

Summary sheet

Permit Number: BT4885IT	Compliance Officer: Stuart Ross	
Operator: Shotton Mill Ltd	Auditor (if different): Stuart Ross & Emma Pierce	
Emission Point(s): A20	Others Present: Jamie Hill, Neil Partridge, Andrew Bronnert, Geoff Edge & Vicky Morris-Jones.	
OMA Sections		SCORE
OMA 1 – Management of monitoring		40%
OMA 2 – Periodic monitoring and test laboratories		100%
OMA 3 – Continuous monitoring		83%
OMA 4 – Quality assurance		64%
		73%
		OVERALL SCORE
OVERALL SITE ASSESSMENT COMMENTS		Letter
		Variation
		Enforcement
The audit identified a number of deficiencies and associated permit non compliances regarding the management of monitoring and the calibration of CEMS (EN14181). Actions have been included in this report (and the accompanying Compliance Assessment Report) to address these issues. The operator can significantly improve their overall score and achieve permit compliance by improving monitoring procedures, staff training and implementing the internal auditing of monitoring. There are opportunities for the operator to sustain plant operation in the event of a CEMS failure by operating the spare CEMS instruments as a 'hot standby'. NRW is likely to carry out a further audit in 2022 to ensure the actions have been implemented effectively at a site level.		
Date of audit: 28/01/22		
Signed: 		
Date: 09/03/22		

OMA 1: Management of monitoring		
OMA ELEMENTS	SCORE	COMMENTS
A. Documentation of management system procedures for monitoring	2	Monitoring procedures are deficient in several areas, particularly regarding the calibration of CEMs to the requirements of EN14181. Site Specific Protocols are in place before monitoring is carried out and are reviewed but no evidence could be presented to show sign off by Shotton Mill Ltd (SML).
B. Organisational structure for monitoring	2	The organogram for emissions to air monitoring is out of date and refers to retired personnel. Role responsibilities are up to date. Monitoring is effectively the responsibility of the Utilities Manager, currently there is not a suitably trained deputy.
C. Schedules and planning of monitoring, including contingencies	3	Monitoring requirements are agreed with the test house, a detailed monitoring schedule is not in place. Missed samples are addressed via dialogue between SML and Socotec (MCERTS accredited test laboratory).
D. Monitoring records and use of monitoring data	2	Except for ammonia, corrected CEMS data is displayed in the control room with approach to limit alarms as applicable. CEMS data is checked daily for compliance purposes but data is not reviewed more widely. Periodic monitoring data is not trended for review. No procedures in place for data review.
E. Understanding the requirements of the permit and monitoring methods	1	It is apparent that a significant amount of emissions monitoring knowledge and experience has been lost from the business following a recent retirement. Existing staff do not currently have the required level of understanding to ensure the permit requirements are fully met.
OMA 1 – SCORE	10/25	40%
SUMMARY COMMENTS FOR OMA 1		
RCID 57036 is the overarching monitoring procedure (originally created 06/09/19) but no evidence of document review could be provided. The procedure does not include sufficient detail on the requirements of EN14181 nor the actions to be taken in event of AST, QAL2 or QAL3 failure etc.		

SOP2130 covers CEMS checks and QAL3 operation.

All EMS documents are currently being migrated onto a new document management system.

The SSP for the July 2021 QAL 2 and extractive monitoring round contains a number of inaccuracies, for example on page 6 it is stated that the fuel requirements are 'natural gas', abatement 'none' and type of CEMS installed 'N/A'. These issues should have been identified through operator review of the SSP before sign off.

The Utilities Process Engineer who has been in role for <12 months is due to start emissions monitoring training with the objective of becoming the deputy to the Utilities Manager.

Action 1 – Review monitoring procedures to ensure the monitoring requirements as set out in the permit are met. You may wish to refer to 'How to Carry Out an Operating Monitoring Assessment' guidance to establish what is expected from monitoring procedures. Sufficient detail must be included to fully implement the requirements of EN14181. Provide NRW with copies of your revised guidance by 29/04/22.

Refer [Technical Guidance Note M20](#) for guidance on EN14181.

Action 2 – Staff with roles and responsibilities for emissions monitoring shall receive adequate training to ensure they fully understand and implement the required monitoring requirements of the permit, to include (but not limited to) the implementation of EN14181 QAL2, AST and QAL3. The Utilities Manager must be supported by a suitably trained deputy. Provide NRW with the steps you intend to take along with associated timescales to meet the requirements of this action – please do so by 29/04/22.

Action 3 – Implement a procedure for the review of CEMS and extractive monitoring data to identify trends and opportunities for minimising non compliance and emissions to the environment. Please do so by 29/04/22.

OMA 2: Periodic monitoring and test laboratories		
OMA ELEMENTS	SCORE	COMMENTS
A. Sampling provisions	5	Sampling facilities are safe. Platforms meet the requirements of TGN M1. Testing to EN 15259 confirms the sample points are representative and fully compliant with the requirements of the standard Stack condition survey (includes platform) completed November 2021 – no significant issues.
B. Certification of equipment	5	Monitoring is performed by an MCERTS accredited test laboratory (Socotec).
C. Measurement methods and standards	5	MCERTS for all parameters. No deviations. Methods as required by the permit.
D. Calibration methods	5	Calibration has been carried out under UKAS/MCERTS accreditation.
E. Frequency of maintenance and calibration	5	Maintenance and calibration have been carried out under UKAS/MCERTS accreditation.
F. Reliability of methods and equipment (data availability)	5	Data is reported as required >95% data availability.
G. Breakdown response	N/A	Not assessed.
H. Traceability	5	Calibration has been carried out under UKAS/MCERTS accreditation.
OMA 2 – SCORE	35/35	100%
SUMMARY COMMENTS FOR OMA 2		
Socotec are contracted to complete periodic monitoring, QAL and AST testing. Periodic monitoring is completed to a high standard, emissions are routinely compliant.		

OMA 3: Continuous monitoring		
OMA ELEMENTS	SCORE	COMMENTS
A. Provisions for monitoring and location of continuous monitors	5	Sampling facilities are safe. Platforms meet the requirements of TGN M1. Testing to EN 15259 confirms the sample points are representative and fully compliant with the requirements of the standard
B. Certification of continuous monitoring	5	Gasmet Multigas Analyser (CX4000), Enotec Oxitec 5000, SICK FWE200 extractive dust monitor and SICK FID3006 MCERTs certified. FID cert has expired but MCERTS status remains valid. Operator to confirm whether the Data Handling & Acquisition System (DAHS) is MCERTS certified.
C. Do not assess for air, water only	N/A	N/A
D. Calibration methods	2	QAL 2 completed July 2020. AST failed July 2021 with no follow up QAL2 until January 2022, therefore. CEMS are not currently calibrated to an acceptable standard. Ammonia has not been subject to QAL 2. Refer comments below.
E. Frequency of maintenance and calibration	2	AST testing carried out July 2021, but the report was not written until January 2022 and therefore it is deemed that the AST was not completed in 2021. During the OMA audit Socotec equipment was inspected and had valid calibration stickers where checked. The CEMS maintenance contract is held by Gasmet. Operator to confirm maintenance contact for SICK FWE200. Manual QAL3 zero and span check carried out weekly by the Automation Team.
F. Reliability of equipment (data availability)	5	CEMS are >98% reliable. Invalidation logs reported but require review (subject to separate ongoing correspondence).
G. Breakdown response	5	Critical spares held on site. Call out contract with Gasmet. Spare CEMS units and PC held on site but are not on hot standby.

H. Traceability	5	QAL 2 and AST tests demonstrate traceability to national standards. In date span gases used for QAL3, sample of certificates inspected.
OMA 3 – SCORE	29/35	83%

SUMMARY COMMENTS FOR OMA 3

A maintenance contract is held with Gasmet for all instruments except the particulate monitor.

Action 4 – Please provide details of the maintenance contact for the SICK FWE200 plus evidence that the maintenance has been carried out during the past 12 months. Please do so by 29/04/22

QAL 2

During the 2020 QAL 2, CO did not meet the allowable uncertainty of 10% so this was increased to 20% in accordance with clause 6.7 of M20 (clause copied below).

6.7 Test of variability Note that the daily average ELV is applied. In practice, an uncertainty of 10% for CO is very difficult to achieve, whilst the risks of applying a higher uncertainty of 20% are very low. Therefore, test laboratories may use a 95% confidence interval of 20% for CO. EN 14181, Annex I contains kv values for three to 30+ pairs of data. Refer to EN 14181 for an example calculation.

Ammonia has not historically been subject to QAL 2 and therefore a calibration function has not been derived - this is in breach of permit. There is no ELV for ammonia but a virtual ELV can be used to derive a calibration function, The Waste Incineration BAT Conclusions suggests ELVs between 2-10mg/m3 and so a virtual 10mg/m3 ELV could be used.

Following the audit, SML provided an updated and signed SSP for the 2022 QAL2 exercise that now includes QAL2 for ammonia.

Action 5 – Provide NRW with a copy of the 2022 QAL 2 report and confirmation that calibration functions have been entered into the DAHS by 31/03/22.

During the audit it was not possible for operator to provide evidence that the current QAL calibration functions and 95%ile confidence intervals had been applied correctly as the operator was not able (though lack of software training) to interrogate the system.

Action 6 – Confirm calibration functions and 95%ile confidence intervals entered the DAHS as of 28/01/22. Please do so by 31/03/22.

Procedures do not cover the implementation and verification of the calibration functions in the CEMS Data Handling and Acquisition System and associated timescales following a QAL2 exercise – this must be addressed as part of the procedure review actioned in section 1.

Particulate CEM Calibration

In the 2020 QAL 2 report Socotec state that

'all the parallel test results are below 30% of the ELV and as such the calculation of a QAL2 calibration function would be an incorrect application of the standard. When emissions are less than 30% of the ELV it is acceptable to use linearity data to derive a calibration function, however for particulate emissions there are no surrogates from which to derive linearity data. From the results of the parallel test it cannot be determined whether the CEM is operating correctly or not at high particulate concentrations. It is recommended that the CEM be set at a high gain factor, and that the installations response to particulates be tested by suitably trained personnel.'

Action 7 – Confirm what action SML took in response to this comment in terms of the use of the CEM as a qualitative particulate monitor with reference to the requirements of Section 3.5.4 of TGN M20. Please do so by 29/04/22.

Action 8 – Confirm why Socotec did not pursue the following options below as per the extract from section 3.5.3 of TGN M20. Please do so by 29/04/22.

- If the average particulate emissions recorded using the SRM are greater than the uncertainty of the SRM, then it may be feasible to use the average value to calibrate the CEM.*
- If there are sufficient data available from the site, or from similar sites with higher emissions, then the CEM supplier or test laboratory can calibrate the CEM based on experience and a best estimate of the CEM's response to expected concentrations.*

AST

AST testing was carried out July 2021, but the report was not written until January 2022 owing to an error on behalf of the test house and SML failing to identify that the report had not been received. Upon completion of the report, it was identified that the CEMS failed the AST and a QAL2 was carried out w/c 31 January.

Action 9 – Investigate the root cause of the AST failure and take steps to prevent a recurrence. Provide NRW with your root cause analysis and remedial steps by 29/04/22.

Procedures do not include the steps to be taken in the event of an AST failure along with associated timescales – this must be addressed as part of the procedure review actioned in section 1.

QAL 3

Practical aspects are covered by work instruction SOP2130 (includes inspection of Span Gases and general CEMS operation), After the audit QAL 3 data for the previous 6 months was supplied to NRW and has been reviewed.

CO Span – there are several occurrences where the span value exceeds the control limit. It would be expected that SML shall investigate the reason for this and potentially be looking into maintenance/service of the CEM if necessary. The span readings are all up around the upper control limit, and even if they don't exceed it this should still be cause for concern/investigation.

No procedure is in place for reviewing and actioning QAL 3 data e.g., responding and investigating action limit exceedances – this must be addressed as part of the procedure review actioned in section 1.

Standby CEMS

As per the requirements of permit condition 2.3.8(d) the loading of waste must cease if there is a loss of TOC, particulate, or CO CEMS (including peripheral measurements e.g., Oxygen) unless alternative techniques have been agreed for monitoring.

At the point of writing NRW is not aware that any such alternative techniques have been agreed and therefore the failure of these CEMS would lead to the shutdown of the plant pending CEMS repair.

It is therefore recommended that SML considers the requirements of this condition and in particular the feasibility of running the spare instruments as a hot standby. This would improve the resilience of emissions monitoring and have benefits to SML in avoiding CEMS failure leading to plant shutdown.

OMA 4: Quality assurance		
OMA ELEMENTS	SCORE	COMMENTS
A. External quality control schemes	5	All monitoring activities are MCERTS certified. Socotec (Test House) are UKAS accredited.
B. Internal data QC	N/A	Not assessed in detail during this audit. Operator to confirm if DAHS is MCERTS certified. Periodic monitoring MCERTS certified.
C. Competence of monitoring personnel	5	MCERTS personnel. A score of 5 has been awarded subject to evidence being presented that the monitoring technicians who performed the QAL 2 exercise have valid technical endorsements.
D. Auditing of monitoring	1	No audit procedures or evidence of audits carried out.
E. Audit compliance	1	No actions have been generated but future actions will be logged and tracked via Sphera Cloud system.
F. Reporting	4	Data generally reported to NRW in accordance with the permit.
OMA 4 – SCORE	16/25	64%
SUMMARY COMMENTS FOR OMA 4		
Action 10 - During the audit Socotec personnel were on site setting up equipment for the QAL 2 exercise. NRW requested to see their MCERTS identity cards, both of which had expired. It is not clear if these individuals would carry out the QAL testing but NRW seeks confirmation that the technicians that performed the 2022 QAL 2 testing have valid technical endorsements. Please do so by 31/03/22. The absence of audit and audit procedures is a breach of permit, this is an essential component of an Environmental Management System. Action 11 – Implement an audit procedure and programme for the auditing of emissions monitoring (including monitoring carried out by SML). Provide a summary to NRW by 29/04/22.		