FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 4

Groundwater & Surface Water Sampling Analysis Report

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Fehily Timoney
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 September 2019
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	190906-103
Your Reference:	P1766 North Kerry
Location:	North Kerry Landfills
Report No:	522224

We received 5 samples on Friday September 06, 2019 and 5 of these samples were scheduled for analysis which was completed on Friday September 20, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS 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:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20668536	BH01 Ahascra		0.00 - 0.00	03/09/2019
20668587	BH02 Ahascra		0.00 - 0.00	03/09/2019
20668626	BH01 Ardfert		0.00 - 0.00	03/09/2019
20668654	BH01 Listowel		0.00 - 0.00	03/09/2019
20668689	BH02 Listowel		0.00 - 0.00	03/09/2019

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:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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)							20668536						20668587						20668626				20668654
Customer Sample Reference							BH01 Ahascra						BH02 Ahascra						BH01 Ardfert				BH01 Listowel
AGS Reference																							
Depth (m)							0.00 - 0.00						0.00 - 0.00						0.00 - 0.00				0.00 - 0.00
Container							0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)
Sample Type							GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 5					X						X						X						X
Alkalinity as CaCO3	All	NDPs: 0 Tests: 5						X						X						X					
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5							X						X						X				
Anions by Kone (w)	All	NDPs: 0 Tests: 5						X						X						X					
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 5						X						X						X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5									X							X						X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5								X							X						X	
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 5						X						X						X					
Fluoride	All	NDPs: 0 Tests: 5						X						X						X					
Mercury Dissolved	All	NDPs: 1 Tests: 4								X							X						X	
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 5					X						X						X						X
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 5					X						X						X						X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 5					X						X						X						X
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 5					X						X						X						X
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 5					X						X						X						X

20668689	BH02 Listowel		0.00 - 0.00	Vial (ALE297)	GW																														
				NaOH (ALE245)	GW												X																		
				HNO3 Filtered (ALE204)	GW														X					N											
				H2SO4 (ALE244)	GW						X																								
				500ml Plastic (ALE208)	GW				X				X		X						X		X												
				0.5l glass bottle (ALE227)	GW		X																				X		X		X		X		X
20668654	BH01 Listowel		0.00 - 0.00	Vial (ALE297)	GW																														
				NaOH (ALE245)	GW												X																		
				HNO3 Filtered (ALE204)	GW														X						X										
				H2SO4 (ALE244)	GW						X																								
				500ml Plastic (ALE208)	GW				X				X		X						X		X												

CERTIFICATE OF ANALYSIS

SDG:	190906-103	Client Reference:	P1766 North Kerry	Report Number:	522224
Location:	North Kerry Landfills	Order Number:	Z1658	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)			20668536						20668587						20668626						20668654
Customer Sample Reference			BH01 Ahascra						BH02 Ahascra						BH01 Ardfert						BH01 Listowel
AGS Reference																					
Depth (m)			0.00 - 0.00						0.00 - 0.00						0.00 - 0.00						0.00 - 0.00
Container			0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
pH Value	All	NDPs: 0 Tests: 5		X						X						X					
Phosphate by Kone (w)	All	NDPs: 0 Tests: 5		X						X						X					
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5	X						X						X						X
Total Dissolved Solids	All	NDPs: 0 Tests: 5		X						X						X					
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 5			X						X						X				
VOC MS (W)	All	NDPs: 0 Tests: 5						X						X						X	

20668689	BH02 Listowel		0.00 - 0.00	Vial (ALE297)	GW												X
				NaOH (ALE245)	GW												
				HNO3 Filtered (ALE204)	GW												
				H2SO4 (ALE244)	GW										X		
				500ml Plastic (ALE208)	GW		X		X				X				
				0.5l glass bottle (ALE227)	GW						X						
20668654	BH01 Listowel		0.00 - 0.00	Vial (ALE297)	GW												X
				NaOH (ALE245)	GW												
				HNO3 Filtered (ALE204)	GW												
				H2SO4 (ALE244)	GW										X		
				500ml Plastic (ALE208)	GW		X		X				X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
Alkalinity, Total as CaCO3	<2 mg/l	TM043		309 #	348 #	346 #	660 #	320 #
Oxygen, dissolved	<0.3 mg/l	TM046		7.1	9.08	9	3.31	8.63
Organic Carbon, Total	<3 mg/l	TM090		4.04 #	3.29 #	3.78 #	24.5 @ #	9.49 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		2.38 #	2.38 #	0.296 #	26.1 #	0.313 #
Fluoride	<0.5 mg/l	TM104		<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		0.552 #	0.634 #	0.834 #	1.49 #	0.424 #
Dissolved solids, Total (meter)	<5 mg/l	TM123		434 #	484 #	605 #	1170 #	343 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		65.6 #	19.2 #	2.65 #	12.4 #	0.934 #
Barium (diss.filt)	<0.2 µg/l	TM152		24.8 #	42.8 #	32.4 #	164 #	8.61 #
Boron (diss.filt)	<10 µg/l	TM152		18.2 #	16.6 #	68.4 #	189 #	197 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 #	0.464 #	1.07 #	<0.3 #	2.46 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	0.2 #	3.84 #	0.261 #	0.473 #
Manganese (diss.filt)	<3 µg/l	TM152		376 #	1250 #	119 #	1310 #	1250 #
Nickel (diss.filt)	<0.4 µg/l	TM152		0.972 #	1.32 #	2.27 #	3.79 #	1.72 #
Phosphorus (diss.filt)	<10 µg/l	TM152		<10 #	19.6 #	38.3 #	20.1 #	32.1 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	3.24 #	<1 #	<1 #
Thallium (diss.filt)	<2 µg/l	TM152		<2 #	<2 #	<2 #	<2 #	<2 #
Zinc (diss.filt)	<1 µg/l	TM152		2.19 #	3.3 #	2.8 #	8.6 #	8.03 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152		31.4 #	29.6 #	36.5 #	119 #	22.8 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		8.25 #	10.3 #	9.74 #	48.2 #	6.66 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152		1.78 #	2.28 #	14 #	29.7 #	1.42 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		80.2 #	102 #	135 #	156 #	64.5 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		2.79 #	4.13 #	0.355 #	12.3 #	0.171 #
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172		<100	<100	<100	<100	3340
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		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chloride	<2 mg/l	TM184		37.4 #	37.4 #	73.2 #	214 #	22.5 #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		<0.1 #	<0.1 #	5.82 #	<0.1 #	<0.1 #
Sulphate (soluble) as S	<1 mg/l	TM184		<1 #	<1 #	11.2 #	<1 #	1.9 #
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03

11:54:19 20/09/2019

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.03
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		<0.105	<0.105	<0.105	<0.105	<0.21
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
pH	<1 pH Units	TM256		7.99 #	7.67 #	7.64 #	7.67 #	7.93 #
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01	<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	<0.01
Endrin	<0.01 µg/l	TM343		<0.02	<0.02	<0.01	<0.02	<0.02
o,p'-DDT	<0.01 µg/l	TM343		<0.01	<0.03	<0.01	<0.02	<0.01
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.01	<0.03	<0.01	<0.02	<0.01
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01	<0.03	<0.01	<0.02	<0.01
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01	<0.04	<0.01	<0.02	<0.01
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.06	<0.06	<0.02	<0.04	<0.06

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

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

Component	LOD/Units	Method	Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01	<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	<0.01
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.01	<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	<0.01
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Phorate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Triallate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Propetamphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02
Etridiazole	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Chlorothalonil	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01
Dinitro-o-cresol	<0.1 µg/l	TM411		<10	0.43	1.07	<0.5	<1
Clopyralid	<0.04 µg/l	TM411		<4	<0.04	<0.04	<0.2	<0.4
MCPA	<0.05 µg/l	TM411		<5	<0.05	<0.05	<0.25	<0.5
Mecoprop	<0.04 µg/l	TM411		<4	<0.04	<0.04	<0.2	<0.4
Dicamba	<0.04 µg/l	TM411		<4	<0.04	<0.04	<0.2	<0.4
MCPB	<0.05 µg/l	TM411		<5	<0.05	<0.05	<0.25	<0.5

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
Customer Sample Ref.							
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
Sample Time			-	-	-	-	-
Date Received			06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
SDG Ref			190906-103	190906-103	190906-103	190906-103	190906-103
Lab Sample No.(s)			20668536	20668587	20668626	20668654	20668689
AGS Reference							
2,4-DB	<0.1 µg/l	TM411	<10	<0.1	<0.1	<0.5	<1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5
Dichlorprop	<0.1 µg/l	TM411	<10	<0.1	<0.1	<0.5	<1
Triclopyr	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5
Fenoprop (Silvex)	<0.1 µg/l	TM411	<10	<0.1	<0.1	<0.5	<1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5
Bromoxynil	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4
Benazolin	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4
Ioxynil	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5
Pentachlorophenol	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4
Fluoroxypyr	<0.1 µg/l	TM411	<10	<0.1	<0.1	<0.5	<1

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Chlorophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Methylphenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Nitroaniline (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
2-Nitrophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
3-Nitroaniline (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Chloroaniline (aq)	<1 µg/l	TM176		<40	<20	<1	<2	<20
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Methylphenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Nitroaniline (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
4-Nitrophenol (aq)	<1 µg/l	TM176		<40	<20	<1	<2	<20
Azobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Acenaphthylene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Acenaphthene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Anthracene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<80 @ #	<40 @ #	<2 @ #	<4 @ #	<40 @ #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Carbazole (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Chrysene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dibenzofuran (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Diethyl phthalate (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<200 @ #	<100 @ #	<5 @ #	<10 @ #	<100 @ #
Fluoranthene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Fluorene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Pentachlorophenol (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Phenol (aq)	<1 µg/l	TM176		<40	<20	<1	<2	<20
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachloroethane (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Nitrobenzene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Naphthalene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Isophorone (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<40	<20	<1	<2	<20
Phenanthrene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Pyrene (aq)	<1 µg/l	TM176		<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
Dibromofluoromethane**	%	TM208		106	118	103	106	106
Toluene-d8**	%	TM208		99.6	99.8	99.8	100	99.8
4-Bromofluorobenzene**	%	TM208		96.8	99.7	98.8	98.2	96.1
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

11:54:19 20/09/2019

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	1.29 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	-	-	-	-	-
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103
			Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689
			AGS Reference					
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 06/09/2019 14:28:26

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
20668689	BH02 Listowel	0.00 - 0.00	Mercury Dissolved	Insufficient Sample

CERTIFICATE OF ANALYSIS

SDG:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
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
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
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:	190906-103	**Client Reference:**	P1766 North Kerry	**Report Number:**	522224
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	20668536	20668587	20668626	20668654	20668689
Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Sep-2019	11-Sep-2019	12-Sep-2019	13-Sep-2019	17-Sep-2019
Alkalinity as CaCO3	13-Sep-2019	13-Sep-2019	13-Sep-2019	15-Sep-2019	15-Sep-2019
Ammoniacal Nitrogen	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Anions by Kone (w)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
Conductivity (at 20 deg.C)	11-Sep-2019	11-Sep-2019	11-Sep-2019	10-Sep-2019	11-Sep-2019
Cyanide Comp/Free/Total/Thiocyanate	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Dissolved Metals by ICP-MS	18-Sep-2019	18-Sep-2019	18-Sep-2019	16-Sep-2019	16-Sep-2019
Dissolved Oxygen by Probe	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Fluoride	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Mercury Dissolved	10-Sep-2019	09-Sep-2019	10-Sep-2019	09-Sep-2019	
Mineral Oil C10-40 Aqueous (W)	16-Sep-2019	16-Sep-2019	10-Sep-2019	16-Sep-2019	16-Sep-2019
PCB Congeners - Aqueous (W)	16-Sep-2019	16-Sep-2019	11-Sep-2019	16-Sep-2019	16-Sep-2019
Pesticides (Suite I) by GCMS	11-Sep-2019	11-Sep-2019	13-Sep-2019	11-Sep-2019	11-Sep-2019
Pesticides (Suite II) by GCMS	11-Sep-2019	11-Sep-2019	13-Sep-2019	13-Sep-2019	11-Sep-2019
Pesticides (Suite III) by GCMS	10-Sep-2019	10-Sep-2019	12-Sep-2019	10-Sep-2019	10-Sep-2019
pH Value	12-Sep-2019	12-Sep-2019	12-Sep-2019	13-Sep-2019	13-Sep-2019
Phosphate by Kone (w)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
SVOC MS (W) - Aqueous	19-Sep-2019	19-Sep-2019	19-Sep-2019	20-Sep-2019	19-Sep-2019
Total Dissolved Solids	11-Sep-2019	10-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Total Organic and Inorganic Carbon	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
VOC MS (W)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019

Appendix General

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

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

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

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

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

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

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

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

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

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

Unit 7-8 Hawarden Business Park
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Deeside
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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:	31 July 2019
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	190719-99
Your Reference:	P1766 North Kerry
Location:	North Kerry Landfills
Report No:	516269

This report has been revised and directly supersedes 515690 in its entirety.

We received 6 samples on Friday July 19, 2019 and 6 of these samples were scheduled for analysis which was completed on Wednesday July 31, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS 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:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20365870	SW-01 Ahascra		0.00 - 0.00	16/07/2019
20365883	SW-02 Ahascra		0.00 - 0.00	16/07/2019
20365911	SW-01 Ardfert		0.00 - 0.00	16/07/2019
20365921	SW-02 Ardfert		0.00 - 0.00	16/07/2019
20365892	SW-01 Leanamore		0.00 - 0.00	16/07/2019
20365901	SW-02 Leanamore		0.00 - 0.00	16/07/2019

Maximum Sample/Coolbox Temperature (°C) : **13.8**

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:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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)						20365870					20365883					20365911				20365921
Customer Sample Reference						SW-01 Ahascra					SW-02 Ahascra					SW-01 Ardfert				SW-02 Ardfert
AGS Reference																				
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00				0.00 - 0.00
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
Sample Type						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6					X					X					X					X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6						X					X					X					X	
Anions by Kone (w)	All	NDPs: 0 Tests: 6					X					X					X					X		
COD Unfiltered	All	NDPs: 0 Tests: 6					X					X					X					X		
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6					X					X					X					X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6								X					X					X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6							X					X					X					X
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 6					X					X					X					X		
Fluoride	All	NDPs: 0 Tests: 6					X					X					X					X		
Mercury Dissolved	All	NDPs: 0 Tests: 6							X					X					X					X
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 6	X				X				X					X					X			
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 6	X				X				X					X					X			
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 6	X				X				X					X					X			
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 6	X				X				X					X					X			
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 6	X				X				X					X					X			

20365901	SW-02 Leanamore		0.00 - 0.00	NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X			X					
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW	X		X	X	X			X	X						
				0.5l glass bottle (ALE227)	SW											X	X	X	X	X
20365892	SW-01 Leanamore		0.00 - 0.00	NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X			X					
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW	X		X	X	X			X	X						
				0.5l glass bottle (ALE227)	SW											X	X	X	X	X
20365921	SW-02 Ardfert		0.00 - 0.00	NaOH (ALE245)	SW						X									

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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)						20365870					20365883					20365911				20365921
Customer Sample Reference						SW-01 Ahascra					SW-02 Ahascra					SW-01 Ardfert				SW-02 Ardfert
AGS Reference																				
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00				0.00 - 0.00
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
Sample Type						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
pH Value	All	NDPs: 0 Tests: 6					X					X					X					X			
Phosphate by Kone (w)	All	NDPs: 0 Tests: 6					X					X					X					X			
Suspended Solids	All	NDPs: 0 Tests: 6					X					X					X					X			
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6					X				X						X				X				
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6						X					X					X						X	
VOC MS (W)	All	NDPs: 0 Tests: 6				X					X						X				X				

20365901										
SW-02 Leanamore										
0.00 - 0.00										
NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)
SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
			X					X		
			X					X		
			X					X		
			X					X		
		X					X			
				X					X	

20365892										
SW-01 Leanamore										
0.00 - 0.00										
NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)
SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
				X					X	

20365921										
SW-02 Ardfert										
0.00 - 0.00										
NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	NaOH (ALE245)
SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
				X					X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
Suspended solids, Total	<2 mg/l	TM022		24 #	41.8 #	<2 #	3.6 #	30.7 #	17 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043		16 #	11 #	288 #	298 #	283 #	278 #
Oxygen, dissolved	<0.3 mg/l	TM046		8.63	8.88	9.49	8.58	9.12	9.58
Organic Carbon, Total	<3 mg/l	TM090		51.7 @ #	51.6 @ #	<3 #	<3 @ #	11.8 #	11.1 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
Fluoride	<0.5 mg/l	TM104		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
COD, unfiltered	<7 mg/l	TM107		183 #	183 #	19.8 #	<7 #	29.7 #	31.1 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		0.17 #	0.17 #	0.691 #	0.684 #	0.558 #	0.546 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		<0.5 #	0.578 #	<0.5 #	<0.5 #	3.82 #	<0.5 #
Barium (diss.filt)	<0.2 µg/l	TM152		2.42 #	2.52 #	6.41 #	6.61 #	15.3 #	2.65 #
Boron (diss.filt)	<10 µg/l	TM152		11 #	12.6 #	18.7 #	25.8 #	18.6 #	16.8 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		2.2 #	2.29 #	2.67 #	3.14 #	3.96 #	1.79 #
Lead (diss.filt)	<0.2 µg/l	TM152		1.15 #	1.14 #	<0.2 #	<0.2 #	<0.2 #	1.07 #
Manganese (diss.filt)	<3 µg/l	TM152		89.7 #	88.5 #	5.52 #	6.41 #	170 #	90.2 #
Nickel (diss.filt)	<0.4 µg/l	TM152		1.11 #	1.27 #	1.79 #	2.11 #	3.73 #	0.873 #
Phosphorus (diss.filt)	<10 µg/l	TM152		20.1 #	18.7 #	<10 #	<10 #	10.2 #	25.1 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	1.12 #	1.18 #	<1 #	<1 #
Thallium (diss.filt)	<2 µg/l	TM152		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Zinc (diss.filt)	<1 µg/l	TM152		32.4 #	32.2 #	24.6 #	25.6 #	16.8 #	25.8 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152		22.7 #	22.8 #	25.2 #	25.4 #	26.2 #	22.6 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		3.96 #	3.93 #	8.76 #	8.91 #	14.5 #	4.1 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152		0.65 #	0.667 #	3.46 #	3.54 #	2.92 #	0.442 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		7.93 #	7.67 #	126 #	124 #	88.3 #	8.4 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.801 #	0.774 #	<0.019 #	<0.019 #	0.161 #	0.766 #
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172		<100	<100	<100	<100	<100	<100
Mercury (diss.filt)	<0.01 µg/l	TM183		0.0102	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chloride	<2 mg/l	TM184		32.6 #	42.8 #	45.7 #	45.8 #	32.1 #	32.2 #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		<0.1 #	<0.1 #	4.84 #	4.89 #	0.386 #	0.36 #
Sulphate (soluble) as S	<1 mg/l	TM184		<5 #	<5 #	9.33 #	7.9 #	<1 #	<1 #
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015

12:59:42 31/07/2019

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<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	<0.105	<0.105
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	<1 pH Units	TM256		6.29 #	6.39 #	8.09 #	7.99 #	7.86 #	7.86 #
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01	<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	<0.01	<0.01
Endrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDT	<0.01 µg/l	TM343		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phorate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triallate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propetamphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Etridiazole	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tributylphosphate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorothalonil	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<20 #	<16 @ #	<2 #	<4 @ #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<50 #	<40 @ #	<5 #	<10 @ #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
Phenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<10 #	<8 @ #	<1 #	<2 @ #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
Dibromofluoromethane**	%	TM208		108 1	104 1	105 1	105 1	103 1	116 1
Toluene-d8**	%	TM208		97.1 1	98.2 1	95.5 1	99.2 1	103 1	103 1
4-Bromofluorobenzene**	%	TM208		94.6 1	97.3 1	93 1	94.5 1	94.8 1	94 1
Dichlorodifluoromethane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
Chloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Vinyl chloride	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromomethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Carbon disulphide	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dichloromethane	<3 µg/l	TM208		4.26 1 #	8.28 1 #	12.8 1 #	9.78 1 #	9.43 1 #	9.61 1 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
Bromochloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chloroform	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Carbontetrachloride	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Benzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Trichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dibromomethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromodichloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Toluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference	.	.	.	.	.	.
Tetrachloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dibromochloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Ethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
m,p-Xylene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
o-Xylene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Styrene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromoform	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Isopropylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Propylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
n-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Naphthalene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Time	.	.	.	.	.	.
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1

CERTIFICATE OF ANALYSIS

SDG:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

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
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
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
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

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:	190719-99	**Client Reference:**	P1766 North Kerry	**Report Number:**	516269
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	515690

Test Completion Dates

Lab Sample No(s)	20365870	20365883	20365911	20365921	20365892	20365901
Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Alkalinity as CaCO3	24-Jul-2019	26-Jul-2019	26-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Ammoniacal Nitrogen	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	24-Jul-2019
Anions by Kone (w)	26-Jul-2019	26-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019
COD Unfiltered	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019
Conductivity (at 20 deg.C)	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Cyanide Comp/Free/Total/Thiocyanate	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Dissolved Metals by ICP-MS	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
Dissolved Oxygen by Probe	21-Jul-2019	21-Jul-2019	21-Jul-2019	20-Jul-2019	21-Jul-2019	21-Jul-2019
Fluoride	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019
Mercury Dissolved	23-Jul-2019	23-Jul-2019	22-Jul-2019	22-Jul-2019	23-Jul-2019	23-Jul-2019
Mineral Oil C10-40 Aqueous (W)	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
PCB Congeners - Aqueous (W)	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019
Pesticides (Suite I) by GCMS	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
Pesticides (Suite II) by GCMS	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Pesticides (Suite III) by GCMS	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019
pH Value	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Phosphate by Kone (w)	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019
Suspended Solids	24-Jul-2019	24-Jul-2019	23-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
SVOC MS (W) - Aqueous	26-Jul-2019	29-Jul-2019	26-Jul-2019	31-Jul-2019	25-Jul-2019	26-Jul-2019
Total Organic and Inorganic Carbon	25-Jul-2019	25-Jul-2019	23-Jul-2019	25-Jul-2019	23-Jul-2019	26-Jul-2019
VOC MS (W)	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019

Appendix General

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

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

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

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

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

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

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

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

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

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

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Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 September 2019
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	190906-109
Your Reference:	P1766 North Kerry
Location:	North Kerry Landfills
Report No:	522621

We received 6 samples on Friday September 06, 2019 and 6 of these samples were scheduled for analysis which was completed on Tuesday September 24, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS 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:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20668831	SW01 Ahascra		0.00 - 0.00	03/09/2019
20668850	SW02 Ahascra		0.00 - 0.00	03/09/2019
20668862	SW01 Ardfert		0.00 - 0.00	03/09/2019
20668877	SW02 Ardfert		0.00 - 0.00	03/09/2019
20668892	SW01 Listowel		0.00 - 0.00	03/09/2019
20668907	SW02 Listowel		0.00 - 0.00	03/09/2019

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.

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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)						20668831					20668850					20668862				20668877
Customer Sample Reference						SW01 Ahascra					SW02 Ahascra					SW01 Ardfert				SW02 Ardfert
AGS Reference																				
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00				0.00 - 0.00
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)
Sample Type						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6					X					X					X					X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6						X					X					X						X		
Anions by Kone (w)	All	NDPs: 0 Tests: 6					X					X					X					X				
COD Unfiltered	All	NDPs: 0 Tests: 6					X					X					X					X				
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6					X					X					X					X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6								X					X					X						X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6							X					X				X							X	
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 6					X					X					X					X				
Fluoride	All	NDPs: 0 Tests: 6					X					X					X					X				
Mercury Dissolved	All	NDPs: 0 Tests: 6							X					X				X							X	
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 6	X								X					X					X					
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 6	X								X					X					X					
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 6	X								X					X					X					
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 6	X								X					X					X					
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 6	X								X					X					X					

20668907	SW02 Listowel		0.00 - 0.00	NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X			X					
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW	X		X	X	X			X	X						
				0.5l glass bottle (ALE227)	SW											X	X	X	X	X
20668892	SW01 Listowel		0.00 - 0.00	NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X			X					
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW	X		X	X	X			X	X						
				0.5l glass bottle (ALE227)	SW											X	X	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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
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DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)						20668831					20668850					20668862				20668877
Customer Sample Reference						SW01 Ahascra					SW02 Ahascra					SW01 Ardfert				SW02 Ardfert
AGS Reference																				
Depth (m)						0.00 - 0.00					0.00 - 0.00					0.00 - 0.00				0.00 - 0.00
Container						0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)
Sample Type						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
pH Value	All	NDPs: 0 Tests: 6					X					X					X				X			
Phosphate by Kone (w)	All	NDPs: 0 Tests: 6					X					X					X				X			
Suspended Solids	All	NDPs: 0 Tests: 6					X					X					X				X			
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6					X					X				X					X			
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6						X					X					X					X	
VOC MS (W)	All	NDPs: 0 Tests: 6				X					X					X				X				

20668907	SW02 Listowel		0.00 - 0.00	NaOH (ALE245)	SW												
				HNO3 Filtered (ALE204)	SW												
				H2SO4 (ALE244)	SW										X		
				500ml Plastic (ALE208)	SW		X		X		X		X				
				0.5l glass bottle (ALE227)	SW												X
20668892	SW01 Listowel		0.00 - 0.00	NaOH (ALE245)	SW												
				HNO3 Filtered (ALE204)	SW												
				H2SO4 (ALE244)	SW										X		
				500ml Plastic (ALE208)	SW		X		X		X		X				
				0.5l glass bottle (ALE227)	SW												X

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Suspended solids, Total	<2 mg/l	TM022		35.1 #	46 #	14.3 #	15.9 #	<4 #	4.47 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043		9 #	12.7 #	291 #	292 #	24.4 #	18.7 #
Oxygen, dissolved	<0.3 mg/l	TM046		9.73	9.04	10.5	10.2	10.8	10.5
Organic Carbon, Total	<3 mg/l	TM090		63.6 @ #	63.5 @ #	<3 #	<3 @ #	13 #	15.8 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
Fluoride	<0.5 mg/l	TM104		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
COD, unfiltered	<7 mg/l	TM107		179 #	167 #	<7 #	<7 #	41.3 #	45.3 #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		0.0973 #	0.0926 #	0.655 #	0.646 #	0.113 #	0.119 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		<0.5 #	0.683 #	0.52 2 #	<0.5 #	<0.5 #	<0.5 #
Barium (diss.filt)	<0.2 µg/l	TM152		2.41 #	2.76 #	5.62 2 #	5.71 #	2.92 #	2.86 #
Boron (diss.filt)	<10 µg/l	TM152		16.7 #	16 #	21.6 2 #	22.2 #	<10 #	10.5 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 2 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		3.11 #	2.41 #	1.22 2 #	2.03 #	3.13 #	2.97 #
Lead (diss.filt)	<0.2 µg/l	TM152		1.26 #	1.22 #	<0.2 2 #	0.29 #	0.31 #	0.349 #
Manganese (diss.filt)	<3 µg/l	TM152		79.8 #	85.2 #	<3 2 #	4.78 #	38.3 #	38.2 #
Nickel (diss.filt)	<0.4 µg/l	TM152		0.854 #	0.915 #	0.756 2 #	0.839 #	2.18 #	2.18 #
Phosphorus (diss.filt)	<10 µg/l	TM152		12.2 #	12.1 #	16 2 #	28 #	29 #	28.4 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Thallium (diss.filt)	<2 µg/l	TM152		<2 #	<2 #	<2 2 #	<2 #	<2 #	<2 #
Zinc (diss.filt)	<1 µg/l	TM152		41.1 #	39.6 #	3.92 2 #	7.36 #	11.3 #	11.2 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152		12 #	11.8 #	24.3 2 #	25.9 #	10.7 #	10.8 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152		2.63 #	2.9 #	8.05 2 #	7.48 #	2.64 #	2.62 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152		0.281 #	0.372 #	2.99 2 #	2.98 #	1.57 #	1.55 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		6.33 #	7.48 #	118 2 #	112 #	7.29 #	7.19 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		1.19 #	1.13 #	<0.019 2 #	<0.019 #	0.631 #	0.668 #
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172		<100	<100	<100	<100	<100	<100
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01	<0.01	<0.01 2	<0.01	<0.01	<0.01
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	<0.05 #	0.08 #	0.064 #	<0.05 #	<0.05 #
Chloride	<2 mg/l	TM184		21.2 #	21.1 #	48.7 #	48.8 #	19.3 #	19.2 #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184		<0.5 #	<0.5 #	4.94 #	4.95 #	0.997 #	1.15 #
Sulphate (soluble) as S	<1 mg/l	TM184		<5 #	<5 #	8.1 #	7.67 #	<1 #	1.73 #
PCB congener 28	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015

10:43:46 24/09/2019

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
PCB congener 52	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 101	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 138	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 153	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 180	<0.015 µg/l	TM197		<0.015	<0.015	<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	<0.105	<0.105
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	<1 pH Units	TM256		6.14 #	6.08 #	8.11 #	8.23 #	7.19 #	7.1 #
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01	<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	<0.01	<0.01
Endrin	<0.01 µg/l	TM343		<0.02	<0.02	<0.01	<0.02	<0.02	<0.02
o,p'-DDT	<0.01 µg/l	TM343		<0.03	<0.03	<0.01	<0.01	<0.03	<0.03
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.03	<0.03	<0.02	<0.01	<0.03	<0.03
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.03	<0.03	<0.01	<0.01	<0.03	<0.03
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.04	<0.04	<0.01	<0.01	<0.04	<0.04

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.06	<0.06	<0.02	<0.06	<0.06	<0.06
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01	<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	<0.01	<0.01
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.01	<0.01	<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	<0.01	<0.01
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phorate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triallate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propetamphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Etridiazole	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorothalonil	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Chlorophenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Methylphenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Nitroaniline (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
2-Nitrophenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
3-Nitroaniline (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Chloroaniline (aq)	<1 µg/l	TM176		<20	<8	<2	<1	<4	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Methylphenol (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Nitroaniline (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
4-Nitrophenol (aq)	<1 µg/l	TM176		<20	<8	<2	<1	<4	<1
Azobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Acenaphthylene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Acenaphthene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Anthracene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<40 @ #	<16 @ #	<4 @ #	<2 @ #	<8 @ #	<2 @ #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Carbazole (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Chrysene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Dibenzofuran (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Diethyl phthalate (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<100 @ #	<40 @ #	<10 @ #	<5 @ #	<20 @ #	<5 @ #
Fluoranthene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Fluorene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Pentachlorophenol (aq)	<1 µg/l	TM176		<20	<8	<2	<1	<4	<1
Phenol (aq)	<1 µg/l	TM176		<20	<8	<2	<1	<4	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Hexachloroethane (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Nitrobenzene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Naphthalene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Isophorone (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<20	<8	<2	<1	<4	<1
Phenanthrene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #
Pyrene (aq)	<1 µg/l	TM176		<20 @ #	<8 @ #	<2 @ #	<1 @ #	<4 @ #	<1 @ #

Validated

CERTIFICATE OF ANALYSIS

SDG: 190906-109 **Client Reference:** P1766 North Kerry **Report Number:** 522621
Location: North Kerry Landfills **Order Number:** Z1658 **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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Dibromofluoromethane**	%	TM208		112 1	108 1	104 1	107 1	110 1	104 1
Toluene-d8**	%	TM208		101 1	100 1	99.9 1	99.6 1	100 1	101 1
4-Bromofluorobenzene**	%	TM208		99.6 1	99.6 1	99.7 1	100 1	100 1	101 1
Dichlorodifluoromethane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
Chloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Vinyl chloride	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromomethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Carbon disulphide	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dichloromethane	<3 µg/l	TM208		<3 1 #	<3 1 #	<3 1 #	<3 1 #	<3 1 #	<3 1 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
Bromochloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chloroform	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Carbontetrachloride	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Benzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Trichloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dibromomethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromodichloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Toluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #

10:43:46 24/09/2019

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Tetrachloroethene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Dibromochloromethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Chlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Ethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
m,p-Xylene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
o-Xylene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Styrene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromoform	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Isopropylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Bromobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Propylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
n-Butylbenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
Naphthalene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #	<1 1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**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.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time	.	.	.	.	.	.
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1 1	<1 1	<1 1	<1 1	<1 1	<1 1

CERTIFICATE OF ANALYSIS

SDG:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

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
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
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
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

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:	190906-109	**Client Reference:**	P1766 North Kerry	**Report Number:**	522621
Location:	North Kerry Landfills	**Order Number:**	Z1658	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	20668831	20668850	20668862	20668877	20668892	20668907
Customer Sample Ref.	SW01 Ahascra	SW02 Ahascra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Alkalinity as CaCO3	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
Ammoniacal Nitrogen	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Anions by Kone (w)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
COD Unfiltered	11-Sep-2019	11-Sep-2019	11-Sep-2019	10-Sep-2019	11-Sep-2019	11-Sep-2019
Conductivity (at 20 deg.C)	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Cyanide Comp/Free/Total/Thiocyanate	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Dissolved Metals by ICP-MS	18-Sep-2019	17-Sep-2019	18-Sep-2019	18-Sep-2019	18-Sep-2019	18-Sep-2019
Dissolved Oxygen by Probe	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Fluoride	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Mercury Dissolved	11-Sep-2019	11-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Mineral Oil C10-40 Aqueous (W)	16-Sep-2019	18-Sep-2019	16-Sep-2019	10-Sep-2019	18-Sep-2019	10-Sep-2019
PCB Congeners - Aqueous (W)	16-Sep-2019	16-Sep-2019	16-Sep-2019	11-Sep-2019	16-Sep-2019	11-Sep-2019
Pesticides (Suite I) by GCMS	11-Sep-2019	11-Sep-2019	12-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Pesticides (Suite II) by GCMS	12-Sep-2019	11-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	11-Sep-2019
Pesticides (Suite III) by GCMS	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
pH Value	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	13-Sep-2019	13-Sep-2019
Phosphate by Kone (w)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Suspended Solids	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
SVOC MS (W) - Aqueous	19-Sep-2019	20-Sep-2019	24-Sep-2019	19-Sep-2019	19-Sep-2019	19-Sep-2019
Total Organic and Inorganic Carbon	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
VOC MS (W)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019

Appendix General

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

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

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

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

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

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

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

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

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

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

southern scientific services ltd.

Certificate of Analysis

Customer:	Fehily Timoney & Co	**Project:**	Ardfert
Address:	Core House Pouladuff Rd Cork	**Date Received:**	04/09/2019
		Condition of Sample:	Satisfactory
Report to:	Emily Archer	**Date Analysed:**	04/09/2019 - 17/09/2019
Customer PO		**Issue Date:**	18/09/2019
Quote No.		**BATCH NUMBER:**	**19-03589**

Conor Murphy
Operations Manager

Index to symbols used & Notes

*	Analysis is not INAB/UKAS accredited
**	Adapted from Standard Methods for the Examination of Water and Wastewater.
****	Customer specific limits
(F)	Analysis carried out at our Farranfore Laboratory.
(D)	Analysis carried out at our Dunrine Laboratory.
LOD	Parameter Limit of Detection.
Note 6	Subcontracted Parameter.

Notes

- **The results relate only to the items tested.**
- **Opinions and interpretations expressed herein are outside the scope of INAB accreditation.**
- **The analysis report shall not be reproduced except in full without written approval of the laboratory.**
- **Sampling is outside the scope of the laboratory activities.**

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registered in ireland no 323196 | vat reg no IE 6343196 M

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.194T

Customer Sample Ref:	BH01 - Ardfert	**Customer Sample Code:**	
Project:	Ardfert	**Sampled By:**	Emily Archer
Our Reference:	11198 (19-03589)	**Sample Matrix:**	Ground Water
Date Sampled:	03/09/2019	**Time Sampled:**	15:00

Method:	Parameter:	Units	LOD	Result
	Microbiological Analysis: (D)			
SMP 019	Coliforms	MPN/100mL	*<1*	613
SMP 124	Faecal coliforms	MPN/100mL	*<1*	41

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Customer Sample Ref:	BH 02 - Ardfert	**Customer Sample Code:**	
Project:	Ardfert	**Sampled By:**	Emily Archer
Our Reference:	11199 (19-03589)	**Sample Matrix:**	Surface Water
Date Sampled:	03/09/2019	**Time Sampled:**	15:00

Method:	Parameter:	Units	LOD	Result
	Chemical Analysis: (F)			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	*1.0*	1.3

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Customer Sample Ref:		**Customer Sample Code:**	
Project:	Ardfert	**Sampled By:**	Emily Archer
Our Reference:	11200 (19-03589)	**Sample Matrix:**	Surface Water
Date Sampled:	03/09/2019	**Time Sampled:**	15:00

Method:	Parameter:	Units	LOD	Result
	Chemical Analysis: (F)			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	*1.0*	1.2

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