

OMA 1: Management of monitoring		
OMA ELEMENTS	SCORE	COMMENTS
A. Documentation of management system procedures for monitoring	5	Environmental Policy outlining the commitment to environmental monitoring. Relevant Local Procedure (LP) for Environmental Management PEB/LMI/ENV/3001 & LP for 'Monitoring Measuring and Reporting PEB/LP/ENV/3012 are in place and copies of these procedures were provided for NRW review.
B. Organisational structure for monitoring	4	Pembroke organisational chart demonstrated and posts are clearly outlined in PEB/LP/ENV/3012 as having responsibilities for environmental monitoring in respect of emissions to air. Please see recommendation outlined below.
C. Schedules and planning of monitoring, including contingencies	5	Operator has in place LP for the management of instrumentation for environmental compliance (PEB/LP/ENG/6562). Monitoring schedules and contracts demonstrated and maintenance management system PRISM.
D. Monitoring records and use of monitoring data	5	Multiple Emissions Reporting System (MERS) PI and (PEB/LP/ENG/6562).
E. Understanding the requirements of the permit and monitoring methods	5	The operator demonstrated a good knowledge and understanding of MCERTS and monitoring requirements required by the permit. Demonstration of attendance at MCERTS awareness training was also provided.
OMA 1 – SCORE	24/25	96%

SUMMARY COMMENTS FOR OMA 1

- A. The site specific environment management system (EMS) has been developed for the power station and is based on the ISO14001 standard. The EMS can be accessed onsite using the Pembroke Asset Management System (PAMS). PAMS is available to all staff within RWE who need access to it as part of their roles and responsibilities.

A copy of the most up to date Environmental Policy (February 2016) was demonstrated to the inspecting officers and this clearly showed a commitment to environmental monitoring. The operator explained prior to this element their self-regulation process whereby local procedures (LP) following initial development are risk assessed and scheduled for audit and review. If the risk is deemed high the LP will be subject for an annual audit and subsequent review, if low risk a reduced auditing frequency of 3 years is applied. Last year was a very busy time on site with the turbines going through the first major shut down or 'C' inspections since they were commissioned. This work impacted on the internal auditing schedule and subsequent review and re-issue of some

procedures since development. The operator demonstrated that the LP's are kept up to date through a table / log of 'records of revisions and reviews' but not all procedures had been reissued to incorporate these changes. Following the completion of the 'C' inspections the operator will work through the procedures using the risk based approach.

- B. Demonstration of compliance included the Pembroke Organisational Chart. The operator explained the structure, immediate reports and those responsible for the monitoring programme in respect of air emissions from the power station. Roles and responsibilities for document control procedures are detailed in PEB/LMI/ENV/3001. On review of PEB/LM1/ENV/3001 the job titles of those roles responsible for the monitoring are out of date. The risk assessment for this document has been categorised as high and dated 16/9/2016 with an audit date of 10/5/2015. With the last record of revisions being 16/9/2014. This would suggest that the audit was not undertaken and no updates have been listed since 2014. Those posts responsible for environmental monitoring for air emissions is also clearly outlined in PEB/LP/ENV/3012 LP again on review the job titles were out of date and there was no note in respect of this in the table /log.

Recommendation: Operator to ensure that procedures are kept up to date and to ensure it is clear which roles are responsible for environmental monitoring.

- C. PRISM automatically generates a work order for any preventative maintenance and sends it to the person in the post responsible for that work e.g. scheduling of the AST and QAL 3. The operator demonstrated the annual frequency for the AST and on-going QAL 3 (2 week auto regeneration). Management of Instrumentation for Environmental Compliance (PEB/LP/ENG/6562).

Site Specific Protocols (SSP) – The operator provided a copy of SSP for 2 July 2015 has been cross referenced to Annex D in the following guidance: 'Manual Stack-Emission Monitoring Performance Standard for Organisations' Version 7.2. On review no issues were found that require raising with the operator and their contractor. The following is a link to the guidance:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/301417/manual_stack_emission_monitoring_-_performance_standard_for_organisations.pdf

- D. The operator uses Multiple Emissions Reporting System (MERS) which is MCERTS and was developed by RWE but is also used by other companies. Emissions data on site is automatically populated into a spreadsheet format and visually represented in the sites PI over a 24 hr period. The data is plotted, trended and checked on a daily basis. The data in MERS is also used for annual reporting (PEB/LP/ENG/6562). Environmental Compliance Monitoring data from the main operating system or DCS which is used in the stations control room and the relevant data trending using the PI.
- E. The score of 5 reflects the practical understanding and experience demonstrated, for example, knowledge of MCERTS, monitoring methods, reference conditions, oxygen corrections, isokinetic sampling and quality assurance standards for CEMs, such as BS EN 14181. The operator also demonstrated an understanding of how the process may impact on the environment and the reasonings behind the requirement for monitoring emissions to air.

OMA 2: Periodic monitoring and test laboratories		
OMA ELEMENTS	SCORE	COMMENTS
A. Sampling provisions <i>Critical Element</i>	4	The monitoring platforms fully met all of the requirements as per Technical Guidance Note M1, with flow criteria measurements fulfilled, and all relevant sampling points being reached, as well as H+S criteria for maintenance and inspection fulfilled to the highest level (platform inspection records made available etc.). It was noted however that the ports did not appear to be labelled.
B. Certification of equipment	5	All equipment is appropriately certified (MCERTS) with the appropriate operating range.
C. Measurement methods and standards <i>Critical element</i>	5	MCERTS accredited measurement methods & standards are used, and are in compliance with latest version of Technical Guidance Note M2. ESG is a member of the Source Testing Association (STA), and all staff are of the relevant MCERTS certification competency for the relevant determinands that require monitoring.
D. Calibration methods <i>Critical element</i>	5	UKAS / MCERTS accreditation for all relevant determinands. Calibration records reviewed.
E. Frequency of maintenance and calibration	5	Calibration schedule reviewed for ESG analyser. UKAS / MCERTS accreditation.
F. Reliability of equipment (data availability)	5	Data availability >95%. Spares or maintained replacement equipment is available in the event that an analyser fails. To date there has been no need to reschedule.
G. Breakdown response	5	Spares or replacement equipment is available on site in the event that an analyser fails. Site staff also competent in repairs and assistance is available from their contractors if necessary. Replacements available within 24hrs. Operator has a contract with a third party. The renewal of the contract was demonstrated.
H. Traceability	5	MCERTS and UKAS accredited test laboratory, although no separate lab analysis is necessary for monitored determinands. Materials used for calibrations purposes traceable to relevant standards (ISO 17025).
OMA 2 – SCORE	39/40	98 %

SUMMARY COMMENTS FOR OMA 2

For this section an on-site visit was undertaken of the sample facility on Unit 31. A visual inspection only was undertaken from the top of Unit 31.

For this element the operator also provided the regulator with the last routine maintenance inspection report for the stack on Unit 31 dated May 2015. The most notable thing in the report was that it failed a British standard in respect of lightening protection as there was a missing earth position. This has since been rectified. There was also comments in respect of the safety gate at the head of each vertical ladder and the gap between the handrails and head of the ladder, there were also a number of minor defects listed. The presence of this report for the purposes of the OMA is that it demonstrates that the operator is undertaking routine inspections and maintenance of the stacks and actioning any matters arising. The focus for the purposes of this audit is the sampling facilities for emissions to air and their associated gantries. The operator explained that the contractor had built the monitoring platform to the standards outlined in the EA technical guidance note M1. A plan of the stack was also provided by the operator and a comparison made against Annex 1 – ‘Check sheet of sample facility requirements for plant designers / operators’.

Recommendation: OMA guidance refers to the labelling of the sample points to aid stack emissions testing and prevent any confusion over sample point location while undertaking this work.

A discussion was held with the operator prior to site about any notable corrosion of the stack and any associated gantries etc. due to atmospheric conditions and the close proximity of the station to the coast. The power station is new (commissioned 2012) and some surface corrosion was picked up and classed as minor in the stack inspection report for Unit 31. The photograph below left is of the stack on Unit 41 and below right is of the sampling platform on Unit 21 both were taken from the base of Unit 31 during the site visit.



B. Horiba PG250 instrumental analyser used for periodic monitoring of NO_x, CO and Oxygen. MCERTS certification number: MC050056/04 (a score of 5 is applied for MCERTS certificated equipment with an appropriate operating range).

C. All instrumental methods are United Kingdom Accreditation Service (UKAS) accredited to the MCERTS performance standard under certificate 1015. The standard reference methods used for periodic monitoring include chemiluminescence for NO_x (BS EN 14792), infra-red for Carbon Monoxide (BS EN 15058) and Zirconium cell for Oxygen (BS EN 14789), as stipulated in TGN M2 (NB/ if MCERTS accreditation for the relevant determinands and methods this would indicate a score of 5, this also applies to 2D and 2E).

OMA 3: Continuous monitoring		
OMA ELEMENTS	SCORE	COMMENTS
A. Provisions for monitoring and location of CEMs <i>Critical Element</i>	5	The monitoring platform fully meets the requirements as per TGN M1 for parallel testing to be conducted effectively (QAL 2 / AST / homogeneity testing). The sampling provisions of the CEMS are located at the same level as the manual sampling positions. 4 points at 90 degrees. Flange above each port.
B. Certification of CEMs	5	SICK Maihak GmbH DEFOR used for monitoring NOx; Siemens Oxymat/Ultramat 6 used for monitoring CO and Oxygen. All equipment is MCERTS certified.
C. Calibration methods <i>Critical element</i>	5	OAL2 & AST calibrations checks as required and undertaken. QAL 2 calibration functions are applied correctly. Zero and span checks are completed weekly for both CEMS as part of ongoing QAL3 procedures, using accredited (UKAS) traceable reference materials (gases), which are of the appropriate concentration in relation to the determinands ELV. Control charts also used as part of the QAL3 process for extra integrity.
D. Frequency of maintenance and calibration	5	OAL 2 and AST testing is completed as per the appropriate time frame (QAL2 every 5 years and AST annually). QAL 3 frequency is weekly.
E. Reliability of equipment (data availability)	5	CEMs records shown to be very reliable, greater than 98% data availability.
F. Breakdown response	5	Operator has a 24 hour call out contract with Siemens. Spares and parts are held on site, which are maintained appropriately by operator/service engineer. Operator has suitably qualified personnel to carry out maintenance tasks, breakdowns and if it can't be rectified in house a call out contract.
G. Traceability	5	UKAS accredited calibration gases. All cylinders being used for QAL3 purposes were in date, with the cylinder levels continuously monitored. Calibration certificate copies were on operator's computer system as well as with gas cylinder. Maintenance records for CEMS also on operators system.
OMA 3 – SCORE	40/40	100%

SUMMARY COMMENTS FOR OMA 3

B. MCERTS certification number for Siemens Oxymat/Ultramat 6 CEM: MC 040035/05
MCERTS certification number for Sick Maihak GmbH DEFOR CEM: MC 100182/03 (a score of 5 is applicable for MCERTS-certified equipment with an appropriate operating range).



C. During the on-site visit a review of the CEMS and traceable gases was made. The photographs above were taken of some of the traceable gases located on the CEMS cabin for unit 31.

The gases held in the store are covered by an automatic ordering system. Some gases have a long life compared to others.

OMA 4: Quality assurance		
OMA ELEMENTS	SCORE	COMMENTS
A. External quality control schemes	5	ESG participates in inter laboratory and EN 14181 proficiency testing schemes. Internal OMA audits also take place during periodic monitoring. The operator referred to the improvements they had made following an internal audit i.e. MCERTS awareness and OMA training.
B. Internal data quality control	5	CEMs data are reviewed daily and trends assessed to allow for intervention. Unusual activity/emissions is investigated. CEM systems all have approach to limit alarms. Data is corrected and 95% confidence intervals applied. The operator outlined the systems in place and the timeline for the retention and back up of the monitoring.
C. Competence of monitoring personnel	5	ESG – MCERTS level 2 with appropriate technical endorsements for monitoring the relevant determinands. A copy of the MCERTS awareness and OMA training for DW was provided to demonstrate this element.
D. Auditing of monitoring	5	ESG monitoring personnel are subject to internal & UKAS auditing. Operator audits ESG periodically (ad hoc), mainly focusing on H+S issues/requirements.
E. Audit compliance	5	All audit records are available, tracking of actions arising was demonstrated during audit (including from most recent OMA).
F. Reporting	5	Environmental monitoring for emissions to air reported in compliance with permit requirements.
OMA 4 – SCORE	40/40	100%
SUMMARY COMMENTS FOR OMA 4		
C. The MCERTS personnel competency scheme is applicable to people who carry out manual stack emission monitoring. A level 2 certificate person with technical endorsements appropriate to the methods specified in the permit is required to approve the site specific protocol, lead the site work and approve the monitoring report. An individual's certificate status can be confirmed by referring to their MCERTS certificate or identification card. The operator advised that their contractor's individual identification cards were checked for site personnel attending the station to undertake environmental monitoring.		

D. Monitoring measurement procedures for ESG and adhoc audit of samplers attending site undertaken and available. Also an adhoc OMA audit was undertaken internally by the operator and as discussed in the above improvements were noted, tracked and actioned.

Acknowledgements

Content based on Environment Agency Operator Monitoring Assessment Version 4, January 2013 Reporting Template, Emissions to Air - used with permission.

Further Information

More Guidance regarding Operator Monitoring Assessment (V4) can be found at the following GOV.UK webpages (Environment Agency Guidance Notes):

[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/301267/Preparation for an OM A audit.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/301267/Preparation_for_an_OM_A_audit.pdf)

[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/301257/Industrial installations regulated under the EPR - emissions to air.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/301257/Industrial_installations_regulated_under_the_EPR_-_emissions_to_air.pdf)