

CAULMERT LIMITED

Engineering, Environmental & Planning
Consultancy Services

Bryn Posteg Landfill Site

Sundorne Products (Llanidloes) Ltd

Quarterly Monitoring Review

April – June 2019

Prepared by:

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APPROVAL RECORD

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Client: Potters Waste Management

Document Title: Quarterly Monitoring Review, April – June 2019

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TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	LANDFILL GAS	2
3.0	LEACHATE	5
4.0	GROUNDWATER	7
5.0	SURFACE WATER	8
6.0	DUST	9
7.0	SUMMARY	10

DRAWINGS

3376-CAU-XX-XX-DR-V-1801	Gas Extraction and Monitoring Infrastructure Plan
3997-CAU-XX-XX-DR-V-1804-X	As Built Replacement Leachate Wells
3033-CAU-XX-XX-DR-S-1800	Site Layout Plan

APPENDICES

Appendix 1	Landfill gas
Appendix 2	Leachate
Appendix 3	Groundwater
Appendix 4	Surface water
Appendix 5	Dust

1.0 INTRODUCTION

1.1 Background

1.1.1 This report has been compiled in compliance with the Environmental Permit (EP) BU7766, Variation Notice Number EPR/BU7766IC for Bryn Posteg Landfill Site, which requires that the monitoring data collected at the site is reviewed quarterly. The data reviewed in this report was collected between the 1st of April and the 31st of June 2019.

1.1.2 This report records and reviews monitoring data for landfill gas, leachate, groundwater and surface water and discusses this data in relation to emission limits set in the latest EP variation. The data will also be included in an Annual Monitoring Review, as required by the EP. Third party information supplied by Potters Waste Management (Potters) has been used in good faith within this document. Caulmert Ltd has not attempted to verify the information.

1.2 Site Location and Surrounding Land-use

1.2.1 Bryn Posteg Landfill Site is located approximately 3 km south east of Llanidloes in Powys and is centred at National Grid Reference SN 971 822. The site is accessed via the B4518, Llanidloes to Tylwch road. The B4518 runs parallel with the western site boundary.

1.2.2 The landfill site was developed from the surface void of a former lead mine. Controlled landfilling has taken place since 1982.

1.2.3 Bryn Posteg is situated amongst predominantly agricultural land. There are seven residential receptors located within approximately 450 m of the waste mass, these are:

- Valley View, 100 m to the north west;
- Rhoswen, 200 m to the east;
- Pant, 250 m to the east;
- Bryn Posteg Farm, 250 to the west;
- Penbryn Du, 300 m to the north
- Tawelfa, 300 m to the North
- Maes-Socyn, 350 m to the south-west
- Talcen-Llwydiarth, 450 m to the south-east

2.0 LANDFILL GAS

2.1 Gas Collection Compound and Extraction Wells

- 2.1.1 In waste gas and daily gas collection data is included in Appendix 1. In waste gas was analysed recorded in April, May and June.
- 2.1.2 Methane concentrations in-waste ranged from 0.1 % in GW323 to 86.2 % in GW204. Carbon dioxide concentrations ranged from 0.1 % in GW323 to 49.7 % in GW309.
- 2.1.3 Oxygen concentrations similar to atmospheric concentrations were detected in BPIW0051, BPIW0204, BPIW0206, BPIW0305, BPIW0306, BPIW0309, BPIW0208A and BPSP0001. This suggests the seal around the wells aren't sufficient and need replacing.
- 2.1.4 Carbon monoxide concentrations were above the management trigger level (100 ppm) at least once in 26 locations. The highest concentrations were seen in Phase 9D with concentrations near the limit of detection (500 ppm), as observed during the last Quarterly Review period.
- 2.1.5 There were 140 occasions that the total percentage of gas was above 100%.

2.2 Perimeter Monitoring Results

- 2.2.1 Routine landfill gas (LFG) monitoring is required to be carried out on a weekly basis at 36 boreholes situated around the site perimeter. All boreholes have the prefix 'G' in the monitoring data. Concentrations of methane (CH₄) and carbon dioxide (CO₂) are measured alongside oxygen (O₂), relative pressure and atmospheric pressure on each visit.
- 2.2.2 Summary tables displaying all CH₄, CO₂ and O₂ monitoring data collected during this period are included in Appendix 1. Concentrations are compared to Trigger Limits and Compliance Limits. The Trigger Limits are included in the Site's Gas Action Plan, part of the Landfill Gas Management Plan (3428-CAU-XX-XX-RP-V-0303.A0.C4) and serve as a first stage of identifying any potential lateral landfill gas migration. The Trigger Limits are lower than the Permit Compliance Limits to allow early identification of any methane or carbon dioxide increase at perimeter wells.
- 2.2.3 There were 10 occasions that the total percentage of gas was above 100%, this has increased from the previous quarter where there were only 4 occurrence.
- 2.2.4 Methane concentrations exceeded the Compliance Limit value of 1.0 %¹ at least once in 15 of the monitoring locations. The maximum concentration was 89.6 %, detected at G20, on the 11th of April 2019. This is very similar to the concentration detected during the previous review period (89.2 % at G20).

¹ All gas concentrations are expressed as % v/v

- 2.2.5 Carbon dioxide concentrations exceeded the Compliance Limit value of 1.5 % on at least one occasion at 26 monitoring locations. The maximum concentration was 33.0 %, detected in G19 on the 8th May 2019. This is very similar to the concentration detected during the previous review period (33.6 % at G19).
- 2.2.6 Methane concentrations along the south western boundary of the site (G01 – G08) typically show very little gas migration with average concentrations below 0.04 %, during the previous monitoring period, with the exception of G01 where an increase in methane concentration was detected. This trend has continued during this review period with methane concentrations ranging between 6.8 % and 33.7 %. Carbon dioxide concentrations were similar to that detected in the previous review period (average of 2.36 %) with an average of 2.68 %.
- 2.2.7 Methane concentrations remained low at the other locations along the south eastern boundary, however, carbon dioxide fluctuated at G03 and G08 where averages were 1.64 % and 1.26 % respectfully.
- 2.2.8 Lateral landfill gas migration issues and on-going Compliance Limit breaches are currently under investigation. The highest landfill gas concentrations have been detected primarily in the vicinity of the oldest phases; Phase 1 and 2 in perimeter wells G19 – G25. Gas extraction is undertaken in these phases. The concentrations of landfill gas in these perimeter wells has fluctuated during the review period (see graphs and tables in Appendix 1).
- 2.2.9 Perimeter landfill gas concentrations are currently being addressed as part of ongoing improvement actions for the management of the landfill gas extraction system.
- 2.2.10 A cut off trench is currently scheduled to be constructed along the eastern section of Phase 1 to facilitate leachate and gas extraction to a greater capacity than the current infrastructure can support (CQA Plan reference; EXEA/Bryn Posteg/CQAP/IVT/December 2018). The perimeter landfill gas concentrations along this flank will be monitored closely, both during the works and after, to identify any trends.
- 2.2.11 Leachate extraction infrastructure improvements were carried out at Bryn Posteg during May and June, as detailed in the CQA Plan (3376-CAU-XX-XX-RP-V-0302.A0-C1). These works are anticipated to benefit both the leachate and gas extraction efficiencies across the site.
- 2.2.12 Highly variable concentrations of landfill gas are often detected at G35 and G38. Concentrations of methane and carbon dioxide in G35 fluctuated across the review period. Average methane concentrations within G35 reduce from 22.3 % in Q4 2018 to 13.34 % in Q1 2019 but increased again during Q2 2019 to 24.14 %. Average carbon dioxide concentrations also decreased from 13.5 % in Q4 2018 to 12.2 % in Q1 2019 but increased slightly to 14.66 % in Q2 2019. Concentrations in G38 have also fluctuated. Average methane increased from 29.64 % in Q4 2018 to 50.5 % in Q1 2019 but decreased slightly to 44.14 % during Q2 2019. Carbon dioxide at G38 increased from 14.34 % in Q4 2018 to 22.05 % in Q1 2019 but decreased slightly to 20.68 % during Q2 2019.

Table 2.1 Landfill Gas Average Concentrations (% v/v)

Date	G12		G19		G20		G21		G22	
	CH4	CO2	CH4	CO2	CH4	CO2	CH4	CO2	CH4	CO2
2016	68.8	3.8	71.4	32.9	71.9	28.3	50.0	12.9	67.8	20.1
2017	57.6	3.6	68.7	32.1	71.0	26.9	54.5	14.8	71.6	23.3
2018 Q1	75.7	4.2	67.6	27.0	64.0	19.6	39.8	10.3	50.4	18.8
2018 Q2	53.2	3.4	60.4	17.5	52.8	18.1	64.3	15.7	68.7	21.7
2018 Q3	49.6	3.4	68.9	34.0	67.8	35.3	52.5	16.2	71.8	27.2
2018 Q4	60.1	3.9	65.0	14.7	60.7	13.3	45.1	13.7	74.0	22.4
2019 Q1	66.4	4.6	70.2	21.9	71.9	5.5	50.5	14.8	68.5	16.7
2019 Q2	64.5	4.4	64.2	25.3	68.7	19.5	54.7	17.6	76.3	19.7
Date	G23		G24		G25		G35		G38	
	CH4	CO2	CH4	CO2	CH4	CO2	CH4	CO2	CH4	CO2
2016	14.4	9.4	8.9	5.1	51.0	13.0	26.8	15.4	56.7	27.9
2017	14.8	9.8	12.4	5.3	37.8	14.8	48.5	23.1	54.9	29.2
2018 Q1	3.1	7.0	5.4	1.8	36.0	12.0	4.6	4.0	46.2	17.5
2018 Q2	14.6	9.4	27.9	13.1	14.0	11.2	42.3	22.2	34.1	12.9
2018 Q3	18.5	11.6	29.6	13.4	52.8	16.4	64.8	30.0	48.6	31.6
2018 Q4	14.3	8.9	4.4	2.6	23.6	16.5	22.3	13.5	29.6	14.3
2019 Q1	5.1	5.2	14.1	2.8	23.9	15.3	13.3	12.2	50.1	22.1
2019 Q2	7.7	5.8	12.2	5.8	5.6	5.6	24.1	14.7	22.2	20.7

Table showing average gas concentrations for locations which continue to have issues with lateral landfill gas migration. Increases in concentration compared to the previous period are highlighted by red text.

- 2.2.13 Consistently elevated concentrations of methane and carbon dioxide have also been detected at G12. A maximum methane concentration of 77.3 % was detected in May, a slight increase from the 74.2 % detected during the previous quarter. Concentrations at G12 will be monitored closely to identify any improvement in the control of landfill gas migration as a result of the recently installed leachate extraction infrastructure in this area of the landfill.

3.0 LEACHATE

3.1 Summary of Monitoring Results

Monitoring of leachate levels

- 3.1.1 The installation of replacement leachate extraction and monitoring wells was carried out between April and June 2019, in accordance with the CQA Plan (3376-CAU-XX-XX-RP-V-0302.A0-C1). The infrastructure layout is shown in Drawing 3997-CAU-XX-XX-DR-V-1804-X, and a CQA Validation Report will be submitted separately detailing the works.
- 3.1.2 This new infrastructure will allow reliable leachate levels to be obtained and leachate extraction to be managed more efficiently.
- 3.1.3 Leachate levels have not been obtained from all locations during this quarter; however the available data is presented below and in Appendix 2.

Table 3.1 Leachate Level Summary

ID	date	DIP mBGL	Leachate above well base
LCP2	13/05/2019	25.13	4.27
LCP3	02/05/2019	25.38	9.19
LCP6	18/06/2018	23.44	0.76
RMLP9B	12/06/2019	23.43	16.37
RMLP9C	31/05/2019	10.87	14.61
RMLP9D	24/05/2019	7.0	17.76

- 3.1.4 Leachate level is presented as leachate above the base of the well as required by the Permit. The installations all intercept the leachate drainage layer of their respective cells. Further leachate level information is included in Appendix 2, showing the ordinance level utilized to accurately calculate the leachate height.
- 3.1.5 All leachate levels were above the compliance limit of 1 m above the sump base, with the exception of LCP6. These levels were recorded shortly after leachate extraction pumps were installed into the new wells and are expected to improve over the next review period.

Monitoring of leachate quality

- 3.1.6 Raw leachate samples were analysed in April, May and June for pH and ammoniacal nitrogen and chloride. All results are summarised in tables in Appendix 2.
- 3.1.7 pH concentrations were relatively stable throughout the review period with values between 6.6 and 8.3 recorded. Ammoniacal nitrogen ranged between 92.2 mg/l (LCP 1) and 2530 mg/l (RMLP9B).
- 3.1.8 Chloride concentrations ranged from 172 mg/l in LCP 1 to 8640 mg/l within LCP 2. On average, chloride concentrations within LCP2 (8180 mg/l) were considerably higher than the rest of the site. The location containing the next highest average concentration was LCP3 at 2697 mg/l.

- 3.1.9 These concentrations are comparable to those previously detected at these locations and reflects the age of the waste in the respective phases.

Treated leachate

- 3.1.10 Potters undertakes daily in-situ and monthly testing of treated leachate in order to assess its suitability for discharge. If the parameters exceed the Discharge Consent Limit no discharge is made.
- 3.1.11 Treated leachate (final discharge) was tested during April, May and June for pH, ammoniacal nitrogen, suspended solids, BOD, COD, Total Petroleum Hydrocarbons (C6 – C40), sulphate and dissolved methane. All results are tabulated in Appendix 2.
- 3.1.12 Ammoniacal nitrogen remained below the discharge consent of 150 mg/l throughout the duration of the review period. pH concentrations were below the discharge consent (6) during June at 4.8.
- 3.1.13 COD, sulphate and suspended solids concentrations remained below their respective EP limits throughout the review period. A concentration of dissolved methane was detected during May at 0.068 mg/l, no dissolved methane was detected during the remainder of the review period.
- 3.1.14 TPH was detected at a concentration of 2840 µg/L, 1870 µg/L and 285 µg/L during April, May and June. As required by the Permit, no visible oils were detected in the treated leachate.
- 3.1.15 The volume of treated leachate discharged between the 1st April and the 28th June 2019 was not recorded due to a fault with the flow meter.
- 3.1.16 3,157 m³ was removed by tanker for off-site treatment.

4.0 GROUNDWATER

4.1 Groundwater Levels

- 4.1.1 Groundwater levels were recorded monthly at W1-W15. The results indicated that groundwater elevation remained relatively stable over the review period in all locations. Summary tables and time series graphs are presented in Appendix 3.

4.2 Summary of Monitoring Results

- 4.2.1 Groundwater is sampled at locations W1 – W9. W10 requires replacing and W11 was dry for the duration of the review period. Samples were tested for a monthly suite of parameters and a larger quarterly suite was carried out in June. All monitoring data is included in Appendix 3.
- 4.2.2 Concentrations of monthly parameters were below their respective Compliance Limits, with the exception of Chloride in W1 only. The maximum chloride concentration in W1 was 343 mg/l, lower than the maximum found during the last review period (484 mg/l). This trend in chloride at W1 has occurred seasonally at this location, as discussed in detail in the Caulmert Letter Report 3033-CAU-XX-XX-CO-V-9101.
- 4.2.3 Ammoniacal nitrogen concentrations remained below the compliance limit (2 mg/l) throughout the review period. A decrease in concentration from the maximum of 2.93 mg/l detected in March was seen at W4. Concentrations at W4 ranged from 0.99 mg/l to 1.48 mg/l. No ammoniacal nitrogen was detected at any of the other monitoring points during this review period.
- 4.2.4 Quarterly parameters were all below their respective compliance limits and were mostly undetected, with the exception of mecoprop. Mecoprop was detected at concentrations of 0.11 µg/l and 0.13 µg/l at W4 and W5 respectively, slightly above the compliance limit (0.1 µg/l).

5.0 SURFACE WATER

5.1 Summary of Monitoring Results

- 5.1.1 The permit requires monthly monitoring at monitoring points P1, P2 and P3.
- 5.1.2 P3 is the discharge point for the proposed reed bed which has not yet been commissioned, however the collection ponds where surface water is currently stored has been sampled once during this review period, in June, and is referred to as P3 in this report.
- 5.1.3 Surface water samples were collected at SW1 (P1) and SW2 (P2) in April, May and June. A summary table displaying surface water monitoring data is enclosed in Appendix 4.
- 5.1.4 Ammoniacal nitrogen concentrations were below the limit of detection in P1 throughout the review period. In P2, concentrations were below the compliance limit and ranged between <0.06 mg/l and 0.18 mg/l, which is a decrease from the peak observed during the previous review period (1.5 mg/l). Concentrations were also low at P3 (0.19 mg/L).
- 5.1.5 Suspended solids concentration remained below the 50 mg/l Compliance Limit at all locations, with maximum concentrations of 4.0 mg/l and 34 mg/l in P1 and P2 respectively.
- 5.1.6 pH was relatively neutral with values ranging between 6.1 in P1 to 7.8 in P2. All concentrations were within the permitted range of 6-9.
- 5.1.7 Electrical conductivity ranged from 96.3 µS/cm to 105 µS/cm in P1 and 258 µS/cm to 470 µS/cm in P2. Conductivity at P3 was 115 µS/cm. Chloride concentrations were low with maximums at P1, P2 and P3 of 11.8 mg/l to 43.9 mg/l and <3.7 mg/l respectively.
- 5.1.8 BOD concentrations ranged from below the limit of detection in P1 to 3 mg/L in P2.
- 5.1.9 Concentrations of petroleum hydrocarbons were below the limit of detection throughout the review period in P1. Hydrocarbons in the range; EH >C24 - C40 were detected at P2 and P3 during June in low concentrations; 63 µg/l and 39 µg/l respectively.
- 5.1.10 An extensive quarterly suite was also analysed at all locations during June. Cadmium was detected in trace concentrations at P1 (0.0006 mg/l). No other hazardous substances were detected. COD was low, at concentrations of 20 mg/l, 28 mg/l and 26 mg/l at P1, P2 and P3 respectively.

6.0 DUST

6.1 Monitoring Results

- 6.1.1 Dust monitoring was undertaken between the 29th of April 2019 to the 23rd of May 2019 at locations BP1, BP2 and BP3. The dust monitoring results, as supplied by the subcontracted laboratory, are summarized in Table 2 below. A Certificate of Analysis is enclosed in Appendix 5.

Table 2: Dust Monitoring Results

Period	29/04/19 - 23/05/19		
Location	Mass of Undissolved Solids mg	Result mg/m ² /day	Compliance Limit mg/m ² /day
BP 1	5.7	<10	200
BP 2	20.7	21	200
BP 3	29.5	30	200

- 6.1.2 Dust concentrations remained below the Compliance Limit at all locations during this review period.

7.0 SUMMARY

7.1 Landfill gas

- 7.1.1 The CH₄ Compliance Limit was exceeded at 15 locations, similar to the previous review period (quarter 1 2019) where 14 locations exceeded their respective Compliance Limits. CO₂ Compliance Limit was exceeded at 26 locations on a number of occasions during the monitoring period, similar to the 25 observed in the previous review period. Compliance Limits exceedances and landfill gas management are currently under review by Potters as part of the improvement actions stipulated in the Landfill Gas Management Plan, in agreement with NRW.

7.2 Leachate

- 7.2.1 Replacement leachate extraction and monitoring wells were installed at Bryn Posteg during this quarter, in accordance with the CQA Plan (3376-CAU-XX-XX-RP-V-0302.A0-C1). A full CQA report will be submitted to NRW separately. Leachate levels were collected at some of the new locations, however extraction pumps were only recently installed and levels have not yet reduced to below the compliance limit.
- 7.2.2 Considerably higher concentrations of chloride were detected within LCP2 when compared to the rest of the monitoring locations.
- 7.2.3 In the final discharge (treated leachate) quality data, an exceedance of the discharge consent for pH was recorded.
- 7.2.4 The volume of treated leachate discharged between the 1st April and the 30th June was not recorded. 3,157 m³ was tankered off site for treatment.

7.3 Groundwater

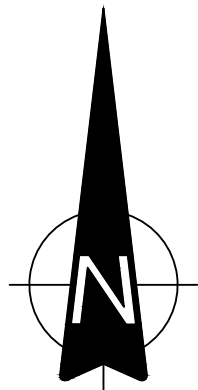
- 7.3.1 Groundwater levels in all locations remained relatively stable over the review period.
- 7.3.2 Ammoniacal Nitrogen concentrations remained below the compliance limit at all locations throughout the review period.
- 7.3.3 Chloride within W1 exceeded the compliance limit as noted in the previous reviews since 2005. This trend in chloride at W1 has occurred seasonally at this location, as discussed in detail in the Caulmert Letter Report 3033-CAU-XX-XX-CO-V-9101.

7.4 Surface Water

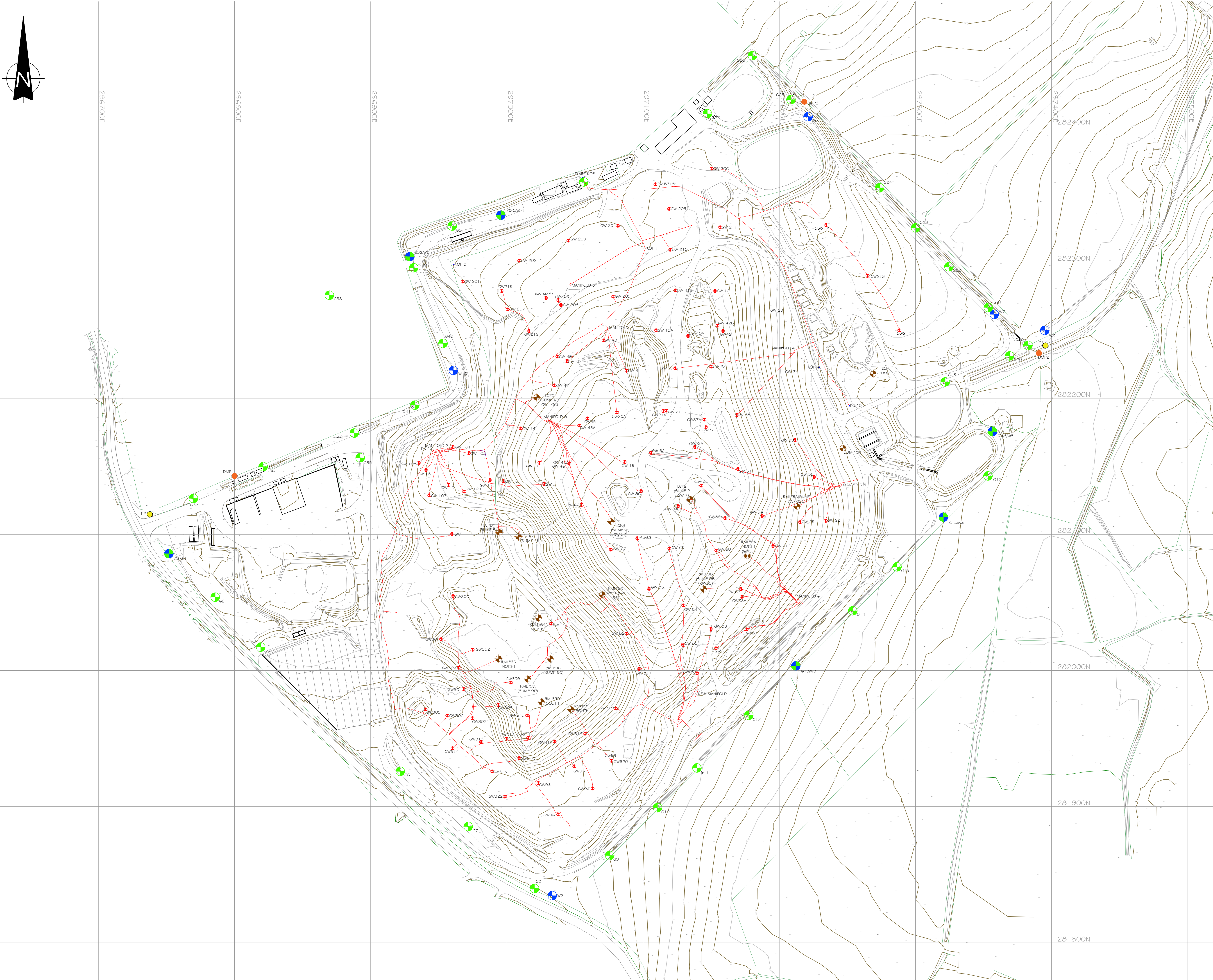
- 7.4.1 Surface water samples were collected at P1 and P2 monthly during this quarter, while P3 was sampled once in June at the surface water collection ponds. No compliance limits were exceeded at any of the monitoring points. No hazardous substances were detected in the larger quarterly suite in June, with the exception of a very low concentration of cadmium at the lower limit of detection in P1.

7.5 Dust

- 7.5.1 Dust concentrations remained below the 200 mg/m²/day Compliance Limit at all locations during this review period.



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LEGEND

- IN WASTE GAS WELL
- LEACHATE COLLECTION / MONITORING POINT
- PERIMETER GAS MONITORING BOREHOLE
- PERIMETER GROUNDWATER MONITORING BOREHOLE
- PERIMETER GAS & GROUNDWATER MONITORING BOREHOLE
- SURFACE WATER MONITORING LOCATION
- DUST MONITORING POINT

C2	GAS MONITORING LOCATIONS NAME CHANGE	DA	SO	SO	09.05.19
C1	BOREHOLE NAME CHANGE	DA	HC	HC	16.10.18
P3	MINOR AMENDMENTS	DA	SO	SO	31.05.18
P2	MINOR AMENDMENTS	DA	SO	SO	29.05.18
P1	ISSUED FOR COMMENT	RWG	SO	SO	04.05.18
REV	MODIFICATIONS	BY	RE	AP	DATE

POTTERS WASTE MANAGEMENT

PROJECT:

BRYN POSTEG LANDFILL SITE

TITLE:

GAS EXTRACTION AND MONITORING INFRASTRUCTURE PLAN

DRAWN BY	DATE	
RWG	04.05.2018	
REVIEWED BY	SCALE @ A1	JOB REF:
SO	1:1250	3376
AUTHORISED BY	ISSUE	REVISION
SO	S1	C2

DRAWING NUMBER

3376-CAU-XX-XX-DR-V-1801



engineering environmental planning

Registered Office: InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG Company Registered No: 06716319

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4. LOCATIONS OF PEGS TAKEN FROM NRG DRAWING : Bryn Posteg_Proposed Drilling Locations_May2019 : 1284/TP/14 : 01

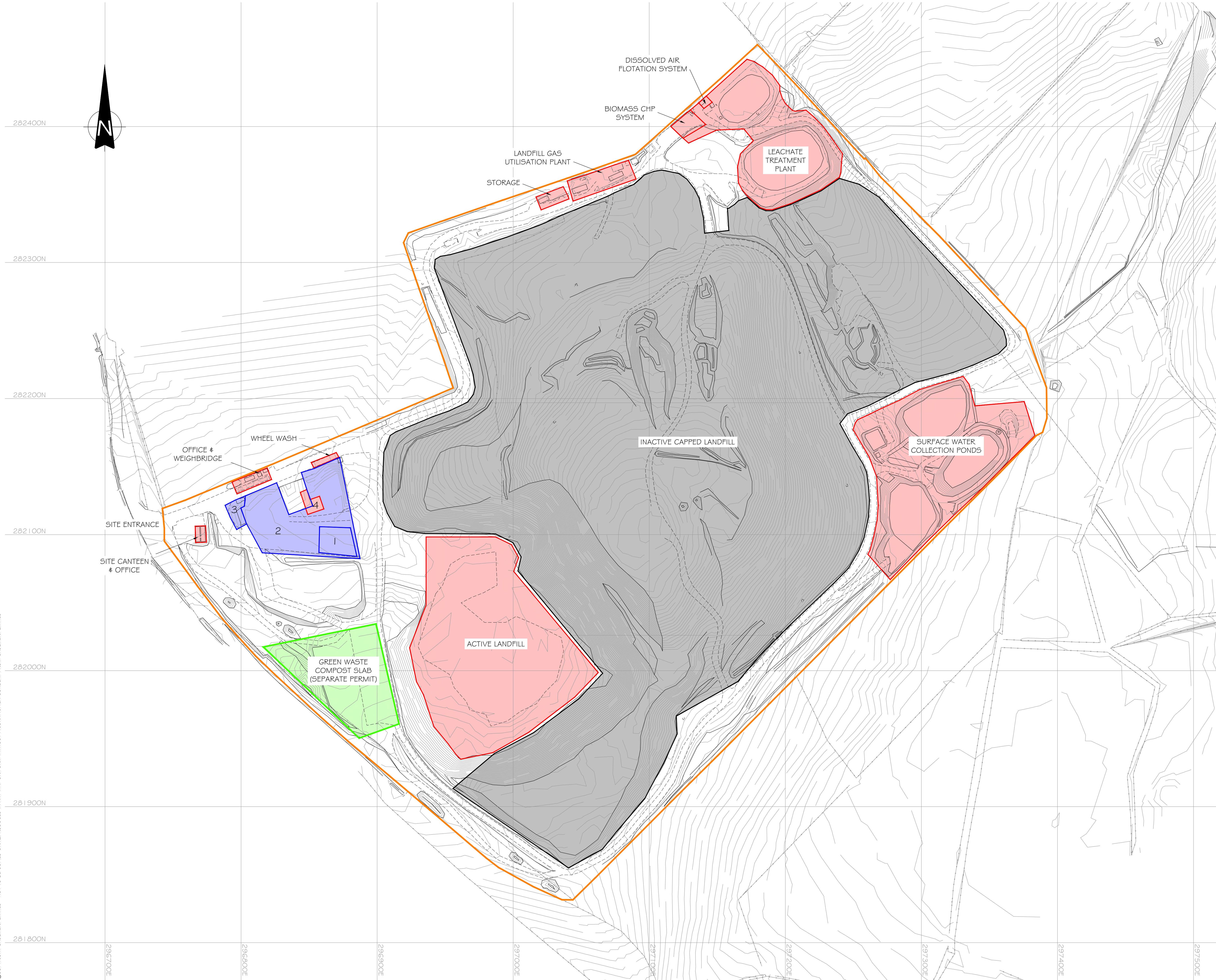
LEGEND

- IN WASTE GAS WELL
- OLD, REPLACED LEACHATE WELL
- NEW, REPLACEMENT LEACHATE WELL
- LEACHATE COLLECTION/MONITORING POINT
- NEW IN WASTE GAS WELL

X	AS BUILT		AAR	SO	DB	18.07.19
REV	MODIFICATIONS		BY	RE	AP	DATE
PURPOSE OF ISSUE					STATUS	
AS BUILT					CR	
CLIENT:						
PotterGroup						
PROJECT:						
BRYN POSTEG LANDFILL						
TITLE:						
AS BUILT REPLACEMENT LEACHATE WELLS						
DRAWN BY AAR		REVIEWED BY SO		AUTHORISED BY DB		SCALE @ A1 1:1250
DATE 18.07.2019		JOB REF: 3997			REVISION X	
DRAWING NUMBER 3997-CAU-XX-XX-DR-V-1804						
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- SITE BOUNDARY
- MRF PERMIT ACTIVITY
- LANDFILL PERMIT / GENERAL SITE ACTIVITY
- GREEN WASTE COMPOSTING PERMIT ACTIVITY
- CAPPED LANDFILL

1. MBT COMPOST (MRF PERMIT)
2. WASTE RECEPTION (MRF PERMIT)
3. TYRE STORAGE & BAILING (MRF PERMIT)
4. TROMMEL (LANDFILL PERMIT)

C1		APPROVED AND ISSUED		EJD	SB	SB	19/12/17
P1		ISSUED FOR COMMENT		EJD	SB	SB	20/11/17
REV		MODIFICATIONS		BY	RE	AP	DATE
POTTERS WASTE MANAGEMENT							
PROJECT: BRYN POSTEG LANDFILL SITE							
TITLE: ENVIRONMENTAL MONITORING PLAN							
DRAWN BY		EJD		DATE		20/11/2017	
REVIEWED BY		SB		SCALE @ A1		1:1250	
AUTHORISED BY		SB		ISSUE		AO	
				REVISION		C1	
DRAWING NUMBER 3033-CAU-XX-XX-DR-S-1800							
Caulmert engineering environmental planning							

Registered Office: Intec, Parc Menai, Bangor, Gwynedd, LL57 4FG Company Registered No: 06716319

APPENDIX 1 – LANDFILL GAS**Table 1: In-waste Gas monitoring data**

ID	Methane			Carbon Dioxide			Oxygen		
	Min	Max	Average	Min	Max	Average	Min	Max	Average
BPIW0007	60.60	67.40	64.30	34.70	41.00	38.10	0.10	0.20	0.17
BPIW0011	55.80	60.00	58.03	38.80	43.10	41.53	0.00	0.30	0.20
BPIW0014	62.80	64.30	63.70	35.80	40.90	38.67	0.00	0.30	0.17
BPIW0015	51.90	73.30	62.57	20.80	29.90	26.57	0.10	5.50	2.70
BPIW0016	53.20	63.00	57.83	33.90	37.80	36.23	0.60	1.30	0.87
BPIW0017	48.30	62.50	55.67	34.90	39.40	36.70	0.30	2.40	1.37
BPIW0018	20.00	64.20	46.50	24.20	35.50	30.90	0.30	2.60	1.07
BPIW0019	49.70	62.70	58.23	34.70	39.00	36.37	0.00	0.30	0.13
BPIW0021	63.60	66.90	64.83	35.10	38.40	37.10	0.10	0.50	0.27
BPIW0022	60.70	65.30	63.23	34.90	39.90	37.70	0.10	1.00	0.53
BPIW0024	57.90	68.10	64.60	30.80	34.60	32.67	0.10	1.70	0.80
BPIW0025	63.80	65.60	64.60	35.30	39.80	38.00	0.10	0.30	0.23
BPIW0030	60.60	64.30	62.80	35.50	39.40	38.07	0.10	0.80	0.43
BPIW0032	52.70	63.80	59.00	37.50	40.30	38.97	0.10	2.40	0.90
BPIW0033	46.70	59.20	51.97	34.30	36.90	36.00	1.10	4.30	2.60
BPIW0034	63.90	64.00	63.95	36.70	40.20	38.45	0.20	0.40	0.30
BPIW0035	21.40	65.80	49.00	16.50	43.20	31.43	0.10	13.40	4.63
BPIW0037	63.60	65.00	64.23	34.40	37.60	36.30	0.30	0.70	0.53
BPIW0038	51.00	65.80	60.40	35.10	37.60	35.93	0.10	0.30	0.23
BPIW0039	49.00	63.50	58.13	35.20	37.90	36.43	0.10	0.40	0.20
BPIW0043	15.90	63.50	47.33	22.30	39.10	31.77	0.00	2.20	1.03
BPIW0044	24.10	65.60	41.97	16.30	35.90	25.07	0.20	12.90	7.10
BPIW0045	59.40	61.80	60.60	38.40	41.70	40.23	0.30	0.50	0.40
BPIW0047	45.40	55.60	50.50	36.60	40.70	38.65	0.30	1.10	0.70
BPIW0048	41.20	62.80	55.03	31.60	40.60	35.17	0.30	1.00	0.60
BPIW0049	32.80	65.90	50.67	27.00	29.30	28.07	0.30	3.70	1.47
BPIW0051	0.30	62.70	21.53	1.20	35.90	13.47	0.30	21.50	14.30
BPIW0052	41.00	56.10	50.83	33.70	37.30	34.90	0.70	1.10	0.93
BPIW0054	43.50	62.70	56.20	34.70	37.90	36.47	0.10	0.80	0.40
BPIW0055	44.40	65.40	58.20	33.00	38.80	35.37	0.10	1.10	0.50
BPIW0061	43.60	62.90	55.53	35.00	38.00	36.83	0.30	0.90	0.53
BPIW0062	64.10	65.70	64.95	35.40	39.60	38.15	0.10	0.70	0.28
BPIW0063	47.50	65.50	58.37	34.70	40.70	37.30	0.00	1.00	0.47
BPIW0066	42.10	52.00	47.13	32.90	40.40	37.00	0.20	0.30	0.23
BPIW0067	37.50	50.90	44.07	32.20	38.30	34.37	0.20	0.80	0.57
BPIW0068	57.30	59.90	58.80	37.70	44.20	41.33	0.10	1.00	0.57
BPIW0069	46.50	62.80	55.63	36.10	43.40	39.77	0.00	2.40	0.87
BPIW0082	39.50	59.80	46.50	30.90	42.90	36.73	0.10	0.70	0.50
BPIW0083	43.60	62.00	54.03	31.90	39.40	35.20	0.10	2.10	0.80
BPIW0084	50.30	60.00	56.60	37.70	42.20	39.83	0.50	2.20	1.23
BPIW0085	42.00	59.40	50.70	33.90	38.70	36.30	0.90	2.80	1.85
BPIW0086	57.10	61.50	59.10	36.40	40.60	38.87	0.40	0.80	0.63
BPIW0087	61.80	64.80	63.40	35.90	39.90	38.43	0.10	0.60	0.33
BPIW0088	61.80	63.80	62.60	36.80	40.60	39.13	0.00	0.60	0.30
BPIW0089	49.70	62.20	57.07	31.20	40.20	36.90	0.40	3.20	1.43
BPIW0090	38.10	50.40	43.97	31.60	37.30	34.70	0.90	2.90	1.70
BPIW0093	61.30	63.50	62.30	35.20	41.60	38.83	0.10	0.80	0.57
BPIW0094	59.60	62.20	60.97	38.40	41.80	40.60	0.10	1.00	0.50
BPIW0095	57.70	66.40	63.30	35.20	37.60	36.60	0.00	1.50	0.57
BPIW0099	51.90	64.50	59.87	36.30	39.70	37.73	0.10	1.20	0.57
BPIW0103	42.80	49.30	46.05	30.10	30.70	30.40	1.60	2.60	2.10
BPIW0104	56.40	56.40	56.40	39.80	39.80	39.80	1.10	1.10	1.10
BPIW0106	40.80	56.40	50.83	29.10	40.90	34.90	1.10	6.60	3.10

APPENDIX 1 – LANDFILL GAS

ID	Methane			Carbon Dioxide			Oxygen		
	Min	Max	Average	Min	Max	Average	Min	Max	Average
BPIW011A	44.40	62.30	54.40	32.00	40.90	37.43	0.00	0.80	0.33
BPIW013A	63.70	65.20	64.37	30.50	35.20	32.67	0.60	1.50	1.03
BPIW0202	20.90	66.50	49.43	21.00	29.40	24.80	0.00	0.60	0.30
BPIW0203	34.10	61.70	46.10	18.70	29.40	24.33	0.10	0.50	0.27
BPIW0204	2.10	86.20	48.83	2.20	15.10	8.77	0.10	19.00	8.20
BPIW0206	27.90	62.10	40.83	14.70	33.30	21.70	1.50	11.30	7.97
BPIW0207	42.00	64.90	56.43	31.10	36.20	33.37	0.10	0.40	0.23
BPIW0208	42.00	59.40	52.77	28.20	31.70	30.47	1.20	2.30	1.73
BPIW0209	31.20	77.80	61.17	21.10	26.40	23.67	0.30	1.50	0.70
BPIW020A	61.90	64.60	62.83	36.80	40.40	38.93	0.00	0.40	0.23
BPIW0211	50.10	72.40	65.75	27.10	30.80	29.48	0.10	1.20	0.58
BPIW0212	55.80	69.10	63.47	29.60	36.00	32.50	0.50	3.60	1.60
BPIW0213	58.80	70.50	65.20	31.10	31.70	31.47	0.30	2.50	1.27
BPIW0214	71.10	72.70	72.10	29.30	31.80	30.80	0.10	0.40	0.27
BPIW0215	36.10	65.10	53.00	27.10	32.90	29.87	0.10	1.40	0.57
BPIW0216	19.10	66.60	48.33	13.90	34.80	26.43	0.20	13.60	4.80
BPIW021A	63.90	66.70	64.83	35.70	39.20	37.63	0.10	0.40	0.20
BPIW0300	58.80	65.60	61.40	33.00	41.70	37.67	0.20	1.30	0.73
BPIW0301	34.90	61.30	52.17	19.30	41.10	33.53	0.30	9.80	3.47
BPIW0303	58.40	58.40	58.40	43.70	43.70	43.70	0.10	0.10	0.10
BPIW0304	58.30	60.20	59.30	39.80	44.70	42.83	0.10	0.60	0.37
BPIW0305	0.40	55.10	34.40	6.10	37.50	26.90	0.00	19.00	5.03
BPIW0306	27.00	62.60	41.63	17.20	37.30	26.23	0.50	12.00	7.10
BPIW0307	57.00	61.50	58.80	42.60	45.40	44.30	0.10	0.40	0.27
BPIW0308	27.30	58.20	47.43	23.40	45.50	38.07	0.10	7.10	2.50
BPIW0309	5.00	5.00	5.00	49.70	49.70	49.70	9.00	9.00	9.00
BPIW0310	32.90	55.10	44.00	20.90	38.00	29.45	0.30	10.60	5.45
BPIW0311	59.60	59.90	59.75	42.90	44.80	43.85	0.10	0.10	0.10
BPIW0312	45.30	59.90	54.93	34.60	43.50	40.17	0.10	0.40	0.27
BPIW0313	52.80	62.60	58.10	36.40	43.10	40.60	0.20	0.40	0.30
BPIW0314	54.70	61.90	59.47	36.00	40.60	37.73	0.10	2.50	1.17
BPIW0315	50.60	59.00	55.97	36.30	41.60	38.33	0.10	0.50	0.27
BPIW0316	31.30	58.20	43.53	25.80	43.60	33.03	0.10	9.20	4.80
BPIW0317	35.10	55.20	46.23	26.80	39.40	33.90	1.90	8.30	4.48
BPIW0318	49.50	60.20	54.85	32.00	42.00	37.00	0.10	3.90	2.00
BPIW0319	42.60	53.40	46.43	30.00	37.50	34.17	0.10	1.20	0.63
BPIW0320	61.30	63.70	62.53	36.30	40.60	38.83	0.10	0.60	0.40
BPIW0321	50.50	60.80	56.90	31.10	41.60	38.00	0.00	4.00	1.60
BPIW0322	61.00	64.20	62.23	36.10	40.30	38.53	0.20	0.40	0.30
BPIW0323	0.10	65.80	48.75	0.10	38.40	27.80	0.10	21.40	5.60
BPIW0325	58.00	58.00	58.00	43.70	43.70	43.70	0.10	0.10	0.10
BPIW0326	55.40	55.40	55.40	38.10	38.10	38.10	1.50	1.50	1.50
BPIW0327	56.80	56.80	56.80	45.40	45.40	45.40	0.00	0.00	0.00
BPIW037A	57.90	62.70	61.00	33.30	37.60	35.23	0.80	1.70	1.23
BPIW040A	34.30	58.10	49.93	30.20	36.50	32.47	0.10	1.20	0.57
BPIW041B	37.40	69.60	57.37	27.70	32.00	29.77	0.00	1.40	0.53
BPIW042B	26.60	65.80	51.43	27.30	36.90	33.27	0.00	0.70	0.30
BPIW045A	41.90	60.30	52.57	30.50	39.80	36.60	0.30	5.90	2.43
BPIW046A	56.70	59.70	58.20	41.50	47.20	44.35	0.20	0.30	0.25
BPIW053A	11.70	59.20	34.13	21.90	33.80	28.20	0.00	1.20	0.43
BPIW056A	60.00	63.70	61.70	37.40	40.50	39.40	0.00	0.40	0.20
BPIW059A	60.70	63.60	62.13	38.30	41.50	40.13	0.10	0.40	0.23
BPIW063A	46.90	58.70	54.63	33.40	38.80	35.20	1.50	4.40	2.60
BPIW208A	6.80	30.10	20.43	4.60	21.40	12.47	9.80	19.10	14.03

APPENDIX 1 – LANDFILL GAS

ID	Methane			Carbon Dioxide			Oxygen		
	Min	Max	Average	Min	Max	Average	Min	Max	Average
BPSP0001	0.20	57.40	39.70	0.10	37.50	27.23	1.00	21.60	6.53
BPSP0002	45.30	62.20	54.27	32.70	37.00	34.73	0.80	2.20	1.53
BPSP0003	56.70	67.90	62.28	31.70	39.00	34.08	0.40	2.20	1.00
BPSP0004	43.90	56.30	51.27	34.60	39.50	36.27	0.90	2.40	1.63
BPSP0005	36.00	59.30	50.40	27.20	29.10	27.90	0.20	0.90	0.60

APPENDIX 1 – LANDFILL GAS**Table 2: In-waste Gas Carbon monoxide and Hydrogen sulphide monitoring data**

ID	Carbon Monoxide			Hydrogen Sulphide		
	Min	Max	Average	Min	Max	Average
Management Limit	100 ppm			N/A		
BPIW0007	0	93	41	0	27	9
BPIW0011	1	91	46	0	30	10
BPIW0012	2	26	14	0	37	12
BPIW0014	0	7	4	0	2	1
BPIW0015	0	158	58	0	2	1
BPIW0016	1	28	16	0	6	2
BPIW0017	1	32	17	0	0	0
BPIW0018	1	74	31	0	24	8
BPIW0019	0	80	32	0	22	7
BPIW0021	0	53	21	0	53	18
BPIW0022	2	6	4	0	2	1
BPIW0024	0	9	6	0	59	20
BPIW0025	1	4	3	0	2	1
BPIW0030	5	14	8	0	85	29
BPIW0032	1	152	55	0	1	0
BPIW0033	1	94	48	0	39	20
BPIW0034	1	44	18	0	1	0
BPIW0035	1	61	25	0	18	6
BPIW0037	0	48	19	0	50	17
BPIW0038	2	236	101	0	12	4
BPIW0039	0	8	5	0	0	0
BPIW0043	1	24	9	0	0	0
BPIW0044	1	109	51	0	84	28
BPIW0045	17	127	72	0	6	3
BPIW0047	2	26	17	0	3	1
BPIW0048	0	15	8	0	16	5
BPIW0049	0	21	8	0	1	0
BPIW0051	2	75	32	0	47	16
BPIW0052	4	9	7	0	27	12
BPIW0054	1	3	2	0	6	2
BPIW0055	5	6	6	0	10	6
BPIW0061	1	5	3	0	247	62
BPIW0062	2	11	6	0	0	0
BPIW0063	1	105	41	0	185	62
BPIW0066	1	81	35	0	0	0
BPIW0067	1	104	60	0	0	0
BPIW0068	2	63	40	0	1	0
BPIW0069	2	20	11	0	23	8
BPIW0081	1	6	3	0	5	2
BPIW0082	1	70	37	0	0	0
BPIW0083	2	92	47	0	1	1
BPIW0084	2	104	42	0	54	18
BPIW0085	5	95	49	0	5	3
BPIW0086	2	11	8	0	31	11
BPIW0087	0	134	51	0	110	37
BPIW0088	2	13	8	0	37	13
BPIW0089	3	39	25	0	71	24
BPIW0090	3	34	23	0	28	10
BPIW0093	2	24	16	0	32	11
BPIW0094	3	50	28	0	2	1
BPIW0095	1	23	12	0	0	0
BPIW0099	220	220	220	0	0	0

APPENDIX 1 – LANDFILL GAS

ID	Carbon Monoxide			Hydrogen Sulphide		
	Min	Max	Average	Min	Max	Average
Management Limit	100 ppm			N/A		
BPIW0103	1	133	48	0	1	0
BPIW0105	1	69	28	0	200	67
BPIW0106	0	52	21	0	4	1
BPIW011A	0	7	4	0	0	0
BPIW013A	0	6	3	0	1	0
BPIW0202	0	6	2	0	0	0
BPIW0203	1	6	3	0	0	0
BPIW0204	1	8	5	0	4	1
BPIW0205	0	12	6	0	2	1
BPIW0206	0	12	6	0	0	0
BPIW0207	0	72	32	0	53	18
BPIW0208	1	3	2	0	4	1
BPIW0209	3	9	6	0	4	1
BPIW020A	3	12	7	0	4	1
BPIW0211	3	10	7	0	8	3
BPIW0212	1	15	9	0	5	2
BPIW0213	1	21	9	0	0	0
BPIW0214	0	72	29	0	67	22
BPIW0215	4	133	49	0	344	115
BPIW0216	2	39	24	0	87	29
BPIW021A	0	0		2	2	2
BPIW0300	30	30	30	2	302	130
BPIW0301	0	19	13	0	191	51
BPIW0303	0	12	6	0	6	3
BPIW0304	14	183	104	0	9	5
BPIW0305	8	234	121	1	202	69
BPIW0306	0	0		111	111	111
BPIW0307	1	1	1	1	5	3
BPIW0308	53	53	53	0	0	0
BPIW0309	6	84	45	0	428	145
BPIW0310	4	76	40	0	404	135
BPIW0311	3	41	22	0	378	127
BPIW0312	2	23	13	0	54	18
BPIW0313	13	91	52	0	2	1
BPIW0314	2	480	172	0	201	56
BPIW0315	3	30	17	0	0	0
BPIW0316	3	383	133	0	302	101
BPIW0317	1	331	115	0	74	25
BPIW0318	3	428	162	0	240	81
BPIW0319	2	265	92	0	2	1
BPIW0320	1	177	82	0	80	20
BPIW0321	0	0		7	7	7
BPIW0322	12	12	12	0	0	0
BPIW0323	77	77	77	0	0	0
BPIW037A	0	76	27	0	43	14
BPIW040A	3	230	116	0	38	13
BPIW041B	0	79	33	0	1	0
BPIW042B	5	196	100	0	2	1
BPIW045A	2	40	16	0	1	0
BPIW046A	1	117	59	0	19	10
BPIW053A	1	49	24	0	1	0
BPIW056A	1	135	52	0	15	5
BPIW059A	2	155	59	0	27	9

APPENDIX 1 – LANDFILL GAS

ID	Carbon Monoxide			Hydrogen Sulphide		
	Min	Max	Average	Min	Max	Average
Management Limit	100 ppm			N/A		
BPIW063A	1	9	6	0	31	10
BPIW208A	0	6	3	0	0	0
BPSP0001	0	72	33	0	152	56
BPSP0002	3	66	28	0	32	11
BPSP0003	1	76	21	0	7	2
BPSP0004	7	105	68	0	92	32
BPSP0005	1	4	3	0	2	1

APPENDIX 1 – LANDFILL GAS**Table 3: Perimeter Gas Monitoring Data (exceedances highlighted yellow)**

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
G01	04/04/2019	32.7	1.8	1.4
	11/04/2019	23.6	2.1	3.2
	18/04/2019	13.8	3	6.5
	25/04/2019	24.3	2.7	2.7
	03/05/2019	12.8	2.6	6.3
	08/05/2019	33.7	1.4	1.3
	14/05/2019	25.7	2.8	2.5
	21/05/2019	19.3	3.7	3.1
	05/06/2019	9.4	3.5	5.1
	13/06/2019	22.1	2.4	2.8
	19/06/2019	16.8	2.4	3.8
	28/06/2019	6.8	3.7	4.9
G02	04/04/2019	0	0	21.2
	11/04/2019	0	0	21.2
	18/04/2019	0	0.1	20.4
	25/04/2019	0	0	21
	03/05/2019	0.2	0.1	20.7
	08/05/2019	0.3	0.1	20.8
	14/05/2019	0.2	0.1	20.8
	21/05/2019	0	0	20.8
	05/06/2019	0	0	20.9
	13/06/2019	0	0	20.5
	19/06/2019	0	0	20.5
	28/06/2019	0	0	20.9
G03	04/04/2019	0	3.4	7.6
	11/04/2019	0	0.3	20.8
	18/04/2019	0	0.9	20
	25/04/2019	0	3.8	6.7
	03/05/2019	0.2	0.6	19.8
	08/05/2019	0.2	1.9	15.1
	14/05/2019	0.2	0.2	20.5
	21/05/2019	0	2.4	13.8
	05/06/2019	0	2.7	11.9
	13/06/2019	0	1.3	18.1
	19/06/2019	0	1.5	17.6
	28/06/2019	0	0.7	20.2
G07	04/04/2019	0	1.5	21.2
	11/04/2019	0	0.7	21.4
	18/04/2019	0	0.6	20.1
	25/04/2019	0	0.5	21.2
	03/05/2019	0.2	0.5	20.7
	08/05/2019	0.2	0.6	20.8
	14/05/2019	0.1	0.5	20.6
	21/05/2019	0	0.5	20.5
	05/06/2019	0	0.5	20.7
	13/06/2019	0	0.6	20.4
	19/06/2019	0	0.6	20.3
	28/06/2019	0	0.7	20.4

APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
G08	04/04/2019	0	0.8	17.8
	11/04/2019	0	0.7	17.6
	18/04/2019	0	1	19
	25/04/2019	0	1.1	17.3
	03/05/2019	0.2	1	17.2
	08/05/2019	0.2	1.1	17.2
	14/05/2019	0	1.2	17.1
	21/05/2019	0	1.7	17
	05/06/2019	0	1.7	17.2
	13/06/2019	0	1.8	17.1
	19/06/2019	0	1.6	16.8
	28/06/2019	0	1.4	17.5
G09	04/04/2019	0	0.2	22.6
	11/04/2019	0	0	22.1
	18/04/2019	0	0.3	20.1
	25/04/2019	0	0	21.6
	03/05/2019	0.2	0.1	21.1
	08/05/2019	0.3	0.1	21.4
	14/05/2019	0.1	0.1	20.9
	21/05/2019	0	0	20.9
	05/06/2019	0	0	21.3
	13/06/2019	0	0	21.1
	19/06/2019	0	0	21
	28/06/2019	0	0	21.1
G10	04/04/2019	0	4.3	17.4
	11/04/2019	0	5	16.5
	18/04/2019	0.1	4.6	18.8
	25/04/2019	0	4	18.7
	03/05/2019	0.2	3.4	19.1
	08/05/2019	0.2	4.3	17.8
	14/05/2019	0.1	3.3	17.6
	21/05/2019	0	2.2	19.5
	05/06/2019	0	1.8	20.3
	13/06/2019	0	0.3	20.9
	19/06/2019	0	1.4	20.2
	28/06/2019	0	2.2	19.4
G11	04/04/2019	0	0.8	22.5
	11/04/2019	0	0.1	22.1
	18/04/2019	0	0.2	20.4
	25/04/2019	0	0.4	21.3
	03/05/2019	0.2	0.2	20.9
	08/05/2019	0.2	0.2	21.4
	14/05/2019	0.1	0.5	20.6
	21/05/2019	0	1.1	20
	05/06/2019	0	1.6	19.7
	13/06/2019	0	0	21.2
	19/06/2019	0	0	21.1
	28/06/2019	0	0.4	20.6
G12	04/04/2019	70.3	5	2.6
	11/04/2019	61.1	4	4.6

APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	18/04/2019	71.6	4.6	2.7
	25/04/2019	65.3	4.4	3.6
	03/05/2019	68.6	4.2	3.3
	08/05/2019	77.3	4.8	1.7
	14/05/2019	30.5	5	4.1
	21/05/2019	57.8	4.3	5
	05/06/2019	56.4	3.7	5.5
	13/06/2019	71.6	4.3	2.9
	19/06/2019	74.9	4.6	2.4
	28/06/2019	68.5	4.4	3.1
G13	04/04/2019	0	0	23.1
	11/04/2019	0	0	22.3
	18/04/2019	0	0	20.5
	25/04/2019	0	0	21.8
	03/05/2019	0.2	0.1	21.4
	08/05/2019	0.2	0.1	21.7
	14/05/2019	0.1	0.1	21.3
	21/05/2019	0	0	21
	05/06/2019	0	0	21.4
	13/06/2019	0	0.2	21.2
	19/06/2019	0	0	21.2
	28/06/2019	0	0	21.1
G14	04/04/2019	0	2.5	21.1
	11/04/2019	0	0.6	22.1
	18/04/2019	0.1	1.4	20.8
	25/04/2019	0	2	23.9
	03/05/2019	0.2	1.1	20.7
	08/05/2019	0.2	1.8	20.5
	14/05/2019	0	1.4	19.8
	21/05/2019	0	2.2	19.4
	05/06/2019	0	2.4	19.2
	13/06/2019	0	0	21.6
	19/06/2019	0	1.5	18.7
	28/06/2019	0	2.2	19
G15	04/04/2019	0	1.2	20.5
	11/04/2019	0	1.3	19.1
	18/04/2019	0	3.4	15.5
	25/04/2019	0	0.7	20.1
	03/05/2019	0.2	1.3	19.1
	08/05/2019	0.2	0.9	20.3
	14/05/2019	0	0.8	19.9
	21/05/2019	0	0.7	20
	05/06/2019	0	0.4	20.5
	13/06/2019	0	1.1	19.3
	19/06/2019	0	0.6	20
	28/06/2019	0	0.7	19.9
G16	04/04/2019	0	0.1	23.5
	11/04/2019	0	0	22.4
	18/04/2019	0	0	21.3
	25/04/2019	0	0	22

APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	03/05/2019	0.2	0.1	21.6
	08/05/2019	0.2	0.1	21.8
	14/05/2019	0	0.1	21.4
	21/05/2019	0	0	21
	05/06/2019	0	0	21.5
	13/06/2019	0	0	21.5
	19/06/2019	0	0	21.3
	28/06/2019	0	0	21.2
G17	04/04/2019	0	0.1	23.2
	11/04/2019	0	0	22.5
	18/04/2019	0	0.1	21.4
	25/04/2019	0	0	22.2
	03/05/2019	0.2	0.1	21.6
	08/05/2019	0.2	0.1	22
	14/05/2019	0	0.1	21.3
	21/05/2019	0	0	21.1
	05/06/2019	0	0	21.2
	13/06/2019	0	0	21.4
	19/06/2019	0	0	21.3
	28/06/2019	0	0	21.2
G18	04/04/2019	0	0	23.2
	11/04/2019	0	0	22.5
	18/04/2019	0	1.1	21.3
	25/04/2019	0	0.2	22.1
	03/05/2019	0.2	1.8	20.7
	08/05/2019	0.2	0.1	21.9
	14/05/2019	0	0.4	21.3
	21/05/2019	0	2.5	20
	05/06/2019	0	1.2	21
	13/06/2019	0	0.1	21.5
	19/06/2019	0	1.6	20.5
	28/06/2019	0	0.5	20.9
G19	04/04/2019	73.5	30.2	0.2
	11/04/2019	65.3	24	2
	18/04/2019	52.3	21.7	5.4
	25/04/2019	59.5	31.8	2
	03/05/2019	71.8	28.5	0.4
	08/05/2019	69.2	33	0.3
	14/05/2019	69.9	29.6	0.4
	21/05/2019	40	19.8	8.3
	05/06/2019	41.4	22.8	7.7
	13/06/2019	71.2	29.5	0.3
	19/06/2019	77.3	18.7	0.2
	28/06/2019	78.4	13.5	0.7
G20	04/04/2019	75.1	28.1	0.3
	11/04/2019	89.6	4.8	0.2
	18/04/2019	73.8	26.8	1.5
	25/04/2019	71.5	30.7	0.2
	03/05/2019	85.5	10	0.4
	08/05/2019	71.7	29.6	0.3

APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	14/05/2019	63.6	22.8	0.3
	21/05/2019	71.8	30.3	0.2
	05/06/2019	68.6	30.2	0.2
	13/06/2019	56.8	3.1	0.7
	19/06/2019	56.8	5.3	0.3
	28/06/2019	39.7	12.6	0.3
G21	04/04/2019	57.6	21.4	0.2
	11/04/2019	68	20.8	0.3
	18/04/2019	43.3	16	6.6
	25/04/2019	63.2	21.6	0.5
	03/05/2019	65	20.7	0.3
	08/05/2019	59.9	19.3	0.3
	14/05/2019	69.6	19.8	0.3
	21/05/2019	58	20.2	1.4
	05/06/2019	13.7	6.8	15.2
	13/06/2019	52.5	8.4	0.2
	19/06/2019	47.5	17.7	0.1
	28/06/2019	58.1	19	0.2
G22	04/04/2019	77.8	21.9	0.2
	11/04/2019	78.8	17.1	0.2
	18/04/2019	78.8	17.8	2
	25/04/2019	77.8	22.1	0.2
	03/05/2019	79	17.5	0.3
	08/05/2019	78.3	21.5	0.2
	14/05/2019	63.9	15.2	0.3
	21/05/2019	77	19.3	0.2
	05/06/2019	75.6	20.5	0.5
	13/06/2019	74.3	21.6	0.2
	19/06/2019	76.6	20.9	0.1
	28/06/2019	77.3	20.4	0.2
G23	04/04/2019	0.4	0.8	13.8
	11/04/2019	0	0	20.7
	18/04/2019	4.1	6.7	5.8
	25/04/2019	5.1	10.3	3.2
	03/05/2019	0.5	0.6	21
	08/05/2019	6.3	9.2	1.2
	14/05/2019	0.3	0.8	20.2
	21/05/2019	3.6	11.9	0.2
	05/06/2019	31.7	9.7	0.3
	13/06/2019	21.1	5.4	0.6
	19/06/2019	13.1	7.1	2.9
	28/06/2019	6.2	6.6	7
G24	04/04/2019	0	0.6	22.7
	11/04/2019	0	0.1	22.2
	18/04/2019	0	0.2	21
	25/04/2019	0	0.1	22
	03/05/2019	0.2	0.1	22.1
	08/05/2019	0.2	0.1	22
	14/05/2019	0	0.1	21.3
	21/05/2019	58.1	21	3.7

APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	05/06/2019	57.2	31.1	2.8
	13/06/2019	29.5	15.9	11.3
	19/06/2019	0.6	0.3	21.1
	28/06/2019	0	0	21.2
G25	04/04/2019	12.7	9.1	9
	11/04/2019	2.6	2.3	19
	18/04/2019	2.4	2.7	18.1
	25/04/2019	2.2	5.2	15.3
	03/05/2019	4.4	3.6	18.4
	08/05/2019	6.7	5.1	16.1
	14/05/2019	1.8	2.5	18.7
	21/05/2019	1.4	3.8	16.6
	05/06/2019	1.3	6.8	13.2
	13/06/2019	12.3	10.3	5.7
	19/06/2019	13	10.7	10.8
	28/06/2019	6.4	4.9	15.8
G26	04/04/2019	0	4.2	17.1
	11/04/2019	0	2.9	19.3
	18/04/2019	0	1.8	20.4
	25/04/2019	0	1.9	20.4
	03/05/2019	0.2	1.6	20.1
	08/05/2019	0.2	3	16.8
	14/05/2019	0	2.1	18.3
	21/05/2019	0	2.3	19.5
	05/06/2019	0	2.5	19
	13/06/2019	0.7	1.9	19.2
	19/06/2019	0.3	2.5	16
	28/06/2019	0	3.2	18.4
G27	04/04/2019	0	0.1	22.5
	11/04/2019	0	0	22.2
	18/04/2019	0	1.8	20.2
	25/04/2019	0	0	21.9
	03/05/2019	0.2	0.1	22.2
	08/05/2019	0.2	0.1	22.1
	14/05/2019	0	0	21.5
	21/05/2019	0	0	21.3
	05/06/2019	0	0	21.6
	13/06/2019	0	0	21.7
	19/06/2019	0	0	21.3
	28/06/2019	0	0	21.2
G29	04/04/2019	0	0.1	22.9
	11/04/2019	0	0	22.2
	18/04/2019	0.1	0.5	20.9
	25/04/2019	0	0	22
	03/05/2019	0.2	0.1	22.2
	08/05/2019	0.2	0.1	22.2
	14/05/2019	0	0	21.7
	21/05/2019	0	0	21.4
	05/06/2019	0	0	21.7
	13/06/2019	0	0	21.7

APPENDIX 1 – LANDFILL GAS

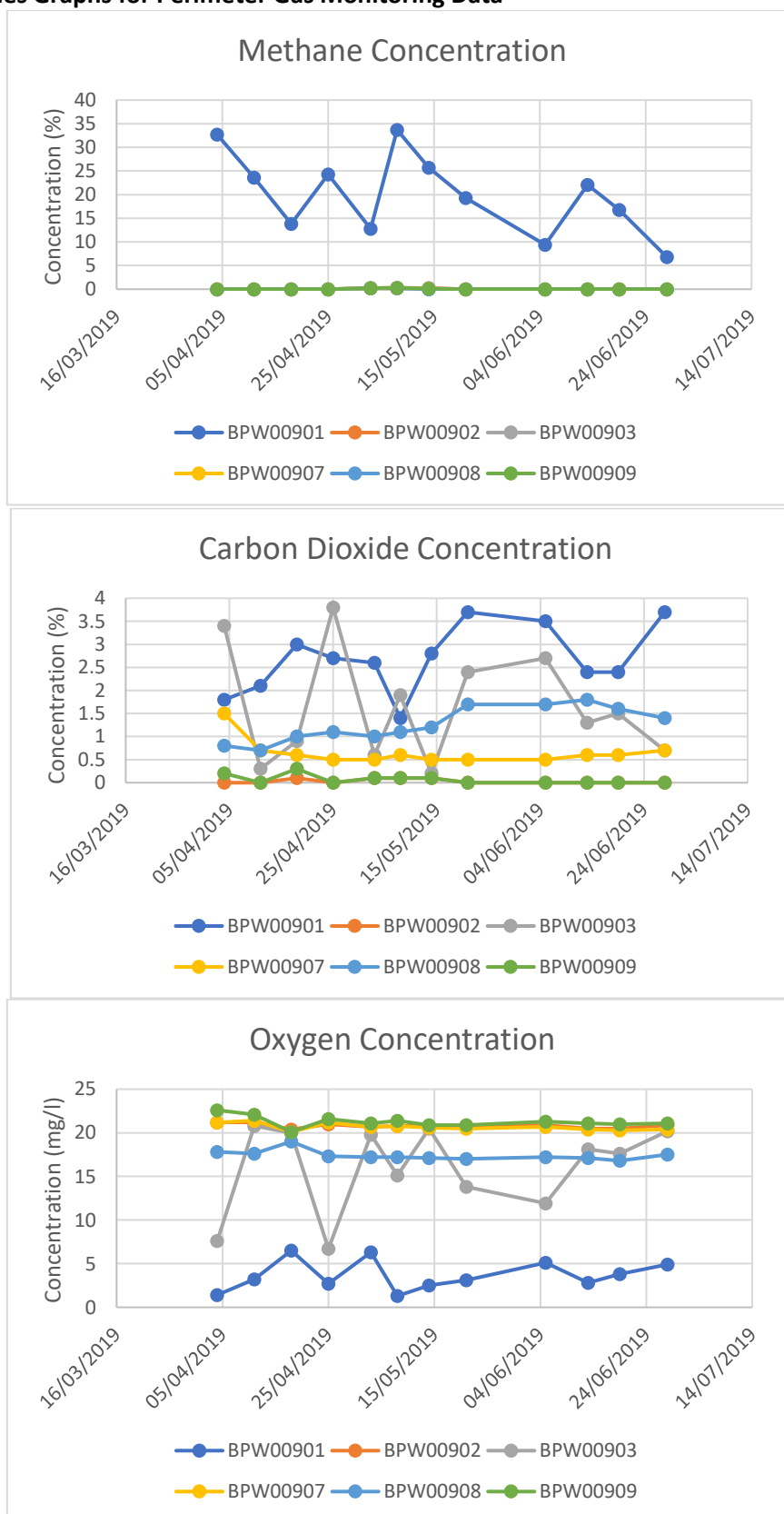
Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	19/06/2019	0	0	21.4
	28/06/2019	0	0	21.4
G30	04/04/2019	18.6	4.7	5.5
	11/04/2019	0	0	22.1
	18/04/2019	0.4	0.5	20.5
	25/04/2019	14.7	3.3	9.9
	03/05/2019	1.1	0.7	20.3
	08/05/2019	12.4	2.7	12.7
	14/05/2019	0	0	21.6
	21/05/2019	5.4	1.5	17.3
	05/06/2019	1.5	1.3	18.8
	13/06/2019	0	0	21.8
	19/06/2019	0	0	21.3
	28/06/2019	0	0	21.3
G31	04/04/2019	0	2.5	19.9
	11/04/2019	0	0.7	21.3
	18/04/2019	0	0.7	20.8
	25/04/2019	0	2.1	18.9
	03/05/2019	0.2	2.9	16.7
	08/05/2019	0.2	3	17.9
	14/05/2019	0	2.3	19.1
	21/05/2019	0	3.7	16.8
	05/06/2019	0	4.5	14.2
	13/06/2019	0	4.3	15.5
	19/06/2019	0	5.7	11.9
	28/06/2019	0	3.2	18.4
G32	04/04/2019	0	0.2	22.5
	11/04/2019	0	0	22.1
	18/04/2019	0	0.1	21.4
	25/04/2019	0	0.1	21.9
	03/05/2019	0.2	0.1	22.2
	08/05/2019	0.2	0.1	22.3
	14/05/2019	0	0.1	21.6
	21/05/2019	0	0	20.9
	05/06/2019	0	0	21.7
	13/06/2019	0	0	21.7
	19/06/2019	0	0	21.3
	28/06/2019	0	0.1	21.2
G35	04/04/2019	28.3	19.4	0.4
	11/04/2019	1.1	3.3	17.6
	18/04/2019	0.8	5	15.5
	25/04/2019	6.2	14.2	4.1
	03/05/2019	7.8	9.6	8.3
	08/05/2019	20.5	14.2	4.5
	14/05/2019	25.9	15	3.8
	21/05/2019	38	20.2	1.3
	05/06/2019	48.3	21.5	2.4
	13/06/2019	43.4	21.6	2.1
	19/06/2019	36.8	15.7	5.1
	28/06/2019	32.6	16.2	6.8

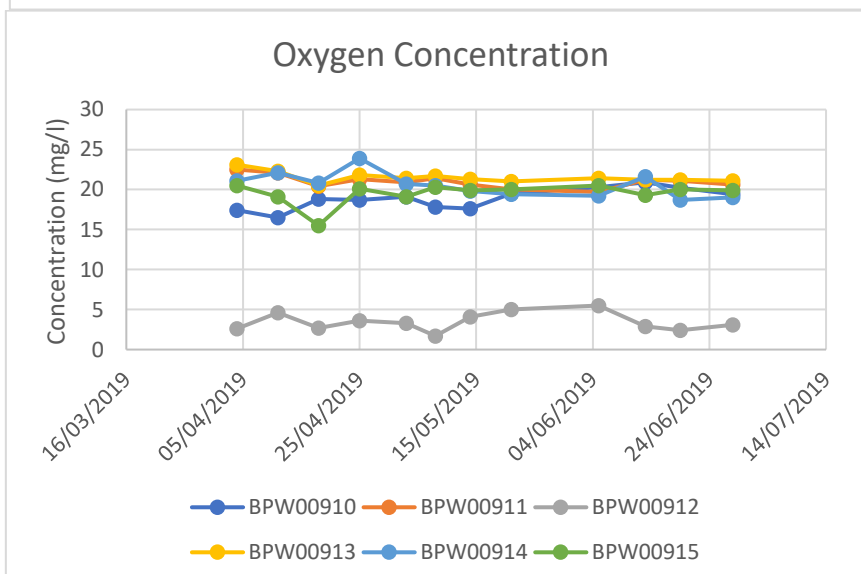
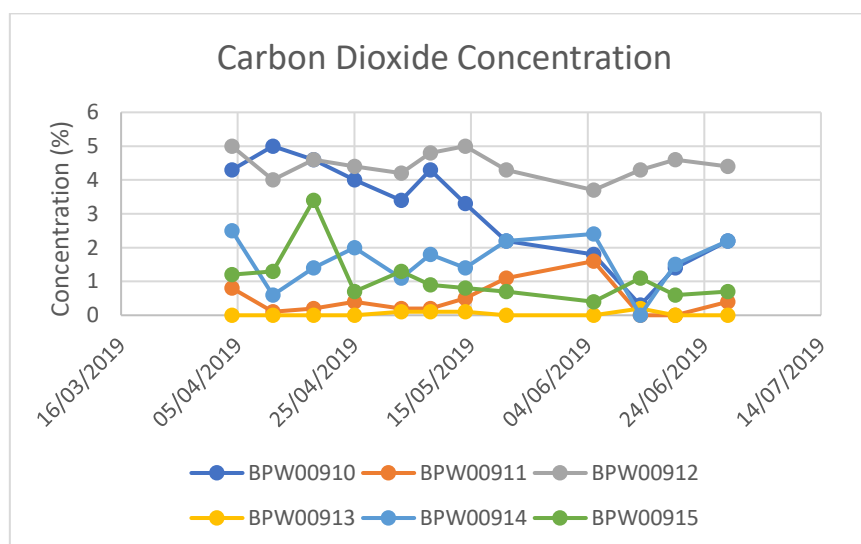
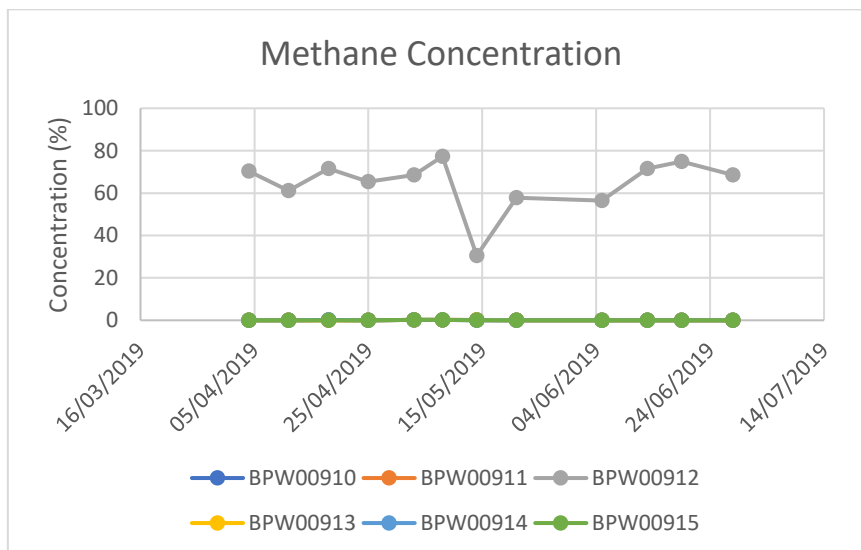
APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
G36	04/04/2019	8.4	5.3	13.1
	11/04/2019	1.2	1.8	19.4
	18/04/2019	0.4	0.9	19.7
	25/04/2019	0	0.5	21.6
	03/05/2019	0.2	0.3	21.7
	08/05/2019	0.2	0.3	21.9
	14/05/2019	0	0.4	21.2
	21/05/2019	0	0.2	20.6
	05/06/2019	0	0.1	21.3
	13/06/2019	38.8	5.1	7.9
	19/06/2019	39	4.9	7.8
	28/06/2019	25.1	4.7	10.4
G37	04/04/2019	0	1	22.1
	11/04/2019	0	0.7	21.8
	18/04/2019	0	0.7	21.1
	25/04/2019	0	0.9	22.1
	03/05/2019	0.2	0.2	22
	08/05/2019	0.3	0.3	22.3
	14/05/2019	0	0.2	21.6
	21/05/2019	0	0.2	20.9
	05/06/2019	0	0.3	21.3
	13/06/2019	0	0.3	21.5
	19/06/2019	0	0.2	20.9
	28/06/2019	0	0.2	20.9
G38	04/04/2019	47.9	23.5	1
	11/04/2019	61.4	21.9	0.2
	18/04/2019	37.8	17.8	3.4
	25/04/2019	68.4	26.7	0.2
	03/05/2019	65.1	23.5	0.3
	08/05/2019	61.6	24.1	0.3
	14/05/2019	27.3	19.7	0.3
	21/05/2019	21.7	15.7	9.4
	05/06/2019	21.4	16.3	6.6
	13/06/2019	51.3	25.1	0.2
	19/06/2019	49.7	21.5	0.4
	28/06/2019	16.1	12.4	4
G39	04/04/2019	0	1.9	20
	11/04/2019	0	2	19
	18/04/2019	0	1.1	20.5
	25/04/2019	0	1.6	20.2
	03/05/2019	0.2	0.7	20.9
	08/05/2019	0.2	0.1	22.4
	14/05/2019	0	1.5	19.8
	21/05/2019	0	1.2	19.7
	05/06/2019	0	0	21.7
	13/06/2019	0	3.3	18.8
	19/06/2019	0	0.7	20.4
	28/06/2019	0	1.2	20.2
G40	04/04/2019	0	6.9	11.8
	11/04/2019	0	0	22.1

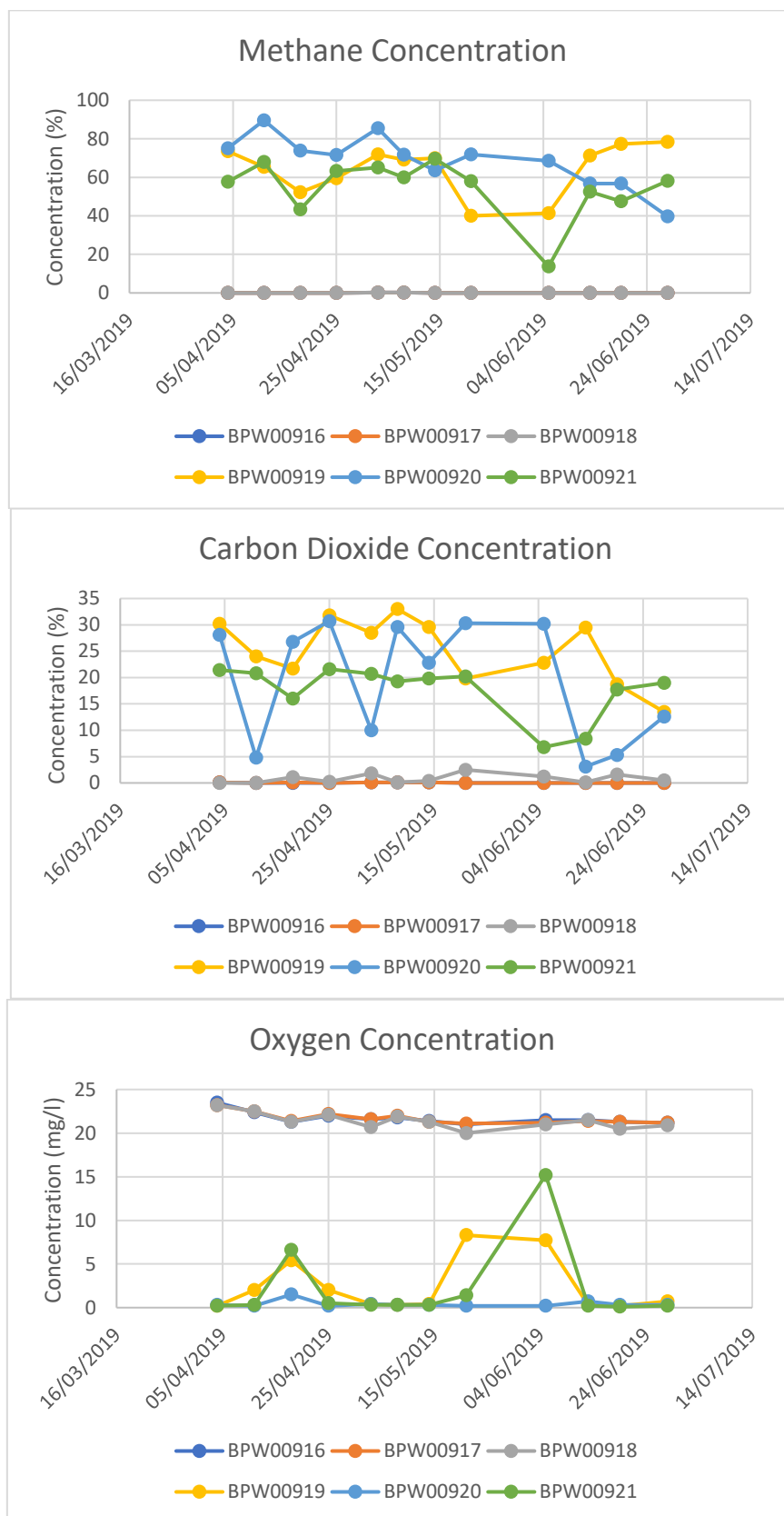
APPENDIX 1 – LANDFILL GAS

Sample Point	Date	Methane	Carbon Dioxide	Oxygen
		% v/v	% v/v	% v/v
Compliance Limit		1	1.5	N/A
Trigger Limit		0.8	1.3	N/A
	18/04/2019	0	0	21.1
	25/04/2019	25.7	11.3	3.1
	03/05/2019	32.7	13.6	0.8
	08/05/2019	45.5	15.8	0.4
	14/05/2019	0.8	2	17.2
	21/05/2019	47.7	15.1	0.5
	05/06/2019	13.6	11.2	5.4
	13/06/2019	1.2	7.8	9.2
	19/06/2019	1.9	5.4	11.6
	28/06/2019	2.6	3.7	15.2
G41	04/04/2019	0	0.8	21.9
	11/04/2019	0	0.3	21.7
	18/04/2019	0	0	21.5
	25/04/2019	0.3	1.9	19
	03/05/2019	1.7	2.8	15.6
	08/05/2019	8.1	5.3	12.8
	14/05/2019	0.4	1.6	19.8
	21/05/2019	2.9	4.7	14.6
	05/06/2019	3.8	3.9	14.3
	13/06/2019	1.3	2.1	17.9
	19/06/2019	0.7	1.6	18.7
	28/06/2019	0.6	1.9	19.5
G42	04/04/2019	0	0.1	22.3
	11/04/2019	0	0	22.1
	18/04/2019	0	0	21.4
	25/04/2019	0	0	22.2
	03/05/2019	0.2	0.1	22.1
	08/05/2019	0.3	0.1	22.4
	14/05/2019	0	0	21.8
	21/05/2019	0	0.3	20.8
	05/06/2019	0	0	21.7
	13/06/2019	0	0	21.7
	19/06/2019	0	0	21.1
	28/06/2019	0	0	21.2

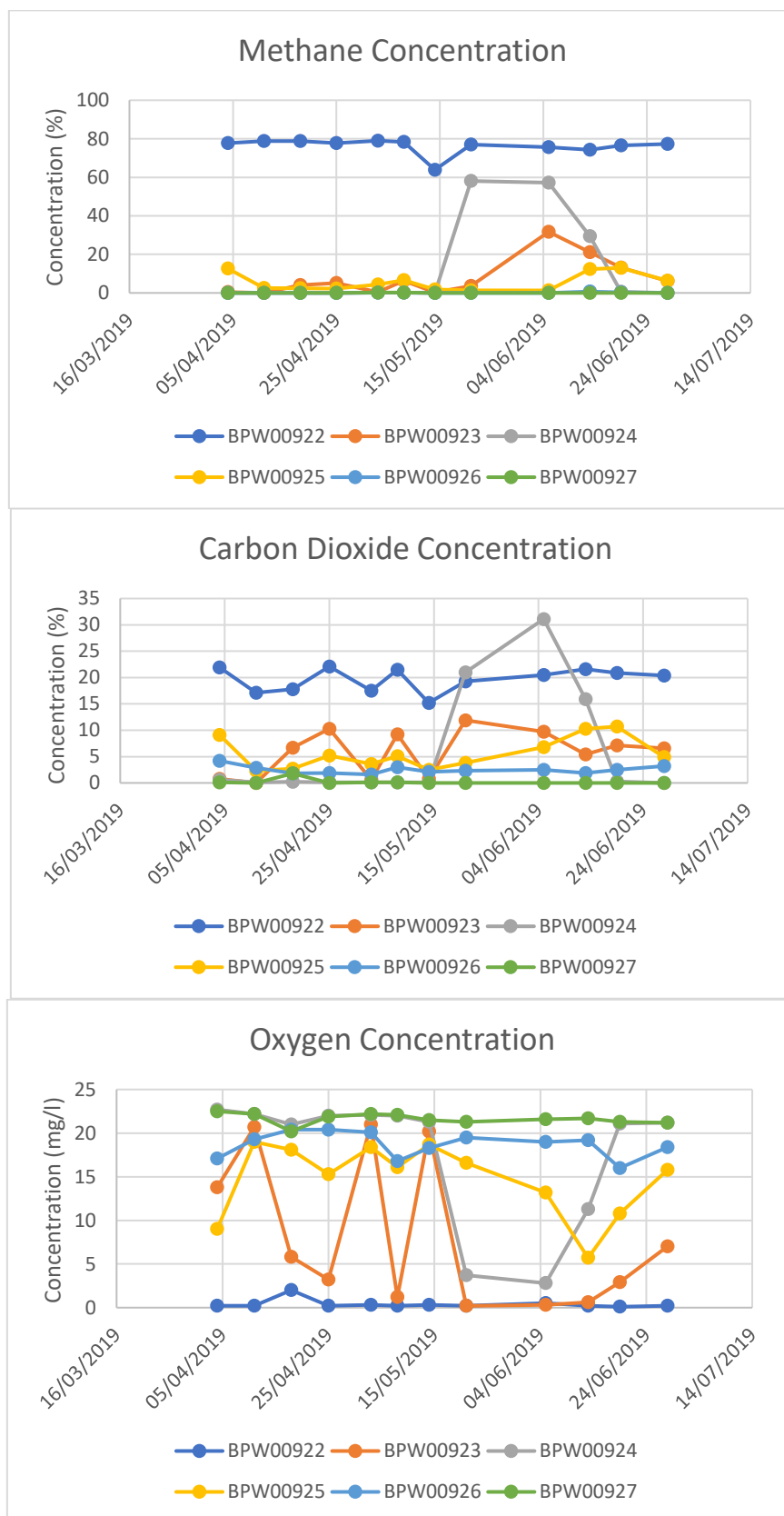
APPENDIX 1 – LANDFILL GAS**Time Series Graphs for Perimeter Gas Monitoring Data**

APPENDIX 1 – LANDFILL GAS

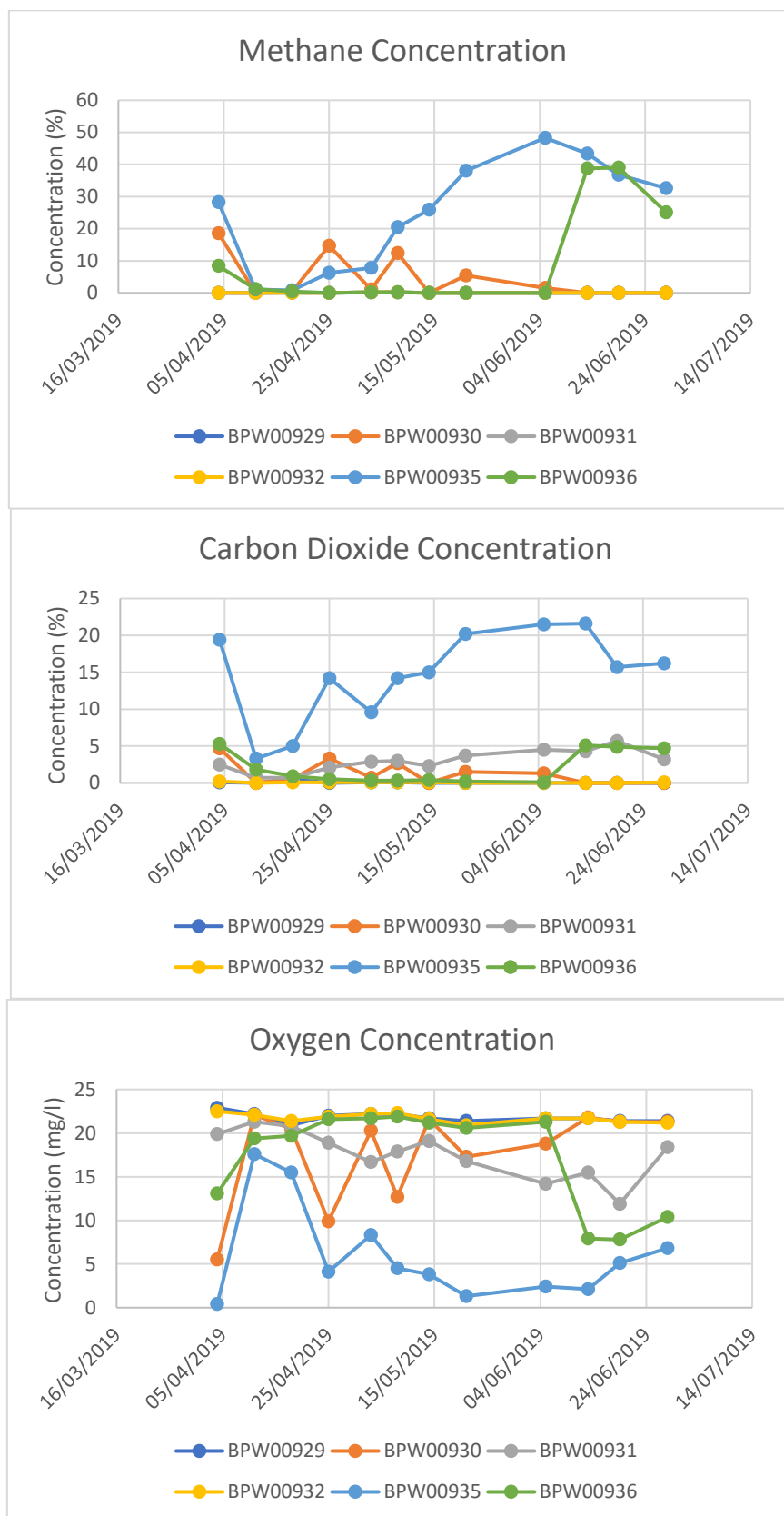
APPENDIX 1 – LANDFILL GAS



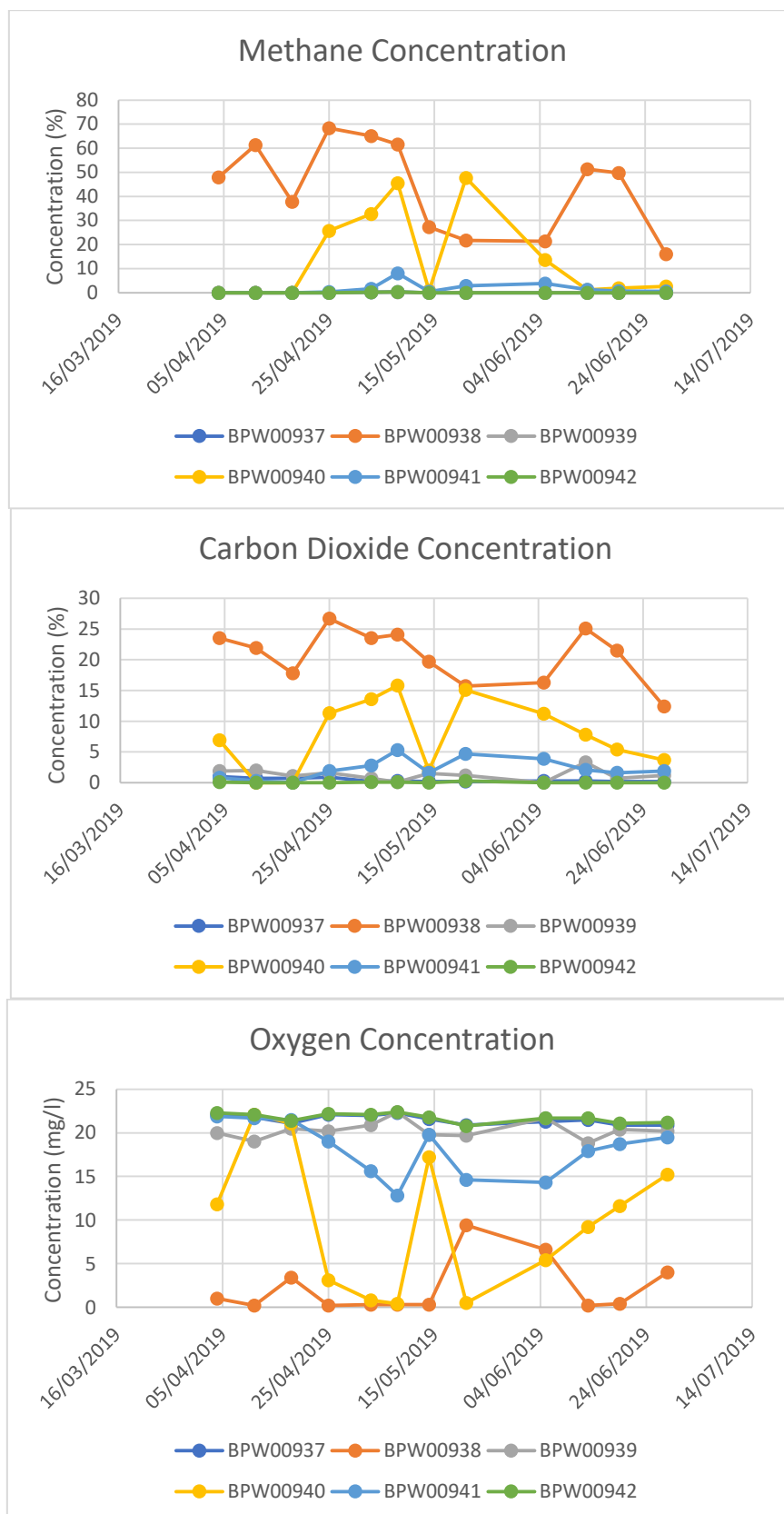
APPENDIX 1 – LANDFILL GAS



APPENDIX 1 – LANDFILL GAS



APPENDIX 1 – LANDFILL GAS



APPENDIX 2 – LEACHATE**Table 1: Leachate Level Data**

ID	TOP LEVEL (mAOD)	BASE OF WELL (mAOD)	date	DIP mBGL	DIP mAOD	Leachate above well base	Compliance Limit
LCP2	347.63	318.23	13/05/2019	25.13	322.5	4.27	1.0
LCP3	349.44	314.87	02/05/2019	25.38	324.06	9.19	1.0
LCP6	338.51	314.31	18/06/2018	23.44	315.07	0.76	1.0
RMLP9B	349.35	309.55	12/06/2019	23.43	325.92	16.37	1.0
RMLP9C	333.56	308.08	31/05/2019	10.87	322.69	14.61	1.0
RMLP9D	331.51	306.75	24/05/2019	7.00	324.51	17.76	1.0

Table 2: Monthly raw leachate monitoring data

Parameter	Units	Date	LCP 1	LCP 2	LCP 3	LCP 7	LCP 8	LCP 6	RMLP9A	RMLP9B	RMLP9C	RMLP9D
Ammoniacal Nitrogen as N	mg/l	29/04/2019	42.9	2240	1970	865	959	1950	1760	2530	1230	1430
		23/05/2019	284	2180	2110	835	1250	1690	1920	1690	837	1800
		23/06/2019	92.2	2000	2010	745	1180	1030	1890	1650	1490	1380
Chloride as Cl	mg/l	29/04/2019	83.5	8640	2520	1220	1960	2240	1790	2900	1540	1590
		23/05/2019	386	7930	2730	1090	2310	2200	2500	1770	1130	1860
		23/06/2019	172	7970	2840	1130	2450	1720	2750	1800	1950	1370
pH	pH units	29/04/2019	7.1	8.1	8	7.8	7.8	8.1	8.3	8.2	8.1	8.3
		23/05/2019	7.1	8	7.9	7.6	7.9	7.9	8	8.2	7.6	8.2
		23/06/2019	6.6	7.9	7.7	7.6	7.6	7.7	8	8.1	8.3	8

APPENDIX 2 – LEACHATE**Table 3: Final discharge monthly monitoring data (EP exceedances highlighted)**

Parameter	Unit	Discharge Consent	Treated Leachate		
			29/04/2019	23/05/2019	23/06/2019
Ammoniacal Nitrogen as N	mg/l	150	94.1	77.6	32.8
BOD + ATU (20 day)	mg/l	-	63	88	31
BOD + ATU (5 day)	mg/l	-	8	25	9
COD (1 hr settled)	mg/l	1000	406	518	339
COD (Filtered)	mg/l	-	377	511	249
COD (Total)	mg/l	-	426	553	726
EH >C6 - C40	ug/l	-	2840	1870	285
Methane, Dissolved	mg/l	-	<0.010	0.068	<0.010
pH	pH units	6 to 10	6.8	6.9	4.8
Sulphate as SO4, High Level	mg/l	1000	51.7	64.8	81.6
Total Suspended Solids	mg/l	500	20	39	500

APPENDIX 2 – LEACHATE**Table 4: Final discharge quarterly monitoring data**

Sample Matrix	unit	Treated Leachate
Cadmium , Total as Cd	mg/l	<0.0006
Chromium , Total as Cr	mg/l	0.14
Copper, Total as Cu	mg/l	0.054
Lead , Total as Pb	mg/l	0.012
Mercury, Total as Hg	mg/l	<0.00020
Nickel, Total as Ni	mg/l	0.072
Zinc, Total as Zn	mg/l	0.17
Cyanide, Total as CN	mg/l	0.031
2,3,6 - TBA	ug/l	<0.10
2,4 - D	ug/l	<0.10
2,4 - DB	ug/l	<0.10
2,4,5 - T	ug/l	<0.10
Bromoxynil	ug/l	<0.10
Dicamba	ug/l	0.33
Dichlorprop	ug/l	<0.10
Ioxynil	ug/l	<0.10
MCPA	ug/l	1.63
MCPB	ug/l	<0.10
Mecoprop	ug/l	2.71
EH >C6 - C8	ug/l	<100
EH >C8 - C10	ug/l	<100
EH >C16 - C24	ug/l	128
EH >C24 - C40	ug/l	<100
EH >C10 - C16	ug/l	157
1,1,1,2-Tetrachloroethane	ug/l	<1.00
1,1,1-Trichloroethane	ug/l	<1.00
1,1,2,2-Tetrachloroethane	ug/l	<1.00
1,1,2-Trichloroethane	ug/l	<1.00
1,1-Dichloroethane	ug/l	<1.00
1,1-Dichloroethene	ug/l	<1.00
1,1-Dichloropropene	ug/l	<1.00
1,2,3-Trichlorobenzene	ug/l	<1.00
1,2,3-Trichloropropane	ug/l	<1.00
1,2,4-Trichlorobenzene	ug/l	<1.00
1,2,4-Trimethylbenzene	ug/l	<1.00
1,2-Dibromo-3-chloropropane	ug/l	<2.00
1,2-Dibromoethane	ug/l	<1.00
1,2-Dichlorobenzene	ug/l	<1.00
1,2-Dichloroethane	ug/l	<1.00
1,2-Dichloropropane	ug/l	<1.00
1,3,5-Trimethylbenzene	ug/l	<1.00
1,3-Dichlorobenzene	ug/l	<1.00
1,3-Dichloropropane	ug/l	<1.00
1,4-Dichlorobenzene	ug/l	<1.00
2,2-Dichloropropane	ug/l	<1.00
2-Chlorotoluene	ug/l	<1.00
4-Chlorotoluene	ug/l	<1.00
Benzene	ug/l	<1.00
Bromobenzene	ug/l	<1.00
Bromochloromethane	ug/l	<1.00
Bromodichloromethane	ug/l	<1.00
Bromoform	ug/l	<1.00
Bromomethane	ug/l	<1.00
Carbon Tetrachloride	ug/l	<1.00
Chlorobenzene	ug/l	<1.00

APPENDIX 2 – LEACHATE

Sample Matrix	unit	Treated Leachate
Chloroethane	ug/l	<1.00
Chloroform	ug/l	<1.00
Chloromethane	ug/l	<2.00
cis-1,2-Dichloroethene	ug/l	<1.00
cis-1,3-Dichloropropene	ug/l	<1.00
Dibromochloromethane	ug/l	<1.00
Dibromomethane	ug/l	<1.00
Dichlorodifluoromethane	ug/l	<1.00
Dichloromethane	ug/l	<1.00
Ethyl Benzene	ug/l	<1.00
Hexachlorobutadiene	ug/l	<1.00
iso-Propylbenzene	ug/l	<1.00
m&p Xylene	ug/l	<1.00
MTBE	ug/l	<1.00
Naphthalene	ug/l	<1.00
n-butylbenzene	ug/l	<1.00
n-propylbenzene	ug/l	<1.00
o-Xylene	ug/l	<1.00
p-isopropyltoluene	ug/l	<1.00
sec-butylbenzene	ug/l	<1.00
Styrene	ug/l	<1.00
tert-Butylbenzene	ug/l	<1.00
Tetrachloroethene	ug/l	<1.00
Toluene	ug/l	<1.00
trans-1,2-Dichloroethene	ug/l	<1.00
trans-1,3-Dichloropropene	ug/l	<1.00
Trichloroethene	ug/l	<1.00
Trichlorofluoromethane	ug/l	<1.00
Vinyl Chloride	ug/l	<0.500
Xylene, Total	ug/l	<1.00

Sample Matrix	unit	Treated Leachate
SVOC		
1,2,4-Trichlorobenzene	ug/l	<10.0
1,2-Dichlorobenzene	ug/l	<10.0
1,3-Dichlorobenzene	ug/l	<10.0
1,4-Dichlorobenzene	ug/l	<10.0
2,4,5-Trichlorophenol	ug/l	<10.0
2,4,6-Trichlorophenol	ug/l	<10.0
2,4-Dichlorophenol	ug/l	<10.0
2,4-Dimethylphenol	ug/l	<10.0
2,4-Dinitrotoluene	ug/l	<10.0
2,6-Dinitrotoluene	ug/l	<10.0
2-Chloronaphthalene	ug/l	<10.0
2-Chlorophenol	ug/l	<10.0
2-Methylnaphthalene	ug/l	<10.0
2-Methylphenol	ug/l	<10.0
2-Nitrophenol	ug/l	<10.0
3&4-Methylphenol	ug/l	<10.0
4-Bromophenyl Phenyl Ether	ug/l	<10.0
4-Chloro-3-methylphenol	ug/l	<10.0
4-Chlorophenyl phenyl ether	ug/l	<10.0
4-Nitrophenol	ug/l	<50.0
Acenaphthene	ug/l	<10.0

APPENDIX 2 – LEACHATE

Sample Matrix	unit	Treated Leachate
SVOC		
Acenaphthylene	ug/l	<10.0
Anthracene	ug/l	<10.0
Benzo(a)anthracene	ug/l	<10.0
Benzo(a)pyrene	ug/l	<10.0
Benzo(b)fluoranthene	ug/l	<10.0
Benzo(g,h,i)perylene	ug/l	<10.0
Benzo(k)fluoranthene	ug/l	<10.0
Benzyl Butyl Phthalate	ug/l	<10.0
Bis(2-chloroethoxy)methane	ug/l	<10.0
Bis(2-chloroethyl)ether	ug/l	<10.0
Bis(2-chloroisopropyl)ether	ug/l	<10.0
Bis(2-ethylhexyl)phthalate	ug/l	<50.0
Chrysene	ug/l	<10.0
Dibenz(a,h)anthracene	ug/l	<10.0
Dibenzofuran	ug/l	<10.0
Diethylphthalate	ug/l	<10.0
Dimethylphthalate	ug/l	<10.0
di-n-Butylphthalate	ug/l	<10.0
Di-n-octylphthalate	ug/l	<10.0
Diphenylamine	ug/l	<10.0
Fluoranthene	ug/l	<10.0
Fluorene	ug/l	<10.0
Hexachlorobenzene	ug/l	<10.0
Hexachlorobutadiene	ug/l	<10.0
Hexachloroethane	ug/l	<10.0
Indeno(1,2,3-c,d)pyrene	ug/l	<10.0
Isophorone	ug/l	<10.0
Naphthalene	ug/l	<20.0
Nitrobenzene	ug/l	<10.0
n-Nitrosodi-n-propylamine	ug/l	<10.0
Pentachlorophenol	ug/l	<10.0
Phenanthrene	ug/l	<10.0
Phenol	ug/l	<10.0
Pyrene	ug/l	<10.0

APPENDIX 3 – GROUNDWATER**Table 1: Weekly level data (calculated metres above ordinance datum)**

date	W1	W2	W3	W4	W5	W6	W7	W8	W9
06/01/2019	311.37	329.81	300.53	301.22	312.52	310.06	297.41	278.37	320.04
14/01/2019	311.31	329.74	300.30	301.24	312.49	310.08	296.93	278.35	319.98
22/01/2019	311.02	329.73	300.16	301.15	312.50	310.01	295.99	278.38	319.97
29/01/2019	310.59	329.65	300.00	301.07	312.47	309.94	295.40	278.40	319.78
05/02/2019	310.05	329.53	299.67	301.08	312.45	309.92	294.54	278.36	319.82
11/02/2019	309.52	329.43	299.41	300.98	312.45	309.88	293.35	278.32	319.66
19/02/2019	309.64	329.49	299.49	301.16	312.51	309.89	293.95	278.42	319.75
26/02/2019	309.59	329.48	299.59	301.13	312.61	309.94	293.73	278.50	319.79
04/03/2019	309.69	329.66	299.71	301.07	312.57	309.99	293.69	278.49	319.86
13/03/2019	309.74	329.73	299.82	301.13	312.58	309.98	294.14	278.55	319.90
21/03/2019	309.95	329.81	299.84	300.99	312.63	309.91	294.40	278.60	319.87
27/03/2019	309.91	329.73	299.92	301.01	312.65	309.85	294.31	278.53	319.93

APPENDIX 3 – GROUNDWATER**Table 3: Groundwater Monthly monitoring data**

Parameter	Unit	Compliance Limit	Date	GW 1	GW 2	GW 3	GW 4	GW 5	GW 6	GW 7	GW 8	GW 9
Ammoniacal Nitrogen as N	mg/l	2	29/04/2019	<0.41	<0.41	<0.41	0.99	<0.41	<0.41	<0.41	<0.41	<0.41
			23/05/2019	<0.41	<0.41	<0.41	1.21	<0.41	<0.41	<0.41	<0.41	<0.41
			23/06/2019	<0.41	<0.41	<0.41	1.48	<0.41	<0.41	<0.41	<0.41	<0.41
Chloride as Cl	mg/l	69	29/04/2019	291	34	8.3	20.2	19.5	12.9	16.3	17.8	22
			23/05/2019	343	34.2	12.8	22.6	23.1	16.5	18.3	18.2	22.7
			23/06/2019	227	31.6	<3.7	21.6	21.8	14	15	16.2	18.1
Conductivity-Electrical 20C	uS/cm	-	29/04/2019	963	178	137	309	186	89.3	316	282	181
			23/05/2019	1060	182	273	303	188	98.2	316	266	180
			23/06/2019	752	179	133	316	198	107	322	270	176
Cyanide, Total as CN	mg/l	-	29/04/2019	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
			23/05/2019	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
			23/06/2019	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
pH	pH units	-	29/04/2019	6.1	7.9	6.1	6.8	6	6.3	7.3	7	6.3
			23/05/2019	6.2	7.6	7.6	7	6.3	6.6	7.7	7.3	6.5
			23/06/2019	6.5	7.4	6.6	6.9	6.3	6.4	7.6	7.1	6.6
Sulphate as SO ₄	mg/l	-	29/04/2019	22.4	<4.4	45.1	38.1	35.3	5.3	28.4	23.8	29.7
			23/05/2019	21.2	<4.4	6.3	37.7	40.4	4.7	28.9	25	32.1
			23/06/2019	18.4	<4.4	27.5	33.1	37	<4.4	28.4	24.7	27.3

APPENDIX 3 – GROUNDWATER**Table 4: Groundwater Quarterly monitoring data (with compliance limits)**

Reference	Unit	Trigger	W1	W2	W3	W4	W5	W6	W7	W8	W9
Cadmium , Total as Cd	mg/l	0.0056	<0.0006	0.0008	0.001	<0.0006	<0.0006	0.0006	<0.0006	<0.0006	0.0008
Nickel , Total as Ni	mg/l	0.12	0.005	<0.003	0.004	0.005	0.014	0.007	<0.003	<0.003	0.003
Toluene	µg/l	4	<0.10	0.14	0.19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Xylenes	µg/l	3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zinc, Total as Zn	mg/l	0.85	<0.018	<0.018	0.02	<0.018	0.07	0.137	<0.018	<0.018	0.06
Ethyl Benzene	µg/l	1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Mecoprop	µg/l	0.1	<0.04	<0.04	<0.04	0.11	0.13	<0.04	<0.04	<0.04	<0.04
2,4 - D	µg/l	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 5: Groundwater Quarterly monitoring data (without compliance limits)

Reference	Unit	W1	W2	W3	W4	W5	W6	W7	W8	W9
Acenaphthene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Alkalinity as CaCO3	mg/l	25.2	46	29.4	106	22.2	19.6	127	101	32.2
Anthracene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony Ultra Low Total as Sb	mg/l	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
Arsenic, Ultra Low Total as As	mg/l	0.0053	<0.0010	0.006	0.017	0.0012	0.0062	0.001	0.0019	<0.0010
Benzene	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo (a) anthracene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo (a) pyrene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo (b) fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo (g,h,i) perylene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo (k) fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bicarbonate Alkalinity	mg/l	25.2	46	29.4	106	22.2	19.6	127	101	32.2
Calcium , Total as Ca	mg/l	7.13	10.4	16.4	38.6	16.7	11.3	43.9	38.8	14.6
Chromium , Total as Cr	mg/l	0.002	<0.002	0.003	<0.002	<0.002	0.002	<0.002	<0.002	<0.002
Chrysene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX 3 – GROUNDWATER

Reference	Unit	W1	W2	W3	W4	W5	W6	W7	W8	W9
Copper, Total as Cu	mg/l	0.012	<0.009	0.015	<0.009	0.029	0.026	<0.009	<0.009	<0.009
Dibenz (a,h) anthracene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Oxygen, Fixed	mg/l	2.4	<0.5	3	0.5	4.1	4.5	1.5	3.1	4.7
Fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluorene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno (1,2,3) cd pyrene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron , Total as Fe	mg/l	1.55	<0.23	2.01	7.51	<0.23	1.74	0.31	0.76	0.39
Lead , Total as Pb	mg/l	<0.006	<0.006	0.025	<0.006	<0.006	0.019	0.016	0.071	<0.006
m&p Xylene	ug/l	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Magnesium, Total as Mg	mg/l	1.7	1.2	3.9	8.8	4.3	2.3	6.8	9.6	4.6
Manganese , Total as Mn	mg/l	0.312	0.009	0.573	3.59	0.663	0.189	0.773	0.945	0.161
Mercury, Total as Hg	mg/l	0.00002	<0.00001	<0.00010	<0.00010	0.00001	0.00001	<0.00001	<0.00001	<0.00001
Naphthalene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate as N	mg/l	<0.7	<0.7	<0.7	<0.7	0.9	<0.7	<0.7	<0.7	<0.7
o-Xylene	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
PAH, Total	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenanthrene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols Mono (Phenol Index)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium , Total as K	mg/l	1.43	2.69	1.37	2.56	2.39	0.98	2.9	1.34	1.18
Pyrene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium Ultra Low Total as Se	mg/l	0.0009	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Silver , Total as Ag	mg/l	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007
Sodium , Total as Na	mg/l	128	24.3	5.09	12.3	13.7	6.98	19.6	9.02	12.8

APPENDIX 4 – SURFACE WATER**Table 1: Monthly monitoring data**

LOCATION	DATE	pH	Conductivity- Electrical 20C	Ammoniacal Nitrogen as N (LL)	Chloride as Cl	Total Suspended Solids	BOD + ATU (5 day)	EH >C6 - C40	EH >C6 - C8	EH >C8 - C10	EH >C16 - C24	EH >C24 - C40	EH >C10 - C16
		pH units	µS/cm	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Compliance Limit		6 - 9	N/A	0.25	N/A	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P1 (SW 1)	29/04/2019	6.1	96.3	<0.06	10.4	4	1	<20	<20	<20	<20	<20	<20
	23/05/2019	7.2	105	<0.06	11.8	3	1	<20	<20	<20	<20	<20	<20
	23/06/2019	6.8	113	<0.06	9.9	2	<1	<40	<40	<40	<40	<40	<40
P2 (SW 2)	29/04/2019	7.8	258	0.13	24.7	34	1	<40	<40	<40	<40	<40	<40
	23/05/2019	7.6	353	<0.06	43.9	4	2	<20	<20	<20	<20	<20	<20
	23/06/2019	7.6	470	0.18	25.1	7	3	63	<40	<40	<40	63	<40
P3 (SW 3)	23/06/2019	6.2	115	0.19	<3.7	16	2	39	<20	<20	<20	39	<20

APPENDIX 4 – SURFACE WATER**Table 2: Quarterly monitoring data**

Sample Matrix	units	SW 1	SW 2	SW 3
1,1,1,2-Tetrachloroethane	ug/l	<1.00	<1.00	<1.00
1,1,1-Trichloroethane	ug/l	<1.00	<1.00	<1.00
1,1,2,2-Tetrachloroethane	ug/l	<1.00	<1.00	<1.00
1,1,2-Trichloroethane	ug/l	<1.00	<1.00	<1.00
1,1-Dichloroethane	ug/l	<1.00	<1.00	<1.00
1,1-Dichloroethene	ug/l	<1.00	<1.00	<1.00
1,1-Dichloropropene	ug/l	<1.00	<1.00	<1.00
1,2,3-Trichlorobenzene	ug/l	<1.00	<1.00	<1.00
1,2,3-Trichloropropane	ug/l	<1.00	<1.00	<1.00
1,2,4-Trichlorobenzene	ug/l	<1.00	<1.00	<1.00
1,2,4-Trimethylbenzene	ug/l	<1.00	<1.00	<1.00
1,2-Dibromo-3-chloropropane	ug/l	<2.00	<2.00	<2.00
1,2-Dibromoethane	ug/l	<1.00	<1.00	<1.00
1,2-Dichlorobenzene	ug/l	<1.00	<1.00	<1.00
1,2-Dichloroethane	ug/l	<1.00	<1.00	<1.00
1,2-Dichloropropane	ug/l	<1.00	<1.00	<1.00
1,3,5-Trimethylbenzene	ug/l	<1.00	<1.00	<1.00
1,3-Dichlorobenzene	ug/l	<1.00	<1.00	<1.00
1,3-Dichloropropane	ug/l	<1.00	<1.00	<1.00
1,4-Dichlorobenzene	ug/l	<1.00	<1.00	<1.00
2,2-Dichloropropane	ug/l	<1.00	<1.00	<1.00
2,3,6 - TBA	ug/l	<0.05	<0.05	<0.05
2,4 - D	ug/l	<0.05	<0.05	<0.05
2,4 - DB	ug/l	<0.05	<0.05	<0.05
2,4,5 - T	ug/l	<0.05	<0.05	<0.05
2-Chlorotoluene	ug/l	<1.00	<1.00	<1.00
4-Chlorotoluene	ug/l	<1.00	<1.00	<1.00
Benzene	ug/l	<1.00	<1.00	<1.00
Bromobenzene	ug/l	<1.00	<1.00	<1.00
Bromochloromethane	ug/l	<1.00	<1.00	<1.00
Bromodichloromethane	ug/l	<1.00	<1.00	<1.00
Bromoform	ug/l	<1.00	<1.00	<1.00
Bromomethane	ug/l	<1.00	<1.00	<1.00
Bromoxynil	ug/l	<0.05	<0.05	<0.05
Cadmium , Total as Cd	mg/l	0.0006	<0.0006	<0.0006
Carbon Tetrachloride	ug/l	<1.00	<1.00	<1.00
Chlorobenzene	ug/l	<1.00	<1.00	<1.00
Chloroethane	ug/l	<1.00	<1.00	<1.00
Chloroform	ug/l	<1.00	<1.00	<1.00
Chloromethane	ug/l	<2.00	<2.00	<2.00
cis-1,2-Dichloroethene	ug/l	<1.00	<1.00	<1.00
cis-1,3-Dichloropropene	ug/l	<1.00	<1.00	<1.00
COD (Total)	mg/l	20	28	26
Cyanide, Total as CN	mg/l	<0.009	<0.009	<0.009
Dibromochloromethane	ug/l	<1.00	<1.00	<1.00
Dibromomethane	ug/l	<1.00	<1.00	<1.00
Dicamba	ug/l	<0.05	<0.05	<0.05
Dichlorodifluoromethane	ug/l	<1.00	<1.00	<1.00
Dichloromethane	ug/l	<1.00	<1.00	<1.00
Dichlorprop	ug/l	<0.05	<0.05	<0.05
Dissolved Oxygen, Fixed	mg/l	9.1	10	8.2
Ethyl Benzene	ug/l	<1.00	<1.00	<1.00

APPENDIX 4 – SURFACE WATER

Sample Matrix	units	SW 1	SW 2	SW 3
Hexachlorobutadiene	ug/l	<1.00	<1.00	<1.00
loxylin	ug/l	<0.05	<0.05	<0.05
iso-Propylbenzene	ug/l	<1.00	<1.00	<1.00
m&p Xylene	ug/l	<1.00	<1.00	<1.00
MCPA	ug/l	<0.05	<0.05	<0.05
MCPB	ug/l	<0.05	<0.05	<0.05
Mecoprop	ug/l	<0.04	<0.04	<0.04
MTBE	ug/l	<1.00	<1.00	<1.00
Naphthalene	ug/l	<1.00	<1.00	<1.00
n-butylbenzene	ug/l	<1.00	<1.00	<1.00
n-propylbenzene	ug/l	<1.00	<1.00	<1.00
o-Xylene	ug/l	<1.00	<1.00	<1.00
p-isopropyltoluene	ug/l	<1.00	<1.00	<1.00
sec-butylbenzene	ug/l	<1.00	<1.00	<1.00
Styrene	ug/l	<1.00	<1.00	<1.00
tert-Butylbenzene	ug/l	<1.00	<1.00	<1.00
Tetrachloroethene	ug/l	<1.00	<1.00	<1.00
Toluene	ug/l	<1.00	<1.00	<1.00

Sample Matrix		SW 1	SW 2	SW3
SVOC				
1,2,4-Trichlorobenzene	ug/l	<10.0	<4.0	<4.0
1,2-Dichlorobenzene	ug/l	<10.0	<4.0	<4.0
1,3-Dichlorobenzene	ug/l	<10.0	<4.0	<4.0
1,4-Dichlorobenzene	ug/l	<10.0	<4.0	<4.0
2,4,5-Trichlorophenol	ug/l	<10.0	<4.0	<4.0
2,4,6-Trichlorophenol	ug/l	<10.0	<4.0	<4.0
2,4-Dichlorophenol	ug/l	<10.0	<4.0	<4.0
2,4-Dimethylphenol	ug/l	<10.0	<4.0	<4.0
2,4-Dinitrotoluene	ug/l	<10.0	<4.0	<4.0
2,6-Dinitrotoluene	ug/l	<10.0	<4.0	<4.0
2-Chloronaphthalene	ug/l	<10.0	<4.0	<4.0
2-Chlorophenol	ug/l	<10.0	<4.0	<4.0
2-Methylnaphthalene	ug/l	<10.0	<4.0	<4.0
2-Methylphenol	ug/l	<10.0	<4.0	<4.0
2-Nitrophenol	ug/l	<10.0	<4.0	<4.0
3&4-Methylphenol	ug/l	<10.0	<4.0	<4.0
4-Bromophenyl Phenyl Ether	ug/l	<10.0	<4.0	<4.0
4-Chloro-3-methylphenol	ug/l	<10.0	<4.0	<4.0
4-Chlorophenyl phenyl ether	ug/l	<10.0	<4.0	<4.0
4-Nitrophenol	ug/l	<50.0	<20.0	<20.0
Acenaphthene	ug/l	<10.0	<4.0	<4.0
Acenaphthylene	ug/l	<10.0	<4.0	<4.0
Anthracene	ug/l	<10.0	<4.0	<4.0
Benzo(a)anthracene	ug/l	<10.0	<4.0	<4.0
Benzo(a)pyrene	ug/l	<10.0	<4.0	<4.0
Benzo(b)fluoranthene	ug/l	<10.0	<4.0	<4.0
Benzo(g,h,i)perylene	ug/l	<10.0	<4.0	<4.0
Benzo(k)fluoranthene	ug/l	<10.0	<4.0	<4.0
Benzyl Butyl Phthalate	ug/l	<10.0	<4.0	<4.0
Bis(2-chloroethoxy)methane	ug/l	<10.0	<4.0	<4.0
Bis(2-chloroethyl)ether	ug/l	<10.0	<4.0	<4.0
Bis(2-chloroisopropyl)ether	ug/l	<10.0	<4.0	<4.0

APPENDIX 4 – SURFACE WATER

Sample Matrix		SW 1	SW 2	SW3
SVOC				
Bis(2-ethylhexyl)phthalate	ug/l	<50.0	<20.0	<20.0
Chrysene	ug/l	<10.0	<4.0	<4.0
Dibenz(a,h)anthracene	ug/l	<10.0	<4.0	<4.0
Dibenzofuran	ug/l	<10.0	<4.0	<4.0
Diethylphthalate	ug/l	<10.0	<4.0	<4.0
Dimethylphthalate	ug/l	<10.0	<4.0	<4.0
di-n-Butylphthalate	ug/l	<10.0	<4.0	<4.0
Di-n-octylphthalate	ug/l	<10.0	<4.0	<4.0
Diphenylamine	ug/l	<10.0	<4.0	<4.0
Fluoranthene	ug/l	<10.0	<4.0	<4.0
Fluorene	ug/l	<10.0	<4.0	<4.0
Hexachlorobenzene	ug/l	<10.0	<4.0	<4.0
Hexachlorobutadiene	ug/l	<10.0	<4.0	<4.0
Hexachloroethane	ug/l	<10.0	<4.0	<4.0
Indeno(1,2,3-c,d)pyrene	ug/l	<10.0	<4.0	<4.0
Isophorone	ug/l	<10.0	<4.0	<4.0
Naphthalene	ug/l	<20.0	<8.0	<8.0
Nitrobenzene	ug/l	<10.0	<4.0	<4.0
n-Nitrosodi-n-propylamine	ug/l	<10.0	<4.0	<4.0
Pentachlorophenol	ug/l	<10.0	<4.0	<4.0
Phenanthrene	ug/l	<10.0	<4.0	<4.0
Phenol	ug/l	<10.0	<4.0	<4.0
Pyrene	ug/l	<10.0	<4.0	<4.0

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Mr Williams
Potters Waste Management
Potters Yard
Severn Road
Welshpool SY21 7BE
Powys

11 July 2019

Test Report: COV/1717874/2019

Dear Mr Williams

Analysis of your sample(s) submitted on 25 May 2019 is now complete and we have pleasure in enclosing the appropriate test report(s).

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

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

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

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

Yours Sincerely,

Signed: 

Name: P. Johal

Title: Coventry Operations Manager



Report Summary

Mr David Williams
Potters Waste Management
Potters Yard
Severn Road
Welshpool
Powys
SY21 7BE



Date of Issue : **29 May 2019**

Report Number : **COV/1717874/2019**

Issue **1**

This issue replaces all previous issues

Number of Samples
included in report: **3**

Site Name : **Waste Water Analysis**
Job Received : **25 May 2019**

Number of Test
Results included in rep **21**

Analysis Commenced : **28 May 2019**
Order Number : **B1772POT2**

Signed :

A handwritten signature in black ink, appearing to read 'P. Johal'.

Name : **P. Johal**

Date : **29 May 2019**

Title : **Coventry Operations Manager**

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

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

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ALS Environmental Ltd

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Certificate of Analysis



Report Number: **COV/1717874/2019** Issue **1**
 Site Name: **Waste Water Analysis**

				Dust					
				18257561		18257562		18257563	
Determinand	Units	Method/ Analysis Site		Dust Sample 1		Dust Sample 2		Dust Sample 3	
Date In	dd/mm/yy	FIELD	Cov	N	23/05/19	N	23/05/19	N	23/05/19
Date Out	dd/mm/yy	FIELD	Cov	N	29/04/19	N	29/04/19	N	29/04/19
Deposited Dust, Total, Calc.	mg/m2/day	74	Cov	N	<10	N	21	N	30
Description of Dust	Text	74	Cov	N	{/*}Light, green and brown deposition. Algae {*/}	N	{/*}Heavy, green and brown deposition. Algae {*/}	N	{/*}Heavy, green and brown deposition. Algae {*/}
Frisbee Diameter	mm	FIELD	Cov	N	230	N	230	N	230
Mass of Undissolved Solids	mg	74	Cov	N	5.7	N	20.7	N	29.5
Number of Days Exposed		FIELD	Cov	N	24	N	24	N	24

Signed :

Name : **P. Johal**

Date : **29 May 2019**

Title : **Coventry Operations Manager**

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH4 9EP), CTD = Coatbridge(ML5 4FR), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2SW), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG).

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. The LOD for the Legionella analysis will increase where the volume analysed is <1000g (1g is approximately equivalent to 1ml for

ALS Environmental Ltd

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ANALYST COMMENTS FOR REPORT

COV/1717874/2019

Issue 1

This issue replaces all previous issues

Date of Issue: 29 May 2019

Sample No	Analyst Comments
18257561	DUST COMMENTS Light, green and brown deposition. Algae
18257562	DUST COMMENTS Heavy, green and brown deposition. Algae
18257563	DUST COMMENTS Heavy, green and brown deposition. Algae

Signed:



Name: P. Johal

Date: 29 May 2019

Title: Coventry Operations Manager

DETERMINAND COMMENTS FOR REPORT COV/1717874/2019**ISSUE 1**This issue replaces
all previous issues**Date of Issue : 29 May 2019**

Sample No	Description	Determinand	Comments
18257561	Dust Sample 1	Description of Dust	{*}Light, green and brown deposition. Algae{*/}
18257562	Dust Sample 2	Description of Dust	{*}Heavy, green and brown deposition. Algae{*/}
18257563	Dust Sample 3	Description of Dust	{*}Heavy, green and brown deposition. Algae{*/}

Signed:

A handwritten signature in black ink, appearing to be "P. Johal", written over a horizontal line.

Name: **P. Johal**Date: **29 May 2019**Title: **Coventry Operations Manager**



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