



EPR Compliance Assessment Report

Report ID: BU0800IZ/0198481

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	19/12/2013		Time in	09:30	Out	13:00
What parts of the permit were assessed	Landfill gas extraction system, control of fugitive emissions.					
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	22/01/2014		

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	A	
	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	N	
	2. Noise	N	
	3. Dust/fibres/particulates	N	
	4. Pests, birds & scavengers	N	
	5. Deposits on road	N	
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	N	
	2. Records of activity, site diary, journal & events	N	
	3. Maintenance records	N	
	4. Reporting & notification	N	
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.

NB: In this document 'Natural Resources Wales' means the Natural Resources Body for Wales established by Article 3 of the Natural Resources Body for Wales (Establishment) Order 2012.

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

Auditors present:

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

FCC/Infinis Staff present:

Andrew Leeding (Manager, Compliance & Services)

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 - A large amount of improvement work has been carried out to the gas extraction system and controls for the prevention of emissions since the previous audits in July and March 2013. This work has resulted in a significant reduction in the amount of fugitive emissions identified during the audit and a general uplift in the volume of gas being extracted from the site.

However, some significant areas of fugitive emissions remain, some of which correspond to areas of the site that in-situ monitoring demonstrated gas well efficacy to be compromised by perched leachate levels. Data reviewed from Infinis shows there are wells situated in operational parts of the site with over 50% of the available slotting in those wells for gas collection is covered by water.

Findings during the audit are again corroborated by the pumping trial data that has been submitted. Pumping of wells identified with high liquid levels has resulted in a general reduction in fugitive emissions around those wells.

As a result these findings have been scored a **CCS category 3** score at present due to lack of appropriate measure to minimise emissions. This is subject to review if the present level of improvement in the gas extraction system is not maintained.

Action(s) - As listed 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:

- No significant fugitive emissions were detected around the Leachate Pots on the top of the permanently capped flank of Phase 3A North, which have been problematic previously.
- 1300-1500ppm fugitive landfill gas detected around the line of the old pin wells adjacent to the haul road on Phase 3A North. This corresponded to gas wells D264 that in-field gas readings suggest is either inhibited or blocked with leachate. H₂S was off the scale at this well and no apparent gas flow.
- Up to 5000ppm detected from outside the bentonite seal on gas well D266. This well was exhibiting similar readings to D264 above.
- We recorded significant odour around D268 and the well exhibited similar readings to the above.
- 5% Methane (50,000ppm) detected from around bentonite seal on LC3A, significant odour in this area.
- Odour and high ambient gas levels (500ppm) around a recently excavated area adjacent to the haul road and LC3A.
- Up to 10,000ppm detected directly from the bentonite seal on gas well D270.
- We noted the generally low level of gas odour around the lines of new pin wells that have been installed on the tipping area.
- The area around the crest of Phase 3A South adjacent to gas well D233 showed low / no significant fugitive emissions, which is again an improvement since the last audit. We believe this is due to the re-sealing work and the dewatering of gas well D233 providing greater environmental control in this area.

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

Action(s) - As listed overleaf.

 Cyfoeth Naturiol Cymru Natural Resources Wales	EPR Compliance Assessment Report		Report ID: BU0800IZ/0198481	
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Operator/ Permit	3C Waste Limited	Date	19/12/2013	

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	Gas wells identified as potentially being inhibited by high liquid levels should be pumped to dewater the infrastructure and improve gas collection efficacy. In some instances wells may require de-silting alongside dewatering to improve the gas collection.	31/03/14
E1	C3	All emissions identified above 1000ppm identified during the audit should be remediated as a matter of priority.	31/01/14

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:	19 th December 2013	CAR ID No.	BU0800IZ/0198481
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, actions from previous audits and control of fugitive emissions at the site. 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.

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	Environment Agency proposed response
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.	31/03/2014	3	Warning.
3.3.5	e)1.	Fugitive emissions of landfill gas in excess of the limits listed in the permit. Corrective actions listed below.	31/01/2014	3	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

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



Gas Wells C152 & C154 (pictured above) – This gas infrastructure installed on the 24/10/13 was under negative pressure with good audible flow. Live readings with the GA2000+ unit showed typical landfill gas make up with low levels of oxygen. No fugitive emissions were detected in this area, which is an improvement from the previous audit in July 2013.

Gas Wells R262 – This well had good flow with atypical landfill gas concentration. The H₂S level recorded from this well was noted as being high as around 424ppm.

Gas Wells D256 - This well had good flow and atypical landfill gas concentration. The oxygen level recorded from this well was noted at 3.9% and therefore it should be monitored for well seal integrity or distal air ingress.

Northern Flank of Phase 3A North (pictured below) – Some minor odour was encountered on this flank during the audit, although ambient emissions detected remained relatively low. The improvement in emissions from this area is reflective of the investment in permanent capping and new gas infrastructure over the course of 2013.

Capping and gas infrastructure on Northern flank of Phase 3A North:



Capping and gas infrastructure on Northern flank of Phase 3A North:



Gas Wells D264 – D266. (D264 pictured below) – These three wells are located adjacent to the current haul road and replaced a line of saddled pin wells previously located in the same area.

D264 was showing very little flow, with high methane levels recorded (63.3%) and H₂S off the scale off the instrument. These in-field readings suggest the well is blocked or compromised by high liquid levels; a fugitive emission of up to 1500ppm methane was detected outside of the bentonite seal for this well.

D265 was sampled and demonstrated good gas flow with atypical landfill gas concentrations.

D266 was noted as being under high relative extraction pressure (-75mb). This well also showed little signs of actual flow, a high H₂S reading (355ppm) and a fugitive emission varying between 1600 – 5000ppm from outside of the bentonite seal. Again, this data suggests that this well is compromised by high liquid levels.



Gas Well D267 – This well had good flow and atypical landfill gas concentration. However a small fugitive emission of around 300ppm was recorded in the vicinity of this well.

Gas Well D268 – This well had little audible flow and a relatively high H₂S reading at 181ppm. There was a distinct landfill gas odour in the area but the exact source was not identified.

Gas Well D269 – This well had good flow and atypical landfill gas concentration.

LC3A – A fugitive emission of 5% gas by volume (50,000ppm) was recorded from the bentonite seal around this leachate tower / monitoring point. Significant odour was present downwind.

A high ambient reading for methane was also recorded around the area of this infrastructure (500ppm) adjacent to an excavation near the haul road. It was unclear if this reading was as a result of the emission from LC3A or some other source in the area.

Pictures of this infrastructure and area of high ambient methane readings are included below:



Gas Well D272 – This well had been recently connected to the gas extraction system following carrier pipe work upgrades in the area. The well had good audible flow but a relatively high H₂S reading at 261ppm.

Gas Well D270 – Up to 10,000ppm methane was recorded from the bentonite seal at the base of this well. The well appeared to be under extraction, although there was an odour present in the area.

Gas Well D259 – This well had good flow and atypical landfill gas concentration. No issues with the bentonite sealing of this well.

Gas Well D260 – This well had good flow and atypical landfill gas concentration. No issues with the bentonite sealing of this well.

New Lines of Pin Wells on Phase 3A North (pictured below) – These pins wells were recently installed adjacent to the current active tipping area. No significant fugitive emissions or odours were recorded in this area as a result.



Gas Well D233 and Crest of Phase 3A South – The area around this well and the crest of phase 3A south had been identified as problematic in terms of fugitive emissions during the previous audit. No significant odours or fugitive emission were recorded and D233 was noted as having flow and atypical landfill gas concentration. This well had received a leachate pump installation following the previous audit, which appears to have had a positive influence of gas control in this area.

Summary: Levels of fugitive emissions recorded have reduced considerably since audits carried out in March and July 2013. This is reflective of the considerable investments in replacement and additional gas extraction infrastructure as well as permanent capping systems. Weekly monitoring to identify and reduce fugitive gas emissions by contractors JSR has also had a positive impact on fugitive gas levels recorded and the speed at which they are remediated.

However, in light of the above some significant fugitive emissions were still recorded during the audit and whilst off-site odour complaints have reduced in number they are still being received on a fairly frequent basis. Areas of the site with high levels of emissions recorded during the audit appeared to corroborate with gas infrastructure that is being affected by liquid within gas wells, lack of extraction in the area or poor sealing of the infrastructure.

Part five – Actions/recommendations

Actions:

1. **Repair of emission identified during the audit** – All defects identified during the audit in excess of 1000ppm ambient methane should be repaired as a matter of priority and no later than the end of January 2014.
2. **Gas Well Dewatering** – Those wells identified as having a high level of fugitive emissions should be investigated for perched leachate / high liquid levels and dewatered to improve landfill gas collection. Where dewatering is not considered viable other measures to improve gas collection efficacy should be considered.

Part six - Report approval

Lead auditor	Aled Zachary.	Signed		Date	17/01/13
Report authorised by	Paul Wright.	Signed		Date	21/01/13
Job title	Team Leader PPC / RSR				

