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Manor Road (off Manor Lane)
Hawarden
Deeside
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Newport City Council
Civic Centre
Newport
NP20 4UR

Attention: Robert Hester

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 January 2020
Customer:	Newport City Council
Sample Delivery Group (SDG):	191219-55
Your Reference:	GW/SW/Leach Dec Part 2
Location:	Docks Way
Report No:	536650

This report has been revised and directly supersedes 536620 in its entirety.

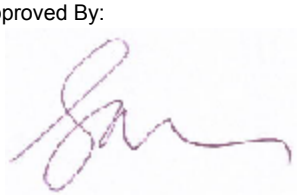
We received 14 samples on Thursday December 19, 2019 and 13 of these samples were scheduled for analysis which was completed on Wednesday January 08, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope 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.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
21405980	C3_Asb		0.00 - 0.00	17/12/2019
21405849	C2B		0.00 - 0.00	17/12/2019
21405919	GW03_13		0.00 - 0.00	17/12/2019
21405879	GW06_36		0.00 - 0.00	17/12/2019
21405899	GW06_37		0.00 - 0.00	17/12/2019
21405786	GW09_35		0.00 - 0.00	17/12/2019
21405943	GW12_38		0.00 - 0.00	17/12/2019
21405965	GW06_14A		0.00 - 0.00	17/12/2019
21405825	LF08_07		0.00 - 0.00	17/12/2019
21405783	NO ID	A		
21405819	SW23		0.00 - 0.00	17/12/2019
21405985	SW24		0.00 - 0.00	17/12/2019
21405992	SW25		0.00 - 0.00	17/12/2019
21405811	SW1A		0.00 - 0.00	17/12/2019

Maximum Sample/Coolbox Temperature (°C) : 7.9

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

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

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)			21405980											21405849									21405919	21405879
Customer Sample Reference			C3_Asb											C2B									GW03_13	GW06_36
AGS Reference																								
Depth (m)			0.00 - 0.00											0.00 - 0.00									0.00 - 0.00	0.00 - 0.00
Container			250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)
Sample Type			SW	SW	SW	LE	LE	LE	LE	LE	LE	LE	LE	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6														X							
Alkalinity Filtered as CaCO3	All	NDPs: 0 Tests: 7						X								X							
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 13			X				X								X						
Anions by Kone (w)	All	NDPs: 0 Tests: 13		X				X								X							
BOD True Total	All	NDPs: 0 Tests: 13	X				X								X								
COD Unfiltered	All	NDPs: 0 Tests: 13	X				X								X								
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 13		X				X								X							
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8									X								X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8								X								X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 6												X									X
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 8				X								X									X
Ionic Balance	All	NDPs: 0 Tests: 8						X								X							
Nitrite by Kone (w)	All	NDPs: 0 Tests: 8									X								X				
pH Value	All	NDPs: 0 Tests: 13		X				X								X							
Phosphate by Kone (w)	All	NDPs: 0 Tests: 8						X								X							

21405786	GW09_35		0.00 - 0.00	HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	X
				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	
				500ml Plastic (ALE208)	GW	X
				250ml BOD (ALE212)	GW	
				0.5l glass bottle (ALE227)	GW	
				ZnAc (ALE246)	GW	
				Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	X
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	X
				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	
				500ml Plastic (ALE208)	GW	X
				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	
				500ml Plastic (ALE208)	GW	X
				250ml BOD (ALE212)	GW	
21405879	GW06_36		0.00 - 0.00	0.5l glass bottle (ALE227)	GW	
				ZnAc (ALE246)	GW	
				Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	X
				250ml BOD (ALE212)	GW	

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

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)			21405980			21405849									21405919						21405879
Customer Sample Reference			C3_Asb			C2B									GW03_13						GW06_36
AGS Reference																					
Depth (m)			0.00 - 0.00			0.00 - 0.00									0.00 - 0.00						0.00 - 0.00
Container			250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)
Sample Type			SW	SW	SW	LE	LE	LE	LE	LE	LE	LE	LE	GW	GW	GW	GW	GW	GW	GW	GW	GW
Sulphide	All	NDPs: 0 Tests: 8											X								X	
Suspended Solids	All	NDPs: 0 Tests: 2		X																		
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 2							X													
VOC MS (W)	All	NDPs: 0 Tests: 8										X								X		

21405786	GW09_35		0.00 - 0.00	HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW								
				500ml Plastic (ALE208)	GW								
				250ml BOD (ALE212)	GW								
				0.5l glass bottle (ALE227)	GW								
21405899	GW06_37		0.00 - 0.00	ZnAc (ALE246)	GW		X						
				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								
21405879	GW06_36		0.00 - 0.00	ZnAc (ALE246)	GW		X						
				Vial (ALE297)	GW								X
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW								
				500ml Plastic (ALE208)	GW								
				250ml BOD (ALE212)	GW								

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

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)			21405786					21405943										21405965					21405825
Customer Sample Reference			GW09_35					GW12_38										GW06_14A					LF08_07
AGS Reference																							
Depth (m)			0.00 - 0.00					0.00 - 0.00										0.00 - 0.00					0.00 - 0.00
Container			NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	LE
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6						X								X							
Alkalinity Filtered as CaCO3	All	NDPs: 0 Tests: 7						X								X							
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 13							X								X						
Anions by Kone (w)	All	NDPs: 0 Tests: 13						X								X							
BOD True Total	All	NDPs: 0 Tests: 13					X								X								
COD Unfiltered	All	NDPs: 0 Tests: 13					X								X								
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 13						X								X							
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8	X								X								X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8								X								X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 6				X								X									
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 8				X								X									X
Ionic Balance	All	NDPs: 0 Tests: 8						X								X							
Nitrite by Kone (w)	All	NDPs: 0 Tests: 8	X								X								X				
pH Value	All	NDPs: 0 Tests: 13						X								X							
Phosphate by Kone (w)	All	NDPs: 0 Tests: 8						X								X							

21405811	SW1A		0.00 - 0.00	H2SO4 (ALE244)	SW			X															
				500ml Plastic (ALE208)	SW				X			X									X		
				250ml BOD (ALE212)	SW					X	X												
21405992	SW25		0.00 - 0.00	H2SO4 (ALE244)	SW			X															
				500ml Plastic (ALE208)	SW				X			X									X		
				250ml BOD (ALE212)	SW					X	X												
21405985	SW24		0.00 - 0.00	H2SO4 (ALE244)	SW			X															
				500ml Plastic (ALE208)	SW				X			X									X		
				250ml BOD (ALE212)	SW					X	X												
21405819	SW23		0.00 - 0.00	H2SO4 (ALE244)	SW			X															
				500ml Plastic (ALE208)	SW				X			X									X		
				250ml BOD (ALE212)	SW					X	X												
21405825	LF08_07		0.00 - 0.00	ZnAc (ALE246)	LE																		
				Vial (ALE297)	LE																		
				NaOH (ALE245)	LE									X						X			
				HNO3 Filtered (ALE204)	LE										X								
				H2SO4 (ALE244)	LE			X															
				500ml Plastic (ALE208)	LE		X		X			X						X		X		X	
				250ml BOD (ALE212)	LE					X	X												

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

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)			21405786									21405943									21405965	21405825
Customer Sample Reference			GW09_35									GW12_38									GW06_14A	LF08_07
AGS Reference																						
Depth (m)			0.00 - 0.00									0.00 - 0.00									0.00 - 0.00	0.00 - 0.00
Container			NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	0.5l glass bottle (ALE227)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	LE
Sulphide	All	NDPs: 0 Tests: 8			X								X								X	
Suspended Solids	All	NDPs: 0 Tests: 2																				
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 2																				
VOC MS (W)	All	NDPs: 0 Tests: 8		X								X								X		

21405811	SW1A		0.00 - 0.00	H2SO4 (ALE244)	SW	
				500ml Plastic (ALE208)	SW	
				250ml BOD (ALE212)	SW	
21405992	SW25		0.00 - 0.00	H2SO4 (ALE244)	SW	
				500ml Plastic (ALE208)	SW	X
				250ml BOD (ALE212)	SW	
21405985	SW24		0.00 - 0.00	H2SO4 (ALE244)	SW	
				500ml Plastic (ALE208)	SW	
				250ml BOD (ALE212)	SW	
21405819	SW23		0.00 - 0.00	H2SO4 (ALE244)	SW	
				500ml Plastic (ALE208)	SW	
				250ml BOD (ALE212)	SW	
21405825	LF08_07		0.00 - 0.00	ZnAc (ALE246)	LE	X
				Vial (ALE297)	LE	
				NaOH (ALE245)	LE	
				HNO3 Filtered (ALE204)	LE	
				H2SO4 (ALE244)	LE	X
				500ml Plastic (ALE208)	LE	
				250ml BOD (ALE212)	LE	

Validated

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			C3_Asb	C2B	GW03_13	GW06_36	GW06_37	GW09_35
			0.00 - 0.00 / Surface Water (SW) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405980	0.00 - 0.00 / Land Leachate (LE) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405849	0.00 - 0.00 / Ground Water (GW) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405919	0.00 - 0.00 / Ground Water (GW) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405879	0.00 - 0.00 / Ground Water (GW) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405899	0.00 - 0.00 / Ground Water (GW) / 17/12/2019 / . / 19/12/2019 / 191219-55 / 21405786
Ionic balance	% Diff	Calulation		3.19	-3.82	18.9	-5.86	-15.3
Suspended solids, Total	<2 mg/l	TM022	4.85 #					
Alkalinity, Total as CaCO3	<2 mg/l	TM043			1000 #	635 #	1060 #	880 #
Alkalinity,Total as CaCO3 (diss.filt)	<2 mg/l	TM043		6100	1030	630	1080	
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043		6100				
BOD, unfiltered	<1 mg/l	TM045	3.88 #	95.4 #	5.63 #	4.18 #	23.5 #	<1 #
Carbon, Organic (diss.filt)	<3 mg/l	TM090			17.2	8.97	28	10.2
Organic Carbon, Total	<3 mg/l	TM090		471				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1.31 #	1070	12.6 #	6.35 #	27.6 #	7.84 #
Sulphide	<0.01 mg/l	TM101		0.0206	0.0746 #	2.71 #	3.38 #	0.039 #
COD, unfiltered	<7 mg/l	TM107	46.7 #	1400 #	91 #	69.5 #	177 #	85.5 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	1.54 #	13.4 #	8.21 #	5.69 #	11.8 #	11.3 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		48.6 2 #	3.45 #	1.28 #	12.6 2 #	2.55 #
Boron (diss.filt)	<10 µg/l	TM152		9700 2 #	1630 #	1010 #	2190 2 #	1090 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	<0.08 #	<0.08 #	<0.08 2 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		157 2 #	<1 #	<1 #	<1 2 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		4.22 2 #	0.434 #	<0.3 #	0.432 2 #	0.305 #
Lead (diss.filt)	<0.2 µg/l	TM152		0.824 2 #	0.389 #	<0.2 #	1.09 2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		872 2 #	320 #	217 #	410 2 #	644 #
Nickel (diss.filt)	<0.4 µg/l	TM152		155 2 #	1.46 #	2.69 #	2.63 2 #	2.37 #
Selenium (diss.filt)	<1 µg/l	TM152		1.65 2 #	<1 #	<1 #	<1 2 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		104 2 #	13.2 #	2.48 #	13 2 #	2.17 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152		1630 2 #	1560 #	1700 #	2330 2 #	1700 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		233 2 #	214 #	164 #	254 2 #	242 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152		579 2 #	56.6 #	52.9 #	73.8 2 #	54.2 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		122 2 #	118 #	183 #	108 2 #	242 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		2.67 2 #	0.473 #	0.421 #	8.85 2 #	2.29 #
Hardness, Total as CaCO3	<0.65 mg/l	TM152		1260 2	1180	1130	1320 2	1600
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172		3490 ♦	<100 ♦	188 ♦	120 ♦	<100 ♦
Nitrite as NO2	<0.05 mg/l	TM184		<0.05	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		9.47	6.7 #	5.58 #	7.26 #	7.91 #
Sulphate	<2 mg/l	TM184		<20	90.6 #	157 #	7.3 #	129 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	C3_Asb	C2B	GW03_13	GW06_36	GW06_37	GW09_35
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019
			Sampled Time	.	.	.	.	.	.
			Date Received	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
			SDG Ref	191219-55	191219-55	191219-55	191219-55	191219-55	191219-55
			Lab Sample No.(s)	21405980	21405849	21405919	21405879	21405899	21405786
			AGS Reference						
Chloride	<2 mg/l	TM184		151 #	1850	2800 #	1810 #	4480 #	4480 #
Nitrate as NO3	<0.3 mg/l	TM184			<3	<0.3	<0.3	<0.3	<0.3
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184			<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 #
pH	<1 pH Units	TM256		8.21 #	8.08 #	8.12 #	8.52 #	8.58 #	8.31 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	GW12_38	GW06_14A	LF08_07	SW23	SW24	SW25
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019
			Sampled Time	.	.	.	.	.	.
			Date Received	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
			SDG Ref	191219-55	191219-55	191219-55	191219-55	191219-55	191219-55
			Lab Sample No.(s)	21405943	21405965	21405825	21405819	21405985	21405992
			AGS Reference						
Ionic balance	% Diff	Calulation		1.82	-3.71	1.38			
Suspended solids, Total	<2 mg/l	TM022							5.5 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043		505 #	260 #				
Alkalinity,Total as CaCO3 (diss.filt)	<2 mg/l	TM043		520	260	2970			
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043				2970			
BOD, unfiltered	<1 mg/l	TM045		3.46 #	2.07 #	47.5 #	3.23 #	2.6 #	5.95 #
Carbon, Organic (diss.filt)	<3 mg/l	TM090		16.1	4.74				
Organic Carbon, Total	<3 mg/l	TM090				189			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		0.345 #	<0.2 #	495	11.6 #	<0.2 #	8.71 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	0.1			
COD, unfiltered	<7 mg/l	TM107		56.4 #	134 #	612 #	25.1 #	27.7 #	69.3 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		1.37 #	14.9 #	7.48 #	1.08 #	0.529 #	1.21 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		2.26 #	2.05 #	23.6 #			
Boron (diss.filt)	<10 µg/l	TM152		572 #	1180 #	4720 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	0.16 #	<0.08 #			
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	35.8 #			
Copper (diss.filt)	<0.3 µg/l	TM152		0.97 #	3.07 #	2.52 #			
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	<0.2 #	0.351 #			
Manganese (diss.filt)	<3 µg/l	TM152		694 #	76.1 #	1790 #			
Nickel (diss.filt)	<0.4 µg/l	TM152		4.22 #	1.92 #	93.5 #			
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #			
Zinc (diss.filt)	<1 µg/l	TM152		23.4 #	17.2 #	111 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152		90.7 #	2950 #	744 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		46.8 #	369 #	138 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152		22.5 #	131 #	295 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152		244 #	276 #	228 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.045 #	<0.019 #	1.22 #			
Hardness, Total as CaCO3	<0.65 mg/l	TM152		803	2210	1140			
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172		154 ♦	118 ♦	801 ♦			
Nitrite as NO2	<0.05 mg/l	TM184		<0.05 #	0.821 #	<0.05			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	0.358 #	0.085			
Sulphate	<2 mg/l	TM184		391 #	913 #	628			

Validated

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	GW12_38	GW06_14A	LF08_07	SW23	SW24	SW25
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019	17/12/2019
			Sampled Time	-	-	-	-	-	-
			Date Received	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
			SDG Ref	191219-55	191219-55	191219-55	191219-55	191219-55	191219-55
			Lab Sample No.(s)	21405943	21405965	21405825	21405819	21405985	21405992
			AGS Reference						
Chloride	<2 mg/l	TM184		46.2 #	5850 #	810	58.5 #	43.9 #	91.1 #
Nitrate as NO3	<0.3 mg/l	TM184		0.389	2.6	2.04			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		<0.1 #	0.838 #	0.471			
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #			
pH	<1 pH Units	TM256		7.91 #	7.82 #	7.8 #	7.64 #	8.23 #	7.94 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.			SW1A
Depth (m)			0.00 - 0.00
Sample Type			Surface Water (SW)
Date Sampled			17/12/2019
Sampled Time			.
Date Received			19/12/2019
SDG Ref			191219-55
Lab Sample No.(s)			21405811
AGS Reference			
Component	**LOD/Units**	**Method**	
BOD, unfiltered	<1 mg/l	TM045	2.91 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #
COD, unfiltered	<7 mg/l	TM107	<7 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.256 #
Chloride	<2 mg/l	TM184	13.1 #
pH	<1 pH Units	TM256	7.95 #

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			C2B	0.00 - 0.00	Land Leachate (LE)	17/12/2019	.	19/12/2019	191219-55	21405849	
			GW03_13	0.00 - 0.00	Ground Water (GW)	17/12/2019	.	19/12/2019	191219-55	21405919	
			GW06_36	0.00 - 0.00	Ground Water (GW)	17/12/2019	.	19/12/2019	191219-55	21405879	
			GW06_37	0.00 - 0.00	Ground Water (GW)	17/12/2019	.	19/12/2019	191219-55	21405899	
			GW09_35	0.00 - 0.00	Ground Water (GW)	17/12/2019	.	19/12/2019	191219-55	21405786	
			GW12_38	0.00 - 0.00	Ground Water (GW)	17/12/2019	.	19/12/2019	191219-55	21405943	
Benzene	<1 µg/l	TM208	4.24 #	<1 #	<1 #	<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208	2.27 #								
Naphthalene	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.						
			GW06_14A	LF08_07					
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Land Leachate (LE)				
			Date Sampled	17/12/2019	17/12/2019				
			Sampled Time	.	.				
			Date Received	19/12/2019	19/12/2019				
			SDG Ref	191219-55	191219-55				
			Lab Sample No.(s)	21405965	21405825				
			AGS Reference						
Benzene	<1 µg/l	TM208	<1 #	3.03 #					
m,p-Xylene	<1 µg/l	TM208	<1 #						
o-Xylene	<1 µg/l	TM208		<1 #					
Naphthalene	<1 µg/l	TM208	<1 #	<1 #					

Table of Results - Appendix

Method No	Reference	Description
Calulation		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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

SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Test Completion Dates

Lab Sample No(s)	21405980	21405849	21405919	21405879	21405899	21405786	21405943	21405965	21405825	21405819
Customer Sample Ref.	C3_Asb	C2B	GW03_13	GW06_36	GW06_37	GW09_35	GW12_38	GW06_14A	LF08_07	SW23
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	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Land Leachate	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Land Leachate	Surface Water
Alkalinity as CaCO3			30-Dec-2019	31-Dec-2019	31-Dec-2019	31-Dec-2019	31-Dec-2019	30-Dec-2019		
Alkalinity Filtered as CaCO3		30-Dec-2019	02-Jan-2020	02-Jan-2020	02-Jan-2020	30-Dec-2019	02-Jan-2020	02-Jan-2020	30-Dec-2019	
Ammoniacal Nitrogen	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	27-Dec-2019	27-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019
Anions by Kone (w)	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019
BOD True Total	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019
COD Unfiltered	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	28-Dec-2019	27-Dec-2019	28-Dec-2019	28-Dec-2019
Conductivity (at 20 deg.C)	24-Dec-2019	27-Dec-2019	27-Dec-2019	27-Dec-2019	27-Dec-2019	27-Dec-2019	27-Dec-2019	24-Dec-2019	27-Dec-2019	27-Dec-2019
Cyanide Comp/Free/Total/Thiocyanate		21-Dec-2019	21-Dec-2019	21-Dec-2019	21-Dec-2019	21-Dec-2019	21-Dec-2019	21-Dec-2019	21-Dec-2019	
Dissolved Metals by ICP-MS		03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	31-Dec-2019	07-Jan-2020	03-Jan-2020	
Dissolved Organic/Inorganic Carbon			29-Dec-2019	23-Dec-2019	23-Dec-2019	28-Dec-2019	23-Dec-2019	29-Dec-2019		
EPH (DRO) (C10-C40) Aqueous (W)		03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	03-Jan-2020	
Ionic Balance		03-Jan-2020	03-Jan-2020	08-Jan-2020	03-Jan-2020	08-Jan-2020	03-Jan-2020	08-Jan-2020	03-Jan-2020	
Nitrite by Kone (w)		23-Dec-2019	23-Dec-2019	23-Dec-2019	23-Dec-2019	23-Dec-2019	23-Dec-2019	23-Dec-2019	23-Dec-2019	
pH Value	29-Dec-2019	30-Dec-2019	29-Dec-2019	30-Dec-2019	29-Dec-2019	29-Dec-2019	30-Dec-2019	29-Dec-2019	29-Dec-2019	29-Dec-2019
Phosphate by Kone (w)		24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	
Sulphide		30-Dec-2019	30-Dec-2019	02-Jan-2020	02-Jan-2020	30-Dec-2019	30-Dec-2019	30-Dec-2019	30-Dec-2019	
Suspended Solids	23-Dec-2019									
Total Organic and Inorganic Carbon		27-Dec-2019							27-Dec-2019	
VOC MS (W)		24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	24-Dec-2019	

Lab Sample No(s)	21405985	21405992	21405811
Customer Sample Ref.	SW24	SW25	SW1A
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	27-Dec-2019	27-Dec-2019	27-Dec-2019
Anions by Kone (w)	30-Dec-2019	30-Dec-2019	30-Dec-2019
BOD True Total	24-Dec-2019	24-Dec-2019	24-Dec-2019
COD Unfiltered	27-Dec-2019	28-Dec-2019	28-Dec-2019
Conductivity (at 20 deg.C)	24-Dec-2019	27-Dec-2019	27-Dec-2019
pH Value	29-Dec-2019	29-Dec-2019	29-Dec-2019
Suspended Solids		23-Dec-2019	

CERTIFICATE OF ANALYSIS

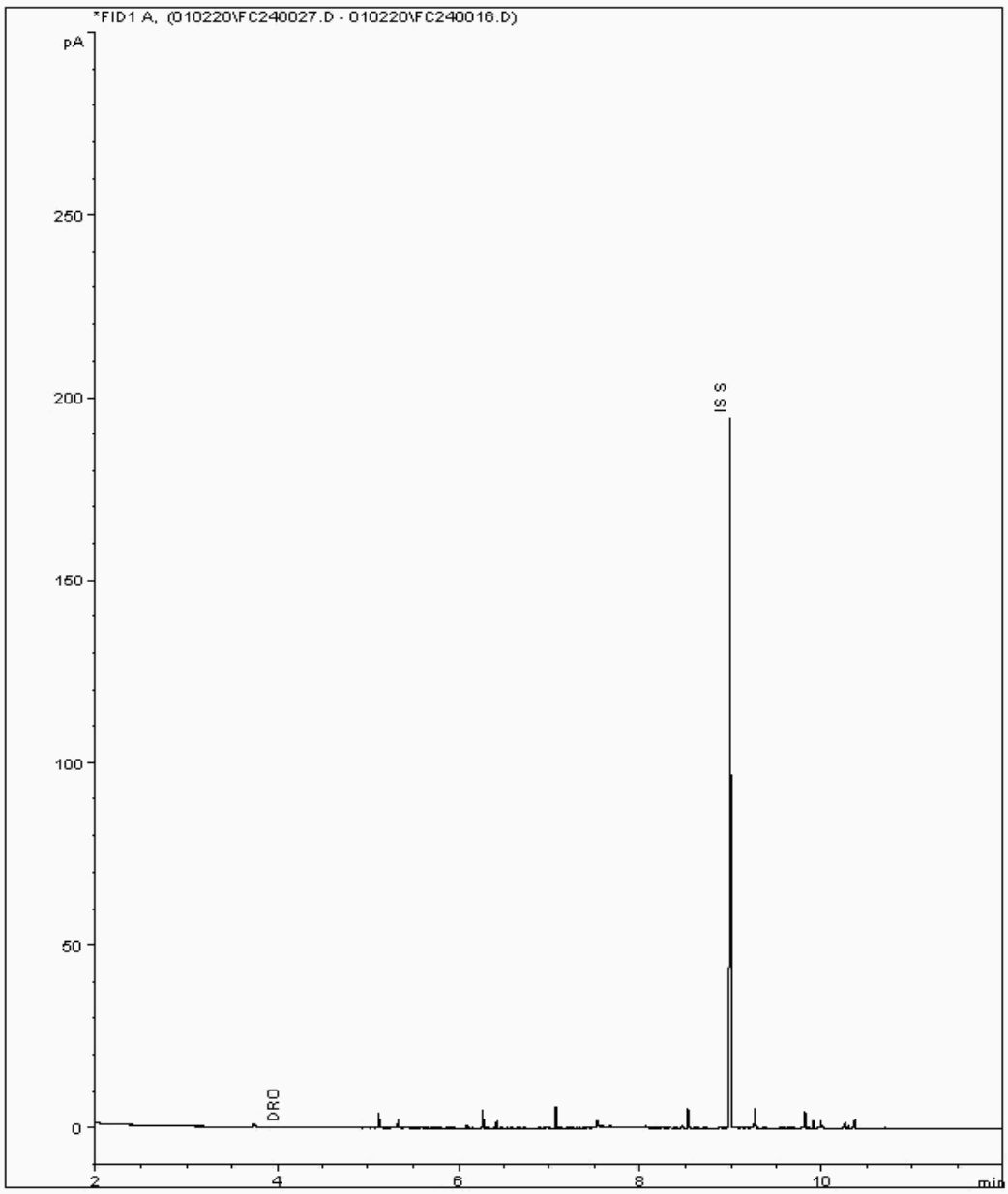
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21406592 **Sample ID :** GW06_37 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20104021-
Date Acquired : 02/01/2020 20:59:24 PM
Units : ppm



CERTIFICATE OF ANALYSIS

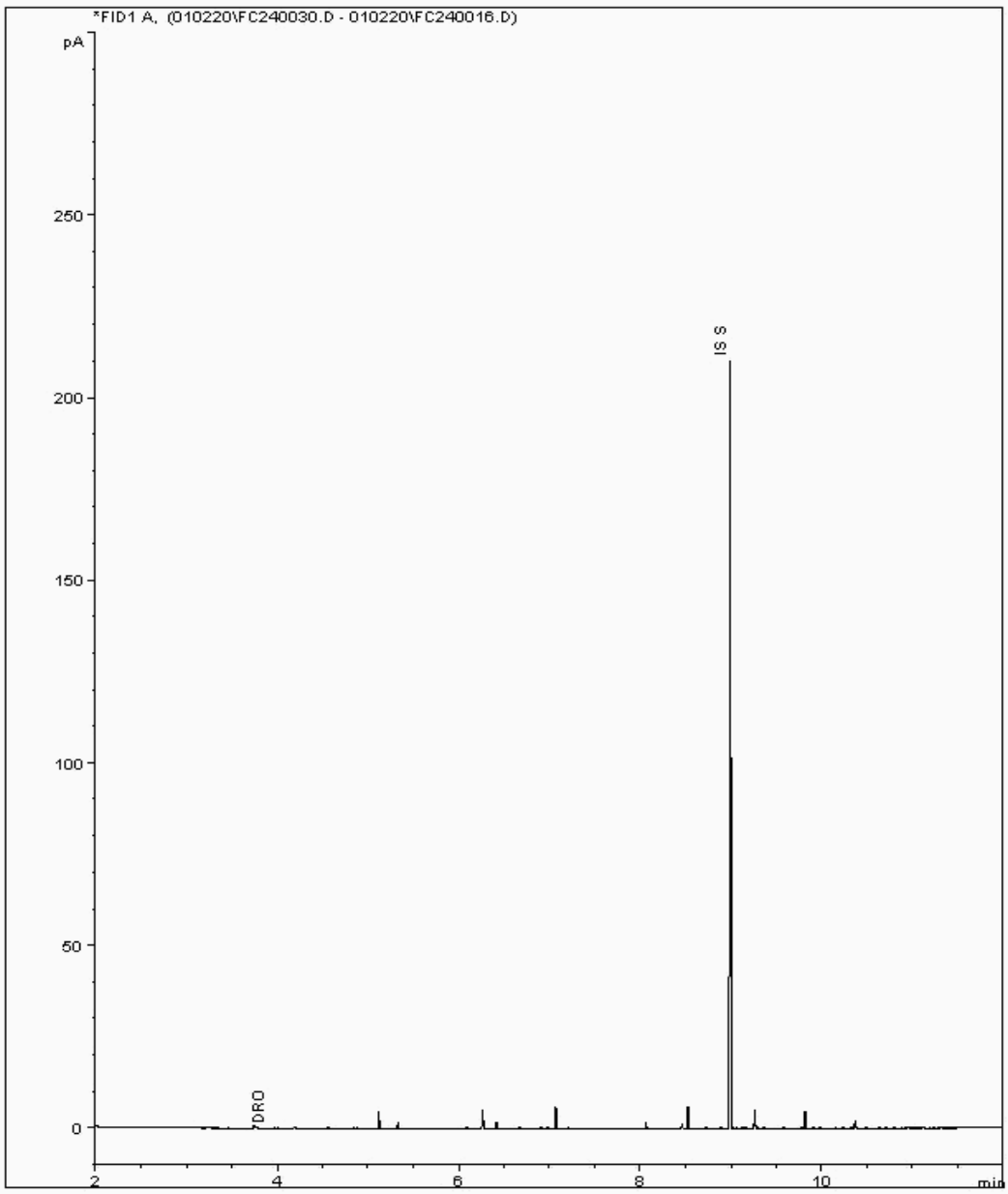
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408661 **Sample ID :** GW09_35 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20103938-
Date Acquired : 02/01/2020 22:11:11 PM
Units : ppm



CERTIFICATE OF ANALYSIS

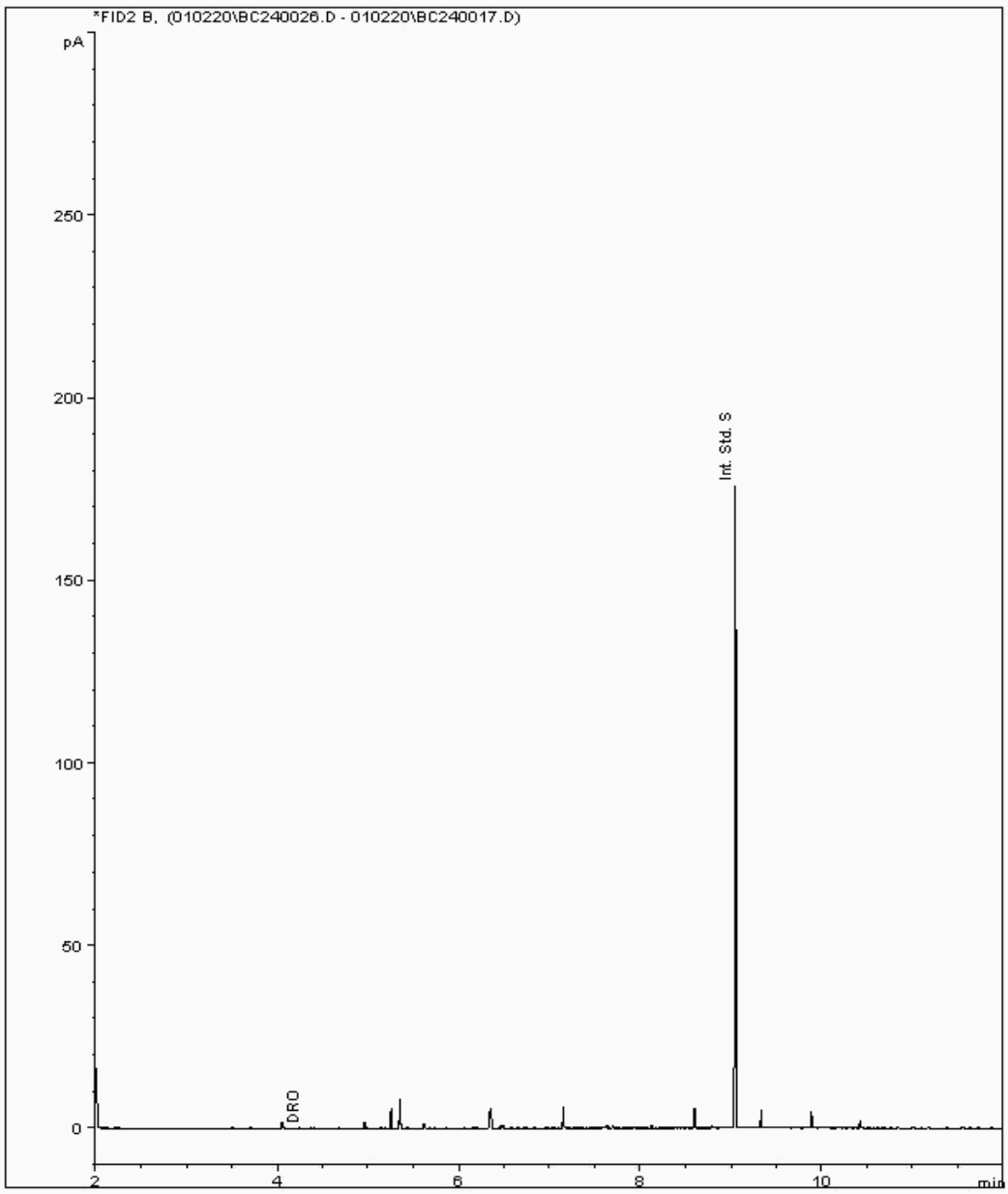
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408680 **Sample ID :** GW06_14A **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20104075-
Date Acquired : 02/01/2020 20:35:17 PM
Units : mg/l



CERTIFICATE OF ANALYSIS

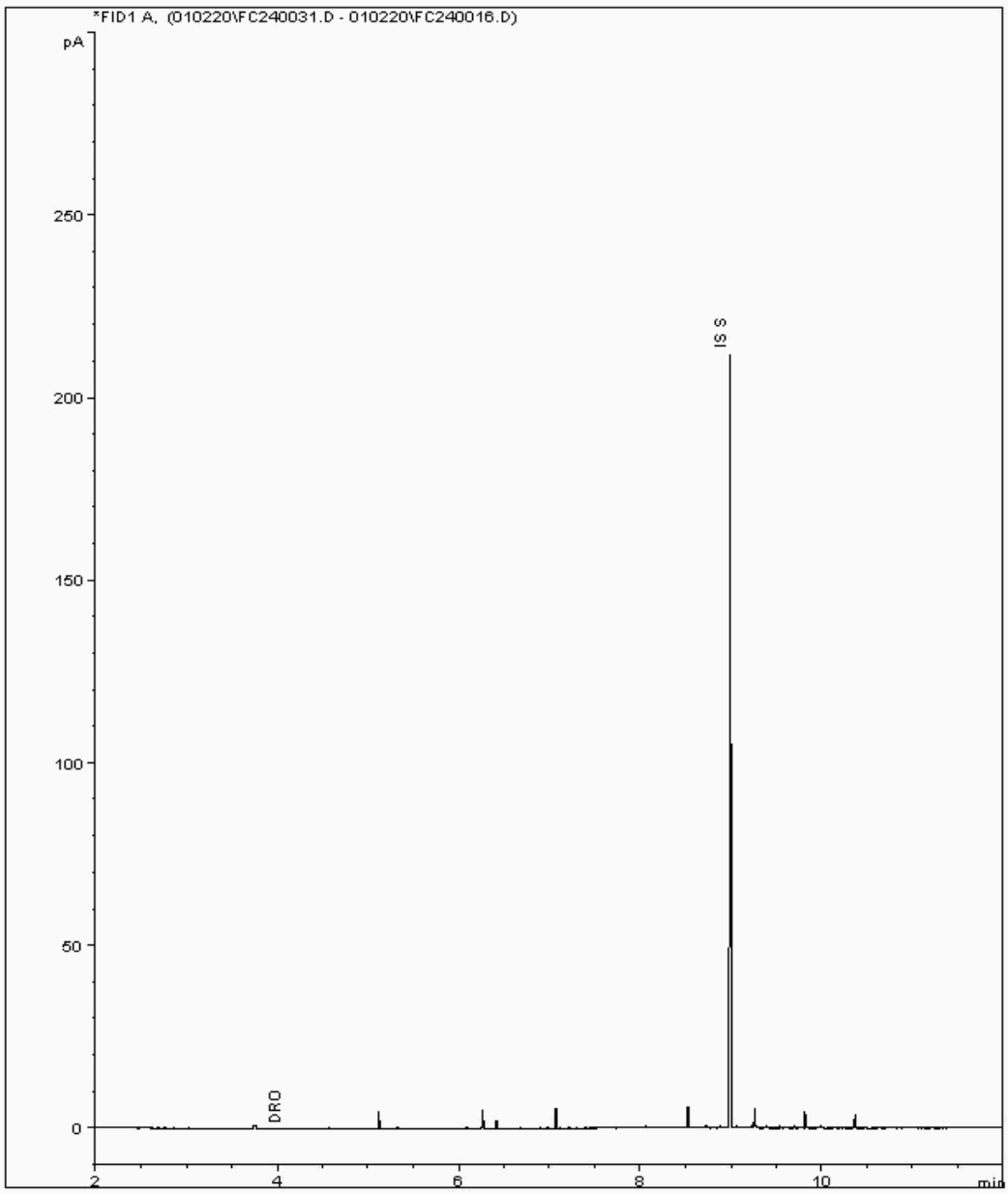
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408706 **Sample ID :** GW12_38 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20104057-
Date Acquired : 02/01/2020 22:35:04 PM
Units : ppm



CERTIFICATE OF ANALYSIS

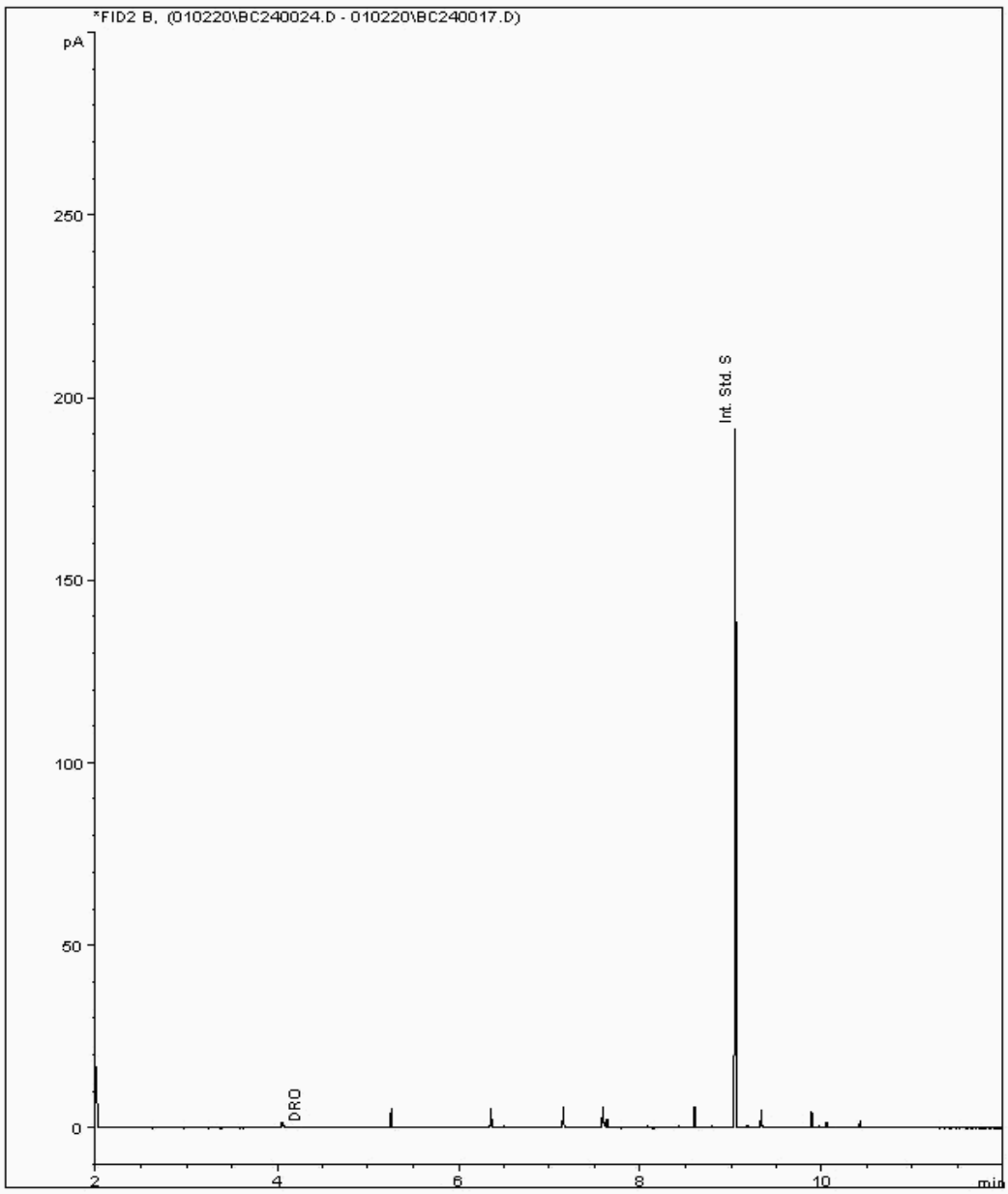
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408717 **Sample ID :** GW03_13 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20104038-
Date Acquired : 02/01/2020 19:47:33 PM
Units : mg/l



CERTIFICATE OF ANALYSIS

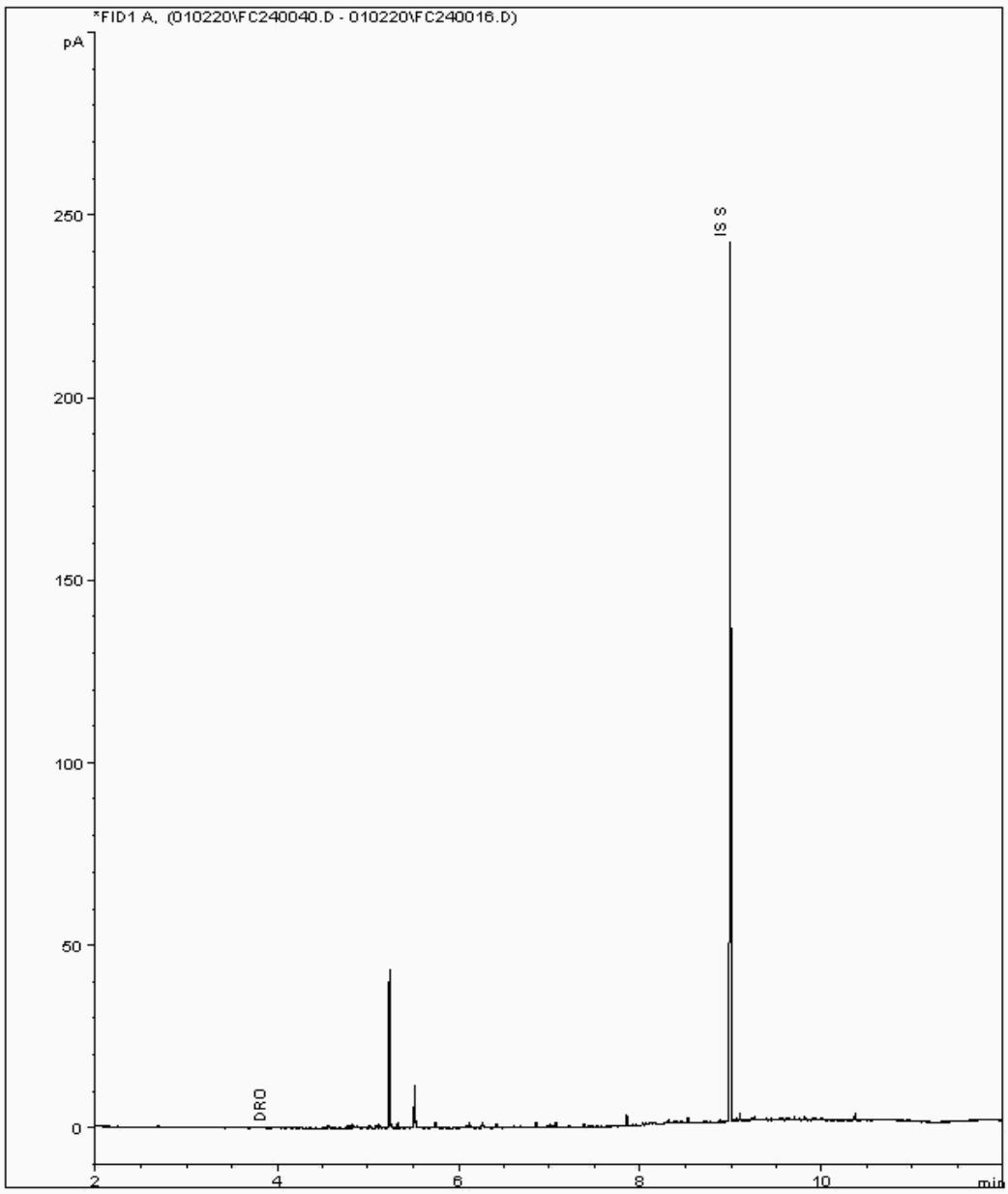
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408720 **Sample ID :** C2B **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20103986-
Date Acquired : 03/01/2020 02:10:50 PM
Units : ppm



CERTIFICATE OF ANALYSIS

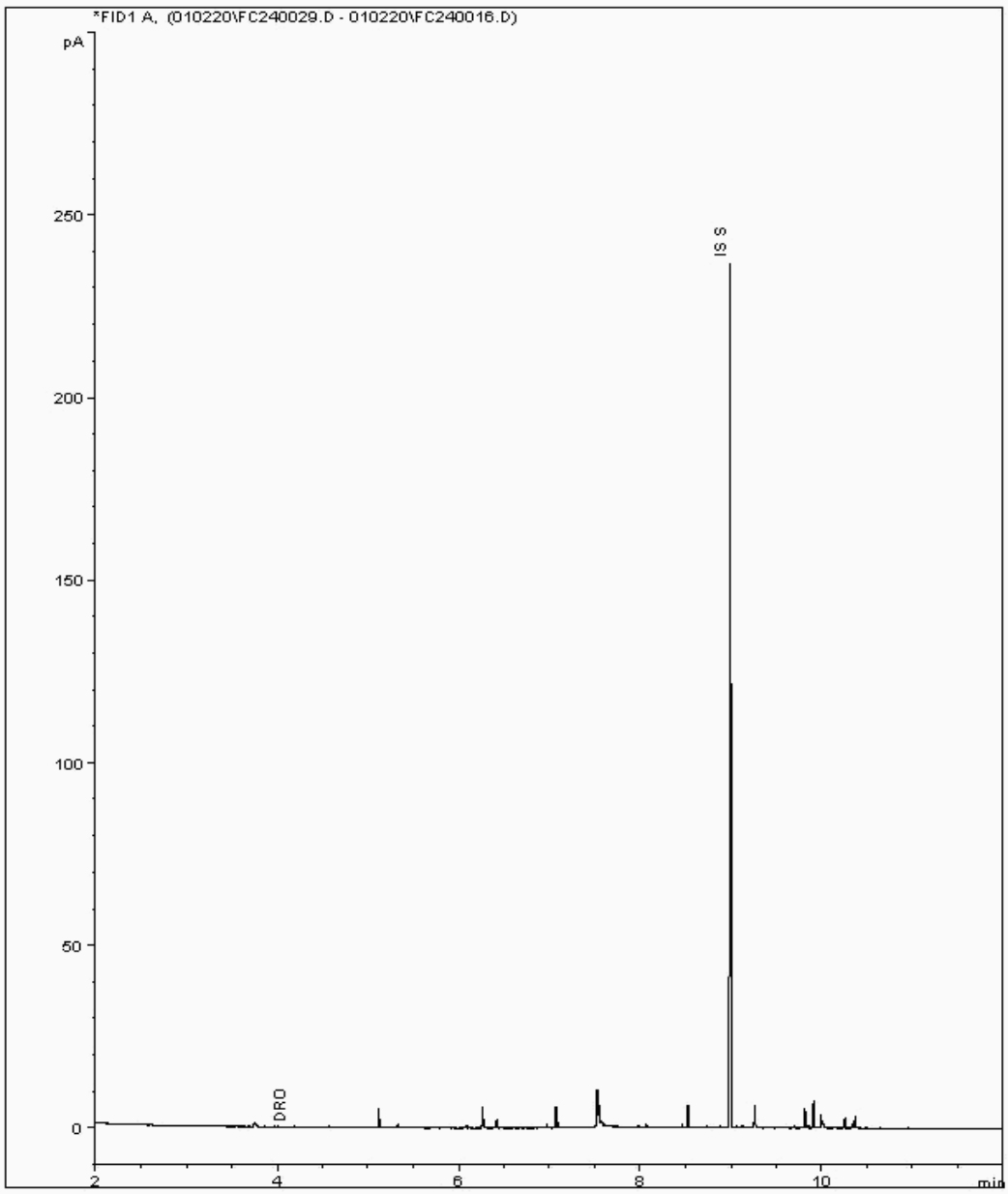
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408724 **Sample ID :** GW06_36 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20104004-
Date Acquired : 02/01/2020 21:47:10 PM
Units : ppm



CERTIFICATE OF ANALYSIS

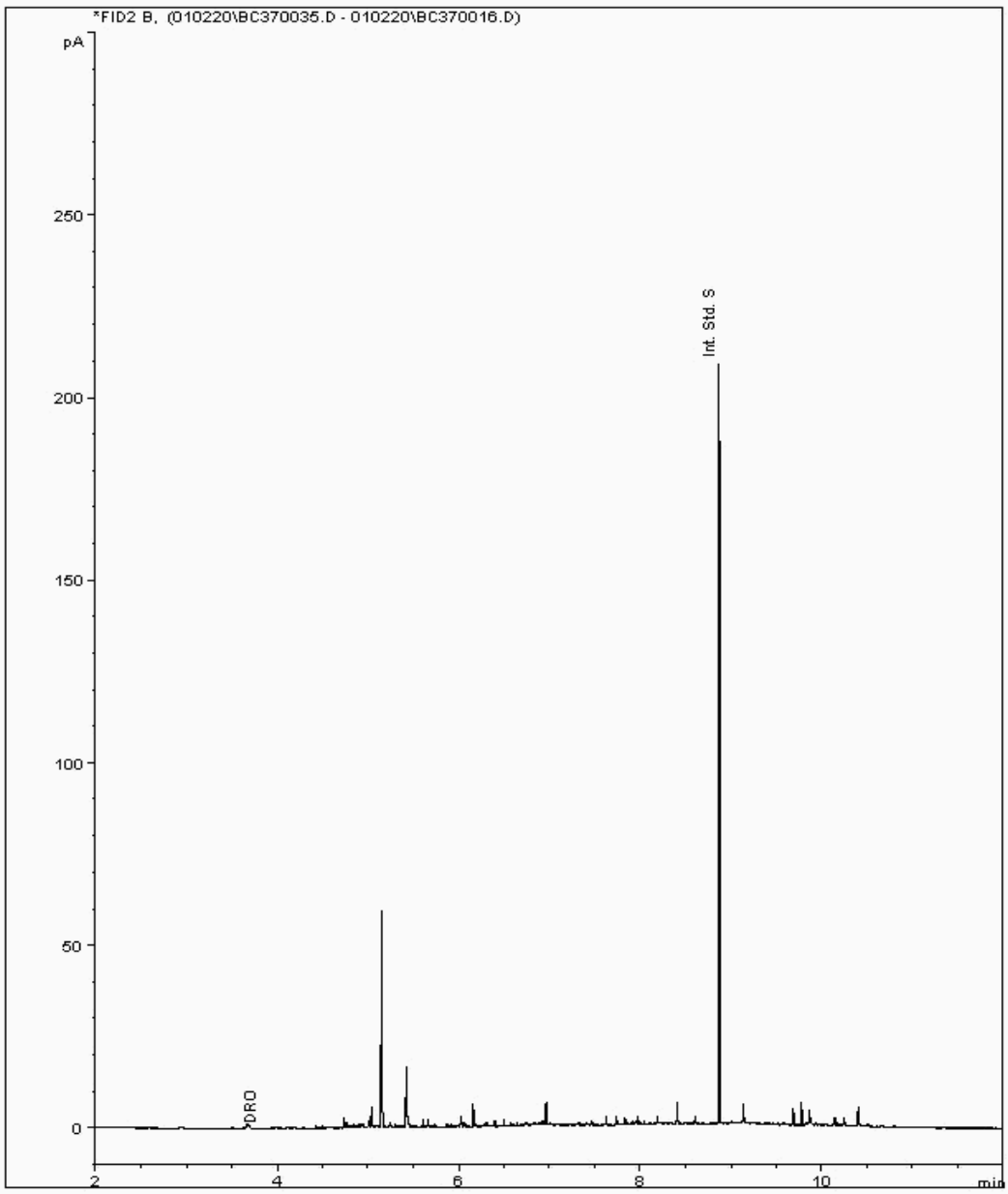
SDG:	191219-55	**Client Reference:**	GW/SW/Leach Dec Part 2	**Report Number:**	536650
Location:	Docks Way	**Order Number:**	700145760	**Superseded Report:**	536620

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) **Sample No :** 21408745 **Sample ID :** LF08_07 **Depth :** 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 20103968-
Date Acquired : 03/01/2020 00:58:50 PM
Units : mg/l



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. 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.

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

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

9. **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.

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

11. 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.

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

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

14. 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.

15. 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.

16. 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.

17. **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.

18. **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**

19. **Asbestos**

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

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.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107).*

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.