

Compliance Assessment Report CAR_NRW0041088

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 30/12/2022 between 09:00 and 17:00.

Parts of permit assessed: Emissions, monitoring and reporting

NRW Lead Officer: Antony Leakey.

Report sent to: Gwyn Jones, EHS Manager on 06/02/2023.

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

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
B5 - Infrastructure - Plant and equipment	Assessed (A)	
C2 - General Management - Management system and operating procedures	C3 Minor	1.1.1
E1 - Emissions - Air	C3 Minor	3.2.1
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)	
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	Assessed (A)	
H1 - Resource Efficiency - Efficient use of raw materials	Assessed (A)	
H2 - Resource Efficiency - Energy efficiency	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
2	8

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 the event, identify learning points and provide an update at next compliance review meeting 2/3/23.	02/03/2023
E1	Viridor to review the event, identify learning points and provide an update at next compliance review meeting 2/3/23.	02/03/2023

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 2022			
Summary of previous CAR action status			
Permit condition	Action summary	Due date	Action status
1.1.1	Power loss incident 4/1/21: Produce lessons learned document and undertake DCS alarm priority level and design intent review.	31/12/22	Complete
4.3.1	Review of reporting procedures	31/12/22	Complete, Local Management Instruction (LMI) for Notifications to NRW implementation to be verified at next inspection.
n/a	Compliance with ESA IBA Protocol	31/12/22	Complete, randomisation of the sampling date/day is now addressed by the site-specific protocol. Implementation to be verified at next inspection.
n/a	12/9/21 – CEM loss on line 2 due to comms failure review possible CO invalid daily average	31/12/22	Complete. Viridor confirmed daily average was valid.
3.1.2	31/10/21 & 20/12/21 - learning points and procedural reviews completed.	31/12/22	Complete

4.2.2	Updated version of 2021 annual report provided.	31/12/22	Complete
-------	-------------------------------------------------	----------	----------

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 completed a review of the DCS alarm priority levels based on design intent and experience of operating the facility since commissioning. Operating personnel refresher training on upset conditions flagged by high priority alarms has not been undertaken recently.

ACTION: Viridor to review operator training requirements and provide NRW with an update at next compliance meeting.

IBA assessment

The site-specific sampling protocol ERF-TPK-SOP-OPS-912 now includes randomisation of the sampling date/day. This will be verified at the next opportunity.

Combustion and efficiency control

The latest Martin optimisation report following the 2022 outage was reviewed.

NRW notes that there is increased reliance on online cleaning due to poor efficiency of the installed cleaning systems. Online cleaning was observed during a visit to the plant on 14/9/22. Minimal effect on emissions occurs because the unit load is reduced when the explosive cleaning charges are detonated.

Recommendations were also made to replace wet oxygen measurement with dry measurement instruments to improve combustion stability, increase flue gas oxygen levels to reduce combustion temperatures and slagging, update software to improve reliability, house keeping around the dischargers, water wastage on the feed chute cooling jackets.

Tramp air ingress affecting primary combustion was again identified and the grate siftings flaps need to be cleaned and checked for leakage as a priority.

ACTION: Viridor to provide an update on actions taken at next compliance meeting and a copy of the latest Martin combustion system inspection report with each subsequent annual report.

CEMs QAL2 reset

The resulting QAL2 reports included the following issues for resolution:

- 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

These issues will now be examined during the next Operator Monitoring Assessment which is due in May 2023.

Wind speed and direction monitoring requirement

Discussions on improving the weather station location are continuing. Ideally this would be on the top of the main plant building away from interference from the stack and 10 metres clear of the roof. However, this will have access and cost implications. A trial location on elevated ground on the south-east corner of the installation is proposed and results will be reviewed against other local data sources.

ACTION: Viridor to review onsite weather station data after a trial period and update NRW at next review meeting.

Nitrous oxide, carbon dioxide and flue gas flow rate monitoring

Monitoring of these parameters to EN14181/16911 standards is now mandatory during 2023. QAL2/calibration details will be checked during the next Operator Monitoring Assessment which is due in May 2023.

Waste Incineration Bref Review

The reviewed permit was granted in December 2022. Progress towards outstanding BAT Conclusion compliance will be reviewed during 2023.

Energy efficiency, CHP, raw materials and waste reviews - permit conditions 1.2.1(b), 1.2.3, 1.3.1(c) and 1.4.2

The following reports were provided by Viridor upon request in demonstration of compliance with these permit conditions:

Energy Efficiency – review and action plan 2020-21 was examined. The plan is focused primarily on parasitic electricity usage and minimisation for ancillary plant and equipment. Future plans should consider a wider range of efficiency aspects such as flue gas flow rate and heat loss minimisation, heat recovery aspects including emerging techniques to maximise heat recovery such as heat pumps, mechanical vapour recompression and Organic Rankine Cycle. The report should also quantify improvements achieved to date and benchmark actual performance against appropriate best performance indicators.

CHP Report dated January 2022 – the report contains limited detail on progress with provision of connection to the Cardiff district heating network now under construction. Subsequent discussions with Viridor have established that steam bleed isolations will be installed during the next outage in June 2023 and detailed design work is underway for the onsite heat exchange station. Further details will be formalised and assessed through the improvement conditions (ref IC9 and IC10) recently incorporated into the revised permit following the Waste Incineration Bref Review.

Efficient use of raw materials action plan, May 2020 – water efficiency measures are mainly focused on domestic uses and consideration should be given to potentially larger process

inefficiencies such as cooling water loss (see Martin report comments above) and boiler feedwater make up rates. Again, quantification and benchmarking will ensure good demonstration that permit requirements and best practice are being met.

Avoidance, recovery and disposal of wastes – Recovery of Waste Report, May 2020 - quantification and benchmarking required.

ACTION: Viridor to include consideration of appropriate aspects of the recommendations above in future reports.

R1 Assessments, including 5-year boiler efficiency revalidation

Calibration details for the key flow meters and electricity meter specification have now been provided by Viridor along with the source process data.

This information is now sufficient to allow verification of the reported final R1 energy recovery factors for 2019, 2020 and 2021 as 0.78, 0.80 and 0.80 respectively.

The 5-year boiler revalidation test was previously accepted by NRW at 86.8%, although it is noted that recent calculated plant operating boiler efficiencies are in the range 84-85% (latest Martin Report), nevertheless these slightly lower values have limited impact on the reported R1 value.

Incident review

23/2/22 – line 1 feed hopper fire resulting in release of smoke from building. The feed chutes on both lines were replaced during the 2020 outage and revised instructions were issued to the operations team to minimise the risk of feed chute fires. However, on this occasion attempts to deal with the fire and blockage caused the plant to trip allowing smoke to escape from the building.

The fugitive release of smoke from the building is a minor impact (category 3) non-compliance with permit condition 3.2.1 (now 3.3.1) due to the limited potential for exceedance of the daily mean PM₁₀ Air Quality Standard because of the short duration of the event and limited scale of the release.

The Unit Emergency Plan (UEP) for feed hopper fires will need to address the potential for plan trips to be initiated and provide mitigation. This procedural shortfall is a minor actual and potential impact (category 3) non-compliance with permit condition 1.1.1 as the scope for significant impact is limited by the short duration of any event. Viridor will review the event to identify any learning points for future events.

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

29/7/22 – bunker fire following transfer of shredded bulky bay waste, possibly due to lithium-ion battery ignition. 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. Smoke was mostly contained by the primary air extraction system. No further action required.

Emissions review

10/7/22 – line 2 daily average HCl ELV marginally exceeded due to lime bridging in acid gas abatement system. Four elevated 30-minute average values were reported as Abnormal Operation to enable a compliant daily average to be reported. Boiler load reduction was insufficient on this occasion to mitigate the higher emissions while the blockage was cleared.

27/7/22 – line 2 daily average HCl ELV marginally exceeded due to lime bridging in acid gas abatement system. One elevated 30-minute average value were reported as Abnormal Operation to enable a compliant daily average to be reported.

ACTION: Viridor to review operating procedures for operators when dealing with lime blockages to establish if earlier or faster action can be taken to minimise emissions and update NRW at next compliance meeting.

The 2022 annual report still has some errors identified in the 2021 annual report including the 95%ile 10-minute average CO ELV, which is 150 not 100 mg/Nm³, no cross referencing of abnormal operation periods for HCl daily average ELV exceedance and the provisional R1 value for 2022 is not included.

ACTION: Viridor to update 2022 annual report to address these comments.

Q1, Q2, Q3 and Q4 2022 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.

Higher dioxin/furan/PCB levels are noted in the APCR and correspondingly lower air emissions for Line 2 compared to Line 1, although both lines were well within the ELV.

NO_x emissions continue to be compliant by virtue of subtraction of the confidence interval value for the CEMs. This will be addressed by the new improvement condition reference IC7 in the reviewed permit which seeks to minimise emissions.

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.