

APPENDIX J

*Thames Water Discharge Permit (Appendix 1 Extract),
Leachate/Water Data and Duty of Care Records*



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

Table 4. Waste Water Test Results Screened for Disposal via Thames Water Discharge Consent

Water Analysis											
Thames Water Leachate Discharge Limits	Location Reference		LAGOON 3 TRENCH	LAGOON 1	LAGOON 2	LEP1	LEP2	LEP 1	LEP 2	EWYB	LAGOON
	Sample Type		-	-	-			-	-	EW	EW
	Sample Reference		L1	DP 1	DP 2	EW4	EW6	EW7	EW8	IBC W1	IBC W2
	TestType		LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
	Laboratory Reference*		831595	828908	828909	867579	867581	883072	883073	1189028	1189029
	Analytical Parameter	Units									
	pH		7.9	11.5	10.4	10.3	7.4	9	8.9	7	8.1
	Total Cyanide	(µg/l)	<1.0	84	31	33	18	53	46	20	36
	Free Cyanide	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Sulphate as SO4	(µg/l)	11200	822000	1260000	645000	965000	1030000	1090000	520000	101000
1500	Chloride	(mg/l)	-	-	-	-	-	520	500	1000	7100
	Dissolved Organic Carbon	(mg/l)	3.41	39.5	59.8	87.5	55.3	31.5	29.2	113	159
100	Chemical Oxygen Demand (Total)	(mg/l)	-	-	-	-	-	120	150	460	910
2000	Total Suspended Solids	(mg/l)	-	-	-	-	-	170	160	3000	1700
100	Settleable Solids (Rapidly Settleable)	(mg/l)	-	-	-	-	-	100	60	325	10
500	Settleable Solids (1 hour)	(mg/l)	-	-	-	-	-	144	124	2670	1270
	Hardness - Total	(mgCaCO3/l)	40.6	596	1220	226	895	1060	1090	1450	440
35000	Ammoniacal Nitrogen as N	(µg/l)	22	5300	6800	24000	14000	3000	3000	24000	46000
	Ammonia as NH3	(µg/l)	26	6500	8200	30000	12000	3600	3700	-	-
	Total Phenols	(µg/l)	<1.0	<1.0	60	37	200	<1.0	<1.0	7700	1600
	Naphthalene	(µg/l)	<0.01	<0.01	0.84	3.74	1.55	<0.01	<0.01	0.43	<0.01
	Acenaphthene	(µg/l)	<0.01	<0.01	0.41	1.81	0.67	<0.01	<0.01	0.23	<0.01
	Fluorene	(µg/l)	<0.01	<0.01	0.22	0.92	0.33	<0.01	<0.01	0.19	<0.01
	Anthracene	(µg/l)	<0.01	<0.01	0.29	0.54	0.24	<0.01	<0.01	0.3	0.94
	Fluoranthene	(µg/l)	<0.01	<0.01	0.18	0.55	0.18	<0.01	<0.01	4.41	9.3
	Pyrene	(µg/l)	<0.01	<0.01	0.13	0.37	0.13	<0.01	<0.01	4.11	8.42
	Benzo_a_anthracene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.94	3.95
	Chrysene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.57	5.02
	Benzo_b_fluoranthene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3.54	4.44
	Benzo_k_fluoranthene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.37	2.03
	Benzo_a_pyrene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.99	3.03
	Indeno_1_2_3_cd_pyrene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.63	1.6
	Dibenzo_a_h_anthracene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo_g_h_i_perylene	(µg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.23	2.24
	Acenaphthylene	(µg/l)	<0.01	<0.01	0.1	0.26	0.14	<0.01	<0.01	0.33	<0.01
	Phenanthrene	(µg/l)	<0.01	<0.01	0.29	1.79	0.55	<0.01	<0.01	1.78	3.84
	Antimony	(µg/l)	1.6	2.6	3.8	1.9	3.1	9	10	5	2.9
	Arsenic	(µg/l)	0.77	7.39	11	9.08	9.73	5.93	5.49	7.92	2.15
	Barium	(µg/l)	16	94	130	30	69	100	100	170	230
	Beryllium	(µg/l)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Boron	(µg/l)	<10	30	73	71	27	100	110	140	28
	Cadmium	(µg/l)	<0.02	0.06	0.12	0.12	0.05	0.07	0.03	0.05	0.03
	Chromium_VI	(µg/l)	<5.0	84	<5.0	<5.0	<5.0	16	17	<5.0	<5.0
	Chromium_III	(µg/l)	<1.0	11	4.3	<1.0	2.9	<1.0	<1.0	1.4	<1.0
	Chromium dissolved	(µg/l)	0.7	95	4.3	0.4	2.9	8.8	10	1.4	<0.2
	Copper	(µg/l)	6.1	190	150	33	51	34	40	1.5	<0.5
	Lead	(µg/l)	0.4	2.8	2.6	9.4	9.8	4.8	3.9	6.6	0.3
	Mercury	(µg/l)	<0.05	0.12	0.33	0.36	0.32	<0.05	<0.05	0.12	0.27
	Nickel	(µg/l)	0.7	23	23	59	28	9.6	9.5	37	28
	Selenium	(µg/l)	<0.6	7.7	19	24	31	13	14	-	-
	Vanadium	(µg/l)	1.1	37	40	9.7	6.3	10	10	5.5	0.9
	Zinc	(µg/l)	5	2.8	1.1	0.9	1.2	2.6	2.2	4.2	<0.5
	Benzene	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001
	Toluene	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.0053	<0.001
	Ethyl benzene	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001
	p_m_Xylene	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001
	o_Xylene	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001
	Aliphatic_EC5_6	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aliphatic_EC6_8	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aliphatic_EC8_10	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aliphatic_EC10_12	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Aliphatic_EC12_16	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Aliphatic_EC16_35	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Aromatic_EC5_7	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aromatic_EC7_8	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aromatic_EC8_10	(µg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Aromatic_EC10_12	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Aromatic_EC12_16	(µg/l)	<10	<10	<10	19	<10	<10	<10	<10	<10
	Aromatic_EC16_21	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Aromatic_EC21_35	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Sum C5<10.0	(µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Sum C10+	(µg/l)	<10	<10	<10	19	<10	<10	<10	<10	<10

*Cross reference laboratory reference number in Table 4 of CGL Environmental Verification Report for material location details.

Table 4. Waste Water Test Results Screened for Disposal via Thames Water Discharge Consent

Thames Water Leachate Discharge Limits	Location Reference		LAGOON	YB OIL
	Sample Type		EW	
	Sample Reference		BUND W3	S4
	TestType		LIQUID	LIQUID
	Laboratory Reference*		1189030	1398023
	Analytical Parameter	Units		
	pH		9.2	8.8
	Total Cyanide	(µg/l)	7.5	27
	Free Cyanide	(µg/l)	<1.0	<1.0
	Total Sulphate as SO4	(µg/l)	1230000	92300
1500	Chloride	(mg/l)	580	-
	Dissolved Organic Carbon	(mg/l)	44	32.7
100	Chemical Oxygen Demand (Total)	(mg/l)	130	-
2000	Total Suspended Solids	(mg/l)	120	-
100	Settleable Solids (Rapidly Settleable)	(mg/l)	40	-
500	Settleable Solids (1 hour)	(mg/l)	100	-
	Hardness - Total	(mgCaCO3/l)	1340	383
35000	Ammoniacal Nitrogen as N	(µg/l)	3400	7900
	Ammonia as NH3	(µg/l)	-	10000
	Total Phenols	(µg/l)	8.3	42
	Naphthalene	(µg/l)	0.59	<0.01
	Acenaphthene	(µg/l)	0.4	<0.01
	Fluorene	(µg/l)	0.16	<0.01
	Anthracene	(µg/l)	0.22	<0.01
	Fluoranthene	(µg/l)	2.05	<0.01
	Pyrene	(µg/l)	1.9	<0.01
	Benzo_a_anthracene	(µg/l)	0.82	<0.01
	Chrysene	(µg/l)	0.88	<0.01
	Benzo_b_fluoranthene	(µg/l)	1.03	<0.01
	Benzo_k_fluoranthene	(µg/l)	0.48	<0.01
	Benzo_a_pyrene	(µg/l)	0.68	<0.01
	Indeno_1_2_3_cd_pyrene	(µg/l)	0.41	<0.01
	Dibenzo_a_h_anthracene	(µg/l)	0.12	<0.01
	Benzo_g_h_i_ptylene	(µg/l)	0.54	<0.01
	Acenaphthylene	(µg/l)	0.09	<0.01
	Phenanthrene	(µg/l)	0.77	<0.01
	Antimony	(µg/l)	4.3	3.7
	Arsenic	(µg/l)	6.24	1.77
	Barium	(µg/l)	85	97
	Beryllium	(µg/l)	<0.1	<0.1
	Boron	(µg/l)	64	55
	Cadmium	(µg/l)	0.07	150
	Chromium_VI	(µg/l)	<5.0	<5.0
	Chromium_III	(µg/l)	1.5	<1.0
	Chromium dissolved	(µg/l)	1.5	0.5
	Copper	(µg/l)	42	38
	Lead	(µg/l)	12	3
	Mercury	(µg/l)	0.23	0.17
	Nickel	(µg/l)	7.8	13
	Selenium	(µg/l)	-	-
	Vanadium	(µg/l)	7.6	0.7
	Zinc	(µg/l)	7.2	5.6
	Benzene	(µg/l)	<0.001	<1.0
	Toluene	(µg/l)	<0.001	<1.0
	Ethyl benzene	(µg/l)	<0.001	<1.0
	p_m_Xylene	(µg/l)	<0.001	<1.0
	o_Xylene	(µg/l)	<0.001	<1.0
	Aliphatic_EC5_6	(µg/l)	<1.0	<1.0
	Aliphatic_EC6_8	(µg/l)	<1.0	<1.0
	Aliphatic_EC8_10	(µg/l)	<1.0	<1.0
	Aliphatic_EC10_12	(µg/l)	<10	<10
	Aliphatic_EC12_16	(µg/l)	<10	<10
	Aliphatic_EC16_35	(µg/l)	<10	<10
	Aromatic_EC5_7	(µg/l)	<1.0	<1.0
	Aromatic_EC7_8	(µg/l)	<1.0	<1.0
	Aromatic_EC8_10	(µg/l)	<1.0	<1.0
	Aromatic_EC10_12	(µg/l)	<10	<10
	Aromatic_EC12_16	(µg/l)	<10	<10
	Aromatic_EC16_21	(µg/l)	<10	<10
	Aromatic_EC21_35	(µg/l)	<10	<10
	Sum C5<10.0	(µg/l)	<10	<10
	Sum C10+	(µg/l)	<10	<10

*Cross reference laboratory reference number in Table 4 of CGL Environmental Verification Report for material location details.

**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			



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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.

Page 5 of 6



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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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

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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

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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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 : 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.

**Chris Gordon**

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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	-