

Compliance Assessment Report CAR_NRW0042016

Permit being assessed: BS6149IQ.

For: Pencoed Rockwool EPR/BS6149IQ, **held by:** Rockwool Ltd

At: Rockwool Ltd , Bridgend , Mid Glamorgan , CF35 6NY.

Type of assessment: Site Inspection,

Reason: Routine.

On: 17/04/2023 between 10:00 and 14:00.

Parts of permit assessed: Emissions, monitoring, abatement, waste, reporting.

NRW Lead Officer: Antony Leakey, accompanied by Kelly Sherratt.

Report sent to: Samuel Brookes, Environmental Manager, on 22/06/2023.

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

Part of permitted activity assessed (compliance criteria)	Assessment result	Permit condition
IR1A - Management - General management	C3 Minor	1.1.1
IR1E - Management - Avoidance, recovery and disposal of wastes produced by the activities	Assessed (A)	
IR3A - Emissions and monitoring - Emissions to water, air or land	C3 Minor	3.1.2
IR3A - Emissions and monitoring - Emissions to water, air or land	C3 Minor	3.1.2
IR3A - Emissions and monitoring - Emissions to water, air or land	C4 No impact	3.1.2
IR3B - Emissions and monitoring - Emissions of substances not controlled by emission limits	Assessed (A)	
IR3E - 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
4	12.1

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
IR1A	Rockwool to review critical valves and dampers maintenance frequency and emergency venting prevention measures and submit proposals for improvements by 30 September 2023.	30/09/2023
IR3A	Rockwool to review critical valves and dampers maintenance frequency and emergency venting prevention measures and submit proposals for improvements by 30 September 2023.	30/09/2023
IR3A	Review bag filter and combustion system inspection regime.	30/09/2023
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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.

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

Rockwool Limited Site inspection 17 April 2023, emissions and reporting review June 2023			
Summary of previous CAR action status			
Permit condition	Action summary	Due date	Action status
4.3.1	Review and update of reporting procedures	31/3/23	Complete. Work Instruction 15 updated to include immediate notification when appropriate.
1.1.1	Review of the ducting deep clean down regime.	31/3/23	Ongoing. Follow up after stack inspection during summer shutdown.
1.1.1	Review management of change process	31/3/23	Ongoing. Follow up at next compliance review.

3.1.2	Review DAHS and CEMs data reporting	31/3/23	Complete. DAHS commissioning underway before reporting commences.
3.1.2	Review ammonia emissions control and abatement options.	31/3/23	Ongoing. Improvement condition to be added via varied permit.
3.5.5	CEMs performance against specified CIs	Ongoing	Ongoing – carried forward to OMA
3.5.1	Reporting to EN 17255	Ongoing	Implementation through DAHS replacement
3.1.2	Line 3 SO ₂ abatement – APCR disposal	Ongoing	Commissioning in progress and variation application submitted.
2.3.4	Pit slag recovery	Ongoing	Quarterly updates to be provided
n/a	Submit nitrous oxide mass emissions calculation methodology.	31/3/23	Complete. Emissions factors are correlated with afterburner (AB) operating temperature. Follow up intervention required to review cupola and curing oven AB operating regimes.
n/a	PSA carbon capture trial	Ongoing	Update on trial outcome required.
3.1.2	A12 abatement review	Ongoing	Maintenance works undertaken in 2021 and further inspection planned Christmas 2022. Follow up required on thermal oxidiser unit maintenance regime.
3.5.1	Review surface water discharge monitoring.	Complete.	OMA actions implemented. Follow up at next OMA.
n/a	Review waste reporting terminology.	Complete.	

Line 3 filter house fire investigation

Environmental Work Instruction 15 (“NRW Notification of Environmental Incident / Breakdown or Breach of Limit”) has been updated to ensure appropriate notifications are received to the required timescales. Section 3.2.3 appears to list “standard” uncertainty values for water discharge parameters, however, these would normally be expected to be sample and result-specific and could vary for each set of results, so reliance on standard fixed uncertainty may result in incorrect decisions being made regarding compliance. In any

case values over the limit but within the result uncertainty budget should still be reported because they are still potentially not in compliance with the ELV.

Stack clean is also scheduled as part of the periodic ducting and filter cleaning arrangements. Findings from the next stack clean down will inform efficacy of interim duct and filter cleaning frequency.

Action: Rockwool to provide report and update on stack cleanliness at next compliance meeting.

Process water system – ammonium sulphate leak

The location of the ammonium sulphate leak was visited on 17/4/23. The leak was into the tank bund and was contained but the bund was pumped out into the process water system without checks for contamination being made.

The cause of the failed gasket is also uncertain but is likely to relate to the age of the plant and the potential lack of an aging plant management regime.

Action required by 31 December 2023:

Rockwool to provide bund water accumulation management procedure and confirm training of relevant staff in use of the procedure.

Rockwool to provide details of aging plant management strategy and priority list of environmentally critical plant and equipment requiring integrity management.

Ammonia emissions reduction

A review of current emissions provided by Rockwool confirms that around a 70% reduction in ammonia emissions is required to prevent predicted exceedance of the critical level and nutrient nitrogen critical load at the nearby Brynna a Wern Tarw SSSI. The spinning chamber emissions contribute approximately 80% of the total site releases.

Historic ammonia monitoring and the modelling work already provide evidence that ammonia releases from Rockwool are contributing significantly to critical level and load exceedance at the SSSI.

A recent oak twig lichen scoping survey undertaken by NRW conservation specialists on 16/5/23 appears to reinforce the predicted environmental ammonia levels at the SSSI. A formal survey using the full lichen assessment methodology is planned and the results will be published.

Current grazing practices appear to be managing the impacts on the SSSI features, although this will need verification through *Succisa* abundance/size monitoring, alongside a more detailed lichen survey and possible further ammonia in ambient air monitoring.

NRW will provide Rockwool with a scope and specification for a SSSI features survey for further discussion and agreement.

Significant investment and process changes are required to reduce ammonia emissions and work to identify the most effective strategy is still in progress.

Rockwool has committed to the following improvement programme:

- Trial ammonia reduction in binder by a further 12%. Trial planned for Q3 2023.
- An ammonia jet scrubber abatement approach that recovers ammonium sulphate for reuse in the binder is due to be commissioned at a sister plant in Europe. If successful Rockwool will implement the technology in Wales on Line 3 spinning exhaust.
- Participate in an alternative binder trial when a potential formulation is available that does not require ammonia.

NRW will formalise the programme by incorporating an improvement condition into the permit as part of the current application to operate sulphur dioxide abatement and trial recycling of a wider range of Rockwool products:

A written report shall be submitted to Natural Resources Wales for approval. The report shall describe progress with development and implementation of ammonia emissions reductions to air and the predicted or monitored improvement in process contribution at the Brynna a Wern Tarw SSSI. Further reports shall be submitted annually, subject to review following implementation of emissions reductions, and until notified in writing by Natural Resources Wales.

First report to be submitted by 31 December 2023.

CEMs quality assurance

Rockwool is currently commissioning an MCERTS DAHS and this will enable more rigorous implementation of QA processes without the need for significant staff resources. NRW will audit CEM reliability and emissions data QA arrangements in detail as part of an Operator Monitoring Assessment when the new DAHS is fully operational.

There remains an outstanding action to implement a management of change process for hardware, software, and process modifications. NRW understands that an ongoing quality management system review will seek to address this.

Action: Rockwool to provide periodic updates on implementation of a management of change process.

SO₂ emissions abatement

Application is now in determination and a draft variation notice will be issued for comments.

The continued monitoring of ambient air concentrations of sulphur dioxide around the installation needs to be reviewed given the expected reduction in emissions following commissioning of the abatement.

Action: Rockwool to provide a data summary of ambient sulphur dioxide concentrations, including historic data, and proposals for changes to the monitoring

programme, including justification for any proposal to discontinue monitoring.Pit slag legacy stock

The slag stockpile was visited and seen to be reducing. 9,424 tonnes of pit material were removed to landfill construction during Q1 2023. Dust management may become an issue in drier and windier weather conditions.

Complaints and incident review

Date	Release point	Pollutant	Cause/action required	Permit non-compliance
4/6/23	Line 3 A19	CO ELV exceeded	Cupola high pressure – early shut down for bag filter and combustion system inspection required	3.1.2, cat. 4
4/6/23	Line 3 A19	Dust ELV exceeded	As above	3.1.2, cat. 3
11/5/23	Line 3 A19	CO ELV invalid day	Start up and shutdown peaks. CEM data capture criteria need review.	n/a
9/5/23	Line 2 A2	NOx ELV exceeded	TC17 failed open, cupola surge	3.1.2, cat. 3
25 & 26/4/23	Line 3 A19	Dust ELV invalid days	Dust contamination on fly ash filter bags (40/41 valid ½ hour means)	n/a
22/4/23	Line 2 A2	All invalid day	CEM power loss	n/a
14/4/23	Line 2 A2	NOx ELV invalid day	Coke quality issue. Coke blending in place to mitigate.	n/a
12/4/23	Line 2 A2	NOx & CO ELV invalid day	Start up and shutdown peaks. Coke quality issue.	n/a
11/4/23	Line 2 A2	NOx & dust ELV invalid day	Coke quality issue. Coke blending in place to mitigate.	n/a
27/3/23	Line 2 A17	CO, cupola vent explosion	Emergency bypass system valve failure allowing air ingress.	1.1.1, cat. 3
24/1/23	Plume grounding complaint	Ground level smoke and sulphuric odour	Normal operation. High humidity and cold calm weather conditions.	n/a

A small explosion occurred in the cupola emergency vent system (release point A17) on line 2 on 27 March. There was no damage to the plant and the event was not reportable to Health & Safety Executive under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013.

The automatic vent system protects the furnace and downstream afterburner system against over-pressure by venting furnace gas directly to atmosphere, bypassing the abatement.

This bypass is routine and permitted. The minor vent explosion was caused by air ingress when a valve in the system failed to close and allowed air to back feed from the afterburner system. There appears to be no reason for there to be greater environmental impact (or harm to onsite personnel) from the explosion in the vent, than from “normal” bypass operation, due to the limited inventory of carbon monoxide in the vent system.

There is potential for noise, odour, or dust complaints, although none were received on this occasion.

This event did not require a formal schedule 5 notification, although informing the regulator of such events immediately is required in case noise, odour, or dust complaints are made.

There have been other events associated with valve/damper failures over the last 12 months or more and previous actions to review maintenance and system design do not appear to have reduced the frequency of these events.

Consequently, a cat 3 non-compliance with permit condition 1.1.1 for maintenance management failure is appropriate and a formal written response to the following action is required.

Action: Rockwool to review critical valves and dampers maintenance frequency and emergency venting prevention measures and submit proposals for improvements by 30 September 2023.

Emissions review

Pollution inventory (E-PRTR) reporting indicates high annual releases (>80 tonnes in 2022) of nitrous oxide (N₂O). The Rockwool calculation methodology was reviewed. The N₂O emissions calculation methodology is based upon correlation with key process variables (primarily temperatures) and raw material throughput/binder loading. This seems appropriate, although the base data used to derive the correlations has not been examined to check that the methodology is statistically representative of the Pencoed operation. This will be examined as part of a future OMA.

Monitoring data for Q4, half year and annual report for 2022 have been reviewed and no breach of permit conditions was identified other than those already identified and discussed in this report.

Water Operator Monitoring Assessment (OMA) follow up

The sample integrity and procedural aspects have been addressed and are detailed in “NC8 Water OMA Actions” document. Implementation will be verified at next OMA.

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.

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 – Emissions to water, air or 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.

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 to 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.