

Compliance Assessment Report CAR_NRW0037557

Permit being assessed: JP3239ST.

For: Lamby Way Landfill Site EPR/JP3239ST, held by The County Council of the City and County of Cardiff

At: Lamby Way Landfill Site Lamby Way, Cardiff, Cardiff, CF3 8EQ.

Type of assessment carried out: Report/Data Review, Reason: Routine.

On 10/02/2021.

Parts of permit assessed: Monitoring, HRA, Surface Emissions

NRW Lead Officer: Andi Kemp.

Report sent to: Martin Williams, Recycling and Permit Manager on 10/02/2021.

1. Summary of our findings (full details in section 4)

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	C3 Minor	3.6.1
A1 - Specified by permit	C3 Minor	2.1.1
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	C3 Minor	4.2.2
E2 - Emissions - Land and groundwater	C3 Minor	3.2.3

Result types are explained in more detail in the 'Important Information' section below.

Total number of non-compliances recorded	Total non-compliance score
4	16

How we use the non-compliance score to calculate your annual fee is explained in the 'Important Information' section below.

2. What action is required?

Criteria	Action needed	Complete by
G1	2020 survey done.	Already completed
A1	Vary permit	31/03/2021
G4	Data now submitted	Already completed
E2	Update regulator with investigations and data review.	03/03/2021

Action criteria codes are listed in the 'Important information' section below.

3. What will happen next?

Any non-compliance we have identified and recorded on this form is an offence. It can result in criminal prosecution and/or suspension or revocation of your permit.

You are non-compliant with your permit.

At this time, we are issuing you with a warning for the non-compliance recorded above. Warnings may influence future enforcement response for continued or further non-compliance.

This statement does not stop us from taking additional enforcement action if further relevant information comes to light or offences continue.

4. Details of our assessment

Compliance Assessment Report (CAR1) – Lamby Way Landfill; JP3239ST (Variation UP3130MA); 10th February 2021

Purpose Of Compliance Assessment

This CAR1 covers the following routine aspects of regulation under the Environmental Permitting Regulations 2016 (EPR) and follows on from two CAR1s issued on 2nd Oct. 2020 and 12th Oct. 2020:

- Walkover inspection 6th Oct. 2020
- Gas utilisation and gas management
- Previous actions
- Surface gas flux survey 2020
- Leachate levels, treatment plant maintenance and addition of listed activity
- Annual reports 2019 & 2020
- Routine monitoring submissions - overview
- Hydrogeological risk assessment review
- Collapsing bank on the river Rumney

Walkover Inspection 6th October 2020

This was a brief visual inspection of certain parts of the landfill capping (where previous leachate outbreaks had occurred), the installation of the solar farm, some of the landfill gas infrastructure, perimeter gas wells, surface water drainage and the leachate treatment plant. This was on the back of the high leachate levels over the previous 18 - 24 months – covered in a previous CAR1 (23rd March 2020) and the restrictions on routine inspections due to COVID-19. Gareth Ffoulkes the (then) Landfill and Aftercare Manager was in attendance.

The solar farm has been largely installed over part of LWS. I was informed by the previous regulatory officer that the engineering details – depth of base, protection of landfill cap – was in a design document assessed and approved by NRW Geoscience. The project was overseen by a CCCC Clerk of Works and there were communications between the authority and the contractors about the project and protecting the integrity

of the landfill cap, along with regular works inspections. The area was secured by fencing and lights and there have been no attempts to steal or damage the array. There are also security cameras. NRW's only interest in this is to ensure that the cap of LWS is not compromised – although it is recognised that this is a worthwhile “green” energy project.

Some of the landfill gas wells were examined, but the main point here (due to the Infinis situation), was who was maintaining the field and balancing the wells. At this time both flares were running, so reasonable extraction from the field must have been happening. As this contract situation with Infinis (see CAR1 issued on 1st February 2021 including a non-compliance and warning to the landfill operator about flaring), was still ongoing, it appears that CCCC did not have provision for maintaining the gas field, other than GF checking certain aspects. Infinis run the GUP and the extraction and management of the gas field. This is now resolved (as of the 18th Dec. 2020), with Infinis back in contract and running the GUP plus balancing the gas field. Infinis were also warned (AK email 1st Feb. 2021) that a future such situation would not necessarily mean just the landfill operator would be regarded as breaching their permit. There is provision for NRW to issue formal warning letters, even if conditions specific to, say the Infinis permit, have not been breached, but there is the potential for significant environmental harm.

There appeared to be no leachate outbreak at significant points (capping and basal liner tie-ins and other known previous outbreak locations), meaning even though the leachate head reached just below 5m at one point and had elevated levels (compliance limit LWEE 1m) for a prolonged time, the engineered capping tie-in held its integrity. Since then leachate levels have reduced to below 2m. There are sections below on the leachate treatment plant (LTP) and the requirement to revise the hydrogeological risk assessment (HRA). The prolonged high leachate levels may affect if and how and at what rate leachate may seep through the basal liner.

An important aspect to ensure integrity of the capping, is to assess annually the differential settlement year on year and back to the original final capped level. This will show the rate of settlement over a period of years and show any significant decreases with the previous year, which may alert the operator to potential stresses on the cap. The topographical surveys are submitted in the annual reports (permit conditions 3.6.3 and 4.2.1 (g), (h) and (i)), however permit condition 4.2.1 (g), (h) and (i) require the actual settlement figures to be reported, based on the comparison between the previous survey and the latest and the original level – the scale on the drawings is too small to discern the actual difference in height.

Action 1 Lamby Way Landfill 10th February 2021: *Review the original survey against the subsequent annual topographic surveys and submit the settlement / surcharge differential. An assessment can then be made about any significant settlement and the integrity of the landfill capping. Due: 31st March 2021.*

Some perimeter gas wells were briefly looked at, along with the surface water drainage gravel channels. The various monitoring, gas, leachate and surface water landfill infrastructure, were subject to the design and installation details laid out in the overall site design, Site Monitoring Plan, supplemented by the relevant CQA reports. Monitoring and maintaining these elements, to ensure the landfill performs effectively and no pollution is caused, is a critical aspect of ongoing management oversight, especially when the site is closed to waste acceptance. These aspects will likely be subject to more detailed assessment when normal inspections resume.

Gas Utilisation & Gas Management

This has been covered in several earlier CAR1 forms (2nd and 13th October 2020), culminating in CAR1 issued

on 1st February 2021, with the CCS3 non-compliance and warning. The other CAR1 forms were general guidance about landfill gas management and possible permit variations.

NRW understand from Infinis that gas utilisation, using two engines, commenced on 18th December 2020 and that Infinis are also inspecting, maintaining and balancing the gas field and associated equipment. Things to be considered are: avoiding condensation blocking lines and gas pipe dip; emptying knockout pots; maintaining well seals, valves, manifolds; balancing the extraction pressures; gas treatment before combustion (if required); and general condition of pipelines. An aspect NRW is unsure about is whether there is ongoing (in accordance with Annex III of the LfD, implemented by Schedule 10 of EPR and covered in guidance note LFTGN03) regular monitoring of in waste landfill gas from the gas wells, to check for oxygen ingress and high nitrogen/ balance gas and carbon monoxide levels. The site Environmental Monitoring Plan 2012, section 7 lays out the frequencies.

Action 2 Lamby Way Landfill 10th February 2021: *The operator is to confirm if this in waste landfill gas composition monitoring is taking place and by whom and how often.* **Due: 31st March 2021.**

Previous Actions

The only open action, apart from actions given in this CAR1, is Action 1 from the 1st February 2021 CAR1 – due 31st March 2021.

Surface Gas Flux Survey 2020

Condition 3.6.1(d) requires the parameters in Tables S4.5 and S4.6 to be monitored in accordance with the tables and condition 4.2.2 requires the data from this monitoring to be reported at the frequencies stipulated in Table S5.1 (amongst others). Table S4.6 is the annual surface flux monitoring of permanently capped areas and Table S5.1 requires an annual submission. The last but one submission was from monitoring conducted in April 2017 and the most recent submission was from monitoring in October 2020. Looking at the records and confirmed by GF, no surveys were conducted in 2016, 18 or 2019. This is significant, because by 2017 the landfill was virtually completely capped and the purpose of these annual surveys is to verify the integrity of the capping system and any penetrations, e.g. leachate or landfill gas wells. Early detection of any defects and leaks can be repaired, maximising extraction, reducing odour and preventing safety issues from flammable and dense gas. In turn any issues with extraction of landfill gas, can cause emissions through the cap and / or cause extraction to draw in air (O₂) into the landfill – so there is a management feedback cycle in operation.

Non-compliance: *A category 3 non-compliance is given due to the potential risk to people and the environment of not verifying the integrity of the landfill cap using an annual surface emissions survey for 2018 & 2019. This is a breach under condition 3.6.1. It is an offence under Regulation 38(2) of the Environmental Permitting Regulations (consolidated 2016) to breach a permit condition or emission limit.*
Non-compliance score CCS3.

This could have been a more serious score, with contributing root causes, however the surveys of 2017 and 2020 (discussed below) show minimal surface emissions. Additionally, the internal affairs of the authority during 2018 and into 2019 disrupted management of the landfill and on this occasion, due to the earlier serving of an enforcement notice and the landfill returning to stable operation and submissions in late 2019, additional non-compliances have been avoided.

The 2017 survey highlighted six areas with emissions over 100ppm in LWS, three along transect 14 and 1 very high reading (1000ppm +) along transect 9. LWEE showed very little gas detection and the five locations that were detected (1 – 5ppm) were around gas wells in LWEE Cell 4. In all 894 locations were sampled.

Moving on to the 2020 submission, the first thing to look at, before assessing the results as a whole, is to see if the high levels in LWS from 2017 are repeated, which would indicate an ongoing problem that hasn't been rectified or repair failure. Most of LWS, except transect 14 was not sampled due to the installation of the solar farm, however 803 points were sampled. This survey did not show any readings above 100ppm, however because most of LWS was not surveyed and certain points showed elevated levels, see action below.

Action 3 Lamby Way Landfill 10th February 2021: *The operator is to refer to the 2017 surface emissions survey and revisit the 5 locations (refer to transects Fig. 2 and emission exceedances Table 1) and ascertain if there is any ongoing gas emission from a tear, well seal or other means. Due: 31st July 2021.*

Leachate Levels, LTP and Maintenance Contract

The latest leachate level across the site, reported in the 2020 annual report, is 1.92m Dec. 2020. This is still above the 1m compliance limit for LWEE. LWS has a limit of 2m and discussions have been had about applying to vary the permit to have LWEE at 2m head and this is all linked to reviewing the hydrogeological risk assessment, which is a separate topic and well overdue. The previous enforcement notice sought to bring leachate levels down, so while there are discussions about a revised compliance limit, no additional non-compliances will be scored at this time – but this will be reviewed, especially in the light of the HRA review output.

GF submitted a tender specification and this covered the main aspects, including twice yearly inspection and cleaning of pumps and 24hr (48 at weekend) emergency response. The contract has now been awarded, although COVID-19 has prevented much work taking place – AK did challenge this, taking into account COVID-19 laws and rules, based on the work would be outside.

Action 4 Lamby Way Landfill 10th February 2021: *The operator is to confirm with the LTP contractor if they have started the routine work, if not, when will they and whether that means any routine maintenance has been missed, if so, what. Due: 31st March 2021.*

GF stated that the contract had been awarded to Enitial – please see Action 4 above.

It is critical that the LTP is maintained so that treated leachate is removed from the landfill and that the plant operating parameters can be interrogated remotely. The plant was briefly inspected on 6th Oct. 2020, where it could be seen that it was operating (flow and volumes discharged) and the SCADA control was operating and several layers of information were seen.

In Schedule 1 EPR Chapter 5, section 5.4 – if >50tpd of non-hazardous waste are disposed of, then a 5.4A(1)(a)(ii) physico-chemical treatment listed activity needs to be included in the permit and OPRA profile. The figures clearly show (see 2019 and 2020 annual reports) this is regularly exceeded, e.g. 28th December 2020 = 266m3.

Action 5 Lamby Way Landfill 10th February 2021: *The operator is to build this aspect into discussions about*

varying the permit (other attributes may include ELVs and leachate head via HRA review and permitting of the gas engines) and provide a timed action plan to the regulator, that must be agreed by the regulator.

Due: 31st March 2021.

Non-compliance: *A category 3 non-compliance is given due to operating a listed activity without it being authorised in the permit. This is a breach of condition 2.1.1, Table S1.1 It is an offence under Regulation 38(2) of the Environmental Permitting Regulations (consolidated 2016) to breach a permit condition or emission limit. Non-compliance score CCS3.*

This could have been a higher non-compliance, if work had not been underway to improve leachate treatment capacity, but Action 5 must provide tangible evidence of progress to get this (and other permitting aspects) addressed by a permit variation, with yet to be agreed deadline for submission. NRW will not take additional enforcement action at this time, dependant on compliance with Action 5 above. Putting this activity into the permit will bring the annual subsistence fee to where it should be according to NRW Charging Scheme and OPRA profile.

Annual Reports 2019 & 2020

These reports have been submitted on time and contain all the information required by the permit conditions, except the settlement differential from the topographical surveys – see Action 1 above. The reports provide valuable information, especially monitoring data trends, improvement targets, incidents etc. Some examples from 2019: leachate field pumps replaced; perimeter gas well overhaul, repairs and valve replacements; vegetation removed for monitoring point access. Landfill gas through engines = $6,835,954\text{m}^3$; via flares = $547,375\text{m}^3$, which is 8%. Detail of what monitoring locations could not be sampled were provided. The data trends need a separate thorough analysis – see monitoring data section below. Leachate disposed of peaked with 331m^3 average for 18th and 19th October 2019. Note the volume discharged in relation to exceeding the threshold for a listed activity. $18,452\text{m}^3$ of leachate were treated and discharged to sewer.

The 2020 report is the same layout and once again monitoring detail will be discussed below. Leachate treated and discharged = $12,761\text{m}^3$. Landfill gas used in engines = $4,587,109\text{m}^3$; via the flares = $1,574,988\text{m}^3$. Therefore, flared gas represents 34.33%, obviously a cause for concern and has been covered in previous CAR1s and non-compliances relating to the Infinis / CCCC contract situation. This is not to be repeated.

Routine Monitoring Submissions Review

The landfill permit requires the monitoring (derived from the Landfill Directive) of perimeter gas (% above defined background of CO_2 and CH_4), leachate composition and level, surface water at defined locations and groundwater at defined boreholes for composition against defined trigger levels. The data is mostly reported on a quarterly basis, with the exception of the annual surface emissions survey discussed earlier.

The data covered here is for 2019 and 2020. As already alerted to GF and acknowledged, some data for Oct. – Dec. 2019 is still missing. GF was away from post for most of 2019, therefore much of 2019 data was compiled by GF and submitted late.

Non-compliance: *A category 3 non-compliance is given due to the absence of monitoring submissions until*

GF returned to post from Sep. 2019 – all submissions prior to Oct. 2019 were not submitted. This means that potential pollution may have gone unnoticed. This is a breach under condition 4.2.2. It is an offence under Regulation 38(2) of the Environmental Permitting Regulations (consolidated 2016) to breach a permit condition or emission limit. Non-compliance score CCS3.

Action 6 Lamby Way Landfill 10th February 2021: *The operator is to submit the data for Oct. – Dec. 2019. Due: 31st March 2021.*

Having looked at the data, it is apparent that there are several breaches of trigger levels to groundwater – whether this is an ongoing event is not known at this time. There are also gaps in the data. For example:

Jan. 2019 GW – cadmium, nickel, xylene and mecoprop have no data for all wells.

Feb. 2019 – exceedance of nickel with trigger level at C1, C2, C3

Mar. 2019 – much data missing

A similar pattern for the rest of 2019. If we look at just some of 2020 GW data:

Jan., June, Sep. 2020 – cadmium, nickel, mecoprop and xylene – no data – these are just some of the months checked.

The annual report for 2019 summarises the breaches of what parameter and which borehole and include cadmium, ammoniacal nitrogen and mecoprop. A similar situation is summarised in the 2020 annual report. These reports and the quarterly data, also include breaches of surface water emission limits. The perimeter gas data shows a couple of minor exceedances, probably not significant enough to suggest a breach in containment, but if regularly occurring at the same gas wells, it is worth checking that location.

Non-compliance: *A category 3 non-compliance is given for exceedances of emission limits to surface water and groundwater. This is a breach under conditions 3.1.2 and 3.2.3. It is an offence under Regulation 38(2) of the Environmental Permitting Regulations (consolidated 2016) to breach a permit condition or emission limit. Non-compliance score CCS3.*

This CCS3 could escalate upon a full review of the data for 2019 and 2020. The score for subsequent data for any exceedances will be suspended, while the above score is in place and until the data review findings. The breaches may be an ongoing event.

Action 7 Lamby Way Landfill 10th February 2021: *The operator is to arrange with the regulator a suitable date and time to review the monitoring data, examine exceedances and propose any relevant actions or investigation required to bring the landfill emissions back into compliance. Due: This data review shell be planned to take place within the next three weeks.*

Hydrogeological Risk Assessment Review

The HRA review is overdue. This is an important aspect to landfill regulation as it models possible pollutant migration from the landfill into the surrounding groundwater and enables trigger levels to be set that represent pollution of the groundwater. The HRA factors in the size and geometry of the landfill, the volume and nature of the waste, the leachate composition, the nature of the liner and the surrounding hydrogeology. The review has been made even more urgent due to the prolonged elevated leachate heads in 2018 – 2019. Additionally, GF discussed with the regulator the possibility of varying the leachate level to

2m as per LWS. 1m is considered the norm, but if the output of the HRA suggests no additional risk with a 2m leachate head, it may be possible to vary the limit. In an email sent to GF on the 15th Oct. 2020, the regulator requested the operator make the HRA review a priority in the up and coming procurement process. It was discussed that the review be broad enough to include the review per se based on current leachate heads (2m) and an addendum to model the output of prolonged 4m leachate head.

Action 8 Lamby Way Landfill 10th February 2021: *The operator is to update the regulator on progress with the HRA review: when will it start.* **Due: 31st March 2021.**

Collapsing Bank on the River Rumney

The regulator alerted the operator to this situation and the potential threat to LWS in an email in January 2021. GF responded with some aerial photographs and an email approaching the Highways Operations Manager about the situation. There are no NRW flood defences in this location, so the responsibility falls to the landowner.

A copy of the text sent to GF is below:

It seems quite a significant area of damage.

I think the first thing is to confirm, via drawings and records etc., how far away the actual contained landfill engineering infrastructure is with respect to the exposure. Then identify what caused this – the rivers / tides, or failure of the bank / slope in its own right. Confirm whether the exposure / collapse is likely to increase and can further deterioration be prevented.

These, to me, seem the most important things to answer.

Action 9 Lamby Way Landfill 10th February 2021: *The operator is update the regulator on progress with the investigation, risk of LWS waste / leachate outbreak and potential actions to be taken.* **Due: 31st March 2021.**

END

If you have any queries about this report, or to discuss completion of any actions, please contact the NRW Officer named above.

Important information

Legal status of this report

Your permit is issued to you under the Environmental Permitting Regulations. You have a responsibility to comply with the conditions of your permit and prevent pollution/harm of the environment. You must also ensure that you comply with any other relevant legislation that may apply to your site's operations.

This report explains the findings of our assessment and any action you are required to take. We categorise non-compliance using our guidance for assessing non-compliance at regulated sites.

When we find potential non-compliance/s we will normally give you advice on how to maintain compliance.

To correct non-compliance, we may:

- require you to take specific actions
- issue a notice
- review the conditions of your permit.

Any advice and guidance we give will be without prejudice to any other enforcement response that we consider may be required.

Assessment results and non-compliance categories (used in section 1):

Assessment result	Description
Assessed (A)	Assessed or assessed in part, no evidence of non-compliance found
Action only (X)	Action only relating to the activity assessment
Ongoing (O)	Ongoing non-compliance, not scored

Non-compliance category	Description	Score
C1 Major	Potential to have a major, serious, persistent and/or extensive impact or effect on the environment, people and/or property	60
C2 Significant	Potential to have a significant impact or effect on the environment, people and/or property	31
C3 Minor	Potential to have a minor or minimal impact or effect on the environment, people and/or property	4
C4 No environmental impact	Non-compliance at a regulated site that cannot foreseeably have any impact on the environment, people and/or property	0.1

How we use assessment scores

The number and severity of non-compliances recorded in a year will affect your annual subsistence fee the following year. A non-compliance factor is added to your site's Operator

Performance Risk Appraisal (OPRA) score when we calculate your fee to reflect the additional resource we use to assess permit compliance.

What are suspended scores?

In line with our guidance, we may suspend scores for up to six months to allow time for remedial action to be taken. Suspended scores will be re-instated if the action is not completed.

Full list of Industry and Waste action criteria (used in section 1 and 2):**A: Permitted activities**

- A1 Specified by permit

B: Infrastructure

- B1 Infrastructure – Engineering for prevention and control of emissions
- B2 Infrastructure – Closure and decommissioning
- B3 Infrastructure – Site drainage engineering (clean and foul)
- B4 Infrastructure – Containment of stored materials
- B5 Infrastructure – Plant and equipment

C: General management

- C1 General management – Staff competency/training
- C2 General management – Management system and operating procedures
- C3 General management – Materials acceptance
- C4 General management – Storage, handling, labelling and segregation

D: Incident management

- D1 Incident management – Site security
- D2 Incident management – Accidents, emergency and incident planning

E: Emissions

- E1 Emissions – Air
- E2 Emissions – Land and groundwater
- E3 Emissions – Surface water
- E4 Emissions – Sewer
- E5 Emissions – Waste

F: Amenity

- F1 Amenity – Odour
- F2 Amenity – Noise
- F3 Amenity – Dust/fibres/particulates and litter
- F4 Amenity – Pests/birds and scavengers
- F5 Amenity – Deposits on road

G: Monitoring and records, maintenance and reporting

- G1 Monitoring and records, maintenance and reporting – Monitoring of emissions and environment
- G2 Monitoring and records, maintenance and reporting – Records of activity, site diary/journal/events
- G3 Monitoring and records, maintenance and reporting – Maintenance records
- G4 Monitoring and records, maintenance and reporting – Reporting and notification to Natural Resources Wales

H: Resources efficiency

- H1 Resource efficiency – Efficient use of raw materials
- H2 Resource efficiency – Energy efficiency

Enforcement response

Any permit condition non-compliance is an offence and we may take legal action against you. Action we take can include prosecution, serving a notice on you and/or suspension or revocation of your permit. See our Enforcement and Sanctions Guidance for further information.

Data protection notice

You should make sure that anyone named in this report knows that the information it contains will be processed by Natural Resources Wales to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s).

We may also use and/or disclose the report in connection with:

- offering or providing you with our literature or 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
- assessing customer service satisfaction and improving our service
- Freedom of Information Act or Environmental Information Regulations requests.

We may also pass it on to our agents or representatives to do these things on our behalf.

Disclosure of information – this report will be available to view on-line

If you think this report contains commercially confidential information that should not be placed on our public register, you must contact your local Natural Resources Wales office within **fifteen working days** of receiving this report, using the contact details in the accompanying email or letter. You must give a full explanation of why it should not be added to our public register, including specifying which information is commercially confidential. We will assess your request and respond to you within 20 working days to let you know if we agree to your request.

What do I do if I disagree with the report or have a complaint?

If you disagree with this compliance assessment report, you should contact the lead officer without delay to discuss your concerns.

If you are unable to resolve the issue with the lead officer or their line manager you should contact our Customer Contact team on 0300 065 3000 (Monday to Friday 08:00 – 18:00), or email enquiries@naturalresourceswales.gov.uk for details of how to raise your dispute further through our Complaints and Commendations procedure.

If you are dissatisfied with our response, you can contact the Public Services Ombudsman for Wales by phone on 0300 7900203 or by email at ask@ombudsman.wales

Welsh Language Standards

We are committed to establishing Natural Resources Wales as a naturally bilingual organisation. We will provide compliance reports in your preferred language.