FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 5

Groundwater, Leachate and Surface Water Sampling Analysis Results

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Fehily Timoney
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North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	19 August 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200702-50
Your Reference:	P2282
Location:	Gort Landfill
Report No:	563812

This report has been revised and directly supersedes 562070 in its entirety.

We received 4 samples on Thursday July 02, 2020 and 4 of these samples were scheduled for analysis which was completed on Wednesday August 19, 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 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: 2.4 Version Issued: 19/08/2020

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22408528	Holy Well		0.00 - 0.00	01/07/2020
22408517	MH-1		0.00 - 0.00	01/07/2020
22408488	SW1		0.00 - 0.00	01/07/2020
22408504	SW2		0.00 - 0.00	01/07/2020

Maximum Sample/Coolbox Temperature (°C) : **15.2**

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.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

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)									22408528							22408517					22408488
Customer Sample Reference									Holy Well							MH-1					SW1
AGS Reference																					
Depth (m)									0.00 - 0.00							0.00 - 0.00					0.00 - 0.00
Container									0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	
Sample Type									GW	GW	GW	GW	GW	GW	GW	LE	LE	LE	LE	LE	LE	LE	LE	SW	SW	SW	SW	SW	
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 3							X															X					
Alkalinity as CaCO3	All	NDPs: 0 Tests: 1							X																				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2																	X										
Ammonium Low	All	NDPs: 0 Tests: 4										X							X								X		
Anions by Kone (w)	All	NDPs: 0 Tests: 4							X							X								X					
BOD True Total	All	NDPs: 0 Tests: 3															X								X				
COD Unfiltered	All	NDPs: 0 Tests: 3															X								X				
Coliforms (W)	All	NDPs: 0 Tests: 1								X																			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 4									X							X								X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4												X								X							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4											X								X								X
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 4									X							X								X			
Fluoride	All	NDPs: 0 Tests: 4									X							X								X			
Mercury Dissolved	All	NDPs: 0 Tests: 4											X								X								X
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 4									X							X								X			

									22408504
								SW2	
							0.00 - 0.00		
								SW1	22408488
							0.00 - 0.00		
Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml BOD (ALE212)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	
SW	SW	SW	SW	SW	SW	SW	SW	SW	
						X			
			X						
			X						
						X			
					X				
					X				
				X					
	X							X	
		X							
				X					
				X					
		X							
				X					

Validated

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- G - Gas
- OTH - Other

Lab Sample No(s)			22408528							22408517							22408488				
Customer Sample Reference			Holy Well							MH-1							SW1				
AGS Reference																					
Depth (m)			0.00 - 0.00							0.00 - 0.00							0.00 - 0.00				
Container			0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
Sample Type			GW	GW	GW	GW	GW	GW	GW	LE	LE	LE	LE	LE	LE	LE	SW	SW	SW	SW	SW
Nitrite by Kone (w)	All	NDPs: 0 Tests: 1													X						
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 1										X									
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 4			X					X									X		
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 4	X							X							X				
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 4	X							X							X				
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 4	X							X							X				
pH Value	All	NDPs: 0 Tests: 4			X					X									X		
Phosphate by Kone (w)	All	NDPs: 0 Tests: 4	X									X					X				
Silicon Dissolved by ICP-OES	All	NDPs: 0 Tests: 1												X							
Suspended Solids	All	NDPs: 0 Tests: 3										X							X		
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 4	X									X					X				
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 2				X							X								
VOC MS (W)	All	NDPs: 0 Tests: 4							X							X					

12:41:41 19/08/2020

22408504	SW2		0.00 - 0.00	Vial (ALE297)	SW																x
				NaOH (ALE245)	SW																
				HNO3 Filtered (ALE204)	SW																
				H2SO4 (ALE244)	SW																
				500ml Plastic (ALE208)	SW			x				x			x						
				250ml BOD (ALE212)	SW																
				0.5l glass bottle (ALE227)	SW				x	x	x		x			x					
22408488	SW1		0.00 - 0.00	Vial (ALE297)	SW																x
				NaOH (ALE245)	SW																

Validated

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SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

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
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Coliforms, Total*	MPN/100ml	SUB		>2420					
Coliforms, Faecal*	CFU/100ml	SUB		10					
Suspended solids, Total	<2 mg/l	TM022			<9	7.05 #	<4 #		
Alkalinity, Total as HCO3	<2 mg/l	TM043		405					
BOD, unfiltered	<1 mg/l	TM045			<1 #	<1 #	<1 #		
Oxygen, dissolved	<0.3 mg/l	TM046		9.28	9.64	9.69	10.4		
Organic Carbon, Total	<3 mg/l	TM090		3.47 #	5.71				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099			0.573		<0.2 #		
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		1.06 #	0.664	0.0296 #	0.0653 @ #		
Fluoride	<0.5 mg/l	TM104		<0.5 #	<0.5	<0.5	<0.5		
COD, unfiltered	<7 mg/l	TM107			16.8 #	18.3 #	23.5 #		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120		0.692 #	0.624 #	0.169 #	0.167 #		
Antimony (diss.filt)	<1 µg/l	TM152			<1 #				
Arsenic (diss.filt)	<0.5 µg/l	TM152		2.16 #	<0.5 #	<0.5 #	<0.5 #		
Barium (diss.filt)	<0.2 µg/l	TM152		17.8 #	36.7 #	38.3 #	37.9 #		
Beryllium (diss.filt)	<0.1 µg/l	TM152			<0.1 #				
Boron (diss.filt)	<10 µg/l	TM152		19.5 #	44.9 #				
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 #	<0.08 #		
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #		
Cobalt (diss.filt)	<0.5 µg/l	TM152			<0.5 #				
Copper (diss.filt)	<0.3 µg/l	TM152		1.33 #	1.09 #	1.11 #	0.699 #		
Lead (diss.filt)	<0.2 µg/l	TM152		1.13 #	<0.2 #	0.483 #	0.268 #		
Manganese (diss.filt)	<3 µg/l	TM152		58 #	32.7 #	50.9 #	38.9 #		
Molybdenum (diss.filt)	<3 µg/l	TM152			<3 #				
Nickel (diss.filt)	<0.4 µg/l	TM152		1.31 #	1.35 #	1.24 #	0.795 #		
Phosphorus (diss.filt)	<10 µg/l	TM152		206 #	67.9 #	21.3 #	12.4 #		
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #		
Tellurium (diss.filt)	<2 µg/l	TM152			<2				
Thallium (diss.filt)	<2 µg/l	TM152		<2 #	<2 #	<2 #	<2 #		
Titanium (diss.filt)	<1 µg/l	TM152			3.32 #				
Uranium (diss.filt)	<0.5 µg/l	TM152			1.05 #				
Vanadium (diss.filt)	<1 µg/l	TM152			<1 #				
Zinc (diss.filt)	<1 µg/l	TM152		3.85 #	22.9 #	6.61 #	8.97 #		

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Results Legend

#	ISO17025 accredited.
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aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
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**	% 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.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Tin (Diss.Filt)	<1 µg/l	TM152			<1 #				
Silver (diss.filt)	<0.5 µg/l	TM152			<0.5 #				
Sodium (Dis.Filt)	<0.076 mg/l	TM152		22.6 #	18.7 #	10.8 #	10.9 #		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		13.3 #	10.9 #	2.81 #	2.83 #		
Potassium (Dis.Filt)	<0.2 mg/l	TM152		4.89 #	7.65 #	1.27 #	1.24 #		
Calcium (Dis.Filt)	<0.2 mg/l	TM152		132 #	124 #	21.5 #	22.2 #		
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.258 #	0.0943 #	0.118 #	0.0749 #		
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172		<100	<100	<100	<100		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01	<0.01		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		0.368 #	0.095	<0.05 #	<0.05 #		
Sulphate	<2 mg/l	TM184		23.4 #	22.5	5.2 #	4.4 #		
Chloride	<2 mg/l	TM184		44.1 #	24.5	21.7 #	21.8 #		
Nitrite as N	<0.0152 mg/l	TM184			0.0201				
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		1.73 #	4.37				
Sulphate (soluble) as S	<1 mg/l	TM184		7.8 #	7.5	1.73 #	1.47 #		
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		<0.105	<0.105	<0.105	<0.105		
Cyanide, Total	<0.05 mg/l	TM227		<0.05 ♦ #	<0.05 ♦ #	<0.05 ♦	<0.05		
Cyanide, Free	<0.05 mg/l	TM227			<0.05 ♦ #				
pH	<1 pH Units	TM256		7.28 #	7.75 #	7.37 #	7.54 #		
Silicon (diss.filt)	<0.05 mg/l	TM284			3.19				
Dibutyl tin	<5 ng/l	TM328			<5				
Tributyl tin	<1 ng/l	TM328			<1				
Tetrabutyl tin	<2 ng/l	TM328			<2				
Triphenyl tin	<1 ng/l	TM328			<1				
Surrogate	%	TM328			79.8				
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		

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			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Endrin	<0.01 µg/l	TM343		<0.02	<0.02	<0.01	<0.02		
o,p'-DDT	<0.01 µg/l	TM343		<0.03	<0.03	<0.01	<0.03		
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02	<0.02		
p,p'-DDT	<0.01 µg/l	TM343		<0.05	<0.05	<0.02	<0.05		
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.03	<0.03	<0.02	<0.03		
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.05	<0.05	<0.02	<0.05		
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.02	<0.02	<0.02	<0.02		
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01		
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		

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Results Legend	
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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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Phorate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Diazinon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Triallate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Atrazine	<0.01 µg/l	TM344		0.0777	0.0174	<0.01	<0.01		
Simazine	<0.01 µg/l	TM344		0.0312	<0.01	<0.01	<0.01		
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Propetamphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Malathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Fenthion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Ethion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01		
Phosalone	<0.01 µg/l	TM344		<0.02	<0.02	<0.02	<0.02		
Azinphos methyl	<0.02 µg/l	TM344		<0.04	<0.04	<0.04	<0.04		
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02		
Etridiazole	<0.01 µg/l	TM345		<0.02	<0.02	<0.02	<0.02		
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		

Validated

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Alachlor	<0.01 µg/l	TM345		<0.02	<0.02	<0.02	<0.02		
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Chlorothalonil	<0.01 µg/l	TM345		<0.02	<0.02	<0.02	<0.02		
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Metazachlor	<0.01 µg/l	TM345		<0.02	<0.02	<0.02	<0.02		
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01		
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.2		<0.2	0.114		
Clopyralid	<0.04 µg/l	TM411		<0.08		<0.08	<0.04		
MCPA	<0.05 µg/l	TM411		<0.1		<0.1	<0.05		
Mecoprop	<0.04 µg/l	TM411		<0.08		<0.08	<0.04		
Dicamba	<0.04 µg/l	TM411		<0.08		<0.08	<0.04		
MCPB	<0.05 µg/l	TM411		<0.1		<0.1	<0.05		
2,4-DB	<0.1 µg/l	TM411		<0.2		<0.2	<0.1		
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.1		<0.1	<0.05		
Dichlorprop	<0.1 µg/l	TM411		<0.2		<0.2	<0.1		
Triclopyr	<0.05 µg/l	TM411		<0.75		<0.75	<0.75		
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.2		<0.2	<0.1		
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.1		<0.1	<0.05		
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.1		<0.1	<0.05		
Bromoxynil	<0.04 µg/l	TM411		<0.08		<0.08	<0.08		
Benazolin	<0.04 µg/l	TM411		<0.08		<0.08	<0.08		
Ioxynil	<0.05 µg/l	TM411		<0.1		<0.1	<0.1		
Pentachlorophenol	<0.04 µg/l	TM411		<0.08		<0.08	<0.08		
Fluoroxypyr	<0.1 µg/l	TM411		<0.2		<0.2	<0.2		

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<2	<1	<1		
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<2	<1	<1		
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Anthracene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<4	<2 #	<2 #		
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

SVOC MS (W) - Aqueous

Results Legend

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

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Carbazole (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Chrysene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<10	<5 #	<5 #		
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Fluorene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<2	<1	<1		
Phenol (aq)	<1 µg/l	TM176		<1	<2	<1	<1		
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Isophorone (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<2	<1	<1		
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		
Pyrene (aq)	<1 µg/l	TM176		<1 #	<2	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
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			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Dibromofluoromethane**	%	TM208		113	114	112	113		
Toluene-d8**	%	TM208		100	99	99	99.3		
4-Bromofluorobenzene**	%	TM208		95.2	94.4	96.6	94.7		
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Holy Well	MH-1	SW1	SW2		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Land Leachate (LE)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	01/07/2020	01/07/2020	01/07/2020	01/07/2020		
			Sample Time	.	.	.	.		
			Date Received	02/07/2020	02/07/2020	02/07/2020	02/07/2020		
			SDG Ref	200702-50	200702-50	200702-50	200702-50		
			Lab Sample No.(s)	22408528	22408517	22408488	22408504		
			AGS Reference						
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1		

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
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
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
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
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
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
TM284		
TM328		
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

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:	200702-50	**Client Reference:**	P2282	**Report Number:**	563812
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562070

Test Completion Dates

Lab Sample No(s)	22408528	22408517	22408488	22408504
Customer Sample Ref.	Holy Well	MH-1	SW1	SW2
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Land Leachate	Surface Water	Surface Water
Acid Herbicides by GCMS	07-Jul-2020		07-Jul-2020	07-Jul-2020
Alkalinity as CaCO3	07-Jul-2020			
Ammoniacal Nitrogen		06-Jul-2020		06-Aug-2020
Ammonium Low	06-Jul-2020	06-Jul-2020	08-Jul-2020	19-Aug-2020
Anions by Kone (w)	04-Jul-2020	04-Jul-2020	05-Jul-2020	05-Jul-2020
BOD True Total		08-Jul-2020	08-Jul-2020	08-Jul-2020
COD Unfiltered		06-Jul-2020	06-Jul-2020	06-Jul-2020
Coliforms (W)	06-Jul-2020			
Conductivity (at 20 deg.C)	03-Jul-2020	03-Jul-2020	03-Jul-2020	03-Jul-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2020	07-Jul-2020	07-Jul-2020	07-Jul-2020
Dissolved Metals by ICP-MS	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020
Dissolved Oxygen by Probe	03-Jul-2020	03-Jul-2020	03-Jul-2020	03-Jul-2020
Fluoride	07-Jul-2020	03-Jul-2020	03-Jul-2020	07-Jul-2020
Mercury Dissolved	03-Jul-2020	03-Jul-2020	03-Jul-2020	03-Jul-2020
Mineral Oil C10-40 Aqueous (W)	07-Jul-2020	07-Jul-2020	07-Jul-2020	07-Jul-2020
Nitrite by Kone (w)		03-Jul-2020		
Organotins in Aqueous Samples		06-Jul-2020		
PCB Congeners - Aqueous (W)	09-Jul-2020	08-Jul-2020	08-Jul-2020	09-Jul-2020
Pesticides (Suite I) by GCMS	09-Jul-2020	09-Jul-2020	09-Jul-2020	09-Jul-2020
Pesticides (Suite II) by GCMS	07-Jul-2020	07-Jul-2020	07-Jul-2020	07-Jul-2020
Pesticides (Suite III) by GCMS	09-Jul-2020	09-Jul-2020	09-Jul-2020	09-Jul-2020
pH Value	03-Jul-2020	03-Jul-2020	03-Jul-2020	03-Jul-2020
Phosphate by Kone (w)	03-Jul-2020	03-Jul-2020	03-Jul-2020	03-Jul-2020
Silicon Dissolved by ICP-OES		10-Jul-2020		
Suspended Solids		08-Jul-2020	08-Jul-2020	08-Jul-2020
SVOC MS (W) - Aqueous	05-Jul-2020	05-Jul-2020	05-Jul-2020	08-Jul-2020
Total Organic and Inorganic Carbon	04-Jul-2020	04-Jul-2020		
VOC MS (W)	06-Jul-2020	06-Jul-2020	06-Jul-2020	06-Jul-2020

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Customer

Customer Services

ALS Life Sciences
Hawarden Business Park
Manor Lane
Hawarden, Deeside
UK
CH5 3US

Certificate Of Analysis

Job Number: 20-79340
Issue Number: 1
Report Date: 2 July 2020

Site: Galway Historic Landfills
PO Number: Not Supplied
Date Samples Received: 01/07/2020

Please find attached the results for the samples received at our laboratory on 01/07/2020.

Should you have any queries regarding the report or require any further services, we would be happy to discuss your requirements. For additional information about the company please log-on to our website at the above address.

Thank you for choosing City Analysts Limited. We look forward to assisting you again.

Authorised By: **Authorised Date:** 2 July 2020

Debbie Kelly
Laboratory Supervisor

Notes are not INAB accredited

Results relate only to the items tested.
Information on methods of analysis and uncertainty of measurement is available on request.
Any opinions or interpretations indicated are outside the scope of our INAB accreditation.

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Certificate Of Analysis

Customer

Customer Services

ALS Life Sciences
Hawarden Business Park
Manor Lane
Hawarden, Deeside
UK
CH5 3US

Report Reference: 20-79340

Report Version: 1

Site: Galway Historic Landfills

Sample Description: 5A Tuam

Sample Type: Ground

Lab Reference Number: 517821

Date of Sampling: 01/07/2020

Date Sample Received: 01/07/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	01/07/2020	Coliforms	**913.9**	MPN/100ml	-
D/D3221#	01/07/2020	Faecal Coliforms	**12**	cfu/100ml	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
NAC & ATC - No abnormal change and acceptable to customers.
TVC - Total viable count
Site D = Analysed at City Analysts Dublin. Site S = Analysed at City Analysts Shannon

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Certificate Of Analysis

Customer

Customer Services

ALS Life Sciences
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Manor Lane
Hawarden, Deeside
UK
CH5 3US

Report Reference: 20-79340

Report Version: 1

Site: Galway Historic Landfills

Sample Description: RC2 Tuam

Sample Type: Ground

Lab Reference Number: 517822

Date of Sampling: 01/07/2020

Date Sample Received: 01/07/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	01/07/2020	Coliforms	> 2419.6	MPN/100ml	-
D/D3221#	01/07/2020	Faecal Coliforms	< 1	cfu/100ml	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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CH5 3US

Report Reference: 20-79340

Report Version: 1

Site: Galway Historic Landfills

Sample Description: RC3 Tuam

Sample Type: Ground

Lab Reference Number: 517823

Date of Sampling: 01/07/2020

Date Sample Received: 01/07/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	01/07/2020	Coliforms	**> 2419.6**	MPN/100ml	-
D/D3221#	01/07/2020	Faecal Coliforms	**< 100**	cfu/100ml	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
NAC & ATC - No abnormal change and acceptable to customers.
TVC - Total viable count
Site D = Analysed at City Analysts Dublin. Site S = Analysed at City Analysts Shannon

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UK
CH5 3US

Report Reference: 20-79340

Report Version: 1

Site: Galway Historic Landfills

Sample Description: Holywell Gort

Sample Type: Ground

Lab Reference Number: 517824

Date of Sampling: 01/07/2020

Date Sample Received: 01/07/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	01/07/2020	Coliforms	**> 2419.6**	MPN/100ml	-
D/D3221#	01/07/2020	Faecal Coliforms	**10**	cfu/100ml	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
NAC & ATC - No abnormal change and acceptable to customers.
TVC - Total viable count
Site D = Analysed at City Analysts Dublin. Site S = Analysed at City Analysts Shannon

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 (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.

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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 August 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200731-85
Your Reference:	P2282
Location:	Gort Landfill
Report No:	562378

We received 2 samples on Friday July 31, 2020 and 2 of these samples were scheduled for analysis which was completed on Sunday August 09, 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 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22583238	SW1		0.00 - 0.00	30/07/2020
22583260	SW2		0.00 - 0.00	30/07/2020

Maximum Sample/Coolbox Temperature (°C) : **16.2**

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.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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)													
			22583238						22583260							
			Customer Sample Reference													
			SW1						SW2							
			AGS Reference													
			Depth (m)													
			0.00 - 0.00						0.00 - 0.00							
			Container	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
			Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 2		X						X					
Ammonium Low	All	NDPs: 0 Tests: 2					X						X		
Anions by Kone (w)	All	NDPs: 0 Tests: 2				X						X			
BOD True Total	All	NDPs: 0 Tests: 2			X						X				
COD Unfiltered	All	NDPs: 0 Tests: 2			X						X				
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 2				X						X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2						X						X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2				X						X			
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 2				X						X			
Fluoride	All	NDPs: 0 Tests: 2				X						X			
Mercury Dissolved	All	NDPs: 0 Tests: 2				X						X			
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 2		X						X					
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 2		X						X					
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 2		X						X					
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 2		X						X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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)								22583238						22583260
Customer Sample Reference								SW1						SW2
AGS Reference														
Depth (m)								0.00 - 0.00						0.00 - 0.00
Container								0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
Sample Type								SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 2						X						X					
pH Value	All	NDPs: 0 Tests: 2								X						X			
Phosphate by Kone (w)	All	NDPs: 0 Tests: 2								X						X			
Suspended Solids	All	NDPs: 0 Tests: 2								X						X			
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 2						X	X										
VOC MS (W)	All	NDPs: 0 Tests: 2						X											X

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Surface Water (SW)	Surface Water (SW)				
			Date Sampled	30/07/2020	30/07/2020				
			Sample Time	.	.				
			Date Received	31/07/2020	31/07/2020				
			SDG Ref	200731-85	200731-85				
			Lab Sample No.(s)	22583238	22583260				
			AGS Reference						
Suspended solids, Total	<2 mg/l	TM022		<2 #	2.65 #				
BOD, unfiltered	<1 mg/l	TM045		<1 #	<1 #				
Oxygen, dissolved	<0.3 mg/l	TM046		9.94	10.3				
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.0229 #	0.0246 #				
Fluoride	<0.5 mg/l	TM104		<0.5	<0.5				
COD, unfiltered	<7 mg/l	TM107		42.1 #	43.5 #				
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120		0.155 #	0.145 #				
Arsenic (diss.filt)	<0.5 µg/l	TM152		<0.5 2 #	<0.5 2 #				
Barium (diss.filt)	<0.2 µg/l	TM152		42.5 2 #	42.6 2 #				
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	<0.08 2 #				
Chromium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 2 #				
Copper (diss.filt)	<0.3 µg/l	TM152		0.92 2 #	1.14 2 #				
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 2 #	0.442 2 #				
Manganese (diss.filt)	<3 µg/l	TM152		3.81 2 #	8.19 2 #				
Nickel (diss.filt)	<0.4 µg/l	TM152		1.09 2 #	1.03 2 #				
Phosphorus (diss.filt)	<10 µg/l	TM152		<10 2 #	13.4 2 #				
Selenium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 2 #				
Thallium (diss.filt)	<2 µg/l	TM152		<2 2 #	<2 2 #				
Zinc (diss.filt)	<1 µg/l	TM152		1.7 2 #	2.81 2 #				
Sodium (Dis.Filt)	<0.076 mg/l	TM152		10 2 #	11.1 2 #				
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		2.59 2 #	2.67 2 #				
Potassium (Dis.Filt)	<0.2 mg/l	TM152		1.03 2 #	1.13 2 #				
Calcium (Dis.Filt)	<0.2 mg/l	TM152		20.6 2 #	20.6 2 #				
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.183 2 #	0.187 2 #				
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172		<100	<100				
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2	<0.01 2				
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	<0.05 #				
Sulphate	<2 mg/l	TM184		<2 #	<2 #				
Chloride	<2 mg/l	TM184		19.6 #	19.1 #				
Sulphate (soluble) as S	<1 mg/l	TM184		<1 #	<1 #				
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015				
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015				
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015				

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2			
			Depth (m)	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Surface Water (SW)			
			Date Sampled	30/07/2020	30/07/2020			
			Sample Time	.	.			
			Date Received	31/07/2020	31/07/2020			
			SDG Ref	200731-85	200731-85			
			Lab Sample No.(s)	22583238	22583260			
			AGS Reference					
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015			
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015			
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015			
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		<0.105	<0.105			
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05			
pH	<1 pH Units	TM256		7.52 #	7.52 #			
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01			
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01			
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01			
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01			
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01			
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01			
delta-HCH	<0.01 µg/l	TM343		<0.02	<0.02			
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01			
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01			
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01			
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01			
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01			
Endrin	<0.01 µg/l	TM343		<0.01	<0.01			
o,p'-DDT	<0.01 µg/l	TM343		<0.04	<0.04			
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01			
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343		<0.07	<0.07			
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.04	<0.04			
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.07	<0.07			
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.04	<0.04			
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01			

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Customer Sample Ref.			SW1	SW2				
Depth (m)			0.00 - 0.00	0.00 - 0.00				
Sample Type			Surface Water (SW)	Surface Water (SW)				
Date Sampled			30/07/2020	30/07/2020				
Sample Time			.	.				
Date Received			31/07/2020	31/07/2020				
SDG Ref			200731-85	200731-85				
Lab Sample No.(s)			22583238	22583260				
AGS Reference								
Component	**LOD/Units**	**Method**						
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01				
Chlorpyriphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01				
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01				
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01				
Chlorpyriphos	<0.01 µg/l	TM344	<0.01	<0.01				
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01				
Malathion	<0.01 µg/l	TM344	<0.01	<0.01				
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01				
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01				
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01				
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01				
Parathion	<0.01 µg/l	TM344	<0.01	<0.01				
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01				
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01				
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01				
Ethion	<0.01 µg/l	TM344	<0.01	<0.01				
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01				

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Surface Water (SW)	Surface Water (SW)				
			Date Sampled	30/07/2020	30/07/2020				
			Sample Time	.	.				
			Date Received	31/07/2020	31/07/2020				
			SDG Ref	200731-85	200731-85				
			Lab Sample No.(s)	22583238	22583260				
			AGS Reference						
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01				
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01				
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02				
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02				
Etridiazole	<0.01 µg/l	TM345		<0.02	<0.02				
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01				
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01				
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01				
Propazine	<0.01 µg/l	TM345		<0.01	<0.01				
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01				
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01				
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01				
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01				
Chlorothalonil	<0.01 µg/l	TM345		<0.03	<0.03				
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01				
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01				
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01				
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01				
Phosphamidon I	<0.01 µg/l	TM345		<0.02	<0.02				
Phosphamidon II	<0.01 µg/l	TM345		<0.02	<0.02				
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1	<0.1				
Clopyralid	<0.04 µg/l	TM411		<0.04	<0.04				
MCPA	<0.05 µg/l	TM411		<0.05	<0.05				
Mecoprop	<0.04 µg/l	TM411		<0.04	<0.04				
Dicamba	<0.04 µg/l	TM411		<0.04	<0.04				
MCPB	<0.05 µg/l	TM411		<0.05	<0.05				
2,4-DB	<0.1 µg/l	TM411		<0.1	<0.1				
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05	<0.05				
Dichlorprop	<0.1 µg/l	TM411		<0.1	<0.1				
Triclopyr	<0.05 µg/l	TM411		<0.05	<0.05				

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Surface Water (SW)	Surface Water (SW)				
			Date Sampled	30/07/2020	30/07/2020				
			Sample Time	.	.				
			Date Received	31/07/2020	31/07/2020				
			SDG Ref	200731-85	200731-85				
			Lab Sample No.(s)	22583238	22583260				
			AGS Reference						
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1	<0.1				
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.05				
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.05				
Bromoxynil	<0.04 µg/l	TM411		<0.04	<0.04				
Benazolin	<0.04 µg/l	TM411		<0.04	<0.04				
Ioxynil	<0.05 µg/l	TM411		<0.05	<0.05				
Pentachlorophenol	<0.04 µg/l	TM411		<0.04	<0.04				
Fluoroxypyr	<0.1 µg/l	TM411		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Surface Water (SW)	Surface Water (SW)				
			Date Sampled	30/07/2020	30/07/2020				
			Sample Time	.	.				
			Date Received	31/07/2020	31/07/2020				
			SDG Ref	200731-85	200731-85				
			Lab Sample No.(s)	22583238	22583260				
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<8 #	<10 #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Chlorophenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Methylphenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Nitroaniline (aq)	<1 µg/l	TM176		<8 #	<10 #				
2-Nitrophenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
3-Nitroaniline (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Chloroaniline (aq)	<1 µg/l	TM176		<8	<10				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Methylphenol (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Nitroaniline (aq)	<1 µg/l	TM176		<8 #	<10 #				
4-Nitrophenol (aq)	<1 µg/l	TM176		<8	<10				
Azobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #				
Acenaphthylene (aq)	<1 µg/l	TM176		<8 #	<10 #				
Acenaphthene (aq)	<1 µg/l	TM176		<8 #	<10 #				
Anthracene (aq)	<1 µg/l	TM176		<8 #	<10 #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<8 #	<10 #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<8 #	<10 #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<16 #	<20 #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<8 #	<10 #				
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<8 #	<10 #				

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2			
			Depth (m)	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Surface Water (SW)			
			Date Sampled	30/07/2020	30/07/2020			
			Sample Time	.	.			
			Date Received	31/07/2020	31/07/2020			
			SDG Ref	200731-85	200731-85			
			Lab Sample No.(s)	22583238	22583260			
			AGS Reference					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Carbazole (aq)	<1 µg/l	TM176		<8 #	<10 #			
Chrysene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Dibenzofuran (aq)	<1 µg/l	TM176		<8 #	<10 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<8 #	<10 #			
Diethyl phthalate (aq)	<1 µg/l	TM176		<8 #	<10 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<8 #	<10 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<40 #	<50 #			
Fluoranthene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Fluorene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Pentachlorophenol (aq)	<1 µg/l	TM176		<8	<10			
Phenol (aq)	<1 µg/l	TM176		<8	<10			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<8 #	<10 #			
Hexachloroethane (aq)	<1 µg/l	TM176		<8 #	<10 #			
Nitrobenzene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Naphthalene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Isophorone (aq)	<1 µg/l	TM176		<8 #	<10 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<8	<10			
Phenanthrene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<8 #	<10 #			
Pyrene (aq)	<1 µg/l	TM176		<8 #	<10 #			

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2			
			Depth (m)	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Surface Water (SW)			
			Date Sampled	30/07/2020	30/07/2020			
			Sample Time	.	.			
			Date Received	31/07/2020	31/07/2020			
			SDG Ref	200731-85	200731-85			
			Lab Sample No.(s)	22583238	22583260			
			AGS Reference					
Dibromofluoromethane**	%	TM208		107	105			
Toluene-d8**	%	TM208		96.8	97.4			
4-Bromofluorobenzene**	%	TM208		100	101			
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #			
Chloromethane	<1 µg/l	TM208		<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #			
Bromomethane	<1 µg/l	TM208		<1 #	<1 #			
Chloroethane	<1 µg/l	TM208		<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #			
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #			
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1			
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #			
Chloroform	<1 µg/l	TM208		<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #			
Benzene	<1 µg/l	TM208		<1 #	<1 #			
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #			
Toluene	<1 µg/l	TM208		<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #			
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #			

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2			
			Depth (m)	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Surface Water (SW)			
			Date Sampled	30/07/2020	30/07/2020			
			Sample Time	.	.			
			Date Received	31/07/2020	31/07/2020			
			SDG Ref	200731-85	200731-85			
			Lab Sample No.(s)	22583238	22583260			
			AGS Reference					
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1			

Table of Results - Appendix

Method No	Reference	Description
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
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in 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
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
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

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:	200731-85	**Client Reference:**	P2282	**Report Number:**	562378
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	22583238	22583260
Customer Sample Ref.	SW1	SW2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
Acid Herbicides by GCMS	07-Aug-2020	07-Aug-2020
Ammonium Low	06-Aug-2020	06-Aug-2020
Anions by Kone (w)	03-Aug-2020	03-Aug-2020
BOD True Total	06-Aug-2020	05-Aug-2020
COD Unfiltered	01-Aug-2020	01-Aug-2020
Conductivity (at 20 deg.C)	05-Aug-2020	05-Aug-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Aug-2020	07-Aug-2020
Dissolved Metals by ICP-MS	07-Aug-2020	07-Aug-2020
Dissolved Oxygen by Probe	02-Aug-2020	02-Aug-2020
Fluoride	04-Aug-2020	04-Aug-2020
Mercury Dissolved	05-Aug-2020	05-Aug-2020
Mineral Oil C10-40 Aqueous (W)	07-Aug-2020	07-Aug-2020
PCB Congeners - Aqueous (W)	07-Aug-2020	07-Aug-2020
Pesticides (Suite I) by GCMS	06-Aug-2020	06-Aug-2020
Pesticides (Suite II) by GCMS	07-Aug-2020	07-Aug-2020
Pesticides (Suite III) by GCMS	05-Aug-2020	05-Aug-2020
pH Value	04-Aug-2020	03-Aug-2020
Phosphate by Kone (w)	04-Aug-2020	04-Aug-2020
Suspended Solids	05-Aug-2020	05-Aug-2020
SVOC MS (W) - Aqueous	09-Aug-2020	09-Aug-2020
VOC MS (W)	05-Aug-2020	05-Aug-2020

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 (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.

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Fehily Timoney
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North Park Business Park
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 August 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200731-87
Your Reference:	P2282
Location:	Gort Landfill
Report No:	562220

We received 2 samples on Friday July 31, 2020 and 2 of these samples were scheduled for analysis which was completed on Friday August 07, 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 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22583355	LH01		0.00 - 0.00	30/07/2020
22583349	MH-1		0.00 - 0.00	30/07/2020

Maximum Sample/Coolbox Temperature (°C) : **16.2**

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.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**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)						
			22583355			22583349			
			Customer Sample Reference						
			LH01			MH-1			
			AGS Reference						
			Depth (m)						
			0.00 - 0.00			0.00 - 0.00			
			Container						
			0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	
			Sample Type						
			LE	LE	LE	LE	LE	LE	
Ammonium Low	All	NDPs: 0 Tests: 2			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X			X		
BOD True Total	All	NDPs: 0 Tests: 2	X			X			
COD Unfiltered	All	NDPs: 0 Tests: 2		X			X		
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 2		X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X			X		
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 2		X			X		
Fluoride	All	NDPs: 0 Tests: 2		X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 2		X			X		
pH Value	All	NDPs: 0 Tests: 2		X			X		
Phosphate by Kone (w)	All	NDPs: 0 Tests: 2		X			X		
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 2			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	LH01	MH-1				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Land Leachate (LE)	Land Leachate (LE)				
			Date Sampled	30/07/2020	30/07/2020				
			Sample Time	.	.				
			Date Received	31/07/2020	31/07/2020				
			SDG Ref	200731-87	200731-87				
			Lab Sample No.(s)	22583355	22583349				
			AGS Reference						
BOD, unfiltered	<1 mg/l	TM045		61.9 #	2.18 #				
Oxygen, dissolved	<0.3 mg/l	TM046		7.64	9.33				
Organic Carbon, Total	<3 mg/l	TM090		26.6	6.67				
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		59.2	0.63				
Fluoride	<0.5 mg/l	TM104		<0.5	<0.5				
COD, unfiltered	<7 mg/l	TM107		640 #	25.8 #				
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120		1.87 #	0.603 #				
Arsenic (diss.filt)	<0.5 µg/l	TM152		3.16 2 #	<0.5 2 #				
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	<0.08 2 #				
Chromium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 2 #				
Copper (diss.filt)	<0.3 µg/l	TM152		1.19 2 #	1.3 2 #				
Lead (diss.filt)	<0.2 µg/l	TM152		0.308 2 #	<0.2 2 #				
Manganese (diss.filt)	<3 µg/l	TM152		1920 2 #	19.2 2 #				
Nickel (diss.filt)	<0.4 µg/l	TM152		16.3 2 #	1.73 2 #				
Phosphorus (diss.filt)	<10 µg/l	TM152		30.9 2 #	82.3 2 #				
Selenium (diss.filt)	<1 µg/l	TM152		1.12 2 #	<1 2 #				
Zinc (diss.filt)	<1 µg/l	TM152		11.3 2 #	26.3 2 #				
Sodium (Dis.Filt)	<0.076 mg/l	TM152		69.5 2 #	16.8 2 #				
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		44.7 2 #	9.92 2 #				
Potassium (Dis.Filt)	<0.2 mg/l	TM152		53.1 2 #	6.97 2 #				
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0299 2 #	0.0494 2 #				
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2 #	<0.01 2 #				
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05	0.2				
Sulphate	<2 mg/l	TM184		223	18.3				
Chloride	<2 mg/l	TM184		95.1	22.3				
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		0.558	4.69				
pH	<1 pH Units	TM256		7.06 #	7.41 #				

CERTIFICATE OF ANALYSIS

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
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
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
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
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
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 Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	22583355	22583349
Customer Sample Ref.	LH01	MH-1
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Land Leachate	Land Leachate
Ammonium Low	06-Aug-2020	06-Aug-2020
Anions by Kone (w)	04-Aug-2020	04-Aug-2020
BOD True Total	06-Aug-2020	06-Aug-2020
COD Unfiltered	04-Aug-2020	04-Aug-2020
Conductivity (at 20 deg.C)	05-Aug-2020	05-Aug-2020
Dissolved Metals by ICP-MS	07-Aug-2020	07-Aug-2020
Dissolved Oxygen by Probe	04-Aug-2020	02-Aug-2020
Fluoride	04-Aug-2020	04-Aug-2020
Mercury Dissolved	05-Aug-2020	05-Aug-2020
pH Value	04-Aug-2020	04-Aug-2020
Phosphate by Kone (w)	04-Aug-2020	04-Aug-2020
Total Organic and Inorganic Carbon	06-Aug-2020	06-Aug-2020

SDG:	200731-87	**Client Reference:**	P2282	**Report Number:**	562220
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

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 (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.

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Fehily Timoney
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North Park Business Park
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 September 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200826-93
Your Reference:	P2282
Location:	Gort Landfill
Report No:	565742

We received 1 sample on Wednesday August 26, 2020 and 1 of these samples were scheduled for analysis which was completed on Thursday September 03, 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 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200826-93	**Client Reference:**	P2282	**Report Number:**	565742
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22723140	LH01		0.00 - 0.00	25/08/2020

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	200826-93	**Client Reference:**	P2282	**Report Number:**	565742
Location:	Gort Landfill	**Order Number:**	Z2189	**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)			22723140
			Customer Sample Reference			LH01
			AGS Reference			
			Depth (m)			0.00 - 0.00
			Container	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)
			Sample Type	LE	LE	LE
Ammonium Low	All	NDPs: 0 Tests: 1				X
Anions by Kone (w)	All	NDPs: 0 Tests: 1			X	
BOD True Total	All	NDPs: 0 Tests: 1		X		
COD Unfiltered	All	NDPs: 0 Tests: 1		X		
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 1			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1			X	
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 1			X	
Fluoride	All	NDPs: 0 Tests: 1			X	
Mercury Dissolved	All	NDPs: 0 Tests: 1			X	
pH Value	All	NDPs: 0 Tests: 1			X	
Phosphate by Kone (w)	All	NDPs: 0 Tests: 1			X	
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 1				X

Validated

CERTIFICATE OF ANALYSIS

SDG:	200826-93	**Client Reference:**	P2282	**Report Number:**	565742
Location:	Gort Landfill	**Order Number:**	Z2189	**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
1-3+$@	Sample deviation (see appendix)

Customer Sample Ref.	LH01
Depth (m)	0.00 - 0.00
Sample Type	Land Leachate (LE)
Date Sampled	25/08/2020
Sample Time	.
Date Received	26/08/2020
SDG Ref	200826-93
Lab Sample No.(s)	22723140
AGS Reference	

Component	LOD/Units	Method	
BOD, unfiltered	<1 mg/l	TM045	7.95 #
Oxygen, dissolved	<0.3 mg/l	TM046	6.13
Organic Carbon, Total	<3 mg/l	TM090	28.4
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	42
Fluoride	<0.5 mg/l	TM104	<0.5
COD, unfiltered	<7 mg/l	TM107	143 #
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	1.77 #
Arsenic (diss.filt)	<0.5 µg/l	TM152	2.14 2 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 2 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 2 #
Copper (diss.filt)	<0.3 µg/l	TM152	3.02 2 #
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 2 #
Manganese (diss.filt)	<3 µg/l	TM152	4310 2 #
Nickel (diss.filt)	<0.4 µg/l	TM152	13.7 2 #
Phosphorus (diss.filt)	<10 µg/l	TM152	23.6 2 #
Selenium (diss.filt)	<1 µg/l	TM152	<1 2 #
Zinc (diss.filt)	<1 µg/l	TM152	19 2 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152	37.3 2 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	27.1 2 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152	36.4 2 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.0492 2 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 2 #
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05
Sulphate	<2 mg/l	TM184	128
Chloride	<2 mg/l	TM184	49
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1
pH	<1 pH Units	TM256	7.1 #

CERTIFICATE OF ANALYSIS

SDG:	200826-93	**Client Reference:**	P2282	**Report Number:**	565742
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
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
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
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
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
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 Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200826-93	**Client Reference:**	P2282	**Report Number:**	565742
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	22723140
Customer Sample Ref.	LH01
AGS Ref.	
Depth	0.00 - 0.00
Type	Land Leachate
Ammonium Low	02-Sep-2020
Anions by Kone (w)	31-Aug-2020
BOD True Total	01-Sep-2020
COD Unfiltered	28-Aug-2020
Conductivity (at 20 deg.C)	27-Aug-2020
Dissolved Metals by ICP-MS	01-Sep-2020
Dissolved Oxygen by Probe	28-Aug-2020
Fluoride	01-Sep-2020
Mercury Dissolved	03-Sep-2020
pH Value	27-Aug-2020
Phosphate by Kone (w)	27-Aug-2020
Total Organic and Inorganic Carbon	30-Aug-2020

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 (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.

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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	27 August 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200731-86
Your Reference:	Galway Historic Landfills
Location:	Gort Landfill
Report No:	564885

This report has been revised and directly supersedes 562437 in its entirety.

We received 3 samples on Friday July 31, 2020 and 3 of these samples were scheduled for analysis which was completed on Monday August 10, 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 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22583337	BH1		0.00 - 0.00	30/07/2020
22583320	GW01		0.00 - 0.00	30/07/2020
22583328	GW02		0.00 - 0.00	30/07/2020

Maximum Sample/Coolbox Temperature (°C) : **16.2**

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.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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)						2258337					2258320					2258328	
Customer Sample Reference						BH1					GW01					GW02	
AGS Reference																	
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00	
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
Sample Type						GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 3				X					X					X				
Alkalinity as CaCO3	All	NDPs: 0 Tests: 3					X					X					X			
Ammonium Low	All	NDPs: 0 Tests: 3						X					X					X		
Anions by Kone (w)	All	NDPs: 0 Tests: 3					X					X					X			
BOD True Total	All	NDPs: 0 Tests: 3					X					X					X			
COD Unfiltered	All	NDPs: 0 Tests: 3					X					X					X			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 3					X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3							X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3					X					X					X			
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 3					X					X					X			
Faecal Coliforms (W)*	All	NDPs: 0 Tests: 3					X					X					X			
Fluoride	All	NDPs: 0 Tests: 3					X					X					X			
Mercury Dissolved	All	NDPs: 0 Tests: 3					X					X					X			
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 3				X					X					X				
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 3				X					X					X				

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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)					22583337					22583320					22583328	
Customer Sample Reference					BH1					GW01					GW02	
AGS Reference																
Depth (m)					0.00 - 0.00					0.00 - 0.00					0.00 - 0.00	
Container					0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
Sample Type					GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 3			X					X					X				
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 3			X					X					X				
pH Value	All	NDPs: 0 Tests: 3				X					X					X			
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3							X					X					X
Total Coliforms(W)*	All	NDPs: 0 Tests: 2				X					X								
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 3					X					X					X		
VOC MS (W)	All	NDPs: 0 Tests: 3							X					X					X

Validated

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
Faecal coliforms confirmed (M7M)*	0 CFU/100ml	SUB		4	19	620			
Total Coliform Presumptive (M16)*	CFU/100ml	SUB		>100	>100				
Total Coliform Confirmed (M14)*	CFU/100ml	SUB		>100	>100				
Alkalinity, Total as HCO3	<2 mg/l	TM043		952	744	1710			
BOD, unfiltered	<1 mg/l	TM045		<1 #	<1 #	4.52 #			
Oxygen, dissolved	<0.3 mg/l	TM046		9.4	9.5	9.12			
Organic Carbon, Total	<3 mg/l	TM090		<3 #	<3 #	<3 #			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.0297 #	0.0331 #	0.0627 #			
Fluoride	<0.5 mg/l	TM104		<0.5 #	<0.5 #	<0.5 #			
COD, unfiltered	<7 mg/l	TM107		94.5 #	116 #	412 #			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120		0.62 #	0.623 #	0.593 #			
Arsenic (diss.filt)	<0.5 µg/l	TM152		0.532 2 #	0.642 2 #	0.754 2 #			
Barium (diss.filt)	<0.2 µg/l	TM152		20.3 2 #	22.7 2 #	38.4 2 #			
Boron (diss.filt)	<10 µg/l	TM152		12.5 2 #	21.9 2 #	25.1 2 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	<0.08 2 #	<0.08 2 #			
Chromium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 2 #	<1 2 #			
Copper (diss.filt)	<0.3 µg/l	TM152		1.46 2 #	0.926 2 #	3.77 2 #			
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 2 #	<0.2 2 #	<0.2 2 #			
Manganese (diss.filt)	<3 µg/l	TM152		<3 2 #	<3 2 #	5.72 2 #			
Nickel (diss.filt)	<0.4 µg/l	TM152		1.78 2 #	3.64 2 #	7.68 2 #			
Phosphorus (diss.filt)	<10 µg/l	TM152		18 2 #	11.2 2 #	<10 2 #			
Selenium (diss.filt)	<1 µg/l	TM152		1.42 2 #	2.33 2 #	3.64 2 #			
Thallium (diss.filt)	<2 µg/l	TM152		<2 2 #	<2 2 #	<2 2 #			
Zinc (diss.filt)	<1 µg/l	TM152		1.52 2 #	1.49 2 #	2.6 2 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152		9.71 2 #	33.9 2 #	17.2 2 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		7.69 2 #	12.8 2 #	9.62 2 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152		1.83 2 #	4.19 2 #	2.43 2 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152		130 2 #	91 2 #	112 2 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 2 #	<0.019 2 #	<0.019 2 #			
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2 #	<0.01 2 #	<0.01 2 #			
Sulphate	<2 mg/l	TM184		12.9 #	39.8 #	49.8 #			
Chloride	<2 mg/l	TM184		20.2 #	45.7 #	20.7 #			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		1.86 #	1.76 #	1.35 #			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		<0.105	<0.105	<0.105			
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #			
pH	<1 pH Units	TM256		7.55 #	7.76 #	7.59 #			
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
delta-HCH	<0.01 µg/l	TM343		<0.02	<0.02	<0.02			
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDT	<0.01 µg/l	TM343		<0.04	<0.04	<0.04			
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343		<0.07	<0.07	<0.07			
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.04	<0.04	<0.04			
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.07	<0.07	<0.07			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.04	<0.04	<0.04			
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Phorate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Diazinon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Triallate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Atrazine	<0.01 µg/l	TM344		0.0305	0.0605	<0.01			
Simazine	<0.01 µg/l	TM344		<0.01	0.0362	<0.01			
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Propetamphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Malathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Fenthion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Ethion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01	<0.01			
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02			
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02			
Etridiazole	<0.01 µg/l	TM345		<0.02	<0.02	<0.02			
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Chlorothalonil	<0.01 µg/l	TM345		<0.03	<0.03	<0.03			
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Phosphamidon I	<0.01 µg/l	TM345		<0.02	<0.02	<0.02			
Phosphamidon II	<0.01 µg/l	TM345		<0.02	<0.02	<0.02			
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1	<0.5	<0.5			
Clopyralid	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
MCPA	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
Mecoprop	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
Dicamba	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
MCPB	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
2,4-DB	<0.1 µg/l	TM411		<0.1	<0.5	<0.5			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
Dichlorprop	<0.1 µg/l	TM411		<0.1	<0.5	<0.5			
Triclopyr	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1	<0.5	<0.5			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
Bromoxynil	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
Benazolin	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
Ioxynil	<0.05 µg/l	TM411		<0.05	<0.25	<0.25			
Pentachlorophenol	<0.04 µg/l	TM411		<0.04	<0.2	<0.2			
Fluoroxypyr	<0.1 µg/l	TM411		<0.1	<0.5	<0.5			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Chlorophenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
2-Nitrophenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
3-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<10	<20			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<10	<20			
Azobenzene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
Acenaphthylene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
Acenaphthene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
Anthracene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<20 #	<20 #	<40 #			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10 #	<10 #	<20 #			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH1	GW01	GW02			
Customer Sample Ref.			BH1	GW01	GW02			
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
Date Sampled			30/07/2020	30/07/2020	30/07/2020			
Sample Time			.	.	.			
Date Received			31/07/2020	31/07/2020	31/07/2020			
SDG Ref			200731-86	200731-86	200731-86			
Lab Sample No.(s)			22583337	22583320	22583328			
AGS Reference								
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Carbazole (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Chrysene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Dibenzofuran (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Diethyl phthalate (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<50 #	<50 #	<100 #			
Fluoranthene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Fluorene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Pentachlorophenol (aq)	<1 µg/l	TM176	<10	<10	<20			
Phenol (aq)	<1 µg/l	TM176	<10	<10	<20			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Hexachloroethane (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Nitrobenzene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Naphthalene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Isophorone (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<10	<10	<20			
Phenanthrene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			
Pyrene (aq)	<1 µg/l	TM176	<10 #	<10 #	<20 #			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

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
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Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
Dibromofluoromethane**	%	TM208		108	105	107			
Toluene-d8**	%	TM208		96.9	97.2	96.8			
4-Bromofluorobenzene**	%	TM208		99.5	101	99.5			
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1			
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroform	<1 µg/l	TM208		<1 #	8.44 #	7.39 #			
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208		<1 #	4.04 #	3.94 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

VOC MS (W)

Results Legend

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Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	30/07/2020	30/07/2020	30/07/2020			
			Sample Time	.	.	.			
			Date Received	31/07/2020	31/07/2020	31/07/2020			
			SDG Ref	200731-86	200731-86	200731-86			
			Lab Sample No.(s)	22583337	22583320	22583328			
			AGS Reference						
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	1.31 #	1.04 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1			

Table of Results - Appendix

Method No	Reference	Description
SUB		Subcontracted Test
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
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
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
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
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

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:	200731-86	**Client Reference:**	Galway Historic Landfills	**Report Number:**	564885
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	562437

Test Completion Dates

Lab Sample No(s)	22583337	22583320	22583328
Customer Sample Ref.	BH1	GW01	GW02
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	07-Aug-2020	07-Aug-2020	07-Aug-2020
Alkalinity as CaCO3	06-Aug-2020	06-Aug-2020	05-Aug-2020
Ammonium Low	06-Aug-2020	06-Aug-2020	06-Aug-2020
Anions by Kone (w)	04-Aug-2020	04-Aug-2020	04-Aug-2020
BOD True Total	06-Aug-2020	06-Aug-2020	06-Aug-2020
COD Unfiltered	04-Aug-2020	04-Aug-2020	04-Aug-2020
Conductivity (at 20 deg.C)	05-Aug-2020	05-Aug-2020	05-Aug-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Aug-2020	07-Aug-2020	07-Aug-2020
Dissolved Metals by ICP-MS	07-Aug-2020	07-Aug-2020	07-Aug-2020
Dissolved Oxygen by Probe	02-Aug-2020	02-Aug-2020	02-Aug-2020
Faecal Coliforms (W)*	10-Aug-2020	10-Aug-2020	10-Aug-2020
Fluoride	04-Aug-2020	04-Aug-2020	04-Aug-2020
Mercury Dissolved	05-Aug-2020	05-Aug-2020	05-Aug-2020
PCB Congeners - Aqueous (W)	10-Aug-2020	10-Aug-2020	10-Aug-2020
Pesticides (Suite I) by GCMS	06-Aug-2020	06-Aug-2020	06-Aug-2020
Pesticides (Suite II) by GCMS	07-Aug-2020	07-Aug-2020	07-Aug-2020
Pesticides (Suite III) by GCMS	05-Aug-2020	05-Aug-2020	05-Aug-2020
pH Value	04-Aug-2020	04-Aug-2020	04-Aug-2020
SVOC MS (W) - Aqueous	09-Aug-2020	09-Aug-2020	10-Aug-2020
Total Coliforms(W)*	10-Aug-2020	10-Aug-2020	
Total Organic and Inorganic Carbon	06-Aug-2020	06-Aug-2020	06-Aug-2020
VOC MS (W)	05-Aug-2020	05-Aug-2020	05-Aug-2020

ALS Environmental Ltd
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www.alsenvironmental.co.uk

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

08 August 2020

Test Report: COV/1904555/2020

Dear Subcon Results

Analysis of your sample(s) received on 01 August 2020 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: B. Paige

Title: Microbiology Team Leader

UKAS TESTING 1314

bsi ISO 14001 Environmental Management CERTIFIED EMS 675527 ISO 45001 Occupational Health and Safety Management CERTIFIED OHS 542058

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report Summary

ANALYSED BY

UKAS TESTING 1314

ALS

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

Date of Issue: **08 August 2020**

Report Number: **COV/1904555/2020** Issue **1**

This issue replaces all previous issues

Job Description: 2020 Analysis

Job Location: 200731-86

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

Job Received: **01 August 2020**

Number of Test Results included in this report **7**

Analysis Commenced: **01 August 2020**

Signed: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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

UKAS TESTING 1314

ALS

Report Number:	**COV/1904555/2020**	Issue	**1**
Laboratory Number:	**19545528**	Sample	**1** of **5**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**22584567 BH1**		
Sample Matrix:	**Ground Water**		
Sample Date/Time:	**30 July 2020**		
Sample Received:	**01 August 2020**		
Analysis Complete:	**08 August 2020**		
SDG:	**200731-86**		
Sample Reference:	**BH1**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Faecal coliforms confirmed	4	cfu/100ml	08/08/2020	N Cov	W57

Analyst Comments for 19545528: This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.

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 2SW), 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: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
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Certificate of Analysis

ANALYSED BY

UKAS TESTING 1314

ALS

Report Number:	**COV/1904555/2020**	Issue	**1**
Laboratory Number:	**19545529**	Sample	**2** of **5**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**22584568 BH1**		
Sample Matrix:	**Ground Water**		
Sample Date/Time:	**30 July 2020**		
Sample Received:	**01 August 2020**		
Analysis Complete:	**08 August 2020**		
SDG:	**200731-86**		
Sample Reference:	**BH1**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Total Coliform presump	>100	cfu/100ml	02/08/2020	Y Cov	W10
Total Coliforms confirmed	>100	cfu/100ml	02/08/2020	Y Cov	W10

Analyst Comments for 19545529: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample.

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 2SW), 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: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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Certificate of Analysis

ANALYSED BY

UKAS TESTING 1314

ALS

Report Number:	**COV/1904555/2020**	Issue	**1**
Laboratory Number:	**19545530**	Sample	**3** of **5**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**22584558 GW01**		
Sample Matrix:	**Ground Water**		
Sample Date/Time:	**30 July 2020**		
Sample Received:	**01 August 2020**		
Analysis Complete:	**08 August 2020**		
SDG:	**200731-86**		
Sample Reference:	**GW01**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Faecal coliforms confirmed	19	cfu/100ml	08/08/2020	N Cov	W57

Analyst Comments for 19545530: This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.

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 2SW), 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: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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Certificate of Analysis

ANALYSED BY

UKAS TESTING 1314

ALS

Report Number:	**COV/1904555/2020**	Issue	**1**
Laboratory Number:	**19545531**	Sample	**4** of **5**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**22584559 GW01**		
Sample Matrix:	**Ground Water**		
Sample Date/Time:	**30 July 2020**		
Sample Received:	**01 August 2020**		
Analysis Complete:	**08 August 2020**		
SDG:	**200731-86**		
Sample Reference:	**GW01**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Total Coliform presump	>100	cfu/100ml	02/08/2020	Y Cov	W10
Total Coliforms confirmed	>100	cfu/100ml	02/08/2020	Y Cov	W10

Analyst Comments for 19545531: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample.

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 2SW), 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: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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Certificate of Analysis

ANALYSED BY

UKAS TESTING 1314

ALS

Report Number:	**COV/1904555/2020**	Issue	**1**
Laboratory Number:	**19545532**	Sample	**5** of **5**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**22584565 GW02**		
Sample Matrix:	**Ground Water**		
Sample Date/Time:	**30 July 2020**		
Sample Received:	**01 August 2020**		
Analysis Complete:	**08 August 2020**		
SDG:	**200731-86**		
Sample Reference:	**GW02**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Faecal coliforms confirmed	620	cfu/100ml	08/08/2020	N Cov	W57

Analyst Comments for 19545532: This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.

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 2SW), 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: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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ANALYST COMMENTS FOR REPORT COV/1904555/2020

Issue 1

This issue replaces all previous issues

Date of Issue: **08 August 2020**

Sample No	Analysis Comments
19545528	This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.
19545529	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample.
19545530	This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.
19545531	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample.
19545532	This sample has been analysed for Faecal coliforms confirmed outside recommended stability times. It is therefore possible that the results provided may be compromised.

Signed: Bpaige

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

DETERMINAND COMMENTS FOR REPORT COV/1904555/2020

ISSUE 1

This issue replaces all previous issues

Date of Issue: 08 August 2020

Sample No	Description	Determinand	Comments
19545529	22584568 BH1	Total Coliform presump	Confirmation process not been carried out for coliforms due to nature of the sample.
19545531	22584559 GW01	Total Coliform presump	Confirmation process not been carried out for coliforms due to nature of the sample.

Signed: 

Name: **B. Paige** Date: **08 August 2020**

Title: **Microbiology Team Leader**

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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**
§	**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 (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.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 September 2020
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	200826-91
Your Reference:	Galway Historic Landfills
Location:	Gort Landfill
Report No:	565822

This report has been revised and directly supersedes 565524 in its entirety.

We received 3 samples on Wednesday August 26, 2020 and 3 of these samples were scheduled for analysis which was completed on Thursday September 03, 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 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22723066	BH1		0.00 - 0.00	25/08/2020
22723048	GW01		0.00 - 0.00	25/08/2020
22723058	GW02		0.00 - 0.00	25/08/2020

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

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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)			22723066					22723048					22723058			
Customer Sample Reference			BH1					GW01					GW02			
AGS Reference																
Depth (m)			0.00 - 0.00					0.00 - 0.00					0.00 - 0.00			
Container			0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 3	X					X					X				
Alkalinity as CaCO3	All	NDPs: 0 Tests: 3		X					X					X			
Ammonium Low	All	NDPs: 0 Tests: 3			X					X					X		
Anions by Kone (w)	All	NDPs: 0 Tests: 3		X					X					X			
BOD True Total	All	NDPs: 0 Tests: 3		X					X					X			
COD Unfiltered	All	NDPs: 0 Tests: 3		X					X					X			
Coliforms (W)	All	NDPs: 0 Tests: 3		X					X					X			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 3		X					X					X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3				X					X					X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3		X					X					X			
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 1		X													
Fluoride	All	NDPs: 0 Tests: 3		X					X					X			
Mercury Dissolved	All	NDPs: 0 Tests: 3		X					X					X			
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 3	X					X					X				
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 3	X					X					X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
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PL - Prepared Leachate
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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)						22723066					22723048					22723058
Customer Sample Reference						BH1					GW01					GW02
AGS Reference																
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)
Sample Type						GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 3									X					X				
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 3									X					X				
pH Value	All	NDPs: 0 Tests: 3					X					X					X			
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3					X					X					X			
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 3						X					X					X		
VOC MS (W)	All	NDPs: 0 Tests: 3								X					X					X

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Coliforms, Total*	MPN/100ml	SUB		345	425	146			
Coliforms, Faecal*	CFU/100ml	SUB		47	2	21			
Alkalinity, Total as HCO3	<2 mg/l	TM043		1050	382	1180			
BOD, unfiltered	<1 mg/l	TM045		<1 #	7 #	2.45 #			
Oxygen, dissolved	<0.3 mg/l	TM046		9.71					
Organic Carbon, Total	<3 mg/l	TM090		3.29 #	<3 #	3.33 ♦ #			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.0572 #	0.0516 #	0.0745 #			
Fluoride	<0.5 mg/l	TM104		0.972 #	<0.5 #	<0.5 #			
COD, unfiltered	<7 mg/l	TM107		150 #	25.6 #	135 #			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120		0.664 #	0.699 #	0.609 #			
Arsenic (diss.filt)	<0.5 µg/l	TM152		0.982 2 #	1.6 2 #	0.939 2 #			
Barium (diss.filt)	<0.2 µg/l	TM152		23.2 2 #	20 2 #	28.9 2 #			
Boron (diss.filt)	<10 µg/l	TM152		33.4 2 #	22.9 2 #	17.4 2 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	0.0863 2 #	<0.08 2 #			
Chromium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 2 #	<1 2 #			
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 2 #	0.895 2 #	0.932 2 #			
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 2 #	1.01 2 #	<0.2 2 #			
Manganese (diss.filt)	<3 µg/l	TM152		15.2 2 #	30.3 2 #	13.8 2 #			
Nickel (diss.filt)	<0.4 µg/l	TM152		1.39 2 #	15 2 #	4.78 2 #			
Phosphorus (diss.filt)	<10 µg/l	TM152		19.4 2 #	<10 2 #	<10 2 #			
Selenium (diss.filt)	<1 µg/l	TM152		<1 2 #	1.4 2 #	1.07 2 #			
Thallium (diss.filt)	<2 µg/l	TM152		<2 2 #	<2 2 #	<2 2 #			
Zinc (diss.filt)	<1 µg/l	TM152		1.03 2 #	10.8 2 #	2.69 2 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152		9.23 2 #	39.5 2 #	9.51 2 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		7.72 2 #	15.4 2 #	8.09 2 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152		1.77 2 #	4.38 2 #	1.94 2 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152		129 2 #	102 2 #	128 2 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 2 #	0.0433 2 #	<0.019 2 #			
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2 #	<0.01 2 #	<0.01 2 #			
Sulphate	<2 mg/l	TM184		8.1 #	31.2 #	13.5 #			
Chloride	<2 mg/l	TM184		21.4 #	58.6 #	19.4 #			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		1.78 #	1.76 #	1.92 #			
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		<0.105	<0.105	<0.105			
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #			
pH	<1 pH Units	TM256		7.24 #	7.45 #	7.29 #			
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-DDT	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.02	<0.02	<0.02			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01	<0.01			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Dichlorvos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Dichlobenil	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Mevinphos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Tecnazene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Hexachlorobenzene	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Demeton-S-methyl	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Phorate	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Diazinon	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Triallate	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Atrazine	<0.01 µg/l	TM344		<0.02	0.0233	0.0125			
Simazine	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Disulfoton	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Propetamphos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Dimethoate	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Chlorpyriphos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Methyl Parathion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Malathion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Fenthion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Fenitrothion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Triadimefon	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Pendimethalin	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Parathion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Chlorfenvinphos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Ethion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Carbophenothion	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Triazophos	<0.01 µg/l	TM344		<0.02	<0.01	<0.01			
Phosalone	<0.01 µg/l	TM344		<0.04	<0.01	<0.01			
Azinphos methyl	<0.02 µg/l	TM344		<0.12	<0.04	<0.04			
Azinphos ethyl	<0.02 µg/l	TM344		<0.08	<0.02	<0.02			
Etridiazole	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Chlorothalonil	<0.01 µg/l	TM345		<0.02	<0.02	<0.02			
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01	<0.01			
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1	<0.2	0.283			
Clopyralid	<0.04 µg/l	TM411		<0.04	<0.08	<0.04			
MCPA	<0.05 µg/l	TM411		<0.05	<0.1	<0.05			
Mecoprop	<0.04 µg/l	TM411		<0.08	<0.08	<0.04			
Dicamba	<0.04 µg/l	TM411		<0.08	<0.08	<0.04			
MCPB	<0.05 µg/l	TM411		<0.1	<0.1	<0.05			
2,4-DB	<0.1 µg/l	TM411		<0.2	<0.2	<0.1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05	<0.1	<0.05			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Dichlorprop	<0.1 µg/l	TM411		<0.1	<0.2	<0.1			
Triclopyr	<0.05 µg/l	TM411		<0.05	<0.1	<0.05			
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1	<0.2	<0.1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.1	<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.1	<0.1	<0.1			
Bromoxynil	<0.04 µg/l	TM411		<0.04	<0.08	<0.04			
Benazolin	<0.04 µg/l	TM411		<0.08	<0.08	<0.04			
Ioxynil	<0.05 µg/l	TM411		<0.05	<0.1	<0.05			
Pentachlorophenol	<0.04 µg/l	TM411		<0.08	<0.08	<0.04			
Fluoroxypyr	<0.1 µg/l	TM411		<0.2	<0.2	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Chlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
2-Nitrophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
3-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<1	<10			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<1	<10			
Azobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Acenaphthylene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Acenaphthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<20 #	<2 #	<20 #			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Carbazole (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Chrysene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Dibenzofuran (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Diethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<50 #	<5 #	<50 #			
Fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Fluorene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Pentachlorophenol (aq)	<1 µg/l	TM176		<10	<1	<10			
Phenol (aq)	<1 µg/l	TM176		<10	<1	<10			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Hexachloroethane (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Nitrobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Naphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Isophorone (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<10	<1	<10			
Phenanthrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			
Pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #			

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	25/08/2020	25/08/2020	25/08/2020
			Sample Time	.	.	.
			Date Received	26/08/2020	26/08/2020	26/08/2020
			SDG Ref	200826-91	200826-91	200826-91
			Lab Sample No.(s)	22723066	22723048	22723058
			AGS Reference			
Dibromofluoromethane**	%	TM208		117	119	116
Toluene-d8**	%	TM208		98.2	98.7	98.5
4-Bromofluorobenzene**	%	TM208		97.2	97.1	97
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

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
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH1	GW01	GW02			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	25/08/2020	25/08/2020	25/08/2020			
			Sample Time	.	.	.			
			Date Received	26/08/2020	26/08/2020	26/08/2020			
			SDG Ref	200826-91	200826-91	200826-91			
			Lab Sample No.(s)	22723066	22723048	22723058			
			AGS Reference						
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1			

Table of Results - Appendix

Method No	Reference	Description
SUB		Subcontracted Test
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
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
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
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
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

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:	200826-91	**Client Reference:**	Galway Historic Landfills	**Report Number:**	565822
Location:	Gort Landfill	**Order Number:**	Z2189	**Superseded Report:**	565524

Test Completion Dates

Lab Sample No(s)	22723066	22723048	22723058
Customer Sample Ref.	BH1	GW01	GW02
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	03-Sep-2020	03-Sep-2020	03-Sep-2020
Alkalinity as CaCO3	29-Aug-2020	29-Aug-2020	29-Aug-2020
Ammonium Low	03-Sep-2020	03-Sep-2020	03-Sep-2020
Anions by Kone (w)	31-Aug-2020	31-Aug-2020	31-Aug-2020
BOD True Total	01-Sep-2020	01-Sep-2020	01-Sep-2020
COD Unfiltered	28-Aug-2020	28-Aug-2020	30-Aug-2020
Coliforms (W)	02-Sep-2020	02-Sep-2020	02-Sep-2020
Conductivity (at 20 deg.C)	27-Aug-2020	27-Aug-2020	27-Aug-2020
Cyanide Comp/Free/Total/Thiocyanate	03-Sep-2020	03-Sep-2020	03-Sep-2020
Dissolved Metals by ICP-MS	02-Sep-2020	02-Sep-2020	02-Sep-2020
Dissolved Oxygen by Probe	28-Aug-2020		
Fluoride	01-Sep-2020	01-Sep-2020	28-Aug-2020
Mercury Dissolved	03-Sep-2020	03-Sep-2020	03-Sep-2020
PCB Congeners - Aqueous (W)	03-Sep-2020	03-Sep-2020	03-Sep-2020
Pesticides (Suite I) by GCMS	01-Sep-2020	01-Sep-2020	01-Sep-2020
Pesticides (Suite II) by GCMS	01-Sep-2020	01-Sep-2020	01-Sep-2020
Pesticides (Suite III) by GCMS	01-Sep-2020	01-Sep-2020	01-Sep-2020
pH Value	27-Aug-2020	27-Aug-2020	27-Aug-2020
SVOC MS (W) - Aqueous	30-Aug-2020	30-Aug-2020	30-Aug-2020
Total Organic and Inorganic Carbon	29-Aug-2020	29-Aug-2020	01-Sep-2020
VOC MS (W)	03-Sep-2020	03-Sep-2020	03-Sep-2020

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Customer Services

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Certificate Of Analysis

Job Number: 20-82835
Issue Number: 1
Report Date: 1 September 2020

Site: Fehily Timoney
PO Number: ALS GLOBAL
Date Samples Received: 27/08/2020

Please find attached the results for the samples received at our laboratory on 27/08/2020.

Should you have any queries regarding the report or require any further services, we would be happy to discuss your requirements. For additional information about the company please log-on to our website at the above address.

Thank you for choosing City Analysts Limited. We look forward to assisting you again.

Authorised By: Louise Morrow **Authorised Date:** 1 September 2020

Louise Morrow

Notes are not INAB accredited

Results relate only to the items tested.
Information on methods of analysis and uncertainty of measurement is available on request.
Any opinions or interpretations indicated are outside the scope of our INAB accreditation.

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: GW01 - GORT

Sample Type: Ground

Lab Reference Number: 529041

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	424.5	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	2	cfu/100ml	-

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Note:
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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: GW02 - GORT

Sample Type: Ground

Lab Reference Number: 529042

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	145.5	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	21	cfu/100ml	-

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: BH01 - GORT

Sample Type: Ground

Lab Reference Number: 529043

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	344.8	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	47	cfu/100ml	-

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: GW01 -NEW INN

Sample Type: Ground

Lab Reference Number: 529044

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	2.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	< 1	cfu/100ml	-

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Note:
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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: GW02 - NEW INN

Sample Type: Ground

Lab Reference Number: 529045

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	488.4	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	10	cfu/100ml	-

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: BH1 - NEW INN

Sample Type: Ground

Lab Reference Number: 529046

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	< 1.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	< 1	cfu/100ml	-

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: BH4 -NEW INN

Sample Type: Ground

Lab Reference Number: 529047

Date of Sampling: 26/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	< 1.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	< 1	cfu/100ml	-

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Report Reference: 20-82835

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Site: Fehily Timoney

Sample Description: RC2 - TUAM

Sample Type: Ground

Lab Reference Number: 529048

Date of Sampling: 27/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	817.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	9	cfu/100ml	-

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Report Reference: 20-82835

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Site: Fehily Timoney

Sample Description: RC3- TUAM

Sample Type: Ground

Lab Reference Number: 529049

Date of Sampling: 27/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	52000.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	2	cfu/100ml	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: 3AP-TUAM

Sample Type: Ground

Lab Reference Number: 529050

Date of Sampling: 27/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	17329.0	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	740	cfu/100ml	-

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Report Reference: 20-82835

Report Version: 1

Site: Fehily Timoney

Sample Description: 4AP- TUAM

Sample Type: Ground

Lab Reference Number: 529051

Date of Sampling: 27/08/2020

Date Sample Received: 27/08/2020

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D1201#	27/08/2020	Coliforms	15.5	MPN/100ml	-
D/D3221#	27/08/2020	Faecal Coliforms	1	cfu/100ml	-

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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**
§	**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 (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.

FEHILY TIMONEY

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