Environment Agency	**EPR Compliance Assessment Report**	Report ID: GP3305LN/0560124

This form will report compliance with your permit as determined by an Environment Agency officer

Site	Beddington ERF EPR/GP3305LN			Permit Ref	GP3305LN		
Operator/ Permit holder	Viridor South London Limited						
Date	4th June 2025			Time in		Out	
What parts of the permit were assessed	Monitoring of Oxides of Nitrogen to Air						
Assessment	Audit	EPR Activity:	Installation X	Waste Op		Water Discharge	
Recipient's name/position	Technical Compliance Lead ; Company Director						
Officer's name	[redacted], [redacted]			Date issued	19th June 2025		

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations (EPR). A detailed explanation and any action you may need to take are given in the Detailed Assessment of Compliance (section 2) and the Actions (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit Conditions and Compliance Summary				**Condition(s) breached**
a) Permitted activities	**1**. Specified by permit	N		
b) Infrastructure	**1.** Engineering for prevention & control of pollution	N		
	2. Closure & decommissioning	N		
	3. Site drainage engineering (clean & foul)	N		
	4. Containment of stored materials	N		
	5. Plant and equipment	N		
c) General management	**1**. Staff competency/ training	N		
	2. Management system & operating procedures	C2		1.1.1
	3. Materials acceptance	N		
	4. Storage handling, labelling, segregation	N		
d) Incident management	**1**. Site security	N		
	2. Accident, emergency & incident planning	N		
In Line e) Emissions	**1.** Air	C3		3.2.1(a) for Q3 2022 in Line 1
	1. Air	C3		3.2.1(a) for Q3 2022 in Line 2
	1. Air	C3		3.2.1(a) for Q4 2022 in Line 1
	1. Air	C3		3.2.1(a) for Q4 2022 in Line 2
	1. Air	C3		3.2.1(a) for Q1 2023 in Line 1
	1. Air	C3		3.2.1(a) for Q1 2023 in Line 2
	1. Air	C3		3.2.1(a) for Q2 2023 in Line 1
	1. Air	C3		3.2.1(a) for Q2 2023 in Line 2
	1. Air	C3		3.2.1(a) for Q3 2023 in Line 1
	1. Air	C3		3.2.1(a) for Q3 2023 in Line 2
	1. Air	C3		3.2.1(a) for Q4 2023 in Line 1
	1. Air	C3		3.2.1(a) for Q4 2023 in Line 2
	1. Air	C3		3.2.1(a) for Q1 2024 in Line 1
	1. Air	C3		3.2.1(a) for Q1 2024 in Line 2
	2. Land & Groundwater	N		
	3. Surface water	N		
	4. Sewer	N		
	5. Waste	N		
f) Amenity	**1**. Odour	N		
	2. Noise	N		
	3. Dust/fibres/particulates & litter	N		
	4. Pests, birds & scavengers	N		
	5. Deposits on road	N		

g) Monitoring and records, maintenance and reporting	**1**. Monitoring of emissions & environment	C3		3.6.1
	2. Records of activity, site diary, journal & events	N		
	3. Maintenance records	N		
	4. Reporting & notification	N		
h) Resource efficiency	**1**. Efficient use of raw materials	N		
	2. Energy	N		

KEY: **C1, C2, C3, C4** = CCS breach category **(* suspended scores are marked with an asterisk),**
A = Assessed (no evidence of non-compliance), **N** = Not assessed, **NA** = Not Applicable, **O** = Ongoing non-compliance – not scored
MSA, **MSB**, **TCM** = Management System condition A, Management System Condition B and Technically Competent Manager condition which are environmental permit conditions from Part 3 of schedule9 EPR (see notes in Section 5/6).

Number of breaches recorded	**16**	**Total compliance score** (see section 5 for scoring scheme)	91

If the Total No Breaches is greater than zero, then please see Section 3 for details of our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with directly applicable legislation
- details of any multiple non-compliances
- information on the compliance score accrued inc. details of suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

This report should be clear, comprehensive, unambiguous and normally completed within 14 days of an assessment.

Background

This Compliance Assessment Report Form (CAR form) is the report and investigation into a calibration error at Beddington ERF.

On 19th March 2024, the Environment Agency received a notification from Viridor Beddington Energy Recovery Facility (ERF) pertaining to a potential calibration error relating to their Oxides of Nitrogen (NOx) Continuous Emission Monitors (CEMS). This notification was issued in line with Environmental Permit condition 4.3.1(b).

Viridor Beddington's permit requires the continuous measurement of total particulate matter (TPM), total organic carbon (TOC), hydrogen chloride (HCl), carbon monoxide (CO), sulphur dioxide (SO_2), oxides of nitrogen (NOx) expressed as nitrogen dioxide (NO_2), ammonia (NH_3), nitrous oxide (N_2O).

The notification stated that Beddington ERF had received information from Element, their contracted MCERTs test house, that there was an issue with the methodology used in their EN 14181 QAL2 calibration approach and this had affected the calibration functions derived for duty and standby NOx CEMs for both incineration lines. Beddington ERF stated that they were waiting for an official response from Element regarding the exact nature of the error and the potential impacts on the plant's historic CEMs readings for NOx.

A Schedule 5 Part A Notification was subsequently issued by Beddington ERF to the Environment Agency on 26th March 2024, in line with permit condition 4.3.1(b) of the Environmental Permit. This Schedule 5 Part A confirmed details of the original Notification and stated that Element had incorrectly derived a calibration function for NOx which was applied to the CEMs software following the 2022 QAL2.

A Schedule 5 Part B Notification along with other supporting documentation prepared by Viridor's consultants, Ricardo, was received on 29th July 2024. Supporting documentation included:

- Investigation of the NOx Measurement Report for: Viridor South London Ltd Ref. VSLL-007081 Ricardo ref: ED19936100
- Air Quality Assessment Report for Viridor Ref. VSLL-007081 Ricardo ref: ED19936

These reports were reviewed by the Environment Agency and our initial comments were included in Compliance Assessment Report (CAR) GP3305LN/0517739. Several corrections and updates to these documents have been made by Ricardo in response to CAR ref:0517739 and subsequent meetings with EA, Viridor and Ricardo to discuss the reports. The final issue of each report includes a 'version control' table which documents the

changes that have been made to each reissue of the reports. This information also includes details of the reason for the change.

The final version of the 'Investigation of the NOx Measurement Report' was Issue 7 Version 2 and was dated 18th February 2025 and received by the Environment Agency on 21st February 2025. The final version of 'Air Quality Assessment Report' was Issue 5 and was dated 11th February 2025 and received by the Environment Agency on 14th February 2025.

1.'Investigation of the NOx Measurement' Report (ref: ED19936100)

The final version of this report, submitted by Ricardo on behalf of Viridor includes details of the root cause investigation into the NOx calibration and measurement issue as well as the measures which have been put in place or are intended to be put in place by Viridor to prevent recurrence. The findings of this report are further discussed below:

1.1 NOx Calibration Function derivation:

Report ref: ED19936100 provides details of the error in the methodology used for deriving the NOx calibration function that was applied to the CEMs data acquisition and handling system (DAHS) software for incineration lines 1 and 2 for both duty and standby analysers for the period August 2022 to March 2024.

Environment Agency Technical Guidance Note M20 and EN14181:2014 provide details of how to derive a calibration function under Quality Assurance Level 2 (QAL2) using parallel measurements from CEM data and Standard Reference Measurements (SRM). It is the responsibility of the MCERTS test house to perform the SRMs for the QAL2 procedures and report the results specified for the QAL2 procedures. Test laboratories must be accredited to EN14181:2014.

The calibration function error applied over the period September 2022 to March 2024 was generated during the July 2022 QAL2 CEMs calibration, performed by Viridor's contractors Element, when following EN 14181.

On the 11th March 2024 Beddington ERF contacted Element because they had noted an increased requirement for urea dosing requirement used during NOx abatement following the application of a new calibration function. Element undertook an investigation, and it was determined that the NOx calibration function error had occurred during the July 2022 QAL2, and these incorrect functions had been applied during the above 18 month period. During the QAL2, an incorrect data correction value was applied to raw NO CEMs data when converting raw NO and NO_2 emissions data to generate raw NOx values. This error gave an overall calibration function that required the raw emission data to be multiplied by a factor that was less than one, which when applied to the CEM DAHS generated underreporting NOx emissions data.

The Environment Agency have reviewed the July 2022 QAL2 reports and can confirm that the error in the methodology for calculating raw NOx CEM values from raw NO and NO_2 CEM data would not have been visible to Beddington ERF when reviewing the reports. The calculation step to generate raw NOx values is not included in the QAL2 reports, and a recommendation has been made by the Environment Agency that all calculations used in deriving calibration functions under EN14181 are included in QAL2 reports to reduce the risk of this happening again.

1.2 NOx Emission Limit Exceedances

The Environment Agency instructed Viridor to carry out a full review of historic NOx data that was impacted by the calibration error.

Details of the review that was carried out are included in report ref: ED19936100. This report provides details of NOx emissions data re-evaluation for the period August 2022 to March 2024 following the generation of the correct NOx calibration functions by Element that should have been in place during this period.

The incorrect QAL 2 calibration functions resulted in lower NOx emissions being reported than what the actual emission should have been.

Beddington ERF processes waste in two incineration lines of a mass burn moving grate design, emissions from each line are monitored separately on a continuous basis.

Table 3-4 'Line 1 Exceedances' on page 11 of report ref: ED19936100 provides details of NOx ELV exceedances on Line 1 for every month in the period August 2022 to March 2024. In total, 457 exceedances of Daily NOx ELV were identified for Line 1 following the emissions data re-evaluation.

Table 3-5 'Line 2 Exceedances' on page 12 of report ref: ED19936100 provides details of NOx ELV exceedances on Line 2 for every month in the period August 2022 to March 2024. In total, 459 exceedances of Daily NOx ELV were identified for Line 2 following the emissions data re-evaluation.

Permit condition 3.2.1 states that "*The limits for emissions to air apply as follows (a) The limits in table S3.1 shall not be exceeded except during periods of abnormal operation.*"

The exceedances of NOx Daily ELV identified on Line 1 and Line 2 during the period August 2022 and March 2024 are breaches of permit condition 3.2.1 (a).

1.3 QAL3 Methodology

Report ref: ED19936100 provides details of issues in Beddington ERF's application of Quality Assurance Level 3 (QAL3) methodology under EN14181. QAL3 requires the plant operator to regularly measure the drift and precision of the CEM for each measurement parameter using zero and span measurement to ensure ongoing control of emissions monitoring.

During their investigation Ricardo found that the NO_2 channel had not undergone zero and span measurement checks and therefore no QAL 3 record was available. This means that the instrument that measures NO_2 emissions has not undergone assessment for drift and precision. As the measurement of NO_2 forms part of the approach to determine the total NOx this should be included in the QAL3 procedure under EN14181. The reason for not carrying out QAL3 on NO_2 measurements is unclear but no NO_2 calibration gas is available on site.

ENVEA are contracted by Viridor to undertake QAL3 under EN14181. Report ref: ED19936100 states that ENVEA did not make Viridor aware that they were not checking the NO_2 channel, however it is the responsibility of the process operator, Viridor, to ensure that appropriate QAL3 procedures are developed and applied according to EN14181.

Permit condition 3.6.1 states that *"The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit point source emissions specified in table S3.1"*.

Table S3.1 states that Oxides of nitrogen (NO and NO_2 expressed as NO_2) must be monitoring continuously adhering to monitoring standard EN14181. The failure to ensure that QAL3 procedures are in place for NO_2 is a breach of permit condition 3.6.1.

1.4 Linearity Testing

Report ref: ED19936100 provides details of issues in Beddington ERF's application of linearity testing under EN14181. Linearity testing forms part of the CEM functional checks and is a requirement under EN14181 and must be performed for each measurement parameter prior to a QAL2 to ensure that the CEM provides accurate and consistent measurements across its entire operating range.

It is the responsibility of the process operator to ensure that the functional tests, including linearity testing, are performed according to EN14181 before each QAL2.

It was identified during the root cause investigation that NO_2 had not undergone linearity testing and other measurement parameters had undergone linearity testing that was not in line with the requirements of EN14181.

Section A.8 of EN14181 states that

"The linearity of the CEMS' response must be checked using 5 different reference materials, including a zero concentration" and

"The reference material concentrations must be selected such that the measured values are at approximately 20%, 40%, 60% and 80% of a range that is at least the short-term ELV".

When we reviewed the linearity procedure used in the July 2022 QAL2 reports the test gases used for HCl, CO, SO_2, and NO did not meet the requirements of EN14181 whereby the linearity was not performed over a range of 'at least the short term ELV' as detailed below:

- Test gas concentration used for HCl linearity testing was 15.58mg/m^3 against a short term ELV of 60mg/m^3.

- Test gas concentration used for CO linearity testing was 81.8mg/m^3 against a short term ELV of 150mg/m3.
- Test gas concentration used for SO_2 linearity testing was 80.2mg/m^3 against a short term ELV of 200mg/m^3.
- Test gas concentration used for NO linearity testing was 376mg/m^3 against a short term ELV of 400mg/m^3.

Permit condition 3.6.1 states that *"The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit point source emissions specified in table S3.1"*.

Table S3.1 states that Oxides of nitrogen (NO and NO_2 expressed as NO_2), Sulphur Dioxide, Hydrogen Chloride must be monitored continuously following monitoring standard EN14181. The failure to ensure that the linearity testing in undertaken in line with EN14181 is a breach of permit condition 3.6.1.

1.5 Calibration Function application in Data Acquisition and Handling System (DAHS).

Report ref: ED19936100 provides details of issues in the application of derived calibration functions into the DAHS. The inputting of the QAL2 calibration functions into the CEMS data acquisition software (CDAS), is contracted to ENVEA, Viridor's CEMS installation specialist.

A full review of calibration functions was undertaken following the identification of errors in the derivation of the NOx calibration functions applied in September 2022. Report ref: ED19936100 states that ENVEA were asked by Viridor to check the QAL2 calibration functions that were entered into the CDAS software. It was found that the incorrect NOx calibration functions derived by Element had been inputted into the DAHS, but into the incorrect channels.

Additionally, it was identified that the calibration function applied for Line 1 Standby was incorrect and not as per the QAL 2 reports. This would have had only a small impact as the standby is only used for short periods of time when the duty is unavailable.

The operator should have a documented procedure for inputting and checking the application of new calibration functions. Changes should be recorded possibly with a witness being present who checks and reviews the calibration function against what is to be entered to make sure of correct data entry, with a record created of the change.

Permit condition 3.6.1 states that *"The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit point source emissions specified in table S3.1"*.

Table S3.1 states that Oxides of nitrogen (NO and NO_2 expressed as NO_2) must be monitoring continuously adhering to monitoring standard EN14181. The failure to ensure that the calibration functions, as derived, were input into the correct channels and that the application of a calibration function aligns with those derived under EN14181 is a breach of permit condition 3.6.1.

1.6 Abatement Consumables Monitoring

In Section 6 of Report ref: ED19936100 Ricardo have issued a recommendation to Viridor to continue the monitoring of consumables especially when functions are changed to provide confidence in the CEMS data.

It was a member of Viridor's on site team that identified a possible issue with the CEMS for NOx following a review of consumables (i.e. urea) used to control the emissions of total NOx, in March 2024. This type of abatement is called Selective Non-Catalytic Reduction (SNCR), involving the injection of urea into the combustion chamber, providing abatement of nitrogen oxides.

A new QAL2 had been performed following a failure of the latest Annual Surveillance Test (AST) under EN14181. The AST consists of the same functional tests as those used in QAL2 but is used to check whether an existing calibration function is still valid. The operator can check the calibration function using a smaller number of repetitions of the SRMs (typically 5). If the calibration function is still valid, no further action related to the AST is required. If the AST shows that the calibration function is no longer valid, the operator must do another QAL2.

New QAL2 assessments were undertaken, and new calibration functions were applied for NOx and resulted in an increase in urea dosing (in kg/tonne of waste burnt) compared to when operating on the previous, now understood to be incorrect, NOx calibration functions. Viridor raised concerns regarding the emission monitoring system output. Element undertook an investigation into Viridor's concerns and identified that there was an error in the previous QAL2 carried out in July 2022, as discussed further in Section 1.1 above. It was then understood that Viridor had been underreporting NOx since the application of the July 2022 QAL2 Calibration Functions in September 2022.

Viridor are required as per permit condition 4.2.2(c) to report urea consumption on an annual basis as consumption in kg/tonne of waste incinerated.

The Environment Agency have reviewed the annual trends of urea consumption as reported according to permit condition 4.2.2(c) from 2019 to 2024. Over this period the average consumption of urea has been 1.6 kg/tonne of waste incinerated. The maximum consumption was 2.05 kg/tonne of waste incinerated in 2019. The minimum consumption was 1.09 kg/tonne of waste incinerated in 2023. The year 2023 was the only year where NOx was being under-reported for the full 12-month period. Full consumption data is tabulated below:

Year	Urea Consumption	Units	Notes
2019	2.05	Kg/tonne waste	
2020	1.36	Kg/tonne waste	
2021	1.60	Kg/tonne waste	
2022	1.56	Kg/tonne waste	4 month underreporting NOx
2023	1.09	Kg/tonne waste	12 months underreporting NOx
2024	1.82	Kg/tonne waste	3 months underreporting NOx
2025	2.02	Kg/tonne waste	Year to date: 20 May 2025

It can be seen from the urea consumption data above that there was a significant drop in urea consumption from 2021 to 2023. Urea consumption was 1.47 times higher when the NOx CEM was correctly calibrated as opposed to when the erroneous NOx calibration functions were applied to the DAHS.

Additionally, there was a significant increase in urea consumption for the period 2023 to 2024. This represents urea consumption 1.67 times higher after the NOx calibration issue was resolved in March 2024.

The Environment Agency carried out a full data verification exercise in May 2022 prior to the NOx calibration issue and the results of this can be found in CAR form ref: GP3305LN/0425994. No major concerns were identified.

The NOx calibration function derived from the July 2022 QAL2 for Duty analysers and Standby analyser on Line 1 when applied had the outcome of significantly reducing the raw measured NOx data. This had not been typical of previous NOx calibration functions derived in previous EN14181 campaigns. This finding along with a significant reduction in urea consumption following their application should have alerted the operator to a potential issue with the calibration function that had been applied.

An operator should review the impact of a new calibration function on the emissions and operation of the site and raise any potential issues with service providers, such as an increase or decrease in abatement consumable consumption or step changes in emissions profiles.

Guidance:

- Section 7 of *Monitoring stack emissions: quality assurance of continuous monitoring* (link below) requires that QAL2 and AST reports must include the details of previous calibration functions, as well as a statement on whether a new calibration function varies by more than 10% from the previous one.
- Guidance document: *LIT 74145 Operator Monitoring Assessment* – Air provides guidance on carrying out a calibration function review. This review requires that:
    - clear procedures for inputting of calibration functions are available.

- evidence of time and date when new calibration functions have been applied to the CEMS are recorded.
- a review of how changes to calibration functions impact emissions and process control.
- changes to calibration functions over time are recorded, so variability in the CEMS can be assessed

1.7 Roles and Responsibilities

Report ref: ED19936100 refers to errors made by monitoring contractor (Element) who were responsible for carrying out the QAL 2 testing to EN14181, as well as ENVEA, who Viridor contract to input the calibration functions into the DAHS and perform the functional tests including linearity.

Sections 1.3.1 and 1.3.2 of Environment Agency Guidance Note TGN M20 provide details of Roles and Responsibilities and Delegation of Roles respectively relating to compliance with EN14181. TGN M20 is clear in that roles can be delegated as described; however, process operators have overall responsibility for complying with EN 14181 and must have robust procedures in place for auditing activities that are delegated or sub-contracted to third parties. Procedures should be available so that process operators can audit calibration function application and the impact thereof on emission profiles or abatement consumable usage, linearity testing reports, test gas compliance as well as other aspects of EN14181 activities undertaken at an installation.

TGN M20 is now available on gov.uk using the link below:

Monitoring stack emissions: quality assurance of continuous monitoring - GOV.UK

2. Air Quality Assessment Report for Viridor Ref. VSLL-00708, Ricardo ref: ED19936

The final version of this report was dated 11th February 2025 and includes details of air quality assessment conducted by Ricardo to ascertain any potential impacts from the miscalibration of NOx emissions from 8th September 2022 to 14th March 2024. The findings of this report are further discussed below:

2.1 Ricardo report findings

The following conclusions were drawn from the assessment set out above.

- Modelled annual mean NO_2 concentrations comply with the air quality objective of 40 µg/m^3 at all locations within the grid and at all sensitive receptors when corrected NOx data for the period 8th September 2022 – 14th March 2024 are assessed.
- The modelled 99.8th percentile of 1-hour mean NO_2 concentrations were found to be within the air quality objective of 200 µg/m^3 at all locations within the grid and at all sensitive receptors when corrected NOx data for the period 8th September 2022 – 14th March 2024 are assessed.

2.2 AQMAU Review of Air Quality Assessment Report for Viridor Ref. VSLL-007081 Ricardo ref: ED19936

The Environment Agency's Air Quality Management and Assessment Unit (AQMAU) carried out a full review of Air Quality Assessment Report for Viridor Ref. VSLL-007081 Ricardo ref: ED19936 their findings are details below:

- Contributions from the Beddington ERF for the period 8th September 2022 to 14th March 2024 are unlikely to have caused or contributed towards exceedances of the environmental standards set for the protection of human health.
- AQMAU's modelling checks using the maximum NOx emission rate for each year of the assessment indicate that exceedances of the environmental standards set for the protection of human health are unlikely.
- AQMAU's checks at protected conservation sites indicate that contributions from the Beddington ERF for the period 8th September 2022 to 14th March 2024 are likely to have been insignificant against the critical levels and critical loads set for the protection of the habitats. When modelling using the maximum NOx emission rates for each year of the assessment period, the same conclusions apply

2.3 UK Health Security Agency (UKHSA) Review:

On 24th February 2025 the Environment Agency forwarded copies of the Ricardo 'Investigation of the Oxides of Nitrogen Measurement' and 'Air Quality Assessment', and the Environment Agency 'Air Quality Audit' reports to the UK Health Security Agency (UKHSA) for review and comment.

The outcome of the review undertaken by the UKHSA was forwarded to the Environment Agency as a letter dated 25th April 2025 via email on 25th April 2025. UKHSA Reference: CIRIS 65797.

Following review of the reports, the UKHSA provided the following comments:

- The 'Investigation of the Oxides of Nitrogen Measurement' report concludes that although the corrected data demonstrates a number of breaches of the permitted Emissions Limit Value (ELV) this did not result in exceedances of Air Quality Standards (AQS).
- UKHSA has reviewed the reports provided which demonstrate that, for both annual mean NO_2 and hourly mean NO_2, modelled emissions remain below Air Quality Standards at all sensitive receptor locations between 2022 and 2024 when adjusting for the updated emissions data. The UKHSA also reviewed the nearest active roadside air quality monitoring station (Beddington Lane North), approximately 400m northeast of the site, which showed that annual measured NO_2 concentrations remained below AQS between 2021 and 2024. This corroborates the outcomes of both Ricardo and the EA's modelling where no exceedances of the AQS were modelled.
- The UKHSA stated that whilst the air quality modelling has demonstrated slight increases in NO_2 concentrations at identified receptors compared to the original emissions data reported to the EA, these remain below AQS. Furthermore, measured concentrations from the vicinity reflect this. On this basis, we do not consider there to have been a significant public health impact based on the information provided.
- The UKHSA stated that their position is that pollutants including oxides of nitrogen are non-threshold; i.e, an exposed population is likely to be subject to potential harm at any level and that reducing public exposure to non-threshold pollutants (including nitrogen dioxide) below air quality standards will have potential public health benefits.
- UKHSA has reviewed research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health and the UKHSA's opinion is that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that these incinerators make only a very small contribution to local concentrations of air pollutants.

Non-compliances against the permit

Permit condition: 3.6 Monitoring; CAR form g)1. Monitoring of emissions & environment

- *3.6.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:*

  (a) point source emissions specified in tables S3.1, S3.1(a) and S3.2;
  (b) process monitoring specified in table S3.3; and
  (c) residue quality in table S3.4.

Whereby Table S3.1 states that Oxides of nitrogen (NO and NO_2 expressed as NO_2) must be monitored continuously adhering to monitoring standard EN14181- table S3.1 reproduced below:

Table S3.1 Point source emissions to air – emission limits and monitoring requirements.						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
	Sulphur dioxide		200 mg/m^3	½-hr average	Continuous	EN 14181
	Sulphur dioxide		50 mg/m^3 Until 02/12/2023	daily average	Continuous	EN 14181
			40 mg/m^3 from 03/12/2023			
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)		400 mg/m^3	½-hr average	Continuous	EN 14181
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)		165 mg/m^3	daily average	Continuous	EN 14181
	Hydrogen fluoride		2 mg/m^3 until 02/12/2023	Average of three consecutive measurements of at least 30 minutes	Bi-annually	CEN TS 17340
			1 mg/m^3 from			

Non-Compliances
Three non-compliances have been identified relating to the application of EN 14181 as required by permit condition 3.6.1. These are:

- The failure to ensure that the linearity testing in undertaken in line with EN14181
- The failure to ensure that QAL3 procedures are in place for NO_2 in line with EN14181
- The failure to ensure that the calibration functions, as derived under EN14181, were input into the correct channels of the DAHS

These non-compliances have been referenced in sections 1.2 – 1.5 of this CAR form. These non-compliances are breaches of your environmental permit and have been assigned a single consolidated CCS cat 3 against permit condition 3.6.1.

CCS Score: CCS 3 (4 points)

<u>NOx ELV Exceedances:</u>

Permit condition: 3.2 Emissions limits and monitoring for emission to air for incineration plant; CAR form e1) Emissions – Air

- *3.2.1 The limits for emissions to air apply as follows:*
  (a) The limits in table S3.1 shall not be exceeded except during periods of abnormal operation.
  (b) The limits in table S3.1 (a) shall not be exceeded

Non-compliances
There were a significant number of exceedances of NOx Daily ELV identified for both line 1 and line 2 over the 18-month period.

Line 1 ELV daily breaches	Line 2 ELV daily breaches	Total number of exceedances
457	**459**	**916**

Environment Agency guidance ref: "*Waste operations and installations: assessing and scoring environmental permit compliance*" requires that we assess each non-compliant ELV. Where the permit holder must submit quarterly data or reports to meet a permit condition, we must consolidate non-compliances into one category and score per ELV, per quarter.

- During Q3 2022, **13** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q3 2022, **26** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q4 2022, **83** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q4 2022, **86** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q1 2023, **86** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q1 2023, **78** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q2 2023, **60** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q2 2023, **58** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q3 2023, **67** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q3 2023, **70** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q4 2023, **82** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q4 2023, **76** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q1 2024, **66** exceedances of NOx Daily ELV were identified on Line 1.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**
- During Q1 2024, **65** exceedances of NOx Daily ELV were identified on Line 2.
  These exceedances are breaches of permit condition 3.2.1 (a) and have been assigned a single consolidated CCS cat 3 non-compliance. **Score: CCS 3**

Compliance Classification Scheme (CCS) Score for ELV breaches:

14 breaches x CCS3 (4 points) = 56 CCS points

Root Cause – 1.1.1 Management

Permit condition: 1 Management; CAR form : c2) General Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

(c) referenced in schedule 1, table S1.1 (AR1), from 03/12/2023, in accordance with a written other than normal operating conditions (OTNOC) management plan.

Non-compliances

Multiple failures of permit conditions relating to ensuring that EN14181 was followed i.e. calibration function were input incorrectly, QAL3 procedures not in place, zero, span, linearity, drift span and quality checks were not carried out in accordance with the requirements of EN14181.

There was also a key failure to identify step changes in abatement dosing rates when urea usage was reduced but identified immediately when dosing usage rates increased.

CCS Score: CCS 2 (31 points) for breaches of 1.1.1

Total score for CAR form: 91 Points

The total non-compliance score for this inspection is 91 CCS Points

Operator action

Viridor is to take appropriate measures to ensure that environmental monitoring systems operate in accordance with their permit 3.6.1.

Before the end of August 2025, the operator shall provide an updated written management system covering emissions monitoring compliance, which must demonstrate:

a) How emissions monitoring information is reviewed, including against abatement raw material usage, the type of review (internal, external or regulator) and the frequency of review.

b) How you review the performance of monitoring organisations within inter-laboratory proficiency testing schemes when tendering for monitoring services and the frequency of these reviews.

c) How you ensure that root cause analysis of failures within the monitoring regime/process is undertaken and acted upon by the monitoring organisation.

d) How your audit plan covers all emissions monitoring activities

e) The person responsible for managing audits and closing out corrective actions is identified; how non-compliances are escalated and the hierarchal structure for raising non-compliances.

f) The required competencies and capabilities of the staff responsible for the monitoring arrangements and auditing. This must include training plans, assessments and periodic reviews of the required competencies and capabilities.

g) How the auditor is suitably trained, qualified and independent of the activity being audited.

h) You must have procedures within your management system for checking the work of monitoring contractors to ensure permit requirements are met regarding emission monitoring to EN 14181, and permit condition 3.6.1.
These procedures should include, as a minimum :

- check the change of slope (figure 'b`) and change in offset (figure 'a') of a calibration function when a new calibration function is derived.
- compare the values of the new and old calibration functions and query and significant differences with your monitoring contractor.
- check the new calibration function has been entered into the DAHS, and that it is correct.
- within 3 months of a new calibration function being entered into the DAHS, review emissions from the plant, abatement reagent consumption, where used, to look for changes that may be due to an incorrect calibration function.

Deadline: the above actions, a) - h), must be completed by 31st August 2025

Measures Viridor intend to put in place

Viridor have committed to implement changes and introduce new operating practices to reduce the possibility of these scenarios described above occurring in the future.

a) They have stated that a central part of this will be training for key Viridor staff and a wholesale review of the procedure for QAL 2 testing to ensure that there is a consistent approach that fully complies with the requirements of EN14181.

b) Viridor will also be reviewing the process of monitoring and reviewing its contractors' methods and processes to ensure a robust process is followed, which will include a review of the process for checking and sign-off of calibrations inputted into the CEMS/CDAS systems.

c) They have committed to monitoring of abatement consumables and operating factors to support the implementation of new QAL 2 functions.

d) They will periodically request details of the monitoring contractors' methods and ENVEA processes. Review and audit both monitoring contractor and ENVEA site procedures prior to any testing in line with the Viridor procedure as well as reviewing the process for checking and sign-off of calibration functions inputted into CEMS DAHS Software. This would be responsibility of a competent person within Viridor.

e) Viridor will ensure that all on-site procedures comply with the requirements of EN14181 and ensure that functional checks are undertaken accordance with the requirements of EN14181.

f) Monitor/review calibration gases to ensure that gases are of the correct concentration and tolerance. and are in date. This is something that is incorporated into the ENVEA CDAS system. Alternatively, this will be done as an internal controlled system.

Viridor have stated that they will undertake a direct comparison of CEMS NOx during compliance monitoring exercises to highlight possible errors within the system.

The Environment Agency will arrange a mutually suitable date to carry out a full review of your updated management system as well as assess measures that have been put in place to prevent recurrence of the non-compliances identified in this compliance assessment report.

In regard to the permit non-compliances detailed above we will now consider what further enforcement action is necessary.

Section 3- Enforcement Response	**Only one of the boxes below should be ticked**

You must take immediate action to rectify any non-compliance and prevent repetition.
Non-compliance with your permit conditions constitutes an offence* and can result in criminal prosecutions and/or suspension or

revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below. **Non-compliance with **MSA**, **MSB** & **TCM** do not constitute an offence but can result in the service of a compliance, suspension and/or revocation notice.*	
Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.	
In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.	
We will now consider what enforcement action is appropriate and notify you, referencing this form.	**X**

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required / Advised	Due Date
See Section 1 above			
C2	C2	Viridor is to take appropriate measures to ensure that environmental monitoring systems operate in accordance with their permit 3.6.1. Before the end of August 2025, the operator shall provide an updated written management system covering emissions monitoring compliance, which must demonstrate: a) How emissions monitoring information is reviewed, including against abatement raw material usage, the type of review (internal, external or regulator) and the frequency of review. b) How you review the performance of monitoring organisations within inter-laboratory proficiency testing schemes when tendering for monitoring services and the frequency of these reviews. c) How you ensure that root cause analysis of failures within the monitoring regime/process is undertaken and acted upon by the monitoring organisation. d) How your audit plan covers all emissions monitoring activities e) The person responsible for managing audits and closing out corrective actions is identified; how non-compliances are escalated and the hierarchal structure for raising non-compliances. f) The required competencies and capabilities of the staff responsible for the monitoring arrangements and auditing. This must include training plans, assessments and periodic reviews of the required competencies and capabilities. g) How the auditor is suitably trained, qualified and independent of the activity being audited. h) You must have procedures within your management system for checking the work of monitoring contractors to ensure permit requirements are met regarding emission monitoring to EN 14181, and permit condition 3.6.1. These procedures should include, as a minimum: • check the change of slope (figure 'b`) and change in offset (figure 'a') of a calibration function when a new calibration function is derived. • compare the values of the new and old calibration functions and query and significant differences with your monitoring contractor. • check the new calibration function has been entered into the DAHS, and that it is correct. • within 3 months of a new calibration function being entered into the DAHS, review emissions from the plant, abatement reagent consumption, where used, to look for changes that may be due to an incorrect calibration function.	31st August 2025
E1	C3		
G1	C3		

Section 5 - Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- advise on corrective actions verbally or in writing
- require you to take specific actions in writing
- issue a notice
- require you to review your procedures or management system
- change some of the conditions of your permit
- decide to undertake a full review of your permit

Any breach of a permit condition is an offence* and we may take legal action against you.

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit.
- A civil sanction Enforcement Undertaking (EU) offer may also be available to you as an alternative enforcement response for this/these offence(s).

See our Enforcement and Civil Sanctions guidance for further information

A breach of permit condition **MSA, MSB & **TCM** is not an offence but may result in the service of a notice requiring compliance and/or suspension or revocation of the permit*.

This report does not relieve the site operator of the responsibility to

- ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- ensure you comply with other legislative provisions which may apply.

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance which could have a **major** environmental effect	60
C2	A non-compliance which could have a **significant** environmental effect	31
C3	A non-compliance which could have a **minor** environmental effect	4
C4	A non-compliance which has **no** potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

MSA, MSB & TCM are conditions inserted into certain permits by Schedule 9 Part 3 EPR

MSA requires operators to manage and operate in accordance with a written management system that identifies and minimises risks of pollution.

MSB requires that the management system must be reviewed, kept up-to-date and a written record kept of this.

TCM requires the submission of technical competence information.

Section 6 – General Information

Data protection notice

The information on this form will be processed by the Environment Agency to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). The Environment Agency may also use and/or disclose it in connection with:

- offering/providing you with its literature/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 and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

The Environment Agency may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The Environment Agency will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within 28 days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If a permit holder disagrees with the CAR form, they should raise their concerns to the officer or team which issued the form. This must be done within 14 calendar days of receipt. If the response does not resolve the issue, a permit holder can request an appeal of the regulatory decision. This request must be made within 28 calendar days of receipt of the response. More details on our regulatory appeals process can be found at https://www.gov.uk/guidance/appeal-a-regulatory-decision-from-the-environment-agency.

If you are still dissatisfied, you can make a complaint to the Ombudsman. For advice on how to complain to the Parliamentary and Health Service Ombudsman phone their helpline on 0345 015 4033.