

C&P Environmental Ltd

Giants Grave Landfill Site

Quarterly Data Submission - January to March 2024

Environmental Permit EPR/SP3298FT/T009

Prepared for: Neath Port Talbot County Borough Council

**The Quays
Brunel Way
Baglan Energy Park
Neath
SA11 2GG**

By: C & P Environmental Limited

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SUMMARY

This document provides the key data that have been recorded during the January to March 2024 monitoring quarter.

Leachate Monitoring

Discharge Flap Valve

No exceedance of the Discharge Flap compliance limits during this monitoring period.

Leachate level monitoring

For the January to March monitoring there were two monitoring locations that exceeded its respective revised leachate level compliance levels:

- LW17 in January to March inclusive
- A1305 in February and March

The following table details the highest recorded leachate levels at each location for information:

Leachate well	Leachate level recorded (m) - highest reading	Revised compliance level (m)
LW5	1.5 (Feb)	1.6
LW8	0.99 (Jan)	1.0
LW15	0.19 (Feb)	2.1
LW17	2.84 (Jan), 3.11 (Feb) & 3.07 (Mar)	1.0
A1302	2.94 (Mar)	3.0
A1305	2.81 (Feb) & 2.82 (Mar)	2.8

Groundwater Monitoring

The samples from the following locations exceeded the compliance (trigger) levels or control levels for ammoniacal nitrogen during this monitoring quarter for the following components:

Borehole	Month	Concentration (mg/l)	Control level (mg/l)	Compliance level (mg/l)
BH43B	March	86	72.6	108.9
BH45B	January	86	39.7	59.5
	February	91		
	March	79		

Surface Water Monitoring

The ammoniacal nitrogen control and compliance levels for the surface water monitoring locations for the Canal and River are not stated in the environmental permit but are set within the Landfill Aftercare Plan.

No compliance (trigger) levels were exceeded for the River or Canal sampling locations during this monitoring quarter, although the following control levels were exceeded:

Location	Month	Concentration (mg/l)	Control level (mg/l)	Compliance level (mg/l)
Canal South	January	0.31	0.3	0.5
	March	0.43		

Perimeter Gas Monitoring

There was an exceedance of the carbon dioxide action level in the borehole BH8 in February (although carbon dioxide levels much lower in January and March).

Borehole	Month	Methane (%)	Carbon Dioxide (%)	Methane compliance level (%)	Carbon Dioxide action level (%)
BH8	February	0	2.0	1.2	1.6

The perimeter gas in BH8 was retested later in February and recorded at 2.5%.

There are no exceedances of a methane compliance limit/action levels between January and March 2024.

The quarterly data is provided in the following tables:

Page 4	Section A Tables	Leachate Monitoring Data
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Page 7	Section D Table	Perimeter and Landfill Gas Monitoring Data

Section A Tables - Leachate Monitoring Data

A1 - Leachate Level and Quality Monitoring Data

Monitoring location		Borehole Levels	Borehole Depth	Difference	pH	Temperature	Conductivity	Dissolved oxygen	Chloride	Ammoniacal nitrogen	Potassium
		mbTOC	mbTOC	m	-	°C	µS	mg/l	mg/l	mg/l	mg/l
LW5	Jan-24	5.72	7.05	1.33	7	13.3	730	5.9	10	2.9	11
	Feb-24	5.55	7.05	1.5							
	Mar-24	5.6	7.05	1.45							
LW8	Jan-24	4.95	5.94	0.99	7.5	12.7	730	8.8	39	<0.015	4
	Feb-24	5.48	5.94	0.46							
	Mar-24	5.15	5.94	0.79							
LW9	Jan-24	Unable to obtain sample									
	Feb-24										
	Mar-24										
LW15	Jan-24	10.5	10.56	0.06	7.1	18	1600	6.4	82	62	68
	Feb-24	10.37	10.56	0.19							
	Mar-24	10.4	10.56	0.16							
LW17b	Jan-24	11.72	14.56	2.84	7.2	25.9	1900	7.2	120	8.7	67
	Feb-24	11.45	14.56	3.11							
	Mar-24	11.49	14.56	3.07							
LW18	Jan-24				6.8		890	7.6	9.8	8.8	8.5
	Feb-24										
	Mar-24										
A1302	Jan-24	15.22	18.09	2.87	7.1		3000	8	140	180	100
	Feb-24	15.16	18.09	2.93							
	Mar-24	15.15	18.09	2.94							
A1305CV	Jan-24	10.41	13.18	2.77	7.2		5200	3.6	550	300	200
	Feb-24	10.37	13.18	2.81							
	Mar-24	10.36	13.18	2.82							

Blanks indicate data not recorded. Black shading is for data not required for this location. Grey shading is for data not required on this month. Red figures indicate exceedance of compliance level.

Comments:

No monitoring of wells LW1, LW3, LW16, A1301, A1303, & A1304 undertaken in the January to March monitoring period and so not included in the table above

pH, Conductivity and dissolved oxygen analysed at the laboratory during this monitoring period.

A2 - Leachate Quality Monitoring - Discharge Flap Valve

Parameter	Units	Jan-24	Feb-24	Mar-24	Compliance limits
Ammoniacal Nitrogen	mg/l	36	2.5	4.6	190
As (dissolved)	µg/l	1.83	2.19	3.47	130
Cd (dissolved)	µg/l	0.07	0.04	0.03	3
Cr (dissolved)	µg/l	1.2	0.7	0.7	40
Cu (dissolved)	µg/l	3.4	4	4.6	85
Iron	mg/l	0.019	0.007	0.018	40
Pb (dissolved)	µg/l	<0.2	<0.2	<0.2	40
Ni (dissolved)	µg/l	4.6	3.2	4.1	90
Zn (dissolved)	µg/l	11	7.7	7.8	376

Section B Tables - Groundwater Monitoring Data

B1 - Groundwater Level Monitoring & Monthly Data

Monitoring location		Borehole Levels	Borehole Depth	Difference	pH	Temperature	Conductivity	Chloride	Ammoniacal nitrogen	Potassium
		mbTOC	mbTOC	m	-	°C	µS	mg/l	mg/l	mg/l
BH4	Jan-24	0.46	2.8	2.34						
	Feb-24	0.4	2.8	2.4						
	Mar-24	0.41	2.8	2.39						
BH5	Jan-24	0.37	3.36	2.99	7.4	10.1	650	18	0.046	6.5
	Feb-24	0.37	3.36	2.99	7.6	10.8	590	16	<0.015	5.9
	Mar-24	0.37	3.36	2.99	7.4	12.3	630	17	<0.015	5.6
BH6	Jan-24	0.58	3.05	2.47						
	Feb-24	0.62	3.05	2.43						
	Mar-24	0.28	3.05	2.77						
BH7	Jan-24	0.24	3	2.76						
	Feb-24	0.3	3	2.7						
	Mar-24	0.25	3	2.75						
BH8	Jan-24	0.34	3.69	3.35	7.4	12.1	730	37	0.016	3.7
	Feb-24	0.4	3.69	3.29	7.6	10.9	830	42	0.029	6.2
	Mar-24	0.57	3.69	3.12	7.3	13.3	780	25	0.015	3.4
BH12	Jan-24	1.35	3.78	2.43	7.8	13.2	200	23	0.026	3.6
	Feb-24	flooded	3.78	flooded	7.9	10.2	200	10	0.017	2.6
	Mar-24	2.59	3.78	1.19	7.5	13.5	210	4.7	0.023	3.6
BH15	Jan-24	1.95	3.86	1.91	7.1	10.6	770	20	<0.015	18
	Feb-24	1.65	3.86	2.21	7.3	11	610	13	<0.015	13
	Mar-24	1.63	3.86	2.23	7.1	11.8	530	7.4	<0.015	15
BH9B	Jan-24	4.69	10.3	5.61	7.7	12.9	5400	1600	0.71	48
	Feb-24	1.46	10.3	8.84	8.6	12.2	3100	710	0.063	25
	Mar-24	4.67	10.3	5.63	7.4	14.5	7600	2200	0.26	72
BH7B	Jan-24	4.47	11.28	6.81						
	Feb-24	4.58	11.28	6.7						
	Mar-24	4.43	11.28	6.85						
BH5B	Jan-24	4.45	11.23	6.78						
	Feb-24	4.42	11.23	6.81						
	Mar-24	4.3	11.23	6.93						
BH3W	Jan-24	3	7.84	4.84						
	Feb-24	2.9	7.84	4.94						
	Mar-24	2.8	7.84	5.04						
BH1B	Jan-24	3.34	7.9	4.56	8	13.8	3200	430	1.1	29
	Feb-24	3.35	7.9	4.55	7.9	12.9	2200	430	0.58	21
	Mar-24	3.17	7.9	4.73	7.6	15.5	2200	420	1.1	22
BH45B	Jan-24	3.94	9.41	5.47	7.1	13.5	2000	110	86	86
	Feb-24	3.22	9.41	6.19	7.1	11.8	1800	660	91	66
	Mar-24	3.87	9.41	5.54	7	15.3	2000	99	79	63
BH43B	Jan-24	4.05	8.93	4.88	7.1	13.4	1700	99	57	65
	Feb-24	4.22	8.93	4.71	7.2	12.9	1400	81	48	43
	Mar-24	4.04	8.93	4.89	7	14.8	2000	120	86	69
BH40B	Jan-24	3.78	6.9	3.12						
	Feb-24	3.81	6.9	3.09						
	Mar-24	3.78	6.9	3.12						

Blanks indicate data not recorded (on-site temperature readings in January). Black shading is for data not required for this location. **Red figures** indicate exceedance of compliance/trigger level. **Orange figures** indicate exceedance of control level.

pH and Conductivity analysed at the laboratory during this monitoring period.

Section C Table - Surface Water Monitoring Data

Monitoring location		pH	Temperature	Conductivity	Dissolved oxygen		Ammoniacal Nitrogen as N	BOD	COD	Ni (Dissolved)	Nitrate as N	Phenol	Suspended Solids (total)
		-	°C	µS	mg/m3	mg/l	mg/l	mg/l	mg/l	µg/l	mg/l	µg/l	mg/l
River north	Jan-24	7.9	10.4	250		11	0.082	1.7	19	1.7	0.31	<0.5	160
	Feb-24	8	8.2	9000		11	0.04	2.1	59	1.3	0.45	<0.5	280
	Mar-24	7.8	10.5	17000		8.9	<0.015	1.6	190	1.1	0.41	<0.5	130
River south	Jan-24	7.8	10.5	340		11	0.061	1.8	20	1.9	0.29	<0.5	100
	Feb-24	7.9	8.4	18000		11	0.04	1.6	290	1.2	0.51	<0.5	130
	Mar-24	7.5	10.3	33000		8.7	<0.015	3.5	530	7.5	0.41	<0.5	270
Canal north	Jan-24	7.7	8.8	220		9.8	0.039	2.6	3.3	2.6	0.46	<0.5	10
	Feb-24	7.6	7.8	160		10	0.025	1.7	7.1	1.6	0.65	<0.5	14
	Mar-24	7.4	11.9	170		7.1	0.12	3.5	15	0.9	0.45	<0.5	250
Canal south	Jan-24	7.5	8.4	220		9.8	0.31	2.4	8.1	1.8	0.77	<0.5	41
	Feb-24	7.5	7.9	150		9.4	0.13	2.5	3.6	1.8	0.68	<0.5	3
	Mar-24	7.6	12.3	300		9.1	0.43	1.8	5.8	1.8	0.31	<0.5	10000

Blanks indicate data not recorded. **Red figures** indicate exceedance of trigger level for ammoniacal nitrogen (in the Landfill Aftercare Plan). **Orange figures** indicate exceedance of control level for ammoniacal nitrogen (in the Landfill Aftercare Plan).

pH, Conductivity and DO analysed at the laboratory during this monitoring period.

Section D Table - Perimeter Gas Monitoring Data

Monitoring location	Month	Methane	Carbon dioxide	Oxygen	Carbon monoxide	Atmospheric pressure	Differential pressure
		%	%	%	ppm	mbar	mbar
BH4	Jan-24	0	1	19.7	0	1014	0
	Feb-24	0	1.2	20.1	0	977	-0.02
	Mar-24	0	0.4	20.4	0	1010	0
BH5	Jan-24	0	2.1	20.7	0	1014	0
	Feb-24	0	0.2	20.5	0	977	0.02
	Mar-24	0	0.3	20.3	0	1010	0
BH8	Jan-24	0.1	1.3	21.1	0	1014	-0.02
	Feb-24	0	2	15.5	0	977	0.02
	Mar-24	0	0.7	19.6	0	1010	-0.02
BH12	Jan-24	0.1	0.2	20.4	0	1013	0.02
	Feb-24	flooded					
	Mar-24	0	0.6	20.3	0	1010	0.02
BH15	Jan-24	0	2.7	20.2	0	1013	-0.02
	Feb-24	0	1.3	19.6	0	977	0.02
	Mar-24	0	1.6	19.2	0	1010	0.02
BH9B	Jan-24	0	0.1	21.2	0	1014	-0.02
	Feb-24	0	0.1	20.6	0	977	0.02
	Mar-24	0	0.1	20.4	0	1010	0
BH7B	Jan-24	0	0.2	21.1	0	1014	0.02
	Feb-24	0	0.3	20.6	0	977	0.02
	Mar-24	0	0.1	20.4	0	1010	0
BH5B	Jan-24	0	0.2	21.2	0	1014	-0.02
	Feb-24	0	0.7	13.2	0	977	0
	Mar-24	0	0.2	20.6	0	1010	0
BH3W	Jan-24	0	2.1	15.3	0	1014	0.05
	Feb-24	0	0.6	19.6	0	977	-0.02
	Mar-24	0	0.7	18.9	0	1010	-0.02
BH1B	Jan-24	0.1	0.3	20.5	0	1014	-0.02
	Feb-24	0	0.1	20.8	0	977	0.04
	Mar-24	0	0.6	19.9	0	1012	0
BH49W	Jan-24	0	0.6	20.5	0	1014	0
	Feb-24	0	0.4	20.1	0	977	-0.02
	Mar-24	0	0	20.4	0.2	1010	0
BH47W	Jan-24	0	0.1	21.5	0	1014	0
	Feb-24	0	0.2	20.5	0	977	0
	Mar-24	0	0.1	20.7	0	1010	-0.03
BH55B	Jan-24	0	3.3	17.8	0	1014	-0.03
	Feb-24	0	3.6	18.2	0	977	0.02
	Mar-24	0	2.7	16.6	0	1012	-0.02
BH45B	Jan-24	17.5	11.5	8.4	0	1014	0
	Feb-24	17.9	8.2	11.1	0	977	0.04
	Mar-24	14.7	2.1	15.7	2	1012	0
BH43B	Jan-24	29.7	4	10.3	0	1014	0.02
	Feb-24	28	3.9	9.9	0	977	0.02
	Mar-24	17.3	2.4	16.4	0	1012	0.05
BH40B	Jan-24	3.2	1.4	13.4	0	1014	0
	Feb-24	3.4	1.6	12.5	0	977	-0.02
	Mar-24	12	1.9	14.2	1	1012	0.02

Red figures indicate a compliance limit breach for methane. Orange figures indicate exceedance of an action level for methane or carbon dioxide (from the Landfill Aftercare Plan).