Compliance Assessment Report

Report ID:
CAR_NRW0032518

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	27/11/2017	Time in	N/A	Out	N/A
Assessment type	Site Inspection				
Parts of the permit assessed	All Below				
Lead officer's name	Ellis, Rhys				
Accompanied by					
Recipient's name/position	Paul Murphy, Harvey Mitchell/ Site Manager, Streetscene Manager	Date issued	06/12/2017		

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
C1 - General Management - Staff competency/training	C2	1.1.1
E2 - Emissions - Land and groundwater	C3	3.1.5

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)	66

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

This CAR Form covers the following key areas:

* Response letter dated 25th August 2017 reference 3031-CAU-XX-XX-CO-V-9104.A0-C1 (Submitted by Caulmert) which included information on the leachate resting levels.

* Continual breaches of leachate permit limits, including the breaches of limits noted in Q2 April to June 2017 and Q3 July to September 2017 monitoring results

* Breaches of groundwater limits noted in Q2 April to June 2017 and Q3 July to September 2017 monitoring results.

Please note : Natural Resources Wales are aware that the site are currently working towards the submittal of a revised HRA and a closure report. There are aspects of this CAR form that should be considered in those.

Responses to Actions 3 and 4 in Caulmert's letter dated 25th August 2017.

Thank you for reviewing the rodded depths as summarised in Table 2. You have also advised that the cover levels and base levels of all monitoring leachate wells have been updated, including on all site work sheets, raw data sheets for submission to NRW and all calculations in the quarterly monitoring reports.

The difference between the chamber and cell base within R2B and LC6B appear to be above the respective compliance limits. This indicates that the operator cannot verify that leachate level is below the permit limits in R2B and LC6B. For example R2B has a difference between chamber /cell base of 3.4m where the trigger limit is 3 meters above cell base.

These points should be fit for purpose of recording the level of leachate in relation to the base of the site.

Action A

Provide evidence that R2B and LC6B are fit for purpose to assess leachate levels against permit limits. Please respond no later than 15th January 2018.

Responses to Actions 5 and 6 in Caulmerts letter dated 25th August 2017.

Thank you for forwarding the leachate resting levels in Table 3. These were forwarded to our geoscience team for comments.

Graph Cell 3: GW and Resting Leachate - BK LC3 seems to increase during resting times, however our understanding was that this leachate chamber is blocked and is not pumped. There are no recent quarterly or yearly data associated with this chamber.
Graph Cell 5: GW and Resting Leachate - BK LC5 seems to increase during resting times, however our understanding was that this leachate chamber is blocked and not pumped. There are no recent quarterly or yearly data associated with this chamber.

Action B
Please can the operator clarify the status of the above chambers. Are they used for pumping leachate? If they are not pumped please provide an explanation of why there is an increase in leachate within these wells. Please respond no later than 15th January 2018.

Action C
Your response details that exceedances of leachate limits are caused by "difficulties in extraction encountered at the site and not by limitations to storage or treatment capacity". Please could you elaborate on what these difficulties are? Please respond no later than 15th January 2018.

You advised that "*with the recently completed leachate resting levels test and confirmation of the leachate chambers and remote well depth, a strategy has been suggested to help bring levels across the site into compliance. The resting level tests show that leachate levels surrounding the wells are likely much higher than that monitored within the wells due to the draw down effect of extraction. This is often demonstrated in the quarterly monitoring review data analysis, where levels are in compliance at the LC*

series (Leachate extraction chamber) wells, but breached nearby at the R series (remote monitoring) wells. Coupled with slow recharge rates due to the waste characteristics, this makes uniformed leachate levels across the site difficult to maintain". You propose *'that the site manager maintains extraction at the LC series wells, alongside the addition of extraction pump to the remote monitoring wells and suitable gas extraction wells".*

Your current monitoring confirms that all current leachate points are already pumped (including R series wells) which has been the case for a considerable amount of time and as such does not seem to have driven leachate management into compliance. It also must be noted that in cases where leachate wells and remote wells are being pumped then draw down effect of extraction should apply to both.

Action D
In regards to your proposal on the utilisation of the gas extraction units on site for leachate management, please provide Natural Resources Wales with more detailed proposals as to how this would work in practice, which wells you deem suitable to do this with what basis do you consider a well suitable. For these specific wells please provide current dip levels. Please respond no later than 15th January 2018.

Our concerns regarding continual exceedances of leachate levels limits are exacerbated by the result of your cessation tests which clearly demonstrates that leachate levels increase on all locations and do not appear to reach resting levels even after 48 hours (See graphs in Appendix 1 - 3031-CAU-XX-XX-CO-V-9104.A0-C1).

Action E

Please can the operator provide an explanation to why as you stated in letter reference 3031-CAU-XX-XX-CO-V-9104.A0-C1 "the leachate levels have increases more than expected at most locations" Has the operator investigated this and what were the conclusions? Is it the case that after 48hrs leachate levels would continue to go up ? The graphs in Appendix 1 suggest they would.

It would be prudent for site to revise their water balance for the site considering the reduced infiltration following installation of the cap.

Please respond to the above points no later than 15th January 2018.

Cell 1 shows the greatest increase in leachate level during the cessation tests, specifically within LC1B (6.67 meters over 48 hours, with levels exceeding the adjacent groundwater levels. It should be noted that the use of 'average' groundwater levels may be misleading as there are issues associated with using averages, whilst overall that data may show the cell is hydraulically contained, within the data there may be periods when groundwater levels were lower such that the cell was not in hydraulic containment. This maylead to leachate discharging into groundwater. Cell 1 would appear to be out of containment for the whole year relative to average groundwater levels.

Action F

The operator needs to compare the results of the cessation tests with actual groundwater levels and quality. Please respond no later than 15th January 2018.

Permit condition 2.7.1 does refer to guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02).This guidance stipulates that *'routine leachate level measurements from monitoring points should record the rest water level. If pumping is being carried out from either the monitoring point to be measured or an adjacent monitoring point, this could produce misleading level measurements. When water is pumped from a monitoring point, the water in the lining will fall to a level at which the rate of inflow (i.e the yield) matches the rate of pumping. This level is the 'pumping water level'*
The time taken for levels to recover after pumping can vary from being almost instantaneous to hours, days or longer, depending on the permeability of the surrounding strata or waste and the design of the monitoring point. Where pumping is routinely carried out from monitoring points, the following procedure should be followed:

• A recovery test should be undertaken before confirming the suitability of the monitoring point for routine water level measurements. The test should record water level measurements. The test should recover water levels from the time the pump is switched off for a sufficient period until the rest water level is proved. A 'recovery time' is then assigned to the monitoring point and used to govern the timing of all future water level measurements.

Your recent leachate resting levels indicate that leachate levels were still increasing after 48 hours and 'rest water level had not been reached' It's our understanding that pumps are normally turned off on the morning of when leachate monitoring is undertaken (Approximately 4 hrs before monitoring).

• All water level measurements taken at pumped monitoring points are accompanied by a record of the interval between the time the pump was switched off and the time of measurements.

To Natural Resources Wales knowledge the operator is currently not keeping this record.

• *Tests should be repeated annually to ensure the efficiency of the monitoring point is sustained.*

Natural Resources Wales are not aware of any such annual tests been undertaken or submitted to Natural Resources Wales.

• *Unless the time of recovery is known and properly documented in the Environmental Management and monitoring programme, it is unacceptable to use pumped installations for water level measurements.*

Recent resting leachate levels have confirmed that 'actual' current time of recovery is unknown as the data suggested a continual upward trend even after 48hrs.

• *Pumped monitoring points in which the recovery time is greater than 24 hours not normally be used for routine water level measurements.*

Your Leachate resting levels demonstrate that even after 48 hrs the recharge levels are still increasing.

G1) Monitoring of emission and environment- Leachate level results..

Leachate levels

Monitoring results (April – June 2017)

Your report concluded that Leachate levels in Cell 1 exceeded the compliance limits in R1B throughout the review period, with little variation in level, as well as on one occasion at LC1B. We note that this maximum level at LC1B occurred following investigation at the site, in which the pumps were turned off for 48 hours to assess the resting leachate levels mentioned above.

Your report concluded that Cell 2 also recorded an exceedance of the leachate compliance limit at R2B on all monitoring occasions. LC2B remained within the compliance limit over the review period.

Your report details that R3 remained below the compliance limit for cell 3 during April and May, but increased significantly in June as a result of the resting leachate level test.

Cell 4 levels were slightly above the compliance limit at R4B during April, May, and June. LC4B however remained within the compliance limit throughout the review.

R5 was above the compliance limit for cell 5 in June alone, when a significant increase in leachate level was recorded following the resting level tests.

Cell 6 recorded an exceedance in R6B during June.

Monitoring results (July – September 2017)

Your report concluded that Leachate levels in Cell 1 exceeded the compliance limits in both R1B and LC1B throughout the review period, with little variation in level

Cell 2 also recorded an exceedance of the leachate compliance limit at R2B on all monitoring occasions. LC2B remained within the compliance limits over the review period.

R3 remained below the compliance limit for Cell 3 throughout the review period.

Cell 4 levels were above the compliance limit at R4B during July, August and September. LC4B remained within the compliance limits during July and August but was slightly over in September.

R5 was above the compliance limit for cell 5 on all monitoring occasions.

Cell 6 recorded an exceedance in R6B during September alone. LC6B leachate levels exceeded compliance limits on every occasion throughout the review period.

Breaches of permit:

B1- Engineering to control emissions.

Due to the continual breaches of leachate levels limits which have now been ongoing for a considerable amount of time, increasing

the risk of significant foreseeable pollution a **CCS Score of 2** is applied under condition 2.7.1. This is supported by the results of your groundwater monitoring results, which consistently breach agreed permit limits for several parameters. Recent analysis of down gradient groundwater show a deteriorating in quality.

These breaches of permit indicate that the operator is failing to remove leachate appropriately.The resting level results have also raised concerns as to whether the true leachate levels are significantly higher than reported.

It's our understanding that pumps are normally turned off on the morning of when leachate monitoring is undertaken. Taken into the account recent cessation test results this is not sufficient time for the rest water level to be reached.

An action was highlighted in CAR form reference (CAR_NRW0031800) dated 30th June 2017 to bring leachate levels back into compliance before 21st August 2017 and that failure to do this will lead to further enforcement action.Unfortunately this has not been achieved and we will now consider our enforcement action.

Action G:

It is imperative that the operator provide a robust and detailed action plan outlining how they will become compliant with bringing leachate levels to a stable compliant level and ensure that site infrastructure and monitoring regimes are fit for purpose. Your response should take into account concerns and comments raised in this CAR form.

This response must be submitted to Natural Resources Wales no later than 15th January 2017.Natural Resources Wales will then decide on the enforcement response in relation to this matter.

C1- General Management- Staff competency/training.

A **CCS score of 2** has been applied under condition 1.1.1 which stipulates that the operator should manage and operate the activities in accordance with a written management system and using sufficient competent persons and resources.
Relevant personnel are unaware of the relevant sections of the Environment Management System (i.e leachate management plan) and relevant permit conditions which reference LFTGN02 guidance.

When undertaking leachate levels measurements the operator is not complying with the minimal standards highlighted in your Leachate Management Plan which forms an integral part of the operational techniques for the site to effectively manage emissions from the site and prevent an impact on the surrounding environment from leachate.(Paragraph 3.1.5 stipulates the pumps are switched off and removed from the respective wells 24 hrs prior to obtaining dips to ensure that a representative reading is obtained). As stated earlier its out understanding that the operator switch off the pumps on the morning of monitoring.

As a result of not allowing sufficient resting time for leachate level monitoring, the data has not been collected in accordance with the leachate management plan, and based on the recent cessation test results, it appears likely that resting leachate levels are likely to be significantly higher than those which have been reported and true extent of leachate levels reported to Natural Resources Wales might be significantly higher than those which have been reported

LFTGN02 which is referenced in the permit stipulates that routine groundwater or leachate level measurements from monitoring points should record the rest water level. If pumping is being carried out from either the monitoring point to be measured or an adjacent monitoring point, this could produce misleading results.

Please also note that there is a section within the guidance which stipulates that pumped monitoring points in which the recovery time is greater than 24 hours should not normally be used for routine water level measurements. It appears that majority of the wells were still recharging even after 48hrs which raises concerns on the suitability of these wells for monitoring.

Action H

Your Leachate Management Plan should be reviewed to take into account points highlighted in this CAR form with reference to LFTGN02 to ensure effective and reliable leachate levels recording. The updated and reviewed Leachate Management Plan should be submitted no later than 15th January 2017.

Training should be provided to staff to ensure that the site is being managed in accordance with your permit and associated documents including Leachate management plan. Operator to confirm when this training will be rolled out.

E2 Emissions to Land and Groundwater.

Groundwater depth and quality monitoring was carried out as required by the permit

Monitoring results (April – June 2017)

Exceedances of the permit limits for ammonical nitrogen (1.7 mg/l) were observed in GW2A, GW3A AND GW4 during the review period. Maximum concentrations of ammonical nitrogen in GW2A, GW3A and GW4 were9.6mg/l, 81.6 mg/l and 20.6 mg/l respectively. Concentrations as you stipulated are similar to those recorded in the previous review period (14.3mg/l, 74.9mg/l and 34.1 mg/l)
Exceedance of the Environmental permit limits for chloride (60mg/l) were also observed in GW2A, GW3A and GW4 during the review period. Maximum chloride concentrations were 146mg/l, 261mg/l and 121mg/l respectively. These concentrations are similar/slightly higher to those recorded in previous review period (146mg/l,192mg/l and 120 mg/l)

Monitoring results (July – September 2017)
Exceedances of the Environmental permit limit for ammoniacal nitrogen (1.7 mg/l) were observed in GW2A,GW3A and GW4 during the review period. Maximum concentrations of ammoniacal nitrogen in GW2A, GW3A and GW4 were 42.8 mg/l, 75 mg/l and 13.7 mg/l respectively. Ammoniacal nitrogen concentrations at GW2A have increased significantly since the previous review period, when a maximum concentration of 9.6 mg/l was recorded.

You have advised now that, seasonal trends in ammoniacal nitrogen have been identified at this location, potentially representing the influence of external factors. These trends and their relationship to chloride and potassium concentrations (key leachate indicators) will be analysed in detail as part of the 2017 update of the Hydrological Risk Assessment for Brookhill Landfill.

Exceedances of the Environmental permit limit for chloride (60 mg/l) were also observed in GW2A, GW3A and GW4 during the review period. Maximum chloride concentrations were 162 mg/l, 206 mg/l and 141 mg/l respectively. These concentrations are similar to those recorded in the previous review period (146 mg/l, 261 mg/l and 121 mg/l respectively).

In the quarterly monitoring round, Toulene was detected in GW2A at a concentration of 0.063 mg/l. You stipulate that no Xylenes or Toluene was detected at any other locations.

Due to the breach of permit limit in regards to trigger levels of emissions into groundwater a **CCS3 breach** has been noted against permit condition 3.1.5 for both quarters (April – June 2017and July – September 2017).

Other matters
In your response to Action E of letter dated 25th August 2017 in regards to field measurements, field measurements are always required for groundwater. Please refer to LFTGN02. The same would apply for leachate (excluding DO). The permit condition refers to the LFTGN02 as a monitoring standard or method for both groundwater and leachate (Table S3.8 and Table S3.9).

Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	**Report ID: CAR_NRW0032518**

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	27/11/2017

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.

We will now consider what enforcement action is appropriate and notify you, referencing this form.

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	Bring leachate levels into compliance and respond to Actions in CAR form	15/01/2018
E2	C3	Operators HRA submission will discuss this further	29/12/2017
C1	C2	Refer to actions in CAR form	15/01/2018

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.