

Compliance Assessment Report CAR_NRW0039274

Permit being assessed: LP3030XA.

For: Cardiff Energy Recovery Facility, held by Viridor Trident Park Limited

At: Trident Park, Glass Avenue, Cardiff, CF24 5EN.

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

On 31/12/2021.

Parts of permit assessed: Emissions control, waste assessment, efficiency, monitoring, reporting and emissions

NRW Lead Officer: Antony Leakey.

Report sent to: Gwyn Jones, EHS Manager on 03/02/2022.

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

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
C2 - General Management - Management system and operating procedures	C4 No impact	2.3.6
E1 - Emissions - Air	C3 Minor	3.1.2
C2 - General Management - Management system and operating procedures	C3 Minor	1.1.1
E1 - Emissions - Air	C3 Minor	3.1.2
C2 - General Management - Management system and operating procedures	C3 Minor	1.1.1
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	C4 No impact	4.2.2
E3 - Emissions - Surface water	Assessed (A)	
E5 - Emissions - Waste	Assessed (A)	
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	Assessed (A)	
H2 - Resource Efficiency - Energy efficiency	Assessed (A)	
H1 - Resource Efficiency - Efficient use of raw materials	Assessed (A)	

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

Total number of non-compliances recorded	Total non-compliance score
6	16.2

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
C2	Viridor to review cause of the CEM computer communications fault, implementation of measures taken to prevent a recurrence and provide an update at next review meeting.	03/03/2022
E1	Viridor to review the event, identify learning points and provide an update at next review meeting.	03/03/2022
C2	Viridor to review the event, identify learning points and provide an update at next review meeting.	03/03/2022
E1	Viridor to review operating procedures for operators when dealing with problem wastes in the bunker and provide an update on any identified improvements at next review meeting.	03/03/2022
C2	Viridor to review operating procedures for operators when dealing with problem wastes in the bunker and provide an update on any identified improvements at next review meeting.	03/03/2022
G4	Viridor to review annual report and provide updated version as required.	03/03/2022

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.

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

Trident Park Reporting Review and Compliance Assessment - 31 December 2021

Power loss incident 4/1/21

The site suffered a total power loss at 0136h on 4/1/21 resulting from an internal loss of supply to the HV and LV distribution boards.

Viridor has commenced a review of the DCS alarm priority levels based on design intent and experience of operating the facility since commissioning. NRW understands that the work stream has been incorporated into the Viridor continuous improvement plan and it is estimated that this review will take around 12 months to complete. A Local Management Instruction (LMI) for Notifications to NRW has now also been established and rolled out to operating personnel. The Notification LMI has been reviewed by NRW and covers the main

aspects required to ensure compliance with permit conditions relating to notifications. Implementation will be verified at the next site inspection.

Viridor also undertook to produce a technical anonymised “lessons learned” document that could be shared with other regulators and operators to raise awareness of the power supply configuration and alarm issues that led to this event.

ACTION: Viridor to provide a lessons learned document and an update on DCS alarm priority level and design intent review progress at next review meeting.

IBA assessment

The site-specific sampling protocol ERF-TPK-SOP-OPS-912, dated 11/02/2021 was compared with the ESA IBA Protocol and broadly follows the sampling methodology outlined. However, the randomisation of the sampling date/day is not addressed by the site-specific protocol.

ACTION: Viridor to review how randomisation of the sampling date and time is achieved and update at next review meeting.

Combustion and efficiency control

Viridor has implemented the recommendations from the Martin optimisation reports to improve control of tramp air ingress and grate coverage. Further guidance and training have been provided to the operations team on fuel bed thickness and waste mixing. The feed chutes on both lines were replaced during the 2020 outage and revised instructions have been issued to the operations team to minimise the risk of feed chute fires.

ACTION: Viridor to provide a copy of the next Martin combustion system inspection report when available.

CEMs QAL2 reset

A review of the QAL2 latest reports has identified the following aspects for clarification:

- Documentation of QAL3 failures, deviations for stabilisation approach and linearity tests
- QAL2 function gradients <0.9 for some pollutants (e.g. HCl, SO₂)
- Low valid calibration ranges
- Low level cluster failure for dust

ACTION: Viridor to review these issues and provide an update on progress at next review meeting.

Wind speed and direction monitoring requirement

Trident Park ERF does have a weather station. However, the data obtained is limited due to the topography and surrounding built environment. Viridor plans to upgrade the system.

ACTION: Viridor to review provision of an upgraded onsite weather station, time scale and update at next review meeting.

Nitrous oxide, carbon dioxide and flue gas flow rate monitoring

NRW has adopted the Environment Agency requirement for voluntary monitoring of these parameters to EN14181/16911 standard by 2022.

The Trident Park CEM system already captures the data for N₂O, CO₂ and flue gas flow rate. These instruments will be calibrated at the next available opportunity, which is expected to be the next QAL2 round or AST.

Please note that NRW has proposed adoption of the Environment Agency guidance for PRTR 2021 reporting:

Reporting of emissions of total carbon dioxide, nitrous oxide and carbon dioxide from qualifying renewable fuel sources in the Pollution Inventory

ACTION: Viridor to follow EA PI reporting guidance for 2021 reporting if possible and confirm calibration timescale and update at next review meeting.

Waste Incineration Bref Review

The permit review process has started and NRW has undertaken a preliminary review of the Viridor Regulation 61 information notice response.

It is noted that further data submission is required to justify the continued use of periodic monitoring rather than continuous monitoring for dioxin and mercury.

Any requests for further information will be made by the NRW permitting team after detailed assessment has started in April 2022.

CHP review - permit condition 1.2.3

The next 2-yearly response was due in May 2021 and was received on 31 January 2022. The report provides a summary update of progress in discussions with Cardiff Council on supply of heat to the proposed district heat network initial phase which will serve local and Welsh Government buildings and facilities. The current expected timeframe for implementation is 2 years.

ACTION: Viridor to provide progress updates in future annual reports.

R1 Assessment, including boiler efficiency revalidation

The 5-year boiler efficiency revalidation was undertaken using the methodology developed by Ricardo for the Environment Agency. Basic sensitivity calculations using real plant data were undertaken to verify the revalidation data and confirmed that the key data were correct. Some minor errors/deviations were identified in the first version of the report:

- Minor numeric errors in the report, CO NCV incorrect.
- The biggest deviation from the methodology was the use of a lower (0.8%) estimate

of heat losses from radiation, convection, and cooling, Q_{St} , compared to the recommended 3% of maximum useful heat output, Q_N . This results in a slightly higher efficiency value of 86.8% compared to 84.7%). The lower Q_{St} value appears to be based upon the original FDBR-Guideline RL7 BAC performance test value, although this is not justified further in the report.

- Nevertheless, the 2% difference in boiler efficiency makes limited difference to final R1 energy recovery factor, which will still be well over the target value regardless of which efficiency value is used.

Calibration details are only provided for steam temperature and pressure measurements. Error ranges have been increased for flow and concentration measurements to address this, although this approach is not set out in the methodology and the lack of calibration history (even original as supplied) is not justified.

Not all the source process data are provided in the report (only steam flow and pressure stability demonstration), with summary values provided in the calculation sections. There appear to be differences in key data values between the 5-year revalidation and the original performance test, e.g., boiler flue gas outlet temperature lower for 5-year revalidation (~180°C vs. 206°C).

Given the relative insensitivity of the final R1 energy recovery factor to these issues, they will be addressed when the next R1 assessments (2020 and 2021) are evaluated. The 2019 R1 assessment will be confirmed at the same time due to the following outstanding queries:

- Please provide boiler revalidation flue gas flow and temperature source data.

The main data changes contributing to the increase in R1 value year on year are an increase in net electricity export and a reduction in support fuel use.

- Please provide an explanation for the performance changes and the fuel oil flow meter calibration certificate or other verification means for fuel oil usage.
- Please provide confirmation that superheated steam flows are measured after the superheater and before any de-superheating and provide flow meter calibration details.
- Please provide confirmation that boiler feedwater flows are measured after deaeration and feedwater heating and provide flow meter calibration details.

ACTION: Viridor to provide details requested above to enable confirmation of the 2019, 2020 and 2021 R1 values.

Incident review

6/8/21 – small fire in the tipping hall bulky bay involving an old oil drum, which may have been used as a fire pit or similar prior to disposal while still containing hot embers or ash. Small volume of firewater generated in tackling the fire was fully contained. Building sprinkler system was not activated contrary to the statement in the Schedule 5 notification. Viridor have discussed the issue with Cardiff Council material recovery facility where the drum

originated, to improve waste screening checks. Thermal imaging of the bulky bay and waste bunker linked to the automatic deluge system is also in place to enable early detection of hot spots to prevent escalation to large fires if the initial smoulder is not detected by personnel. No further action required.

12/9/21 – CEM loss on line 2 due to computer communications failure during period when back up CEM was reporting for line 1. If CEMs for particulates, TOC and/or CO are unavailable waste feed must cease, unless alternative techniques to demonstrate compliance have been agreed and are available. Alternative techniques to demonstrate compliance were not available in this case as the standby CEM was already in use on line 1.

The concurrent TOC data do suggest that CO levels will be very low at the time of the missing data, and process data (T2S temperature measurements, furnace oxygen levels) support this. However, the missing CO data cannot be discounted as the percentile compliance data set is not met for the 24-hour period that includes the Abnormal Operation loss of CEMs, due to more than 7 x 10-minute averages being missing. The CO daily average value may be invalid on this basis.

ACTION: Viridor to review possible CO invalid day and provide an update at next review meeting.

A reduction in waste load to mitigate loss of combustion emissions measurement was undertaken, the event relates to potential CO non-compliance and therefore the incident is a no impact potential (category 4) non-compliance with permit condition 2.3.6 requiring waste charging to cease if ELV compliance monitoring results are unavailable, unless covered by Abnormal Operation provisions.

ACTION: Viridor to review cause of the CEM computer communications fault, implementation of measures taken to prevent a recurrence and provide an update at next review meeting.

31/10/21 – offsite power loss resulting in VOC 30-minute average ELV exceedance of 29.7 mg/Nm³ against the limit of 20 mg/Nm³. This is a minor impact actual and potential (category 3) non-compliance with permit condition 3.1.2 because the original air dispersion modelling report for the facility demonstrates that even at this elevated release level the short-term air quality impacts are not significant. There are no long-term impacts associated with this incident due to the short duration of the increase in emissions. Short term combustion instability during recovery of line 2 from the power loss caused the elevated VOC emissions. Viridor will review the event to identify any learning points for future events.

The recovery procedures will need to address the potential for combustion instability and provide mitigation. This procedural shortfall is a minor impact actual and potential (category 3) non-compliance with permit condition 1.1.1 as the scope for significant impact is limited by the limited expected duration of any event.

ACTION: Viridor to review the event, identify learning points and provide an update at next review meeting.

20/12/21 – increase in HCl emissions resulting in 30-minute average ELV exceedance of

72.5 mg/Nm³ against the limit of 60 mg/Nm³. This is a minor impact actual and potential (category 3) non-compliance with permit condition 3.1.2 because the original air dispersion modelling report for the facility demonstrates that even at this elevated release level the short-term air quality impacts are not significant. There are no long-term impacts associated with this incident due to the short duration of the increase in emissions. The immediate cause was high plastic content waste entering the feed hopper despite attempts to mix it up. Boiler load was reduced, and standby abatement feed started to compensate, however, this could have been done proactively as a precaution as soon as the material was placed in the hopper.

The procedures for dealing with problem wastes in the bunker will need to address the potential for increased pollutant loads and provide proactive mitigation where possible. This procedural shortfall is a minor impact actual and potential (category 3) non-compliance with permit condition 1.1.1 as the scope for significant impact is limited by the limited maximum credible duration of any event.

ACTION: Viridor to review operating procedures for operators when dealing with problem wastes in the bunker and provide an update on any identified improvements at next review meeting.

Emissions review

The Line 1 30-minute average VOC ELV was exceeded on 23 January 2021 shortly after start-up following a first pass tube leak. This non-compliance was previously addressed in CAR_NRW0038548. Corrective actions have been put in place to prevent a re-occurrence including a review and update to the boiler start up procedure and of how first pass tube leaks are managed.

In collaboration with A1-CBISS, the CEMs service and data contractor, Viridor has now set up a computer programme that allows CEMS reports to be automatically generated and e-mailed to key personnel (including smart phones), to ensure that reporting failures are not missed. This programme went live on Wednesday 27 October 2021. A1-CBISS have also uploaded 2 new emissions templates (quarterly report and an annual report) that will assist in the accurate production of reports. Emissions review processes have been enhanced for both normal office hours and during night and weekend shift work. It is expected that the LMI mentioned above (Notifications to NRW) will complement the internal emissions review process.

2021 annual report was not received by 31/1/22 and no prior agreement was made for late submission. This is a category 4 administrative non-compliance with permit condition 4.2.2.

The 2021 annual report will need updating to reflect the further non-compliances identified in this report. There are also minor errors or omissions relating to the 95%ile 10-minute average CO ELV, which is 150 not 100 mg/Nm³, invalid data days, abnormal operation hours and the provisional R1 value for 2021 is not included.

ACTION: Viridor to review annual report and provide updated version as required.

Q3 and Q4 2021 and annual reporting has been assessed. All emissions and reports other than the specific cases discussed in this report are compliant with the permit conditions and

limits.

Reporting now uses the DAHS generated format, however, it should not be necessary to print, date, sign and rescan the monthly emission reports produced by the DAHS. Please investigate if it is possible to export the data and plots in an Excel spreadsheet format for review, electronic signature and date can then be inserted once verified as correct, converted to PDF format and submitted to NRW for assessment and uploading to the public register in an easily readable format. The current scanned format is not easily readable.

ACTION: Viridor to investigate and ensure that the next submissions are suitable.

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.