

Compliance Assessment Report CAR_NRW0039130

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 carried out: Site Inspection, Reason: Routine.

On 16/11/2021 between 10:00 and 16:00.

Parts of permit assessed: Monitoring Returns

NRW Lead Officer: Geraint Harris, accompanied by Antony Leakey.

Report sent to: Jude Sartor, Environmental Specialist on 31/12/2021.

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

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
E1 - Emissions - Air	C4 No impact	3.6.2

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

Total number of non-compliances recorded	Total non-compliance score
1	0.1

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
E1	Improve the emissions monitoring system to provide a more real time update of invalid days.	31/01/2022

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.

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 reporting and compliance assessment review

Noise control

A further update was provided by DOW on the incident relating to the failure of the valve packing related to

the main steam stop valve stated in CAR_NRW0037553.

Following a temporary repair during the September turn around period, the valves on the Fired Boiler and the HRSG-A and B were repacked. This means all 6 valves have now been re-packed.

However, during the turnaround it was discovered that further work was required. HRSG-A had a full overhaul. The remaining valves will undertake a full overhaul in the turnaround period in 2022.

Furthermore, the maintenance program has been amended to include all valves as part of the CHP Integration program. The 60bar and 10bar valves have been included in the maintenance programs within SAP as part of the 10-year maintenance plan. The high-pressure valves are the main priority and will be overhauled on a yearly basis. The 10 bar valves will be subjected to a 3 to 4-year overhaul depending on their accessibility. The valves were seen during the visit on the 16th November where no noise or other issues were noticed.

Fired (HP) Boiler Update:

It was agreed in CAR_NRW0037553 that the HP boiler could operate in excess of the Annex V NOx ELV for 8-11 weeks after 1 July 2020. This was agreed because of delayed upgrading and statutory inspection works as a result of Covid-19 restrictions. As a result, a suspended score was applied. The restrictions resulting from Covid-19 are continuing and so the fired boiler has continued to be operated, intermittently, under this agreement, while statutory inspections of the HRSG-A are continuing. It is anticipated that the statutory inspections will conclude in early December. During commissioning of the two new NOx burners there were flame stability issues experienced. Consequently, Dow were only able to undertake safe commissioning work up to 28MW out of maximum 69MW. Dow are waiting for HRSG A inspections to finish then they will have enough steam generation flexibility so that they can run the fired boiler to its maximum range. Therefore, allowing them to invite the systems engineers to attend the site to fine tune the burners to generate the desired NOx emissions. It is anticipated that this work will be concluded by mid-January.

ACTION: Dow Silicones to provide a further update on upgrading and commissioning progress at next compliance meeting.

Packaged boiler

The use of the packaged boiler was granted for short term use in the previous CAR Form. The use of the boiler was a result of Covid-19 restrictions affecting the statutory inspections of HRSG- A and B. As of November 2021, the packaged boiler is no longer being utilised, but it remains on the Dow site. It ran for 5 hours in total, including its commissioning period. It was kept pressurised during the most recent turnaround but was not utilised for steam generation. Should it be required then Dow's management of change document would require a further review. However, with HRSG-A due back and with shell boilers available the likelihood it will be required is significantly low. During commissioning noise and emission data was collated for the longest operational run on the boiler (27/7 05:30 to 27/7 22:00). The plot shows no significant noise levels with only two short incidents over 75dB. During this period, emissions data was obtained that showed a maximum NOx level of 55ppm which is around 113 mg/m³ which is over the 100mg/m³ limit for MCP's. The temporary boiler was seen during the site visit on the 16th November 2021. The boiler was not running at the time and was due to be decommission in the near future.

Monitoring Returns

Monitoring Returns for Q2 were received on the 21st July 2021. The returns for each emission point were within the limits with the exception of A2. It was agreed in CAR_NRW0037553, as a result of covid-19 restrictions, that the HP (fired) boiler could operate in excess of the Annex V NOx ELV's for 8-11 weeks after 1 July 2020. This 8-11 week period is measured in hours and is only counted when the fired boiler operates over 25Te/Hr. As of the 16th November there were approximately 219.5 hours remaining. There were 20 invalid days reported for Q2 for A1 (HRSG A). This is a minor breach of permit condition 3.6.2. and so a category 4 **non-compliance** is awarded. If more than 10 invalid days occur in a year then Permit Condition 3.6.2 requires the operator to review the causes of the invalidations and submit to Natural Resources Wales

for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures. Following an investigation DOW reported the following:

“The sensor function with two outputs, a red and a blue and it was noticed that the oxygen cell blue had zeroed however, the readings on the system were correct and so it wasn’t considered an issue for the system at this time and we could troubleshoot it when we weren’t resource constrained (numerous holidays over the last few weeks). The signal was traced back to the control room and there seems to be an issue with the output if one of the signals has an issue i.e. the output from the analyser to the Ethos will have an issue if one of the signals has a fault but the local display won’t have an issue. This is not something we were aware of previously. Both the CO and oxygen sensors have now been replaced and it seems to be performing correctly. The reason for the sporadic interruptions are still unknown but it might be an indication that the sensors were on the way out and is something that is worth monitoring in the future.”

During the MS Teams meeting on the 10th November 2021, Dow stated that they are planning to add additional Tags to their PI system so that they can get a real time update if and when they record an invalid day. This is a vast improvement on the old method where they weren’t aware of invalid days until the end of a quarter.

Following on from CAR_NRW0038381. A detailed review of the NOx mass emissions calculations, including how Envirosoft calculates the LCP mass emissions was required, since plants with CEMs and variable loads should usually use a more sophisticated mass emissions calculation approach.

Since this CAR Form was issued, Dow have spoken with Envirosoft and undertook an investigation on how the LCP report for mass emissions is calculated. This was discussed during the MS Teams meeting held on the 10th November between NRW and Dow.

There are still a number of things that Dow need to check, these include:

- How Envirosoft creates the LCP report, Envirosoft uses mg/m^3 to create 10minute/30minute and hourly averages and these are used to create 24 hour averages. Dow were not certain on how they are applied for the LCP report.
- Dow need to check that the fired boiler is using an oxygen concentration of 3 not 15.
- Dow found the Tag for air flow up the stack, which is measured when above the minimum threshold loads. Dow have asked Envirosoft if this air flow is used all the time or only when the LCP is above the threshold.
- Dow to investigate if the flow factors are correct.

Action: Following the successful commissioning of the fired boiler, Dow will need to review QAL3 control chart limits due to the lower emissions following the upgrades to the this boiler and the GT’s.

Q3 Monitoring Returns

The Q3 monitoring returns for A1,A2 and A3 were received on the 29th October 2021. The new ELV’s for the gas turbines have come into effect following the submission of IC7 on the 9th November 2021. The results for A1 and A3 are within the ELV’s. The results for A2 the fired boiler are still over the ELV but have halved during this period. As mentioned previously in CAR_NRW0037553 this has been granted for a limited time while the upgrades to the plant are completed.

IC7:

The response for improvement condition 7 (IC7) was received on the 9th November. The operator was requested to submit a written post-commissioning report to Natural Resources Wales for approval. The report shall confirm the commissioning completion date for each gas turbine conversion to DLN firing. The report shall also state the emission reductions achieved and relevant performance parameters under the full

range of operating scenarios, including, but not limited to:

- noise levels associated with commissioning activities and routine start up and operation
- start up, shut down thresholds and effective DLN threshold.
- thermal performance
- CEMs performance
- NOx emissions, including NO:NO2 ratio
- CO emissions

The report has satisfied the requirements stated above except for start-up, shut down thresholds and effective DLN threshold and CEMS performance. The report is incomplete in certain sections.

Action: Please review the responses for these two sections and re-submit any missing information.

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.