

Compliance Assessment Report CAR_NRW0050662

Permit being assessed: JP3632ZH.

For: Barry CHP , **held by:** Dow Silicones UK Limited

At: Wimborne Road - Dock 2, Barry, Vale of Glamorgan, CF63 3DH.

Type of assessment: Report/Data Review,

Reason: Routine.

On: 31/12/2025.

Parts of permit assessed: 1.1.1(a) and 3.1.2.

NRW Lead Officer: Geraint Harris.

Report sent to: Environmental Manager, Environmental Manager, on 11/02/2026.

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)	
IR1A - Installations - Management - General Management	C3 Minor	1.1.1(a)

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

Total non-compliances recorded	Total non-compliance score
1	4

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
IR1A	Include the hot calibration requirement to the start-up checklist and procedures.	Already completed

Compliance 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.

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**Dow CHP****EPR JP3632ZH****Monitoring Returns**

The results for emission point A1 and A3, while operated in turbine exhaust mode (TEG) and forced draft mode (FD) are within the emission limits in Schedule 3(b) Table S3.1(a) of the permit and the original boiler limits.

The results for the A2 fired boiler are within the permitted emission limit values (ELV's)

The emissions for emission point A4 are within the permit ELV's. For release point A5, only one sample was taken during 2025 due to the boiler coming offline for statutory inspection and maintenance during H2. The operational period during H2 was within six months of the H1 sample having been taken, therefore the H1 sample data has been used for 2025 as a whole.

The report has been accepted.

Continuation of CAR NRW0046285 and CAR NRW0049276

An emissions exceedance occurred following a shutdown of the gas turbine at Dow Silicones in 2024, during which carbon monoxide (CO) emissions rose above the permitted limits. NRW's investigation found that the burner O₂ sensors were likely calibrated in the "cold" state during restart, contrary to the manufacturer's requirement for "hot" calibration once the sensors were fully online. This incorrect calibration directly contributed to elevated CO emissions until Dow undertook the appropriate hot calibration in line with OEM guidance, which subsequently restored compliance.

Dow has explained that the procedures in use at the time of the incident had been inherited when operation of the Combined Heat and Power (CHP) plant transferred back in-house from Cofely. Dow stated that the majority of operational and maintenance procedures, including those relating to the burner O₂ sensors, were legacy documents that had been reviewed and reformatted into Dow-standard procedures, rather than rewritten from first principles. Dow also highlighted that these were not new sensors or new operating modes, but a continuation of historical CHP operation as previously undertaken by Cofely. They explained that while manuals were available, they did not systematically re-review every OEM manual for each inherited piece of equipment, and in some cases additional manuals had to be sourced from vendors.

While this provides context, the exceedance nevertheless occurred because the manufacturer's hot calibration requirement was not embedded within Dow's operational restart procedures. As a result, the burner O₂ sensors were mis-calibrated during restart and found to be out of calibration when the unit was brought online. This demonstrates that, although manufacturer instructions may have existed within maintenance documentation, the Environmental Management System (EMS) did not ensure

that these instructions were implemented during start-up activities. The subsequent addition of the hot calibration requirement to the start-up checklist confirms that this control was not previously embedded within operational procedures, and therefore the EMS did not proactively identify or minimise this foreseeable pollution risk as required by Condition 1.1.1(a).

A site inspection on the 16th October 2025 was undertaken to review the circumstances leading to the exceedance and to assess the robustness of Dow's EMS and operational controls. During the visit, NRW noted that the hot calibration requirement had not been incorporated into Dow's written procedures or start-up documentation, and had only been added retrospectively following the incident. This raised concerns about whether the EMS adequately identifies and manages foreseeable pollution risks associated with equipment calibration, replacement, and routine maintenance activities.

NRW also sought clarification on how manufacturer instructions are incorporated into operational procedures, Planned Preventive Maintenance (PPM), and Management of Change (MoC) processes. Two regulatory actions were issued as part of compliance report CAR_NRW0050087, requiring Dow to confirm whether a formal procedure exists for integrating manufacturer guidance into operational controls, or alternatively to explain how such guidance is otherwise embedded. These actions were due by 5th of January 2026.

Dow has stated that for new equipment, such as the recently installed CEMS on the three HP boilers, comprehensive procedures were created and analyser technicians were trained and certified by ABB. NRW recognises that this represents good practice and reflects the expected norm for integrating new technical requirements. However, in this case the absence of a systematic method for reviewing and incorporating manufacturer instructions for inherited equipment, combined with the lack of clear evidence of an EMS mechanism to ensure such requirements are captured, contributed directly to the non-compliance.

In summary, Dow has not demonstrated the essential EMS controls required to ensure that compliance is maintained under routine and abnormal operating conditions. The critical manufacturer instruction for hot calibration of burner O₂ sensors was not embedded in written procedures or start-up documentation prior to the exceedance, and was only introduced retrospectively. Additionally, during the October 2025 inspection, NRW identified uncertainty regarding how OEM instructions are captured within operational procedures, PPM and MoC.

This falls short of the requirements of Permit Condition 1.1.1(a), which requires the operator to maintain a proactive and systematic Environmental Management System that identifies, prioritises, and minimises risks of pollution during both routine and abnormal operations. In this case, the foreseeable risk of elevated emissions following a gas turbine shutdown was not effectively controlled, as the critical OEM requirement for hot calibration of the burner O₂ sensors had not been embedded in Dow's written procedures or start-up documentation. The absence of a clear mechanism within the EMS to ensure that manufacturer instructions are consistently incorporated into operational controls meant that a predictable calibration error directly contributed to the CO exceedance. Furthermore, during the October 2025 inspection, NRW identified wider uncertainty about how OEM instructions are captured within operational procedures, PPM, and MoC processes, indicating that this gap was systemic rather than incidental.

Given that the incident resulted from a failure to implement established manufacturer controls, that the impact (increased CO emissions) was foreseeable, and that the missing control was only introduced retrospectively, NRW is issuing **a category 3 non-compliance against permit condition 1.1.1(a)** for the foreseeable pollution risk not being identified, prevented, or adequately managed by the operator's EMS.

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.