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Atkins Global Ltd
Project Jonah site office
Llan Coed House
Suite 24
Coed Darcy
Llandarcy
SA10 6HJ

Attention: John Fitzgerald

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 May 2021
Customer:	Atkins Global Ltd
Sample Delivery Group (SDG):	210430-86
Your Reference:	
Location:	Llanwern
Report No:	598823

We received 6 samples on Friday April 30, 2021 and 6 of these samples were scheduled for analysis which was completed on Thursday May 20, 2021. 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 Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd 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

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

Version: 2.7 Version Issued: 20/05/2021

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24186347	D5-C		0.00 - 0.00	29/04/2021
24186460	Ellens Reen		0.00 - 0.00	29/04/2021
24186414	KW-C		0.00 - 0.00	29/04/2021
24186367	ML-N		0.00 - 0.00	29/04/2021
24186435	ML-S		0.00 - 0.00	29/04/2021
24186393	R3-C		0.00 - 0.00	29/04/2021

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

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

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)										24186347								24186460			24186414
Customer Sample Reference										D5-C								Ellens Reen			KW-C
AGS Reference																					
Depth (m)										0.00 - 0.00								0.00 - 0.00			0.00 - 0.00
Container			1000ml glass bottle (ALE220)	1lplastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	1000ml glass bottle (ALE220)	1lplastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	1000ml glass bottle (ALE220)	1lplastic (ALE221)	H2SO4 (ALE244)
Sample Type			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6			X								X								X
Anions by Kone (w)	All	NDPs: 0 Tests: 6		X								X								X	
BOD True Total	All	NDPs: 0 Tests: 6		X								X								X	
COD Unfiltered	All	NDPs: 0 Tests: 6		X								X								X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6		X								X								X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6						X								X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6				X								X						X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 6	X								X								X		
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 6		X								X								X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X								X								X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X								X								X		
Fluoride	All	NDPs: 0 Tests: 6		X								X								X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6							X								X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 6		X								X								X	
Mercury Dissolved	All	NDPs: 0 Tests: 6				X								X						X	

16:35:28 20/05/2021

24186393	R3-C		0.00 - 0.00	1lplastic (ALE221)	SW		X	X	X	X				X			X		X	
				1000ml glass bottle (ALE220)	SW								X		X	X				
24186435	ML-S		0.00 - 0.00	ZnAc (ALE246)	SW															
				Vial (ALE297)	SW													X		
				NaOH (ALE245)	SW						X									
				HNO3 Unfiltered (ALE204)	SW															
				HNO3 Filtered (ALE204)	SW							X								X
				H2SO4 (ALE244)	SW	X														
				1lplastic (ALE221)	SW		X	X	X	X				X			X		X	
				1000ml glass bottle (ALE220)	SW								X		X	X				
24186367	ML-N		0.00 - 0.00	ZnAc (ALE246)	SW															
				Vial (ALE297)	SW													X		
				NaOH (ALE245)	SW						X									
				HNO3 Unfiltered (ALE204)	SW															
				HNO3 Filtered (ALE204)	SW							X								X
				H2SO4 (ALE244)	SW	X														
				1lplastic (ALE221)	SW		X	X	X	X			X	X	X	X	X		X	
24186414	KW-C		0.00 - 0.00	ZnAc (ALE246)	SW															
				Vial (ALE297)	SW													X		
				NaOH (ALE245)	SW						X									
				HNO3 Unfiltered (ALE204)	SW															

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

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)											24186347											24186460											24186414		
Customer Sample Reference											D5-C											Ellens Reen											KW-C		
AGS Reference																																			
Depth (m)											0.00 - 0.00											0.00 - 0.00											0.00 - 0.00		
Container											1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)	1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)								
Sample Type											SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW								
Mercury Unfiltered	All	NDPs: 0 Tests: 6													X									X												
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 6									X								X								X								
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 6									X								X								X								
pH Value	All	NDPs: 0 Tests: 6										X								X								X								
Phenols by HPLC (W)	All	NDPs: 0 Tests: 6											X								X															X
Phosphate by Kone (w)	All	NDPs: 0 Tests: 6										X								X								X								
Redox Potential	All	NDPs: 0 Tests: 6									X								X								X								
Sulphide	All	NDPs: 0 Tests: 6																X										X							
Sulphur Dissolved by ICP-OES	All	NDPs: 0 Tests: 6										X								X								X								
Suspended Solids	All	NDPs: 0 Tests: 6										X								X								X								
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6									X								X								X								
Total Dissolved Solids	All	NDPs: 0 Tests: 6										X								X								X								
Total Metals by ICP-MS	All	NDPs: 0 Tests: 6													X									X												
Total Organic Carbon*	All	NDPs: 1 Tests: 5									X								X								X								
TPH CWG (W)	All	NDPs: 0 Tests: 6									X								X								X								

24186393	R3-C		0.00 - 0.00	1lplastic (ALE221)	SW				X		X			X	X		X			
				1000ml glass bottle (ALE220)	SW		X	X				X				X			X	X
24186435	ML-S		0.00 - 0.00	ZnAc (ALE246)	SW								X							
				Vial (ALE297)	SW															
				NaOH (ALE245)	SW															
				HNO3 Unfiltered (ALE204)	SW	X												X		
				HNO3 Filtered (ALE204)	SW															
				H2SO4 (ALE244)	SW					X										
				1lplastic (ALE221)	SW				X		X			X	X		X			
				1000ml glass bottle (ALE220)	SW		X	X				X				X			X	X
24186367	ML-N		0.00 - 0.00	ZnAc (ALE246)	SW								X							
				Vial (ALE297)	SW															
				NaOH (ALE245)	SW															
				HNO3 Unfiltered (ALE204)	SW	X												X		
				HNO3 Filtered (ALE204)	SW															
				H2SO4 (ALE244)	SW					X										
				1lplastic (ALE221)	SW		X	X	X		X	X		X	X	X	X		N	X
24186414	KW-C		0.00 - 0.00	ZnAc (ALE246)	SW								X							
				Vial (ALE297)	SW															
				NaOH (ALE245)	SW															
				HNO3 Unfiltered (ALE204)	SW	X												X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

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)									24186347											24186460					24186414
Customer Sample Reference									D5-C											Ellens Reen					KW-C
AGS Reference																									
Depth (m)									0.00 - 0.00											0.00 - 0.00					0.00 - 0.00
Container									1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)				1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)				1000ml glass bottle (ALE220)	1plastic (ALE221)	H2SO4 (ALE244)
Sample Type									SW	SW	SW	SW	SW	SW	SW	SW				SW	SW	SW	SW	SW	SW	SW				SW	SW	SW
Turbidity in waters	All	NDPs: 0 Tests: 6								X											X										X	
VOC MS (W)	All	NDPs: 0 Tests: 6													X										X							

24186393	R3-C		0.00 - 0.00	1lplastic (ALE221)	SW	X
				1000ml glass bottle (ALE220)	SW	
24186435	ML-S		0.00 - 0.00	ZnAc (ALE246)	SW	
				Vial (ALE297)	SW	X
				NaOH (ALE245)	SW	
				HNO3 Unfiltered (ALE204)	SW	
				HNO3 Filtered (ALE204)	SW	
				H2SO4 (ALE244)	SW	
				1lplastic (ALE221)	SW	X
				1000ml glass bottle (ALE220)	SW	
24186367	ML-N		0.00 - 0.00	ZnAc (ALE246)	SW	
				Vial (ALE297)	SW	X
				NaOH (ALE245)	SW	
				HNO3 Unfiltered (ALE204)	SW	
				HNO3 Filtered (ALE204)	SW	
				H2SO4 (ALE244)	SW	
				1lplastic (ALE221)	SW	X
24186414	KW-C		0.00 - 0.00	ZnAc (ALE246)	SW	
				Vial (ALE297)	SW	X
				NaOH (ALE245)	SW	
				HNO3 Unfiltered (ALE204)	SW	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

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)			2418639 3								
Customer Sample Reference			R3-C								
AGS Reference											
Depth (m)			0.00 - 0.00								
Container			H2SO4 (ALE244)	HNO3 Filtered (ALE204)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	ZnAc (ALE246)			
Sample Type			SW	SW	SW	SW	SW	SW			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6	X								
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6				X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6		X							
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6					X				
Mercury Dissolved	All	NDPs: 0 Tests: 6		X							
Mercury Unfiltered	All	NDPs: 0 Tests: 6			X						
Phenols by HPLC (W)	All	NDPs: 0 Tests: 6	X								
Sulphide	All	NDPs: 0 Tests: 6						X			
Total Metals by ICP-MS	All	NDPs: 0 Tests: 6			X						
VOC MS (W)	All	NDPs: 0 Tests: 6					X				

Validated

CERTIFICATE OF ANALYSIS

SDG: 210430-86 **Client Reference:** **Report Number:** 598823
Location: Llanwern **Order Number:** 108282 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	mCERTS 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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Total Organic Carbon, as C*	<0.7 mg/l	SUB		7.8	8.1	9.3		8.1	9
Suspended solids, Total	<2 mg/l	TM022		6 #	79.5 #	19.5 #	33.7 #	11.5 #	39.5 #
BOD, unfiltered	<1 mg/l	TM045		<1 #	2.94 #	3.1 #	2.44 #	2.2 #	3.04 #
Oxygen, dissolved	<0.3 mg/l	TM046		10.9	11	10.1	11.5	10.3	10.2
Carbon, Organic (diss.filt)	<3 mg/l	TM090		9.48	9.2	10.3	8.58	9.39	10.3
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		0.495 #	2.17 #	0.71 #	1.48 #	1.53 #	<0.3 #
Sulphide	<0.01 mg/l	TM101		0.0344	<0.01	0.0113	<0.01	<0.01	<0.01
Fluoride	<0.5 mg/l	TM104		1.14	<0.5	0.634	0.523	0.52	0.664
COD, unfiltered	<7 mg/l	TM107		24.6 #	20.6 #	18.1 #	20.6 #	10.4 #	15.1 #
Redox potential	mV	TM110		284	182	227	170	226	193
Conductivity @ 20 deg.C (diss.filt)	<0.02 mS/cm	TM120		0.682	0.593	0.768	0.541	0.595	0.924
Dissolved solids, Total (meter)	<5 mg/l	TM123		515 #	435 #	604 #	421 #	455 #	764 #
Antimony (diss.filt)	<1 µg/l	TM152		1.59 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Antimony (tot.unfilt)	<4 µg/l	TM152		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		3.03 #	2.18 #	2.88 2 #	2.53 #	2.55 #	2.66 #
Arsenic (tot.unfilt)	<2 µg/l	TM152		3.55 #	2.55 #	3.67 #	2.78 #	2.76 #	3.53 #
Barium (diss.filt)	<0.2 µg/l	TM152		59 #	48.2 #	70.9 2 #	33.1 #	37.7 #	79.6 #
Barium (tot.unfilt)	<0.5 µg/l	TM152		65 #	66.8 #	74.2 #	38.9 #	43.6 #	89.1 #
Beryllium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 2 #	<0.1 #	<0.1 #	<0.1 #
Beryllium (tot.unfilt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Boron (diss.filt)	<10 µg/l	TM152		141 #	125 #	188 2 #	137 #	136 #	194 #
Boron (tot.unfilt)	<20 µg/l	TM152		140 #	120 #	176 #	129 #	124 #	182 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		0.126 #	<0.08 #	<0.08 2 #	<0.08 #	<0.08 #	<0.08 #
Cadmium (tot.unfilt)	<0.5 µg/l	TM152		<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chromium (tot.unfilt)	<3 µg/l	TM152		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Copper (tot.unfilt)	<1 µg/l	TM152		4.47 #	3.74 #	2 #	2.04 #	2.39 #	2.65 #
Lead (tot.unfilt)	<1 µg/l	TM152		2.15 #	<1 #	2.07 #	<1 #	<1 #	4.15 #
Copper (diss.filt)	<0.3 µg/l	TM152		3.56 #	3.04 #	1.37 2 #	1.82 #	1.81 #	1.1 #
Manganese (tot.unfilt)	<1 µg/l	TM152		28.3 #	84.5 #	443 #	52.8 #	53.8 #	632 #
Lead (diss.filt)	<0.2 µg/l	TM152		0.21 #	<0.2 #	<0.2 2 #	<0.2 #	<0.2 #	<0.2 #
Nickel (tot.unfilt)	<1 µg/l	TM152		1.75 #	3.08 #	2.31 #	2.44 #	2.47 #	3 #
Manganese (diss.filt)	<3 µg/l	TM152		5.05 #	<3 #	345 2 #	6.43 #	7.52 #	559 #

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS 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
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Phosphorus (tot.unfilt)	<20 µg/l	TM152		35.6 #	37 #	101 #	54.6 #	47.2 #	112 #
Selenium (tot.unfilt)	<1 µg/l	TM152		1.52 #	1.05 #	<1 #	<1 #	<1 #	<1 #
Nickel (diss.filt)	<0.4 µg/l	TM152		1.38 #	2.73 #	1.48 2 #	2.37 #	2.21 #	1.67 #
Phosphorus (diss.filt)	<10 µg/l	TM152		12.9 #	<10 #	19.9 2 #	17.3 #	15.4 #	26 #
Selenium (diss.filt)	<1 µg/l	TM152		1.57 #	1.14 #	<1 2 #	1.02 #	<1 #	<1 #
Vanadium (tot.unfilt)	<5 µg/l	TM152		30.5 #	9.1 #	6.58 #	6.53 #	5.76 #	8.03 #
Zinc (tot.unfilt)	<5 µg/l	TM152		14.9 #	<5 #	6.53 #	<5 #	<5 #	15.3 #
Vanadium (diss.filt)	<1 µg/l	TM152		25.7 #	7.83 #	3.91 2 #	5.5 #	5.82 #	4.63 #
Zinc (diss.filt)	<1 µg/l	TM152		2.83 #	3.4 #	1.3 2 #	2.75 #	1.45 #	1.5 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		3.33 #	7.36 #	20.3 2 #	12.9 #	14 #	22.5 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		69.9 #	36.3 #	80.8 2 #	35.9 #	41.7 #	87.7 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0219 #	<0.019 #	<0.019 2 #	0.0285 #	0.0331 #	<0.019 #
Hardness, Total as CaCO3	<0.65 mg/l	TM152		188	121	285 2	143	162	312
Magnesium (Tot. Unfilt.)	<0.05 mg/l	TM152		3.56 #	8.23 #	20.8 #	12.6 #	14 #	23.8 #
Calcium (Tot. Unfilt.)	<0.057 mg/l	TM152		80.8 #	57.5 #	87.3 #	44.5 #	48.8 #	95 #
Iron (Tot. Unfilt.)	<0.024 mg/l	TM152		0.234 #	0.206 #	0.693 #	0.244 #	0.215 #	1.5 #
Naphthalene (diss.filt)	<0.01 µg/l	TM178		<0.01	0.103	<0.01	<0.02	<0.01	<0.01
Acenaphthene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.0309	0.00627	<0.01	<0.005	0.00721
Acenaphthylene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.0302	<0.005	<0.01	<0.005	0.00714
Fluoranthene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.0689	<0.005	<0.01	<0.005	0.00962
Anthracene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Phenanthrene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.154	<0.005	<0.01	0.00604	0.00658
Fluorene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.0283	<0.005	<0.01	<0.005	0.00503
Chrysene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Pyrene (diss.filt)	<0.005 µg/l	TM178		<0.005	0.0275	0.0121	<0.01	0.0129	0.0097
Benzo(a)anthracene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(b)fluoranthene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(k)fluoranthene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(a)pyrene (diss.filt)	<0.002 µg/l	TM178		<0.002	<0.002	<0.002	<0.004	<0.002	<0.002
Dibenzo(a,h)anthracene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Benzo(g,h,i)perylene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.005 µg/l	TM178		<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
PAH Sum of EPA 16 detected (Diss filt)	<0.082 µg/l	TM178		<0.082	0.442	<0.082	<0.164	<0.082	<0.082

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS 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
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Mercury (diss.filt)	<0.01 µg/l	TM183		0.0129	0.014	<0.01 2	0.012	<0.01	<0.01
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Sulphate	<2 mg/l	TM184		174 #	116 #	147 #	122 #	127 #	129 #
Chloride	<2 mg/l	TM184		61.8 #	65.9 #	57.2 #	50.6 #	52.5 #	90.1 #
Turbidity	<0.1 ntu	TM195		9.39 #	70.7 #	23.9 #	26.6 #	13.2 #	43.7 #
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide, Free	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide, Complex	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphur Dissolved	<1 mg/l	TM228		55	36.7	45.7	38.3	39.3	39.6
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.88 #	10.4 #	8.12 #	8.69 #	8.5 #	8.2 #
Phenol	<0.002 mg/l	TM259		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cresols	<0.006 mg/l	TM259		<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Xylenols	<0.008 mg/l	TM259		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016	<0.016	<0.016	<0.016	<0.016	<0.016

Validated

CERTIFICATE OF ANALYSIS

SDG: 210430-86 **Client Reference:** **Report Number:** 598823
Location: Llanwern **Order Number:** 108282 **Superseded Report:**

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	mCERTS 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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	0.138 #	0.0408 #	0.0202 #	<0.01 #	0.0334 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0382 #	0.0198 #	<0.01 #	<0.005 #	0.0822 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0403 #	0.0151 #	<0.01 #	<0.005 #	0.0147 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.021 #	0.103 #	0.118 #	0.0457 #	0.02 #	0.0993 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00993 #	0.0299 #	0.0135 #	<0.005 #	0.0209 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0154 #	0.193 #	0.112 #	0.0522 #	0.0264 #	0.094 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	0.035 #	0.0255 #	0.0113 #	<0.005 #	0.0307 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0131 #	0.059 #	<0.01 #	<0.005 #	0.0443 #
Pyrene (aq)	<0.005 µg/l	TM178		0.0149 #	0.045 #	0.0914 #	0.0433 #	0.0252 #	0.0699 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.048 #	<0.01 #	<0.005 #	0.0358 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.0139 #	0.0122 #	0.0684 #	0.0296 #	0.0167 #	0.0596 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0252 #	0.0124 #	0.0117 #	0.0257 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.00593 #	0.00637 #	0.0354 #	0.0146 #	0.0136 #	0.0348 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.00609 #	<0.01 #	<0.005 #	0.00815 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0409 #	<0.01 #	0.0146 #	0.0397 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0293 #	<0.01 #	0.0088 #	0.0321 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	0.634 #	0.764 #	0.243 #	0.137 #	0.725 #

Validated

CERTIFICATE OF ANALYSIS

SDG: 210430-86 **Client Reference:** **Report Number:** 598823
Location: Llanwern **Order Number:** 108282 **Superseded Report:**

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	mCERTS 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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
AGS Reference						

Component	LOD/Units	Method											
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Chlorophenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Methylphenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Nitroaniline (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
2-Nitrophenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3-Nitroaniline (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Chloroaniline (aq)	<1 µg/l	TM176	<1		<1		<1		<1		<1		<1	
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Methylphenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Nitroaniline (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4-Nitrophenol (aq)	<1 µg/l	TM176	<1		<1		<1		<1		<1		<1	
Azobenzene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Carbazole (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Dibenzofuran (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	mCERTS 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
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
SVOC TIC (aq)		TM176		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<10 µg/l	TM176		<10	<10	<10	<10	<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG: 210430-86 **Client Reference:** **Report Number:** 598823
Location: Llanwern **Order Number:** 108282 **Superseded Report:**

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	mCERTS 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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		116	113	92	109	113	111
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<20	<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS 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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Dibromofluoromethane**	%	TM208		111	89.2	112	122	110	112
Toluene-d8**	%	TM208		95.8	96.1	96	102	96.1	96.4
4-Bromofluorobenzene**	%	TM208		90.7	90.9	90.6	102	90.2	91.6
Dichlorodifluoromethane	<1 µg/l	TM208		<1 ♦ #	<1 ♦ #	<1 ♦ #	<1 #	<1 ♦ #	<1 ♦ #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS 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
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
			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)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			Sample Time	00:00	00:00	00:00	00:00	00:00	00:00
			Date Received	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021
			SDG Ref	210430-86	210430-86	210430-86	210430-86	210430-86	210430-86
			Lab Sample No.(s)	24186347	24186460	24186414	24186367	24186435	24186393
			AGS Reference						
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 30/04/2021 09:37:25

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
24186367	ML-N	0.00 - 0.00	Total Organic Carbon*	Insufficient Sample

Table of Results - Appendix

Method No	Reference	Description
SUB		Subcontracted Test
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
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
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM110	BS 1377: Part 3 1990	Redox Potential
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
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
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
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
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

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

CERTIFICATE OF ANALYSIS

SDG:	210430-86	**Client Reference:**		**Report Number:**	598823
Location:	Llanwern	**Order Number:**	108282	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24186347	24186460	24186414	24186367	24186435	24186393
Customer Sample Ref.	D5-C	Ellens Reen	KW-C	ML-N	ML-S	R3-C
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
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	14-May-2021	14-May-2021	14-May-2021	14-May-2021	17-May-2021	14-May-2021
Anions by Kone (w)	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021
BOD True Total	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021
COD Unfiltered	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021
Conductivity (at 20 deg.C)	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021
Cyanide Comp/Free/Total/Thiocyanate	06-May-2021	06-May-2021	06-May-2021	05-May-2021	06-May-2021	06-May-2021
Dissolved Metals by ICP-MS	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021
Dissolved Organic/Inorganic Carbon	20-May-2021	20-May-2021	20-May-2021	20-May-2021	20-May-2021	20-May-2021
Dissolved Oxygen by Probe	04-May-2021	10-May-2021	04-May-2021	04-May-2021	04-May-2021	04-May-2021
EPH CWG (Aliphatic) Aqueous GC (W)	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
EPH CWG (Aromatic) Aqueous GC (W)	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
Fluoride	14-May-2021	14-May-2021	14-May-2021	14-May-2021	14-May-2021	14-May-2021
GRO by GC-FID (W)	13-May-2021	13-May-2021	13-May-2021	05-May-2021	13-May-2021	13-May-2021
Hexavalent Chromium (w)	14-May-2021	14-May-2021	14-May-2021	14-May-2021	14-May-2021	14-May-2021
Mercury Dissolved	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021
Mercury Unfiltered	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021
PAH in waters by GC-MS (diss.filt)	12-May-2021	12-May-2021	11-May-2021	12-May-2021	11-May-2021	11-May-2021
PAH Spec MS - Aqueous (W)	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
pH Value	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
Phenols by HPLC (W)	06-May-2021	10-May-2021	07-May-2021	06-May-2021	06-May-2021	06-May-2021
Phosphate by Kone (w)	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021	13-May-2021
Redox Potential	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
Sulphide	17-May-2021	17-May-2021	17-May-2021	17-May-2021	17-May-2021	17-May-2021
Sulphur Dissolved by ICP-OES	05-May-2021	05-May-2021	05-May-2021	05-May-2021	05-May-2021	05-May-2021
Suspended Solids	10-May-2021	10-May-2021	10-May-2021	10-May-2021	07-May-2021	10-May-2021
SVOC MS (W) - Aqueous	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021	10-May-2021
Total Dissolved Solids	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021	12-May-2021
Total Metals by ICP-MS	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021	11-May-2021
Total Organic Carbon*	07-May-2021	07-May-2021	07-May-2021		07-May-2021	07-May-2021
TPH CWG (W)	13-May-2021	13-May-2021	13-May-2021	12-May-2021	13-May-2021	13-May-2021
Turbidity in waters	30-Apr-2021	30-Apr-2021	30-Apr-2021	30-Apr-2021	30-Apr-2021	30-Apr-2021
VOC MS (W)	13-May-2021	13-May-2021	13-May-2021	04-May-2021	13-May-2021	13-May-2021

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

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F: +44 (0)24 7685 6575
www.alsenvironmental.co.uk

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

07 May 2021

Test Report: COV/2128241/2021

Dear Subcon Results

Analysis of your sample(s) received on 01 May 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: A. Zunzunegui

Title: Dept Organic Technical Manager

Report Summary

ANALYSED BY

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **07 May 2021**

Report Number: **COV/2128241/2021** Issue **1**

This issue replaces all previous issues

Job Description: 2020 Analysis

Job Location: 210430-86

Number of Samples included in this report **5**

Job Received: **01 May 2021**

Number of Test Results included in this report **5**

Analysis Commenced: **06 May 2021**

Signed:

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128241/2021** Issue **1**

Laboratory Number: **20393049** Sample **1** of **5**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24187751**
Sample Matrix: **Surface Water**
Sample Date/Time: **29 April 2021**
Sample Received: **01 May 2021**
Analysis Complete: **07 May 2021**

Sample Reference: **D5-C**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	7.8	mg/l	06/05/2021	N Cov	WAS005

Analyst Comments for 20393049: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

Report Number:	**COV/2128241/2021**	Issue	**1**
Laboratory Number:	**20393050**	Sample	**2** of **5**

Sample Source:	**ALS Life Sciences Limited**
Sample Point Description:	
Sample Description:	**24190223**
Sample Matrix:	**Surface Water**
Sample Date/Time:	**29 April 2021**
Sample Received:	**01 May 2021**
Analysis Complete:	**07 May 2021**
Sample Reference:	**Eliens Reen**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	8.1	mg/l	06/05/2021	N Cov	WAS005

Analyst Comments for 20393050: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

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Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128241/2021** Issue **1**

Laboratory Number: **20393051** Sample **3** of **5**

Sample Source: **ALS Life Sciences Limited**

Sample Point Description:

Sample Description: **24187794**

Sample Matrix: **Surface Water**

Sample Date/Time: **29 April 2021**

Sample Received: **01 May 2021**

Analysis Complete: **07 May 2021**

Sample Reference: **KW-C**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	9.3	mg/l	06/05/2021	N Cov	WAS005

Analyst Comments for 20393051: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

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Certificate of Analysis

ANALYSED BY

Report Number:	**COV/2128241/2021**	Issue	**1**
Laboratory Number:	**20393052**	Sample	**4** of **5**

Sample Source:	**ALS Life Sciences Limited**
Sample Point Description:	
Sample Description:	**24187776**
Sample Matrix:	**Surface Water**
Sample Date/Time:	**29 April 2021**
Sample Received:	**01 May 2021**
Analysis Complete:	**07 May 2021**
Sample Reference:	**ML-S**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	8.1	mg/l	06/05/2021	N Cov	WAS005

Analyst Comments for 20393052: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

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Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128241/2021**
Laboratory Number: **20393053**

Issue **1**
Sample **5** of **5**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24190251**
Sample Matrix: **Surface Water**
Sample Date/Time: **29 April 2021**
Sample Received: **01 May 2021**
Analysis Complete: **07 May 2021**

Sample Reference: **R3-C**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	9.0	mg/l	06/05/2021	N Cov	WAS005

Analyst Comments for 20393053: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

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ANALYST COMMENTS FOR REPORT COV/2128241/2021 Issue 1

This issue replaces all previous issues

Date of Issue: **07 May 2021**

Sample No	Analysis Comments
20393049	
20393050	
20393051	
20393052	
20393053	

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

DETERMINAND COMMENTS FOR REPORT COV/2128241/2021

ISSUE 1

This issue replaces all previous issues

Date of Issue: 07 May 2021

Sample No	Description	Determinand	Comments

Signed: 

Name: **A. Zunzunegui** Date: **07 May 2021**

Title: **Dept Organic Technical Manager**

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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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

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 asbestos present is not determined unless specifically requested.

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 (2017).*

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.