samples were strongly alkaline in reaction (pH 8.5), with pH values that would be considered suitable for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) values (water extract) were low, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 µS/cm) given in BS3882:2015 – Table 1.

Organic Matter and Fertility Status

Sample *BB-1* was adequately supplied with all major plant nutrients but was slightly deficient in organic matter.

Sample *BB-2* was adequately supplied with organic matter and all major plant nutrients.

The C:N ratios of the samples were acceptable for general landscape purposes.

Potential Contaminants

Of the potential contaminants determined, none exceeded their respective guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the samples have been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), together with the consideration of the samples' suitability for general landscape purposes. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

From the soil examination and subsequent laboratory analysis, the samples were described as a strongly alkaline, non-saline, virtually stone-free sand and loamy sand with a weakly developed structure. The sample contained sufficient reserves of organic matter and major plant nutrients. Of the potential contaminants determined, none exceeded their respective guideline values.

Sample BB-1

Based on our findings, the topsoil represented by Sample *BB-1* would be considered suitable for general landscape purposes provided species with a broad pH tolerance are selected and the physical condition of the soil is satisfactory and the organic matter deficiency is addressed.

The topsoil was largely compliant with the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), with the exception of the slightly elevated sand content and slightly low organic matter content. On this occasion, these non-compliances are considered minor provided they are addressed by an appropriate compost application (see 'Recommendations' below).

The topsoil was fully compliant with the requirements of *Table 1: Western Access Capping Layer Soil Import Specification*.

Sample BB-2

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes, provided species with a wide pH tolerance or those known to prefer alkaline soils are selected the soil's physical condition is maintained.

The topsoil was fully compliant with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*) and *Table 1: Western Access Capping Layer Soil Import Specification*.

RECOMMENDATIONS

Compost Application

To address the deficiency in organic matter and improve nutrient and water retention, we recommend applying and incorporating suitable compost (e.g. PAS100:2011 /Landscape Institute/WRAP grade (10mm screened) green compost) at a rate of **15%** by volume, ensuring the soil is dry and friable.

For planting purposes, the compost should be incorporated to a depth of 200mm and for grass areas the compost should be worked into the upper 100mm.

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, resspreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of BS3882:2015.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



Aaron Cross
BSc MSc
Graduate Soil Scientist



Ceri Spears
BSc MSc MISOilSci
Senior Associate

For & on behalf of Tim O'Hare Associates LLP



Client:	Kingston Landscape Group Ltd
Project:	Southall Waterside, Western Access
Job:	Imported Topsoil Analysis - Bat & Ball Topsoil
Date:	22/08/2019
Job Ref No:	TOHA/19/9083/2/SS/Rev.1

Sample Reference		Accreditation
Clay (<0.002mm)	%	UKAS
Silt (0.002-0.063mm)	%	UKAS
Sand (0.063-2.0mm)	%	UKAS
Texture Class (UK Classification)	--	UKAS
Stones (2-20mm)	% DW	GLP
Stones (20-50mm)	% DW	GLP
Stones (>50mm)	% DW	GLP

pH Value (1:2.5 water extract)	units	UKAS
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS
Electrical Conductivity (1:2 CaSO ₄ extract)	uS/cm	UKAS
Exchangeable Sodium Percentage	%	UKAS
Organic Matter (LOI)	%	UKAS
Total Nitrogen (Dumas)	%	UKAS
C : N Ratio	ratio	UKAS
Extractable Phosphorus	mg/l	UKAS
Extractable Potassium	mg/l	UKAS
Extractable Magnesium	mg/l	UKAS

Total Arsenic (As)	mg/kg	MCERTS
Total Beryllium (Be)	mg/kg	MCERTS
Total Cadmium (Cd)	mg/kg	MCERTS
Total Chromium (Cr)	mg/kg	MCERTS
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS
Total Copper (Cu)	mg/kg	MCERTS
Total Lead (Pb)	mg/kg	MCERTS
Total Mercury (Hg)	mg/kg	MCERTS
Total Nickel (Ni)	mg/kg	MCERTS
Total Selenium (Se)	mg/kg	MCERTS
Total Vanadium (V)	mg/kg	MCERTS
Total Zinc (Zn)	mg/kg	MCERTS
Water Soluble Boron (B)	mg/kg	MCERTS
Total Cyanide (CN)	mg/kg	MCERTS
Total (mono) Phenols	mg/kg	MCERTS

Naphthalene	mg/kg	MCERTS
Acenaphthylene	mg/kg	MCERTS
Acenaphthene	mg/kg	MCERTS
Fluorene	mg/kg	MCERTS
Phenanthrene	mg/kg	MCERTS
Anthracene	mg/kg	MCERTS
Fluoranthene	mg/kg	MCERTS
Pyrene	mg/kg	MCERTS
Benz(a)anthracene	mg/kg	MCERTS
Chrysene	mg/kg	MCERTS
Benzo(b)fluoranthene	mg/kg	MCERTS
Benzo(k)fluoranthene	mg/kg	MCERTS
Benzo(a)pyrene	mg/kg	MCERTS
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS
Dibenzo(a,h)anthracene	mg/kg	MCERTS
Benzo(a,h,i)perylene	mg/kg	MCERTS
Total PAHs (sum USEPA16)	mg/kg	MCERTS

Aliphatic TPH >C5 - C6	mg/kg	MCERTS
Aliphatic TPH >C6 - C8	mg/kg	MCERTS
Aliphatic TPH >C8 - C10	mg/kg	MCERTS
Aliphatic TPH >C10 - C12	mg/kg	MCERTS
Aliphatic TPH >C12 - C16	mg/kg	MCERTS
Aliphatic TPH >C16 - C21	mg/kg	MCERTS
Aliphatic TPH >C21 - C35	mg/kg	MCERTS
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS
Aromatic TPH >C5 - C7	mg/kg	MCERTS
Aromatic TPH >C7 - C8	mg/kg	MCERTS
Aromatic TPH >C8 - C10	mg/kg	MCERTS
Aromatic TPH >C10 - C12	mg/kg	MCERTS
Aromatic TPH >C12 - C16	mg/kg	MCERTS
Aromatic TPH >C16 - C21	mg/kg	MCERTS
Aromatic TPH >C21 - C35	mg/kg	MCERTS
Aromatic TPH (C5 - C35)	mg/kg	MCERTS

Aliphatic and Aromatic TPH >C5 - C10	mg/kg	MCERTS
Aliphatic and Aromatic TPH >C10 - C35	mg/kg	MCERTS

Asbestos Screen	--	ISO 17025
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LS = LOAMY SAND
S = SAND

Visual Examination

The samples were reasonably consistent in appearance and were described as very dark grey (Munsell Colour 10YR 3/1), moist to slightly moist, friable, non-calcareous LOAMY SANDS and SANDS with weakly developed fine granular structures. The samples were virtually stone-free and contained frequent organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

Results of analysis should be read in conjunction with the report they were issued with

The contents of this certificate shall not be reproduced without the express written permission of Tim O'Hare Associates LLP.

BB-1	BB-2
------	------

5	9
5	9
90	82
S	LS
3	3
0	0
0	0

8.5	8.5
231	428
2262	2426
1.5	2.0
2.8	5.7
0.16	0.32
10	10
49	81
402	727
137	160

11	14
0.54	0.58
0.5	< 0.2
21	33
< 4.0	< 4.0
28	21
56	23
0.7	< 0.3
17	21
< 1.0	< 1.0
42	58
70	70
0.9	2.9
< 1	< 1
< 1	< 1

< 0.05	< 0.05
< 0.05	< 0.05
< 0.05	< 0.05
< 0.05	< 0.05
0.49	< 0.05
< 0.05	< 0.05
1.10	< 0.05
0.94	< 0.05
0.55	< 0.05
0.56	< 0.05
0.6	< 0.05
0.34	< 0.05
0.46	< 0.05
0.29	< 0.05
< 0.05	< 0.05
0.35	< 0.05
5.7	< 0.8

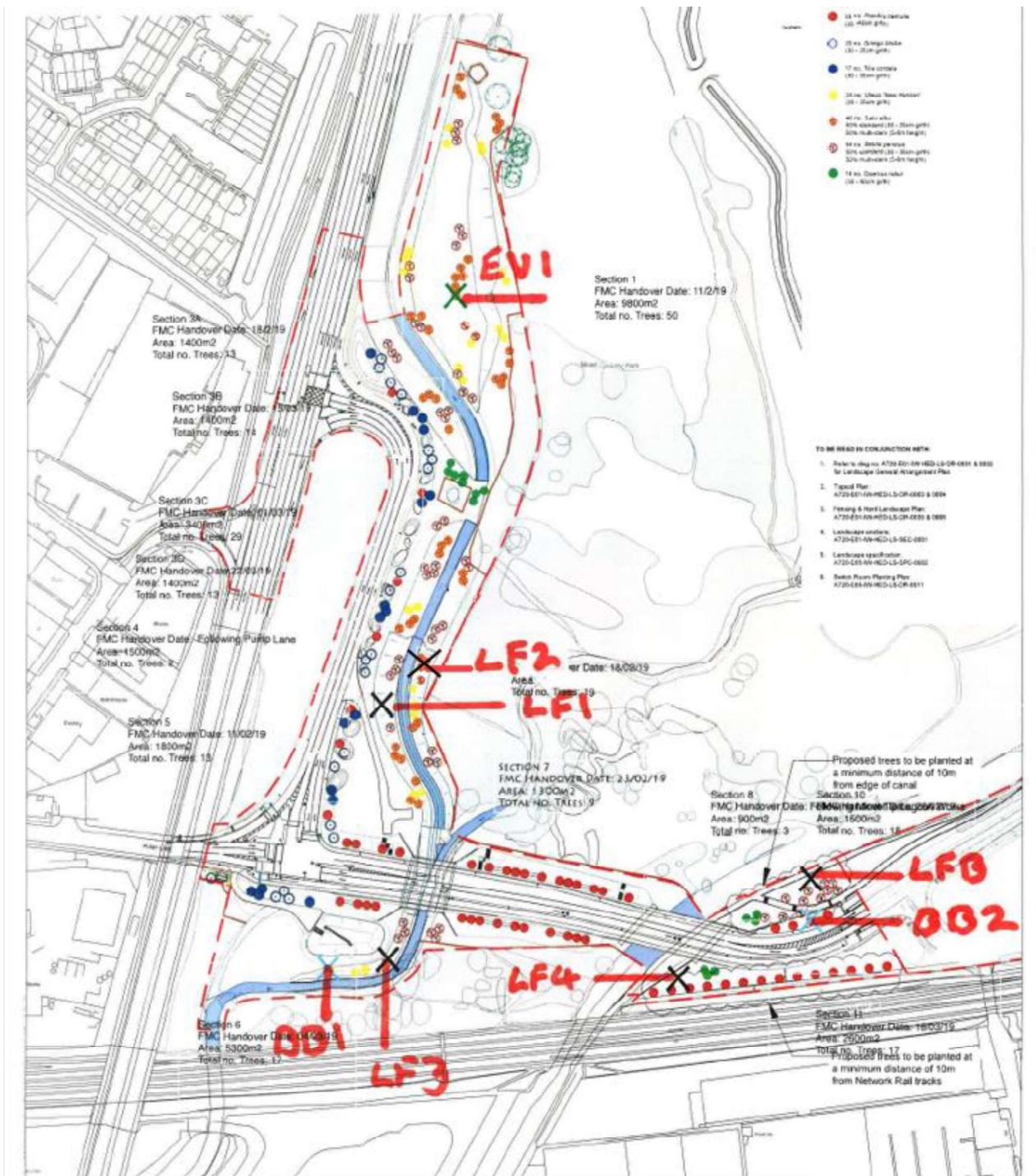
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< 1.0	< 1.0
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53	12
76	14
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< 0.001	< 0.001
< 0.001	< 0.001
< 1.0	< 1.0
< 2.0	< 2.0
< 10	< 10
12	< 10
17	< 10

< 1.0	< 1.0
93	14

Not-detected	Not-detected
--------------	--------------

Aaron Cross

Aaron Cross
BSc MSc
Graduate Soil Scientist





TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Simon Whitlock
Kingston Landscape Group Ltd
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22nd August 2019
Our Ref: TOHA/19/9083/3/SS/Rev.1
Your Ref: KLG-005981

Dear Sirs

Topsoil Analysis Report: Southall Waterside, Western Access – Low Fertility Topsoil

We have completed the analysis of the topsoil samples recently submitted, referenced *LF1-1*, *LF-2*, *LF-3*, *LF-4* and *LF-5*, and have pleasure reporting our findings.

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the samples have been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Specific Purpose Low Fertility Topsoil*), together with the consideration of the samples' suitability for landscape purposes that require low fertility topsoil. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

This report presents the results of analysis for the samples submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification testing, validation testing or waste designation purposes.

SAMPLE EXAMINATION

The samples were reasonably consistent in appearance and were described as dark yellowish brown (Munsell Colour 10YR 4/4), dry to slightly moist, friable, non-calcareous single grain SANDS*. The samples were slightly stony and contained occasional organic fines. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of disturbed samples. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

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ANALYTICAL SCHEDULE

The samples were submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (sand, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The samples fell into the *sand* texture class and the total proportion of sand in these samples exceeded the maximum recommended amount specified in the *BS3882:2015 – Figure 1*. Such soils typically have good aeration and drainage properties but can possess poor water and nutrient retention capacities. As a consequence, they often have a greater risk of excessive leaching and drought particularly during dry periods.

The stone contents of the samples were low and, as such, stones are unlikely to constitute a limitation for low fertility landscape purposes

pH and Electrical Conductivity Values

The samples were alkaline to strongly alkaline in reaction (pH 7.9 to pH 8.4), with a pH range would be considered suitable for low fertility landscape purposes provided species with a wide pH tolerance or those known to prefer alkaline soils are selected.

The electrical conductivity (salinity) values (water extract) were low, which indicates that soluble salts were not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (*BS3882* requirement) fell below the maximum specified value (3300 µS/cm) given in *BS3882:2015 – Table 1*.

Organic Matter and Fertility Status

The table below summarises the organic matter and extractable phosphorus content for each sample in relation to their compliance to the British Standard for Topsoil (*BS3882:2015 – Specific Purpose Low Fertility*):

	LF-1	LF-2	LF-3	LF-4	LF-5
Organic Matter	✓	✓	x	x	✓
Extractable Phosphorus	✓	✓	✓	✓	✓

✓ - compliant; x – non-compliant

Whilst total nitrogen is not a parameter considered by *BS3882:2015* under the requirements for *Specific Purpose, Low Fertility Topsoil*, levels of this nutrient were assessed as it is important for seed germination. The samples were found to contain low levels of this nutrient and may therefore benefit from a supplementary compost application at a low rate (see comments in conclusion below). Sufficient reserves of extractable potassium and extractable magnesium recorded in all samples.

The C:N ratios of the samples were acceptable for low fertility landscape purposes.

Potential Contaminants

Of the potential contaminants determined, none exceeded their respective guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

In accordance with Clause 610 (*Topsoil Analysis*) of the supplied Q28 specification (*Southall Waterside Western Access Soft Landscape Specification, Doc Ref. A720-E01-IW-HED-LS-SPC-000*), the samples have been assessed against the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Specific Purpose Low Fertility Topsoil*), together with the consideration of the samples' suitability for landscape purposes requiring low fertility topsoil. In addition, the results have been reviewed against Table 1: *Maximum permissible concentrations for imported capping layer soils* in the supplied *Western Access Capping Layer Soil Import Specification*.

From the soil examination and subsequent laboratory analysis, the samples were described as alkaline to strongly alkaline, non-saline sands with weak structures and low stone contents. The samples contained adequate levels of extractable phosphorus, extractable potassium and extractable magnesium, but there were slight deficiencies in organic matter and total nitrogen. Of the potential contaminants determined, none exceeded their respective guideline values.

The overall fertility status of the samples is considered to be low and suitable for landscape types requiring infertile soils. These samples do however contain low levels of total nitrogen, which is likely to result in a slow establishment of the grass sward. A light compost application may be beneficial to aid in seed establishment and mitigate the low water and nutrient holding capacity associated with high sand content soil. Species tolerant of alkaline soils should be selected.

The samples were largely compliant with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Low fertility Topsoil*) and Table 1: *Western Access Capping Layer Soil Import Specification* with the exception of the high sand content (all samples) and the low organic matter contents of Sample *LF-3* and *LF-4*.

RECOMMENDATIONS

Compost for Species-Rich Grassland Establishment

To help promote effective seed establishment, we recommend applying and incorporating suitable compost (e.g. PAS100:2011 /Landscape Institute/WRAP grade (10mm screened) green compost) into the upper 100mm of topsoil (ensuring the soil is dry and friable) at a rate of **10%** by volume. This application should address the deficiencies in organic matter and total nitrogen.

Soil Handling Recommendations

It is important to maintain the physical condition of the soils and avoid structural damage during all phases of soil handling (e.g. cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when the soils are reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soils are not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of BS3882:2015.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



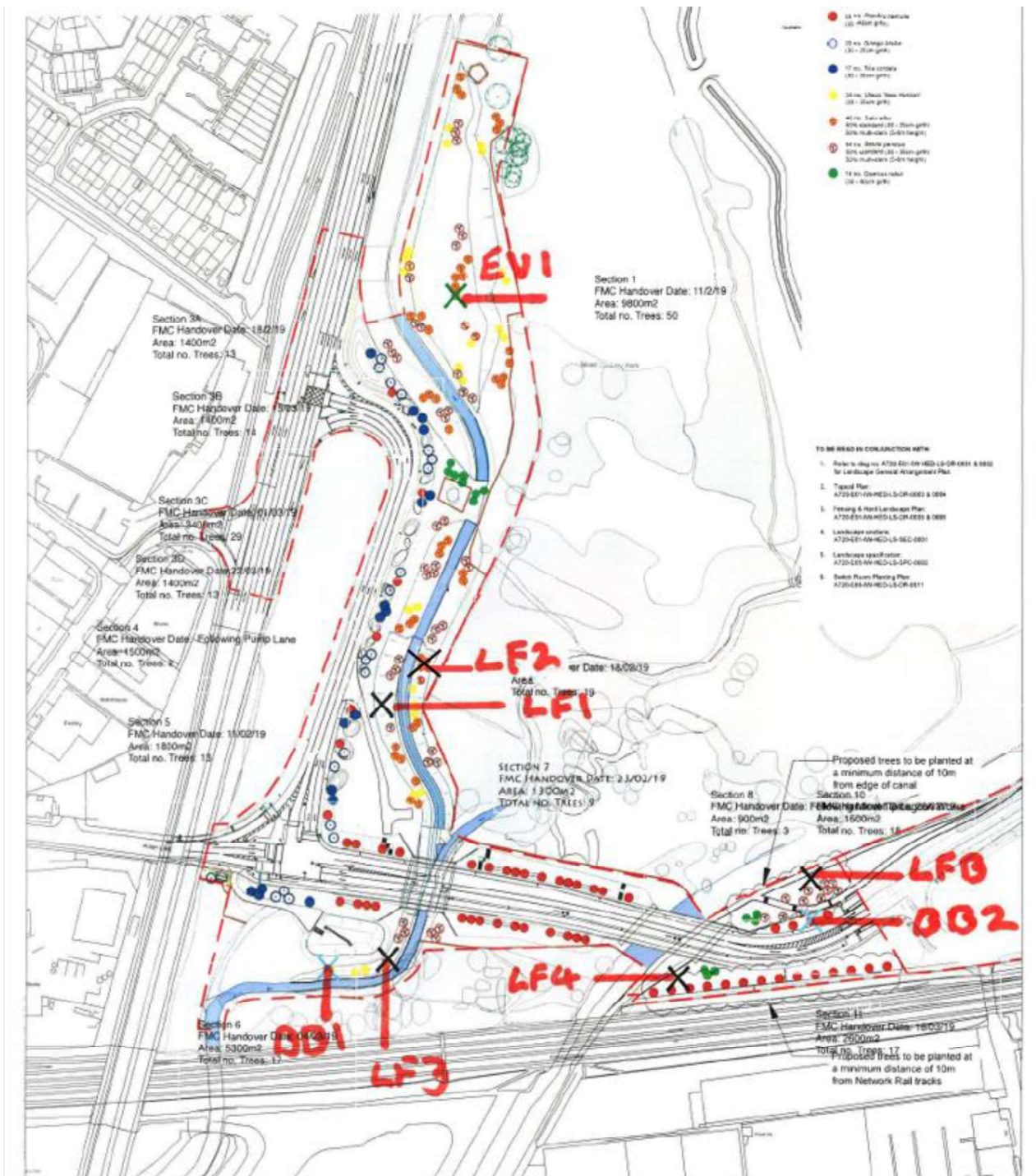
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For & on behalf of Tim O'Hare Associates LLP





Material: 5mm Premium TS6 Topsoil
Source: Bourne Amenity Ltd
Date Tested: 27/06/2019
Tested Against: BS3882:2015 Multipurpose Grade
Tested By: NRM Laboratories (Report ID 58349-19)

Parameter	Unit	BS3882:2015 Multipurpose Range	Result	Compliance
Texture:				
Clay (<0.002mm)	% w/w	5 - 30%	6	Yes
Silt (0.002 - 0.05mm)	% w/w	0 - 65%	6	Yes
Sand (0.05 - 2.0mm)	% w/w	20 - 90%	88	Yes
Textual Class:		Sandy Loam		
Stones (2 - 20mm)	% w/w DW	0 - 30%	0.0	Yes
Stones (20-50mm)	% w/w DW	0 - 10%	0.0	Yes
Stones (>50mm)	% w/w DW	0%	0.0	Yes
Sand Fraction (USGA Sieve Sizes):				
Very Fine Sand (0.05 - 0.15mm)	% w/w	n/a	10	--
Fine Sand (0.15 - 0.25mm)	% w/w	n/a	23	--
Medium Sand (0.25 - 0.50mm)	% w/w	n/a	38	--
Coarse Sand (0.50 - 1.0mm)	% w/w	n/a	14	--
Very Coarse Sand (1.0 - 2.0mm)	% w/w	n/a	3	--
Organic Matter (LOI)	% w/w	3.0 - 20.0	3.7	Yes
Ph		5.5 - 8.5	7.9	Yes
Exchangeable Sodium Percentage	%	< 15%	4.2	Yes
Phytotoxic Contaminants:				
Total Zinc (BS3882:2015)	mg/kg	< 300	41.8	Yes
Total Copper (BS3882:2015)	mg/kg	< 200	13.9	Yes
Total Nickel (S4UL)	mg/kg	< 180	<10	Yes
Available Nutrients:				
Nitrogen	mg/l	>0.15	0.25	Yes
Phosphorus	mg/l	16 - 140	38	Yes
Potassium	mg/l	121 - 1500	754	Yes
Magnesium	mg/l	51 - 600	103	Yes
Carbon:Nitrogen Ratio	:1	< 20:1	8.58	Yes
Calcium Carbonate	% m/m	n/a	0.6	--
Additional Analysis:				
Electrical Conductivity (1:2.5 water extract)	µS/cm	1500	546	Yes
Electrical Conductivity (1:2 CaSO4 extract)	µS/cm	3300	2711	Yes
Saturated Hydraulic Conductivity	mm/hr	n/a	9	--
Visible Contaminants:				
Plastics (>2.0mm)	% w/w	< 0.5	0.00	Yes
Sharps (>2.0mm)	% w/w	< 0.25	0.00	Yes

Bourne Amenity Ltd, The Wharf, Rye Road, Newenden, Kent TN18 5QG

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Parameter	Unit	Guidelines	Value	Result	Compliance
Heavy Metals and Hydrocarbons					
Total Antimony (Sb)	mg/kg	S4UL	<500	0.3	Yes
Total Arsenic (As)	mg/kg	S4UL	<37	9.2	Yes
Total Barium (Ba)	mg/kg	S4UL	<1300	31.1	Yes
Total Beryllium (Be)	mg/kg	S4UL	<1.7	0.3	Yes
Total Cadmium (Cd)	mg/kg	S4UL	<11	0.10	Yes
Total Chromium III (Cr)	mg/kg	S4UL	<910	13.3	Yes
Hexavalent Chromium (Cr VI)	mg/kg	S4UL	<6	<0.1	Yes
Total Cyanide (Cn)	mg/kg	Dutch Action Value (DAV)	<20	<1	Yes
Total Lead (Pb)	mg/kg	SP1010 (Defra Category 4)	<200	23.6	Yes
Total Mercury (Hg)	mg/kg	S4UL	<1.2	<0.2	Yes
Total (mono) Phenols	mg/kg	S4UL^	<550	<1	Yes
Total Selenium (Se)	mg/kg	S4UL	<250	0.12	Yes
Total Vanadium (V)	mg/kg	S4UL	<410	22.7	Yes
Water Soluble Boron (B)	mg/kg	S4UL	<290	1.5	Yes
Water Soluble Sulphate (SO4)	g/l	BRE Special Digest 1:2005 (BRE)	<1.2	0.02	Yes
Acenaphthylene	mg/kg	S4UL^	<420	<0.05	Yes
Acenaphthene	mg/kg	S4UL^	<510	<0.05	Yes
Anthracene	mg/kg	S4UL^	<5400	<0.05	Yes
Benzo (a) Anthracene	mg/kg	S4UL^	<11	0.2	Yes
Benzo (a) Pyrene	mg/kg	S4UL^	<2.7	0.2	Yes
Benzo (b) Fluoranthene	mg/kg	S4UL^	<3.3	0.2	Yes
Benzo (g,h,i) Perylene	mg/kg	S4UL^	<340	0.2	Yes
Benzo (k) Fluoranthene	mg/kg	S4UL^	<93	0.1	Yes
Chrysene	mg/kg	S4UL^	<22	0.2	Yes
Dibenzo (a,h) Anthracene	mg/kg	S4UL^	<0.28	<0.1	Yes
Fluoranthene	mg/kg	S4UL^	<560	0.2	Yes
Fluorene	mg/kg	S4UL^	<400	<0.05	Yes
Indeno (1,2,3-cd) Pyrene	mg/kg	S4UL^	<36	0.2	Yes
Naphthalene	mg/kg	S4UL^	<5.6	<0.05	Yes
Phenanthrene	mg/kg	S4UL^	<220	<0.1	Yes
Pyrene	mg/kg	S4UL^	<1200	0.2	Yes
Aliphatic TPH (C5 - C6)	mg/kg	S4UL^	<78	<0.1	Yes
Aliphatic TPH (C6 - C8)	mg/kg	S4UL^	<230	<0.1	Yes
Aliphatic TPH (C8 - C10)	mg/kg	S4UL^	<65	<0.1	Yes
Aliphatic TPH (C10 - C12)	mg/kg	S4UL^	<330	<1	Yes
Aliphatic TPH (C12 - C16)	mg/kg	S4UL^	<2400	7.0	Yes
Aliphatic TPH (C16 - C21)	mg/kg	S4UL^	<92000	5.2	Yes
Aliphatic TPH (C21 - C35)	mg/kg	S4UL^		12.1	Yes
Aliphatic TPH (C35 - C44)	mg/kg	S4UL^	<92000	11.1	Yes
Aromatic TPH (C5 - C7)	mg/kg	S4UL^	<140	<0.01	Yes
Aromatic TPH (C7 - C8)	mg/kg	S4UL^	<290	<0.01	Yes
Aromatic TPH (C8 - C10)	mg/kg	S4UL^	<83	<0.1	Yes
Aromatic TPH (C10 - C12)	mg/kg	S4UL^	<180	<1	Yes
Aromatic TPH (C12 - C16)	mg/kg	S4UL^	<330	6.7	Yes
Aromatic TPH (C16 - C21)	mg/kg	S4UL^	<540	5.8	Yes
Aromatic TPH (C21 - C35)	mg/kg	S4UL^	<1500	<1	Yes
Aromatic TPH (C35 - C44)	mg/kg	S4UL^	<1500	<1	Yes
Benzene	mg/kg	S4UL^	<0.17	<0.02	Yes
Toluene	mg/kg	S4UL^	<290	<0.2	Yes
Ethylbenzene	mg/kg	S4UL^	<110	>0.04	Yes
O-xylene	mg/kg	S4UL^	<140	<0.1	Yes
M-xylene	mg/kg	S4UL^	<140	<0.2	Yes
P-xylene	mg/kg	S4UL^	<130		Yes
MTBE	mg/kg	Sail Guideline Values	<470	<0.05	Yes
Asbestos	mg/kg	Control of Asbestos Regulations 2006	Absent	Absent	Yes