

Compliance Assessment Report

Report ID:
CAR_NRW0034315

This form will report compliance with your permit as determined by an NRW officer

Site	Brookhill Landfill Site EPR/AP3739KS	Permit Ref	AP3739KS		
Operator/Permit holder	Flintshire County Council				
Regime	Installations				
Date of assessment	05/12/2018	Time in	N/A	Out	N/A
Assessment type	Report/Data Review				
Parts of the permit assessed	Q2 and Q3 Monitoring returns and trial works.				
Lead officer's name	Oakes, Ian				
Accompanied by					
Recipient's name/position	Martyn Johnston / Paul Murphy / FCC Street Scene / Site Manager	Date issued	05/12/2018		

Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations or the licence under the Water Resources Act 1991 as amended by the Water Act 2003. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS Scores can be consolidated or suspended where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit conditions and compliance summary	CCS Category	Condition(s) breached
B1 - Infrastructure - Engineering for prevention and control of emissions	C2	2.7.1
E2 - Emissions - Land and groundwater	C3	3.1.4
	C3	3.1.4

KEY: See Section 5 for breach categories, suspended scores will be indicated as such.

A = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,

O = Ongoing non-compliance, not scored.

Number of breaches recorded	3	Total compliance score (see section 5 for scoring scheme)	39
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If the Number of breaches recorded is greater than zero, please see Section 3 for our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- The part(s) of the permit that were assessed (eg. Maintenance, training, combustion plant, etc)
- Where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- Any non-compliances identified
- Any non-compliances with directly applicable legislation
- Details of any multiple non-compliances
- Information on the compliance score accrued inc.
- Details of advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

Q2 April – June and Q3 July – September 2018 monitoring reviews:

1. E1 Landfill gas

No methane or carbon dioxide breaches were reported for the routine weekly gas monitoring of perimeter boreholes BH1 to BH25.

In waste boreholes average methane and carbon dioxide in the GV wells were 51% & 33% and 49% & 34% in Q2 and Q3 respectively.

Hydrogen sulphide continued the downward trend in maximum concentration from Q1 9 ppm to Q2 1 ppm and Q3 where none was detected in any waste location.

2. E2 Emissions to land and groundwater

2.1 Groundwater levels

Q2 Groundwater levels were recorded on the 6 April, 31 May and 29 June 2018 and followed seasonal trends decreasing into summer, notably in GW1, GW5A and GW7 and stable elsewhere.

Q3 Groundwater levels were recorded on the 31 of July, 24 August and the 19 October 2018 and remained stable, with increases GW1 – GW5A and decreases GW6 – GW8.

2.2 Groundwater quality

Condition 3.1.4 Groundwater boreholes GW1 – GW8 Q2 Exceedances for ammoniacal nitrogen >1.7 mg/L were observed in GW2A, GW3A and GW4 with maximum concentrations of 8.66 mg/L, 26.1 mg/L and 2.26 mg/L respectively (in June). Ammoniacal nitrogen concentrations in the remaining locations ranged from <0.2 mg/L in GW1, GW5 and GW6 to 19 mg/L in GW8. Q2 Exceedances for chloride >60 mg/L were observed in GW2A and GW3A with maximum concentrations of 114 mg/L and 164 mg/L respectively.

Condition 3.1.4 Groundwater boreholes GW1 – GW8 Q3 Exceedances for ammoniacal nitrogen >1.7 mg/L were observed in GW2A, GW3A and GW4 with maximum concentrations of 39.9 mg/L, 124 mg/L, and 6.67 mg/L respectively. Ammoniacal nitrogen concentrations in the remaining locations ranged from <0.2 mg/L in GW6 to 20.3 mg/L in GW8. Q3 Exceedances for chloride >60 mg/L were also observed in GW2A and GW3A with maximum chloride concentrations of 161 mg/L and 179 mg/L respectively.

In line with previous non-compliance scoring both Q2 and Q3 attract a CCS3 for groundwater quality.

It is noted that all trends are to be investigated in detail as part of the ongoing leachate pumping trials and summarised in the 2018 annual monitoring review.

3. E3 Emissions to surface water

Background: Surface water samples are taken from three locations, SW2, P2 and P4. Water flows in a northerly direction alongside the outside perimeter fence of the western boundary of the site and accumulates in a pond at SW2 before slowly seeping through a man-made underground bypass drain which runs along the outside of the site towards the northern boundary. P2 is a pond to the west, which collects surface water run-off from the landfill. P4 is in a field to the north west of the site, beyond landfill gas monitoring borehole BH10.

Q2 P2 was sampled once in June and none from SW2. Ammoniacal nitrogen concentrations at P4 ranged from 0.863 mg/l in May to 8.14 mg/L in June with P2 at 0.441 mg/L and chloride concentrations ranged from 63.9 mg/L to 76.5 mg/L with P2 at 64.7 mg/L during June.

Q3 No samples have been taken from P2 or SW2 during this review period. Ammoniacal nitrogen concentration at P4 on 31 July was LOD <0.2 mg/L and chloride concentration was 70.4 mg/l.

4. B1 Engineering for prevention and control of emissions – Leachate limits

4.1 Progress Update (1) – Leachate extraction trial 3448-CAU-XX-XX-CO-V-9104.A0-C1 - 5 July 2018

It is stated the operations and results of the leachate extraction from gas wells were in accordance with

3448-CAU-XX-XX-RP-V-0300 and this update reviews the data between 8 May and 1 June 2018.

Of the 9 GV wells (Cells 1, 2, 3, 4 & 6) giving a full extraction range of 16 to 174 pump counts (3.3 L) per hour GV41, 36, 48 & 49 in Cells 3, 4 & 6 give the highest yields. The total leachate extracted was around 1500 m³. At the end of the period all the gas wells were below 2m leachate head excepting Cell 1 GV39 and Cell 4 GV44. Trials on-going.

4.2 Cessation test summary ref: 3448-CAU-XX-XX-CO-V-9103.A0-C2.1 - 11 July 2018, brief summary excluding leachate quality considerations.

The test was carried out in accordance with 3448-CAU-XX-XX-CO-V-9100.A0-C1. Site work was completed 26 - 29 March 2018, with final groundwater quality samples 2 days later. The observations onsite indicated that leachate recovery was slow, making the suggested criteria (the last dip level change being 10% of the previous interval change) against which to assess test completion impractical. Instead, the rate of change was used to assess if leachate levels were approaching completion. It was believed that leachate levels approached near rest levels in all wells by the end of the trial. The leachate levels recorded in gas wells GV35 to GV49 did not change significantly and supports the view that the leachate intercepted in these wells may represent perched leachate.

Table 7. Summary of leachate levels

Well ID	Rod depth check, 2017	mASD Base of Cell	June 2017 trial		March 2018 trial	
			total head increase, m	Final head level mAOD	total head increase, m	Final head level mAOD
LC1	18.09	116.97	1.99	125.02	0.58	123.41
LC1B	28.56	116.97	6.67	125.35	5.07	124.57
R1b	32	116.97	3.67	123.26	4.69	124.31
LC2B	40.6	112.97	4.33	117.85	4.97	120.14
R2b	39.62	112.11	2.98	119.58	4.03	120.98
LC3	25.64	110.17	4.85			
R3	43.67	110.37	6.5	117.74	6.17	117.73
LC4	26.97	111.97				
LC4B	36.47	111.97	2.75	114.94	3.37	118.55
R4b	36.69	112.57	3.9	119.55	4.63	120.93
LC5			3.26	125.415	1.84	124.21
R5	42.8	112.88	4.12	119.25		
LC6B	32.33	119.97	4.85	124.64	4.71	128.35
R6b	35.02	120.51	5.69	127.8	5.09	127.49

Extract from the report:

'We conclude that the currently reported rest leachate levels (typically close to the compliance limits for most cells), allow management of leachate levels to below the surrounding groundwater for all cells except Cell 1. This is in keeping with the principle of hydraulic containment, minimising risk of impact to the surrounding environment from leachate from the site.

It is proposed that upon completion of the leachate extraction trial, the cessation test is repeated. This will help evaluate the impact of decreasing the perched layer on leachate levels in Cell 1, and help inform next steps. The planned infrastructure review and options appraisal for the site will then take into consideration the findings of this investigation to suggest the most appropriate measures for ensuring leachate levels in this cell are managed efficiently, within permitted levels.

It is suggested that a desk study is conducted to investigate the possible causes of weak leachate in Cell 3, and potential impact on leachate management across the site so as to minimise possibility of environmental impact'.

4.3 Leachate levels 2017 ranges / annual averages versus Q1, Q2 & Q3 2018 actuals respectively

Table 2: Leachate Head Data (exceedances highlighted in yellow)

Landfill Cell	Monitoring Point	Leachate Head (m above cell base)			Trigger Limit
		Minimum	Average	maximum	
Cell 1	BK LC 1B	1.70	2.36	4.41	2.0
	BK R1	1.78	2.39	2.63	
Cell 2	BK LC 2B	0.56	1.52	2.94	3.0
	BK R2	1.35	4.12	5.02	
Cell 3	BK R3*	0.25	1.20	3.46	3.5
Cell 4	BK LC 4B*	-0.38	1.70	3.22	3.0
	BK R4	2.36	3.09	3.66	
Cell 5	BK R5	1.42	2.93	4.38	3.0
Cell 6	BK LC 6B	-0.22	1.96	3.85	2.0
	BK R6	-0.09	1.37	2.39	

Table 3: Leachate Head Data (exceedances highlighted in yellow)

Landfill Cell	Monitoring Point	January (m above base)	February (m above base)	March (m above base)	Compliance Limit
Cell 1	BK LC 1B	2.52	2.51	3.47	2.00
	BK R1 B	2.65	2.66	3.53	
Cell 2	BK LC 2B	2.16	2.17	3.94	3.00
	BK R2B	4.86	4.82	6.02	
Cell 3	BK R3	1.18	1.17	2.46	2/5.5
Cell 4	BK LC 4B	3.15	3.19	4.27	3.00
	BK R4B	3.70	3.76	4.77	
Cell 5	BK R5	3.11	3.16	*	3.00
Cell 6	BK LC 6B	3.72	3.67	4.75	2.00
	BK R6B	1.88	1.90	5.32	

3.47 figures in italics represent results obtained 8h after switching pumps off, rather than 4h.

Above permit level, but below agreed achievable level

*Dip tape catching, unable to obtain level, dry to 29.5m depth

Table 3: Leachate Head Data (exceedances highlighted in yellow)

Landfill Cell	Monitoring Point	April (m above base)	May (m above base)	June (m above base)	Compliance Limit
Cell 1	BK LC 1B	2.54	2.51	2.49	2.00
	BK R1 B	2.69	3.66	3.49	
Cell 2	BK LC 2B	2.20	2.22	2.14	3.00
	BK R2B	4.91	5.02	4.90	
Cell 3	BK R3	1.29	1.54	1.38	2/5.5
Cell 4	BK LC 4B	3.36	3.37	3.22	3.00
	BK R4B	4.01	4.41	3.98	
Cell 5	BK R5	3.19			3.00
Cell 6	BK LC 6B	3.74	5.53	3.72	2.00
	BK R6B	1.85	2.11	1.76	

Above permit level, but below agreed achievable level

*Dip tape catching, unable to obtain level, dry to 18 m depth

Table 3: Leachate Head Data (exceedances highlighted in yellow)

Landfill Cell	Monitoring Point	July (m above base)	August (m above base)	September (m above base)	Compliance Limit
Cell 1	BK LC 1B	2.48	3.01	2.46	2
	BK R1 B	2.63	3.26	2.57	
Cell 2	BK LC 2B	2.14	2.79	2.08	3
	BK R2B	4.90	5.77	4.81	
Cell 3	BK R3	1.24	1.92	1.23	2/5.5
Cell 4	BK LC 4B	3.21	3.92	3.13	3
	BK R4B	3.97	4.66	3.97	
Cell 6	BK LC 6B	3.69	4.51	3.65	2
	BK R6B	1.73	2.49	1.66	

Natural Resources Wales acknowledges that significant works have / are being undertaken to better understand the levels and behaviour of leachate in Brookhill Landfill and that these works need to be carried through to completion to better ensure compliance with leachate levels.

However, from the tables above the underlying problem with leachate breaches continues and due to the risk of significant foreseeable pollution:

- CSS2 previously suspended CAR_NRW0033543 is applied and consolidated Q1 & Q2, and
- CCS2 score is applied to Q3 (and consolidated to include Q4 if applicable),

under Condition 2.7.1...The limits for the level of leachate...

Q1 & Q2 leachate limit breaches in cells 1 – 6 from 2.11 – 6.02 m vs 2/3 m limits, and
Q3 leachate limit breaches in cells 1, 2, 4 & 6 (no data cell 5) from 2.46 – 5.77 m vs 2/3 m limits.

Action: Provide a monitoring summary report for 2018 that includes all trial work including review of your findings, recommendations and options to improve compliance with permitted leachate levels (including cell 5).

EPR Compliance Assessment Report

**Report ID:
CAR_NRW0034315**

This form will report compliance with your permit as determined by an NRW officer

Site	Brookhill Landfill Site EPR/AP3739KS	Permit Ref	AP3739KS
Operator/Permit holder	Flintshire County Council	Date	05/12/2018

Section 3 – Enforcement Response

You must take immediate action to rectify any non-compliance and prevent repetition.

Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.

Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

Criteria Ref.	CCS Category	Action required/advised	Due Date
See Section 1 above			
B1	C2	To be summarised in the 2018 annual monitoring review.	31/01/2019
E2	C3	To be summarised in the 2018 annual monitoring review.	31/01/2019
E2	C3	To be summarised in the 2018 annual monitoring review.	31/01/2019

Section 5 – Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- Advise on corrective actions verbally or in writing
- Require you to take specific actions verbally or in writing
- Issue a notice
- Require you to review your procedures or management system
- Change some of the conditions of your permit
- Decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and/or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- Ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- Ensure you comply with other legislative provisions which may apply

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance that could have a major environmental effect	60
C2	A non-compliance which could have a significant environmental effect	31
C3	A non-compliance which could have a minor environmental effect	4
C4	A non-compliance which has no potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General information

Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- Offering/providing you with its literature/services relating to environmental matters
- Consulting with the public, public bodies and other organisations (eg. Health and Safety Executive, local authorities) on environmental issues
- Carrying out statistical analysis, research and development on environmental issues
- Providing public register information to enquirers
- Investigating possible breaches of environmental law
- Assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Regulations request

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within fifteen working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

Welsh Language

If you would like this form in Welsh please contact your Regulatory Officer.