



EPR Compliance Assessment Report

Report ID: BU0800IZ/0222488

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

Site	LLANDDULAS LANDFILL SITE			Permit Ref	BU0800IZ		
Operator/ Permit holder	3C Waste Limited						
Date	07/08/2014			Time in	09:30	Out	13:20
What parts of the permit were assessed	Landfill Gas Audit and review of new engineering.						
Assessment	Audit	EPR Activity:	Installation	X	Waste Op		Water Discharge
Recipient's name/position	Peter Taberner / Unit Manager						
Officer's name	Aled Zachary, Tony Roberts			Date issued	21/10/2014		

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). 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

Condition(s) breached

a) Permitted activities	1. Specified by permit	A	
b) Infrastructure	1. Engineering for prevention & control of pollution	C3	3.3.1;
	2. Closure & decommissioning	N	
	3. Site drainage engineering (clean & foul)	N	
	4. Containment of stored materials	A	
	5. Plant and equipment	A	
c) General management	1. Staff competency/ training	N	
	2. Management system & operating procedures	A	
	3. Materials acceptance	A	
	4. Storage handling, labelling, segregation	A	
d) Incident management	1. Site security	N	
	2. Accident, emergency & incident planning	N	
e) Emissions	1. Air	C3	3.3.5;
	2. Land & Groundwater	N	
	3. Surface water	N	
	4. Sewer	N	
	5. Waste	N	
f) Amenity	1. Odour	A	
	2. Noise	A	
	3. Dust/fibres/particulates	A	
	4. Pests, birds & scavengers	A	
	5. Deposits on road	A	
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	A	
	2. Records of activity, site diary, journal & events	A	
	3. Maintenance records	A	
	4. Reporting & notification	A	
h) Resource efficiency	1. Efficient use of raw materials	N	
	2. Energy	N	

KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk),

A = Assessed (no evidence of non-compliance), N = Not assessed, NA = Not Applicable, O = Ongoing non-compliance – not scored

Number of breaches recorded	2	Total compliance score (see section 5 for scoring scheme)	8
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If the Total No Breaches is greater than zero, then please see Section 3 for details of 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 (e.g. 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 suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

This report should be clear, comprehensive, unambiguous and normally completed within 14 days of an assessment.

Follow-up technical gas review and audit of fugitive emissions on site.

Auditors present:

Aled Zachary (PPC Compliance Officer)
Tony Roberts (Senior Environment Officer)

Non compliances:

B1 - Engineering for prevention and control of emissions.

Requirements - Condition 3.3.1 states fugitive emissions of substances shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable to minimise those emissions.

Findings - Details comments are available on the Audit report, attached.

Further improvement work has been carried out to the gas extraction system and controls for the prevention of emissions since the previous audits in 2013.

However, data gathered during the audit and a review of the CQA report submitted shows 10 of 12 recently installed gas wells are probably inhibited in their gas collection efficacy due to high water / perched leachate levels.

As a result these findings have been scored a **Category 3 CCS** score at present due to lack of appropriate measure to minimise emissions. This is subject to review if the suggested actions are not implemented.

Action(s) - As detailed overleaf.

E1 - Emissions, Air

Requirements - Condition 3.3.5 states the limits for landfill gas arising from the installation shall not exceed the limits set in table S.4.11.

Findings - Fugitive emissions around landfill gas and leachate infrastructure were assessed using a Gazomat portable methane detector. The following fugitive landfill gas emissions were recorded:

(continued.)

- Fugitive emissions of 5000ppm was recorded from the line of old pin wells adjacent to the haul road and close to gas well D264.
- Gas / Leachate infrastructure D268, LC3A, D269 & D272 all showed significant (>1000ppm) fugitive emissions from bentonite seals.

The fugitive emissions identified during the audit have been scored a **Category 3 CCS** score at present, subject to future review if emissions increase or are not addressed in a timely manner.

Action(s) - As detailed overleaf.

Observations:

Permanent Capping works to the NE Flank of Phase 3A North are now complete. No issues with the numbers of birds or other pests were noted during the audit. No off site odours were detected prior to officers arriving on site.



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Operator/ Permit	3C Waste Limited	Date	07/08/2014

Section 3- Enforcement Response

Only one of the boxes below should be ticked

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.

Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.

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.

X

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

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			
B1	C3	1. Gas Well Dewatering – Gas wells D268, D277, D278, D280, D281, D282, D284, D285, D286 & D287 should all be investigated for perched leachate / high liquid levels and dewatered to improve landfill gas collection as a matter of priority. All these wells should be re-dipped to determine current water levels and a plan for the pumping of these wells submitted.	20/11/14
		2. Gas Well maintenance – In addition to the above: Gas Well D280 requires the gasket on the well head replacing. Gas wells D278 & D286 require investigation as to the source of the high oxygen readings. Gas Well D272 requires re-sealing.	20/11/14
E1	C3	1. Fugitive Emissions on line of old pin wells – Gas wells D264, D265 & D266 should be investigated as to whether they require de-silting to improve collection efficacy in this area. Temporary capping and/or re-bentoniting of the pin well boreholes should also be considered.	20/11/14
		2. Leachate Tower LC3A – This item of infrastructure has been identified with high fugitive emissions over an extended period of time. Extra gas collection adjacent to the tower should be considered or alternative sealing arrangements.	20/11/14

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 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 which 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 fulfill 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 (e.g. 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 and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information 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 twenty 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 the officer's line managers. 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.

Audit Report form



Part one- Audit reference information

Permit number:	BU0800IZ	Site name:	Llanddulas Landfill Site
Date of audit:	7 th August 2014	CAR ID No.	BU0800IZ/0222488
Lead auditor :	Aled Zachary	Other auditors:	Tony Roberts

Part two - Scope of audit

The scope of this site audit was to review the control of the landfill gas extraction system, including actions from previous audits, control of fugitive emissions at the site and newly installed infrastructure. The audit included

- Review of landfill gas extraction system balancing data.
- Contemporaneous monitoring of in-waste gas extraction wells.
- Contemporaneous monitoring of fugitive emissions using a Gazomat portable methane detector.
- Review of newly engineered capping on the NE Flank of Phase 3A North.
- Review of newly installed gas collection wells and CQA plan.

Part three - Permit conditions

The table below summarises what permit conditions were audited, areas of non-compliance and suggested corrective action.

Permit condition	CAR sub-criteria	Comments and suggested corrective action	Proposed date for completion	CCS score 4 – 1	Natural Resources Wales proposed response
2.7.6	b1), g4)	CQA report submitted as required for new gas wells	N/A	N/A	N/A
3.3.1	b)1, e)1.	Appropriate Measures to prevent or minimise fugitive emissions at the site are not being employed to a satisfactory standard at present. Corrective actions listed below.	20/11/14	3	Site Warning.
3.3.5	e)1.	Fugitive emissions of landfill gas in excess of the limits listed in the permit. Corrective actions listed below.	20/11/14	3	Site Warning.
3.4.1	b)1, f)1.	No off site odours detected prior to the audit.	N/A	N/A	N/A
3.6.1	g)1.	Monitoring carried out as required by the permit conditions.	N/A	N/A	N/A
3.6.2	g)1.	Records of monitoring are maintained as required by the permit.	N/A	N/A	N/A
4.1.1	g)1.	Records of monitoring are maintained as required by the permit.	N/A	N/A	N/A
4.1.3	g)1.	Records of monitoring are maintained as required by the permit.	N/A	N/A	N/A

Part four - Observations

Methane emissions recorded from gas collection infrastructure during the audit with photos (where relevant) and other observations:



New Gas Wells on NE Flank of Phase 3A North (pictured above) – This gas infrastructure was installed during July 2014 following the completion of the permanent capping work to this area of the site. Gas mains and collection pipework have also been re-laid to accommodate this infrastructure with good falls to prevent condensate build up.



Gas Well D284 (pictured above) – This well was recorded under relatively high negative pressure (-77.49mb), 61.95 CH₄, 40.1% CO₂ and H₂S off the scale. These readings combined with the well location (towards the base of the flank) indicate that the well could already be inhibited by high liquid levels within the well. Drill logs submitted as part of the installation CQA show that there was a horizon of wet waste encountered during its installation and that the well was essentially full of liquid 24hrs after installation.

Gas Well RD187 – Audible gas flow from this well, a leachate pump has also been installed. It is located relatively closely to the previous well above.

Gas Well D280 – This well was also recorded under relatively high negative pressure (-74.3mb) and H₂S levels off the scale. The gasket on the well head was identified as leaking. These readings indicate that the well is most likely be inhibited by high liquid levels within the well. Drill logs submitted as part of the installation CQA show that multiple horizons of wet/damp waste were encountered during the installation. The CQA report also shows that this well had a relatively high level of liquid 24hrs after installation.

Gas Well D285 – There was audible gas flow from this well. H₂S was again noted as off the scale. CQA logs show the majority of this well was full of liquid 24hrs after installation. This suggests the well may only be having a small/localised extraction effect.

Gas Well D286 – This well was recorded under very high negative pressure (-82.8mb). Gas composition revealed 20% CH₄, 12.2% CO₂, 14.5% O₂ and 53% Balance Gas. The high oxygen and balance gas readings would suggest that this well is drawing in air, either via the well seal or distally from the well. Drill logs submitted as part of the installation CQA do show that there was a horizon of damp waste encountered during its installation and that the well was essentially full of liquid 24hrs after installation. The well is most likely only exhibiting a surface extraction effect as a result.

Gas Well D287 – There was audible gas flow from this well. The well was under low negative pressure and H₂S was again noted as off the scale. CQA logs show the majority of this well was full of liquid 24hrs after installation. This suggests the well may only be having a small/localised extraction effect.

Gas Well D278 – No fugitive emissions were recorded from this well; the well was noted as being under high negative pressure with oxygen exceeding 5% and a relatively high level of H₂S. Drill logs submitted as part of the installation CQA do show that there was a large horizon of damp waste encountered during its installation and that the well was essentially full of liquid 24hrs after installation. The well is most likely only exhibiting a localised extraction effect as a result.

Gas Well D277 – This gas well was exhibiting positive pressure at +0.05mb, with 61% CH₄, 41.6% CO₂ and H₂S off the scale. Drill logs submitted as part of the installation CQA do show that there were horizons of damp and wet waste encountered during its installation and that the well was essentially full of liquid 24hrs after installation.

Gas Well D282 – There was audible gas flow from this well. The well was under low negative pressure and H₂S was again noted as off the scale. CQA logs show this well had a high liquid level 24hrs after installation. This suggests the well may only be having a small localised extraction effect.

Gas Well D281 – There was audible gas flow from this well. The well was relatively high negative pressure and H₂S was again noted as off the scale. CQA logs show this well had a high liquid level 24hrs after installation. This suggests the well may only be having a small localised extraction effect. A small fugitive emission was noted from the base of this well (50ppm).

Gas Well D264 – There was audible gas flow from this well. Some landfill gas odour was noted in the vicinity of this well.



Area adjacent to D264 / Line of Old Pin Wells (pictured above) – Up to 5000ppm was recorded from the surface of the landfill this area. This suggests the gas infrastructure in the immediate vicinity is not performing optimally allowing surface emissions to be generated from the line of old pin wells that were located in this area.

Gas Well D265 – Audible flow and readings atypical landfill gas readings.

Gas Well D268 – This well was under relatively low negative pressure (-15mb). Up to 1500ppm of methane was detected from the bentonite seal at the time also. This well has been previously identified as problematic and has also breached fugitive emission limits on recent monitoring returns; on 26/05/14 it was shown to be emitting 6,500ppm of Methane and 900ppm on the 23/07/14. This well should be investigated for high water levels or de-silting of perforations.

LC3A – Up to 1600ppm of Methane was detected from around the bentonite seal. Monitoring results submitted show it to be in breach of the 1000ppm permit limit for methane in both June and July also, it has also been identified during previous audits. As this item of infrastructure has been historically problematic for an extended period of time alternative sealing options should be investigated or further gas extraction directly adjacent should be considered.

Gas Well D272 – Up to 2300ppm of methane was present from the base of this well. The well did have a pump installed and readings showed it was under gas extraction. This well most likely requires resealing work.

Gas Well D267 – No emissions were recorded from this well. The gas was under active extraction, GA2000 readings suggest this well may also be being effected by high water/perched leachate.

Summary: Levels of fugitive emissions recorded remain fairly low compared to previous audits carried out in 2013. This is reflective of the considerable investments in replacement and additional gas extraction infrastructure as well as permanent capping systems and improved emission detecting and remediation. However, some significant fugitive emissions remain including items of infrastructure that appear to be long standing issues.

Of most concern however is the readings obtained from the new wells that were installed in July 2014. 10 out of the 12 new wells were sampled during the audit, with all displaying signs of being inhibited by high water / perched leachate levels. This is corroborated by the drill logs and information provided in the CQA report submitted. Gas Well D277 was exhibiting positive gas pressure, gas wells D278, D280 and D286 all exhibited high oxygen readings and the other 6 wells sampled displayed signs of compromised extraction efficacy.

Part five – Actions/recommendations

Actions:

1. **Gas Well Dewatering** – Gas wells D268, D277, D278, D280, D281, D282, D284, D285, D286 & D287 should all be investigated for perched leachate / high liquid levels and dewatered to improve landfill gas collection as a matter of priority. All these wells should be re-dipped to determine current water levels and a plan for the pumping of these wells submitted.
2. **Gas Well maintenance** – In addition to the above: Gas Well D280 requires the gasket on the well head replacing. Gas wells D278 & D286 require investigation as to the source of the high oxygen readings. Gas Well D272 requires re-sealing.
3. **Fugitive Emissions on line of old pin wells** – Gas wells D264, D265 & D266 should be investigated as to whether they require de-silting to improve collection efficacy in this area. Temporary capping and/or re-bentoniting of the pin well boreholes should also be considered.
4. **Leachate Tower LC3A** – This item of infrastructure has been identified with high fugitive emissions over an extended period of time. Extra gas collection adjacent to the tower should be considered or alternative sealing arrangements.

TIMESCALES?

Part six - Report approval

Lead auditor	Aled Zachary.	Signed		Date	21/10/14
Job title	Regulatory Officer PPC / RSR				

