

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Quarterly Monitoring Review

January – March 2016

Prepared by:

Caulmert Limited

InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG

Tel: 01248 672666

Fax: 01248 672601

Email: jimmcclymont@caulmert.com

Web: www.caulmert.com

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Project Director: Mike Caulfield
Project Manager: Jim McClymont
Caulmert Limited: Intec, Parc Menai, Bangor, Gwynedd, LL57 4FG
Tel: 01248 672666

Author	Jim McClymont	Date	21.04.2016
Reviewer	Lisa Sumner	Date	21.04.2016
Approved	Lisa Sumner	Date	29.04.2016

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1.0 INTRODUCTION

1.1 Background

- 1.1.1 This report has been compiled in accordance with the Environmental Permit for Standard Landfill Site, Buckley, which requires a quarterly review of the environmental monitoring data collected at the site. The data reviewed by this report was collected between the 1st of January and the 31st of March 2016.
- 1.1.2 This report records and discusses the monitoring data collected for landfill gas, groundwater, leachate, and surface water. For details regarding the site location, surrounding land-use, site history and development and environmental context please refer to the Standard Landfill Site Annual Monitoring Review 2015, document reference 2231.12.FCC.SDB.JDM.A0, submitted to Natural Resources Wales by Caulmert Ltd, on behalf of Flintshire County Council Waste Management Services in January 2016.

2.0 LANDFILL GAS

2.1 Introduction

- 2.1.1 Routine landfill gas (LFG) monitoring was carried out on a weekly basis at 29 perimeter boreholes during the review period. Methane, carbon dioxide, oxygen, relative pressure and atmospheric pressure were recorded at each borehole.
- 2.1.2 Borehole locations are shown on the drawing entitled 'Environmental Monitoring Locations' enclosed. A summary table displaying methane and carbon dioxide concentrations and can be found in Appendix 1.

2.2 Methane

- 2.2.1 Methane was only detected in BH22, with an average concentration of 0.3 %. A methane trigger level of 1.0 % was proposed for BH22 in EPR Compliance Assessment Report (CAR) ID 37073/0202764 issued by Natural Resources Wales (NRW) on the 27th of February 2014. The proposed trigger level was not exceeded at BH22 during this review period, with a maximum concentration of 0.4 %.

2.3 Carbon Dioxide

- 2.3.1 Carbon dioxide trigger levels were agreed with the Environment Agency during Q3 of 2011 and can be found in Appendix 1 along with the monitoring data. The carbon dioxide trigger values for boreholes BH16 and BH22, 3.0 % and 3.1 % respectively, were approved in EPR Compliance Assessment Report (CAR) ID 37073/0202764.
- 2.3.2 Carbon dioxide concentrations remained below the trigger levels in all locations throughout the review period.

3.0 GROUNDWATER

3.1 Introduction

- 3.1.1 During the review period groundwater levels were recorded on a monthly basis at seven groundwater monitoring boreholes, GW1, GW2, GW3, GW4R, GW5, GW6 and GW7R. Samples collected from GW1, GW3, GW4R, GW5, GW6 and GW7R were analysed for a quarterly suite of parameters.

3.2 Groundwater Levels

- 3.2.1 Groundwater level data was recorded on a monthly basis in metres below ground level (mBGL), where borehole cover level data was available this also resulted in a calculation for groundwater level in metres above Ordnance Datum (mAOD).
- 3.2.2 Groundwater levels, in mBGL and mAOD are displayed in a summary table included in Appendix 2. Groundwater levels decreased in the majority of boreholes over the review period.

3.3 Groundwater Quality

- 3.3.1 A groundwater quality summary table for this review period is included in Appendix 2.
- 3.3.2 Ammoniacal nitrogen and chloride concentrations in GW6 have shown a generally decreasing trend since a leachate outbreak 2013, the concentrations continue to decrease in this monitoring round, at 52.6 mg/l and 159 mg/l respectively.
- 3.3.3 Ammoniacal nitrogen concentrations were at detection limit in GW1 and GW4 and were comparatively lower than in GW6 at all other monitoring points.
- 3.3.4 COD was highest in GW1 at 422 mg/l. COD concentrations were comparatively low in all other groundwater monitoring points.
- 3.3.5 No mercury or phenols were detected in any of the groundwater locations.

4.0 LEACHATE

4.1 Introduction

4.1.1 Leachate levels were recorded monthly at nine leachate monitoring locations, LC2.1, LC3, LC4, LC7, S1, S2, S3, SSR5 (LS5) and SSR6 (LS6). Additionally, leachate samples were analysed for a quarterly suite of determinants.

4.1.2 Well locations are shown on the enclosed Environmental Monitoring Location drawing.

4.2 Leachate Levels

4.2.1 Leachate levels were recorded on a monthly basis. A summary table displaying leachate levels, in metres below ground level (mBGL) and in metres above Ordnance Datum (mAOD), can be found in Appendix 3.

4.2.2 Table 1 below displays minimum, maximum and average leachate head levels in metres above well base. Average levels range between 1.20 m above well base in LS6 to 1.83 m above well base in LC7.

Table 1: Leachate Head Levels in metres above well base

Location	Leachate head (m above cell base)		
	Min	Max	Average
LC2.1	1.39	1.43	1.41
LC3	1.71	1.73	1.72
LC4	1.50	1.55	1.52
LC7	1.79	1.86	1.83
LS5	1.32	1.35	1.33
LS6	1.19	1.20	1.20
S1	1.28	1.38	1.33
S2	1.71	1.76	1.74
S3	1.38	1.41	1.39

4.3 Leachate Quality

4.3.1 A summary of the analysis is shown in Table 3.2 in Appendix 3.

4.3.2 Concentrations of ammoniacal nitrogen within the leachate ranged between 37.3 mg/l in S1 and a maximum concentration of 2550 mg/l in LC2. Chloride concentrations ranged between 107 mg/l in S1 and 1780 mg/l in SSR6. COD concentrations ranged between 135 mg/l in S2 and 2920 mg/l in LC2.

5.0 SURFACE WATER

5.1 Introduction

- 5.1.1 Surface water samples were collected at three locations; SW2, SW4 and SW5 which are shown on the enclosed Environmental Monitoring Locations drawing.
- 5.1.2 Surface water samples were analysed for a quarterly suite of parameters. Summary tables displaying the surface water analysis results are presented in Appendix 4.

5.2 Surface Water Quality

- 5.2.1 Ammoniacal nitrogen was not detected in any of the surface water locations during this period.
- 5.2.2 Chloride concentrations ranged between 18.8 mg/l in SW5 and 107 mg/l in SW2.
- 5.2.3 Chemical oxygen demand concentrations ranged between 19.5 mg/l in SW4 and 32.4 mg/l in SW5.
- 5.2.4 Metal concentrations were low across the surface water locations.

6.0 CONCLUSIONS

6.1 Landfill gas

- 6.1.1 None of the permitted trigger levels for methane or carbon dioxide were exceeded during this review period.
- 6.1.2 Methane was only detected in BH22, remaining below the trigger level of 1.0 % throughout the review period, with an average concentration of 0.3 %.

6.2 Groundwater

- 6.2.1 GW6 continued to display the highest concentrations of most parameters potentially due to the residual impact of the leachate outbreak close to this borehole which was detected in May 2013. The concentrations of key leachate indicator parameters have decreased considerably since the outbreak and continue to decrease in the current quarter.

6.3 Leachate

- 6.3.1 Leachate levels remained low for the duration of the review period.
- 6.3.2 Leachate quality results indicate that a medium to strong leachate is present. This is to be expected given the age of the waste mass and the closed and capped nature of the site.

6.4 Surface Water

- 6.4.1 Surface water was generally of good quality across the sampled locations.

Notes

- Groundwater Borehole
Side Slope Riser
Leachate Chamber
Surface Water Monitoring
Point
- BRGM
SS96
LC7
SW1
- —
- Ground Water Contours

Notes

Monitoring Point Height (mOD) Given Below Identity Number

Ground Water Contour Based on 2005 Levels

TerraConsult

**Bold Business Centre, Bold Lane,
Sutton, St Helens WA9 4TX**

Client



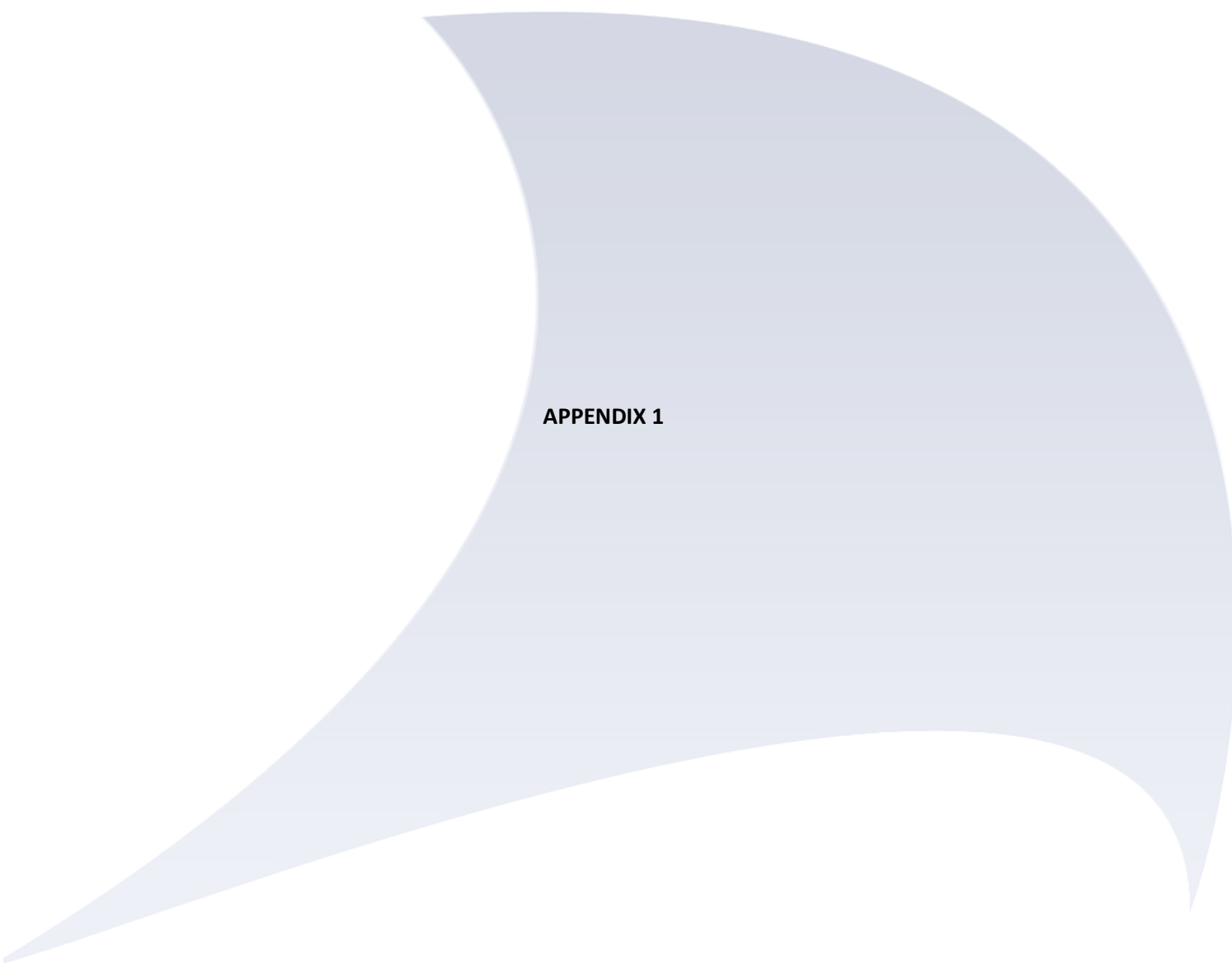
Site

Standard Landfill Buckley

Title

Environmental Monitoring Locations

Scale		1:1500		@ A2	
Drawing No.		0987/1/002			
Rev	Date	Description			
File	Standard Landfill3863a-TCCL Revision001.dwg				
Date	03/09	Engineer	CB		
Drawn	SH	Checked	JB		

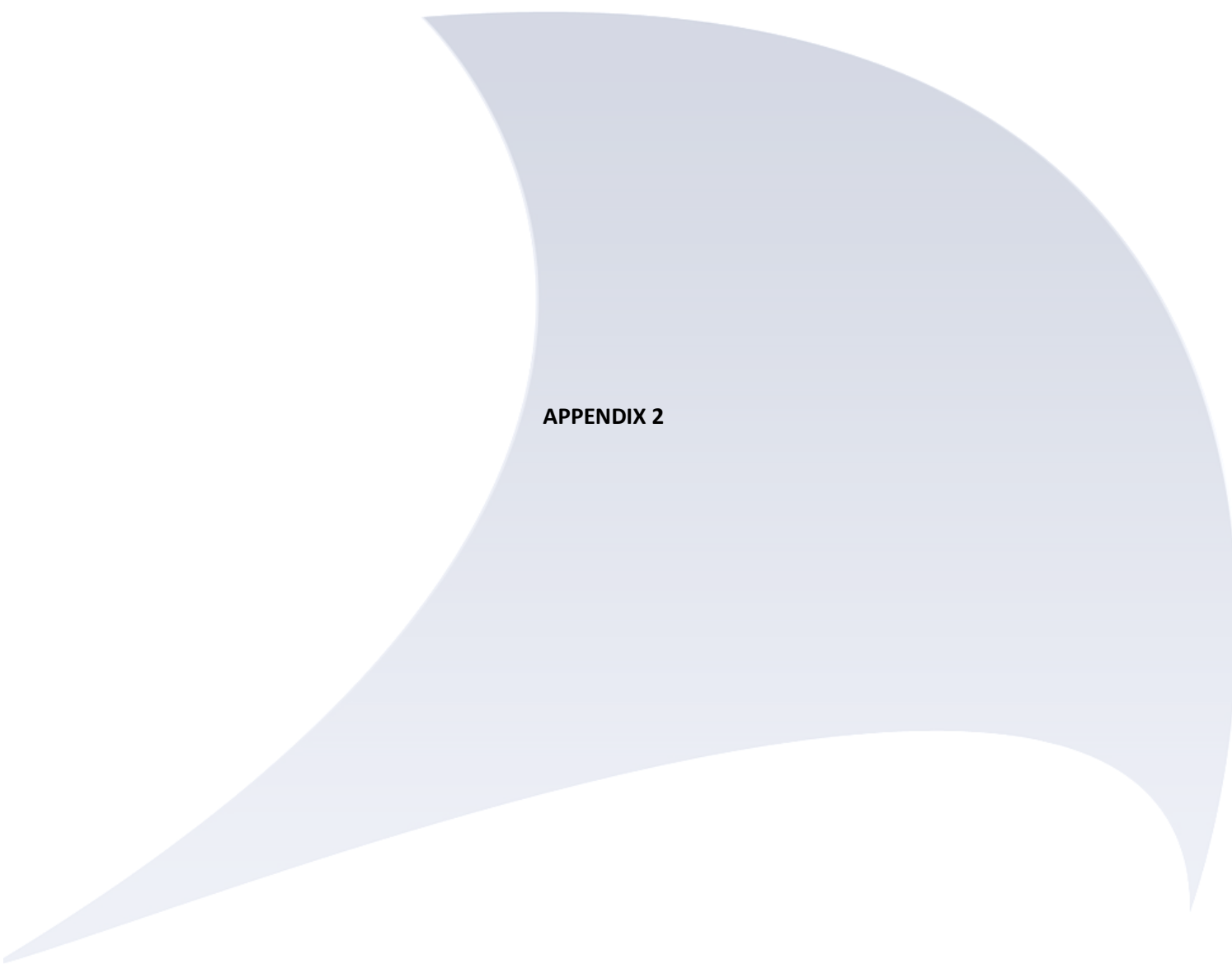


APPENDIX 1

APPENDIX 1

Table 1 – Summary of Landfill Gas Concentrations

Location	Methane (%v/v)				Limit	Carbon Dioxide (%v/v)				
	Min	Max	Ave	Count		Min	Max	Ave	Count	Limit
BH 1	0.0	0.0	0.0	13	1.0	1.0	1.5	1.2	13	5.4
BH 1.1	0.0	0.0	0.0	13	1.0	1.0	1.9	1.4	13	5.4
BH 2.0	0.0	0.0	0.0	13	1.0	1.4	2.6	2.0	13	7.1
BH 2.1	0.0	0.0	0.0	13	1.0	1.6	3.2	2.4	13	7.6
BH 2.2	0.0	0.0	0.0	13	1.0	1.4	2.9	2.1	13	5.8
BH 3.0	0.0	0.0	0.0	13	1.0	1.4	2.4	2.0	13	6.7
BH 3.1	0.0	0.0	0.0	13	1.0	1.1	1.9	1.5	13	7.8
BH 4.0	0.0	0.0	0.0	13	1.0	1.2	2.1	1.8	13	10.7
BH 4.1	0.0	0.0	0.0	13	1.0	1.2	2.5	1.9	13	7.1
BH 4.2	0.0	0.0	0.0	13	1.0	1.2	2.1	1.7	13	8.6
BH 5.0	0.0	0.0	0.0	13	1.0	2.0	2.6	2.2	13	19.4
BH 5.1	0.0	0.0	0.0	13	1.0	1.0	1.7	1.4	13	5.8
BH 5.2	0.0	0.0	0.0	13	1.0	1.0	2.0	1.6	13	9.6
BH 5.3	0.0	0.0	0.0	13	1.0	1.2	2.9	1.9	13	6.0
BH 5.4	0.0	0.0	0.0	13	1.0	1.5	3.2	2.2	13	16.0
BH 5.5	0.0	0.0	0.0	13	1.0	1.2	1.9	1.5	13	17.1
BH 5.7	0.0	0.0	0.0	13	1.0	1.8	3.0	2.2	13	7.1
BH 6.0	0.0	0.0	0.0	13	1.0	1.2	2.6	2.0	13	8.9
BH 6.1	0.0	0.0	0.0	13	1.0	1.5	2.6	2.1	13	3.7
BH 6.2	0.0	0.0	0.0	13	1.0	1.1	2.0	1.6	13	6.1
BH 6.3	0.0	0.0	0.0	13	1.0	1.5	2.4	2.0	13	8.2
BH 7.0	0.0	0.0	0.0	13	1.0	1.0	1.8	1.5	13	6.2
BH 7.1	0.0	0.0	0.0	13	1.0	1.2	2.1	1.7	13	5.5
BH 9.0	0.0	0.0	0.0	13	1.0	1.2	2.4	1.9	13	10.7
BH 12	0.0	0.0	0.0	13	1.0	1.1	2.0	1.5	13	6.5
BH 13	0.0	0.0	0.0	13	1.0	1.8	2.6	1.5	13	5.2
BH 15	0.0	0.0	0.0	13	1.0	1.4	2.6	2.0	13	8.3
BH 16	0.0	0.0	0.0	13	1.0	1.2	2.0	2.0	13	3.0
BH 22	0.2	0.4	0.3	13	1.0	1.1	2.5	1.7	13	3.1



APPENDIX 2

APPENDIX 2

Table 2.1 - Groundwater Levels

Location	Date	Dip Level (mBGL)	Groundwater
GW 1	19/01/2016	21.32	102.76
	22/02/2016	22.36	101.72
	21/03/2016	25.26	98.82
GW 2	19/01/2016	9.10	108.11
	22/02/2016	9.10	108.11
	21/03/2016	9.10	108.11
GW 3	19/01/2016	20.11	93.31
	22/02/2016	24.91	88.51
	21/03/2016	28.97	84.45
GW 4R	19/01/2016	35.69	95.31
	22/02/2016	36.10	94.90
	21/03/2016	37.89	93.11
GW 5	19/01/2016	2.87	131.99
	22/02/2016	3.00	131.86
	21/03/2016	3.98	130.88
GW 6	19/01/2016	23.63	99.94
	22/02/2016	24.97	98.60
	21/03/2016	25.79	97.78
GW 7R	19/01/2016	42.18	99.82
	22/02/2016	44.08	97.92
	21/03/2016	52.65	89.35

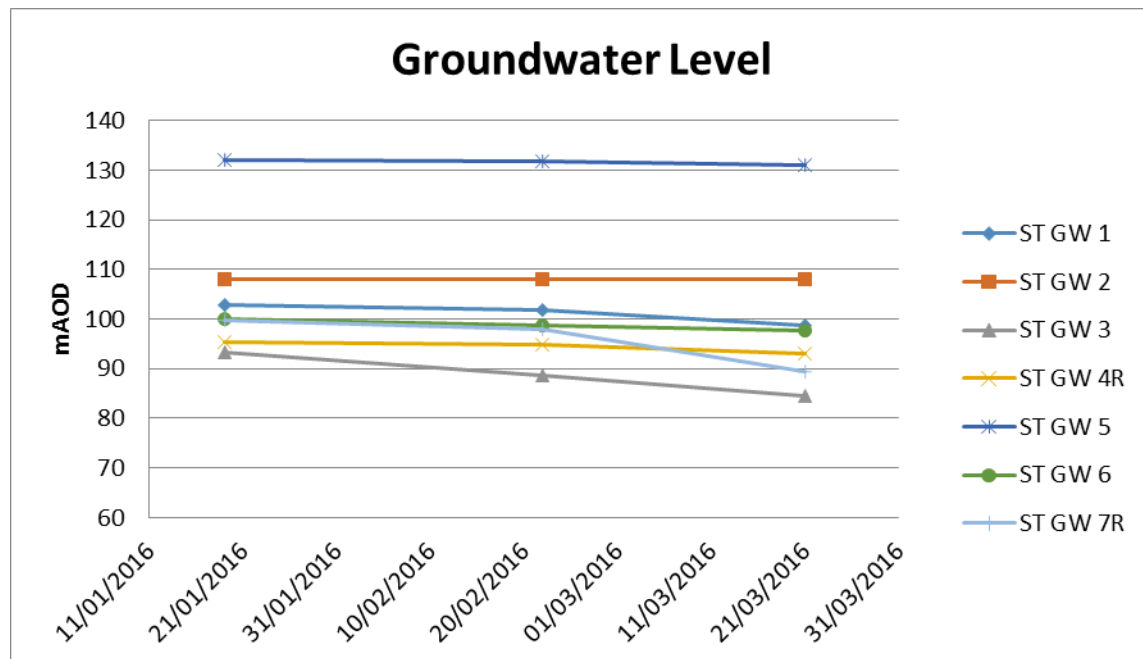
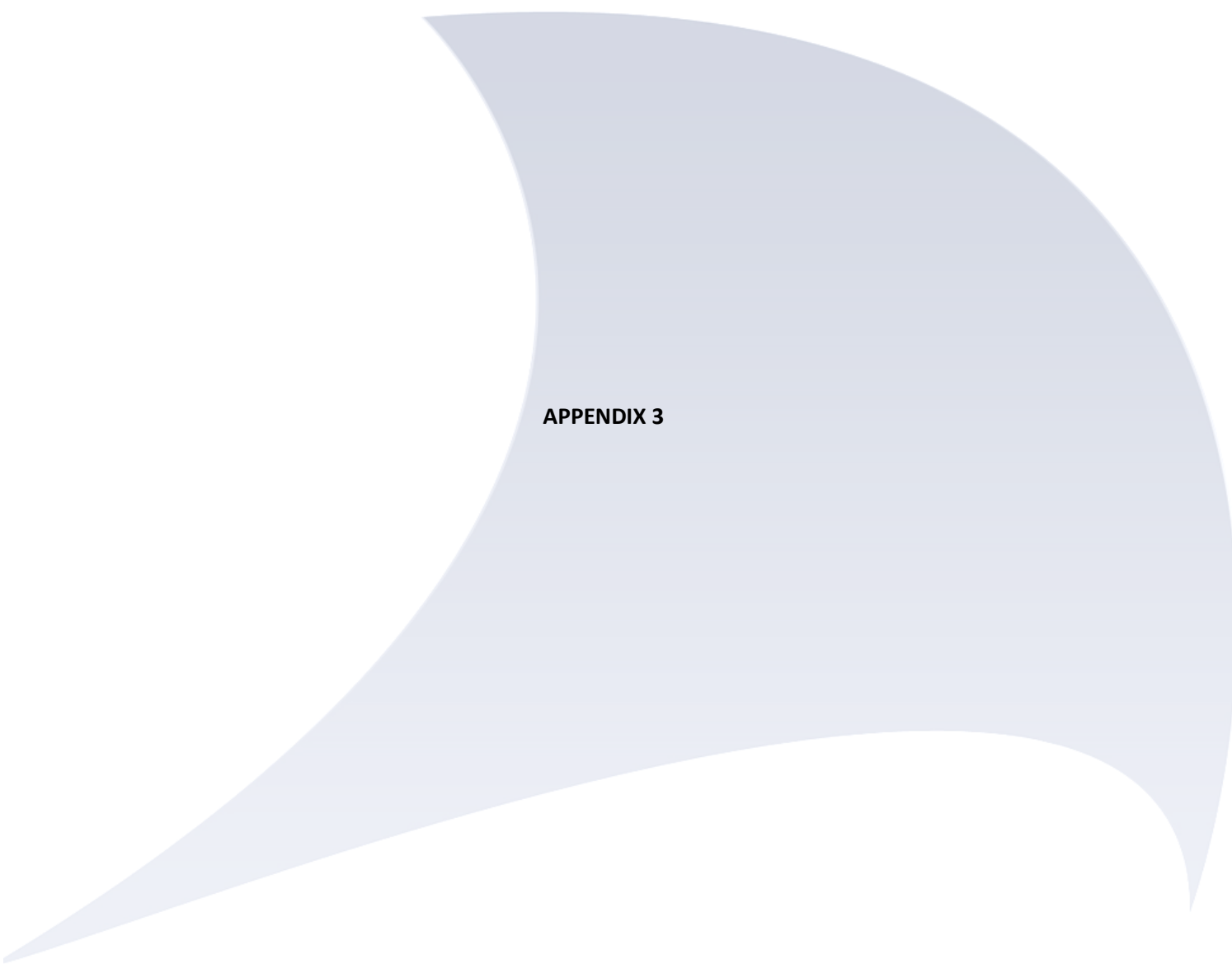


Table 2.2 - Groundwater Quality Data Summary

Parameter	Units	GW1	GW3	GW4R	GW5	GW6
Carbon						
Organic Carbon, Total	mg/l	<3	3.26	8.48	24.7	32.4
Inorganics						
Alkalinity, Bicarbonate as CaCO3	mg/l	101	256	247	378	23.2
Ammoniacal Nitrogen as NH4	mg/l	<0.3	1.25	<0.3	6.72	52.6
BOD, unfiltered	mg/l	2.35	<1	<1	<2.5	<1
Chloride	mg/l	48.1	51.9	24.8	18.2	159
Chlorine, Total (Residual)	mg/l	5	0.04	0.04	27	0.07
COD, unfiltered	mg/l	422	23.9	29.5	143	136
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate as NO3	mg/l	3.33	1.02	4.52	<0.3	295
Nitrite as NO2	mg/l	<0.25	<0.05	<0.05	0.147	0.335
pH	-	6.19	6.86	6.84	6.77	5.62
Sulphate	mg/l	199	193	238	33.5	320
Total Oxidised Nitrogen as N	mg/l	0.772	0.235	1.03	<0.1	66.8
Filtered (Dissolved) Metals						
Arsenic (diss.filt)	mg/l	<0.00012	<0.00012	0.000399	0.0133	0.000787
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	0.000141	<0.0001	0.00207
Calcium (diss.filt)	mg/l	50	76.4	118	83.2	55.7
Copper (diss.filt)	mg/l	<0.00085	<0.00085	0.00296	<0.00085	0.00372
Iron (diss.filt)	mg/l	<0.019	<0.019	<0.019	<0.019	0.028
Lead (diss.filt)	mg/l	<0.00002	<0.00002	<0.00002	0.000106	0.000543
Magnesium (diss.filt)	mg/l	24.3	32.4	33.2	11	28.4
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00112	0.00158	0.00575	0.00295	0.0823
Potassium (diss.filt)	mg/l	9.76	10.9	11	8.67	39.2
Sodium (diss.filt)	mg/l	27	55.2	22.2	24.6	150
Zinc (diss.filt)	mg/l	0.0168	0.00703	0.0182	0.035	0.108
Phenols						
Cresols	mg/l	<0.006	<0.006	<0.006	<0.006	<0.006
Phenol	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002
Phenols, Total Detected monohydric	mg/l	<0.016	<0.016	<0.016	<0.016	<0.016
Xylenols	mg/l	<0.008	<0.008	<0.008	<0.008	<0.008



APPENDIX 3

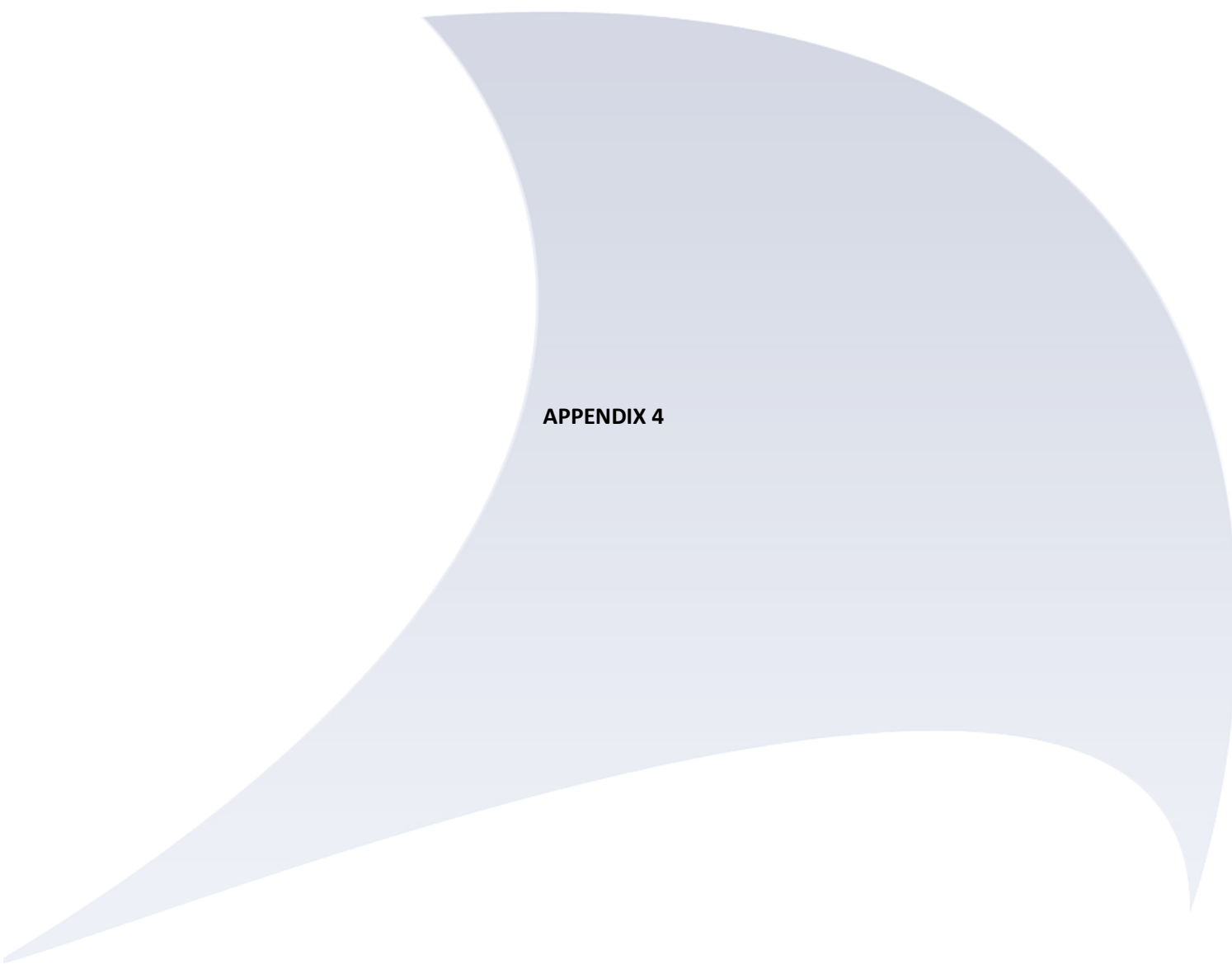
APPENDIX 3

Table 3.1 - Leachate Levels

Location	Date	Dip Level (mBGL)	Leachate Level (mAOD)	Leachate Level Head (m)
LC2.1	06/01/2016	29.57	111.48	1.43
	03/02/2016	29.58	111.47	1.42
	02/03/2016	29.61	111.44	1.39
LC3	06/01/2016	3.13	130.83	1.71
	03/02/2016	3.11	130.85	1.73
	02/03/2016	3.12	130.84	1.72
LC4	06/01/2016	17.45	131.2	1.55
	03/02/2016	17.5	131.15	1.50
	02/03/2016	17.48	131.17	1.52
LC7	06/01/2016	18.52	132.77	1.79
	03/02/2016	18.47	132.82	1.84
	02/03/2016	18.45	132.84	1.86
LS5	06/01/2016	28.69	104.62	1.32
	03/02/2016	28.62	104.69	1.35
	02/03/2016	28.67	104.64	1.33
LS6	06/01/2016	30	104.86	1.20
	03/02/2016	30.02	104.84	1.19
	02/03/2016	29.98	104.88	1.20
S1	06/01/2016	3.15	124.83	1.28
	03/02/2016	3.09	124.89	1.34
	02/03/2016	3.05	124.93	1.38
S2	06/01/2016	1.59	127.27	1.76
	03/02/2016	1.64	127.22	1.71
	02/03/2016	1.59	127.27	1.76
S3	06/01/2016	3.71	124.79	1.38
	03/02/2016	3.68	124.82	1.41
	02/03/2016	3.71	124.79	1.38

Table 3.2 - Leachate Quality Data Summary

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Inorganics										
Alkalinity, Total as CaCO ₃	mg/l	4480	4580	3380	4480	665	3520	2780	4330	7520
Ammoniacal Nitrogen as NH ₄	mg/l	2550	1060	820	1560	37.3	88.3	176	1070	1760
BOD, unfiltered	mg/l	170	157	<15	132	6.87	9.37	>81.3	85.4	130
Chloride	mg/l	1120	1260	1140	1160	107	867	684	1130	1780
Chlorine, Total (Residual)	mg/l	0.25	0.46	0.22	0.32	0.16	0.38	40	74	0.25
COD, unfiltered	mg/l	2920	1650	855	1780	175	135	790	1240	2140
Conductivity @ 20 deg.C	mS/cm	10.5	10.8	8.51	10.7	1.83	8.38	6.48	10	15.2
pH	-	7.83	7.87	8.51	7.86	8	7.83	7.78	7.9	7.79
Total Oxidised Nitrogen as N	mg/l	<0.2	4.11	4.58	<0.2	3.82	<0.2	0.852	<0.1	<1
Filtered (Dissolved) Metals										
Magnesium (diss.filt)	mg/l	67.5	93.4	77.2	78.9	39.7	58.4	65.1	30.6	<0.36
Potassium (diss.filt)	mg/l	448	489	392	479	44.5	338	273	200	<10
Sodium (diss.filt)	mg/l	992	1140	982	1040	108	748	614	978	2.44



APPENDIX 4

APPENDIX 4

Table 4 –Surface Water Quality

Parameter	Units	SW2	SW4	SW5
Inorganics				
Alkalinity, Total as CaCO ₃	mg/l	124	191	54.5
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2	<0.2
Ammoniacal Nitrogen as NH ₄	mg/l	<0.3	<0.3	<0.3
BOD, unfiltered	mg/l	<1	<1	<1
Chloride	mg/l	107	64.9	18.8
Chlorine, Total (Residual)	mg/l	<0.01	0.04	0.06
COD, unfiltered	mg/l	20.2	19.5	32.4
Conductivity @ 20 deg.C	mS/cm	0.794	0.766	0.251
Nitrate as NO ₃	mg/l	1.61	15.9	0.31
pH	pH Units	8.05	8.07	7.65
Sulphate	mg/l	138	132	49.1
Total Oxidised Nitrogen as N	mg/l	0.371	3.61	<0.1
Filtered (Dissolved) Metals				
Iron (diss.filt)	mg/l	<0.019	0.0322	0.114
Magnesium (diss.filt)	mg/l	16.1	14.4	6.25
Potassium (diss.filt)	mg/l	7.74	8.65	5.04
Sodium (diss.filt)	mg/l	64.2	38.4	15.9
Unfiltered (Total) Metals				
Calcium (tot.unfilt)	mg/l	80	108	25.4

APPENDIX 5

Standard Landfill Borehole Gas Monitoring

Date 07/01/2016
 Weather: Dry
 Wind conditions: Calm
 Air Temperature: 4 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	09:32	0	1.5	19.9	78.6	0	0	999	0.02	1	5.4
STBH 1.1	09:29	0	1.3	19.6	79.1	0	0	999	-0.06	1	5.4
STBH 2.0	09:36	0	2	19.4	78.6	0	0	999	0.51	1	7
STBH 2.1	09:24	0	2.6	19.8	77.6	0	0	999	0.85	1	7.6
STBH 2.2	09:27	0	1.4	20	78.6	0	0	999	0.54	1	5.8
STBH 3.0	09:41	0	2.3	19.8	77.9	0	0	999	0.6	1	6.7
STBH 3.1	09:22	0	1.2	19.6	79.2	0	0	999	0.24	1	7.8
STBH 4.0	09:45	0	1.6	19.8	78.6	0	0	999	1.3	10	10.6
STBH 4.1	09:13	0	2.2	19.5	78.3	0	0	999	1.31	1	7.1
STBH 4.2	09:18	0	1.6	19.9	78.5	0	0	999	1.06	1	8.6
STBH 5.0	09:48	0	2.6	19.5	77.9	0	0	999	0.64	15	19.4
STBH 5.1	09:52	0	1.5	20	78.5	0	0	999	0.44	1	5.8
STBH 5.2	09:05	0	1.8	19.6	78.6	0	0	999	0.26	1	9.6
STBH 5.3	09:08	0	1.4	20	78.6	0	0	999	0.96	1	6
STBH 6.0	10:10	0	2.5	19.6	77.9	0	0	999	-0.97	1	5.4
STBH 6.1	08:54	0	2.2	19.9	77.9	0	0	999	0.7	1	5.4
STBH 6.2	08:58	0	1.7	20	78.3	0	0	999	1.33	1	5.4
STBH 6.3	09:02	0	2	19.6	78.4	0	0	999	1.01	1	8.2
STBH 7.0	10:14	0	1.7	19.2	79.1	0	0	999	0.11	1	6.2
STBH 7.1	08:50	0	1.4	19	79.6	0	0	999	0.54	1	5.5
STBH 9.0	10:25	0	2.2	20	77.8	0	0	999	0.65	1	10.7
STBH 12	10:28	0	1.4	19.8	78.8	0	0	999	0.84	10	6.5
STBH 13	10:32	0	2.3	19.9	77.8	0	0	999	-0.16	10	5.2
STBH 15	10:36	0	2.5	19.5	78	0	0	999	0.85	1	8.3
STBH 16	10:40	0	1.4	19.8	78.8	0	0	999	0.65	1	3
STBH 22	10:44	0.4	2	19.9	77.7	0	0	999	0.55	1.6	3.1
STMBH 5.4	09:56	0	1.5	20	78.5	0	0	999	0.57	1	16
STMBH 5.5	09:58	0	1.7	19.8	78.5	0	0	999	-0.1	1	17.1
STMBH 5.7	10:01	0	2.2	19.6	78.2	0	0	999	-0.22	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 14/01/2016
 Weather: Dry
 Wind conditions: Calm
 Air Temperature: 7 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:09	0	1.2	20	78.8	0	0	998	0.07	1	5.4
STBH 1.1	11:06	0	1.1	19.9	79	0	0	998	-0.01	1	5.4
STBH 2.0	11:13	0	1.8	19.6	78.6	0	0	998	-0.48	1	7
STBH 2.1	11:01	0	2.3	20	77.7	0	0	998	-0.24	1	7.6
STBH 2.2	11:04	0	1.5	19.9	78.6	0	0	998	-0.28	1	5.8
STBH 3.0	11:18	0	2.1	19.5	78.4	0	0	998	-0.16	1	6.7
STBH 3.1	10:59	0	1.4	20	78.6	0	0	998	0.24	1	7.8
STBH 4.0	11:22	0	1.5	19.6	78.9	0	0	998	0.4	10	10.6
STBH 4.1	10:50	0	2	19.3	78.7	0	0	998	0.67	1	7.1
STBH 4.2	10:55	0	1.5	20.1	78.4	0	0	998	-0.91	1	8.6
STBH 5.0	11:25	0	2.1	19.6	78.3	0	0	998	0.75	15	19.4
STBH 5.1	11:29	0	1.4	19.8	78.8	0	0	998	0.19	1	5.8
STBH 5.2	10:42	0	1.6	19.4	79	0	0	998	0.43	1	9.6
STBH 5.3	10:45	0	1.2	19.9	78.9	0	0	998	-0.36	1	6
STBH 6.0	11:47	0	2.1	19.9	78	0	0	998	-0.18	1	5.4
STBH 6.1	10:31	0	2	20	78	0	0	998	-0.36	1	5.4
STBH 6.2	10:35	0	1.5	19.8	78.7	0	0	998	0.93	1	5.4
STBH 6.3	10:39	0	2.3	19.4	78.3	0	0	998	0.68	1	8.2
STBH 7.0	11:51	0	1	19.3	79.7	0	0	998	0.33	1	6.2
STBH 7.1	10:27	0	1.5	19.5	79	0	0	998	0.15	1	5.5
STBH 9.0	12:02	0	2.4	19.8	77.8	0	0	998	-0.26	1	10.7
STBH 12	12:05	0	1.5	19.5	79	0	0	998	0.81	10	6.5
STBH 13	12:09	0	2.1	20	77.9	0	0	998	0.05	10	5.2
STBH 15	12:13	0	2.2	19.6	78.2	0	0	998	0.35	1	8.3
STBH 16	12:17	0	1.9	19.7	78.4	0	0	998	-0.12	1	3
STBH 22	12:21	0.2	1.8	19.3	78.7	0	0	998	0.51	1.6	3.1
STMBH 5.4	11:33	0	1.7	19.8	78.5	0	0	998	-0.15	1	16
STMBH 5.5	11:35	0	1.5	20	78.5	0	0	998	-0.09	1	17.1
STMBH 5.7	11:38	0	2.1	19.8	78.1	0	0	998	-0.9	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 21/01/2016
 Weather: Dry
 Wind conditions: Calm
 Air Temperature: 8 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:11	0	1.1	19.8	79.1	0	0	1002	0.5	1	5.4
STBH 1.1	11:08	0	1	20.1	78.9	0	0	1002	-0.66	1	5.4
STBH 2.0	11:15	0	2	19.8	78.2	0	0	1002	0.96	1	7
STBH 2.1	11:03	0	3	20.1	76.9	0	0	1002	0.62	1	7.6
STBH 2.2	11:06	0	1.8	20	78.2	0	0	1002	0.71	1	5.8
STBH 3.0	11:20	0	2.4	19.6	78	0	0	1002	0.66	1	6.7
STBH 3.1	11:01	0	1.4	20.1	78.5	0	0	1002	0.58	1	7.8
STBH 4.0	11:24	0	1.2	19.8	79	0	0	1002	1.04	10	10.6
STBH 4.1	10:52	0	2.5	19.9	77.6	0	0	1002	1.38	1	7.1
STBH 4.2	10:57	0	1.2	20	78.8	0	0	1002	0.87	1	8.6
STBH 5.0	11:27	0	2	19.5	78.5	0	0	1002	1.14	15	19.4
STBH 5.1	11:31	0	1.4	19.8	78.8	0	0	1002	0.69	1	5.8
STBH 5.2	10:44	0	1.7	19.5	78.8	0	0	1002	0.56	1	9.6
STBH 5.3	10:47	0	2	20	78	0	0	1002	0.75	1	6
STBH 6.0	11:49	0	2.5	19.5	78	0	0	1002	-0.82	1	5.4
STBH 6.1	10:33	0	1.5	19.8	78.7	0	0	1002	0.52	1	5.4
STBH 6.2	10:37	0	1.2	20	78.8	0	0	1002	0.87	1	5.4
STBH 6.3	10:41	0	2	19.6	78.4	0	0	1002	0.75	1	8.2
STBH 7.0	11:53	0	1.2	19.5	79.3	0	0	1002	0.72	1	6.2
STBH 7.1	10:29	0	1.4	19.7	78.9	0	0	1002	0.91	1	5.5
STBH 9.0	12:04	0	2	19.6	78.4	0	0	1002	0.59	1	10.7
STBH 12	12:07	0	1.2	19.9	78.9	0	0	1002	1.23	10	6.5
STBH 13	12:11	0	2.6	20.1	77.3	0	0	1002	-0.85	10	5.2
STBH 15	12:15	0	2	19.8	78.2	0	0	1002	0.61	1	8.3
STBH 16	12:19	0	1.5	19.5	79	0	0	1002	0.75	1	3
STBH 22	12:23	0.4	2	19.5	78.1	0	0	1002	0.59	1.6	3.1
STMBH 5.4	11:35	0	2	20	78	0	0	1002	0.86	1	16
STMBH 5.5	11:37	0	1.4	19.8	78.8	0	0	1002	0.81	1	17.1
STMBH 5.7	11:40	0	2.3	20.1	77.6	0	0	1002	-0.62	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 28/01/2016
 Weather: Dry
 Wind conditions: Breezy
 Air Temperature: 8 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	09:36	0	1.4	20.1	78.5	0	0	995	0.03	1	5.4
STBH 1.1	09:33	0	1.2	20.1	78.7	0	0	995	-0.13	1	5.4
STBH 2.0	09:40	0	2.3	19.5	78.2	0	0	995	0.5	1	7
STBH 2.1	09:28	0	3.2	20.1	76.7	0	0	995	0.79	1	7.6
STBH 2.2	09:31	0	1.5	19.9	78.6	0	0	995	0.57	1	5.8
STBH 3.0	09:45	0	2.1	20	77.9	0	0	995	0.63	1	6.7
STBH 3.1	09:26	0	1.5	19.8	78.7	0	0	995	0.24	1	7.8
STBH 4.0	09:49	0	1.2	20	78.8	0	0	995	1.23	10	10.6
STBH 4.1	09:17	0	2.1	19.6	78.3	0	0	995	1.26	1	7.1
STBH 4.2	09:22	0	1.5	20.1	78.4	0	0	995	1.07	1	8.6
STBH 5.0	09:52	0	2.5	19.8	77.7	0	0	995	0.66	15	19.4
STBH 5.1	09:56	0	1.4	20	78.6	0	0	995	0.41	1	5.8
STBH 5.2	09:09	0	1.5	19.6	78.9	0	0	995	0.31	1	9.6
STBH 5.3	09:12	0	1.8	20.1	78.1	0	0	995	1	1	6
STBH 6.0	10:14	0	2.2	19.8	78	0	0	995	-0.9	1	5.4
STBH 6.1	08:58	0	1.5	19.5	79	0	0	995	0.71	1	5.4
STBH 6.2	09:02	0	1.1	19.9	79	0	0	995	1.35	1	5.4
STBH 6.3	09:06	0	2.1	19.8	78.1	0	0	995	0.99	1	8.2
STBH 7.0	10:18	0	1.4	19.7	78.9	0	0	995	0.15	1	6.2
STBH 7.1	08:54	0	1.2	19.9	78.9	0	0	995	0.58	1	5.5
STBH 9.0	10:29	0	2.2	20	77.8	0	0	995	0.63	1	10.7
STBH 12	10:32	0	1.2	19.6	79.2	0	0	995	0.9	10	6.5
STBH 13	10:36	0	2.6	20	77.4	0	0	995	-0.2	10	5.2
STBH 15	10:40	0	2.1	20	77.9	0	0	995	0.83	1	8.3
STBH 16	10:44	0	1.2	19.2	79.6	0	0	995	0.62	1	3
STBH 22	10:48	0.2	2.5	19.9	77.4	0	0	995	0.51	1.6	3.1
STMBH 5.4	10:00	0	2.4	19.5	78.1	0	0	995	0.53	1	16
STMBH 5.5	10:02	0	1.6	19.6	78.8	0	0	995	-0.16	1	17.1
STMBH 5.7	10:05	0	2.1	20	77.9	0	0	995	-0.18	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 04/02/2016
 Weather: Dry
 Wind conditions: Breezy
 Air Temperature: 9 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	09:36	0	1.5	20	78.5	0	0	1004	0.5	1	5.4
STBH 1.1	09:33	0	1.4	19.8	78.8	0	0	1004	-0.62	1	5.4
STBH 2.0	09:40	0	2.6	19	78.4	0	0	1004	0.98	1	7
STBH 2.1	09:28	0	3.1	20.2	76.7	0	0	1004	0.56	1	7.6
STBH 2.2	09:31	0	2	19.5	78.5	0	0	1004	0.62	1	5.8
STBH 3.0	09:45	0	2.1	19.6	78.3	0	0	1004	0.63	1	6.7
STBH 3.1	09:26	0	1.4	19.6	79	0	0	1004	0.62	1	7.8
STBH 4.0	09:49	0	1.5	20.1	78.4	0	0	1004	1.06	10	10.6
STBH 4.1	09:17	0	2.3	19.6	78.1	0	0	1004	1.48	1	7.1
STBH 4.2	09:22	0	1.2	19.9	78.9	0	0	1004	0.74	1	8.6
STBH 5.0	09:52	0	2	20	78	0	0	1004	1.2	15	19.4
STBH 5.1	09:56	0	1.2	19.7	79.1	0	0	1004	0.65	1	5.8
STBH 5.2	09:09	0	1	19.6	79.4	0	0	1004	0.52	1	9.6
STBH 5.3	09:12	0	2.9	20.1	77	0	0	1004	0.71	1	6
STBH 6.0	10:14	0	2	19.8	78.2	0	0	1004	-0.87	1	5.4
STBH 6.1	08:58	0	2.3	19.9	77.8	0	0	1004	0.46	1	5.4
STBH 6.2	09:02	0	1.4	20.1	78.5	0	0	1004	0.88	1	5.4
STBH 6.3	09:06	0	2.1	19.6	78.3	0	0	1004	0.7	1	8.2
STBH 7.0	10:18	0	1.4	19.8	78.8	0	0	1004	0.68	1	6.2
STBH 7.1	08:54	0	1.9	20.1	78	0	0	1004	0.92	1	5.5
STBH 9.0	10:29	0	2.2	19.3	78.5	0	0	1004	0.53	1	10.7
STBH 12	10:32	0	1.1	19.6	79.3	0	0	1004	1.27	10	6.5
STBH 13	10:36	0	2.5	20	77.5	0	0	1004	-0.89	10	5.2
STBH 15	10:40	0	2.4	19.5	78.1	0	0	1004	0.68	1	8.3
STBH 16	10:44	0	1.2	19.6	79.2	0	0	1004	0.72	1	3
STBH 22	10:48	0.4	2.2	19.9	77.5	0	0	1004	0.53	1.6	3.1
STMBH 5.4	10:00	0	2.1	19.5	78.4	0	0	1004	0.84	1	16
STMBH 5.5	10:02	0	1.5	19.6	78.9	0	0	1004	0.78	1	17.1
STMBH 5.7	10:05	0	2	19.9	78.1	0	0	1004	-0.69	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 11/02/2016
 Weather: Dry
 Wind conditions: Breezy
 Air Temperature: 8 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	12:42	0	1.2	19.8	79	0	0	996	0.07	1	5.4
STBH 1.1	12:37	0	1	20	79	0	0	996	-0.01	1	5.4
STBH 2.0	12:47	0	2.4	19.4	78.2	0	0	996	-0.48	1	7
STBH 2.1	12:21	0	3	20	77	0	0	996	-0.24	1	7.6
STBH 2.2	12:28	0	2.5	19.6	77.9	0	0	996	-0.28	1	5.8
STBH 3.0	12:50	0	2.4	19.9	77.7	0	0	996	-0.16	1	6.7
STBH 3.1	12:15	0	1.1	19.8	79.1	0	0	996	0.24	1	7.8
STBH 4.0	12:54	0	1.9	19.6	78.5	0	0	996	0.4	10	10.6
STBH 4.1	12:08	0	2.4	19.8	77.8	0	0	996	0.67	1	7.1
STBH 4.2	12:11	0	1.5	20	78.5	0	0	996	-0.91	1	8.6
STBH 5.0	13:05	0	2.3	19.6	78.1	0	0	996	0.75	15	19.4
STBH 5.1	13:00	0	1	19.9	79.1	0	0	996	0.19	1	5.8
STBH 5.2	11:58	0	1.3	20	78.7	0	0	996	0.43	1	9.6
STBH 5.3	12:06	0	2.5	19.9	77.6	0	0	996	-0.36	1	6
STBH 6.0	13:18	0	2.6	19.6	77.8	0	0	996	-0.18	1	5.4
STBH 6.1	11:48	0	2.4	20.1	77.5	0	0	996	-0.36	1	5.4
STBH 6.2	11:52	0	1.8	19.8	78.4	0	0	996	0.93	1	5.4
STBH 6.3	11:56	0	2.4	19.5	78.1	0	0	996	0.68	1	8.2
STBH 7.0	11:38	0	1.6	19.9	78.5	0	0	996	0.33	1	6.2
STBH 7.1	11:40	0	1.8	20	78.2	0	0	996	0.15	1	5.5
STBH 9.0	13:27	0	2.4	19.5	78.1	0	0	996	-0.26	1	10.7
STBH 12	13:32	0	1.4	19.7	78.9	0	0	996	0.81	10	6.5
STBH 13	13:34	0	2.1	20.1	77.8	0	0	996	0.05	10	5.2
STBH 15	13:37	0	2.5	19.6	77.9	0	0	996	0.35	1	8.3
STBH 16	13:39	0	2	19.8	78.2	0	0	996	-0.12	1	3
STBH 22	13:43	0.3	2.1	20	77.6	0	0	996	0.51	1.6	3.1
STMBH 5.4	12:08	0	3	19.8	77.2	0	0	996	-0.15	1	16
STMBH 5.5	13:09	0	1.6	20	78.4	0	0	996	-0.09	1	17.1
STMBH 5.7	13:12	0	2.1	19.6	78.3	0	0	996	-0.9	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 18/02/2016
 Weather: Dry
 Wind conditions: Calm
 Air Temperature: 6 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:11	0	1	20	79	0	0	999	0.46	1	5.4
STBH 1.1	11:08	0	1.2	19.8	79	0	0	999	-0.68	1	5.4
STBH 2.0	11:15	0	2.4	19.6	78	0	0	999	0.89	1	7
STBH 2.1	11:03	0	2.5	19.6	77.9	0	0	999	0.52	1	7.6
STBH 2.2	11:06	0	2.6	19.8	77.6	0	0	999	0.6	1	5.8
STBH 3.0	11:20	0	2	20	78	0	0	999	0.74	1	6.7
STBH 3.1	11:01	0	1.4	19.6	79	0	0	999	0.71	1	7.8
STBH 4.0	11:24	0	2.1	19.8	78.1	0	0	999	1.13	10	10.6
STBH 4.1	10:52	0	2	19.5	78.5	0	0	999	1.37	1	7.1
STBH 4.2	10:57	0	1.8	19.3	78.9	0	0	999	0.66	1	8.6
STBH 5.0	11:27	0	2	19.8	78.2	0	0	999	0.9	15	19.4
STBH 5.1	11:31	0	1.2	19.5	79.3	0	0	999	0.62	1	5.8
STBH 5.2	10:44	0	1.5	19.6	78.9	0	0	999	0.48	1	9.6
STBH 5.3	10:47	0	2	20.1	77.9	0	0	999	0.74	1	6
STBH 6.0	11:49	0	2.1	19.8	78.1	0	0	999	-0.79	1	5.4
STBH 6.1	10:33	0	2.6	19.8	77.6	0	0	999	0.52	1	5.4
STBH 6.2	10:37	0	2	19.7	78.3	0	0	999	0.87	1	5.4
STBH 6.3	10:41	0	2.1	19.6	78.3	0	0	999	0.69	1	8.2
STBH 7.0	11:53	0	1.8	20	78.2	0	0	999	0.63	1	6.2
STBH 7.1	10:29	0	1.9	19.9	78.2	0	0	999	0.84	1	5.5
STBH 9.0	12:04	0	2.1	19.6	78.3	0	0	999	0.75	1	10.7
STBH 12	12:07	0	1.6	19.8	78.6	0	0	999	1.36	10	6.5
STBH 13	12:11	0	2.4	19.8	77.8	0	0	999	-0.84	10	5.2
STBH 15	12:15	0	2.6	19.9	77.5	0	0	999	0.65	1	8.3
STBH 16	12:19	0	1.5	20	78.5	0	0	999	0.7	1	3
STBH 22	12:23	0.4	1.8	19.4	78.4	0	0	999	0.52	1.6	3.1
STMBH 5.4	11:35	0	3.2	19.9	76.9	0	0	999	0.82	1	16
STMBH 5.5	11:37	0	1.5	20.1	78.4	0	0	999	0.73	1	17.1
STMBH 5.7	11:40	0	3	19.9	77.1	0	0	999	-0.67	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 25/02/2016
 Weather: Dry
 Wind conditions: Calm
 Air Temperature: 5 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:16	0	1.2	19.8	79	0	0	1004	0.03	1	5.4
STBH 1.1	11:13	0	1.4	20	78.6	0	0	1004	-0.13	1	5.4
STBH 2.0	11:20	0	2	19.8	78.2	0	0	1004	0.5	1	7
STBH 2.1	11:08	0	2	19.9	78.1	0	0	1004	0.79	1	7.6
STBH 2.2	11:11	0	2.9	19.6	77.5	0	0	1004	0.57	1	5.8
STBH 3.0	11:25	0	2.2	19.9	77.9	0	0	1004	0.63	1	6.7
STBH 3.1	11:06	0	1.8	19.2	79	0	0	1004	0.24	1	7.8
STBH 4.0	11:29	0	1.9	19.9	78.2	0	0	1004	1.23	10	10.6
STBH 4.1	10:57	0	1.8	19.8	78.4	0	0	1004	1.26	1	7.1
STBH 4.2	11:02	0	1.9	19.5	78.6	0	0	1004	1.07	1	8.6
STBH 5.0	11:32	0	2.3	19.6	78.1	0	0	1004	0.66	15	19.4
STBH 5.1	11:36	0	1.5	19.6	78.9	0	0	1004	0.41	1	5.8
STBH 5.2	10:49	0	1.8	19.1	79.1	0	0	1004	0.31	1	9.6
STBH 5.3	10:52	0	1.9	20	78.1	0	0	1004	1	1	6
STBH 6.0	11:54	0	2	19.9	78.1	0	0	1004	-0.9	1	5.4
STBH 6.1	10:38	0	2.1	20	77.9	0	0	1004	0.71	1	5.4
STBH 6.2	10:42	0	1.6	19.9	78.5	0	0	1004	1.35	1	5.4
STBH 6.3	10:46	0	1.8	19.9	78.3	0	0	1004	0.99	1	8.2
STBH 7.0	11:58	0	1.5	19.8	78.7	0	0	1004	0.15	1	6.2
STBH 7.1	10:34	0	2	20	78	0	0	1004	0.58	1	5.5
STBH 9.0	12:09	0	1.7	19.9	78.4	0	0	1004	0.63	1	10.7
STBH 12	12:12	0	1.9	19.9	78.2	0	0	1004	0.9	10	6.5
STBH 13	12:16	0	2.5	19.5	78	0	0	1004	-0.2	10	5.2
STBH 15	12:20	0	1.9	20	78.1	0	0	1004	0.83	1	8.3
STBH 16	12:24	0	1.9	20	78.1	0	0	1004	0.62	1	3
STBH 22	12:28	0.3	1.5	19.6	78.6	0	0	1004	0.51	1.6	3.1
STMBH 5.4	11:40	0	2.8	19.8	77.4	0	0	1004	0.53	1	16
STMBH 5.5	11:42	0	1.9	19.9	78.2	0	0	1004	-0.16	1	17.1
STMBH 5.7	11:45	0	2.5	20	77.5	0	0	1004	-0.18	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 03/03/2016
 Weather: Dry
 Wind conditions: slight breeze
 Air Temperature: 7 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	09:36	0	1.4	19.4	79.2	0	0	996	0.07	1	5.4
STBH 1.1	09:33	0	1.5	19.8	78.7	0	0	996	-0.01	1	5.4
STBH 2.0	09:40	0	1.8	19.9	78.3	0	0	996	-0.48	1	7
STBH 2.1	09:28	0	2.1	20	77.9	0	0	996	-0.24	1	7.6
STBH 2.2	09:31	0	2.5	19.5	78	0	0	996	-0.28	1	5.8
STBH 3.0	09:45	0	1.8	19.6	78.6	0	0	996	-0.16	1	6.7
STBH 3.1	09:26	0	1.6	19.5	78.9	0	0	996	0.24	1	7.8
STBH 4.0	09:49	0	2.1	20.1	77.8	0	0	996	0.4	10	10.6
STBH 4.1	09:17	0	1.6	19.9	78.5	0	0	996	0.67	1	7.1
STBH 4.2	09:22	0	2.1	19.8	78.1	0	0	996	-0.91	1	8.6
STBH 5.0	09:52	0	2	19.9	78.1	0	0	996	0.75	15	19.4
STBH 5.1	09:56	0	1.6	20	78.4	0	0	996	0.19	1	5.8
STBH 5.2	09:09	0	1.6	19.4	79	0	0	996	0.43	1	9.6
STBH 5.3	09:12	0	2	19.9	78.1	0	0	996	-0.36	1	6
STBH 6.0	10:14	0	1.8	20	78.2	0	0	996	-0.18	1	5.4
STBH 6.1	08:58	0	2.3	19.9	77.8	0	0	996	-0.36	1	5.4
STBH 6.2	09:02	0	1.4	20	78.6	0	0	996	0.93	1	5.4
STBH 6.3	09:06	0	1.9	19.5	78.6	0	0	996	0.68	1	8.2
STBH 7.0	10:18	0	1.6	19.8	78.6	0	0	996	0.33	1	6.2
STBH 7.1	08:54	0	2.1	19.5	78.4	0	0	996	0.15	1	5.5
STBH 9.0	10:29	0	1.5	19.7	78.8	0	0	996	-0.26	1	10.7
STBH 12	10:32	0	2	20	78	0	0	996	0.81	10	6.5
STBH 13	10:36	0	2.1	19.7	78.2	0	0	996	0.05	10	5.2
STBH 15	10:40	0	1.5	19.9	78.6	0	0	996	0.35	1	8.3
STBH 16	10:44	0	1.6	19.8	78.6	0	0	996	-0.12	1	3
STBH 22	10:48	0.2	1.4	19.5	78.9	0	0	996	0.51	1.6	3.1
STMBH 5.4	10:00	0	2.5	19.9	77.6	0	0	996	-0.15	1	16
STMBH 5.5	10:02	0	1.4	19.8	78.8	0	0	996	-0.09	1	17.1
STMBH 5.7	10:05	0	2.3	19.8	77.9	0	0	996	-0.9	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 10/03/2016
 Weather: Dry
 Wind conditions: calm
 Air Temperature: 7 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	09:32	0	1.2	19.6	79.2	0	0	996	0.5	1	5.4
STBH 1.1	09:29	0	1.6	19.9	78.5	0	0	996	-0.66	1	5.4
STBH 2.0	09:36	0	2	20	78	0	0	996	0.96	1	7
STBH 2.1	09:24	0	2	19.8	78.2	0	0	996	0.62	1	7.6
STBH 2.2	09:27	0	1.8	19.6	78.6	0	0	996	0.71	1	5.8
STBH 3.0	09:41	0	1.5	19.2	79.3	0	0	996	0.66	1	6.7
STBH 3.1	09:22	0	1.9	19.1	79	0	0	996	0.58	1	7.8
STBH 4.0	09:45	0	2	19.9	78.1	0	0	996	1.04	10	10.6
STBH 4.1	09:13	0	1.7	19.8	78.5	0	0	996	1.38	1	7.1
STBH 4.2	09:18	0	2	19.9	78.1	0	0	996	0.87	1	8.6
STBH 5.0	09:48	0	2.3	20	77.7	0	0	996	1.14	15	19.4
STBH 5.1	09:52	0	1.7	19.9	78.4	0	0	996	0.69	1	5.8
STBH 5.2	09:05	0	2	19.6	78.4	0	0	996	0.56	1	9.6
STBH 5.3	09:08	0	1.5	19.8	78.7	0	0	996	0.75	1	6
STBH 6.0	10:10	0	1.4	19.9	78.7	0	0	996	-0.82	1	5.4
STBH 6.1	08:54	0	2	19.6	78.4	0	0	996	0.52	1	5.4
STBH 6.2	08:58	0	1.9	19.8	78.3	0	0	996	0.87	1	5.4
STBH 6.3	09:02	0	2	19.6	78.4	0	0	996	0.75	1	8.2
STBH 7.0	10:14	0	1.4	19.9	78.7	0	0	996	0.72	1	6.2
STBH 7.1	08:50	0	2	19.6	78.4	0	0	996	0.91	1	5.5
STBH 9.0	10:25	0	1.2	20	78.8	0	0	996	0.59	1	10.7
STBH 12	10:28	0	1.8	19.8	78.4	0	0	996	1.23	10	6.5
STBH 13	10:32	0	2.3	19.6	78.1	0	0	996	-0.85	10	5.2
STBH 15	10:36	0	1.4	19.7	78.9	0	0	996	0.61	1	8.3
STBH 16	10:40	0	1.5	19.9	78.6	0	0	996	0.75	1	3
STBH 22	10:44	0.3	1.2	20	78.5	0	0	996	0.59	1.6	3.1
STMBH 5.4	09:56	0	2.2	19.2	78.6	0	0	996	0.86	1	16
STMBH 5.5	09:58	0	1.2	19.7	79.1	0	0	996	0.81	1	17.1
STMBH 5.7	10:01	0	2.5	19.8	77.7	0	0	996	-0.62	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 17/03/2016
 Weather: Dry
 Wind conditions: calm
 Air Temperature: 7 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:52	0	1.1	19.8	79.1	0	0	998	-0.2	1	5.4
STBH 1.1	11:49	0	1.5	20	78.5	0	0	998	-0.02	1	5.4
STBH 2.0	11:56	0	1.8	19.9	78.3	0	0	998	-0.59	1	7
STBH 2.1	11:44	0	1.8	19.5	78.7	0	0	998	-0.81	1	7.6
STBH 2.2	11:47	0	2	19.9	78.1	0	0	998	-0.62	1	5.8
STBH 3.0	12:01	0	1.6	19.5	78.9	0	0	998	-0.29	1	6.7
STBH 3.1	11:42	0	1.8	19.2	79	0	0	998	0.39	1	7.8
STBH 4.0	12:05	0	2.1	20	77.9	0	0	998	0.9	10	10.6
STBH 4.1	11:33	0	1.5	19.7	78.8	0	0	998	1.29	1	7.1
STBH 4.2	11:38	0	1.8	19.6	78.6	0	0	998	1.04	1	8.6
STBH 5.0	12:08	0	2.5	19.9	77.6	0	0	998	0.63	15	19.4
STBH 5.1	12:12	0	1.6	20	78.4	0	0	998	0.42	1	5.8
STBH 5.2	11:25	0	1.8	19.8	78.4	0	0	998	0.34	1	9.6
STBH 5.3	11:28	0	1.6	19.8	78.6	0	0	998	-0.13	1	6
STBH 6.0	12:30	0	1.6	20	78.4	0	0	998	-0.91	1	5.4
STBH 6.1	11:14	0	2.3	19.7	78	0	0	998	-0.24	1	5.4
STBH 6.2	11:18	0	1.8	20	78.2	0	0	998	1.28	1	5.4
STBH 6.3	11:22	0	1.9	20	78.1	0	0	998	0.98	1	8.2
STBH 7.0	12:34	0	1.6	19.8	78.6	0	0	998	0.49	1	6.2
STBH 7.1	11:10	0	1.8	19.5	78.7	0	0	998	0.54	1	5.5
STBH 9.0	12:45	0	1.4	19.9	78.7	0	0	998	0.72	1	10.7
STBH 12	12:48	0	1.7	19.6	78.7	0	0	998	-0.94	10	6.5
STBH 13	12:52	0	2.1	19.5	78.4	0	0	998	-0.17	10	5.2
STBH 15	12:56	0	1.6	19.9	78.5	0	0	998	0.83	1	8.3
STBH 16	13:00	0	1.7	20	78.3	0	0	998	-0.75	1	3
STBH 22	13:04	0.2	1.4	19.6	78.8	0	0	998	0.61	1.6	3.1
STMBH 5.4	12:16	0	2	19.8	78.2	0	0	998	-0.7	1	16
STMBH 5.5	12:18	0	1.4	19.9	78.7	0	0	998	-0.01	1	17.1
STMBH 5.7	12:21	0	2.1	20	77.9	0	0	998	-0.18	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 24/03/2016
 Weather: Dry
 Wind conditions: calm
 Air Temperature: 9 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 26/03/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	11:11	0	1.2	19.5	79.3	0	0	996	-0.16	1	5.4
STBH 1.1	11:08	0	1.9	19.9	78.2	0	0	996	-0.09	1	5.4
STBH 2.0	11:15	0	1.5	19.6	78.9	0	0	996	-0.53	1	7
STBH 2.1	11:03	0	1.8	20	78.2	0	0	996	-0.84	1	7.6
STBH 2.2	11:06	0	2.3	19.6	78.1	0	0	996	-0.65	1	5.8
STBH 3.0	11:20	0	1.5	19.8	78.7	0	0	996	-0.22	1	6.7
STBH 3.1	11:01	0	1.8	19.5	78.7	0	0	996	0.36	1	7.8
STBH 4.0	11:24	0	2	19.9	78.1	0	0	996	0.88	10	10.6
STBH 4.1	10:52	0	1.4	20	78.6	0	0	996	1.28	1	7.1
STBH 4.2	10:57	0	1.9	19.9	78.2	0	0	996	0.99	1	8.6
STBH 5.0	11:27	0	2.2	20.1	77.7	0	0	996	0.63	15	19.4
STBH 5.1	11:31	0	1.4	19.9	78.7	0	0	996	0.47	1	5.8
STBH 5.2	10:44	0	1.9	19.5	78.6	0	0	996	0.34	1	9.6
STBH 5.3	10:47	0	1.8	19.5	78.7	0	0	996	-0.18	1	6
STBH 6.0	11:49	0	1.4	19.6	79	0	0	996	-0.91	1	5.4
STBH 6.1	10:33	0	1.9	20.1	78	0	0	996	-0.24	1	5.4
STBH 6.2	10:37	0	2	19.9	78.1	0	0	996	1.27	1	5.4
STBH 6.3	10:41	0	1.5	19.8	78.7	0	0	996	0.99	1	8.2
STBH 7.0	11:53	0	1.4	20	78.6	0	0	996	0.45	1	6.2
STBH 7.1	10:29	0	1.9	19.8	78.3	0	0	996	0.52	1	5.5
STBH 9.0	12:04	0	1.6	20.1	78.3	0	0	996	0.67	1	10.7
STBH 12	12:07	0	1.5	19.5	79	0	0	996	-0.91	10	6.5
STBH 13	12:11	0	1.9	19.2	78.9	0	0	996	-0.15	10	5.2
STBH 15	12:15	0	1.9	20.1	78	0	0	996	0.85	1	8.3
STBH 16	12:19	0	1.4	19.8	78.8	0	0	996	-0.78	1	3
STBH 22	12:23	0.2	1.2	19.8	78.8	0	0	996	0.58	1.6	3.1
STMBH 5.4	11:35	0	1.5	20.2	78.3	0	0	996	-0.7	1	16
STMBH 5.5	11:37	0	1.6	19.6	78.8	0	0	996	0.06	1	17.1
STMBH 5.7	11:40	0	1.8	19.8	78.4	0	0	996	-0.12	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 31/03/2016
 Weather: Dry
 Wind conditions: breezy
 Air Temperature: 9 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 29/09/2016
 Operatives AS

Monitoring Point	Time Hrs	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure mb	Trigger lev CH4 %	Trigger lev CO2
STBH 1	10:41	0	1.1	19.2	79.7	0	0	1001	-0.12	1	5.4
STBH 1.1	10:38	0	1.6	20	78.4	0	0	1001	-0.05	1	5.4
STBH 2.0	10:45	0	1.4	19.6	79	0	0	1001	-0.55	1	7
STBH 2.1	10:33	0	1.6	19.9	78.5	0	0	1001	-0.77	1	7.6
STBH 2.2	10:36	0	2.1	19.9	78	0	0	1001	-0.58	1	5.8
STBH 3.0	10:50	0	1.4	19.6	79	0	0	1001	-0.26	1	6.7
STBH 3.1	10:31	0	1.5	19.8	78.7	0	0	1001	0.3	1	7.8
STBH 4.0	10:54	0	2.1	20	77.9	0	0	1001	0.86	10	10.6
STBH 4.1	10:22	0	1.2	19.9	78.9	0	0	1001	1.22	1	7.1
STBH 4.2	10:27	0	1.6	19.8	78.6	0	0	1001	1.03	1	8.6
STBH 5.0	10:57	0	2	19.9	78.1	0	0	1001	0.62	15	19.4
STBH 5.1	11:01	0	1.6	20	78.4	0	0	1001	0.44	1	5.8
STBH 5.2	10:14	0	1.9	19.6	78.5	0	0	1001	0.27	1	9.6
STBH 5.3	10:17	0	1.5	19.2	79.3	0	0	1001	-0.1	1	6
STBH 6.0	11:19	0	1.2	19.8	79	0	0	1001	-0.94	1	5.4
STBH 6.1	10:03	0	2.1	20	77.9	0	0	1001	-0.3	1	5.4
STBH 6.2	10:07	0	1.8	19.6	78.6	0	0	1001	1.19	1	5.4
STBH 6.3	10:11	0	1.7	19.9	78.4	0	0	1001	1.08	1	8.2
STBH 7.0	11:23	0	1.5	20.1	78.4	0	0	1001	0.46	1	6.2
STBH 7.1	09:59	0	1.6	19.6	78.8	0	0	1001	0.58	1	5.5
STBH 9.0	11:34	0	1.8	19.9	78.3	0	0	1001	0.64	1	10.7
STBH 12	11:37	0	1.6	19.8	78.6	0	0	1001	-0.9	10	6.5
STBH 13	11:41	0	1.8	19.9	78.3	0	0	1001	-0.19	10	5.2
STBH 15	11:45	0	2	19.8	78.2	0	0	1001	0.87	1	8.3
STBH 16	11:49	0	1.6	20	78.4	0	0	1001	-0.78	1	3
STBH 22	11:53	0.3	1.1	19.6	79	0	0	1001	0.65	1.6	3.1
STMBH 5.4	11:05	0	1.6	20	78.4	0	0	1001	-0.64	1	16
STMBH 5.5	11:07	0	1.8	19.4	78.8	0	0	1001	0.01	1	17.1
STMBH 5.7	11:10	0	1.9	19.6	78.5	0	0	1001	-0.14	1	7.1

STANDARD			Gas Well Balance / Monitoring							
Date		04/01/2016								
Weather:		dry								
Wind conditions:		breezy								
Air Temperature:		9								
Instrument:		GA 2000								
Serial No:		GA10692								
Calibrated To:		26/03/2016								
Operative		AS								
Monitoring Point	Time	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure	Comments
GV1	09:10	47.5	32.8	0.3	19.4	8	9	996		Open Full
GV2		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No Access
GV3		51.6	32.2	0.4	15.8	6	7	996	-28.5	open full
GV4		52.3	31.8	0.2	15.7	5	10	996	-27.9	Open full
GV5		50.1	32.6	0.2	17.1	4	8	996	-28.5	Open full
GV6		49.9	31.4	0.2	18.5	5	4	996	-28.4	Open full
GV7		47.8	31.8	0.6	19.8	7	9	996	-28.6	Open full
GV8		48.5	30.3	0.2	21.0	8	7	996	-28.0	Open full
GV9		49.9	31.8	0.3	18.0	5	8	996	-27.8	Left Open Full
GV10		50.2	30.5	0.3	19.0	9	5	996	-28.3	Open full
GV11		39.9	27.8	1.9	30.4	4	10	996	0.0	Left Off
GV18		46.9	31.8	0.5	20.8	11	11	996	-28.2	Open Full
GV19		48.2	32.4	0.2	19.2	7	16	996	-28.3	Open full
GV20		49.0	31.7	0.4	18.9	10	22	996	-28.4	Left open full
GV22		47.5	32.3	0.6	19.6	9	8	996	-28.6	Open full
GV24		48.2	31.8	0.2	19.8	5	10	996	-27.1	Open full (pumped)
GV25		47.9	31.4	0.1	20.6	4	4	996	-27.4	Open Full
GV27		47.1	30.9	0.3	21.7	5	10	996	-27.6	Left Open Full
GV31		48.9	33.6	0.5	17.0	3	5	996	-27.9	Open full (pumped)
GV32		47.5	32.0	0.6	19.9	7	8	996	-28.3	Left Open Full
GV33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off (pumped)
GV34		33.5	33.9	2.6	30.0	12	10	996	0.0	Left off bad gas
GV35		51.6	31.8	0.2	16.4	18	8	996	-28.0	Open full
GV51		49.9	29.9	0.5	19.7	8	14	996	-28.3	open full
GV55		48.5	31.2	0.4	19.9	10	6	996	-28.4	Open full
Manifold C		49.0	32.5	0.3	18.2	8	15	996	-27.6	
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off
GV39		37.8	25.5	3.0	33.7	9	20	996	0.0	Left Off
GV40		50.3	31.0	0.1	18.6	2	15	996	-27.2	Open full
GV41		49.6	30.8	0.3	19.3	0	4	996	-28.4	Open full
GV42		48.1	32.0	0.2	19.7	3	9	996	-27.8	Open full
GV43		48.9	33.6	0.2	17.3	10	6	996	-28.2	Left Open Full
Manifold B		46.9	31.8	0.5	20.8	7	8	996	-27.8	
GV44		49.0	33.1	0.3	17.6	14	2	996	-28.3	left open full
GV45		n/a	n/a	n/a	n/a	n/a	5	n/a	n/a	Turned off
GV46		n/a	n/a	n/a	n/a	n/a	7	n/a	n/a	Turned off
GV47		48.9	33.6	0.8	16.7	8	4	996	-8.5	Reg Opened Full
GV48		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV52		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV53		49.9	30.9	0.4	18.8	10	9	996	-26.7	Left open good gas
GV54		50.2	31.0	0.3	18.5	7	12	996	-27.9	Open full
GV56		49.2	29.9	0.5	20.4	5	7	996	-28.0	Open full
GV57		48.5	31.5	0.2	19.8	3	10	996	-28.3	Open full
GV58		48.3	31.9	0.3	19.5	4	8	996	-27.8	left opened full
GV59		47.4	34.5	0.4	17.7	5	6	996	-26.9	Open full
Manifold A		50.1	31.9	0.1	17.9	10	10	996	-28.0	
GV60		49.0	32.4	0.6	18.0	6	8	996	-28.3	Left Open Full
GV61		48.9	33.0	0.5	17.6	8	11	996	-28.7	Open Full
GV62		48.7	32.0	0.2	19.1	10	4	996	-28.5	Open full
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed
GV64		50.0	34.0	0.0	16.0	6	9	996	-28.5	Open full
GV65		47.9	32.5	0.3	19.3	8	14	996	-28.1	Open full
GV66		48.0	31.0	0.5	20.5	10	7	996	-28.3	Open full
New Wells										
GW60		50.0	31.5	0.4	18.1	8	14	996	-27.8	Open full (pumped)
GW61		49.2	31.8	0.6	18.4	10.0	10.0	996	-27.9	LEFT Open full
GW62		49.5	32.5	0.5	17.5	9	12	996	-28.5	Open full
GW63		47.9	32.0	0.2	19.9	6	7	996	-27.0	Open full
GW64		48.0	33.6	0.4	18.0	4	9	996	-28.3	Open full (pumped)
GW65		50.0	32.5	0.4	17.1	8	10	996	-28.0	Open full
GW66		47.5	31.8	0.3	20.4	3	5	996	-28.0	Left open full
Engine	13:55	47.4	32.5	0.5	19.6	n/a	n/a	996		640 kw

STANDARD			Gas Well Balance / Monitoring							
Date		08/02/2016								
Weather:		dry								
Wind conditions:		breezy								
Air Temperature:		8								
Instrument:		GA 2000								
Serial No:		GA10692								
Calibrated To:		26/03/2016								
Operative		AS								
Monitoring	Time	CH4	CO2	O2	Balance	CO	H2S	Baro	Rel Pressure	Comments
Point		%	%	%	%	ppm	ppm	mb		
GV1	09:40	48.1	33.6	0.4	17.9	8	10	1002		Open Full
GV2		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No Access
GV3		50.0	30.8	0.2	19.0	2	8	1002	-27.2	open full
GV4		51.5	33.8	0.5	14.2	8	12	1002	-27.9	Open full
GV5		51.9	30.9	0.4	16.8	9	12	1002	-27.8	Open full
GV6		50.0	32.0	0.3	17.7	6	14	1002	-27.3	Open full
GV7		48.9	31.1	0.6	19.4	6	8	1002	-27.1	Open full
GV8		46.9	31.7	0.6	20.8	7	9	1002	-26.9	Open full
GV9		50.0	30.6	0.2	19.2	8	3	1002	-27.9	Left Open Full
GV10		49.6	31.2	0.4	18.8	6	5	1002	-27.5	Open full
GV11		36.6	29.9	2.3	31.2	3	7	1002	0.0	Left Off
GV18		47.0	32.0	0.6	20.4	5	8	1002	-27.9	Open Full
GV19		47.9	31.5	0.2	20.4	8	3	1002	-27.2	Open full
GV20		48.0	31.0	0.8	20.2	4	17	1002	-27.9	Left open full
GV22		50.0	30.9	0.4	18.7	1	9	1002	-27.4	Open full
GV24		47.5	30.2	0.3	22.0	4	12	1002	-26.8	Open full (pumped)
GV25		47.1	33.3	0.1	19.5	7	9	1002	-28.0	Open Full
GV27		48.6	32.4	0.6	18.4	9	6	1002	-27.6	Left Open Full
GV31		48.0	31.7	0.2	20.1	6	3	1002	-27.1	Open full (pumped)
GV32		46.9	31.5	0.1	21.5	6	8	1002	-27.5	Left Open Full
GV33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off (pumped)
GV34		35.9	32.0	3.0	29.1	11	11	1002	0.0	Left off bad gas
GV35		50.0	30.9	0.2	18.9	9	14	1002	-27.5	Open full
GV51		48.6	30.4	0.3	20.7	21	8	1002	-27.9	open full
GV55		49.3	31.5	0.1	19.1	6	9	1002	-27.1	Open full
Manifold C		48.1	33.2	0.1	18.6	9	7	1002	-27.1	
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off
GV39		39.0	26.4	3.2	31.4	7	8	1002	0.0	Left Off
GV40		51.0	31.5	0.4	17.1	8	9	1002	-27.9	Open full
GV41		48.6	31.4	0.5	19.5	6	6	1002	-27.5	Open full
GV42		47.1	31.4	0.5	21.0	3	7	1002	-26.8	Open full
GV43		47.9	32.6	0.4	19.1	9	9	1002	-27.3	Left Open Full
Manifold B		49.3	31.9	0.6	18.2	6	8	1002	-27.1	
GV44		50.0	32.5	0.2	17.3	11	9	1002	-27.6	left open full
GV45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV46		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV47		48.0	32.9	0.5	18.6	9	4	1002	-27.0	Left Open Full
GV48		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV52		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV53		50.0	31.5	0.2	18.3	12	10	1002	-27.2	Left open good gas
GV54		51.0	31.5	0.2	17.3	9	12	1002	-27.5	Open full
GV56		50.0	33.3	0.1	16.6	6	17	1002	-28.0	Open full
GV57		49.9	32.0	0.3	17.8	4	11	1002	-26.8	Open full
GV58		49.6	31.7	0.3	18.4	8	13	1002	-27.4	left opened full
GV59		48.5	32.8	0.4	18.3	9	9	1002	-27.3	Open full
Manifold A		51.2	30.9	0.6	17.3	6	6	1002	-27.1	
GV60		50.0	31.4	0.2	18.4	11	8	1002	-27.0	Left Open Full
GV61		49.9	32.5	0.3	17.3	8	9	1002	-27.3	Open Full
GV62		49.9	31.6	0.5	18.0	5	7	1002	-27.0	Open full
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed
GV64		49.9	33.0	0.0	17.1	13	10	1002	-26.8	Open full
GV65		48.5	32.6	0.2	18.7	12	9	1002	-28.1	Open full
GV66		46.3	31.6	0.1	22.0	10	8	1002	-27.6	Open full
New Wells										
GW60		51.6	31.9	0.2	16.3	8	15	1002	-27.2	Open full (pumped)
GW61		49.9	31.8	0.1	18.2	7.0	9.0	1002	-27.4	LEFT Open full
GW62		20.0	32.0	0.1	47.9	9	14	1002	-27.9	Open full
GW63		48.6	31.8	0.3	19.3	6	8	1002	-27.3	Open full
GW64		46.9	32.6	0.5	20.0	6	10	1002	-27.8	Open full (pumped)
GW65		48.7	31.5	0.4	19.4	10	9	1002	-27.4	Open full
GW66		47.2	32.0	0.3	20.5	4	7	1002	-27.6	Left open full
Engine	14:35	48.1	33.6	0.4	17.9	n/a	n/a	1002		640 kw

STANDARD			Gas Well Balance / Monitoring							
Date		12/03/2016								
Weather:		dry								
Wind conditions:		breezy								
Air Temperature:		10								
Instrument:		GA 2000								
Serial No:		GA10692								
Calibrated To:		26/03/2016								
Operative		AS								
Monitoring	Time	CH4	CO2	O2	Balance	CO	H2S	Baro	Rel Pressure	Comments
Point		%	%	%	%	ppm	ppm	mb		
GV1	09:10	47.8	34.5	0.6	17.1	10	7	999		Open Full
GV2		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No Access
GV3		50.2	31.2	0.3	18.3	7	7	999	-25.2	open full
GV4		50.8	31.5	0.4	17.3	7	9	999	-25.6	Open full
GV5		51.0	31.5	0.5	17.0	9	11	999	-25.4	Open full
GV6		50.0	32.0	0.3	17.7	6	12	999	-25.9	Open full
GV7		49.5	31.4	0.3	18.8	8	6	999	-25.9	Open full
GV8		47.5	31.0	0.5	21.0	9	10	999	-25.7	Open full
GV9		49.8	31.0	0.2	19.0	6	5	999	-25.9	Left Open Full
GV10		50.0	31.4	0.4	18.2	10	6	999	-25.4	Open full
GV11		38.5	29.8	5.0	26.7	7	9	999	0.0	Left Off
GV18		48.5	32.0	0.3	19.2	8	10	999	-25.6	Open Full
GV19		49.6	31.4	0.5	18.5	9	6	999	-25.6	Open full
GV20		48.5	31.4	0.4	19.7	5	14	999	-25.8	Left open full
GV22		49.8	31.4	0.6	18.2	7	8	999	-26.0	Open full
GV24		48.1	30.4	0.4	21.1	8	5	999	-25.5	Open full (pumped)
GV25		47.5	32.8	0.8	18.9	6	6	999	-25.4	Open Full
GV27		48.9	31.8	0.3	19.0	8	9	999	-25.6	Left Open Full
GV31		48.5	31.7	0.3	19.5	9	12	999	-25.8	Open full (pumped)
GV32		47.8	31.2	0.1	20.9	6	7	999	-25.4	Left Open Full
GV33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off (pumped)
GV34		38.5	32.8	2.6	26.1	9	12	999	0.0	Left off bad gas
GV35		51.2	30.4	0.2	18.2	8	9	999	-25.6	Open full
GV51		49.5	30.5	0.2	19.8	15	6	999	-25.4	open full
GV55		48.5	30.9	0.5	20.1	8	8	999	-25.3	Open full
Manifold C		49.6	32.5	0.5	17.4	10	7	999	-25.6	
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off
GV39		39.8	27.8	3.0	29.4	8	10	999	0.0	Left Off
GV40		50.5	31.2	0.5	17.8	5	7	999	-25.6	Open full
GV41		49.2	31.8	0.3	18.7	9	9	999	-25.4	Open full
GV42		48.6	32.0	0.2	19.2	4	9	999	-25.8	Open full
GV43		48.2	31.9	0.6	19.3	6	12	999	-25.4	Left Open Full
Manifold B		48.6	31.0	0.5	19.9	7	9	999	-25.6	
GV44		49.6	31.6	0.4	18.4	10	10	999	-25.5	left open full
GV45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV46		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV47		48.5	31.5	0.4	19.6	7	5	999	-25.6	Left Open Full
GV48		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off
GV52		n/a	n/a	n/a	n/a	8	n/a	n/a	n/a	Turned off
GV53		49.6	31.0	0.2	19.2	4	11	999	-25.5	Left open good gas
GV54		50.4	30.9	0.3	18.4	2	15	999	-25.6	Open full
GV56		49.6	32.5	0.6	17.3	6	14	999	-25.4	Open full
GV57		49.3	31.4	0.2	19.1	3	10	999	-25.8	Open full
GV58		49.1	31.0	0.3	19.6	10	7	999	-25.6	left opened full
GV59		49.2	31.6	0.5	18.7	5	10	999	-25.7	Open full
Manifold A		50.5	30.2	0.4	18.9	9	9	999	-25.3	
GV60		49.8	31.0	0.5	18.7	12	12	999	-25.5	Left Open Full
GV61		48.9	31.5	0.4	19.2	6	6	999	-25.8	Open Full
GV62		50.2	31.0	0.4	18.4	9	9	999	-25.4	Open full
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed
GV64		50.1	32.5	0.0	17.4	10	12	999	-25.6	Open full
GV65		49.2	31.5	0.3	19.0	13	10	999	-25.4	Open full
GV66		48.2	33.2	0.2	18.4	11	7	999	-25.7	Open full
New Wells										
GW60		50.2	31.0	0.2	18.6	6	14	999	-25.6	Open full (pumped)
GW61		51.2	31.2	0.5	17.1	8.0	12.0	999	-25.5	LEFT Open full
GW62		23.5	32.0	1.9	42.6	10	6	999	-25.4	Reg turned OFF
GW63		47.8	30.6	0.6	21.0	7	10	999	-25.6	Open full
GW64		48.2	31.4	0.3	20.1	8	9	999	-25.7	Open full (pumped)
GW65		49.0	30.2	0.5	20.3	9	12	999	-25.6	Open full
GW66		48.6	31.2	0.4	19.8	5	8	999	-25.2	Left open full
Engine	14:10	47.5	32.8	0.6	19.1	n/a	n/a	999		640 kw

Standard Groundwater Monitoring

Date 19/01/2016

Weather: dry

Wind conditions: calm

Air Temperature: 4 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	9:50	21.32	55.77	34.45	DRY
ST GW 2	10:04	9.1	9.1	0	
ST GW 3	11:16	20.11	53.25	33.14	
ST GW 4R	10:32	35.69	53	17.31	
ST GW 5	9:32	2.87	10	7.13	
ST GW 6	10:52	23.63	45.46	21.83	
ST GW 7R	9:07	42.18	71	28.82	

Samples not taken this day.

Standard Groundwater Monitoring

Date 22/02/2016
 Weather: dry
 Wind conditions: calm
 Air Temperature: 6 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	10:55	22.36	55.77	33.41	DRY
ST GW 2	11:00	9.1	9.1	0	
ST GW 3	12:12	24.91	53.25	28.34	
ST GW 4R	11:30	36.1	53	16.9	
ST GW 5	10:25	3	10	7	
ST GW 6	11:48	24.97	45.46	20.49	
ST GW 7R	10:12	44.08	71	26.92	

Samples not taken this day.

Standard Groundwater Monitoring

Date 21/03/2016

Weather: dry

Wind conditions: calm

Air Temperature: 8 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	10:50	25.26	55.77	30.51	
ST GW 2	11:05	9.1	9.1	0	DRY
ST GW 3	12:05	28.97	53.25	24.28	
ST GW 4R	12:40	37.89	53	15.11	
ST GW 5	11:30	3.98	10	6.02	
ST GW 6	11:50	25.79	45.46	19.67	
ST GW 7R	11:20	52.65	71	18.35	Dry

Samples not taken this day.

Standard

Leachate Monitoring

Date 06/01/2016
Weather: Slight Rain
Wind conditions: breezy
Air Temperature: 8 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:18	29.57	31	1.43	YES	Pneumatic pumps
LC3	10:33	3.13	4.84	1.71	YES	Pneumatic pumps
LC4	10:43	17.45	19	1.55	YES	Pneumatic pumps
LC7	11:03	18.52	20.31	1.79	YES	Pneumatic pumps
LS5	11:18	28.69	32	1.32	YES	Electric Pump - Direct To Tanks
LS6	11:33	30	33	1.20	YES	Electric Pump - Direct To Tanks
S1	11:48	3.15	4.43	1.28	YES	Pneumatic pumps
S2	12:08	1.59	3.35	1.76	YES	Pneumatic pumps
S3	12:28	3.71	5.09	1.38	YES	Pneumatic pumps

Standard Leachate Monitoring

Date 03/02/2016
 Weather: Dry
 Wind conditions: breezy
 Air Temperature: 8 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:44	29.58	31	1.42	YES	Pneumatic pumps
LC3	10:59	3.11	4.84	1.73	YES	Pneumatic pumps
LC4	11:09	17.5	19	1.5	YES	Pneumatic pumps
LC7	11:29	18.47	20.31	1.84	YES	Pneumatic pumps
LS5	11:44	28.62	32	1.35	YES	Electric Pump - Direct To Tanks
LS6	11:59	30.02	33	1.19	YES	Electric Pump - Direct To Tanks
S1	12:14	3.09	4.43	1.34	YES	Pneumatic pumps
S2	12:34	1.64	3.35	1.71	YES	Pneumatic pumps
S3	12:54	3.68	5.09	1.41	YES	Pneumatic pumps

Standard Leachate Monitoring

Date 02/03/2016
 Weather: Dry
 Wind conditions: breezy
 Air Temperature: 9 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:31	29.61	31	1.39	YES	Pneumatic pumps
LC3	10:46	3.12	4.84	1.72	YES	Pneumatic pumps
LC4	10:56	17.48	19	1.52	YES	Pneumatic pumps
LC7	11:16	18.45	20.31	1.86	YES	Pneumatic pumps
LS5	11:31	28.67	32	1.33	YES	Electric Pump - Direct To Tanks
LS6	11:46	29.98	33	1.20	YES	Electric Pump - Direct To Tanks
S1	12:01	3.05	4.43	1.38	YES	Pneumatic pumps
S2	12:21	1.59	3.35	1.76	YES	Pneumatic pumps
S3	12:41	3.71	5.09	1.38	YES	Pneumatic pumps



Flintshire County Council
Waste Management Services
Brookhill Landfill Site
Pinfold Industrial Estate
Buckley
Flintshire
CH7 3PL

Attention: Paul Murphy

CERTIFICATE OF ANALYSIS

Date: 07 April 2016
Customer: H_FLINTCCO_BUC
Sample Delivery Group (SDG): 160330-88
Your Reference:
Location: Standard Quarterly
Report No: 356085

We received 7 samples on Wednesday March 30, 2016 and 7 of these samples were scheduled for analysis which was completed on Thursday April 07, 2016. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	160330-88	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356085
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13173613	LC2			30/03/2016
13173614	LC3			30/03/2016
13173615	LC4			30/03/2016
13173616	LC7			30/03/2016
13173617	S1			30/03/2016
13173618	S2			30/03/2016
13173619	S3			30/03/2016

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



CERTIFICATE OF ANALYSIS

SDG: 160330-88
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356085
Superseded Report:

LIQUID Results Legend X Test N No Determination Possible	Lab Sample No(s)		13173613	13173614	13173615	13173616	13173617	13173618	13173619
	Customer Sample Reference		LC2	LC3	LC4	LC7	S1	S2	S3
	AGS Reference								
	Depth (m)								
	Container		250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)	250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24) 250ml BOD (ALE21) H2SO4 (ALE24)
Alkalinity as CaCO3	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 7		X	X	X	X	X	X
Anions by ion Chromatography	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
BOD True Total	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
Chlorine	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
COD Unfiltered	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 7	X	X	X	X	X	X	X

Order Number:
Report Number: 356085
Superseded Report:

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Order Number:
Report Number: 356085
Superseded Report:

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SDG: 160330-88
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356085
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM037	MEWAM Chlorine demand HMSO 1988	Determination of Free, Combined and Total Chlorine in Waters and Wastewaters using Colourimetry		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
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		
TM187	Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888."	Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442		
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG:	160330-88	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356085
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	13173613	13173614	13173615	13173616	13173617	13173618	13173619
Customer Sample Ref.	LC2	LC3	LC4	LC7	S1	S2	S3
AGS Ref.							
Depth							
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Alkalinity as CaCO3	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016
Ammoniacal Nitrogen	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016
Anions by ion Chromatography	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016
BOD True Total	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016
Chlorine	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016
COD Unfiltered	31-Mar-2016	31-Mar-2016	31-Mar-2016	31-Mar-2016	31-Mar-2016	31-Mar-2016	31-Mar-2016
Conductivity (at 20 deg.C)	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	01-Apr-2016
Metals by iCap-OES Dissolved (W)	07-Apr-2016	05-Apr-2016	07-Apr-2016	06-Apr-2016	06-Apr-2016	07-Apr-2016	07-Apr-2016
pH Value	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016	04-Apr-2016



SDG: 160330-88
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356085
Superseded Report:

Appendix

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

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

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

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

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

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

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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

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

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

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

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

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

General

20. 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.

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

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

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

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

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

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

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

Visual Estimation Of Fibre Content

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

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

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



Flintshire County Council
Waste Management Services
Brookhill Landfill Site
Pinfold Industrial Estate
Buckley
Flintshire
CH7 3PL

Attention: Paul Murphy

CERTIFICATE OF ANALYSIS

Date: 08 April 2016
Customer: H_FLINTCCO_BUC
Sample Delivery Group (SDG): 160331-133
Your Reference:
Location: Standard Quarterly
Report No: 356316

We received 3 samples on Thursday March 31, 2016 and 3 of these samples were scheduled for analysis which was completed on Friday April 08, 2016. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	160331-133	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356316
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13181021	LHT-31-3-16			30/03/2016
13181019	SSR5-31-3-16			30/03/2016
13181020	SSR6-31-3-16			30/03/2016

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



SDG: 160331-133
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356316
Superseded Report:

LIQUID Results Legend X Test N No Determination Possible	Lab Sample No(s)		13181021	13181019	13181020
	Customer Sample Reference		LHT-31-3-16	SSR5-31-3-16	SSR6-31-3-16
	AGS Reference				
	Depth (m)				
	Container		11plastic (ALE221) H2SO4 (ALE244) 250ml BOD (ALE21)	11plastic (ALE221) H2SO4 (ALE244) 250ml BOD (ALE21)	11plastic (ALE221) H2SO4 (ALE244) 250ml BOD (ALE21)
Alkalinity as CaCO3	All	NDPs: 0 Tests: 3	X	X	X
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3		X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X	X	X
BOD True Total	All	NDPs: 0 Tests: 3	X	X	X
Chlorine	All	NDPs: 0 Tests: 3	X	X	X
COD Unfiltered	All	NDPs: 0 Tests: 3	X	X	X
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 3	X	X	X
Kjeldahl Nitrogen on liquids	All	NDPs: 0 Tests: 3	X	X	X
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 3	X	X	X
pH Value	All	NDPs: 0 Tests: 3	X	X	X
Total Nitrogen	All	NDPs: 0 Tests: 3	X	X	X

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

SDG: 160331-133
Job: H_FLINTCCO_BUC-8
Client Reference:

Order Number:
Report Number: 356316
Superseded Report:

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SDG: 160331-133
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356316
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM037	MEWAM Chlorine demand HMSO 1988	Determination of Free, Combined and Total Chlorine in Waters and Wastewaters using Colourimetry		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM212	SO/TR 11905-2: 1997. Water quality – Determination of nitrogen –Part 2:Determination of bound nitrogen, after combustion and oxidation to nitrogen dioxide, chemiluminescence detection.	Determination of Total Nitrogen by High Temperature Catalytic Oxidation followed by Chemiluminescence Detection		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
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		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG:	160331-133	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356316
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	13181021	13181019	13181020
Customer Sample Ref.	LHT-31-3-16	SSR5-31-3-16	SSR6-31-3-16
AGS Ref.			
Depth			
Type	LIQUID	LIQUID	LIQUID

Alkalinity as CaCO3	07-Apr-2016	07-Apr-2016	07-Apr-2016
Ammoniacal Nitrogen	05-Apr-2016	05-Apr-2016	05-Apr-2016
Anions by Kone (w)	07-Apr-2016	07-Apr-2016	07-Apr-2016
BOD True Total	07-Apr-2016	07-Apr-2016	07-Apr-2016
Chlorine	02-Apr-2016	02-Apr-2016	02-Apr-2016
COD Unfiltered	02-Apr-2016	02-Apr-2016	02-Apr-2016
Conductivity (at 20 deg.C)	05-Apr-2016	05-Apr-2016	05-Apr-2016
Kjeldahl Nitrogen on liquids	08-Apr-2016	08-Apr-2016	08-Apr-2016
Metals by iCap-OES Dissolved (W)	07-Apr-2016	05-Apr-2016	07-Apr-2016
pH Value	05-Apr-2016	05-Apr-2016	05-Apr-2016
Total Nitrogen	08-Apr-2016	08-Apr-2016	08-Apr-2016



SDG: 160331-133
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356316
Superseded Report:

Appendix

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

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

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

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

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

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

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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

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

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

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

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

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

General

20. 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.

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

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

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

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

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

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

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

Visual Estimation Of Fibre Content

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

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

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



Flintshire County Council
Waste Management Services
Brookhill Landfill Site
Pinfold Industrial Estate
Buckley
Flintshire
CH7 3PL

Attention: Paul Murphy

CERTIFICATE OF ANALYSIS

Date: 13 April 2016
Customer: H_FLINTCCO_BUC
Sample Delivery Group (SDG): 160331-131
Your Reference:
Location: Standard Quarterly
Report No: 356754

We received 5 samples on Thursday March 31, 2016 and 5 of these samples were scheduled for analysis which was completed on Wednesday April 13, 2016. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	160331-131	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356754
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13180845	GW1-31-3-16			31/03/2016
13180846	GW3-31-3-16			31/03/2016
13180847	GW4-31-3-16			31/03/2016
13180848	GW5-31-3-16			31/03/2016
13180849	GW6-31-3-16			31/03/2016

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

SDG:	160331-131	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356754
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Page 3 of 7



CERTIFICATE OF ANALYSIS

SDG: 160331-131
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356754
Superseded Report:

Results Legend		Customer Sample R	GW1-31-3-16	GW3-31-3-16	GW4-31-3-16	GW5-31-3-16	GW6-31-3-16	
#	ISO17025 accredited.							
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Water(GW/SW) 31/03/2016 31/03/2016 160331-131 13180845	Water(GW/SW) 31/03/2016 31/03/2016 160331-131 13180846	Water(GW/SW) 31/03/2016 31/03/2016 160331-131 13180847	Water(GW/SW) 31/03/2016 31/03/2016 160331-131 13180848	Water(GW/SW) 31/03/2016 31/03/2016 160331-131 13180849	
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% 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							
1-5&\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Chlorine, Total (Residual)	<0.01 mg/l	TM037	5	0.04	0.04	27	0.07	
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	101	256	247	378	23.2	
BOD, unfiltered	<1 mg/l	TM045	2.35	<1	<1	<2.5	<1	
Organic Carbon, Total	<3 mg/l	TM090	<3	3.26	8.48	24.7	32.4	
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	<0.3	1.25	<0.3	6.72	52.6	
COD, unfiltered	<7 mg/l	TM107	422	23.9	29.5	143	136	
Arsenic (diss.filt)	<0.00012 mg/l	TM152	<0.00012	<0.00012	0.000399	0.0133	0.000787	
Cadmium (diss.filt)	<0.0001 mg/l	TM152	<0.0001	<0.0001	0.000141	<0.0001	0.00207	
Copper (diss.filt)	<0.00085 mg/l	TM152	<0.00085	<0.00085	0.00296	<0.00085	0.00372	
Lead (diss.filt)	<0.00002 mg/l	TM152	<0.00002	<0.00002	<0.00002	0.000106	0.000543	
Nickel (diss.filt)	<0.00015 mg/l	TM152	0.00112	0.00158	0.00575	0.00295	0.0823	
Zinc (diss.filt)	<0.00041 mg/l	TM152	0.0168	0.00703	0.0182	0.035	0.108	
Mercury (diss.filt)	<0.00001 mg/l	TM183	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Nitrite as NO2	<0.05 mg/l	TM184	<0.25	<0.05	<0.05	0.147	0.335	
Sulphate	<2 mg/l	TM184	199	193	238	33.5	320	
Chloride	<2 mg/l	TM184	48.1	51.9	24.8	18.2	159	
Nitrate as NO3	<0.3 mg/l	TM184	3.33	1.02	4.52	<0.3	295	
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	0.772	0.235	1.03	<0.1	66.8	
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05	<0.05	<0.05	<0.05	
Calcium (diss.filt)	<0.012 mg/l	TM228	50	76.4	118	83.2	55.7	
Sodium (diss.filt)	<0.076 mg/l	TM228	27	55.2	22.2	24.6	150	
Magnesium (diss.filt)	<0.036 mg/l	TM228	24.3	32.4	33.2	11	28.4	
Potassium (diss.filt)	<1 mg/l	TM228	9.76	10.9	11	8.67	39.2	
Iron (diss.filt)	<0.019 mg/l	TM228	<0.019	<0.019	<0.019	<0.019	0.028	
pH	<1 pH Units	TM256	6.19	6.86	6.84	6.77	5.62	
Phenol	<0.002 mg/l	TM259	<0.002	<0.002	<0.002	<0.002	<0.002	
Cresols	<0.006 mg/l	TM259	<0.006	<0.006	<0.006	<0.006	<0.006	
Xylenols	<0.008 mg/l	TM259	<0.008	<0.008	<0.008	<0.008	<0.008	
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016	<0.016	<0.016	<0.016	<0.016	



SDG: 160331-131
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356754
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM037	MEWAM Chlorine demand HMSO 1988	Determination of Free, Combined and Total Chlorine in Waters and Wastewaters using Colourimetry		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 160331-131
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356754
Superseded Report:

Test Completion Dates

Lab Sample No(s)	13180845	13180846	13180847	13180848	13180849
Customer Sample Ref.	GW1-31-3-16	GW3-31-3-16	GW4-31-3-16	GW5-31-3-16	GW6-31-3-16
AGS Ref.					
Depth					
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Alkalinity as CaCO ₃	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016
Ammoniacal Nitrogen	05-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016
Anions by Kone (w)	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016
BOD True Total	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016
Chlorine	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016
COD Unfiltered	02-Apr-2016	02-Apr-2016	03-Apr-2016	03-Apr-2016	03-Apr-2016
Cyanide Comp/Free/Total/Thiocyanate	06-Apr-2016	06-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016
Dissolved Metals by ICP-MS	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016
Mercury Dissolved	06-Apr-2016	06-Apr-2016	06-Apr-2016	06-Apr-2016	07-Apr-2016
Metals by iCap-OES Dissolved (W)	07-Apr-2016	07-Apr-2016	05-Apr-2016	13-Apr-2016	05-Apr-2016
Nitrite by Kone (w)	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016	02-Apr-2016
pH Value	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016	05-Apr-2016
Phenols by HPLC (W)	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016	07-Apr-2016
Total Organic and Inorganic Carbon	05-Apr-2016	05-Apr-2016	05-Apr-2016	07-Apr-2016	07-Apr-2016



SDG: 160331-131
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356754
Superseded Report:

Appendix

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

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

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

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

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

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

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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

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

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

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

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

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

General

20. 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.

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

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

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

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

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

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

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

Visual Estimation Of Fibre Content

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

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

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



Flintshire County Council
Waste Management Services
Brookhill Landfill Site
Pinfold Industrial Estate
Buckley
Flintshire
CH7 3PL

Attention: Paul Murphy

CERTIFICATE OF ANALYSIS

Date: 13 April 2016
Customer: H_FLINTCCO_BUC
Sample Delivery Group (SDG): 160404-36
Your Reference:
Location: Standard Quarterly
Report No: 356905

We received 3 samples on Monday April 04, 2016 and 3 of these samples were scheduled for analysis which was completed on Wednesday April 13, 2016. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	160404-36	Location:	Standard Quarterly	Order Number:	
Job:	H_FLINTCCO_BUC-8	Customer:	Flintshire County Council	Report Number:	356905
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13198863	SW2			04/04/2016
13198864	SW4			04/04/2016
13198865	SW5			04/04/2016

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



SDG: 160404-36
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 356905
Superseded Report:

LIQUID Results Legend X Test N No Determination Possible	Lab Sample No(s)		1319863	1319864	1319865
	Customer Sample Reference		SW2	SW4	SW5
	AGS Reference				
	Depth (m)				
	Container		11plastic (ALE221)	H2SO4 (ALE244)	H2SO4 (ALE244)
Alkalinity as CaCO3	All	NDPs: 0 Tests: 3	X	X	X
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3		X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X	X	X
BOD True Total	All	NDPs: 0 Tests: 3	X	X	X
Chlorine	All	NDPs: 0 Tests: 3	X	X	X
COD Unfiltered	All	NDPs: 0 Tests: 3	X	X	X
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 3	X	X	X
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 3	X	X	X
Metals by iCap-OES Unfiltered (W)	All	NDPs: 0 Tests: 3	X	X	X
pH Value	All	NDPs: 0 Tests: 3	X	X	X

Order Number:
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SDG: 160404-36
Job: H_FLINTCCO_BUC-8
Client Reference:

Location: Standard Quarterly
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
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Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM037	MEWAM Chlorine demand HMSO 1988	Determination of Free, Combined and Total Chlorine in Waters and Wastewaters using Colourimetry		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
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		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



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Test Completion Dates

Lab Sample No(s)	13198863	13198864	13198865
Customer Sample Ref.	SW2	SW4	SW5
AGS Ref.			
Depth			
Type	LIQUID	LIQUID	LIQUID

Alkalinity as CaCO3	11-Apr-2016	11-Apr-2016	11-Apr-2016
Ammoniacal Nitrogen	06-Apr-2016	05-Apr-2016	06-Apr-2016
Anions by Kone (w)	07-Apr-2016	07-Apr-2016	07-Apr-2016
BOD True Total	13-Apr-2016	13-Apr-2016	10-Apr-2016
Chlorine	06-Apr-2016	06-Apr-2016	06-Apr-2016
COD Unfiltered	05-Apr-2016	05-Apr-2016	05-Apr-2016
Conductivity (at 20 deg.C)	05-Apr-2016	05-Apr-2016	05-Apr-2016
Metals by iCap-OES Dissolved (W)	06-Apr-2016	06-Apr-2016	06-Apr-2016
Metals by iCap-OES Unfiltered (W)	06-Apr-2016	06-Apr-2016	06-Apr-2016
Nitrite by Kone (w)	06-Apr-2016	06-Apr-2016	06-Apr-2016
pH Value	06-Apr-2016	06-Apr-2016	06-Apr-2016



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Appendix

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

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

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

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

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

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

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

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

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

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

11. Results relate only to the items tested.

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

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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

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

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

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

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

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

General

20. 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.

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

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

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

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

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

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

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

Visual Estimation Of Fibre Content

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

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

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



Registered Office:
InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG
Tel: 01248 672666
Fax: 01248 672601
Email: contact@caulmert.com
Web: www.caulmert.com