

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Quarterly Monitoring Review

July – September 2015

Prepared by:

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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 July and the 30th of September 2015.
- 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 2014, document reference 1902.14.FCC.SDB.JDM.A0, submitted to Natural Resources Wales by Caulmert Ltd, on behalf of Flintshire County Council Waste Management Services in January 2015.

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 0.5 %. 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 0.7 %.

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 the quarterly suite of parameters listed below:

Carbon, Inorganics, Filtered (Dissolved) Metals, Mineral Oil/Oil & Greases and TPH CWG.

3.2 Groundwater Levels

- 3.2.1 Groundwater level data was recorded on a monthly basis in meters 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 remained relatively stable over the review period.
- 3.2.3 Borehole GW2 is blocked and so no samples could be retrieved during this 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 GW6 continues to exhibit elevated concentrations of several parameters, following the leachate outbreak which was detected at the north west edge of the site, close to gas monitoring borehole 2.2 in May 2013. A summary of the water quality at this location has been compiled as part of this report to better identify any trends since the leachate outbreak. A summary table and time series graphs of concentrations at GW6 between April 2013 and October 2015 are included in Table 2.3 in Appendix 2.
- 3.3.3 As displayed in the graphs, ammoniacal nitrogen, chloride and COD concentrations in GW6 have shown a generally decreasing trend since 2013.
- 3.3.4 Ammoniacal nitrogen concentrations were comparatively low in GW1 (<0.2 mg/l), GW3 (0.33 mg/l) GW4 (<0.2 mg/l), GW5 (5.55 mg/l) and GW7 (1.09 mg/l). COD was highest in GW5 and GW6 at 368 mg/l and 137 mg/l respectively. In GW1, GW3, GW4 and GW7 COD concentration was 128 mg/l, 30.7 mg/l, 67.5 mg/l and 11.4 mg/l respectively.
- 3.3.5 No toluene or xylenes 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, samples from LC chambers were analysed for the quarterly suite of determinants listed below:

Carbon, Inorganics and Filtered (Dissolved) Metals,

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

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 1.17 m above well base in LS6 to 1.80 m above well base in S2.

Table 1: Leachate Head Levels in metres above well base

Location	Leachate head (m above cell base)		
	Min	Max	Average
LC2.1	1.38	1.40	1.39
LC3	1.64	1.68	1.66
LC4	1.48	1.52	1.50
LC7	1.75	1.84	1.79
LS5	1.33	1.36	1.34
LS6	1.17	1.18	1.17
S1	1.21	1.27	1.24
S2	1.77	1.82	1.80
S3	1.45	1.49	1.47

4.3 Leachate Quality

- 4.3.1 Quarterly leachate quality sampling was undertaken at four monitoring locations (LC2, LC3, LC4 and LC7). 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 761 mg/l in LC4 and a maximum concentration of 1460 mg/l in LC2.

5.0 SURFACE WATER

5.1 Introduction

5.1.1 Surface water samples are collected at two locations; SW4 and SW5 which are shown on the Environmental Monitoring Locations drawing enclosed.

5.1.2 Surface water samples were collected on the 1st October and analyzed for the following Quarterly parameters:

Ammoniacal nitrogen, chloride, chemical oxygen demand (COD), electrical conductivity, pH, inorganics, filtered (dissolved) metals, phenols, combined pesticides and herbicides.

5.1.4 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 SW5 while the concentration in SW4 had decreased from 19 mg/l recorded in the previous review, to 0.28 mg/l. Chemical oxygen demand concentration was 68.7 mg/l in SW4 and 31.2 mg/l in SW5. pH was 7.5 in SW4 and 8.0 in SW5.

5.2.2 No phenols, pesticides or herbicides were detected at any of the surface water locations during this review period.

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 0.5 %.

6.2 Groundwater

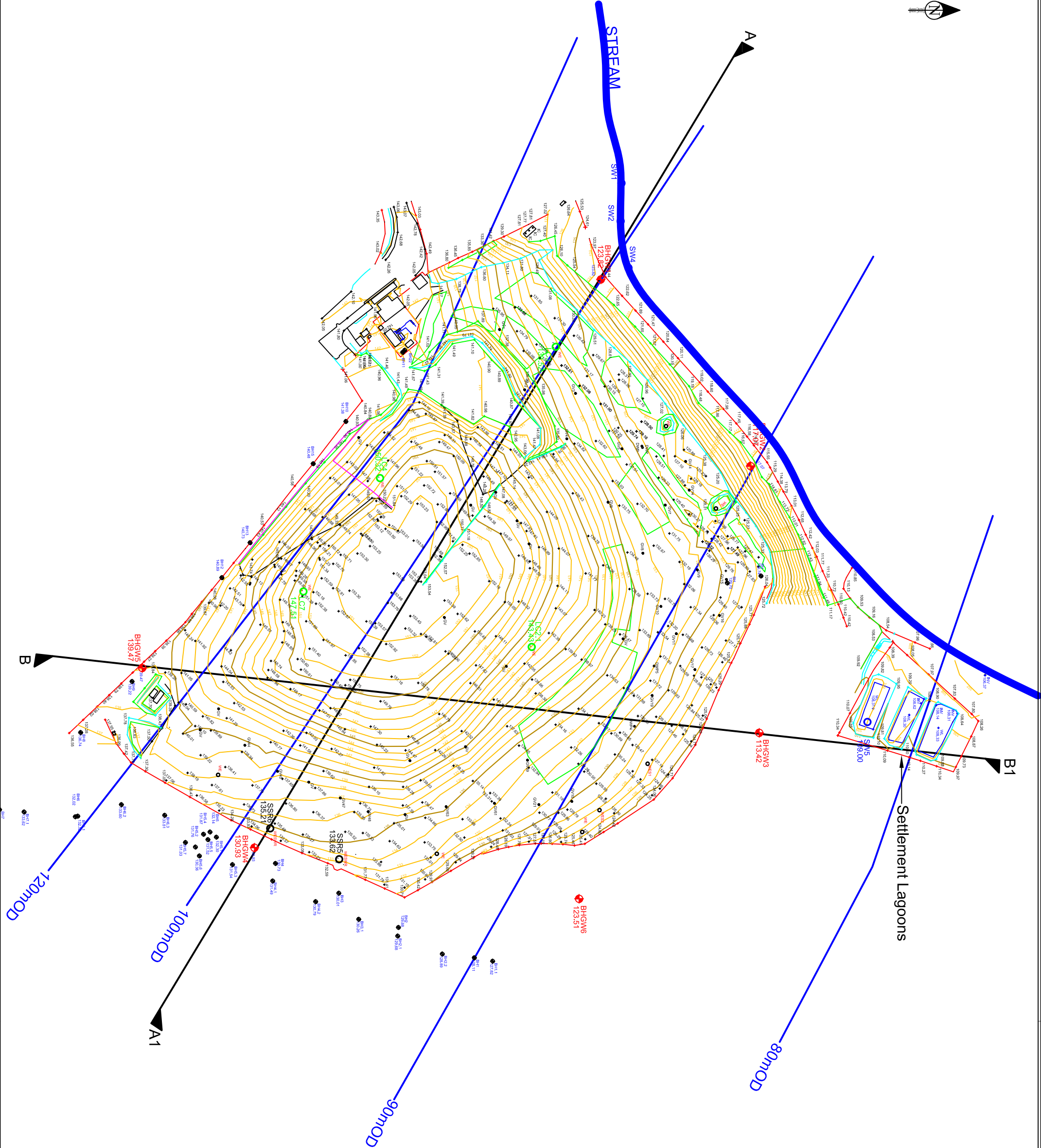
- 6.2.1 Groundwater quality was generally good in all locations, with the exception of GW6.
- 6.2.2 GW6 continued to display the highest concentrations of most parameters potentially due to the residual impact of the leachate outbreak close to this borehole which was detected in May 2013. The concentrations of key leachate indicator parameters have decreased considerably since the outbreak.

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 sampled at SW4 and SW5 during this review period. Ammoniacal nitrogen and COD concentrations were relatively low in these locations and showed a decrease since the previous review period. No phenols, pesticides or herbicides were detected at any of the surface water locations during this review period



Notes

-  Groundwater Borehole
-  Side Slope Riser
-  Leachate Chamber
-  Surface Water Monitoring Point
-  Cross Section
-  Ground Water Contours

Notes

Monitoring Point Height (mOD)
Given Below Identity Number

Ground Water Contour Based on
2005 Levels



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



Site
**Standard Landfill
Buckley**

Title
**Environmental Monitoring
Locations**

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

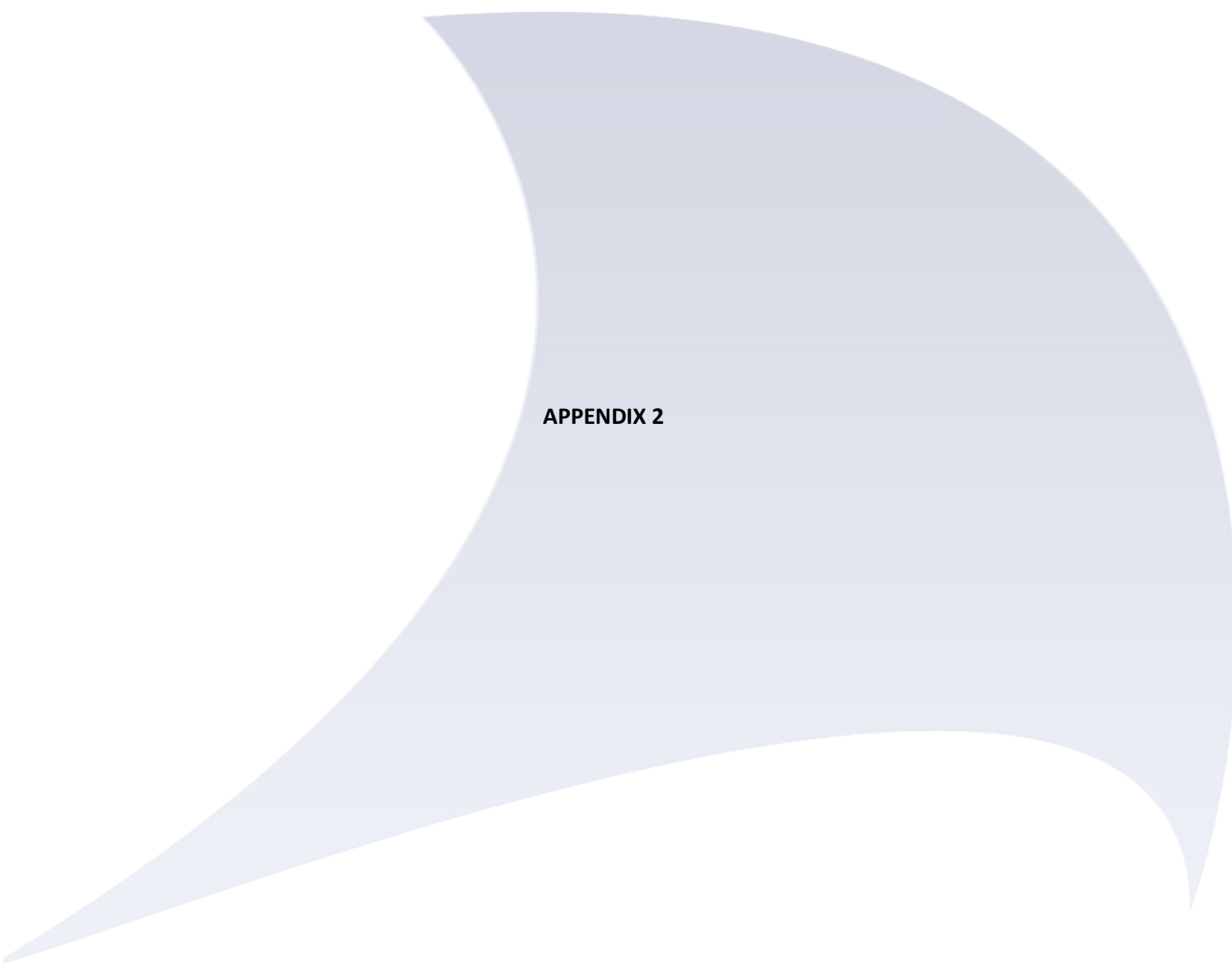
APPENDIX 1

APPENDIX 1

Table 1 – Summary of Landfill Gas Concentrations

Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)	Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)
BH 1	Min	0.0	1.0	2.0	5.37	BH 4.1	Min	0.0	1.0	1.4	7.12
	Max	0.0		3.2			Max	0.0		2.6	
	Ave	0.0		2.5			Ave	0.0		1.9	
	Count	12		12			Count	12		12	
BH 1.1	Min	0.0	1.0	1.5	5.35	BH 4.2	Min	0.0	1.0	1.4	8.59
	Max	0.0		3.2			Max	0.0		2.3	
	Ave	0.0		2.3			Ave	0.0		1.9	
	Count	12		12			Count	12		12	
BH 2.0	Min	0.0	1.0	1.8	7.05	BH 5.0	Min	0.0	1.0	1.5	19.42
	Max	0.0		3.2			Max	0.0		3.0	
	Ave	0.0		2.5			Ave	0.0		2.2	
	Count	12		12			Count	12		12	
BH 2.1	Min	0.0	1.0	1.5	7.57	BH 5.1	Min	0.0	1.0	1.4	5.8
	Max	0.0		2.2			Max	0.0		2.4	
	Ave	0.0		1.8			Ave	0.0		1.9	
	Count	12		12			Count	12		12	
BH 2.2	Min	0.0	1.0	1.2	5.82	BH 5.2	Min	0.0	1.0	1.2	9.64
	Max	0.0		2.0			Max	0.0		2.3	
	Ave	0.0		1.6			Ave	0.0		1.7	
	Count	12		12			Count	12		12	
BH 3.0	Min	0.0	1.0	1.4	6.7	BH 5.3	Min	0.0	1.0	1.5	6
	Max	0.0		2.4			Max	0.0		2.9	
	Ave	0.0		1.9			Ave	0.0		2.0	
	Count	12		12			Count	12		12	
BH 3.1	Min	0.0	1.0	1.4	7.76	BH 5.4	Min	0.0	1.0	1.2	16.03
	Max	0.0		2.8			Max	0.0		2.5	
	Ave	0.0		2.1			Ave	0.0		1.8	
	Count	12		12			Count	12		12	
BH 4.0	Min	0.0	1.0	1.5	10.65	BH 5.5	Min	0.0	1.0	1.4	17.06
	Max	0.0		2.6			Max	0.0		2.2	
	Ave	0.0		2.0			Ave	0.0		1.8	
	Count	12		12			Count	12		12	

Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)	Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)
BH 5.7	Min	0.0	1.0	1.5	7.07	BH 12	Min	0.0	1.0	1.2	6.48
	Max	0.0		2.6			Max	0.0		2.3	
	Ave	0.0		1.9			Ave	0.0		1.7	
	Count	12		12			Count	12		12	
BH 6.0	Min	0.0	1.0	2.0	8.92	BH 13	Min	0.0	1.0	1.8	5.2
	Max	0.0		3.5			Max	0.0		2.6	
	Ave	0.0		2.8			Ave	0.0		2.2	
	Count	12		12			Count	12		12	
BH 6.1	Min	0.0	1.0	1.5	3.72	BH 15	Min	0.0	1.0	1.4	8.3
	Max	0.0		2.6			Max	0.0		2.4	
	Ave	0.0		2.0			Ave	0.0		1.8	
	Count	12		12			Count	12		12	
BH 6.2	Min	0.0	1.0	1.4	6.12	BH 16	Min	0.0	1.0	1.1	3
	Max	0.0		2.5			Max	0.0		2.8	
	Ave	0.0		1.9			Ave	0.0		1.8	
	Count	12		12			Count	12		12	
BH 6.3	Min	0.0	1.0	1.0	8.24	BH 22	Min	0.3	1.0	1.1	3.1
	Max	0.0		2.6			Max	0.7		2.5	
	Ave	0.0		1.7			Ave	0.5		1.8	
	Count	12		12			Count	12		12	
BH 7.0	Min	0.0	1.0	1.9	6.2						
	Max	0.0		3.2							
	Ave	0.0		2.3							
	Count	12		12							
BH 7.1	Min	0.0	1.0	1.5	5.49						
	Max	0.0		3.0							
	Ave	0.0		2.0							
	Count	12		12							
BH 9.0	Min	0.0	1.0	1.4	10.72						
	Max	0.0		2.3							
	Ave	0.0		1.8							
	Count	12		12							



APPENDIX 2

APPENDIX 2

Table 2.1 - Groundwater Levels

Location	Date	Dip Level (mBGL)	GW Level (mAOD)
GW 1	22/07/2015	27.21	96.87
	18/08/2015	27.89	96.19
	22/09/2015	24.28	99.80
GW 2	22/07/2015	9.10	108.11
	18/08/2015	9.10	108.11
	22/09/2015	9.10	108.11
GW 3	22/07/2015	34.25	79.17
	18/08/2015	35.07	78.35
	22/09/2015	31.28	82.14
GW 4R	22/07/2015	45.68	85.32
	18/08/2015	46.28	84.72
	22/09/2015	40.59	90.41
GW 5	22/07/2015	3.89	130.97
	18/08/2015	3.92	130.94
	22/09/2015	2.91	131.95
GW 6	22/07/2015	29.36	94.21
	18/08/2015	31.28	92.29
	22/09/2015	27.70	95.87
GW 7R	22/07/2015	43.71	98.29
	18/08/2015	45.66	96.34
	22/09/2015	44.52	97.48

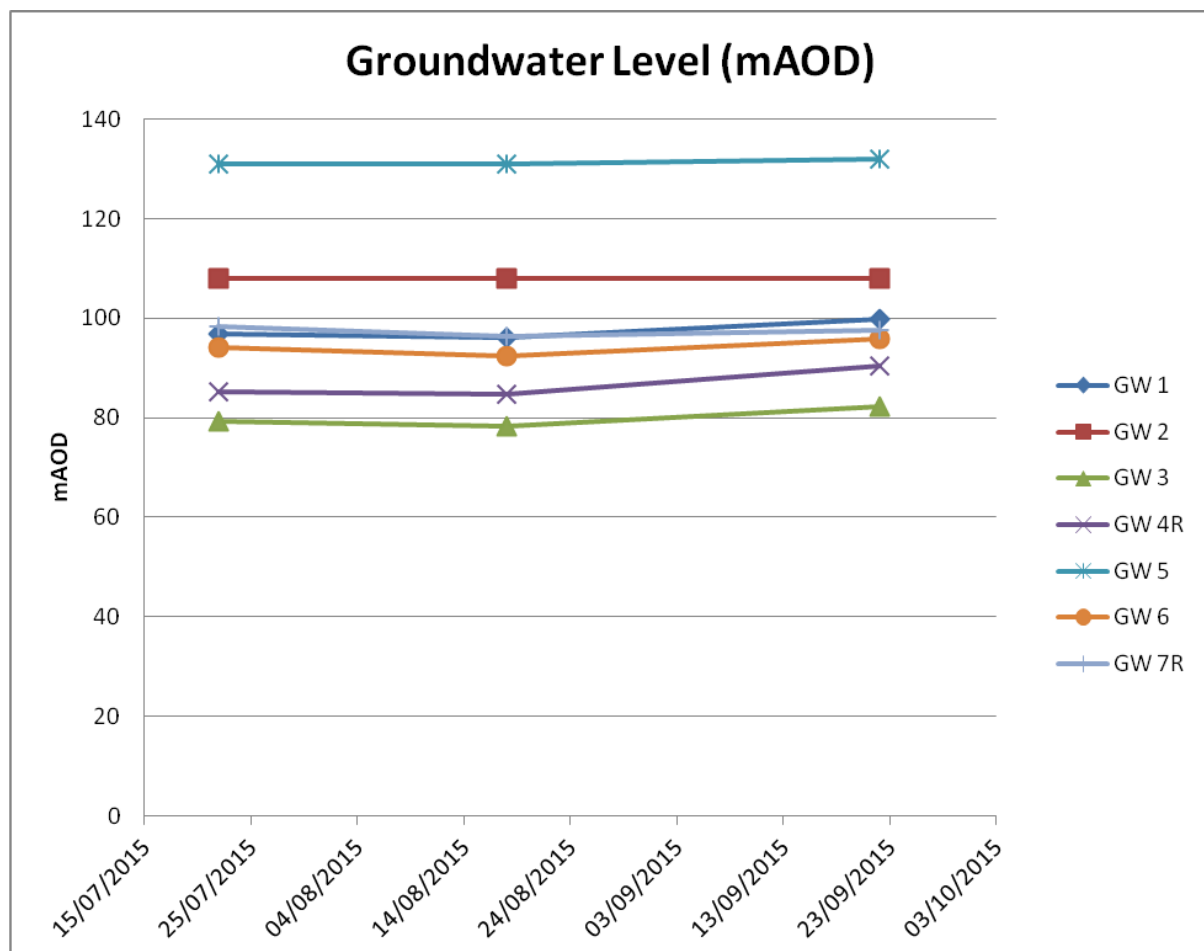


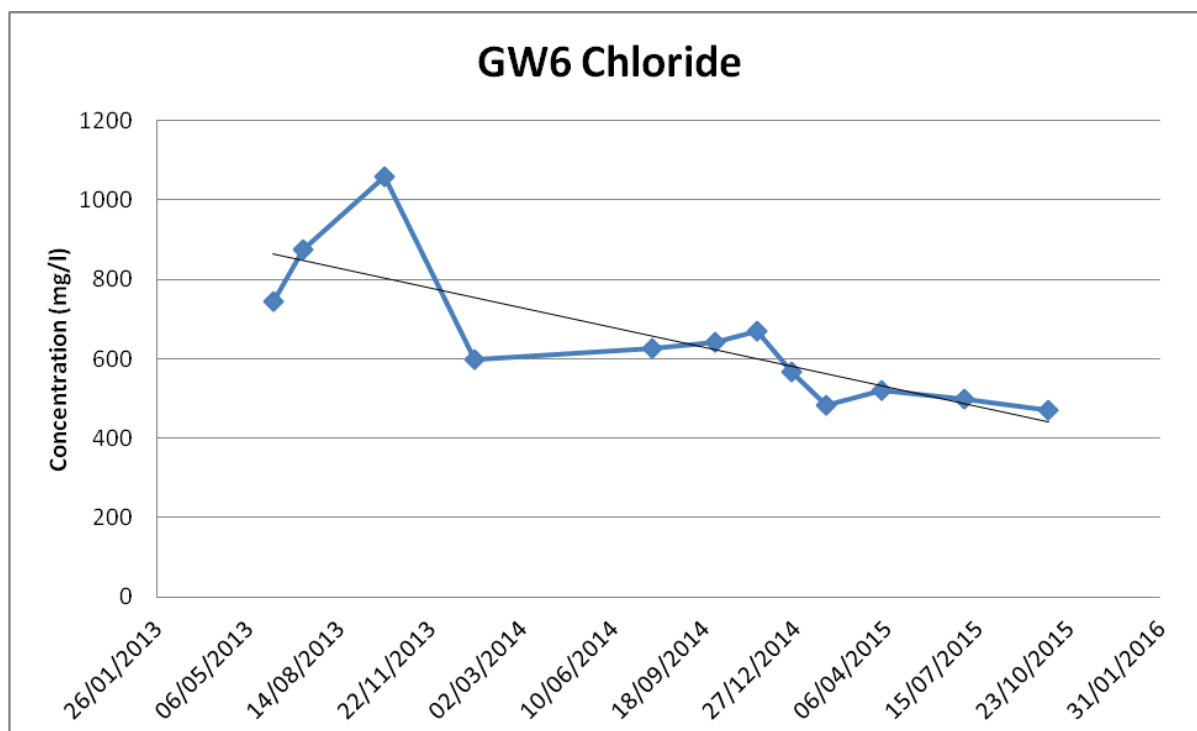
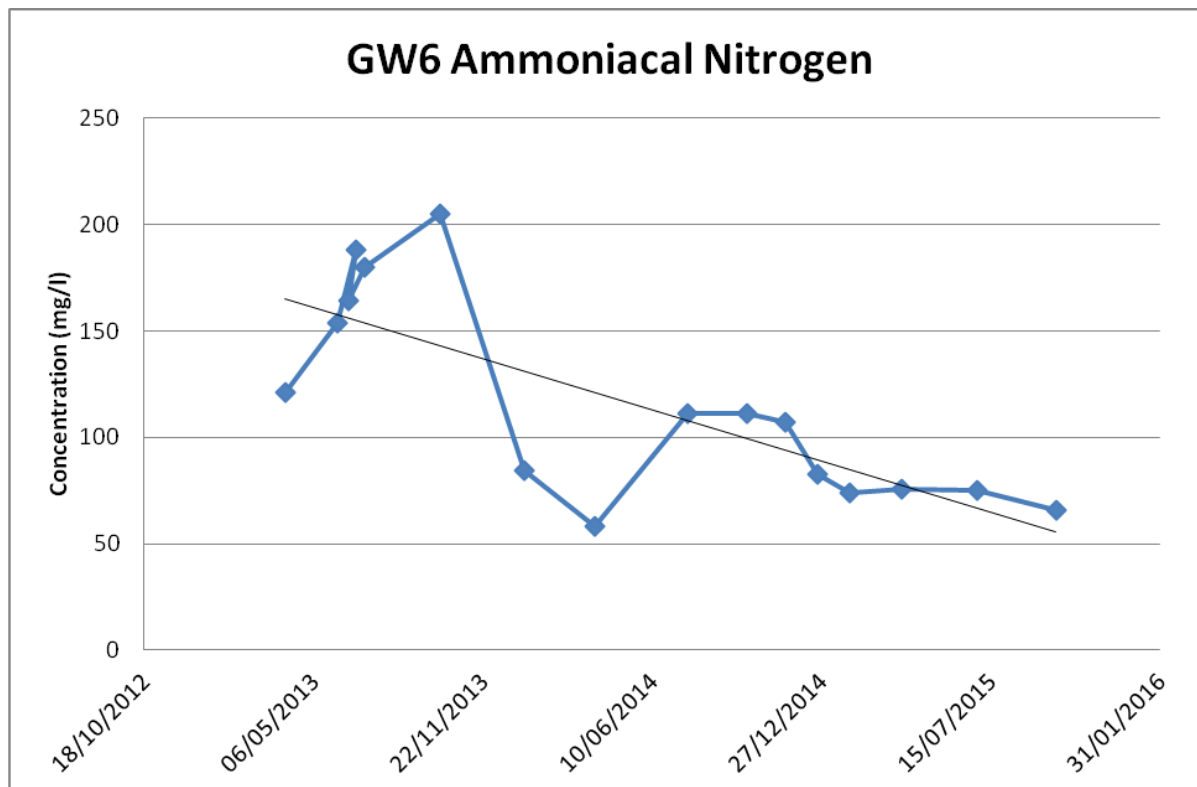
Table 2.2 - Groundwater Quality Data Summary

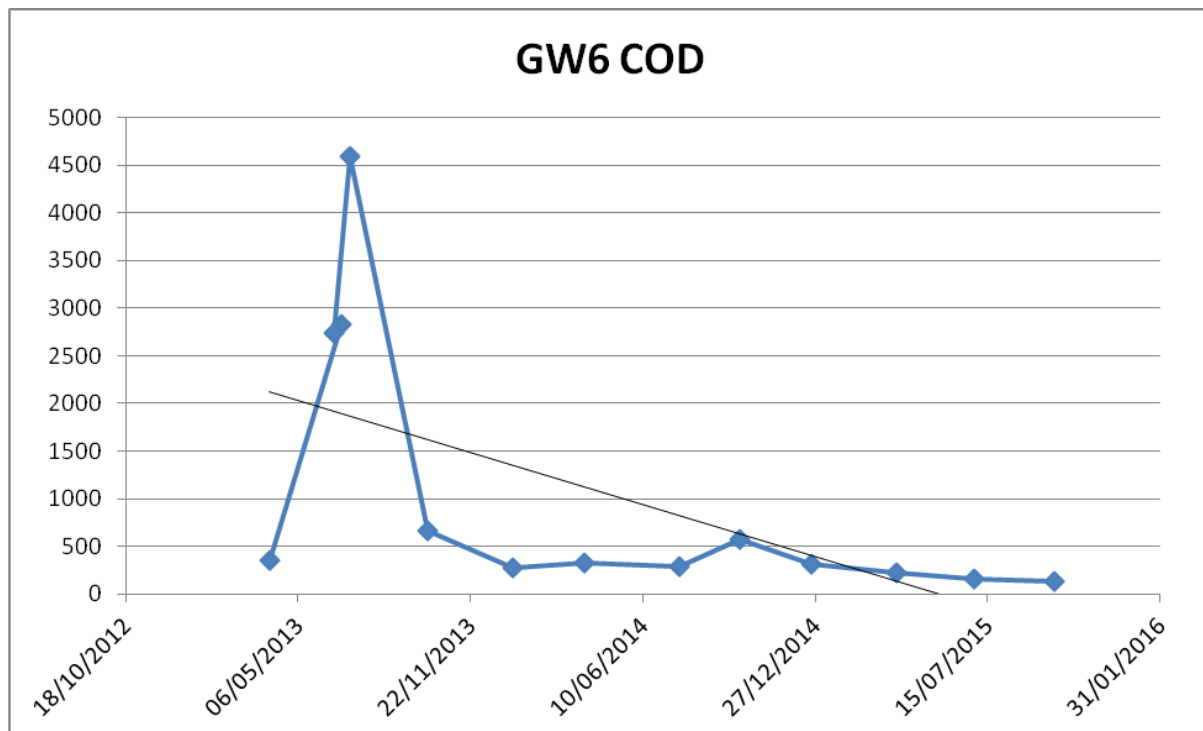
Parameter	Units	GW1	GW3	GW4	GW5	GW6	GW7
Carbon							
Organic Carbon, Total	mg/l	<3	3.53	<3	10.7	32.5	<3
Inorganics							
Alkalinity, Total as CaCO ₃	mg/l	125	120	115	530	140	320
Ammoniacal Nitrogen as N	mg/l	<0.2	0.33	<0.2	5.55	65.8	1.09
Chloride	mg/l	50.7	72.8	77.6	11.5	471	54.9
COD, unfiltered	mg/l	128	30.7	67.5	368	137	11.4
Conductivity @ 20 deg.C	mS/cm	0.605	0.687	0.709	0.679	2.78	0.876
Oxygen, dissolved	mg/l	6.3	5.43	6.31	<0.3	5.09	4.18
pH	pH Units	6.16	6.33	6.01	6.74	5.72	7.4
Sulphate	mg/l	226	197	209	151	349	145
Total Oxidised Nitrogen as N	mg/l	0.564	0.135	0.17	0.68	82.8	0.0478
Filtered (Dissolved) Metals							
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	0.000303	<0.0001	0.00247	<0.0001
Calcium (diss.filt)	mg/l	53.6	75.3	75.4	95.6	81.1	72.5
Chromium (diss.filt)	mg/l	0.00175	0.00276	0.0023	0.00305	0.00557	0.00422
Copper (diss.filt)	mg/l	0.00087	0.0015	<0.00085	<0.00085	0.00738	<0.00085
Iron (diss.filt)	mg/l	0.0464	<0.019	0.025	51.3	0.0769	1.08
Lead (diss.filt)	mg/l	<0.00002	<0.00002	<0.00002	0.00004	0.000106	<0.00002
Magnesium (diss.filt)	mg/l	26	31.8	25.8	14.1	40.5	31.2
Manganese (diss.filt)	mg/l	0.394	0.715	0.263	6.88	8.44	1.38
Nickel (diss.filt)	mg/l	0.00149	0.0143	0.0671	0.00372	0.0773	0.0184
Potassium (diss.filt)	mg/l	10.9	8.97	9.49	10.2	58.3	13.7
Sodium (diss.filt)	mg/l	28.2	37.7	38.7	17.2	319	80.8
Zinc (diss.filt)	mg/l	0.00649	0.0165	0.112	0.00671	0.0633	0.0273
TPH Criteria Working Group (TPH CWG)							
Sum of detected Xylenes	mg/l	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Toluene	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004

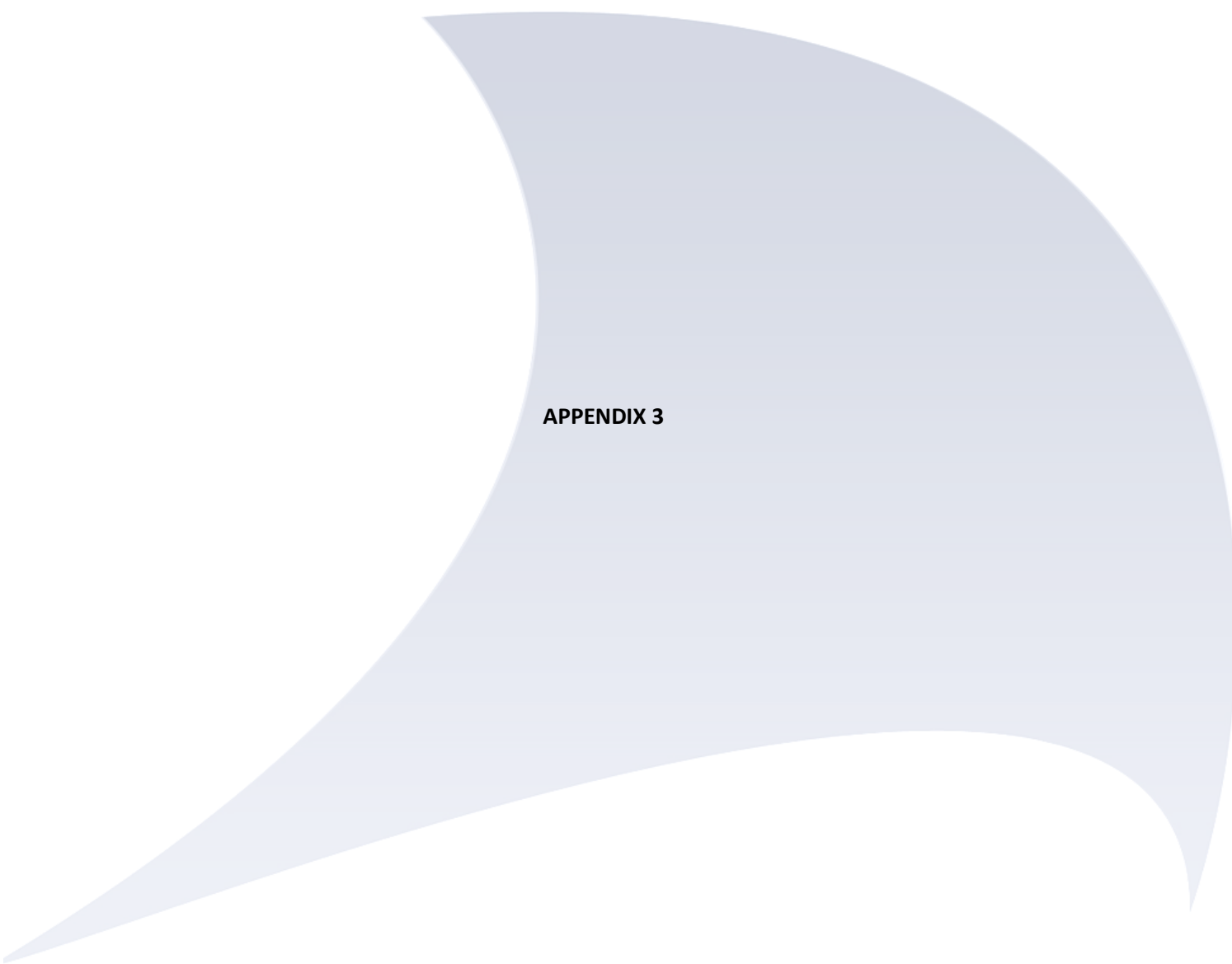
Table 2.3 - Groundwater Quality GW6 Summary

Parameter	Units	03/04/2013	03/06/2013	26/06/2013	17/06/2013	05/07/2013	03/10/2013
Alkalinity, Total as CaCO ₃	mg/l			795	-	-	690
Ammoniacal Nitrogen	mg/l	121	154	188	164	180	205
Chloride	mg/l	-	744	-	<0.08	874	1060
BOD, unfiltered	mg/l	5.62		26.2	-	-	-
COD, unfiltered	mg/l	350		2830	2740	4600	668
Cyanide, Total	mg/l	<0.05		<0.05	-	-	-
Nitrate as NO ₃	mg/l	6.03		8.53	-	-	-
Nitrite as NO ₂	mg/l	39.3		63.6	-	-	-
pH	pH Units	6.52	6.53	6.39	6.38	6.79	7.02
Total Oxidised Nitrogen	mg/l	10.7		16.9	-	-	80.3
Arsenic (diss.filt)	mg/l	0.00522		0.0108	-	-	-
Cadmium (diss.filt)	mg/l	0.0021		0.00273	-	-	0.00223
Calcium (diss.filt)	mg/l	-		-	-	-	70.1
Chromium (diss.filt)	mg/l	-		-	-	-	0.0248
Copper (diss.filt)	mg/l	0.0284		0.062	-	-	0.068
Iron (diss.filt)	mg/l	0.189		0.296	-	-	0.438
Lead (diss.filt)	mg/l	0.00101		0.00117	-	-	0.00135
Magnesium (diss.filt)	mg/l	40		46.5	-	-	44.1
Manganese (diss.filt)	mg/l	-		-	-	-	5.88
Mercury (diss.filt)	mg/l	0.000013		0.000029	-	-	-
Nickel (diss.filt)	mg/l	0.109		0.166	-	-	0.164
Potassium (diss.filt)	mg/l	71.5		101	-	-	139
Sodium (diss.filt)	mg/l	352		618	-	-	721
Zinc (diss.filt)	mg/l	0.0731		0.034	-	-	0.0407
Sum of detected Xylenes	mg/l	-		-	-	-	<0.011
Toluene	mg/l	-		-	-	-	<0.004

Parameter	Units	10/01/2014	04/04/2014	23/07/2014	30/09/2014	15/11/2014	23/12/2014	30/01/2015	01/04/2015	30/06/2015	01/10/2015
Alkalinity, Total as CaCO ₃	mg/l	-	55	400	350	-	108	-	90	130	140
Ammoniacal Nitrogen	mg/l	84.7	58.1	111	111	107	82.9	73.7	75.5	75	65.8
Chloride	mg/l	599	-	627	642	671	567	482	519	500	471
BOD, unfiltered	mg/l	-	5.69	-	-	-	-	-	-	-	-
COD, unfiltered	mg/l	277	323	282	578	-	316	-	225	157	137
Cyanide, Total	mg/l	<0.05	<0.05	-	-	-	<0.05	-	-	-	-
Nitrate as NO ₃	mg/l	435	183	-	-	-	-	-	-	-	-
Nitrite as NO ₂	mg/l	3.91	2.74	-	-	-	-	-	-	-	-
pH	pH	5.85	7.12	6.76	6.86	6.35	5.86	5.97	6.43	5.88	5.72
Total Oxidised Nitrogen	mg/l	109	42.1	86.4	98.2	-	>106	-	>106	102	82.8
Arsenic (diss.filt)	mg/l	0.00583	0.00341	-	-	-	-	-	-	-	-
Cadmium (diss.filt)	mg/l	0.00393	0.00295	0.0024	0.00217	-	0.00466	-	0.00281	-	0.00247
Calcium (diss.filt)	mg/l	-	-	74.2	74.3	-	72.4	-	79.9	70.2	81.1
Chromium (diss.filt)	mg/l	-	-	0.000569	0.00547	-	<0.00022	-	0.00419	-	0.00557
Copper (diss.filt)	mg/l	0.0133	0.00694	0.0216	0.0208	-	0.0123	-	0.0069	-	0.00738
Iron (diss.filt)	mg/l	0.305	0.131	0.0959	0.0844	-	0.0778	-	0.0613	0.0563	0.0769
Lead (diss.filt)	mg/l	0.000881	0.00158	0.00044	0.000312	-	0.00121	-	0.000229	-	0.000106
Magnesium (diss.filt)	mg/l	39.2	25.8	45.7	42.9	-	42.2	-	42.5	32.9	40.5
Manganese (diss.filt)	mg/l	-	-	-	-	-	-	-	8.3	-	8.44
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	-	-	-	<0.00001	-	-	-	-
Nickel (diss.filt)	mg/l	0.155	0.114	0.101	0.0882	-	0.135	-	0.104	-	0.0773
Potassium (diss.filt)	mg/l	71.5	41.9	82.9	78.3	-	60.4	-	64.3	56.2	58.3
Sodium (diss.filt)	mg/l	437	251	>400	440	-	381	-	365	326	319
Zinc (diss.filt)	mg/l	0.201	0.127	0.0629	0.042	-	0.137	-	0.0975	-	0.0633
Sum of detected Xylenes	mg/l	-	-	<0.011	<0.011	-	<0.011	-	<0.011	<0.011	<0.011
Toluene	mg/l	-	-	<0.004	<0.004	-	<0.004	-	<0.004	<0.004	<0.004







APPENDIX 3

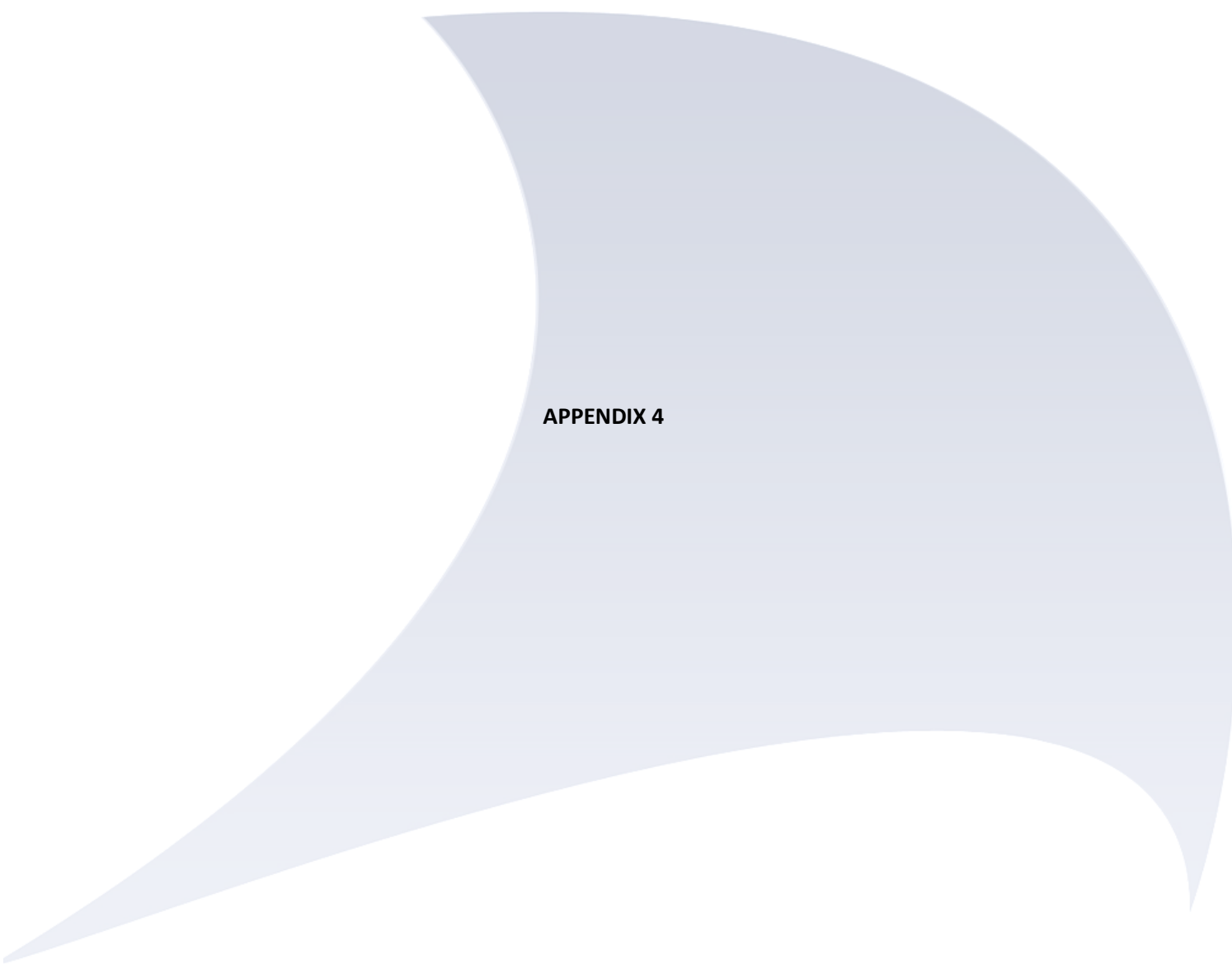
APPENDIX 3

Table 3.1 - Leachate Levels

Location	Date	Dip Level (mBGL)	Leachate Level (mAOD)	Leachate Level Head (m)
LC2.1	15/07/2015	29.6	111.45	1.40
	11/08/2015	29.61	111.44	1.39
	15/09/2015	29.62	111.43	1.38
LC3	15/07/2015	3.18	130.78	1.66
	11/08/2015	3.16	130.80	1.68
	15/09/2015	3.2	130.76	1.64
LC4	15/07/2015	17.51	131.14	1.49
	11/08/2015	17.48	131.17	1.52
	15/09/2015	17.52	131.13	1.48
LC7	15/07/2015	18.56	132.73	1.75
	11/08/2015	18.52	132.77	1.79
	15/09/2015	18.47	132.82	1.84
LS5	15/07/2015	28.65	104.66	1.34
	11/08/2015	28.67	104.64	1.33
	15/09/2015	28.6	104.71	1.36
LS6	15/07/2015	30.05	104.81	1.18
	11/08/2015	30.07	104.79	1.17
	15/09/2015	30.05	104.81	1.18
S1	15/07/2015	3.16	124.82	1.27
	11/08/2015	3.2	124.78	1.23
	15/09/2015	3.22	124.76	1.21
S2	15/07/2015	1.53	127.33	1.82
	11/08/2015	1.54	127.32	1.81
	15/09/2015	1.58	127.28	1.77
S3	15/07/2015	3.6	124.90	1.49
	11/08/2015	3.62	124.88	1.47
	15/09/2015	3.64	124.86	1.45

Table 3.2 - Leachate Quality Data Summary LC Wells

Parameter	Units	LC2	LC3	LC4	LC7
Carbon					
Organic Carbon, Total	mg/l	915	680	323	396
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	8360	6140	4060	4700
Ammoniacal Nitrogen as N	mg/l	1460	1090	761	759
BOD, unfiltered	mg/l	148	186	92.2	109
Chloride	mg/l	2200	1740	1170	1180
COD, unfiltered	mg/l	2400	1770	998	977
pH	pH Units	7.99	8.05	7.55	7.53
Sulphate	mg/l	1.15	9.02	1.1	1.22
Total Oxidised Nitrogen as N	mg/l	<0.01	<0.01	2.13	<0.01
Filtered (Dissolved) Metals					
Calcium (diss.filt)	mg/l	55.4	86.1	95.6	52.8
Magnesium (diss.filt)	mg/l	102	90.5	78.8	67.4
Potassium (diss.filt)	mg/l	802	659	350	329
Sodium (diss.filt)	mg/l	1940	1470	1030	1140



APPENDIX 4

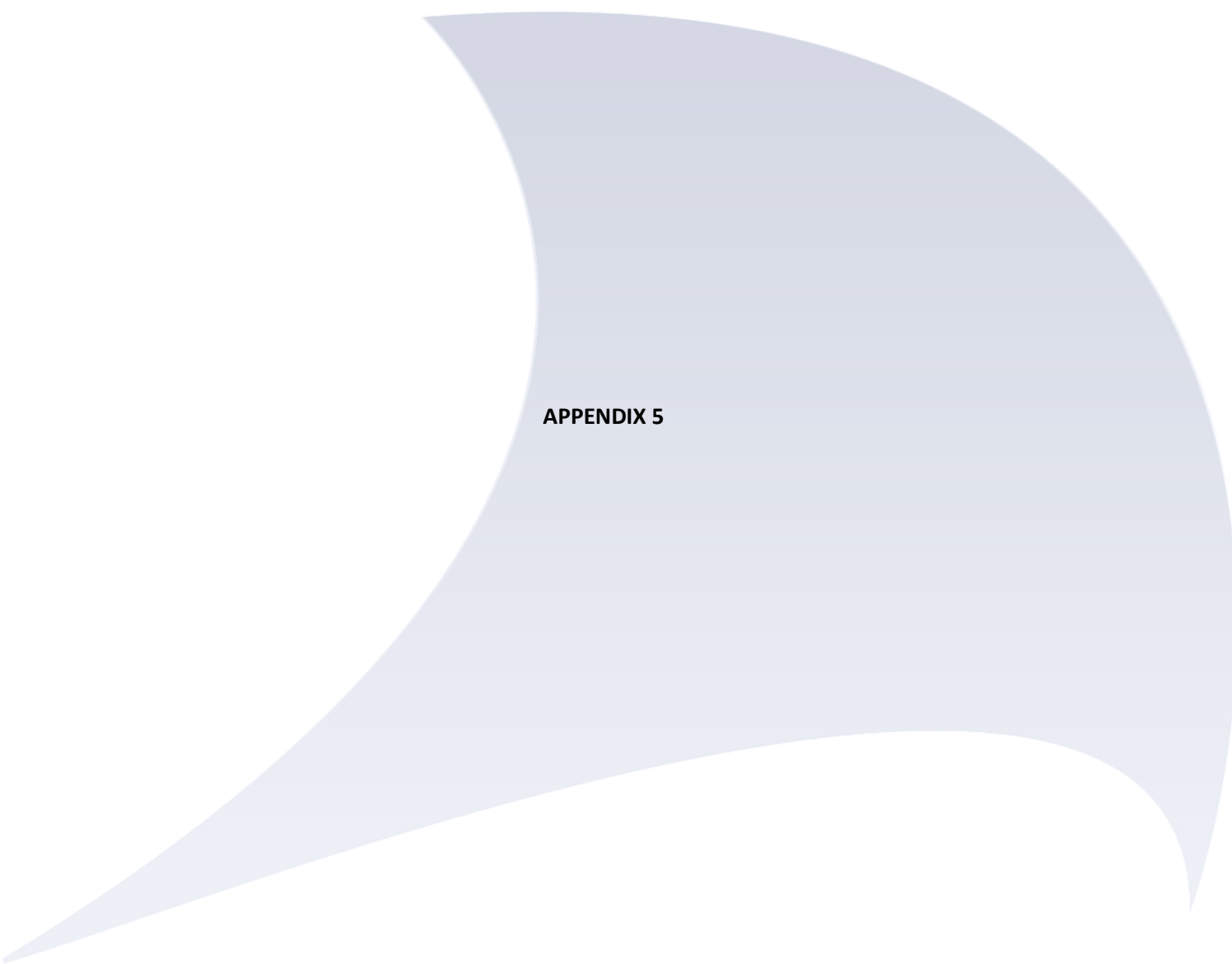
APPENDIX 4

Table 4 –Quarterly Surface Water Quality

Parameter	Units	SW4	SW5
Inorganics			
Alkalinity, Total as CaCO ₃	mg/l	50	140
Ammoniacal Nitrogen as N	mg/l	0.267	<0.2
BOD, unfiltered	mg/l	4.43	6.69
COD, unfiltered	mg/l	68.7	31.2
Cyanide, Total	mg/l	<0.05	<0.05
Nitrate as NO ₃	mg/l	1.72	<0.04
Nitrite as NO ₂	mg/l	0.296	<0.03
pH	pH Units	7.5	8.0
Total Oxidised Nitrogen as N	mg/l	0.479	<0.01
Filtered (Dissolved) Metals			
Arsenic (diss.filt)	mg/l	0.000924	0.000485
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001
Copper (diss.filt)	mg/l	<0.00085	<0.00085
Iron (diss.filt)	mg/l	0.0292	<0.019
Lead (diss.filt)	mg/l	<0.00002	<0.00002
Magnesium (diss.filt)	mg/l	2.76	31.5
Mercury (diss.filt)	mg/l	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00116	0.00177
Potassium (diss.filt)	mg/l	2.29	<1
Sodium (diss.filt)	mg/l	17.6	25.5
Zinc (diss.filt)	mg/l	0.00604	<0.00041
Phenols			
Phenols, Total Detected 5 speciated	mg/l	<0.025	<0.025

Parameter	Units	SW4	SW5
Combined Pesticides / Herbicides			
Aldrin	mg/l	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001

Parameter	Units	SW4	SW5
Combined Pesticides / Herbicides			
Simazine	mg/l	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001



APPENDIX 5

Standard Landfill Borehole Gas Monitoring

Date 03/07/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 18 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	2.4	19.9	77.7	0	0	999	0.46	1	5.4
STBH 1.1	11:13	0	1.5	19.5	79	0	0	999	-0.68	1	5.4
STBH 2.0	11:20	0	1.9	19.6	78.5	0	0	999	0.89	1	7
STBH 2.1	11:08	0	1.5	20.1	78.4	0	0	999	0.52	1	7.6
STBH 2.2	11:11	0	1.9	20.4	77.7	0	0	999	0.6	1	5.8
STBH 3.0	11:25	0	2.2	19.9	77.9	0	0	999	0.74	1	6.7
STBH 3.1	11:06	0	1.4	19.9	78.7	0	0	999	0.71	1	7.8
STBH 4.0	11:29	0	2.6	19.5	77.9	0	0	999	1.13	10	10.6
STBH 4.1	10:57	0	1.5	19.8	78.7	0	0	999	1.37	1	7.1
STBH 4.2	11:02	0	2.1	20.3	77.6	0	0	999	0.66	1	8.6
STBH 5.0	11:32	0	2.5	19.9	77.6	0	0	999	0.9	15	19.4
STBH 5.1	11:36	0	1.4	19.8	78.8	0	0	999	0.62	1	5.8
STBH 5.2	10:49	0	1.2	19.8	79	0	0	999	0.48	1	9.6
STBH 5.3	10:52	0	2.9	19.7	77.4	0	0	999	0.74	1	6
STBH 6.0	11:54	0	2.5	20.2	77.3	0	0	999	-0.79	1	5.4
STBH 6.1	10:38	0	1.9	20	78.1	0	0	999	0.52	1	5.4
STBH 6.2	10:42	0	2.1	19.9	78	0	0	999	0.87	1	5.4
STBH 6.3	10:46	0	2.6	19.6	77.8	0	0	999	0.69	1	8.2
STBH 7.0	11:58	0	3.2	19.4	77.4	0	0	999	0.63	1	6.2
STBH 7.1	10:34	0	2.5	19.3	78.2	0	0	999	0.84	1	5.5
STBH 9.0	12:09	0	1.9	19.8	78.3	0	0	999	0.75	1	10.7
STBH 12	12:12	0	2.3	19.8	77.9	0	0	999	1.36	10	6.5
STBH 13	12:16	0	2.6	19.3	78.1	0	0	999	-0.84	10	5.2
STBH 15	12:20	0	2.4	19.8	77.8	0	0	999	0.65	1	8.3
STBH 16	12:24	0	1.5	20	78.5	0	0	999	0.7	1	3
STBH 22	12:28	0.6	2.1	19.7	77.6	0	0	999	0.52	1.6	3.1
STMBH 5.4	11:40	0	2.3	19.5	78.2	0	0	999	0.82	1	16
STMBH 5.5	11:42	0	1.5	20	78.5	0	0	999	0.73	1	17.1
STMBH 5.7	11:45	0	2.6	19.6	77.8	0	0	999	-0.67	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 10/07/2015
 Weather: dry
 Wind conditions: breezy
 Air Temperature: 19 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	09:54	0	2.9	19.9	77.2	0	0	1000	0.4	1	5.4
STBH 1.1	09:51	0	3.2	19.7	77.1	0	0	1000	-0.65	1	5.4
STBH 2.0	09:58	0	2.6	18.5	78.9	0	0	1000	0.82	1	7
STBH 2.1	09:46	0	2	18.6	79.4	0	0	1000	0.45	1	7.6
STBH 2.2	09:49	0	1.6	18	80.4	0	0	1000	0.66	1	5.8
STBH 3.0	10:03	0	2	19	79	0	0	1000	0.62	1	6.7
STBH 3.1	09:44	0	1.6	19.5	78.9	0	0	1000	0.77	1	7.8
STBH 4.0	10:07	0	2.4	19	78.6	0	0	1000	1.2	10	10.6
STBH 4.1	09:35	0	1.6	19.4	79	0	0	1000	1.49	1	7.1
STBH 4.2	09:40	0	2	19.8	78.2	0	0	1000	0.78	1	8.6
STBH 5.0	10:10	0	2.3	9	88.7	0	0	1000	0.89	15	19.4
STBH 5.1	10:14	0	1.5	19.6	78.9	0	0	1000	0.72	1	5.8
STBH 5.2	09:27	0	1.4	20	78.6	0	0	1000	0.4	1	9.6
STBH 5.3	09:30	0	1.8	19.3	78.9	0	0	1000	0.82	1	6
STBH 6.0	10:32	0	2.3	19	78.7	0	0	1000	-0.68	1	5.4
STBH 6.1	09:16	0	1.5	19	79.5	0	0	1000	0.46	1	5.4
STBH 6.2	09:20	0	2.5	19.8	77.7	0	0	1000	0.8	1	5.4
STBH 6.3	09:24	0	2.1	19	78.9	0	0	1000	0.63	1	8.2
STBH 7.0	10:36	0	3	20.2	76.8	0	0	1000	0.54	1	6.2
STBH 7.1	09:12	0	2.3	19.9	77.8	0	0	1000	0.86	1	5.5
STBH 9.0	10:47	0	1.5	20.7	77.8	0	0	1000	0.71	1	10.7
STBH 12	10:50	0	2	20	78	0	0	1000	1.22	10	6.5
STBH 13	10:54	0	2.4	19.5	78.1	0	0	1000	-0.87	10	5.2
STBH 15	10:58	0	2.1	19.2	78.7	0	0	1000	0.71	1	8.3
STBH 16	11:02	0	1.6	19.6	78.8	0	0	1000	0.63	1	3
STBH 22	11:06	0.5	2	19.9	77.6	0	0	1000	0.45	1.6	3.1
STMBH 5.4	10:18	0	2.5	18.9	78.6	0	0	1000	0.88	1	16
STMBH 5.5	10:20	0	1.4	20	78.6	0	0	1000	-0.67	1	17.1
STMBH 5.7	10:23	0	2.2	19.9	77.9	0	0	1000	-0.57	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 17/07/2015
 Weather: slight rain
 Wind conditions: breezy
 Air Temperature: 20 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	9:55	0	3.2	20.2	76.6	0	0	997	0.09	1	5.4
STBH 1.1	9:52	0	3.1	19.8	77.1	0	0	997	0.02	1	5.4
STBH 2.0	9:59	0	2.4	19.9	77.7	0	0	997	-0.48	1	7
STBH 2.1	9:47	0	1.6	20.1	78.3	0	0	997	-0.18	1	7.6
STBH 2.2	9:50	0	1.8	19.6	78.6	0	0	997	-0.3	1	5.8
STBH 3.0	10:04	0	1.5	19.9	78.6	0	0	997	-0.2	1	6.7
STBH 3.1	9:45	0	1.9	20.2	77.9	0	0	997	0.22	1	7.8
STBH 4.0	10:08	0	2.1	20.3	77.6	0	0	997	0.5	10	10.6
STBH 4.1	9:36	0	1.4	20.1	78.5	0	0	997	0.66	1	7.1
STBH 4.2	9:41	0	1.8	19.9	78.3	0	0	997	-0.94	1	8.6
STBH 5.0	10:11	0	2	19.6	78.4	0	0	997	0.75	15	19.4
STBH 5.1	10:15	0	1.9	19.9	78.2	0	0	997	0.22	1	5.8
STBH 5.2	9:28	0	1.6	19.8	78.6	0	0	997	0.39	1	9.6
STBH 5.3	9:31	0	1.5	19.6	78.9	0	0	997	-0.41	1	6
STBH 6.0	10:33	0	2.1	20.1	77.8	0	0	997	-0.16	1	5.4
STBH 6.1	9:17	0	1.7	19.9	78.4	0	0	997	-0.36	1	5.4
STBH 6.2	9:21	0	2.1	19.7	78.2	0	0	997	0.95	1	5.4
STBH 6.3	9:25	0	2.6	19.9	77.5	0	0	997	0.72	1	8.2
STBH 7.0	10:37	0	2.5	19.8	77.7	0	0	997	0.33	1	6.2
STBH 7.1	9:13	0	2.1	19.6	78.3	0	0	997	0.18	1	5.5
STBH 9.0	10:48	0	1.7	20.1	78.2	0	0	997	-0.21	1	10.7
STBH 12	10:51	0	1.5	19.4	79.1	0	0	997	0.83	10	6.5
STBH 13	10:55	0	2.2	19.2	78.6	0	0	997	0.1	10	5.2
STBH 15	10:59	0	1.8	19.6	78.6	0	0	997	0.29	1	8.3
STBH 16	11:03	0	2.4	19.7	77.9	0	0	997	-0.17	1	3
STBH 22	11:07	0.4	2.3	19.8	77.5	0	0	997	0.45	1.6	3.1
STMBH 5.4	10:19	0	2.3	20.3	77.4	0	0	997	-0.2	1	16
STMBH 5.5	10:21	0	1.6	19.9	78.5	0	0	997	-0.11	1	17.1
STMBH 5.7	10:24	0	2	19.6	78.4	0	0	997	-0.94	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 24/07/2015
 Weather: calm
 Wind conditions: breezy
 Air Temperature: 18 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	10:02	0	3.1	19.9	77	0	0	999	0.04	1	5.4
STBH 1.1	9:59	0	2.5	19.6	77.9	0	0	999	-0.02	1	5.4
STBH 2.0	10:06	0	2.1	19.8	78.1	0	0	999	-0.47	1	7
STBH 2.1	9:54	0	1.9	20.2	77.9	0	0	999	-0.23	1	7.6
STBH 2.2	9:57	0	2	19.8	78.2	0	0	999	-0.29	1	5.8
STBH 3.0	10:11	0	1.4	19.6	79	0	0	999	-0.12	1	6.7
STBH 3.1	9:52	0	1.6	20.1	78.3	0	0	999	0.27	1	7.8
STBH 4.0	10:15	0	2	19.6	78.4	0	0	999	0.47	10	10.6
STBH 4.1	9:43	0	1.8	20.2	78	0	0	999	0.68	1	7.1
STBH 4.2	9:48	0	1.4	19.8	78.8	0	0	999	-0.93	1	8.6
STBH 5.0	10:18	0	2.6	19.5	77.9	0	0	999	0.79	15	19.4
STBH 5.1	10:22	0	1.8	20.1	78.1	0	0	999	0.24	1	5.8
STBH 5.2	9:35	0	1.4	19.9	78.7	0	0	999	0.38	1	9.6
STBH 5.3	9:38	0	1.9	19.8	78.3	0	0	999	-0.38	1	6
STBH 6.0	10:40	0	2.3	20	77.7	0	0	999	-0.13	1	5.4
STBH 6.1	9:24	0	1.5	19.4	79.1	0	0	999	-0.38	1	5.4
STBH 6.2	9:28	0	2	19.6	78.4	0	0	999	0.88	1	5.4
STBH 6.3	9:32	0	2.2	19.5	78.3	0	0	999	0.7	1	8.2
STBH 7.0	10:44	0	2.1	19.2	78.7	0	0	999	0.32	1	6.2
STBH 7.1	9:20	0	3	19.9	77.1	0	0	999	0.22	1	5.5
STBH 9.0	10:55	0	1.5	20.2	78.3	0	0	999	-0.23	1	10.7
STBH 12	10:58	0	1.4	20	78.6	0	0	999	0.81	10	6.5
STBH 13	11:02	0	2	19.5	78.5	0	0	999	0.06	10	5.2
STBH 15	11:06	0	1.5	20.1	78.4	0	0	999	0.31	1	8.3
STBH 16	11:10	0	2.1	19.9	78	0	0	999	-0.19	1	3
STBH 22	11:14	0.3	2.5	19.8	77.4	0	0	999	0.44	1.6	3.1
STMBH 5.4	10:26	0	2	20.2	77.8	0	0	999	-0.24	1	16
STMBH 5.5	10:28	0	1.8	20.1	78.1	0	0	999	-0.14	1	17.1
STMBH 5.7	10:31	0	1.8	19.9	78.3	0	0	999	-0.95	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 31/07/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 17 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	2.1	19.6	78.3	0	0	999	0.01	1	5.4
STBH 1.1	11:49	0	2	19.9	78.1	0	0	999	-0.15	1	5.4
STBH 2.0	11:56	0	2.5	19.6	77.9	0	0	999	0.57	1	7
STBH 2.1	11:44	0	1.6	20.1	78.3	0	0	999	0.79	1	7.6
STBH 2.2	11:47	0	2.1	19.8	78.1	0	0	999	0.56	1	5.8
STBH 3.0	12:01	0	1.5	19.5	79	0	0	999	0.57	1	6.7
STBH 3.1	11:42	0	1.9	20.1	78	0	0	999	0.41	1	7.8
STBH 4.0	12:05	0	2.1	19.5	78.4	0	0	999	1.21	10	10.6
STBH 4.1	11:33	0	1.6	19.4	79	0	0	999	1.32	1	7.1
STBH 4.2	11:38	0	2	20.1	77.9	0	0	999	1.06	1	8.6
STBH 5.0	12:08	0	2	19.8	78.2	0	0	999	0.66	15	19.4
STBH 5.1	12:12	0	1.6	20.4	78	0	0	999	0.4	1	5.8
STBH 5.2	11:25	0	1.4	19.6	79	0	0	999	0.35	1	9.6
STBH 5.3	11:28	0	1.2	20.1	78.7	0	0	999	0.98	1	6
STBH 6.0	12:30	0	2.1	19.6	78.3	0	0	999	-0.91	1	5.4
STBH 6.1	11:14	0	1.9	19.4	78.7	0	0	999	0.71	1	5.4
STBH 6.2	11:18	0	2.4	19.5	78.1	0	0	999	1.21	1	5.4
STBH 6.3	11:22	0	1.8	19.9	78.3	0	0	999	1.05	1	8.2
STBH 7.0	12:34	0	1.5	20	78.5	0	0	999	0.09	1	6.2
STBH 7.1	11:10	0	2.1	19.9	78	0	0	999	0.54	1	5.5
STBH 9.0	12:45	0	1.5	19.6	78.9	0	0	999	0.7	1	10.7
STBH 12	12:48	0	1.3	19.7	79	0	0	999	0.85	10	6.5
STBH 13	12:52	0	2.1	19.9	78	0	0	999	-0.16	10	5.2
STBH 15	12:56	0	1.6	19.8	78.6	0	0	999	0.88	1	8.3
STBH 16	13:00	0	1.6	18.9	79.5	0	0	999	0.69	1	3
STBH 22	13:04	0.4	2	19.2	78.4	0	0	999	0.53	1.6	3.1
STMBH 5.4	12:16	0	1.5	19.7	78.8	0	0	999	0.53	1	16
STMBH 5.5	12:18	0	1.4	19.3	79.3	0	0	999	-0.12	1	17.1
STMBH 5.7	12:21	0	1.8	20.1	78.1	0	0	999	-0.22	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 07/08/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 18 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	2	19.2	78.8	0	0	1001	-0.17	1	5.4
STBH 1.1	11:13	0	1.8	19.4	78.8	0	0	1001	-0.04	1	5.4
STBH 2.0	11:20	0	2.1	19.5	78.4	0	0	1001	-0.55	1	7
STBH 2.1	11:08	0	1.8	20.3	77.9	0	0	1001	-0.83	1	7.6
STBH 2.2	11:11	0	2	19.7	78.3	0	0	1001	-0.59	1	5.8
STBH 3.0	11:25	0	1.6	19.2	79.2	0	0	1001	-0.21	1	6.7
STBH 3.1	11:06	0	1.5	19.9	78.6	0	0	1001	0.32	1	7.8
STBH 4.0	11:29	0	2.3	19.3	78.4	0	0	1001	0.87	10	10.6
STBH 4.1	10:57	0	1.8	19.1	79.1	0	0	1001	1.26	1	7.1
STBH 4.2	11:02	0	1.8	20	78.2	0	0	1001	1.04	1	8.6
STBH 5.0	11:32	0	1.6	19.6	78.8	0	0	1001	0.66	15	19.4
STBH 5.1	11:36	0	2	20.1	77.9	0	0	1001	0.45	1	5.8
STBH 5.2	10:49	0	1.6	19.8	78.6	0	0	1001	0.32	1	9.6
STBH 5.3	10:52	0	1.5	20.3	78.2	0	0	1001	-0.12	1	6
STBH 6.0	11:54	0	2	19.5	78.5	0	0	1001	-0.96	1	5.4
STBH 6.1	10:38	0	1.6	19.3	79.1	0	0	1001	-0.3	1	5.4
STBH 6.2	10:42	0	2.1	19.8	78.1	0	0	1001	1.2	1	5.4
STBH 6.3	10:46	0	1.6	19.5	78.9	0	0	1001	1.02	1	8.2
STBH 7.0	11:58	0	1.9	20.1	78	0	0	1001	0.47	1	6.2
STBH 7.1	10:34	0	2	19.6	78.4	0	0	1001	0.52	1	5.5
STBH 9.0	12:09	0	1.4	20.1	78.5	0	0	1001	0.64	1	10.7
STBH 12	12:12	0	1.2	20.3	78.5	0	0	1001	-0.92	10	6.5
STBH 13	12:16	0	2	19.8	78.2	0	0	1001	-0.16	10	5.2
STBH 15	12:20	0	1.8	19.6	78.6	0	0	1001	0.88	1	8.3
STBH 16	12:24	0	1.3	19.2	79.5	0	0	1001	-0.78	1	3
STBH 22	12:28	0.6	2.1	19.5	77.8	0	0	1001	0.61	1.6	3.1
STMBH 5.4	11:40	0	1.4	20.2	78.4	0	0	1001	-0.7	1	16
STMBH 5.5	11:42	0	1.8	20.1	78.1	0	0	1001	0.04	1	17.1
STMBH 5.7	11:45	0	1.9	20.3	77.8	0	0	1001	-0.14	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 14/08/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 18 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	2.1	19.6	78.3	0	0	998	0.03	1	5.4
STBH 1.1	11:08	0	1.5	19.4	79.1	0	0	998	-0.13	1	5.4
STBH 2.0	11:15	0	1.8	19.3	78.9	0	0	998	0.5	1	7
STBH 2.1	11:03	0	1.5	19.9	78.6	0	0	998	0.79	1	7.6
STBH 2.2	11:06	0	1.9	20	78.1	0	0	998	0.57	1	5.8
STBH 3.0	11:20	0	1.8	19.6	78.6	0	0	998	0.63	1	6.7
STBH 3.1	11:01	0	2	20	78	0	0	998	0.24	1	7.8
STBH 4.0	11:24	0	2.1	20.1	77.8	0	0	998	1.23	10	10.6
STBH 4.1	10:52	0	1.5	19.6	78.9	0	0	998	1.26	1	7.1
STBH 4.2	10:57	0	1.6	19.8	78.6	0	0	998	1.07	1	8.6
STBH 5.0	11:27	0	1.5	20	78.5	0	0	998	0.66	15	19.4
STBH 5.1	11:31	0	1.8	20.3	77.9	0	0	998	0.41	1	5.8
STBH 5.2	10:44	0	2	19.5	78.5	0	0	998	0.31	1	9.6
STBH 5.3	10:47	0	2.6	19.8	77.6	0	0	998	1	1	6
STBH 6.0	11:49	0	3	19.5	77.5	0	0	998	-0.9	1	5.4
STBH 6.1	10:33	0	2.1	19.5	78.4	0	0	998	0.71	1	5.4
STBH 6.2	10:37	0	1.8	20	78.2	0	0	998	1.35	1	5.4
STBH 6.3	10:41	0	1.9	19.6	78.5	0	0	998	0.99	1	8.2
STBH 7.0	11:53	0	2.1	19.8	78.1	0	0	998	0.15	1	6.2
STBH 7.1	10:29	0	2.1	20	77.9	0	0	998	0.58	1	5.5
STBH 9.0	12:04	0	1.6	19.5	78.9	0	0	998	0.63	1	10.7
STBH 12	12:07	0	1.4	19.1	79.5	0	0	998	0.9	10	6.5
STBH 13	12:11	0	2.2	20	77.8	0	0	998	-0.2	10	5.2
STBH 15	12:15	0	1.5	20	78.5	0	0	998	0.83	1	8.3
STBH 16	12:19	0	1.1	19.5	79.4	0	0	998	0.62	1	3
STBH 22	12:23	0.5	2.1	19.4	78	0	0	998	0.51	1.6	3.1
STMBH 5.4	11:35	0	1.5	19.9	78.6	0	0	998	0.53	1	16
STMBH 5.5	11:37	0	1.6	19.6	78.8	0	0	998	-0.16	1	17.1
STMBH 5.7	11:40	0	1.5	19.9	78.6	0	0	998	-0.18	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 21/08/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 17 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	9:45	0	2	19.6	78.4	0	0	998	0.46	1	5.4
STBH 1.1	9:42	0	1.9	19.9	78.2	0	0	998	-0.68	1	5.4
STBH 2.0	9:49	0	2.6	20.1	77.3	0	0	998	0.89	1	7
STBH 2.1	9:37	0	1.8	20.1	78.1	0	0	998	0.52	1	7.6
STBH 2.2	9:40	0	1.5	19.6	78.9	0	0	998	0.6	1	5.8
STBH 3.0	9:54	0	1.6	19.5	78.9	0	0	998	0.74	1	6.7
STBH 3.1	9:35	0	2.3	19.8	77.9	0	0	998	0.71	1	7.8
STBH 4.0	9:58	0	1.9	19.5	78.6	0	0	998	1.13	10	10.6
STBH 4.1	9:26	0	1.8	19.6	78.6	0	0	998	1.37	1	7.1
STBH 4.2	9:31	0	1.9	19.9	78.2	0	0	998	0.66	1	8.6
STBH 5.0	10:01	0	2	19.9	78.1	0	0	998	0.9	15	19.4
STBH 5.1	10:05	0	1.5	20.1	78.4	0	0	998	0.62	1	5.8
STBH 5.2	9:18	0	2.3	20.2	77.5	0	0	998	0.48	1	9.6
STBH 5.3	9:21	0	1.5	19.5	79	0	0	998	0.74	1	6
STBH 6.0	10:23	0	3.2	19.5	77.3	0	0	998	-0.79	1	5.4
STBH 6.1	9:07	0	2.3	19.6	78.1	0	0	998	0.52	1	5.4
STBH 6.2	9:11	0	1.5	19.9	78.6	0	0	998	0.87	1	5.4
STBH 6.3	9:15	0	1.4	19.5	79.1	0	0	998	0.69	1	8.2
STBH 7.0	10:27	0	2.3	19.3	78.4	0	0	998	0.63	1	6.2
STBH 7.1	9:03	0	1.8	20.1	78.1	0	0	998	0.84	1	5.5
STBH 9.0	10:38	0	1.8	20.1	78.1	0	0	998	0.75	1	10.7
STBH 12	10:41	0	1.7	19.8	78.5	0	0	998	1.36	10	6.5
STBH 13	10:45	0	2.3	19.8	77.9	0	0	998	-0.84	10	5.2
STBH 15	10:49	0	1.4	20.1	78.5	0	0	998	0.65	1	8.3
STBH 16	10:53	0	1.4	19.6	79	0	0	998	0.7	1	3
STBH 22	10:57	0.3	1.8	19.8	78.1	0	0	998	0.52	1.6	3.1
STMBH 5.4	10:09	0	1.7	20.1	78.2	0	0	998	0.82	1	16
STMBH 5.5	10:11	0	1.9	20	78.1	0	0	998	0.73	1	17.1
STMBH 5.7	10:14	0	1.6	19.5	78.9	0	0	998	-0.67	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 28/08/2015
 Weather: dry
 Wind conditions: breezy
 Air Temperature: 19 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	09:55	0	2.3	19.9	77.8	0	0	996	0	1	5.4
STBH 1.1	09:52	0	2.1	19.5	78.4	0	0	996	0.02	1	5.4
STBH 2.0	09:59	0	2.4	19.9	77.7	0	0	996	-0.51	1	7
STBH 2.1	09:47	0	1.6	20.3	78.1	0	0	996	-0.22	1	7.6
STBH 2.2	09:50	0	1.8	19.5	78.7	0	0	996	-0.31	1	5.8
STBH 3.0	10:04	0	1.9	19.2	78.9	0	0	996	-0.16	1	6.7
STBH 3.1	09:45	0	2.4	20.1	77.5	0	0	996	0.26	1	7.8
STBH 4.0	10:08	0	1.6	19.9	78.5	0	0	996	0.42	10	10.6
STBH 4.1	09:36	0	1.9	19.6	78.5	0	0	996	0.68	1	7.1
STBH 4.2	09:41	0	2	20	78	0	0	996	-1	1	8.6
STBH 5.0	10:11	0	2.3	19.5	78.2	0	0	996	0.75	15	19.4
STBH 5.1	10:15	0	1.9	19.9	78.2	0	0	996	0.21	1	5.8
STBH 5.2	09:28	0	2.3	20	77.7	0	0	996	0.4	1	9.6
STBH 5.3	09:31	0	1.9	19.8	78.3	0	0	996	-0.44	1	6
STBH 6.0	10:33	0	3.5	19.3	77.2	0	0	996	-0.14	1	5.4
STBH 6.1	09:17	0	2.5	19.4	78.1	0	0	996	-0.37	1	5.4
STBH 6.2	09:21	0	1.8	20.1	78.1	0	0	996	0.97	1	5.4
STBH 6.3	09:25	0	1	19.8	79.2	0	0	996	0.71	1	8.2
STBH 7.0	10:37	0	2	19.6	78.4	0	0	996	0.32	1	6.2
STBH 7.1	09:13	0	1.7	19.9	78.4	0	0	996	0.17	1	5.5
STBH 9.0	10:48	0	2	20.2	77.8	0	0	996	-0.3	1	10.7
STBH 12	10:51	0	1.9	19.6	78.5	0	0	996	0.79	10	6.5
STBH 13	10:55	0	2.1	19.9	78	0	0	996	0.03	10	5.2
STBH 15	10:59	0	1.6	20	78.4	0	0	996	0.32	1	8.3
STBH 16	11:03	0	1.2	19.5	79.3	0	0	996	-0.13	1	3
STBH 22	11:07	0.7	1.5	20.1	77.7	0	0	996	0.5	1.6	3.1
STMBH 5.4	10:19	0	1.2	20.3	78.5	0	0	996	-0.19	1	16
STMBH 5.5	10:21	0	1.8	19.9	78.3	0	0	996	-0.06	1	17.1
STMBH 5.7	10:24	0	2	19.6	78.4	0	0	996	-0.98	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 04/09/2015
 Weather: dry
 Wind conditions: breezy
 Air Temperature: 17 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	10:43	0	2.5	20	77.5	0	0	997	0.13	1	5.4
STBH 1.1	10:40	0	2	19.7	78.3	0	0	997	-0.33	1	5.4
STBH 2.0	10:47	0	2.8	19.8	77.4	0	0	997	0.65	1	7
STBH 2.1	10:35	0	1.8	20	78.2	0	0	997	0.47	1	7.6
STBH 2.2	10:38	0	1.4	19	79.6	0	0	997	0.43	1	5.8
STBH 3.0	10:52	0	2.3	19.4	78.3	0	0	997	0.78	1	6.7
STBH 3.1	10:33	0	2.7	20	77.3	0	0	997	0.55	1	7.8
STBH 4.0	10:56	0	1.9	19.3	78.8	0	0	997	1.06	10	10.6
STBH 4.1	10:24	0	2	19.8	78.2	0	0	997	1.11	1	7.1
STBH 4.2	10:29	0	2.3	20	77.7	0	0	997	0.92	1	8.6
STBH 5.0	10:59	0	3	19.2	77.8	0	0	997	0.83	15	19.4
STBH 5.1	11:03	0	2.2	20	77.8	0	0	997	0.63	1	5.8
STBH 5.2	10:16	0	1.4	19.7	78.9	0	0	997	0.44	1	9.6
STBH 5.3	10:19	0	2.1	19.9	78	0	0	997	0.97	1	6
STBH 6.0	11:21	0	3.1	19.6	77.3	0	0	997	-0.68	1	5.4
STBH 6.1	10:05	0	2.3	19.2	78.5	0	0	997	0.43	1	5.4
STBH 6.2	10:09	0	1.5	20	78.5	0	0	997	0.86	1	5.4
STBH 6.3	10:13	0	1.3	19.9	78.8	0	0	997	0.82	1	8.2
STBH 7.0	11:25	0	2.3	19.8	77.9	0	0	997	0.54	1	6.2
STBH 7.1	10:01	0	1.5	19.6	78.9	0	0	997	0.71	1	5.5
STBH 9.0	11:36	0	2.3	20	77.7	0	0	997	0.6	1	10.7
STBH 12	11:39	0	1.4	19.8	78.8	0	0	997	1.2	10	6.5
STBH 13	11:43	0	1.8	20.1	78.1	0	0	997	-0.57	10	5.2
STBH 15	11:47	0	2.1	19.8	78.1	0	0	997	0.68	1	8.3
STBH 16	11:51	0	1.5	19.7	78.8	0	0	997	0.56	1	3
STBH 22	11:55	0.6	1.4	20	78	0	0	997	0.48	1.6	3.1
STMBH 5.4	11:07	0	1.6	19.9	78.5	0	0	997	0.77	1	16
STMBH 5.5	11:09	0	2	19.8	78.2	0	0	997	-0.55	1	17.1
STMBH 5.7	11:12	0	1.9	20	78.1	0	0	997	-0.31	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 11/09/2015
 Weather: dry
 Wind conditions: Calm
 Air Temperature: 16 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	2.6	20.1	77.3	0	0	999	0.09	1	5.4
STBH 1.1	09:29	0	2.4	19.9	77.7	0	0	999	-0.27	1	5.4
STBH 2.0	09:36	0	2.9	20	77.1	0	0	999	0.67	1	7
STBH 2.1	09:24	0	1.8	19.9	78.3	0	0	999	0.54	1	7.6
STBH 2.2	09:27	0	1.2	19.4	79.4	0	0	999	0.5	1	5.8
STBH 3.0	09:41	0	2.1	19.6	78.3	0	0	999	0.71	1	6.7
STBH 3.1	09:22	0	2.8	20.1	77.1	0	0	999	0.45	1	7.8
STBH 4.0	09:45	0	1.9	19.6	78.5	0	0	999	1.13	10	10.6
STBH 4.1	09:13	0	2.2	19.9	77.9	0	0	999	1.26	1	7.1
STBH 4.2	09:18	0	1.8	19.4	78.8	0	0	999	0.89	1	8.6
STBH 5.0	09:48	0	2.5	19.5	78	0	0	999	0.79	15	19.4
STBH 5.1	09:52	0	2.4	19.9	77.7	0	0	999	0.56	1	5.8
STBH 5.2	09:05	0	1.6	19.9	78.5	0	0	999	0.33	1	9.6
STBH 5.3	09:08	0	2	20.1	77.9	0	0	999	0.99	1	6
STBH 6.0	10:10	0	3.4	19.8	76.8	0	0	999	-0.71	1	5.4
STBH 6.1	08:54	0	2	19.4	78.6	0	0	999	0.49	1	5.4
STBH 6.2	08:58	0	1.8	19.6	78.6	0	0	999	0.99	1	5.4
STBH 6.3	09:02	0	1.1	19.4	79.5	0	0	999	0.97	1	8.2
STBH 7.0	10:14	0	2.1	20.1	77.8	0	0	999	0.46	1	6.2
STBH 7.1	08:50	0	1.8	19.8	78.4	0	0	999	0.81	1	5.5
STBH 9.0	10:25	0	2.1	19.8	78.1	0	0	999	0.63	1	10.7
STBH 12	10:28	0	1.8	19.7	78.5	0	0	999	1.18	10	6.5
STBH 13	10:32	0	2	20	78	0	0	999	-0.44	10	5.2
STBH 15	10:36	0	2	19.9	78.1	0	0	999	0.71	1	8.3
STBH 16	10:40	0	1.8	19.8	78.4	0	0	999	0.51	1	3
STBH 22	10:44	0.5	1.1	19.5	78.9	0	0	999	0.46	1.6	3.1
STMBH 5.4	09:56	0	1.9	20.1	78	0	0	999	0.7	1	16
STMBH 5.5	09:58	0	2.2	19.5	78.3	0	0	999	-0.47	1	17.1
STMBH 5.7	10:01	0	1.5	19.9	78.6	0	0	999	-0.49	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 18/09/2015
 Weather: dry
 Wind conditions: Calm
 Air Temperature: 16 °C

Instrument: GA 2000
 Serial No: GA10692
 Calibrated To: 20/09/2015
 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	9:41	0	2.5	19.9	77.6	0	0	1002	0.23	1	5.4
STBH 1.1	9:38	0	2.8	20.1	77.1	0	0	1002	-0.44	1	5.4
STBH 2.0	9:45	0	3.2	19.8	77	0	0	1002	0.72	1	7
STBH 2.1	9:33	0	2	19.5	78.5	0	0	1002	0.39	1	7.6
STBH 2.2	9:36	0	1.4	19.9	78.7	0	0	1002	0.52	1	5.8
STBH 3.0	9:50	0	2.4	19.8	77.8	0	0	1002	0.73	1	6.7
STBH 3.1	9:31	0	2.5	19.7	77.8	0	0	1002	0.48	1	7.8
STBH 4.0	9:54	0	1.5	19.9	78.6	0	0	1002	1.11	10	10.6
STBH 4.1	9:22	0	2.6	19.9	77.5	0	0	1002	1.25	1	7.1
STBH 4.2	9:27	0	2.3	19.9	77.8	0	0	1002	0.85	1	8.6
STBH 5.0	9:57	0	1.9	19.6	78.5	0	0	1002	0.82	15	19.4
STBH 5.1	10:01	0	2.1	20.1	77.8	0	0	1002	0.78	1	5.8
STBH 5.2	9:14	0	1.9	19.9	78.2	0	0	1002	0.45	1	9.6
STBH 5.3	9:17	0	2.3	19.8	77.9	0	0	1002	0.77	1	6
STBH 6.0	10:19	0	3.1	19.8	77.1	0	0	1002	-0.52	1	5.4
STBH 6.1	9:03	0	2.5	19.6	77.9	0	0	1002	0.4	1	5.4
STBH 6.2	9:07	0	1.4	19.2	79.4	0	0	1002	0.79	1	5.4
STBH 6.3	9:11	0	1.3	19.9	78.8	0	0	1002	0.72	1	8.2
STBH 7.0	10:23	0	2	19.9	78.1	0	0	1002	0.52	1	6.2
STBH 7.1	8:59	0	1.6	19.8	78.6	0	0	1002	0.8	1	5.5
STBH 9.0	10:34	0	2	19.8	78.2	0	0	1002	0.74	1	10.7
STBH 12	10:37	0	1.5	19.5	79	0	0	1002	1.35	10	6.5
STBH 13	10:41	0	2.3	20	77.7	0	0	1002	-0.74	10	5.2
STBH 15	10:45	0	1.8	19.5	78.7	0	0	1002	0.66	1	8.3
STBH 16	10:49	0	2.6	20.1	77.3	0	0	1002	0.55	1	3
STBH 22	10:53	0.7	1.2	19.8	78.3	0	0	1002	0.42	1.6	3.1
STMBH 5.4	10:05	0	1.5	20	78.5	0	0	1002	0.79	1	16
STMBH 5.5	10:07	0	1.8	19.6	78.6	0	0	1002	-0.52	1	17.1
STMBH 5.7	10:10	0	1.9	19.5	78.6	0	0	1002	-0.38	1	7.1

Standard Landfill Borehole Gas Monitoring

Date 25/09/2015
 Weather: slight rain
 Wind conditions: breezy
 Air Temperature: 17 °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	2.4	19.9	77.7	0	0	999	0.19	1	5.4
STBH 1.1	09:33	0	2.5	20.1	77.4	0	0	999	-0.36	1	5.4
STBH 2.0	09:40	0	3	19.8	77.2	0	0	999	0.67	1	7
STBH 2.1	09:28	0	2.2	19.5	78.3	0	0	999	0.41	1	7.6
STBH 2.2	09:31	0	1.2	19.9	78.9	0	0	999	0.45	1	5.8
STBH 3.0	09:45	0	2.1	19.8	78.1	0	0	999	0.81	1	6.7
STBH 3.1	09:26	0	2.6	19.7	77.7	0	0	999	0.42	1	7.8
STBH 4.0	09:49	0	1.9	19.9	78.2	0	0	999	1.14	10	10.6
STBH 4.1	09:17	0	2.3	19.9	77.8	0	0	999	1.17	1	7.1
STBH 4.2	09:22	0	2.1	19.9	78	0	0	999	0.93	1	8.6
STBH 5.0	09:52	0	2	19.6	78.4	0	0	999	0.87	15	19.4
STBH 5.1	09:56	0	2.3	20.1	77.6	0	0	999	0.74	1	5.8
STBH 5.2	09:09	0	1.5	19.6	78.9	0	0	999	0.52	1	9.6
STBH 5.3	09:12	0	2.1	19.9	78	0	0	999	0.84	1	6
STBH 6.0	10:14	0	2.8	19.8	77.4	0	0	999	-0.55	1	5.4
STBH 6.1	08:58	0	2.6	19.7	77.7	0	0	999	0.37	1	5.4
STBH 6.2	09:02	0	2	19.8	78.2	0	0	999	0.82	1	5.4
STBH 6.3	09:06	0	1.5	20	78.5	0	0	999	0.76	1	8.2
STBH 7.0	10:18	0	2.3	19.9	77.8	0	0	999	0.58	1	6.2
STBH 7.1	08:54	0	1.8	19.6	78.6	0	0	999	0.77	1	5.5
STBH 9.0	10:29	0	2.1	19.7	78.2	0	0	999	0.62	1	10.7
STBH 12	10:32	0	1.7	19.8	78.5	0	0	999	1.32	10	6.5
STBH 13	10:36	0	2.1	20	77.9	0	0	999	-0.69	10	5.2
STBH 15	10:40	0	1.9	19.5	78.6	0	0	999	0.72	1	8.3
STBH 16	10:44	0	2.8	19.9	77.3	0	0	999	0.43	1	3
STBH 22	10:48	0.4	1.4	19.6	78.6	0	0	999	0.36	1.6	3.1
STMBH 5.4	10:00	0	1.9	20	78.1	0	0	999	0.71	1	16
STMBH 5.5	10:02	0	2	19.7	78.3	0	0	999	-0.42	1	17.1
STMBH 5.7	10:05	0	1.6	19.6	78.8	0	0	999	-0.47	1	7.1

STANDARD			Gas Well Balance / Monitoring							
Date		06/07/2015								
Weather:		dry								
Wind conditions:		Calm								
Air Temperature:		19								
Instrument:		GA 2000								
Serial No:		GA10692								
Calibrated To:		20/09/2015								
Operative		AS								
Monitoring Point	Time	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure	Comments
GV1	10:00	52.3	28.6	0.3	18.8	10	7	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	27.8	0.2	22.0	8	11	1002	-22.0	open full
GV4		49.8	27.2	0.4	22.6	11	9	1002	-20.0	Open full
GV5		50.0	30.2	0.5	19.3	8	10	1002	-19.0	Open full
GV6		49.6	28.7	0.1	21.6	11	6	1002	-20.0	Open full
GV7		47.5	30.1	0.2	22.2	7	10	1002	-21.0	Open full
GV8		48.9	29.5	0.6	21.0	9	7	1002	-21.0	Open full
GV9		50.1	30.0	0.2	19.7	8	9	1002	-21.0	Left Open Full
GV10		49.5	29.9	0.5	20.1	7	7	1002	-18.0	Open full
GV11		43.6	29.9	2.5	24.0	11	11	1002	0.0	Left Off
GV18		50.2	28.6	0.5	20.7	8	8	1002	-20.0	Open full (pumped)
GV19		48.9	25.8	0.6	24.7	19	6	1002	-22.0	Open full
GV20		47.1	29.2	0.2	23.5	10	10	1002	-19.0	Left open full
GV22		47.3	28.9	0.3	23.5	8	7	1002	-24.0	Open full
GV24		49.2	29.9	0.4	20.5	14	13	1002	-20.0	Open full (pumped)
GV25		50.0	30.0	0.2	19.8	9	14	1002	-16.0	Open Full
GV27		51.0	28.7	0.2	20.1	8	9	1002	-20.0	Left Open Full
GV31		50.9	29.8	0.5	18.8	11	14	1002	-19.0	Open full (pumped)
GV32		49.5	30.0	0.5	20.0	12	10	1002	-20.0	left open full good gas
GV33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off (pumped)
GV34		32.6	19.8	3.8	43.8	5	8	1002	0.0	Left off bad gas
GV35		50.2	26.8	0.4	22.6	7	11	1002	-19.0	Open full
GV51		48.2	27.4	0.3	24.1	10	6	1002	-21.0	open full
GV55		50.3	30.2	0.6	18.9	6	9	1002	-20.0	Open full
Manifold C		49.1	29.0	0.2	21.7	3	9	1002	-22.0	
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off
GV39		35.0	20.0	2.9	42.1	4	11	1002	0.0	Left Off
GV40		50.0	28.5	0.2	21.3	7	6	1002	-21.0	Open full
GV41		48.9	29.7	0.3	21.1	12	13	1002	-20.0	Open full
GV42		49.3	29.3	0.2	21.2	9	8	1002	-20.0	Open full
GV43		49.6	28.7	0.5	21.2	12	10	1002	-21.0	Left Open Full
Manifold B		50.1	29.9	0.6	19.4	7	8	1002	-18.0	
GV44		50.0	30.0	0.1	19.9	13	14	1002	-21.0	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		45.2	32.5	1.4	20.9	10	11	1002	-4.0	reg closed to cracked high o2
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	29.2	0.3	20.5	8	14	1002	-20.0	Left open good gas
GV54		49.6	26.7	0.2	23.5	10	13	1002	-23.0	Open full
GV56		46.3	28.7	0.5	24.5	11	10	1002	-19.0	Open full
GV57		46.7	30.5	0.1	22.7	6	12	1002	-17.0	Open full
GV58		52.3	29.8	0.2	17.7	10	15	1002	-20.0	left opened full
GV59		50.4	30.2	0.3	19.1	9	9	1002	-18.0	Open full
Manifold A		50.3	29.0	0.4	20.3	10	6	1002	-20.0	
GV60		45.6	26.6	1.1	26.7	13	11	1002	-11.0	reg closed to half way
GV61		49.6	30.0	0.6	19.8	12	6	1002	-19.0	Open Full
GV62		51.6	29.2	0.5	18.7	8	12	1002	-21.0	Open full
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed
GV64		50.1	27.8	0.4	21.7	10	11	1002	-20.0	Open full
GV65		49.6	30.2	0.5	19.7	11	7	1002	-23.0	Open full
GV66		48.5	29.9	0.3	21.3	8	13	1002	-19.0	Open full
New Wells										
GW60		50.3	30.0	0.5	19.2	7	10	1002	-18.0	Open full (pumped)
GW61		51.1	30.2	0.2	18.5	14.0	8.0	1002	-24	LEFT Open full
GW62		50.3	29.4	0.3	20.0	9	8	1002	-17.0	Open full
GW63		49.6	30.0	0.4	20.0	8	13	1002	-19.0	Open full
GW64		50.1	29.5	0.2	20.2	6	7	1002	-24.0	Open full (pumped)
GW65		49.6	30.0	0.5	19.9	10	6	1002	-19.0	Open full
GW66		50.1	29.9	0.6	19.4	13	12	1002	-20.0	Left open full
Engine	14:45	50.2	29.9	0.5	19.4	n/a	n/a	1002		640 kw

STANDARD			Gas Well Balance / Monitoring								
Date		24/08/2015									
Weather:		dry									
Wind conditions:		breezy									
Air Temperature:		17									
Instrument:		GA 2000									
Serial No:		GA10692									
Calibrated To:		20/09/2015									
Operative		AS									
Monitoring Point	Time	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure	Comments	
GV1	10:00	51.6	27.2	0.2	21.0	12	6	999		Open Full	
GV2		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No Access	
GV3		50.1	28.9	0.3	20.7	6	10	999	-20.0	open full	
GV4		50.2	26.7	0.2	22.9	9	8	999	-22.0	Open full	
GV5		51.3	29.3	0.5	18.9	9	7	999	-18.0	Open full	
GV6		49.9	25.8	0.2	24.1	14	8	999	-19.0	Open full	
GV7		48.3	30.5	0.4	20.8	8	11	999	-20.0	Open full	
GV8		49.2	29.6	0.3	20.9	10	8	999	-18.0	Open full	
GV9		49.6	29.9	0.6	19.9	11	10	999	-20.0	Left Open Full	
GV10		50.0	30.0	0.2	19.8	8	8	999	-19.0	Open full	
GV11		41.2	25.7	2.6	30.5	14	13	999	0.0	Left Off	
GV18		50.0	29.5	0.2	20.3	9	7	999	-20.0	Open full (pumped)	
GV19		49.6	26.9	0.3	23.2	16	7	999	-20.0	Open full	
GV20		48.2	29.5	0.4	21.9	11	11	999	-18.0	Left open full	
GV22		48.3	29.2	0.5	22.0	9	8	999	-21.0	Open full	
GV24		49.0	29.5	0.6	20.9	15	11	999	-19.0	Open full (pumped)	
GV25		50.2	29.0	0.2	20.6	11	13	999	-18.0	Open Full	
GV27		51.3	29.1	0.3	19.3	9	10	999	-21.0	Left Open Full	
GV31		50.2	30.0	0.1	19.7	10	10	999	-22.0	Open full (pumped)	
GV32		50.0	29.9	0.2	19.9	13	7	999	-21.0	left open full good gas	
GV33		n/a	n/a	n/a	n/a	n/a	n/a	999	n/a	Turned off (pumped)	
GV34		33.6	20.5	4.0	41.9	6	9	999	0.0	Left off bad gas	
GV35		51.2	27.0	0.3	21.5	8	11	999	-20.0	Open full	
GV51		49.6	28.5	0.2	21.7	11	8	999	-22.0	open full	
GV55		50.5	30.2	0.5	18.8	8	10	999	-19.0	Open full	
Manifold C		49.6	30.0	0.4	20.0	4	8	999	-20.0		
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off	
GV39		33.5	21.5	3.1	41.9	5	13	999	0.0	Left Off	
GV40		50.2	29.5	0.3	20.0	8	7	999	-23.0	Open full	
GV41		49.6	30.5	0.4	19.5	10	11	999	-19.0	Open full	
GV42		49.6	29.9	0.5	20.0	8	7	999	-18.0	Open full	
GV43		50.2	29.6	0.3	19.9	11	11	999	-19.0	Left Open Full	
Manifold B		50.5	30.5	0.5	18.5	8	6	999	-17.0		
GV44		51.3	31.2	0.3	17.2	12	12	999	-20.0	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		43.2	30.2	1.9	24.7	8	13	999	0.0	Reg turned off high o2	
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		50.2	28.5	0.2	21.1	7	11	999	-18.0	Left open good gas	
GV54		49.2	27.4	0.3	23.1	9	11	999	-21.0	Open full	
GV56		47.5	28.2	0.5	23.8	12	9	999	-18.0	Open full	
GV57		47.8	30.1	0.4	21.7	8	13	999	-19.0	Open full	
GV58		51.3	29.2	0.8	18.7	9	14	999	-18.0	left opened full	
GV59		50.0	29.7	0.6	19.7	11	10	999	-20.0	Open full	
Manifold A		53.3	28.4	0.4	17.9	7	8	999	-18.0		
GV60		48.5	29.8	0.7	21.0	12	10	999	-20.0	Reg open full o2 dropped	
GV61		46.3	30.6	0.5	22.6	11	8	999	-18.0	Open Full	
GV62		50.1	29.6	0.6	19.7	7	13	999	-22.0	Open full	
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed	
GV64		49.9	28.5	0.2	21.4	9	14	999	-19.0	Open full	
GV65		48.5	30.5	0.3	20.7	10	8	999	-21.0	Open full	
GV66		47.2	30.0	0.6	22.2	9	12	999	-18.0	Open full	
New Wells											
GW60		51.0	29.9	0.5	18.6	8	9	999	-16.0	Open full (pumped)	
GW61		49.6	28.4	0.4	21.6	12.0	9.0	999	-25	LEFT Open full	
GW62		50.2	29.0	0.5	20.3	10	9	999	-19.0	Open full	
GW63		49.1	26.7	0.6	23.6	9	11	999	-21.0	Open full	
GW64		48.5	29.0	0.3	22.2	7	8	999	-22.0	Open full (pumped)	
GW65		50.1	29.7	0.2	20.0	9	7	999	-18.0	Open full	
GW66		51.2	30.2	0.4	18.2	12	11	999	-19.0	Left open full	
Engine	14:45	49.9	30.2	0.6	19.3	n/a	n/a	999		640 kw	

STANDARD			Gas Well Balance / Monitoring							
Date		26/09/2015								
Weather:		dry								
Wind conditions:		breezy								
Air Temperature:		17								
Instrument:		GA 2000								
Serial No:		GA10692								
Calibrated To:		20/09/2015								
Operative		AS								
Monitoring Point	Time	CH4 %	CO2 %	O2 %	Balance %	CO ppm	H2S ppm	Baro mb	Rel Pressure	Comments
GV1	10:00	50.6	25.2	0.4	23.8	12	8	1002		Open Full
GV2		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No Access
GV3		50.2	27.6	0.2	22.0	7	9	1002	-19.0	open full
GV4		50.4	25.1	0.6	23.9	10	6	1002	-21.0	Open full
GV5		50.9	28.4	0.4	20.3	10	8	1002	-20.0	Open full
GV6		50.2	26.5	0.5	22.8	12	11	1002	-18.0	Open full
GV7		49.6	29.6	0.1	20.7	10	10	1002	-21.0	Open full
GV8		49.7	28.4	0.2	21.7	9	7	1002	-19.0	Open full
GV9		50.3	30.1	0.6	19.0	11	12	1002	-23.0	Left Open Full
GV10		50.2	29.6	0.4	19.8	6	9	1002	-18.0	Open full
GV11		40.6	24.5	2.9	32.0	11	10	1002	0.0	Left Off
GV18		50.2	29.2	0.2	20.4	10	8	1002	-19.0	Open full (pumped)
GV19		49.9	26.8	0.3	23.0	14	6	1002	-18.0	Open full
GV20		48.6	29.4	0.4	21.6	12	12	1002	-21.0	Left open full
GV22		49.2	29.2	0.1	21.5	8	7	1002	-20.0	Open full
GV24		49.6	30.0	0.5	19.9	16	10	1002	-20.0	Open full (pumped)
GV25		50.0	29.4	0.2	20.4	12	13	1002	-22.0	Open Full
GV27		50.3	29.5	0.4	19.8	10	8	1002	-23.0	Left Open Full
GV31		49.6	29.5	0.3	20.6	9	12	1002	-21.0	Open full (pumped)
GV32		51.2	30.0	0.4	18.4	12	8	1002	-20.0	left open full good gas
GV33		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Turned off (pumped)
GV34		35.2	24.5	3.6	36.7	9	8	1002	0.0	Left off bad gas
GV35		50.3	26.5	0.4	22.8	7	12	1002	-21.0	Open full
GV51		50.2	27.4	0.5	21.9	12	7	1002	-23.0	open full
GV55		50.1	29.8	0.3	19.8	9	9	1002	-20.0	Open full
Manifold C		49.9	29.6	0.4	20.1	5	6	1002	-21.0	
GV38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	left off
GV39		32.6	20.3	2.5	44.6	6	12	1002	0.0	Left Off
GV40		50.2	30.8	0.4	18.6	10	8	1002	-21.0	Open full
GV41		50.3	30.6	0.2	18.9	11	9	1002	-20.0	Open full
GV42		50.9	30.2	0.3	18.6	7	8	1002	-22.0	Open full
GV43		49.3	30.1	0.4	20.2	12	14	1002	-21.0	Left Open Full
Manifold B		49.2	30.2	0.4	20.2	9	8	1002	-18.0	
GV44		50.4	29.9	0.6	19.1	13	14	1002	-21.0	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		49.9	29.8	1.1	19.2	9	11	1002	-8.0	reg cracked open
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	28.9	0.4	20.7	8	12	1002	-15.0	Left open good gas
GV54		50.3	28.1	0.5	21.1	9	9	1002	-20.0	Open full
GV56		48.9	28.9	0.3	21.9	11	8	1002	-19.0	Open full
GV57		49.6	29.9	0.2	20.3	7	11	1002	-20.0	Open full
GV58		50.3	28.6	0.6	20.5	8	15	1002	-19.0	left opened full
GV59		51.1	29.1	0.1	19.7	12	9	1002	-21.0	Open full
Manifold A		52.3	27.8	0.2	19.7	8	7	1002	-20.0	
GV60		49.6	28.4	0.3	21.7	14	9	1002	-20.0	Left Open Full
GV61		48.7	29.8	0.1	21.4	10	9	1002	-19.0	Open Full
GV62		49.6	30.2	0.2	20.0	8	12	1002	-21.0	Open full
GV63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Closed
GV64		50.2	29.4	0.3	20.1	7	13	1002	-18.0	Open full
GV65		49.6	29.7	0.2	20.5	11	9	1002	-19.0	Open full
GV66		48.1	29.9	0.4	21.6	10	14	1002	-21.0	Open full
New Wells										
GW60		50.2	30.0	0.4	19.4	9	8	1002	-18.0	Open full (pumped)
GW61		49.3	28.8	0.3	21.6	13.0	12.0	1002	-21	LEFT Open full
GW62		50.0	28.5	0.2	21.3	7	10	1002	-20.0	Open full
GW63		49.6	27.4	0.1	22.9	10	14	1002	-19.0	Open full
GW64		48.1	29.5	0.3	22.1	8	9	1002	-20.0	Open full (pumped)
GW65		49.3	29.1	0.4	21.2	10	8	1002	-17.0	Open full
GW66		50.2	29.9	0.5	19.4	13	12	1002	-20.0	Left open full
Engine	14:45	50.2	29.6	0.5	19.7	n/a	n/a	1002		640 kw

Standard Groundwater Monitoring

Date 22/07/2015

Weather: dry

Wind conditions: calm

Air Temperature: 19 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	10:30	27.21	55.77	28.56	DRY
ST GW 2	10:45	9.1	9.1	0	
ST GW 3	11:48	34.25	53.25	19	
ST GW 4R	12:25	45.68	53	7.32	
ST GW 5	11:12	3.89	10	6.11	
ST GW 6	11:35	29.36	45.46	16.1	
ST GW 7R	11:02	43.71	71	27.29	

Standard Groundwater Monitoring

Date 18/08/2015

Weather: dry

Wind conditions: calm

Air Temperature: 17 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	10:05	27.89	55.77	27.88	DRY
ST GW 2	10:20	9.1	9.1	0	
ST GW 3	11:22	35.07	53.25	18.18	
ST GW 4R	12:00	46.28	53	6.72	
ST GW 5	10:49	3.92	10	6.08	
ST GW 6	11:08	31.28	45.46	14.18	
ST GW 7R	10:38	45.66	71	25.34	

Standard Groundwater Monitoring

Date 22/09/2015

Weather: dry

Wind conditions: calm

Air Temperature: 16 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip-Lev Metres	Dip-Base Metres	Water-Lev Metres	
ST GW 1	9:45	24.28	55.77	31.49	DRY
ST GW 2	10:02	9.1	9.1	0	
ST GW 3	11:16	31.28	53.25	21.97	
ST GW 4R	11:48	40.59	53	12.41	
ST GW 5	10:30	2.91	10	7.09	
ST GW 6	10:55	27.7	45.46	17.76	
ST GW 7R	10:19	44.52	71	26.48	

Standard Leachate Monitoring

Date 15/07/2015
 Weather: dry
 Wind conditions: breezy
 Air Temperature: 16 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:00	29.6	31	1.4	YES	Pneumatic pumps
LC3	10:15	3.18	4.84	1.66	YES	Pneumatic pumps
LC4	10:25	17.51	19	1.49	YES	Pneumatic pumps
LC7	10:48	18.56	20.31	1.75	YES	Pneumatic pumps
LS5	11:02	28.65	32	1.34	YES	Electric Pump - Direct To Tanks
LS6	11:18	30.05	33	1.18	YES	Electric Pump - Direct To Tanks
S1	11:31	3.16	4.43	1.27	YES	Pneumatic pumps
S2	11:50	1.53	3.35	1.82	YES	Pneumatic pumps
S3	12:12	3.6	5.09	1.49	YES	Pneumatic pumps

Standard Leachate Monitoring

Date 11/08/2015
 Weather: dry
 Wind conditions: calm
 Air Temperature: 18 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:30	29.61	31	1.39	YES	Pneumatic pumps
LC3	10:42	3.16	4.84	1.68	YES	Pneumatic pumps
LC4	10:51	17.48	19	1.52	YES	Pneumatic pumps
LC7	11:14	18.52	20.31	1.79	YES	Pneumatic pumps
LS5	11:29	28.67	32	1.33	YES	Electric Pump - Direct To Tanks
LS6	11:48	30.07	33	1.17	YES	Electric Pump - Direct To Tanks
S1	12:01	3.2	4.43	1.23	YES	Pneumatic pumps
S2	12:18	1.54	3.35	1.81	YES	Pneumatic pumps
S3	12:41	3.62	5.09	1.47	YES	Pneumatic pumps

Standard Leachate Monitoring

Date 15/09/2015
 Weather: dry
 Wind conditions: breezy
 Air Temperature: 17 °C

Instrument: Dip-Metre

Operative AS

Monitoring Point	Time Hrs	Dip Level (m)	Base Level	Leachate Depth	Pumping Yes/No	Comments
LC2.1	10:15	29.62	31	1.38	YES	Pneumatic pumps
LC3	10:30	3.2	4.84	1.64	YES	Pneumatic pumps
LC4	10:40	17.52	19	1.48	YES	Pneumatic pumps
LC7	11:00	18.47	20.31	1.84	YES	Pneumatic pumps
LS5	11:18	28.6	32	1.36	YES	Electric Pump - Direct To Tanks
LS6	11:32	30.05	33	1.18	YES	Electric Pump - Direct To Tanks
S1	11:48	3.22	4.43	1.21	YES	Pneumatic pumps
S2	12:03	1.58	3.35	1.77	YES	Pneumatic pumps
S3	12:32	3.64	5.09	1.45	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: 15 October 2015
Customer: H_FLINTCCO_BUC
Sample Delivery Group (SDG): 151002-119
Your Reference:
Location: Brookhill Quarterlys
Report No: 333737

We received 17 samples on Friday October 02, 2015 and 12 of these samples were scheduled for analysis which was completed on Thursday October 15, 2015. 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:	151002-119	Location:	Brookhill Quarterlys	Order Number:	
Job:	H_FLINTCCO_BUC-7	Customer:	Flintshire County Council	Report Number:	333737
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12171510	GW1-01-10--15			01/10/2015
12171511	GW3-01-10--15			01/10/2015
12171513	GW5-01-10--15			01/10/2015
12171514	GW6-01-10--15			01/10/2015
12171515	GW7-01-10--15			01/10/2015
12171512	GW4R-01-10--15			01/10/2015
12171518	LC2-01-10-15			01/10/2015
12171519	LC3-01-10-15			01/10/2015
12171520	LC4-01-10-15			01/10/2015
12171521	LC7-01-10-15			01/10/2015
12171524	S1-01-10-15			01/10/2015
12171525	S2-01-10-15			01/10/2015
12171526	S3-01-10-15			01/10/2015
12171522	SSR5-01-10-15			01/10/2015
12171523	SSR6-01-10-15			01/10/2015
12171516	SW4-01-10-15			01/10/2015
12171517	SW5-01-10-15			01/10/2015

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



CERTIFICATE OF ANALYSIS

SDG: 151002-119
Job: H_FLINTCCO_BUC-7
Client Reference:

Location: Brookhill Quarterlys
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 333737
Superseded Report:

LIQUID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	12171521		LC7-01-10-15						HS04 (AL/E244) 250ml BOD (AL/E212) 1l plastic (AL/E221) 1000ml glass bottle (AL/E	
	12171520		LC4-01-10-15						HS04 (AL/E244) 250ml BOD (AL/E212) 1l plastic (AL/E221) 1000ml glass bottle (AL/E	
	12171519		LC3-01-10-15						HS04 (AL/E244) 250ml BOD (AL/E212) 1l plastic (AL/E221) 1000ml glass bottle (AL/E	
	12171518		LC2-01-10-15						HS04 (AL/E244) 250ml BOD (AL/E212) 1l plastic (AL/E221) 1000ml glass bottle (AL/E	
Alkalinity as CaCO ₃	All	NDPs: 0 Tests: 12								
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 12								
Anions by ion Chromatography	All	NDPs: 0 Tests: 12								
BOD True Total	All	NDPs: 0 Tests: 6								
COD Unfiltered	All	NDPs: 0 Tests: 12								
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6								
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8								
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 6								
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6								
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 12								
pH Value	All	NDPs: 0 Tests: 12								
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 10								

Order Number:
Report Number: 333737
Superseded Report:

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Order Number:
Report Number: 333737
Superseded Report:

Page 5 of 12



CERTIFICATE OF ANALYSIS

SDG: 151002-119
Job: H_FLINTCCO_BUC-7
Client Reference:

Location: Brookhill Quarterlys
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 333737
Superseded Report:

Results Legend		Customer Sample Ref.	LC2-01-10-15	LC3-01-10-15	LC4-01-10-15	LC7-01-10-15	SW4-01-10-15	SW5-01-10-15
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.							
aq	Aqueous / settled sample.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
diss.filt	Dissolved / filtered sample.		01/10/2015	01/10/2015	01/10/2015	01/10/2015	01/10/2015	01/10/2015
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		02/10/2015	02/10/2015	02/10/2015	02/10/2015	02/10/2015	02/10/2015
(F)	Trigger breach confirmed		151002-119	151002-119	151002-119	151002-119	151002-119	151002-119
1-5&*\$@	Sample deviation (see appendix)		12171518	12171519	12171520	12171521	12171516	12171517
Component	LOD/Units	Method						
Alkalinity, Total as CaCO3	<2 mg/l	TM043	8360	6140	4060	4700	50	140
			#	#	#	#	#	#
BOD, unfiltered	<1 mg/l	TM045	148	186	92.2	109	4.43	6.69
			#	#	#	#	#	#
Organic Carbon, Total	<3 mg/l	TM090	915	680	323	396		
			♦ #	♦ #	♦ #	♦ #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1460	1090	761	759	0.267	<0.2
			#	#	#	#	#	#
COD, unfiltered	<7 mg/l	TM107	2400	1770	998	977	68.7	31.2
			#	#	#	#	#	#
Arsenic (diss.filt)	<0.00012 mg/l	TM152					0.000924	0.000485
							#	#
Cadmium (diss.filt)	<0.0001 mg/l	TM152					<0.0001	<0.0001
							#	#
Copper (diss.filt)	<0.00085 mg/l	TM152					<0.00085	<0.00085
							#	#
Lead (diss.filt)	<0.00002 mg/l	TM152					<0.00002	<0.00002
							#	#
Nickel (diss.filt)	<0.00015 mg/l	TM152					0.00116	0.00177
							#	#
Zinc (diss.filt)	<0.00041 mg/l	TM152					0.00604	<0.00041
							#	#
Mercury (diss.filt)	<0.00001 mg/l	TM183					<0.00001	<0.00001
							#	#
Chloride	<0.08 mg/l	TM226	2200	1740	1170	1180		
			#	#	#	#		
Nitrite as NO2	<0.03 mg/l	TM226					0.296	<0.03
							♦ #	♦ #
Nitrate as NO3	<0.04 mg/l	TM226					1.72	<0.04
							#	#
Sulphate	<0.1 mg/l	TM226	1.15	9.02	1.1	1.22		
			#	#	#	#		
Total Oxidised Nitrogen as N	<0.01 mg/l	TM226	<0.01	<0.01	2.13	<0.01	0.479	<0.01
			#	#	#	#	#	#
Cyanide, Total	<0.05 mg/l	TM227					<0.05	<0.05
							#	#
Calcium (diss.filt)	<0.012 mg/l	TM228	55.4	86.1	95.6	52.8		
			#	#	#	#		
Sodium (diss.filt)	<0.076 mg/l	TM228	1940	1470	1030	1140	17.6	25.5
			#	#	#	#	#	#
Magnesium (diss.filt)	<0.036 mg/l	TM228	102	90.5	78.8	67.4	2.76	31.5
			#	#	#	#	#	#
Potassium (diss.filt)	<1 mg/l	TM228	802	659	350	329	2.29	<1
			#	#	#	#	#	#
Iron (diss.filt)	<0.019 mg/l	TM228					0.0292	<0.019
							#	#
pH	<1 pH Units	TM256	7.99	8.05	7.55	7.53	7.49	8.01
			#	#	#	#	#	#
Phenols, Total Detected 5 speciated	<0.025 mg/l	TM259					<0.025	<0.025

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Superseded Report:

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CERTIFICATE OF ANALYSIS

SDG: 151002-119
Job: H_FLINTCCO_BUC-7
Client Reference:

Location: Brookhill Quarterlys
Customer: Flintshire County Council
Attention: Paul Murphy

Order Number:
Report Number: 333737
Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	SW4-01-10-15	SW5-01-10-15				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.							
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						
Volume	-	TM231	80	80				
Atrazine	<0.001 mg/l	TM231	<0.001	<0.001				
Simazine	<0.001 mg/l	TM231	<0.001	<0.001				
Dichlorvos	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Mevinphos	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Tecnazene	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Hexachlorobenzene	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Trifluralin	<0.00001 mg/l	TM231	<0.00001	<0.00001				
alpha-Hexachlorocyclohexane (HCH / Lindane)	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Quintozene (PCNB)	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Diazinon	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Triallate	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Etrimpfos	<0.00001 mg/l	TM231	<0.00001	<0.00001				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Disulfoton	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Propetamphos	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Heptachlor	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Chlorpyrifos methyl	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Dimethoate	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Aldrin	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Chlorothalonil	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Pirimiphos-methyl	<0.00001 mg/l	TM231	<0.00001	<0.00001				
beta-Hexachlorocyclohexane (HCH / Lindane)	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Chlorpyrifos	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Telodrin	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Methyl parathion	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Isodrin	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Malathion	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Fenthion	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Fenitrothion	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Heptachlor epoxide	<0.00001 mg/l	TM231	<0.00001	<0.00001				
Triadimefon	<0.00001 mg/l	TM231	<0.00001	<0.00001				



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OC, OP Pesticides and Triazine Herb

Results Legend			Customer Sample Ref.		SW4-01-10-15	SW5-01-10-15			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Water(GW/SW) 01/10/2015 02/10/2015 151002-119 12171516	Water(GW/SW) 01/10/2015 02/10/2015 151002-119 12171517			
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.s.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&+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Pendimethalin	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Parathion	<0.00001 mg/l	TM231			<0.00001	<0.00001			
o,p-DDE	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Chlorfenvinphos	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Endosulphan I	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Trans-chlordane	<0.00001 mg/l	TM231			<0.00001	<0.00001			
cis-Chlordane	<0.00001 mg/l	TM231			<0.00001	<0.00001			
p,p-DDE	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Dieldrin	<0.00001 mg/l	TM231			<0.00001	<0.00001			
o,p-TDE (DDD)	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Endrin	<0.00001 mg/l	TM231			<0.00001	<0.00001			
o,p-DDT	<0.00001 mg/l	TM231			<0.00001	<0.00001			
p,p-TDE (DDD)	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Ethion	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Endosulphan II	<0.00001 mg/l	TM231			<0.00001	<0.00001			
p,p-DDT	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Carbophenothion	<0.00001 mg/l	TM231			<0.00001	<0.00001			
o,p-Methoxychlor	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Triazophos	<0.00001 mg/l	TM231			<0.00001	<0.00001			
p,p-Methoxychlor	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Endosulphan sulphate	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Permethrin I	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Phosalone	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Permethrin II	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Azinphos-methyl	<0.00001 mg/l	TM231			<0.00001	<0.00001			
Azinphos-ethyl	<0.00001 mg/l	TM231			<0.00001	<0.00001			



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Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
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		
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		
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		
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		
TM231	Agilent 6890 Gas Chromatograph system using an Agilent 5973 Mass Selective Detector (MSD)	Determination of Organochlorine and Organophosphorus Pesticides and Triazine Herbicides by GCMS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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



CERTIFICATE OF ANALYSIS

SDG:	151002-119	Location:	Brookhill Quarterlys	Order Number:	
Job:	H_FLINTCCO_BUC-7	Customer:	Flintshire County Council	Report Number:	333737
Client Reference:		Attention:	Paul Murphy	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	12171510	12171511	12171513	12171514	12171515	12171512	12171518	12171519	12171520	12171521
Customer Sample Ref.	GW1-01-10-15	GW3-01-10-15	GW5-01-10-15	GW6-01-10-15	GW7-01-10-15	GW4R-01-10-15	LC2-01-10-15	LC3-01-10-15	LC4-01-10-15	LC7-01-10-15
AGS Ref.										
Depth										
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Alkalinity as CaCO3	10-Oct-2015	09-Oct-2015	10-Oct-2015	09-Oct-2015	08-Oct-2015	10-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015
Ammoniacal Nitrogen	09-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	08-Oct-2015	12-Oct-2015	12-Oct-2015	12-Oct-2015
Anions by ion Chromatography	09-Oct-2015	09-Oct-2015	09-Oct-2015	08-Oct-2015	07-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	12-Oct-2015	09-Oct-2015
BOD True Total							08-Oct-2015	08-Oct-2015	08-Oct-2015	08-Oct-2015
COD Unfiltered	10-Oct-2015	05-Oct-2015	10-Oct-2015	05-Oct-2015	05-Oct-2015	05-Oct-2015	08-Oct-2015	08-Oct-2015	08-Oct-2015	08-Oct-2015
Conductivity (at 20 deg.C)	07-Oct-2015	06-Oct-2015	06-Oct-2015	06-Oct-2015	06-Oct-2015	06-Oct-2015				
Dissolved Metals by ICP-MS	14-Oct-2015	14-Oct-2015	15-Oct-2015	13-Oct-2015	13-Oct-2015	13-Oct-2015				
Dissolved Oxygen by Probe	09-Oct-2015	09-Oct-2015	09-Oct-2015	09-Oct-2015	05-Oct-2015	09-Oct-2015				
GRO by GC-FID (W)	12-Oct-2015	12-Oct-2015	12-Oct-2015	13-Oct-2015	12-Oct-2015	12-Oct-2015				
Metals by iCap-OES Dissolved (W)	07-Oct-2015	07-Oct-2015	07-Oct-2015	07-Oct-2015	05-Oct-2015	07-Oct-2015	07-Oct-2015	07-Oct-2015	07-Oct-2015	07-Oct-2015
pH Value	09-Oct-2015	09-Oct-2015	06-Oct-2015	06-Oct-2015	09-Oct-2015	06-Oct-2015	09-Oct-2015	09-Oct-2015	06-Oct-2015	06-Oct-2015
Total Organic and Inorganic Carbon	08-Oct-2015	08-Oct-2015	13-Oct-2015	06-Oct-2015	08-Oct-2015	08-Oct-2015	12-Oct-2015	09-Oct-2015	12-Oct-2015	12-Oct-2015

Lab Sample No(s)	12171516	12171517
Customer Sample Ref.	SW4-01-10-15	SW5-01-10-15
AGS Ref.		
Depth		
Type	LIQUID	LIQUID
Alkalinity as CaCO3	09-Oct-2015	09-Oct-2015
Ammoniacal Nitrogen	09-Oct-2015	09-Oct-2015
Anions by ion Chromatography	07-Oct-2015	09-Oct-2015
BOD True Total	08-Oct-2015	08-Oct-2015
COD Unfiltered	04-Oct-2015	04-Oct-2015
Cyanide Comp/Free/Total/Thiocyanate	08-Oct-2015	08-Oct-2015
Dissolved Metals by ICP-MS	13-Oct-2015	13-Oct-2015
Mercury Dissolved	08-Oct-2015	08-Oct-2015
Metals by iCap-OES Dissolved (W)	05-Oct-2015	07-Oct-2015
OC, OP Pesticides and Triazine Herb	09-Oct-2015	09-Oct-2015
pH Value	09-Oct-2015	06-Oct-2015
Phenols by HPLC (W)	10-Oct-2015	10-Oct-2015



SDG: 151002-119
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Appendix General

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. 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 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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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

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.



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