

C&P Environmental Ltd

Giants Grave Landfill Site

**Quarterly Data Submission - July to September
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 July to September 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 July to September monitoring there was one monitoring location that exceeded its respective revised leachate level compliance limits:

- LW17 in July to September inclusive

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	0.45 (Sep)	1.6
LW8	Dry in all three months	1.0
LW15	0.05 (Jul)	2.1
LW17	2.23 (Jul), 2.16 (Aug) & 2.21 (Sep)	1.0
A1302	2.63 (Aug)	3.0
A1305	2.28 (Jul)	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)
BH9B	September	2.4	1.0	1.6
BH43B	July	81	72.6	108.9
	September	84		
BH45B	July	78	39.7	59.5
	August	75		

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 or control levels were exceeded for the River or Canal sampling locations during this monitoring quarter.

Perimeter Gas Monitoring

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

There are no exceedances of the carbon dioxide action level between July and September 2024.

Unusual detection of carbon monoxide in BH40B in July at 80ppm, although a retest recorded 5ppm (28ppm in August but only 1ppm in September). Similarly, carbon monoxide was recorded in BH43B at 13ppm in July with the retest value at 4ppm.

The quarterly data is provided in the following tables:

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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
LW3	Jul-24		7.64		6.9	18.1	14000	2.9	8.1	1.4	9.7
	Aug-24										
	Sep-24										
LW5	Jul-24	6.72	7.05	0.33	6.8	19.6	840	3.5	5.9	5.2	12
	Aug-24	6.77	7.05	0.28							
	Sep-24	6.6	7.05	0.45							
LW8	Jul-24	5.94	5.94	dry		dry					
	Aug-24	5.94	5.94	dry							
	Sep-24	5.94	5.94	dry							
LW15	Jul-24	10.51	10.56	0.05	7.1	23.6	2500	1.1	120	120	110
	Aug-24	10.54	10.56	0.02							
	Sep-24	10.56	10.56	0							
LW16	Jul-24		9.06		7.3	19.2	5500	1.8	480	330	320
	Aug-24										
	Sep-24										
LW17b	Jul-24	12.33	14.56	2.23	7.3	31.2	2300	4.3	230	25	98
	Aug-24	12.4	14.56	2.16							
	Sep-24	12.35	14.56	2.21							
A1301	Jul-24		19.69		7.4	30.8	8700	<1	1300	430	380
	Aug-24										
	Sep-24										
A1302	Jul-24	15.69	18.09	2.4	7.2	27.2	5000	1.4	320	300	190
	Aug-24	15.46	18.09	2.63							
	Sep-24	15.89	18.09	2.2							
A1303	Jul-24		11.13		7.4	21.5	8200	<1	790	620	330
	Aug-24										
	Sep-24										
A1304	Jul-24		14		7.1	20.2	2500	4.5	120	150	98
	Aug-24										
	Sep-24										
A1305CV	Jul-24	10.9	13.18	2.28	7.1	18.8	4800	<1	350	260	220
	Aug-24	10.99	13.18	2.19							
	Sep-24	11.14	13.18	2.04							

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:

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

LW17b continues to be difficult to obtain accurate leachate depths.

A2 - Leachate Quality Monitoring - Discharge Flap Valve

Parameter	Units	Jul-24	Aug-24	Sep-24	Compliance limits
Ammoniacal Nitrogen	mg/l	0.19	2.6	<0.015	190
As (dissolved)	µg/l	3.48	2.87	3.35	130
Cd (dissolved)	µg/l	0.03	0.02	0.04	3
Cr (dissolved)	µg/l	0.8	0.4	0.5	40
Cu (dissolved)	µg/l	4.3	4.5	3.4	85
Iron	mg/l	0.028	0.05	0.04	40
Pb (dissolved)	µg/l	<0.2	<0.2	<0.2	40
Ni (dissolved)	µg/l	4.8	4.5	2.8	90
Zn (dissolved)	µg/l	1.1	3.5	3.8	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
BH4	Jul-24	1.39	2.8	1.41						
	Aug-24	0.78	2.8	2.02						
	Sep-24	0.9	2.8	1.9						
BH5	Jul-24	1.45	3.36	1.91	7.2	15.2	650	20	<0.015	6.7
	Aug-24	1.6	3.36	1.76	7.5	17.2	620	19	<0.015	6.7
	Sep-24	1.02	3.36	2.34	7.2	15.7	600	42	<0.015	7
BH6	Jul-24	1.34	3.05	1.71						
	Aug-24	1.3	3.05	1.75						
	Sep-24	1.06	3.05	1.99						
BH7	Jul-24	1.15	3	1.85						
	Aug-24	flooded								
	Sep-24	0.64	3	2.36						
BH8	Jul-24	1.41	3.69	2.28	7.5	18.6	2600	810	19	74
	Aug-24	0.23	3.69	3.46	7.8	18	3800	790	38	96
	Sep-24	0.89	3.69	2.8	7.6	15	3600	760	26	100
BH12	Jul-24	3.62	3.78	0.16	dry - unable to obtain a sample					
	Aug-24	3.52	3.78	0.26	7.6	15.9	1100	32	1.8	29
	Sep-24	2.91	3.78	0.87	7.5	15.1	360	9.4	<0.015	8.1
BH15	Jul-24	3.1	3.86	0.76	7.1	14.2	1300	18	0.19	38
	Aug-24	2.11	3.86	1.75	7.2	14	1400	19	0.087	36
	Sep-24	2.43	3.86	1.43	7.1	13.9	1400	23	<0.015	37
BH9B	Jul-24	5.35	10.3	4.95	7.5	16.7	5400	940	0.26	48
	Aug-24	4.8	10.3	5.5	7.5	16.1	9600	3500	0.87	120
	Sep-24	5.12	10.3	5.18	7.3	15.3	8300	3200	2.4	100
BH7B	Jul-24	5.15	11.28	6.13						
	Aug-24	4.34	11.28	6.94						
	Sep-24	4.96	11.28	6.32						
BH5B	Jul-24	5	11.23	6.23						
	Aug-24	4.62	11.29	6.67						
	Sep-24	3.82	11.23	7.41						
BH3W	Jul-24	3.5	7.84	4.34						
	Aug-24	3.2	7.84	4.64						
	Sep-24	3.35	7.84	4.49						
BH1B	Jul-24	3.93	7.9	3.97	7.9	17.2	2800	250	0.93	25
	Aug-24	3.54	7.9	4.36	8	18.4	2900	370	0.18	29
	Sep-24	3.74	7.9	4.16	7.9	15.3	2900	400	0.23	28
BH45B	Jul-24	4.62	9.41	4.79	7	16.3	2000	110	78	78
	Aug-24	4.22	9.41	5.19	7.2	16.6	2000	85	75	63
	Sep-24	4.37	9.41	5.04	6.9	15	1900	120	19	63
BH43B	Jul-24	4.75	8.93	4.18	7.2	17.3	2100	130	81	79
	Aug-24	4.29	8.93	4.64	7.2	16.1	1700	120	42	65
	Sep-24	4.59	8.93	4.34	7.1	15.3	2000	120	84	78
BH40B	Jul-24	4.49	6.9	2.41						
	Aug-24	4.02	6.9	2.88						
	Sep-24	4.32	6.9	2.58						

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	mg/l	µg/l	mg/l	µg/l
River north	Jul-24	8	25.3	50000		7.5	<0.015	1.2	140	0.8	0.01	<0.5	40
	Aug-24	7.9	18.5	13000		9.5	0.049	2.3	21	2.4	0.2	<0.5	22
	Sep-24	7.8	17.9	44000		9.8	<0.015	1.8	1400	1.9	0.08	<0.5	34
River south	Jul-24	8	24.1	42000		8.3	<0.015	<1	140	0.6	0.01	<0.5	24
	Aug-24	8	19.1	27000		9.4	<0.015	<1	26	2.3	0.15	<0.5	54
	Sep-24	7.9	18.1	46000		9.7	<0.015	1.1	1200	2.2	0.07	<0.5	42
Canal north	Jul-24	7.6	20.1	240		6.9	<0.015	1.2	15	1	0.01	<0.5	<2
	Aug-24	7.3	17.9	140		8.1	0.016	<1	16	3.9	0.01	<0.5	<2
	Sep-24	7.3	16.5	180		6.6	<0.015	<1	29	1.5	0.01	<0.5	<2
Canal south	Jul-24	7.2	19.2	240		6.7	0.026	2.2	12	1.1	0.03	<0.5	<2
	Aug-24	7.2	17.5	160		8	0.033	1.4	16	2.1	0.01	<0.5	<2
	Sep-24	7.2	17.1	180		4.7	0.023	1.6	50	1.3	0.01	<0.5	8

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.

A mention of lots of organic matter recorded for the Canal North and Canal South monitoring locations throughout the quarter.

Section D Table - Perimeter Gas Monitoring Data

Monitoring location	Month	Methane	Carbon dioxide	Oxygen	Carbon monoxide	Atmospheric pressure	Differential pressure
		%	%	%	ppm	mbar	mbar
BH4	Jul-24	0	0.2	19.7	0	1018	-0.02
	Aug-24	0	0.2	20.7	0	1006	0.02
	Sep-24	0	0.1	20.6	0	1030	0.02
BH5	Jul-24	0	2.8	15.6	0	1018	0.02
	Aug-24	0	2.2	16.4	0	1006	-0.02
	Sep-24	0	2.7	15.8	0	1030	0.03
BH8	Jul-24	0	0.6	19.3	0	1018	0.03
	Aug-24	0	0.3	20.8	0	1006	0
	Sep-24	0	0.6	20	0	1030	-0.03
BH12	Jul-24	0	0.8	19.4	0	1018	0.03
	Aug-24	0	1.1	18.8	0	1003	0
	Sep-24	0	0.3	19.9	0	1030	-0.02
BH15	Jul-24	0	1.8	19.5	0	1018	-0.02
	Aug-24	0	1.2	18.6	0	1005	0.02
	Sep-24	0	0.6	19.6	0	1030	-0.02
BH9B	Jul-24	0	0.4	19.2	0	1018	0.02
	Aug-24	0	0.4	20.1	0	1006	0.03
	Sep-24	0	0.2	20.2	0	1030	-0.02
BH7B	Jul-24	0	0.4	19.1	0	1018	-0.02
	Aug-24	0	0.2	20.6	0	1006	0.03
	Sep-24	0	0.2	20.3	0	1030	-0.03
BH5B	Jul-24	0	0.2	19.7	1	1018	0.02
	Aug-24	0	0.1	20.8	0	1006	0.03
	Sep-24	0	0.1	20.7	0	1030	0
BH3W	Jul-24	0	1.7	18	1	1018	0
	Aug-24	0	0.8	19.1	0	1006	0.02
	Sep-24	0	1.5	17.8	0	1030	0
BH1B	Jul-24	0.2	2	18.9	1	1020	0.03
	Aug-24	0	0.6	19.8	0	1003	-0.03
	Sep-24	0	0.3	20.5	0	1030	-0.07
BH49W	Jul-24	0.1	0.3	20.1	1	1020	0.02
	Aug-24	0	0.2	20.9	0	1006	0
	Sep-24	0	0.1	21	0	1030	0
BH47W	Jul-24	0.1	0.5	20	1	1020	0
	Aug-24	0	0.4	20.6	0	1006	0
	Sep-24	0	0.3	20.7	0	1030	0.02
BH55B	Jul-24	0.2	5.8	12.3	2	1020	0.03
	Aug-24	0	7.3	11.5	0	1006	0.02
	Sep-24	0	6.3	14.5	0	1030	0
BH45B	Jul-24	23.5	6.6	10.5	1	1020	0
	Aug-24	14.4	3.7	15.6	0	1003	0.02
	Sep-24	10.2	2.8	16.4	0	1030	0.02
BH43B	Jul-24	24	4	15	4	1013	0
	Aug-24	15	2.3	16	1	1003	-0.02
	Sep-24	51.9	7.3	6.8	0	1030	0.03
BH40B	Jul-24	47	2.4	6.8	5	1013	0
	Aug-24	57.2	2.2	6	28	1003	0.03
	Sep-24	11	0.6	17.5	1	1030	0

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).

BH43B - bung open on arrival. BH43B and BH40B retested in July. The above results are the retest results. The original results obtained recorded detected presence of carbon monoxide which prompted the retests:

BH43b - CH₄ 67.6%, CO₂ 8.7%, O₂ 5.0%, CO 13ppm, 1020 Atmos

BH40b - CH₄ 81.9%, CO₂ 2.5%, O₂ 0.5%, CO 80ppm, 1020 Atmos