



Analytical Report Number : 17-63012

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 *
831692	WGUCPA1	None Supplied	None Supplied	Brown clay and loam.

Analytical Report Number : 17-63012

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
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS



Analytical Report Number : 17-63012

Project / Site name: Southall Western Access

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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 : 17-65049

Project / Site name:	Southall	Samples received on:	25/10/2017
Your job number:	CG-28308	Samples instructed on:	25/10/2017
Your order number:	4586	Analysis completed by:	01/11/2017
Report Issue Number:	1	Report issued on:	01/11/2017
Samples Analysed:	2 soil samples		

Signed: _____

Vineetha Meethale Vettil
Senior Account 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: 17-65049

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				842921	842922			
Sample Reference				Stockpile 12	Stockpile 13			
Sample Number				ES1	ES1			
Depth (m)				None Supplied	None Supplied			
Date Sampled				23/10/2017	23/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	17			
Moisture Content	%	N/A	NONE	20	14			
Total mass of sample received	kg	0.001	NONE	1.4	1.2			

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	52	0.6			

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	0.76	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.3	1.1			

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.7	0.4			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	51	160			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	230	46			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	< 0.3			

Monoaromatics

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
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Analytical Report Number : 17-65049

Project / Site name: Southall

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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 *
842921	Stockpile 12	ES1	None Supplied	Brown clay with gravel and rubble.
842922	Stockpile 13	ES1	None Supplied	Light brown clay with gravel and stones.

Analytical Report Number : 17-65049

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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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 dphenylcarbazine 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.

Stockpile 13

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Analytical Report Number : 17-65049

Project / Site name:	Southall	Samples received on:	25/10/2017
Your job number:	CG-28308	Samples instructed on:	25/10/2017
Your order number:	4586	Analysis completed by:	01/11/2017
Report Issue Number:	1	Report issued on:	01/11/2017
Samples Analysed:	2 soil samples		

Signed: _____

Vineetha Meethale Vettil
Senior Account 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.

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

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Analytical Report Number: 17-65049

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				842921	842922			
Sample Reference				Stockpile 12	Stockpile 13			
Sample Number				ES1	ES1			
Depth (m)				None Supplied	None Supplied			
Date Sampled				23/10/2017	23/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Stone Content				%	0.1	NONE	< 0.1	17
Moisture Content				%	N/A	NONE	20	14
Total mass of sample received				kg	0.001	NONE	1.4	1.2

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	52	0.6			

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	0.76	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.3	1.1			

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.7	0.4			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	51	160			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	230	46			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	< 0.3			

Monoaromatics

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
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Analytical Report Number : 17-65049

Project / Site name: Southall

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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 *
842921	Stockpile 12	ES1	None Supplied	Brown clay with gravel and rubble.
842922	Stockpile 13	ES1	None Supplied	Light brown clay with gravel and stones.

Analytical Report Number : 17-65049

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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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 diphénylcarbazine 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.

Stockpile 16

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Analytical Report Number : 17-64726

Project / Site name:	Southall	Samples received on:	20/10/2017
Your job number:	CG-28308	Samples instructed on:	20/10/2017
Your order number:	4586	Analysis completed by:	30/10/2017
Report Issue Number:	1	Report issued on:	30/10/2017
Samples Analysed:	2 soil samples		

Signed: 

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

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

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

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

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

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Analytical Report Number: 17-64726

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				841158	841159			
Sample Reference				YBBA 1	YBBA 2			
Sample Number				Granular	Cohesive			
Depth (m)				None Supplied	None Supplied			
Date Sampled				19/10/2017	19/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	18	< 0.1			
Moisture Content	%	N/A	NONE	3.9	26			
Total mass of sample received	kg	0.001	NONE	1.5	1.5			

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	4.6	14			

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			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.4	26			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			

Monoaromatics

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
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Analytical Report Number : 17-64726

Project / Site name: Southall

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Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
841158	YBBA 1	Granular	None Supplied	Grey clay and sand with gravel and stones.
841159	YBBA 2	Cohesive	None Supplied	Brown clay.

Analytical Report Number : 17-64726

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
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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

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Stockpile 17

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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.

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	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.



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Analytical Report Number : 19-47040

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:	6 WAC 10:1 SAMPLES		

Signed:

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

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

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

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

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

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

i2 Analytical

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Waste Acceptance Criteria Analytical Results								
Report No:	19-47040							
					Client: CARDGEO			
Location	Southall							
Lab Reference (Sample Number)	1252921 / 1252922				Landfill Waste Acceptance Criteria			
Sampling Date	18/06/2019				Limits			
Sample ID	SP17B 1				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)								
Solid Waste Analysis								
TOC (%)**	3.1				3%	5%	6%	
Loss on Ignition (%) **	6.1				--	--	10%	
BTEX (µg/kg) **	< 10				6000	--	--	
Sum of PCBs (mg/kg) **	0.059				1	--	--	
Mineral Oil (mg/kg)	2000				500	--	--	
Total PAH (WAC-17) (mg/kg)	120				100	--	--	
pH (units)**	7.7				--	>6	--	
Acid Neutralisation Capacity (mol / kg)	14				--	To be evaluated	To be evaluated	
Eluate Analysis								
	10:1			10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *	0.0141			0.128	0.5	2	25	
Barium *	0.0295			0.269	20	100	300	
Cadmium *	< 0.0001			< 0.0008	0.04	1	5	
Chromium *	0.0020			0.018	0.5	10	70	
Copper *	0.029			0.26	2	50	100	
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2	
Molybdenum *	0.0263			0.239	0.5	10	30	
Nickel *	0.0075			0.068	0.4	10	40	
Lead *	0.0034			0.031	0.5	10	50	
Antimony *	0.040			0.36	0.06	0.7	5	
Selenium *	< 0.0040			< 0.040	0.1	0.5	7	
Zinc *	0.0030			0.027	4	50	200	
Chloride *	13			110	800	4000	25000	
Fluoride	1.0			9.5	10	150	500	
Sulphate *	240			2200	1000	20000	50000	
TDS*	330			3000	4000	60000	100000	
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-	
DOC	21.6			197	500	800	1000	
Leach Test Information								
Stone Content (%)	< 0.1							
Sample Mass (kg)	1.2							
Dry Matter (%)	77							
Moisture (%)	23							
Results are expressed on a dry weight basis, after correction for moisture content where applicable.								
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation								
** = UKAS accredited (liquid eluate analysis only)								
** = MCERTS accredited								

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



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Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



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Waste Acceptance Criteria Analytical Results							
Report No:		19-47040					
					Client: CARDGEO		
Location		Southall					
Lab Reference (Sample Number)		1252925 / 1252926			Landfill Waste Acceptance Criteria		
Sampling Date		18/06/2019			Limits		
Sample ID		SP17B 3			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)							
Solid Waste Analysis							
TOC (%)**		3.1			3%	5%	6%
Loss on Ignition (%) **		6.4			--	--	10%
BTEX (µg/kg) **		< 10			6000	--	--
Sum of PCBs (mg/kg) **		0.042			1	--	--
Mineral Oil (mg/kg)		1600			500	--	--
Total PAH (WAC-17) (mg/kg)		290			100	--	--
pH (units)**		7.0			--	>6	--
Acid Neutralisation Capacity (mol / kg)		0.0000			--	To be evaluated	To be evaluated
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)		mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *		0.0132		0.115	0.5	2	25
Barium *		0.0311		0.270	20	100	300
Cadmium *		< 0.0001		< 0.0008	0.04	1	5
Chromium *		0.0013		0.012	0.5	10	70
Copper *		0.025		0.21	2	50	100
Mercury *		< 0.0005		< 0.0050	0.01	0.2	2
Molybdenum *		0.0228		0.198	0.5	10	30
Nickel *		0.0067		0.059	0.4	10	40
Lead *		0.0042		0.036	0.5	10	50
Antimony *		0.026		0.22	0.06	0.7	5
Selenium *		< 0.0040		< 0.040	0.1	0.5	7
Zinc *		0.0036		0.032	4	50	200
Chloride *		14		120	800	4000	25000
Fluoride		0.69		5.9	10	150	500
Sulphate *		220		1900	1000	20000	50000
TDS*		330		2900	4000	60000	100000
Phenol Index (Monhydric Phenols) *		< 0.010		< 0.10	1	-	-
DOC		17.8		154	500	800	1000
Leach Test Information							
Stone Content (%)		< 0.1					
Sample Mass (kg)		1.1					
Dry Matter (%)		78					
Moisture (%)		22					
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					** = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results								
Report No:		19-47040						
					Client: CARDGEO			
Location		Southall						
Lab Reference (Sample Number)		1252927 / 1252928			Landfill Waste Acceptance Criteria			
Sampling Date		18/06/2019			Limits			
Sample ID		SP17C 1			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)								
Solid Waste Analysis								
TOC (%)**		2.8			3%	5%	6%	
Loss on Ignition (%) **		5.5			--	--	10%	
BTEX (µg/kg) **		< 10			6000	--	--	
Sum of PCBs (mg/kg) **		0.055			1	--	--	
Mineral Oil (mg/kg)		890			500	--	--	
Total PAH (WAC-17) (mg/kg)		49			100	--	--	
pH (units)**		7.3			--	>6	--	
Acid Neutralisation Capacity (mol / kg)		4.4			--	To be evaluated	To be evaluated	
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test			
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)		mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)			
Arsenic *		0.0055		0.0479	0.5	2	25	
Barium *		0.0433		0.375	20	100	300	
Cadmium *		< 0.0001		< 0.0008	0.04	1	5	
Chromium *		0.0041		0.036	0.5	10	70	
Copper *		0.024		0.21	2	50	100	
Mercury *		< 0.0005		< 0.0050	0.01	0.2	2	
Molybdenum *		0.0109		0.0947	0.5	10	30	
Nickel *		0.0041		0.036	0.4	10	40	
Lead *		< 0.0010		< 0.010	0.5	10	50	
Antimony *		0.014		0.12	0.06	0.7	5	
Selenium *		< 0.0040		< 0.040	0.1	0.5	7	
Zinc *		0.0070		0.060	4	50	200	
Chloride *		20		170	800	4000	25000	
Fluoride		0.69		6.0	10	150	500	
Sulphate *		480		4200	1000	20000	50000	
TDS*		500		4300	4000	60000	100000	
Phenol Index (Monhydric Phenols) *		< 0.010		< 0.10	1	-	-	
DOC		15.8		137	500	800	1000	
Leach Test Information								
Stone Content (%)		< 0.1						
Sample Mass (kg)		0.95						
Dry Matter (%)		81						
Moisture (%)		19						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)								
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited								
Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.								
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.								



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

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Waste Acceptance Criteria Analytical Results							
Report No:	19-47040						
				Client: CARDGEO			
Location	Southall						
Lab Reference (Sample Number)	1252931 / 1252932			Landfill Waste Acceptance Criteria			
				Limits			
Sampling Date	18/06/2019			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID	SP17A 2						
Depth (m)	2.00						
Solid Waste Analysis							
TOC (%)**	2.5			3%	5%	6%	
Loss on Ignition (%) **	5.0			--	--	10%	
BTEX (µg/kg) **	< 10			6000	--	--	
Sum of PCBs (mg/kg) **	< 0.007			1	--	--	
Mineral Oil (mg/kg)	340			500	--	--	
Total PAH (WAC-17) (mg/kg)	53			100	--	--	
pH (units)**	7.3			--	>6	--	
Acid Neutralisation Capacity (mol / kg)	3.8			--	To be evaluated	To be evaluated	
Eluate Analysis				10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0036			0.0329	0.5	2	25
Barium *	0.0390			0.352	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0012			0.011	0.5	10	70
Copper *	0.019			0.17	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0105			0.0952	0.5	10	30
Nickel *	0.0034			0.031	0.4	10	40
Lead *	0.0028			0.025	0.5	10	50
Antimony *	0.014			0.12	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0030			0.027	4	50	200
Chloride *	14			120	800	4000	25000
Fluoride	0.87			7.8	10	150	500
Sulphate *	150			1400	1000	20000	50000
TDS*	240			2200	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	11.3			102	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.1						
Dry Matter (%)	82						
Moisture (%)	18						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = MCERTS accredited			

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

Analytical Report Number : 19-47040

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 *
1252921	SP17B	1	None Supplied	Grey clay and sand with gravel and brick.
1252923	SP17B	2	None Supplied	Brown clay and sand with gravel.
1252925	SP17B	3	None Supplied	Brown clay and sand with gravel.
1252927	SP17C	1	None Supplied	Brown clay and sand with gravel.
1252929	SP17A	1	0.20	Brown clay and sand with gravel and brick.
1252931	SP17A	2	2.00	Brown clay and sand with gravel and vegetation.

Analytical Report Number : 19-47040

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
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-PL	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L0338-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE

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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 : 19-47040

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 organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests [™]	L009-PL	D	MCERTS

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

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

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

APPENDIX D

Imported Material Chemical 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
Moisture Content	%	N/A	NONE	5.9	8.1
Total mass of sample received	kg	0.001	NONE	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.

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

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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
Wales No. 6000065

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

Certificate No. 17-07009-Issue 1-Page: 2
Site Address Recycled - Batch Testing Sample



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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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 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

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.

Page 6 of 7



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.

**Chris Gordon**

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	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.

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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.

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.

**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 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
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 30°C.

**Tom Kiddier**

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Analytical Report Number : 18-82248

Project / Site name:	Southall	Samples received on:	16/04/2018
Your job number:		Samples instructed on:	16/04/2018
Your order number:		Analysis completed by:	19/04/2018
Report Issue Number:	1	Report issued on:	19/04/2018
Samples Analysed:	6 leachate samples - 6 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: 18-82248

Project / Site name: Southall

Lab Sample Number				943449	943450	943451	943452	943453
Sample Reference				Z56NXX	Z5SP111XX	Z5SP111XY	Z5SP111XZ	Z5SP111YY
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	32	46	26	55
Moisture Content	%	N/A	NONE	14	5.7	6.1	7.8	4.6
Total mass of sample received	kg	0.001	NONE	0.97	1.3	1.4	1.3	1.3

General Inorganics

Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Ammonia as NH ₃	mg/kg	0.5	MCERTS	1.2	6.4	6.7	6.7	7.1

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)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.29	0.26	0.25	0.45

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	15	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Lead (aqua regia extractable)	mg/kg	1	MCERTS	460	33	34	29	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3	< 0.3	0.3

Monoaromatics

Benzene	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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Analytical Report Number: 18-82248

Project / Site name: Southall

Lab Sample Number				943454				
Sample Reference				Z5SP111YZ				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				Deviating				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	36				
Moisture Content	%	N/A	NONE	7.4				
Total mass of sample received	kg	0.001	NONE	1.4				

General Inorganics

Free Cyanide	mg/kg	1	MCERTS	< 1				
Ammonia as NH ₃	mg/kg	0.5	MCERTS	6.6				

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				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.25				

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.3				

Monoaromatics

Benzene	mg/kg	0.001	MCERTS	< 0.001				
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Analytical Report Number: 18-82248

Project / Site name: Southall

Lab Sample Number				943455	943456	943457	943458	943459
Sample Reference				Z56NXX	Z5SP111XX	Z5SP111XY	Z5SP111XZ	Z5SP111YY
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Ammonia as NH ₃	µg/l	15	NONE	34	600	590	650	560

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Heavy Metals / Metalloids

Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	72	< 5.0	< 5.0	< 5.0	< 5.0
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	1.2	2.6	1.8
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



Analytical Report Number: 18-82248

Project / Site name: Southall

Lab Sample Number				943460				
Sample Reference				Z5SP111YZ				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				Deviating				
Time Taken				None Supplied				
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

Free Cyanide	µg/l	10	ISO 17025	< 10				
Ammonia as NH ₃	µg/l	15	NONE	750				

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10				
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				

Heavy Metals / Metalloids

Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08				
Chromium (hexavalent)	µg/l	5	NONE	< 5.0				
Lead (dissolved)	µg/l	1	ISO 17025	2.0				
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5				
Benzene	µg/l	1	ISO 17025	< 1.0				



Analytical Report Number : 18-82248

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 *
943449	Z56NXX	None Supplied	None Supplied	Light grey loam and gravel with ash.
943450	Z5SP111XX	None Supplied	None Supplied	Light brown clay and sand with stones.
943451	Z5SP111XY	None Supplied	None Supplied	Light brown clay and sand with stones.
943452	Z5SP111XZ	None Supplied	None Supplied	Light brown clay and sand with stones.
943453	Z5SP111YY	None Supplied	None Supplied	Light brown clay and sand with stones.
943454	Z5SP111YZ	None Supplied	None Supplied	Light brown clay and sand with stones.

Analytical Report Number : 18-82248

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 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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX in leachates (Monoaromatics)	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025

Analytical Report Number : 18-82248

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
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
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	ISO 17025
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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
Z56NXX		L	18-82248	943455	a			
Z56NXX		S	18-82248	943449	a			
Z5SP111XX		L	18-82248	943456	a			
Z5SP111XX		S	18-82248	943450	a			
Z5SP111XY		L	18-82248	943457	a			
Z5SP111XY		S	18-82248	943451	a			
Z5SP111XZ		L	18-82248	943458	a			
Z5SP111XZ		S	18-82248	943452	a			
Z5SP111YY		L	18-82248	943459	a			
Z5SP111YY		S	18-82248	943453	a			
Z5SP111YZ		L	18-82248	943460	a			
Z5SP111YZ		S	18-82248	943454	a			

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Analytical Report Number : 18-82864

Project / Site name:	Southall	Samples received on:	20/04/2018
Your job number:		Samples instructed on:	20/04/2018
Your order number:		Analysis completed by:	25/04/2018
Report Issue Number:	1	Report issued on:	25/04/2018
Samples Analysed:	5 leachate samples - 5 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: 18-82864

Project / Site name: Southall

Lab Sample Number				947001	947002	947003	947004	947005
Sample Reference				Z56NXY	Z56NXZ	Z56NYX	Z56NYY	Z56NYZ
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.6	4.6	12	10	9.6
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	0.45

General Inorganics

Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Ammonia as NH ₃	mg/kg	0.5	MCERTS	3.7	6.6	1.9	5.4	3.3

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
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	17	34	17	46	19
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Lead (aqua regia extractable)	mg/kg	1	MCERTS	430	440	460	410	410
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Monoaromatics

Benzene	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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Analytical Report Number: 18-82864

Project / Site name: Southall

Lab Sample Number				947006	947007	947008	947009	947010
Sample Reference				Z56NXY	Z56NXZ	Z56NYX	Z56NYY	Z56NYZ
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

Total Cyanide	mg/l	0.01	ISO 17025	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ammonia as NH ₃	mg/l	0.015	NONE	0.52	0.34	0.20	0.52	0.46

Total Phenols

Total Phenols (monohydric)	mg/l	0.01	ISO 17025	< 0.010	< 0.010	< 0.010	< 0.010	0.014
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Speciated PAHs

Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Heavy Metals / Metalloids

Cadmium (dissolved)	mg/l	0.0001	ISO 17025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (hexavalent)	mg/l	0.005	NONE	0.101	0.076	0.020	0.079	0.054
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (dissolved)	mg/l	0.0005	ISO 17025	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005

Monoaromatics

Benzene	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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Analytical Report Number : 18-82864

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 *
947001	Z56NXY	None Supplied	None Supplied	Grey loam and gravel.
947002	Z56NXZ	None Supplied	None Supplied	Grey loam and gravel.
947003	Z56NYX	None Supplied	None Supplied	Grey loam and gravel.
947004	Z56NYY	None Supplied	None Supplied	Grey loam and gravel.
947005	Z56NYZ	None Supplied	None Supplied	Grey loam and gravel.

Analytical Report Number : 18-82864

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 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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX in leachates	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L017-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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
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	ISO 17025

Analytical Report Number : 18-82864

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
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
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	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

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

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

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

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
Z56NXY		L	18-82864	947006	a			
Z56NXY		S	18-82864	947001	a			
Z56NXZ		L	18-82864	947007	a			
Z56NXZ		S	18-82864	947002	a			
Z56NYX		L	18-82864	947008	a			
Z56NYX		S	18-82864	947003	a			
Z56NYY		L	18-82864	947009	a			
Z56NYY		S	18-82864	947004	a			
Z56NYZ		L	18-82864	947010	a			
Z56NYZ		S	18-82864	947005	a			

**Tom Kiddier**

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Analytical Report Number : 18-83413

Project / Site name:	Southall	Samples received on:	26/04/2018
Your job number:		Samples instructed on:	26/04/2018
Your order number:		Analysis completed by:	30/04/2018
Report Issue Number:	1	Report issued on:	30/04/2018
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: 18-83413

Project / Site name: Southall

Lab Sample Number				949779	949780	949781	949782	
Sample Reference				Z5SP11AA	Z5SP11AB	Z56NAA	Z56NAB	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				Deviating	Deviating	Deviating	Deviating	
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	9.2	23	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	4.7	2.9	11	11	
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.1	1.1	

General Inorganics

Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Ammonia as NH ₃	mg/kg	0.5	MCERTS	5.1	5.0	< 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	0.48	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.60	0.15	< 0.05	< 0.05	

Heavy Metals / Metalloids

Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	17	21	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	38	620	400	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.3	< 0.3	< 0.3	

Monoaromatics

Benzene	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
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Analytical Report Number: 18-83413

Project / Site name: Southall

Lab Sample Number				949783	949784	949785	949786	
Sample Reference				Z5SP11AA	Z5SP11AB	Z56NAA	Z56NAB	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				Deviating	Deviating	Deviating	Deviating	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

Free Cyanide	mg/l	0.01	ISO 17025	< 0.010	< 0.010	< 0.010	< 0.010	
Ammonia as NH ₃	mg/l	0.015	NONE	0.49	0.47	0.059	0.036	

Total Phenols

Total Phenols (monohydric)	mg/l	0.01	ISO 17025	< 0.010	< 0.010	< 0.010	< 0.010	
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Speciated PAHs

Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	

Heavy Metals / Metalloids

Cadmium (dissolved)	mg/l	0.0001	ISO 17025	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Chromium (hexavalent)	mg/l	0.005	NONE	< 0.005	< 0.005	0.039	0.067	
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.002	< 0.001	< 0.001	
Mercury (dissolved)	mg/l	0.0005	ISO 17025	< 0.0005	< 0.0005	< 0.0005	< 0.0005	

Monoaromatics

Benzene	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	
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Analytical Report Number : 18-83413

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 *
949779	Z5SP11AA	None Supplied	None Supplied	Brown sand with stones.
949780	Z5SP11AB	None Supplied	None Supplied	Brown sand with stones.
949781	Z56NAA	None Supplied	None Supplied	Grey loam and gravel.
949782	Z56NAB	None Supplied	None Supplied	Grey loam and gravel.

Analytical Report Number : 18-83413

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 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
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX in leachates	Determination of BTEX in leachates by headspace GC-MS.	In-house method based on USEPA8260	L017-PL	W	ISO 17025
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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



Analytical Report Number : 18-83413

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
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
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	ISO 17025
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 Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
Z56NAA		L	18-83413	949785	a			
Z56NAA		S	18-83413	949781	a			
Z56NAB		L	18-83413	949786	a			
Z56NAB		S	18-83413	949782	a			
Z5SP11AA		L	18-83413	949783	a			
Z5SP11AA		S	18-83413	949779	a			
Z5SP11AB		L	18-83413	949784	a			
Z5SP11AB		S	18-83413	949780	a			

**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.



Analytical Report Number : 17-70131

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 *
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.

**Chris Gordon**

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Analytical Report Number : 17-67634

Project / Site name:	Southall	Samples received on:	15/11/2017
Your job number:	CG-28308	Samples instructed on:	15/11/2017
Your order number:	4586	Analysis completed by:	20/11/2017
Report Issue Number:	1	Report issued on:	20/11/2017
Samples Analysed:	4 soil samples - 1 water 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: 17-67634

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				858029	858030	858031	858032	
Sample Reference				TYPE1	TYPE1	TYPE1	TYPE1	
Sample Number				ES1	ES2	ES3	ES4	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				14/11/2017	14/11/2017	14/11/2017	14/11/2017	
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	17	17	11	20	
Moisture Content	%	N/A	NONE	3.6	3.3	3.6	3.2	
Total mass of sample received	kg	0.001	NONE	1.6	1.3	1.6	1.3	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.4	10.8	10.8	10.7	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Free Cyanide (low level)	mg/kg	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2300	2100	2200	2100	
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	
Organic Matter	%	0.1	MCERTS	4.4	5.6	4.6	5.6	

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	1.6	2.2	2.2	1.6	
Acenaphthylene	mg/kg	0.05	MCERTS	1.4	1.5	1.5	1.4	
Acenaphthene	mg/kg	0.05	MCERTS	4.0	4.6	4.1	4.6	
Fluorene	mg/kg	0.05	MCERTS	4.7	6.0	5.7	5.5	
Phenanthrene	mg/kg	0.05	MCERTS	29	35	34	30	
Anthracene	mg/kg	0.05	MCERTS	8.0	9.4	9.0	9.0	
Fluoranthene	mg/kg	0.05	MCERTS	31	37	38	34	
Pyrene	mg/kg	0.05	MCERTS	25	29	30	27	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	15	17	16	16	
Chrysene	mg/kg	0.05	MCERTS	11	13	13	13	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	14	13	16	14	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	9.1	12	9.0	11	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	14	15	15	15	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.7	6.8	7.2	7.2	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.9	2.0	2.2	2.2	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.9	8.2	8.4	8.3	
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	180	210	210	200	
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Analytical Report Number: 17-67634

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number	858029	858030	858031	858032	
Sample Reference	TYPE1	TYPE1	TYPE1	TYPE1	
Sample Number	ES1	ES2	ES3	ES4	
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled	14/11/2017	14/11/2017	14/11/2017	14/11/2017	
Time Taken	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	< 1.0	< 1.0	< 1.0	
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.5	8.8	11	9.9	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	100	100	100	100	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.61	0.59	0.59	0.54	
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.4	1.1	0.6	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	
Chromium (III)	mg/kg	1	NONE	31	30	30	31	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	30	31	32	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	38	30	31	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	62	56	66	57	
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	15	15	16	14	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	39	38	36	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	62	72	65	66	

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	4.3	2.3	2.2	1.7	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	37	44	41	45	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	69	79	89	83	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	420	490	560	610	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	530	620	690	740	

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	2.9	2.9	3.9	4.8	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	49	63	39	59	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	180	230	200	200	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	980	1200	890	1200	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	1200	1500	1100	1500	



Analytical Report Number: 17-67634

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				858033				
Sample Reference				RRCC				
Sample Number				EW9				
Depth (m)				None Supplied				
Date Sampled				14/11/2017				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.6				
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0				
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1				
Sulphate as SO ₄	µg/l	45	ISO 17025	123000				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	930				
Ammonia as NH ₃	µg/l	15	ISO 17025	1100				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	8.05				
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	280				

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	3.3				
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01				

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16				
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Analytical Report Number: 17-67634

Project / Site name: Southall

Your Order No: 4586

Lab Sample Number				858033				
Sample Reference				RRCC				
Sample Number				EW9				
Depth (m)				None Supplied				
Date Sampled				14/11/2017				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	1.4				
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.29				
Barium (dissolved)	µg/l	0.06	ISO 17025	42				
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1				
Boron (dissolved)	µg/l	10	ISO 17025	88				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05				
Calcium (dissolved)	mg/l	0.012	ISO 17025	91				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (III)	µg/l	1	NONE	< 1.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5				
Copper (dissolved)	µg/l	0.5	ISO 17025	6.2				
Lead (dissolved)	µg/l	0.2	ISO 17025	3.4				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	13				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.6				
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.9				
Vanadium (dissolved)	µg/l	0.2	ISO 17025	1.6				
Zinc (dissolved)	µg/l	0.5	ISO 17025	27				

Monoaromatics

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

Petroleum Hydrocarbons

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

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

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



Analytical Report Number : 17-67634

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 *
858029	TYPE1	ES1	None Supplied	Brown loam with stones.
858030	TYPE1	ES2	None Supplied	Brown loam and sand with stones.
858031	TYPE1	ES3	None Supplied	Brown loam and sand with stones and vegetation.
858032	TYPE1	ES4	None Supplied	Brown loam and sand with stones.

Analytical Report Number : 17-67634

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 water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
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
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 soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	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
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	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
Free cyanide (Low level) in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
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

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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 : 17-67634

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
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
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	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
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	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 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
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
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
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 30oC.