

APPENDIX J

*Thames Water Discharge Permit (Appendix 1 Extract)
and Water Data*

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Analytical Report Number : 17-62999

Project / Site name:	Southall Western Access	Samples received on:	06/10/2017
Your job number:	CG-28308	Samples instructed on:	09/10/2017
Your order number:	4586	Analysis completed by:	10/10/2017
Report Issue Number:	1	Report issued on:	10/10/2017
Samples Analysed:	4 water 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

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



Analytical Report Number: 17-62999

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				831594	831595	831596	831597	
Sample Reference				Rail Triangle	Lagoon 3 Trench	WGUCPM GW1	WGUCPM GW2	
Sample Number				RT1	L1	EW11	EW12	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				04/10/2017	04/10/2017	06/10/2017	06/10/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.1	7.9	8.0	7.3	
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	45	ISO 17025	366000	11200	337000	98500	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	1400	22	2900	7200	
Ammonia as NH ₃	µg/l	15	ISO 17025	1800	26	3500	8800	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	6.47	3.41	17.8	10.1	
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	508	40.6	724	591	

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 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	
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	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16	
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	5.3	1.6	6.9	2.0	
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.55	0.77	5.27	1.60	
Barium (dissolved)	µg/l	0.06	ISO 17025	43	16	74	98	
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Boron (dissolved)	µg/l	10	ISO 17025	210	< 10	320	500	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.36	< 0.02	0.43	0.73	
Calcium (dissolved)	mg/l	0.012	ISO 17025	160	15	240	200	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (III)	µg/l	1	NONE	3.4	< 1.0	5.3	< 1.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	3.4	0.7	5.3	< 0.2	
Copper (dissolved)	µg/l	0.5	ISO 17025	11	6.1	55	4.2	
Lead (dissolved)	µg/l	0.2	ISO 17025	0.7	0.4	4.3	0.6	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	24	0.57	29	25	
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.07	< 0.05	0.14	< 0.05	
Nickel (dissolved)	µg/l	0.5	ISO 17025	14	0.7	16	7.8	
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.4	< 0.6	4.6	1.0	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	3.6	1.1	4.8	13	
Zinc (dissolved)	µg/l	0.5	ISO 17025	27	5.0	18	17	



Analytical Report Number: 17-62999

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				831594	831595	831596	831597	
Sample Reference				Rail Triangle	Lagoon 3 Trench	WGUCPM GW1	WGUCPM GW2	
Sample Number				RT1	L1	EW11	EW12	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				04/10/2017	04/10/2017	06/10/2017	06/10/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

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	

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



Analytical Report Number : 17-62999

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
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 water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX 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 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 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 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
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
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
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	L0102B-PL	W	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 Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

Iss No 17-62999-1 Southall Western Access CG-28308

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

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Analytical Report Number : 17-62999

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
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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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
Lagoon 3 Trench	L1	W	17-62999	831595	c	Ammonia as NH3 in water	L082-PL	c
Lagoon 3 Trench	L1	W	17-62999	831595	c	Ammoniacal Nitrogen as N in water	L082-PL	c
Lagoon 3 Trench	L1	W	17-62999	831595	c	pH at 20oC in water (automated)	L099-PL	c
Rail Triangle	RT1	W	17-62999	831594	c	Ammonia as NH3 in water	L082-PL	c
Rail Triangle	RT1	W	17-62999	831594	c	Ammoniacal Nitrogen as N in water	L082-PL	c
Rail Triangle	RT1	W	17-62999	831594	c	pH at 20oC in water (automated)	L099-PL	c
WGUCPM GW1	EW11	W	17-62999	831596	b	BTEX and MTBE in water (Monoaromatics)	L073B-PL	b
WGUCPM GW2	EW12	W	17-62999	831597	b	BTEX and MTBE in water (Monoaromatics)	L073B-PL	b

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	03/10/2017 Am to PM	VISIT BY:	CRG
WEATHER:			
Time	Description		
	Cold start, dry with clear spell of sunshine		

Site operations

Work in hand	Piling at EGUCPM nearing completion. CGL surface water sampling of rail triangle and Lagoon 3 trench. Wheel wash drainage and sump installed. River Crane pipe laying completed. Toolbox talk on safe off loading and swinging chains when lifting. Delivery of Yeading Brook pumps and generators for both YB and RC.
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Observations

- 1) River Crane Bailey Bridge (north of Pump Lane) completed.
- 2) Pipe laying along River Crane west bank completed, electrician installing pump generators
- 3) Cropping and blinding completed in WYBPM.
- 4) Wheel wash drainage trench and sump tank installed.
- 5) Preparatory works for WGUC pile cropping underway, stepping and profiling of extreme northeast banks and lagoon bund as per CGLs approved specification, yellow herras fencing erection around proposed excavation. Pile mat 6F5 reused to build machine working platform.
- 6) Conway are waiting for permission from the local authority to dam the River Crane.

Sampling and/or testing undertaken or observed

Two surface water samples taken from standing water in rail triangle and lagoon 3 trenches. Water in the lagoon trench is rainwater and highly unlikely to be contaminated as lagoon 3 remains unloaded with soil and water has only made contact with clean membrane surface. Standing water in rail triangle is likely to be groundwater as the exposed ground level in this area is low lying. GW sampling in adjacent CGL and Environ BHs and no visual or olfactory indication of contamination indicate this water to be clean. Samples were taken to provide factual clarification.

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

Correspondence requested by FMC

Joe Owen's (H&S) requested copies of CGL MMP and up to date stockpile management plan.

Site Observation Report Form



Correspondence received from FMC

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Analytical Report Number : 17-69319

Project / Site name:	Southall Western Access	Samples received on:	01/12/2017
Your job number:	CG-28308	Samples instructed on:	01/12/2017
Your order number:	4586	Analysis completed by:	11/12/2017
Report Issue Number:	1	Report issued on:	11/12/2017
Samples Analysed:	12 water 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: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867576	867577	867578	867579	867580
Sample Reference				BH3A	BH1A	FUYB	LEP1	BH2B
Sample Number				EW1	EW2	EW3	EW4	EW5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.9	7.1	-	10.3	7.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	36	29	-	33	59
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	-	< 1	< 1
Sulphate as SO ₄	µg/l	45	ISO 17025	1050000	61100	-	645000	645000
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	3200	32000	390	24000	440
Ammonia as NH ₃	µg/l	15	ISO 17025	-	-	480	30000	-
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	28.4	39.1	-	87.5	46.9
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1300	1190	-	226	1120

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	-	37	1.6
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	3.74	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	0.26	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	1.81	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	0.92	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	1.79	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	0.54	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	0.55	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	0.37	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 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
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	0.16	NONE	< 0.16	< 0.16	-	9.98	< 0.16
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4	0.7	-	1.9	9.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.59	3.29	-	9.08	4.79
Barium (dissolved)	µg/l	0.06	ISO 17025	57	120	-	30	69
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	-	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	810	890	-	71	900
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.12	0.07	-	0.12	5.0
Calcium (dissolved)	mg/l	0.012	ISO 17025	410	320	-	80	320
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	1.4	-	< 1.0	1.5
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	1.4	-	0.4	1.5
Copper (dissolved)	µg/l	0.5	ISO 17025	3.2	3.7	-	33	23
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.3	-	9.4	0.9
Magnesium (dissolved)	mg/l	0.005	ISO 17025	67	93	-	6.1	79
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	0.09	-	0.36	0.17
Nickel (dissolved)	µg/l	0.5	ISO 17025	7.3	16	-	59	20
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.5	7.1	-	24	7.1
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.4	-	9.7	8.0
Zinc (dissolved)	µg/l	0.5	ISO 17025	46	5.5	-	0.9	120



Analytical Report Number: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867576	867577	867578	867579	867580
Sample Reference				BH3A	BH1A	FUYB	LEP1	BH2B
Sample Number				EW1	EW2	EW3	EW4	EW5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

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	-	19	< 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	-	19	< 10

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



Analytical Report Number: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867581	867582	867583	867584	867585
Sample Reference				LEP2	BH2A	BH3B	BH4B	MYB
Sample Number				EW6	EW7	EW8	EW9	EW10
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	10.2	7.1	7.4	6.9	-
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	18	< 1.0	33	12	-
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	-
Sulphate as SO ₄	µg/l	45	ISO 17025	965000	753000	1390000	155000	-
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	10000	14000	31	8700	190
Ammonia as NH ₃	µg/l	15	ISO 17025	12000	-	-	-	230
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	55.3	74.8	20.8	4.49	-
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	895	1430	1470	364	-

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	200	2.5	< 1.0	< 1.0	-
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	1.55	< 0.01	< 0.01	43.9	-
Acenaphthylene	µg/l	0.01	ISO 17025	0.14	< 0.01	< 0.01	0.18	-
Acenaphthene	µg/l	0.01	ISO 17025	0.67	< 0.01	< 0.01	7.66	-
Fluorene	µg/l	0.01	ISO 17025	0.33	< 0.01	< 0.01	4.01	-
Phenanthrene	µg/l	0.01	ISO 17025	0.55	< 0.01	< 0.01	3.56	-
Anthracene	µg/l	0.01	ISO 17025	0.24	< 0.01	< 0.01	0.22	-
Fluoranthene	µg/l	0.01	ISO 17025	0.18	< 0.01	< 0.01	0.28	-
Pyrene	µg/l	0.01	ISO 17025	0.13	< 0.01	< 0.01	0.79	-
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 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	-
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	0.16	NONE	3.79	< 0.16	< 0.16	60.6	-
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	3.1	0.8	1.0	< 0.4	-
Arsenic (dissolved)	µg/l	0.15	ISO 17025	9.73	5.24	1.11	1.70	-
Barium (dissolved)	µg/l	0.06	ISO 17025	69	84	54	270	-
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	-
Boron (dissolved)	µg/l	10	ISO 17025	27	1700	550	270	-
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05	0.68	0.09	< 0.02	-
Calcium (dissolved)	mg/l	0.012	ISO 17025	360	440	420	110	-
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	-
Chromium (III)	µg/l	1	NONE	2.9	1.6	< 1.0	< 1.0	-
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.9	1.6	0.4	< 0.2	-
Copper (dissolved)	µg/l	0.5	ISO 17025	51	9.4	4.1	1.3	-
Lead (dissolved)	µg/l	0.2	ISO 17025	9.8	0.6	1.6	< 0.2	-
Magnesium (dissolved)	mg/l	0.005	ISO 17025	0.72	80	110	19	-
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.32	< 0.05	0.05	0.05	-
Nickel (dissolved)	µg/l	0.5	ISO 17025	28	49	5.7	10	-
Selenium (dissolved)	µg/l	0.6	ISO 17025	31	5.0	5.2	0.8	-
Vanadium (dissolved)	µg/l	0.2	ISO 17025	6.3	1.6	1.5	< 0.2	-
Zinc (dissolved)	µg/l	0.5	ISO 17025	1.2	18	3.6	< 0.5	-



Analytical Report Number: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867581	867582	867583	867584	867585
Sample Reference				LEP2	BH2A	BH3B	BH4B	MYB
Sample Number				EW6	EW7	EW8	EW9	EW10
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

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	63	-
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	28	-
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	91	-

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



Analytical Report Number: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867586	867587			
Sample Reference				DYB	UYB			
Sample Number				EW11	EW12			
Depth (m)				None Supplied	None Supplied			
Date Sampled				29/11/2017	29/11/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	-	-			
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	-	-			
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	-	-			
Sulphate as SO ₄	µg/l	45	ISO 17025	-	-			
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	180	360			
Ammonia as NH ₃	µg/l	15	ISO 17025	220	440			
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	-	-			
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	-	-			

Total Phenols

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

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	-	-			
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	-	-			
Arsenic (dissolved)	µg/l	0.15	ISO 17025	-	-			
Barium (dissolved)	µg/l	0.06	ISO 17025	-	-			
Beryllium (dissolved)	µg/l	0.1	ISO 17025	-	-			
Boron (dissolved)	µg/l	10	ISO 17025	-	-			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	-	-			
Calcium (dissolved)	mg/l	0.012	ISO 17025	-	-			
Chromium (hexavalent)	µg/l	5	ISO 17025	-	-			
Chromium (III)	µg/l	1	NONE	-	-			
Chromium (dissolved)	µg/l	0.2	ISO 17025	-	-			
Copper (dissolved)	µg/l	0.5	ISO 17025	-	-			
Lead (dissolved)	µg/l	0.2	ISO 17025	-	-			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	-	-			
Mercury (dissolved)	µg/l	0.05	ISO 17025	-	-			
Nickel (dissolved)	µg/l	0.5	ISO 17025	-	-			
Selenium (dissolved)	µg/l	0.6	ISO 17025	-	-			
Vanadium (dissolved)	µg/l	0.2	ISO 17025	-	-			
Zinc (dissolved)	µg/l	0.5	ISO 17025	-	-			



Analytical Report Number: 17-69319

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				867586	867587			
Sample Reference				DYB	UYB			
Sample Number				EW11	EW12			
Depth (m)				None Supplied	None Supplied			
Date Sampled				29/11/2017	29/11/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

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

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

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



Analytical Report Number : 17-69319

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
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 water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX 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 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 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 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
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
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
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
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 Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-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 : 18-71825

Project / Site name:	Southall Western Access	Samples received on:	21/12/2017
Your job number:	CG-28308	Samples instructed on:	02/01/2018
Your order number:	4586	Analysis completed by:	09/01/2018
Report Issue Number:	1	Report issued on:	09/01/2018
Samples Analysed:	12 water 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: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883066	883067	883068	883069	883070
Sample Reference				BH3A	BH1A	FUYB	BH2B	UYB
Sample Number				EW1	EW2	EW3	EW4	EW5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/12/2017	20/12/2017	20/12/2017	20/12/2017	20/12/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.9	6.9	-	7.2	-
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	25	18	-	17	-
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	-	< 1	-
Sulphate as SO ₄	µg/l	45	ISO 17025	686000	47900	-	615000	-
Chloride	mg/l	0.15	ISO 17025	-	-	-	-	-
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	6200	38000	450	540	320
Ammonia as NH ₃	µg/l	15	ISO 17025	-	-	550	-	390
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	27.0	48.0	-	44.7	-
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	-	-	-	-	-
Total Suspended Solids	mg/l	2	NONE	-	-	-	-	-
Settleable Solids (Rapidly Settleable)	mg/l	2	NONE	-	-	-	-	-
Settleable Solids - Total (1 hour)	mg/l	2	NONE	-	-	-	-	-
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1230	1250	-	1380	-

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	0.18	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	-
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	0.18	-	< 0.01	-
Fluorene	µg/l	0.01	ISO 17025	< 0.01	0.19	-	< 0.01	-
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	0.20	-	< 0.01	-
Anthracene	µg/l	0.01	ISO 17025	< 0.01	0.16	-	< 0.01	-
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.72	-	< 0.01	-
Pyrene	µg/l	0.01	ISO 17025	< 0.01	0.51	-	< 0.01	-
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	0.18	-	< 0.01	-
Chrysene	µg/l	0.01	ISO 17025	< 0.01	0.20	-	< 0.01	-
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.24	-	< 0.01	-
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.08	-	< 0.01	-
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.15	-	< 0.01	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.10	-	< 0.01	-
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	-
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	0.12	-	< 0.01	-

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	3.21	-	< 0.16	-
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	0.6	< 0.4	-	3.4	-
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.95	7.95	-	10.1	-
Barium (dissolved)	µg/l	0.06	ISO 17025	70	180	-	69	-
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	-	< 0.1	-
Boron (dissolved)	µg/l	10	ISO 17025	770	980	-	1200	-
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.69	0.05	-	5.9	-
Calcium (dissolved)	mg/l	0.012	ISO 17025	380	320	-	370	-
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	-
Chromium (III)	µg/l	1	NONE	< 1.0	1.5	-	4.7	-
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	1.5	-	4.7	-
Copper (dissolved)	µg/l	0.5	ISO 17025	5.3	2.4	-	48	-
Lead (dissolved)	µg/l	0.2	ISO 17025	2.1	5.2	-	9.8	-
Magnesium (dissolved)	mg/l	0.005	ISO 17025	70	110	-	110	-
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	-	< 0.05	-
Nickel (dissolved)	µg/l	0.5	ISO 17025	8.1	17	-	17	-
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.7	7.9	-	5.5	-
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.8	-	4.4	-
Zinc (dissolved)	µg/l	0.5	ISO 17025	62	9.8	-	100	-



Analytical Report Number: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883066	883067	883068	883069	883070
Sample Reference				BH3A	BH1A	FUYB	BH2B	UYB
Sample Number				EW1	EW2	EW3	EW4	EW5
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/12/2017	20/12/2017	20/12/2017	20/12/2017	20/12/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 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	-

** Due to method variation the results for Hexavalent Chromium and Dissolved Chromium do not agree.

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



Analytical Report Number: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883071	883072	883073	883074	883075
Sample Reference				BH2A	LEP 1	LEP 2	BH3B	BH4B
Sample Number				EW6	EW7	EW8	EW9	EW10
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/12/2017	20/12/2017	20/12/2017	20/12/2017	20/12/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.1	9.0	8.9	7.0	6.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	53	46	39	5.8
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	< 1
Sulphate as SO ₄	µg/l	45	ISO 17025	653000	1030000	1090000	1180000	193000
Chloride	mg/l	0.15	ISO 17025	-	520	500	-	-
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	16000	3000	3000	17	8700
Ammonia as NH ₃	µg/l	15	ISO 17025	-	3600	3700	-	-
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	76.6	31.5	29.2	19.8	5.46
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	-	120	150	-	-
Total Suspended Solids	mg/l	2	NONE	-	170	160	-	-
Settleable Solids (Rapidly Settleable)	mg/l	2	NONE	-	100	60.0	-	-
Settleable Solids - Total (1 hour)	mg/l	2	NONE	-	144	124	-	-
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	1470	1060	1090	3140	349

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	43.1
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	5.13
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	2.58
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	1.82
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	0.14
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	0.20
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	0.62
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	53.6
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	1.0	9.0	10	1.0	< 0.4
Arsenic (dissolved)	µg/l	0.15	ISO 17025	7.05	5.93	5.49	1.36	9.22
Barium (dissolved)	µg/l	0.06	ISO 17025	140	100	100	130	430
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	1800	100	110	650	260
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.37	0.07	0.03	0.63	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	440	390	410	910	110
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	16 **	17 **	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	2.2	< 1.0	< 1.0	2.3	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.2	8.8 **	10 **	2.3	0.4
Copper (dissolved)	µg/l	0.5	ISO 17025	3.8	34	40	7.1	2.7
Lead (dissolved)	µg/l	0.2	ISO 17025	3.2	4.8	3.9	0.6	1.5
Magnesium (dissolved)	mg/l	0.005	ISO 17025	94	17	18	210	21
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	49	9.6	9.5	9.1	12
Selenium (dissolved)	µg/l	0.6	ISO 17025	8.3	13	14	21	1.0
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.9	10	10	0.9	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	57	2.6	2.2	5.1	8.6



Analytical Report Number: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883071	883072	883073	883074	883075
Sample Reference				BH2A	LEP 1	LEP 2	BH3B	BH4B
Sample Number				EW6	EW7	EW8	EW9	EW10
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/12/2017	20/12/2017	20/12/2017	20/12/2017	20/12/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 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	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	89
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	63
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	48
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	200

** Due to method variation the results for Hexavalent Chromium and Dissolved Chromium do not agree.

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



Analytical Report Number: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883076	883077			
Sample Reference				MYB	DYB			
Sample Number				EW11	EW12			
Depth (m)				None Supplied	None Supplied			
Date Sampled				20/12/2017	20/12/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	-	-			
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	-	-			
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	-	-			
Sulphate as SO ₄	µg/l	45	ISO 17025	-	-			
Chloride	mg/l	0.15	ISO 17025	-	-			
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	630	650			
Ammonia as NH ₃	µg/l	15	ISO 17025	770	790			
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	-	-			
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	-	-			
Total Suspended Solids	mg/l	2	NONE	-	-			
Settleable Solids (Rapidly Settleable)	mg/l	2	NONE	-	-			
Settleable Solids - Total (1 hour)	mg/l	2	NONE	-	-			
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	-	-			

Total Phenols

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

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	-	-			
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	-	-			
Arsenic (dissolved)	µg/l	0.15	ISO 17025	-	-			
Barium (dissolved)	µg/l	0.06	ISO 17025	-	-			
Beryllium (dissolved)	µg/l	0.1	ISO 17025	-	-			
Boron (dissolved)	µg/l	10	ISO 17025	-	-			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	-	-			
Calcium (dissolved)	mg/l	0.012	ISO 17025	-	-			
Chromium (hexavalent)	µg/l	5	ISO 17025	-	-			
Chromium (III)	µg/l	1	NONE	-	-			
Chromium (dissolved)	µg/l	0.2	ISO 17025	-	-			
Copper (dissolved)	µg/l	0.5	ISO 17025	-	-			
Lead (dissolved)	µg/l	0.2	ISO 17025	-	-			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	-	-			
Mercury (dissolved)	µg/l	0.05	ISO 17025	-	-			
Nickel (dissolved)	µg/l	0.5	ISO 17025	-	-			
Selenium (dissolved)	µg/l	0.6	ISO 17025	-	-			
Vanadium (dissolved)	µg/l	0.2	ISO 17025	-	-			
Zinc (dissolved)	µg/l	0.5	ISO 17025	-	-			



Analytical Report Number: 18-71825

Project / Site name: Southall Western Access

Your Order No: 4586

Lab Sample Number				883076	883077			
Sample Reference				MYB	DYB			
Sample Number				EW11	EW12			
Depth (m)				None Supplied	None Supplied			
Date Sampled				20/12/2017	20/12/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

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

Petroleum Hydrocarbons

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

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

** Due to method variation the results for Hexavalent Chromium and Dissolved Chromium do not agree.

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



Analytical Report Number : 18-71825

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
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 water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX 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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
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 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 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 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
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
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025



Analytical Report Number : 18-71825

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
Settleable Solids (Rapidly Settleable) in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

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

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

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

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH1A	EW2	W	18-71825	883067	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH1A	EW2	W	18-71825	883067	c	Hexavalent chromium in water	L080-PL	c
BH1A	EW2	W	18-71825	883067	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH1A	EW2	W	18-71825	883067	c	Boron in water	L039-PL	c
BH1A	EW2	W	18-71825	883067	c	Cr (III) in water	L080-PL	c
BH1A	EW2	W	18-71825	883067	c	Free cyanide (low level) in water	L080-PL	c
BH1A	EW2	W	18-71825	883067	c	Low level total cyanide in water	L080-PL	c
BH1A	EW2	W	18-71825	883067	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH1A	EW2	W	18-71825	883067	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH1A	EW2	W	18-71825	883067	c	Sulphate in water	L039-PL	c
BH1A	EW2	W	18-71825	883067	c	Total Hardness of water	L045-PL	c
BH1A	EW2	W	18-71825	883067	c	pH at 20oC in water (automated)	L099-PL	c
BH2A	EW6	W	18-71825	883071	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH2A	EW6	W	18-71825	883071	c	Hexavalent chromium in water	L080-PL	c
BH2A	EW6	W	18-71825	883071	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH2A	EW6	W	18-71825	883071	c	Boron in water	L039-PL	c
BH2A	EW6	W	18-71825	883071	c	Cr (III) in water	L080-PL	c
BH2A	EW6	W	18-71825	883071	c	Free cyanide (low level) in water	L080-PL	c
BH2A	EW6	W	18-71825	883071	c	Low level total cyanide in water	L080-PL	c
BH2A	EW6	W	18-71825	883071	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH2A	EW6	W	18-71825	883071	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH2A	EW6	W	18-71825	883071	c	Sulphate in water	L039-PL	c
BH2A	EW6	W	18-71825	883071	c	Total Hardness of water	L045-PL	c
BH2A	EW6	W	18-71825	883071	c	pH at 20oC in water (automated)	L099-PL	c
BH2B	EW4	W	18-71825	883069	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH2B	EW4	W	18-71825	883069	c	Hexavalent chromium in water	L080-PL	c
BH2B	EW4	W	18-71825	883069	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH2B	EW4	W	18-71825	883069	c	Boron in water	L039-PL	c
BH2B	EW4	W	18-71825	883069	c	Cr (III) in water	L080-PL	c
BH2B	EW4	W	18-71825	883069	c	Free cyanide (low level) in water	L080-PL	c
BH2B	EW4	W	18-71825	883069	c	Low level total cyanide in water	L080-PL	c
BH2B	EW4	W	18-71825	883069	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH2B	EW4	W	18-71825	883069	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH2B	EW4	W	18-71825	883069	c	Sulphate in water	L039-PL	c
BH2B	EW4	W	18-71825	883069	c	Total Hardness of water	L045-PL	c
BH2B	EW4	W	18-71825	883069	c	pH at 20oC in water (automated)	L099-PL	c
BH3A	EW1	W	18-71825	883066	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH3A	EW1	W	18-71825	883066	c	Hexavalent chromium in water	L080-PL	c
BH3A	EW1	W	18-71825	883066	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH3A	EW1	W	18-71825	883066	c	Boron in water	L039-PL	c
BH3A	EW1	W	18-71825	883066	c	Cr (III) in water	L080-PL	c
BH3A	EW1	W	18-71825	883066	c	Free cyanide (low level) in water	L080-PL	c
BH3A	EW1	W	18-71825	883066	c	Low level total cyanide in water	L080-PL	c
BH3A	EW1	W	18-71825	883066	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH3A	EW1	W	18-71825	883066	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH3A	EW1	W	18-71825	883066	c	Sulphate in water	L039-PL	c
BH3A	EW1	W	18-71825	883066	c	Total Hardness of water	L045-PL	c
BH3A	EW1	W	18-71825	883066	c	pH at 20oC in water (automated)	L099-PL	c
BH3B	EW9	W	18-71825	883074	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH3B	EW9	W	18-71825	883074	c	Hexavalent chromium in water	L080-PL	c
BH3B	EW9	W	18-71825	883074	c	Ammoniacal Nitrogen as N in water	L082-PL	c

BH3B	EW9	W	18-71825	883074	c	Boron in water	L039-PL	c
BH3B	EW9	W	18-71825	883074	c	Cr (III) in water	L080-PL	c
BH3B	EW9	W	18-71825	883074	c	Free cyanide (low level) in water	L080-PL	c
BH3B	EW9	W	18-71825	883074	c	Low level total cyanide in water	L080-PL	c
BH3B	EW9	W	18-71825	883074	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH3B	EW9	W	18-71825	883074	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH3B	EW9	W	18-71825	883074	c	Sulphate in water	L039-PL	c
BH3B	EW9	W	18-71825	883074	c	Total Hardness of water	L045-PL	c
BH3B	EW9	W	18-71825	883074	c	pH at 20oC in water (automated)	L099-PL	c
BH4B	EW10	W	18-71825	883075	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH4B	EW10	W	18-71825	883075	c	Hexavalent chromium in water	L080-PL	c
BH4B	EW10	W	18-71825	883075	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH4B	EW10	W	18-71825	883075	c	Boron in water	L039-PL	c
BH4B	EW10	W	18-71825	883075	c	Cr (III) in water	L080-PL	c
BH4B	EW10	W	18-71825	883075	c	Free cyanide (low level) in water	L080-PL	c
BH4B	EW10	W	18-71825	883075	c	Low level total cyanide in water	L080-PL	c
BH4B	EW10	W	18-71825	883075	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH4B	EW10	W	18-71825	883075	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH4B	EW10	W	18-71825	883075	c	Sulphate in water	L039-PL	c
BH4B	EW10	W	18-71825	883075	c	Total Hardness of water	L045-PL	c
BH4B	EW10	W	18-71825	883075	c	pH at 20oC in water (automated)	L099-PL	c
DYB	EW12	W	18-71825	883077	c	Ammonia as NH3 in water	L082-PL	c
DYB	EW12	W	18-71825	883077	c	Ammoniacal Nitrogen as N in water	L082-PL	c
FUYB	EW3	W	18-71825	883068	cd	Ammonia as NH3 in water	L082-PL	dc
FUYB	EW3	W	18-71825	883068	cd	Ammoniacal Nitrogen as N in water	L082-PL	dc
LEP 1	EW7	W	18-71825	883072	cd	BTEX and MTBE in water (Monoaromatics)	L073B-PL	dc
LEP 1	EW7	W	18-71825	883072	cd	Hexavalent chromium in water	L080-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Ammonia as NH3 in water	L082-PL	dc
LEP 1	EW7	W	18-71825	883072	cd	Ammoniacal Nitrogen as N in water	L082-PL	dc
LEP 1	EW7	W	18-71825	883072	cd	Boron in water	L039-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Cr (III) in water	L080-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Free cyanide (low level) in water	L080-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Low level total cyanide in water	L080-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Metals in water by ICP-MS (dissolved)	L012-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Metals in water by ICP-OES (dissolved)	L039-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Settleable Solids (Rapidly Settleable) in water	L004-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Settleable Solids in water	L004-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Sulphate in water	L039-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Suspended solids in water	L004-PL	c
LEP 1	EW7	W	18-71825	883072	cd	TPHCWG (Waters)	L070-PL	d
LEP 1	EW7	W	18-71825	883072	cd	Total Hardness of water	L045-PL	c
LEP 1	EW7	W	18-71825	883072	cd	Total Settleable Solids in water	L004-PL	c
LEP 1	EW7	W	18-71825	883072	cd	pH at 20oC in water (automated)	L099-PL	c
LEP 2	EW8	W	18-71825	883073	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
LEP 2	EW8	W	18-71825	883073	c	Hexavalent chromium in water	L080-PL	c
LEP 2	EW8	W	18-71825	883073	c	Ammonia as NH3 in water	L082-PL	c
LEP 2	EW8	W	18-71825	883073	c	Ammoniacal Nitrogen as N in water	L082-PL	c
LEP 2	EW8	W	18-71825	883073	c	Boron in water	L039-PL	c
LEP 2	EW8	W	18-71825	883073	c	Cr (III) in water	L080-PL	c
LEP 2	EW8	W	18-71825	883073	c	Free cyanide (low level) in water	L080-PL	c
LEP 2	EW8	W	18-71825	883073	c	Low level total cyanide in water	L080-PL	c
LEP 2	EW8	W	18-71825	883073	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
LEP 2	EW8	W	18-71825	883073	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
LEP 2	EW8	W	18-71825	883073	c	Settleable Solids (Rapidly Settleable) in water	L004-PL	c

Sample Deviation Report



LEP 2	EW8	W	18-71825	883073	c	Settleable Solids in water	L004-PL	c
LEP 2	EW8	W	18-71825	883073	c	Sulphate in water	L039-PL	c
LEP 2	EW8	W	18-71825	883073	c	Suspended solids in water	L004-PL	c
LEP 2	EW8	W	18-71825	883073	c	Total Hardness of water	L045-PL	c
LEP 2	EW8	W	18-71825	883073	c	Total Settleable Solids in water	L004-PL	c
LEP 2	EW8	W	18-71825	883073	c	pH at 20°C in water (automated)	L099-PL	c
MYB	EW11	W	18-71825	883076	c	Ammonia as NH ₃ in water	L082-PL	c
MYB	EW11	W	18-71825	883076	c	Ammoniacal Nitrogen as N in water	L082-PL	c
UYB	EW5	W	18-71825	883070	c	Ammonia as NH ₃ in water	L082-PL	c
UYB	EW5	W	18-71825	883070	c	Ammoniacal Nitrogen as N in water	L082-PL	c

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	21/12/2017	VISIT BY:	CRG
WEATHER:			
Time	Description		
08:00 to 15:30	Dull, overcast with drizzle		

Site operations

Work in hand

WGUC construction of final wing wall section
CGL to undertake weekly ground and surface water sampling

Observations

A full ground and surface water monitoring round was undertaken including all borehole locations and Yeading Brook.

BH4B was partially buried during works to step the WGUC bank, the borehole was salvable and sustained minimal damage.

Additional water samples taken from two extraction points in the lagoon to test missing parameters of discharge consent.

RAMS completed for window sampling works commencing tomorrow in detention basin.

Sampling and/or testing undertaken or observed

Full ground and surface water monitoring round completed

Additional water samples from lagoon extraction points

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

Yeading Brook river level was high therefore submerging the surface water discharge point, no sample taken.

Correspondence requested by FMC

Approved RAMS for WS works

Correspondence received from

CGL require service clearance of WS locations, marking and breaking out.



Analytical Report Number : 17-69319

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
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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.

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	29/11/2017	VISIT BY:	CRG
WEATHER:			
Time	Description		
08:00 to 15:30	Bitterly cold day, overcast with freezing breeze		

Site operations

Work in hand	WGUC strut boxes removed and excavation for remaining wingwall construction TAG pouring concrete of WYB abutment wall TAC continue steelwork of EYB abutment wall CGL to undertake weekly ground and surface water sampling, to include lagoon trench water for disposal
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Observations

- 1) Wheel wash not reassembled, now manually jet washing vehicles near site entrance, runoff flowing towards compound and not currently managed.
- 2) WGUC strut boxes removed and backfill in front of the wingwall of natural arisings from stockpile 16 have been compact well, only minor water ingress from the canal around incomplete section.
- 3) WGUC works to excavate and reprofile banks ready for construction of final wingwall section, arisings were observed to include dark dredged material and Minet Tip refuse, CRG advised that this should be stockpiled on existing contaminated soil stockpiles in the lagoon.
- 4) Stockpile 3 (seeded topsoil) has been reprofiled and material previously over spilling the membrane onto the lagoon bund has been pulled back. Fragments of membrane were observed on the surface of the reprofiled stockpile suggesting the membrane was damaged in the process. Stockpile 17 still overfills the membrane onto the lagoon bund. It has previously advised by CGL and Environ that the over spilling material should be moved clear of the membrane so to avoid the potential risk of runoff contamination leaching underneath the lagoon membrane. During the reprofiling of stockpile 17, it is vital that the membrane is not damaged given that this material is known to contain potentially contaminated soils from merged stockpile 12 material.
- 5) A full ground and surface water monitoring round was undertaken and included additional sampling of the lagoon drainage trenches. A sample was taken from each Lagoon Extraction Point (LEP 1 to LEP2) from the east and west lagoon to determine suitable disposal of the accumulated trench water.

Sampling and/or testing undertaken or observed

Full ground and surface water monitoring round completed

Additional water sampling in Lagoon Extraction Points

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

Advised that stockpile 17 still over-spills the lagoon bund and membrane edge and should be removed

Correspondence requested by FMC

Correspondence received from

CGL require updated stockpile management plan following the reprofiling of stockpiles in the lagoon area.

**Chris Gordon**

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Analytical Report Number : 17-62497

Project / Site name:	Southern Western Access	Samples received on:	03/10/2017
Your job number:	CG-28308	Samples instructed on:	03/10/2017
Your order number:	4586	Analysis completed by:	10/10/2017
Report Issue Number:	1	Report issued on:	10/10/2017
Samples Analysed:	2 water samples		

Signed:

Rexona Rahman
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: 17-62497

Project / Site name: Southern Western Access

Your Order No: 4586

Lab Sample Number				828908	828909			
Sample Reference				Lagoon 1	Lagoon 2			
Sample Number				DP 1	DP 2			
Depth (m)				None Supplied	None Supplied			
Date Sampled				02/10/2017	02/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	11.5	10.4			
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	84	31			
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1			
Sulphate as SO ₄	µg/l	45	ISO 17025	822000	1260000			
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	5300	6800			
Ammonia as NH ₃	µg/l	15	ISO 17025	6500	8200			
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	39.5	59.8			
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	596	1220			

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	60			
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	0.84			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	0.10			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	0.41			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	0.22			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	0.29			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	0.14			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.18			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	0.13			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01			

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	2.31			
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Analytical Report Number: 17-62497

Project / Site name: Southern Western Access

Your Order No: 4586

Lab Sample Number				828908	828909			
Sample Reference				Lagoon 1	Lagoon 2			
Sample Number				DP 1	DP 2			
Depth (m)				None Supplied	None Supplied			
Date Sampled				02/10/2017	02/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	0.4	ISO 17025	2.6	3.8			
Arsenic (dissolved)	µg/l	0.15	ISO 17025	7.39	11.0			
Barium (dissolved)	µg/l	0.06	ISO 17025	94	130			
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1			
Boron (dissolved)	µg/l	10	ISO 17025	30	73			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.06	0.12			
Calcium (dissolved)	mg/l	0.012	ISO 17025	240	490			
Chromium (hexavalent)	µg/l	5	ISO 17025	84	< 5.0			
Chromium (III)	µg/l	1	NONE	11	4.3			
Chromium (dissolved)	µg/l	0.2	ISO 17025	95	4.3			
Copper (dissolved)	µg/l	0.5	ISO 17025	190	150			
Lead (dissolved)	µg/l	0.2	ISO 17025	2.8	2.6			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	0.067	0.39			
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.12	0.33			
Nickel (dissolved)	µg/l	0.5	ISO 17025	23	23			
Selenium (dissolved)	µg/l	0.6	ISO 17025	7.7	19			
Vanadium (dissolved)	µg/l	0.2	ISO 17025	37	40			
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.8	1.1			



Analytical Report Number: 17-62497

Project / Site name: Southern Western Access

Your Order No: 4586

Lab Sample Number				828908	828909			
Sample Reference				Lagoon 1	Lagoon 2			
Sample Number				DP 1	DP 2			
Depth (m)				None Supplied	None Supplied			
Date Sampled				02/10/2017	02/10/2017			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

Monoaromatics

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

Petroleum Hydrocarbons

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

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

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



Analytical Report Number : 17-62497

Project / Site name: Southern 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
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 water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX 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 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 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 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
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
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
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	L0102B-PL	W	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 Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

Iss No 17-62497-1 Southern Western Access CG-28308

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

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Analytical Report Number : 17-62497

Project / Site name: Southern 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
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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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Environmental Science

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Analytical Report Number : 19-35192

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

Signed:

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

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

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

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

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

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Environmental Science

Analytical Report Number: 19-35192

Project / Site name: Southall

Your Order No: 2445

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

General Inorganics

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

Total Phenols

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

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	27.1	44.8	11.1		
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Environmental Science

Analytical Report Number: 19-35192

Project / Site name: Southall

Your Order No: 2445

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

Heavy Metals / Metalloids

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

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	5.3	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

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

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

Miscellaneous Organics

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

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Environmental Science

Analytical Report Number : 19-35192**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 *
1189019	TP1	RDE ES1	0.30	Brown clay with vegetation and chalk.
1189020	TP2	RDE ES2	0.10	Brown loam and clay with vegetation and gravel
1189021	TP3	RDW ES3	0.20	Brown loam and clay with gravel and chalk.
1189022	TP4	FCA ES4	0.20	Brown loam and clay with vegetation and gravel
1189023	TP5	FCA ES5	0.10	Brown loam and clay with vegetation and gravel
1189024	TP6	C. PARK ES6	0.00	Brown loam and sand with gravel.
1189025	TP7	C. PARK ES7	0.20	Brown loam and sand with gravel.
1189026	TP8	C. PARK ES8	0.20	Brown loam and sand with gravel and rubble.
1189027	TP9	WYB ES9	0.30	Brown loam and clay with gravel and vegetation.

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

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Environmental Science

Analytical Report Number : 19-35192**Project / Site name: Southall****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonia as NH3 in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Ammoniacal Nitrogen as N in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
chromium III in soil	In-house method by calculation from total Cr and Cr VI.	In-house method	L068-PL	D	NONE
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
DRO C10-28 (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Free cyanide (Low level) in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025

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Environmental Science

Analytical Report Number : 19-35192

Project / Site name: Southall

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS
Petroleum Ether Extractable Matter in water	Gravimetrically determined through extraction with petroleum ether.	In-house method	L060-PL	W	NONE
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Settleable Solids (Rapidly Settleable) in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025

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Environmental Science

Analytical Report Number : 19-35192**Project / Site name: Southall****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

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

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

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

Iss No 19-35192-1 Southall CG-28308

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Analytical Report Number : 19-78491

Project / Site name:	Southall	Samples received on:	18/12/2019
Your job number:	CG-28308	Samples instructed on:	18/12/2019
Your order number:	4021	Analysis completed by:	03/01/2020
Report Issue Number:	1	Report issued on:	03/01/2020
Samples Analysed:	4 water samples		

Signed: Karolina Marek

Karolina Marek
Technical Reviewer (Reporting Team)

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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



Analytical Report Number: 19-78491

Project / Site name: Southall

Your Order No: 4021

Lab Sample Number				1398020	1398021	1398022	1398023	
Sample Reference				BH2A	BH2A	BH4B	YB OIL	
Sample Number				S1	S2	S3	S4	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/12/2019	18/12/2019	18/12/2019	18/12/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.0	7.2	7.7	8.8	
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	3.7	3.6	14	27	
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	
Sulphate as SO ₄	µg/l	45	ISO 17025	1310000	1350000	117000	92300	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	11000	11000	8100	7900	
Ammonium as NH ₄	µg/l	15	ISO 17025	14000	14000	10000	10000	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	72.0	79.2	11.4	32.7	
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	2160	2190	1000	383	

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	42	
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Speciated PAHs

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

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	
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Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	1200	1300	440	55	
Selenium (dissolved)	µg/l	4	ISO 17025	-	-	-	< 4.0	
Antimony (dissolved)	µg/l	0.4	ISO 17025	1.0	1.0	< 0.4	3.7	
Arsenic (dissolved)	µg/l	0.15	ISO 17025	8.05	7.44	1.44	1.77	
Barium (dissolved)	µg/l	0.06	ISO 17025	77	78	220	97	
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.89	0.90	0.10	0.09	
Calcium (dissolved)	mg/l	0.012	ISO 17025	610	620	170	150	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	1.3	< 1.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.9	0.9	1.3	0.5	
Copper (dissolved)	µg/l	0.5	ISO 17025	6.0	6.0	5.2	38	
Lead (dissolved)	µg/l	0.2	ISO 17025	3.2	4.4	6.3	3.0	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	150	160	140	3.7	
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	0.17	
Nickel (dissolved)	µg/l	0.5	ISO 17025	26	26	6.0	13	
Selenium (dissolved)	µg/l	0.6	ISO 17025	18	17	7.1	U/S*	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.9	0.9	0.8	0.7	
Zinc (dissolved)	µg/l	0.5	ISO 17025	49	42	16	5.6	



Analytical Report Number: 19-78491

Project / Site name: Southall

Your Order No: 4021

Lab Sample Number				1398020	1398021	1398022	1398023	
Sample Reference				BH2A	BH2A	BH4B	YB OIL	
Sample Number				S1	S2	S3	S4	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/12/2019	18/12/2019	18/12/2019	18/12/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

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

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	

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

* U/S for Se on ICP-MS due to matrix interference



Analytical Report Number : 19-78491

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 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
Ammonium as NH ₄ in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX 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 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 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 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
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
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-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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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.



APPENDIX 1 - SUBSTANCES

The Ground water shall not contain any of the substances listed below at a concentration expressed in milligrams per litre greater than that stated:

Determinand Name	Permitted Limit
Suspended Solids	2000.0
Sulphate	1800.0
Chloride	1500.0
Settleable Solids	500.0
Chemical Oxygen Demand	100.0
Rapidly Settleable Solids	100.0
Total Oil & Grease	50.0
Ammoniacal Nitrogen	35.0

THERE ARE NO FURTHER LIMITS IN THIS APPENDIX