

Compliance Assessment Report CAR_NRW0050574

Permit being assessed: BB3891CG.

For: Cog Moors Wastewater Treatment Works, **held by:** DWR CYMRU CYFYNGEDIG

At: Green Lane, Dinas Powys, CF64 2TR.

Type of assessment: Report/Data Review,

Reason: Routine.

On: 31/12/2025.

Parts of permit assessed: Annual Returns.

NRW Lead Officer: Lewis Evans.

Report sent to: Site Manager, Site Manager, on 23/02/2026.

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

Part of permitted activity assessed (compliance criteria)	Assessment result	Permit condition
IR3A(2) - Installations - Emissions and monitoring - Emissions to air	Assessed (A)	
IR4B - Installations - Information - Reporting	Assessed (A)	
IR3E - Installations - Emissions and monitoring - Monitoring	Assessed (A)	

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

Total non-compliances recorded	Total non-compliance score
0	0

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?

No action required.

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.

At this time, we do not intend to take any further action.

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

Dŵr Cymru Welsh Water Cog Moors AAD

Permit Reference – BB3891CG

Annual Returns

The operator submitted the full suite of annual returns on 28 January 2026, ahead of the permit deadline of 31 January, in accordance with Permit Condition 4.2.2, which requires submission of the previous year's data by 31 January each year. Monitoring data for Emission Points A1 and A3 showed that all reported pollutants: Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), and Sulphur Dioxide (SO₂) were within the emission limit values prescribed in Schedule 3 Table S3.1 of the permit. However, emission Point A2, NO_x was reported at 189.13 mg/m³, slightly below the permitted limit of 190 mg/m³ for biogas-fired CHP engines. While this remains compliant, the result lies extremely close to the upper allowable threshold, providing very limited compliance headroom. Although the operator did not report a limit exceedance and no uncertainty adjustment was needed, the proximity to the ELV warrants continued attention to engine performance, tuning, and combustion optimisation to maintain a suitable compliance buffer.

Air Emissions

The operator correctly undertook emissions monitoring at Emission Point A9 (emergency flare). The performance return indicates that the flare operated for 31% of the year, exceeding the 10% operational threshold above which annual monitoring becomes mandatory under Table S3.1 (Note 2). Monitoring was therefore required and appropriately completed. Since no ELVs are set for NO_x, CO, or VOCs at this emission point, the results (e.g. NO_x at 95.67 mg/m³, CO at 397.54 mg/m³) do not constitute compliance issues. Continued review of flare performance remains best practice, especially given the extended operational periods during 2025.

Emission Point	Fuel / Mode	Parameter	Permit Limit (mg/m³)	Result (mg/m³)
A1	Biogas	NO _x	190	138.91
		SO ₂	40	1.4
		CO	<i>No limit set</i>	322.08
A2	Biogas	NO _x	190	189.13
		SO ₂	40	7.72
		CO	<i>No limit</i>	284.22

			<i>set</i>	
A3	Natural Gas	NOx	100	92.08
		CO	<i>No limit set</i>	23.5
	Biogas	NOx	200	48.19
		SO ₂	100	3.88
		CO	<i>No limit set</i>	12.25
A4	Natural Gas	NOx	100	96.48
		CO	<i>No limit set</i>	4.5
	Biogas	NOx	200	87.49
		SO ₂	100	2.05
		CO	<i>No limit set</i>	19.32
A9 (Emergency Flare)		NOx	<i>No limit set</i>	95.67
		CO	<i>No limit set</i>	397.54
		VOCs (as carbon)	<i>No limit set</i>	349.47

Water Usage

Water consumption at the Cog Moors AAD Facility for 2025 was reported as 13,490 m³, as set out in the WaterUsage1 return. This represents a slight increase compared with the 13,075 m³ recorded in 2024. Although the rise is relatively modest, approximately 3% year-on-year, it marks a reversal of the reduction seen between previous reporting periods. The permit does not impose specific quantitative limits on water usage, however, the operator is required under Permit Condition 1.3 to ensure efficient use of raw materials and water and to review water consumption trends as part of its ongoing efficiency assessment.

Energy 1

Total energy consumption at the Cog Moors AAD Facility during **2025** amounted to 24,421.1 MWh, made up of 12,804.326 MWh of electricity and 11,616.784 MWh of natural gas. This represents an increase compared with 2024, when total reported energy usage was 20,513.772 MWh, comprising 13,109.601 MWh of electricity and 7,404.171 MWh of natural gas.

Although the overall rise is modest in proportional terms, the profile of energy use has shifted notably. Electricity consumption has decreased slightly year-on-year, whereas natural gas usage has increased by over 56%, indicating a greater reliance on gas-fired systems to support site operations. This shift may reflect operational constraints such as limited grid export capacity, variability in CHP engine availability, or increased thermal demand associated with the advanced digestion and thermal hydrolysis processes.

The upward trend in total energy demand—along with the changing balance between electricity and natural gas—suggests that a review of system performance, thermal integration, and CHP utilisation

patterns may be beneficial to ensure the installation continues to operate as efficiently as practicable. Continued tracking of these metrics will help determine whether the 2025 increase reflects normal operational variability or a longer-term shift that may merit targeted efficiency improvements in future reporting cycles.

Performance 1

Parameter	Units
Biogas produced by anaerobic digestion process	(m3) 5,174,923
Total amount of waste treated	(tonnes) 12,602
Energy efficiency	(MWh/m3 biogas) 0.002
Electrical energy drawn from the grid	(MWh) 5,989
Electrical energy exported to the grid	(MWh) 0.001
Generation of residues	(tonnes) 5,465
Generation of wastewater	(m3) 38,943,808
Total raw material used	(tonnes) 12,602
Amount of biogas combusted in the Medium Combustion Plant	(m3/day) 14,178
Amount of biogas sent to the emergency flare	(m3) 1,785,965
Operational time of waste gas burner (emergency flare)	(% of operational time) 31%

Waste Returns

During the 2025 reporting period, the installation received a total of 32,188.88 tonnes of EWC 19 08 05 (sludges from the treatment of urban wastewater) for processing at the Advanced Anaerobic Digestion (AAD) facility. In the same period, the site exported 21,701.10 tonnes of material classified under the same EWC code, representing the removal of treated digestate, separated residuals, and associated outputs from the sludge treatment process.

The difference between the quantity of waste received and the quantity removed is consistent with the nature of the treatment operations carried out onsite. Thermal hydrolysis and anaerobic digestion significantly reduce the mass of incoming sludges through biodegradation, water removal, and conversion into biogas, while also generating both liquid and solid fractions that follow separate treatment routes. As such, it is normal for the mass of outputs removed from site to be lower than the mass received, reflecting the energy recovery inherent in the digestion process and the loss of mass through biogas production.

The reported tonnages also remain well within the facility's permitted annual waste throughput capacity of 235,636 tonnes, as set out in Schedule 2, Table S2.2 of permit EPR/BB3891CG. Overall, the data indicates that waste reception, processing, and removal activities during 2025 were compliant with the site's permitted waste types and throughput limits.

Operator Comments:

2025 saw another year of having to operate the site valorisation within the confines of the National Grid imposed electricity export limitation of 0kW. This means we only get to run 1 of our 1.56 MW engines at reduced loads. Once again boiler maintenance has caused prolonged periods of the equivalent CHP being unavailable but maintenance has been managed to coincide with these works so an engine has been available to run the vast majority of the year with 1 of them also having its first

major service rebuild. Whenever possible the boilers have been called upon to use the biogas to raise steam for site treatment processes but once again the flare did reach di-minimis values so was emissions tested. A multitude of site improvements continue to be implemented to increase the value we gain from our biogas and we look forward to them increasing biogas utilisation in 2026. The engines, boilers and waste gas burner continue to operate within emission limit values highlighted in the permit

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 required for the permit condition assessed to avoid non-compliance. No non-compliance scored at this time
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.

If your assessment result in Section 1 is suspended, what does this mean?

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 compliance criteria (used in section 1 and 2):

1. Management

- IR1A – General management
- IR1B – Finance (only applicable to Landfill)
- IR1C – Energy efficiency
- IR1D - Efficient use of raw materials
- IR1E - Avoidance, recovery and disposal of wastes produced by the activities
- IR1F - Multiple operator installations

2. Operations

- IR2A – Permitted activities
- IR2B – The site
- IR2C – Operating techniques
- IR2D – Technical requirements
- IR2E – Improvement programme
- IR2F – Pre-operational conditions
- IR2G – Landfill engineering (only applicable to Landfill)
- IR2H – Waste acceptance (only applicable to Landfill)
- IR2I – Leachate levels (only applicable to Landfill)
- IR2J – Closure and aftercare (only applicable to Landfill)
- IR2K – Landfill gas management (only applicable to Landfill)

3. Emission and Monitoring

- IR3A(1) – Emissions to water
- IR3A(2) – Emissions to air
- IR3A(3) – Emissions to land
- IR3B – Emissions of substances not controlled by emission limits
- IR3C – Odour
- IR3D – Noise and vibration
- IR3E – Monitoring
- IR3F – Pests
- IR3G – Air quality management plans
- IR3H – Monitoring for the purposes of the Industrial Emissions Directive (this heading includes Large Combustion Plants)
- IR3I – Fire

4. Information

- IR4A – Records
- IR4B – Reporting
- IR4C – Notification

Enforcement response

Any non-compliance with a permit condition 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 twenty working days to let you know if we agree to your request.

Disputing the Content of this Compliance Assessment Report Form

If you disagree with the content of this Compliance Assessment Report form, you should submit your concerns, in writing, to the regulating officer who issued it within **15 working days** of its issue. This will be treated as a **Stage 1 review**.

If you are not satisfied with the outcome of the stage 1 review, you may request a **Stage 2 appeal**. This request must be submitted **within 21 working days** of receiving the response from the stage 1 review.

Further details on our review and appeal process are available at: [Natural Resources Wales / Appeal a regulatory decision from Natural Resources Wales](#)

Concerns Not Related to the Content of this Compliance Assessment Report Form

If your concerns do not relate to the content of the Compliance Assessment Report form, you should first attempt to resolve the issue with the regulating officer or their line manager.

If the issue remains unresolved, please contact our **Customer Contact Team**:

- **Telephone:** 0300 065 3000 (Monday to Friday, 09:00–17:00)
- **Email:** enquiries@naturalresourceswales.gov.uk

They will provide details on how to escalate your concerns through our **Complaints and Commendations procedure**.

If you are dissatisfied with our response, you may contact the **Public Services Ombudsman for Wales**:

- **Telephone:** 0300 790 0203
- **Email:** 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.