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Newport City Council
Civic Centre
Newport
NP20 4UR

Attention: Robert Hester

CERTIFICATE OF ANALYSIS

Date of report Generation: 24 June 2019
Customer: Newport City Council
Sample Delivery Group (SDG): 190613-102
Your Reference: June 2019 Groundwater Part 1
Location: Docks way
Report No: 511561

This report has been revised and directly supersedes 511534 in its entirety.

We received 7 samples on Thursday June 13, 2019 and 7 of these samples were scheduled for analysis which was completed on Monday June 24, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	190613-102	Client Reference:	June 2019 Groundwater P	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20147612	GW03_09		0.00 - 0.00	13/06/2019
20147637	GW06_34		0.00 - 0.00	13/06/2019
20147576	GW07_07		0.00 - 0.00	13/06/2019
20147556	GW07_40		0.00 - 0.00	13/06/2019
20147595	GW09_31		0.00 - 0.00	13/06/2019
20147651	GW09_35		0.00 - 0.00	13/06/2019
20147625	GW12_33		0.00 - 0.00	13/06/2019

Maximum Sample/Coolbox Temperature (°C) : 11.4

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		20147612	20147637	20147576
	Customer Sample Reference		GW03_09	GW06_34	GW07_07
	AGS Reference				
	Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Container		0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)
	Sample Type		GW	GW	GW
			GW	GW	GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 7			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 7			
Anions by Kone (w)	All	NDPs: 0 Tests: 7			
BOD True Total	All	NDPs: 0 Tests: 7			
COD Unfiltered	All	NDPs: 0 Tests: 7			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 7			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 7			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 7			
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 7			
Ionic Balance	All	NDPs: 0 Tests: 7			
Nitrite by Kone (w)	All	NDPs: 0 Tests: 7			
pH Value	All	NDPs: 0 Tests: 7			
Phosphate by Kone (w)	All	NDPs: 0 Tests: 7			
Sulphide	All	NDPs: 0 Tests: 7			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102 Client Reference: June 2019 Groundwater P Report Number: 511561
Location: Docks way Order Number: 700139401 Superseded Report: 511534

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
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<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	20147576		GW07_07				0.00 - 0.00		H2SO4 (ALE244)		GW	
	20147637		GW06_34				0.00 - 0.00		500ml Plastic (ALE208)		GW	
									250ml BOD (ALE212)		GW	
									0.5l glass bottle (ALE227)		GW	
									ZnAc (ALE246)		GW	
									Vial (ALE297)		GW	
									NaOH (ALE245)		GW	
									HNO3 Filtered (ALE204)		GW	
									H2SO4 (ALE244)		GW	
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								250ml BOD (ALE212)		GW		
								0.5l glass bottle (ALE227)		GW		
								ZnAc (ALE246)		GW		
								Vial (ALE297)		GW		
								NaOH (ALE245)		GW		

20147595	GW09_31	0.00 - 0.00	ZnAc (ALE246)	GW		
			Vial (ALE297)	GW	X	
			NaOH (ALE245)	GW		
			HNO3 Filtered (ALE204)	GW		
			H2SO4 (ALE244)	GW		
			500ml Plastic (ALE208)	GW		
			250ml BOD (ALE212)	GW		
			0.5l glass bottle (ALE227)	GW		
			ZnAc (ALE246)	GW		
			Vial (ALE297)	GW	X	
20147556	GW07_40	0.00 - 0.00	NaOH (ALE245)	GW		
			HNO3 Filtered (ALE204)	GW		
			H2SO4 (ALE244)	GW		
			500ml Plastic (ALE208)	GW		
			250ml BOD (ALE212)	GW		
			0.5l glass bottle (ALE227)	GW		
			ZnAc (ALE246)	GW		
			Vial (ALE297)	GW		
			NaOH (ALE245)	GW		
			HNO3 Filtered (ALE204)	GW		
20147576	GW07_07	0.00 - 0.00	ZnAc (ALE246)	GW		
			Vial (ALE297)	GW	X	
			NaOH (ALE245)	GW		
			HNO3 Filtered (ALE204)	GW		
			Vial (ALE297)	GW		



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

			20147651	20147625
			GW09_35	GW12_33
			0.00 - 0.00	0.00 - 0.00
			ZnAc (ALE246)	ZnAc (ALE246)
			Vial (ALE297)	Vial (ALE297)
			NaOH (ALE245)	NaOH (ALE245)
			HNO3 Filtered (ALE204)	HNO3 Filtered (ALE204)
			H2SO4 (ALE244)	H2SO4 (ALE244)
			500ml Plastic (ALE208)	500ml Plastic (ALE208)
			250ml BOD (ALE212)	250ml BOD (ALE212)
			0.5l glass bottle (ALE227)	0.5l glass bottle (ALE227)
			GW	GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 7		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 7		
Anions by Kone (w)	All	NDPs: 0 Tests: 7		
BOD True Total	All	NDPs: 0 Tests: 7		
COD Unfiltered	All	NDPs: 0 Tests: 7		
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 7		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 7		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 7		
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 7		
Ionic Balance	All	NDPs: 0 Tests: 7		
Nitrite by Kone (w)	All	NDPs: 0 Tests: 7		
pH Value	All	NDPs: 0 Tests: 7		
Phosphate by Kone (w)	All	NDPs: 0 Tests: 7		
Sulphide	All	NDPs: 0 Tests: 7		



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102 Client Reference: June 2019 Groundwater P Report Number: 511561
Location: Docks way Order Number: 700139401 Superseded Report: 511534

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
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RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

VOC MS (W)

All

NDPs: 0
Tests: 7

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Results Legend			Customer Sample Ref.	GW03_09	GW06_34	GW07_07	GW07_40	GW09_31	GW09_35
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERIS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.			13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.			13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019
+	Subcontracted - refer to subcontractor report for accreditation status.			190613-102	190613-102	190613-102	190613-102	190613-102	190613-102
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			20147612	20147637	20147576	20147556	20147595	20147651
(F)	Trigger breach confirmed								
1-3+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Ionic balance	% Diff	Calulation		1.4	9.42	0.0687	0.567	incomplete	-8.32
Alkalinity, Total as CaCO3	<2 mg/l	TM043		310	595	454	685	340	825
BOD, unfiltered	<1 mg/l	TM045		<1	3.91	7.53	3.38	2.49	<1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		6.7	12.9	13	18.7	9.64	12.2
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2	7.28	4.3	12.4	2.05	2.63
Sulphide	<0.01 mg/l	TM101		<0.01	2.29	2.88	0.328	0.486	0.528
COD, unfiltered	<7 mg/l	TM107		22.5	41.1	43.3	50.6	29.5	110
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		1.45	1.33	1.36	1.92	1.11	9.45
Arsenic (diss.filt)	<0.5 µg/l	TM152		0.914	40.8	2.1	12.7	2.03	2.09
Boron (diss.filt)	<10 µg/l	TM152		284	653	443	1610	369	1120
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium (diss.filt)	<1 µg/l	TM152		<1	<1	<1	<1	<1	<1
Copper (diss.filt)	<0.3 µg/l	TM152		2.27	<0.3	<0.3	<0.3	<0.3	<0.3
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Manganese (diss.filt)	<3 µg/l	TM152		250	1890	680	155	865	1310
Nickel (diss.filt)	<0.4 µg/l	TM152		2.44	1.23	1.98	1.74	2.35	1.04
Selenium (diss.filt)	<1 µg/l	TM152		<1	<1	<1	<1	<1	<1
Zinc (diss.filt)	<1 µg/l	TM152		17.4	2.63	3.35	1.63	1.87	1.36
Sodium (Dis.Filt)	<0.076 mg/l	TM152		79.5	161	163	322	94.5	1420
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		50.9	61.5	36.2	56	32.1	238
Potassium (Dis.Filt)	<0.2 mg/l	TM152		19.5	24.2	15.1	32.1	16.2	50.2
Calcium (Dis.Filt)	<0.2 mg/l	TM152		227	140	100	36.7	127	213
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0809	2.16	0.0648	0.406	0.9	1.55
Hardness, Total as CaCO3	<0.65 mg/l	TM152		776	604	400	322	450	1510
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172		110	<100	115	<100	109	<100
Nitrite as NO2	<0.05 mg/l	TM184		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		0.309	1.08	2.79	9.41	0.129	3.95
Sulphate	<2 mg/l	TM184		551	68.5	44.6	20.9	211	152
Chloride	<2 mg/l	TM184		37.4	110	195	272	83.1	3240
Nitrate as NO3	<0.3 mg/l	TM184		5.74	<0.3	<0.3	<0.3	<0.3	<0.3
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		1.3	<0.1	<0.1	<0.1	<0.1	<0.1
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Results Legend		Customer Sample Ref.	GW12_33				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00				
M	mCERTS accredited.		Ground Water (GW)				
aq	Aqueous / settled sample.		13/06/2019				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		13/06/2019				
(F)	Trigger breach confirmed		190613-102				
1-3+5@	Sample deviation (see appendix)		20147625				
Component	LOD/Units	Method					
Ionic balance	% Diff	Calulation	29.9				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	615	#			
BOD, unfiltered	<1 mg/l	TM045	4.29	#			
Carbon, Organic (diss.filt)	<3 mg/l	TM090	13.1				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	7.43	#			
Sulphide	<0.01 mg/l	TM101	3.45	#			
COD, unfiltered	<7 mg/l	TM107	43.5	#			
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	2.13	#			
Arsenic (diss.filt)	<0.5 µg/l	TM152	42.9	#			
Boron (diss.filt)	<10 µg/l	TM152	872	#			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#			
Chromium (diss.filt)	<1 µg/l	TM152	<1	#			
Copper (diss.filt)	<0.3 µg/l	TM152	<0.3	#			
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2	#			
Manganese (diss.filt)	<3 µg/l	TM152	555	#			
Nickel (diss.filt)	<0.4 µg/l	TM152	1.02	#			
Selenium (diss.filt)	<1 µg/l	TM152	<1	#			
Zinc (diss.filt)	<1 µg/l	TM152	4.49	#			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	708	#			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	98.9	#			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	36.2	#			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	146	#			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.291	#			
Hardness, Total as CaCO3	<0.65 mg/l	TM152	773				
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172	<100				
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	3.84	#			
Sulphate	<2 mg/l	TM184	146	#			
Chloride	<2 mg/l	TM184	354	#			
Nitrate as NO3	<0.3 mg/l	TM184	<0.3				
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1	#			
Cyanide, Total	<0.05 mg/l	TM227	<0.05	#			



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Validated

SDG: 190613-102 **Client Reference:** June 2019 Groundwater P **Report Number:** 511561
Location: Docks way **Order Number:** 700139401 **Superseded Report:** 511534

Table of Results - Appendix

Method No	Reference	Description
Calculation		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Test Completion Dates

Lab Sample No(s)	20147612	20147637	20147576	20147556	20147595	20147651	20147625
Customer Sample Ref.	GW03_09	GW06_34	GW07_07	GW07_40	GW09_31	GW09_35	GW12_33
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Alkalinity as CaCO ₃	19-Jun-2019	19-Jun-2019	18-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	19-Jun-2019
Alkalinity Filtered as CaCO ₃	19-Jun-2019	18-Jun-2019	19-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019
Ammoniacal Nitrogen	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019
Anions by Kone (w)	19-Jun-2019	19-Jun-2019	19-Jun-2019	19-Jun-2019	19-Jun-2019	19-Jun-2019	19-Jun-2019
BOD True Total	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019
COD Unfiltered	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019
Conductivity (at 20 deg.C)	18-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019	18-Jun-2019
Cyanide Comp/Free/Total/Thiocyanate	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019
Dissolved Metals by ICP-MS	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019
Dissolved Organic/Inorganic Carbon	17-Jun-2019	19-Jun-2019	17-Jun-2019	19-Jun-2019	17-Jun-2019	19-Jun-2019	19-Jun-2019
EPH (DRO) (C10-C40) Aqueous (W)	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019
Ionic Balance	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	20-Jun-2019	24-Jun-2019
Nitrite by Kone (w)	17-Jun-2019	17-Jun-2019	17-Jun-2019	17-Jun-2019	14-Jun-2019	14-Jun-2019	17-Jun-2019
pH Value	18-Jun-2019	18-Jun-2019	18-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019
Phosphate by Kone (w)	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019	14-Jun-2019
Sulphide	20-Jun-2019	20-Jun-2019	20-Jun-2019	17-Jun-2019	20-Jun-2019	17-Jun-2019	20-Jun-2019
VOC MS (W)	20-Jun-2019	20-Jun-2019	19-Jun-2019	19-Jun-2019	19-Jun-2019	20-Jun-2019	20-Jun-2019



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Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Chromatogram

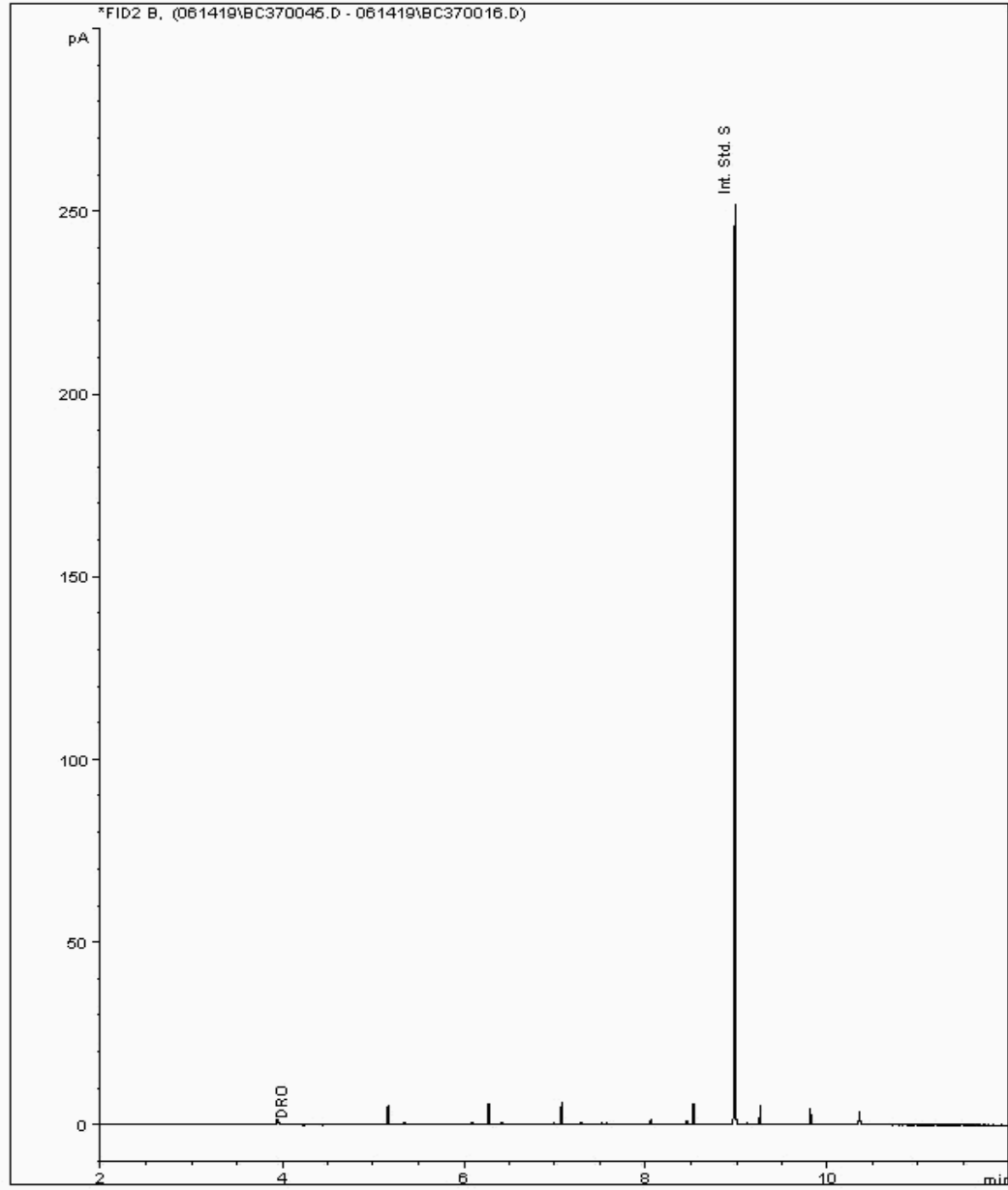
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151062
Sample ID : GW07_40

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920620-
Date Acquired : 15/06/2019 07:22:48 PM
Units : mg/l





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Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Chromatogram

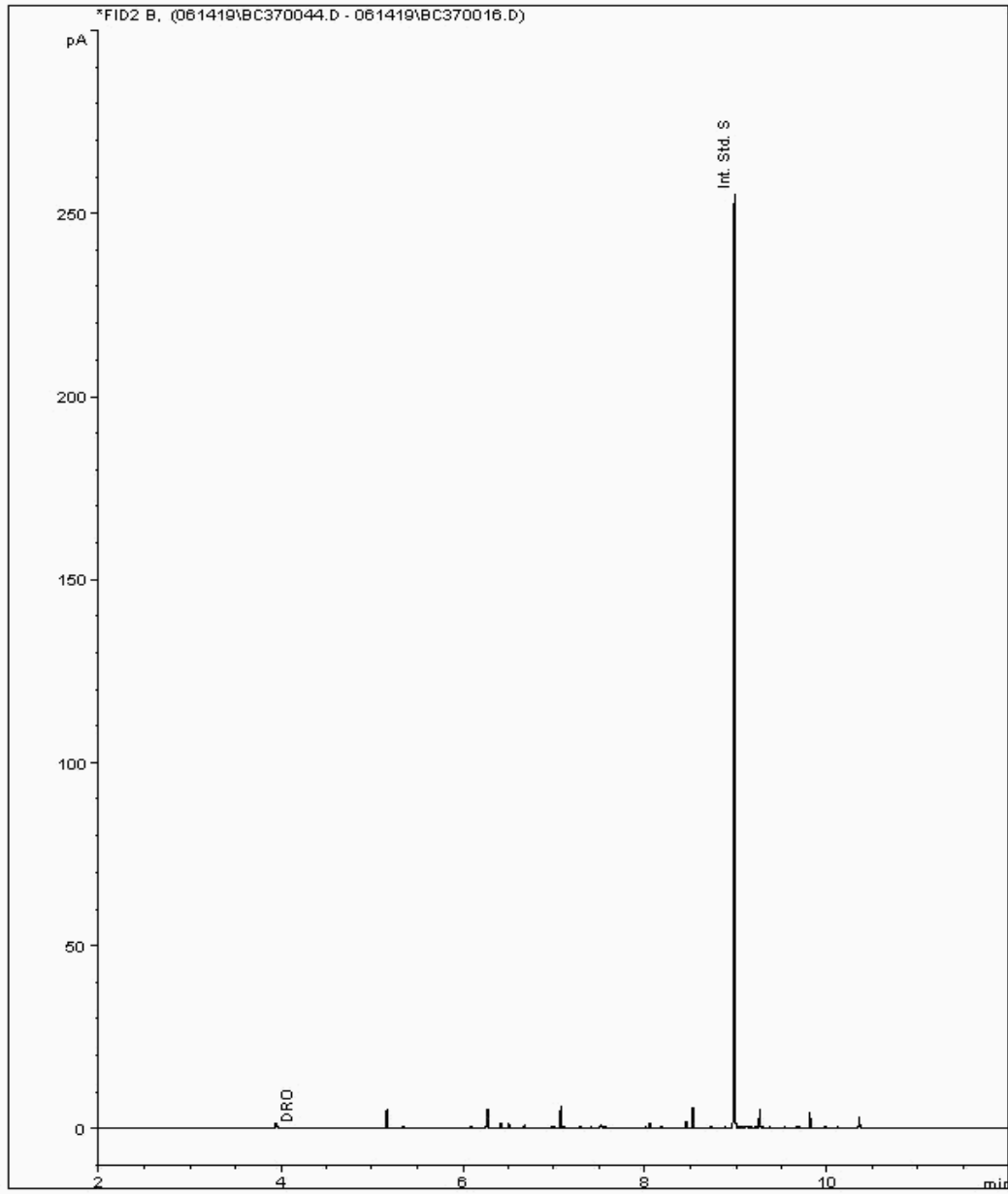
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151068
Sample ID : GW09_31

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920659-
Date Acquired : 15/06/2019 06:58:28 PM
Units : mg/l





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SDG:	190613-102	Client Reference:	June 2019 Groundwater P	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Chromatogram

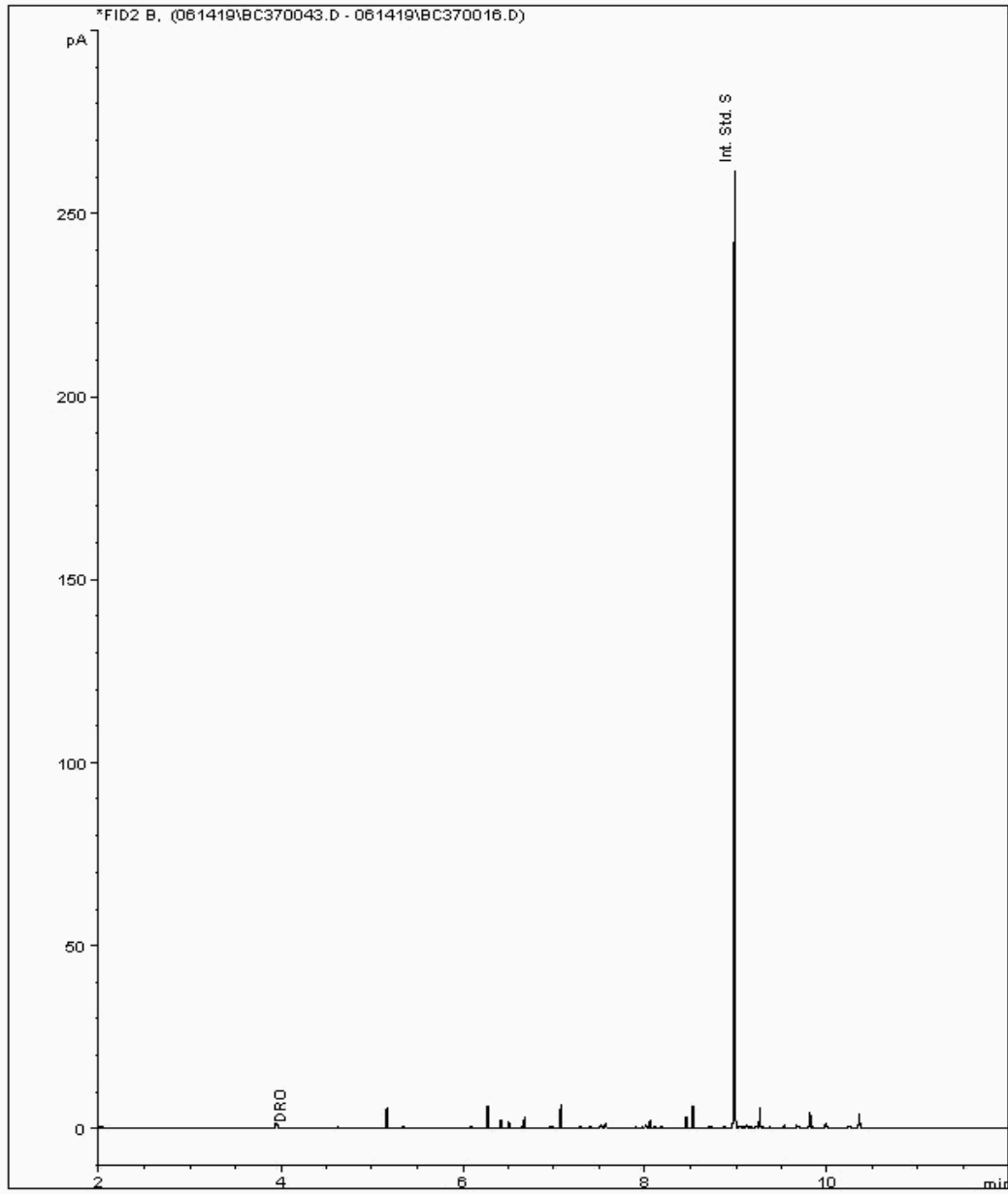
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151075
Sample ID : GW07_07

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920642-
Date Acquired : 15/06/2019 06:34:11 PM
Units : mg/l





CERTIFICATE OF ANALYSIS

Validated

SDG:	190613-102	Client Reference:	June 2019 Groundwater P	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Chromatogram

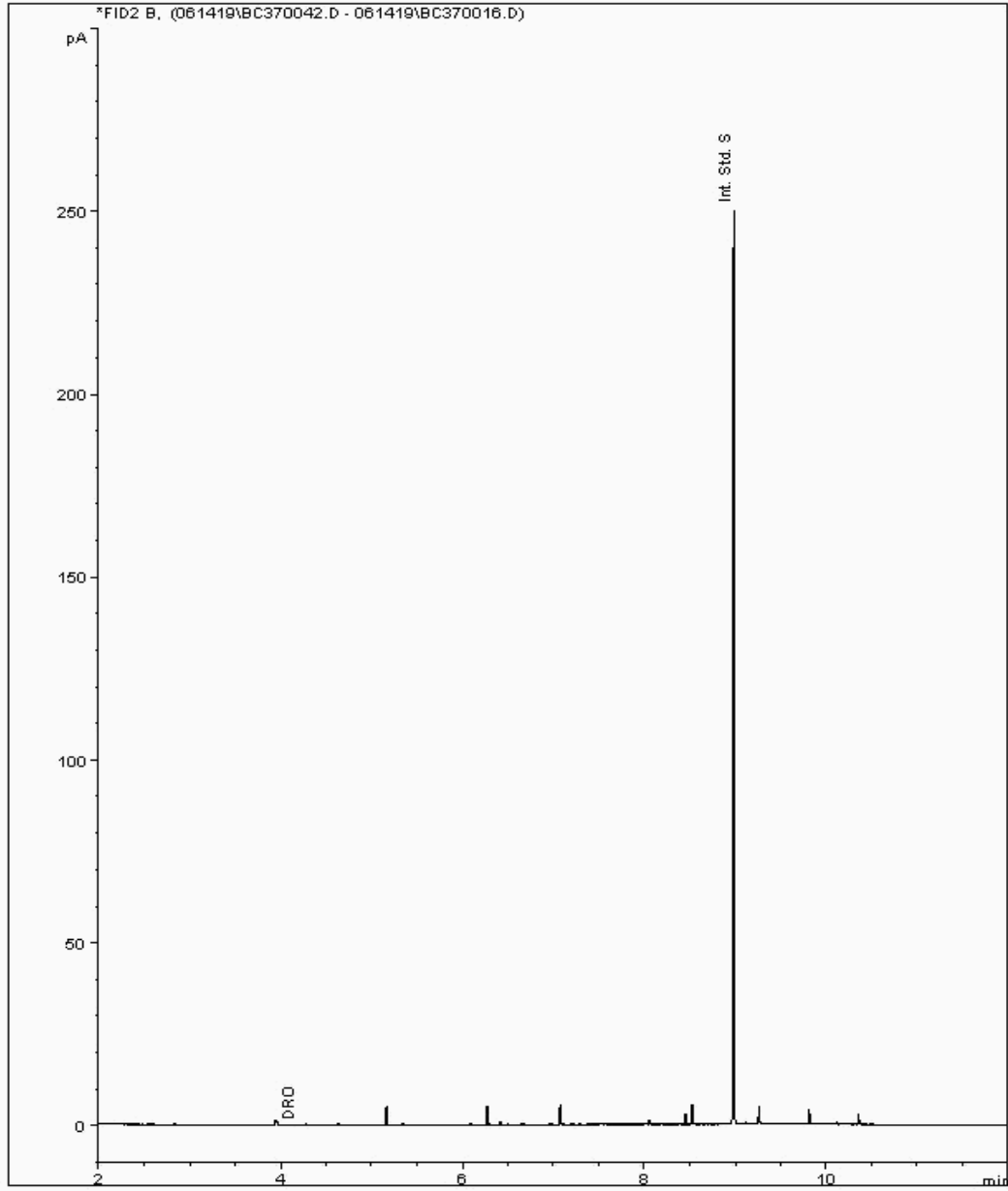
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151084
Sample ID : GW03_09

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920681-
Date Acquired : 15/06/2019 06:09:47 PM
Units : mg/l





CERTIFICATE OF ANALYSIS

Validated

SDG:	190613-102	Client Reference:	June 2019 Groundwater P	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Chromatogram

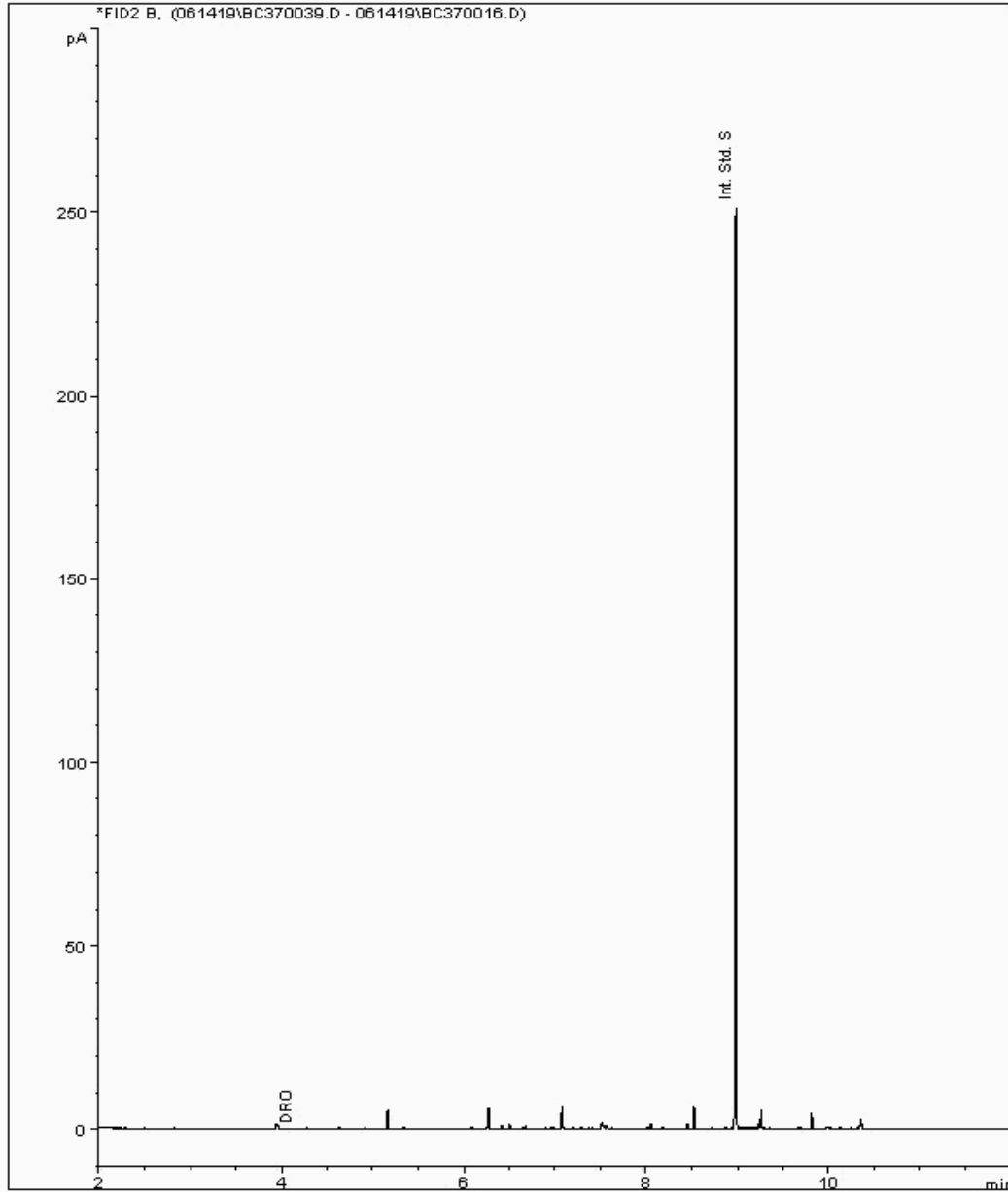
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151096
Sample ID : GW09_35

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920742-
Date Acquired : 15/06/2019 04:56:59 PM
Units : mg/l





CERTIFICATE OF ANALYSIS

Validated

SDG: 190613-102
Location: Docks way

Client Reference: June 2019 Groundwater P
Order Number: 700139401

Report Number: 511561
Superseded Report: 511534

Chromatogram

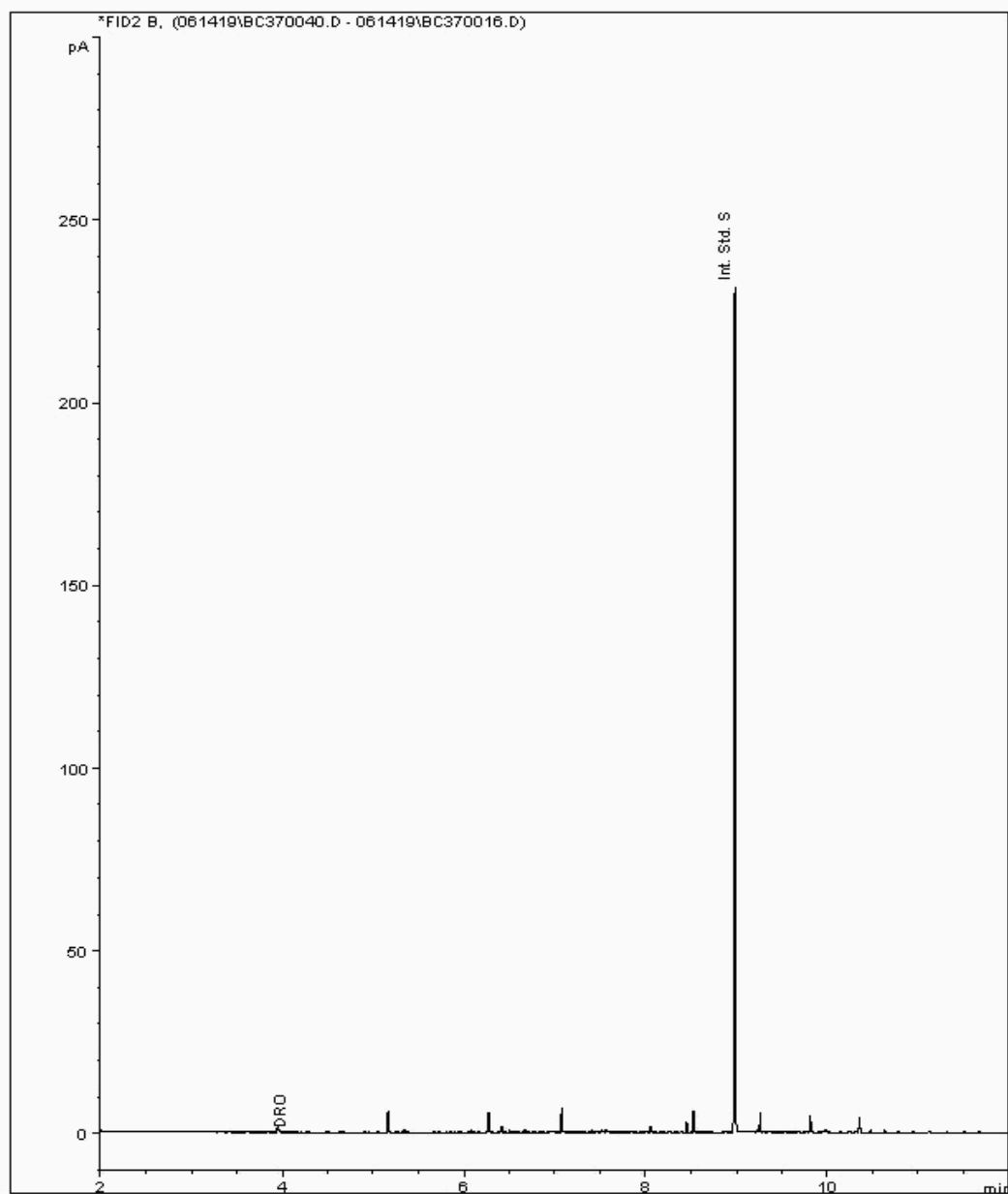
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151102
Sample ID : GW12_33

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920702-
Date Acquired : 15/06/2019 05:21:13 PM
Units : mg/l





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Validated

SDG:	190613-102	Client Reference:	June 2019 Groundwater P	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Chromatogram

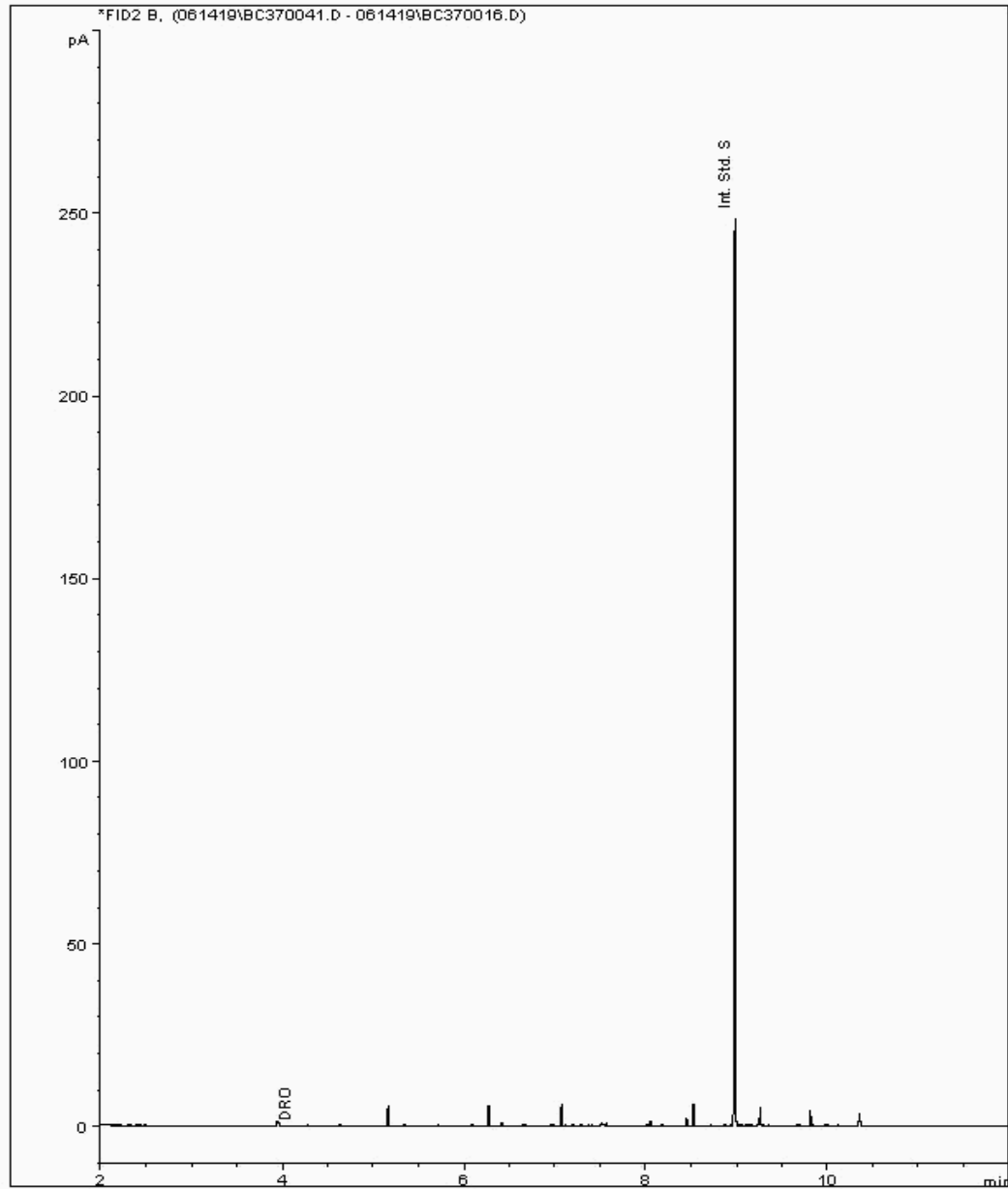
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20151111
Sample ID : GW06_34

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 18920724-
Date Acquired : 15/06/2019 05:45:24 PM
Units : mg/l





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SDG:	190613-102	Client Reference:	June 2019 Groundwater	Report Number:	511561
Location:	Docks way	Order Number:	700139401	Superseded Report:	511534

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

General

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.