Compliance Assessment Report

Report ID:
CAR_NRW0032279

This form will report compliance with your permit as determined by an NRW officer					
Site	Barry CHP	Permit Ref	JP3632ZH		
Operator/Permit holder	Engie FM Ltd				
Regime	Installations				
Date of assessment	30/08/2017	Time in	10:00	Out	13:30
Assessment type	Audit				
Parts of the permit assessed	Emissions, Incident				
Lead officer's name	Griffiths, Toby				
Accompanied by	Lewis, Kirsty				
Recipient's name/position	Paul Searle/ Electrical Engineer	Date issued	10/10/2017		

Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations or the licence under the Water Resources Act 1991 as amended by the Water Act 2003. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (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	CCS Category	Condition(s) breached
B1 - Infrastructure - Engineering for prevention and control of emissions	A	
	X	
	X	
B4 - Infrastructure - Containment of stored materials	X	
C2 - General Management - Management system and operating procedures	C3	1.1.1(a)
	X	
	X	
E1 - Emissions - Air	C3	3.2.1
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	A	
	X	
G3 - Monitoring and Records, Maintenance and Reporting - Maintenance records	A	
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	A	

KEY: See Section 5 for breach categories, suspended scores will be indicated as such.
A = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,
O = Ongoing non-compliance, not scored.

Number of breaches recorded	**2**	**Total compliance score** (see section 5 for scoring scheme)	8

If the Number of breaches recorded is greater than zero, please see Section 3 for 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 (eg. 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 advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

Site visit of 30th August 2017

Hiram Mullan, Compliance Manager, Mechanical UK (HM)

Mark John, Operations Manager (MJ)

Paul Searle, Electrical Engineer (PS)

1. Business update

There have been changes at management level since the last visit. HM is now in a more senior role, although is still providing support to site. MJ is taking over as the new Operations Manager. Dow Corning is the owner of the CHP plant, with Engie as the O&M contractor. Discussions are advancing on the potential of taking on the CHP permit, either as standalone or incorporated into the Dow permit. A transfer of the permit will be required should this go ahead. Engie expect the transfer to have completed by 1st March 2018. NRW will continue to discuss the changes with Dow and Engie.

NRW plans to conduct an Operator Monitoring Assessment (OMA) audit later this year as part of the routine compliance activity. The requirement to transfer the Greenhouse gas permit has been requested in several requests from NRW, and this must be expedited by Engie.

Improvement Condition IC5, regarding the options appraisal for the HP boiler has been received by NRW. NRW will provide feedback to Engie in due course.

CEMS fault

Following the recent annual service, Engie reported a fault with a CEMS unit relating to the O_2/NO cell and associated processor board. Land instruments have been on site to carry our repairs. Any invalid hours should be logged as part of permit conditions 3.6.2 and 3.6.7. In addition, Engie discovered a fault with the way the Envirosoft software was recording invalid data for all three units, rather than the one in fault. This issue is being followed up with the software company. Engie have retained paper records for the missing periods. No exceedances of emission limited were reported. The 2016 AST was received by NRW and will be reviewed in due course.

2. Last visit actions

All actions were completed. However, NRW will follow up on the following items:

DFO tank bund. A review of bund integrity has been completed and some modifications are recommended to improve the fire resistance of the joints as per CIRIA C736 guidance. Since Dow own the assets, there is discussion needed over who will action the modifications.

Action 1: Please discuss the DFO bund review with Dow including the recommendations to improve the fire resistance of joints, including timescales for any works.

Replacement HCl tank. A new polypropylene chemical resistant HCL tank has been installed within the same bund as before. Repairs to the GRP lining of the bund were carried out at the same time. This work is

commended.

Fume corrosion inside WTP building. This has been linked to a minor leak of caustic solution from a manifold on the injection pumps, causing a build-up of a large crust deposit. It is thought that this created a localised corrosive atmosphere sufficient to accelerate surface rusting of steelwork. The crust has obviously built up over a long period, which raises questions over the adequacy of the daily/weekly checks and maintenance programme. In addition, the contractor who routinely services the area had not reported the issue. A repair was confirmed as complete on the 9th October (during October outage) by phone call. There is no evidence of a liquid leak or significant problem other than some surface corrosion of the nearby steelwork. As such, it is a minor issue, although the maintenance procedures need to be reviewed to understand why it was not identified previously.

Action 2: Please review maintenance and checking procedures for the acid/caustic delivery systems in the WTP.

3. Incident review: Black smoke release on 18th June

An emission of black smoke from the main stack was reported by the neighbouring Dow site and by members of the public. The issue also appeared in the local press. Engie reported the incident as required under permit condition 4.3.1. NRW considers black smoke is a *"substance not controlled by emission limits"* under condition 3.2.1, and is therefore a breach of this condition. The smoke came from emission point A1, which is a GT fired HRSG boiler. CEMS data indicated that emissions of CO and NOx remained within the daily average permit limits. Details of the fault is summarised as follows:

High ambient temperatures reduced the efficiency of the lube oil coolers to the point of causing one GT to trip. Historical weather records for the period indicate temperatures of 28ºC and Engie reported that the GT sensor recorded 30.54ºC on site. Without heat from the GT exhaust, the HRSG boiler was changed to forced draught (FD) mode. The automatic oxygen trim sensor (which only operates in FD mode) was known to be faulty, and so the operators used a manual trim protocol. The CEMS began to detect increases in emissions and alarmed to notify the operators of a problem Unfortunately, the manual trim was not successful and black smoke was created. There was some delay in contacting a manager for advice. Once aware of the smoke, the operators shut the unit down. The whole event lasted for around 2 hours, although the black smoke was likely to have lasted a much shorter period. The other boilers were unaffected. The impact on the environment is considered negligible. However, it is prudent to investigate the root causes of the incident. The causes of the incident have been split into points and explored as follows:

Lubrication oil cooling efficiency

Each GT has a dedicated lube oil cooler (essentially a radiator) mounted outside on a metal platform. These are designed for a range of temperature expected in the UK and 30ºC is towards the upper design limit. During warm weather, water hoses have occasionally been used to improve the heat exchange. On this occasion, the hoses were used only after the GT trip had already occurred. During the site tour, it was noted that one of the oil coolers was mounted higher than the other when originally built. There was no known reason for this, and Engie do not consider that this reduces cooling efficiency. Engie intend to clean the heat exchangers and change the lube oil at the next outage as part of routine maintenance. As water hoses are used for extra cooling on an ad hoc basis, Engie could consider whether a more formal procedure for improving cooling should be in place when ambient temperatures reach a certain level.

Action 3: Please review and confirm the procedure for improving cooling when ambient temperatures are high.

Action 4: Please outline the routine maintenance required for the oil cooling system.

Faulty sensor

The automatic oxygen trim sensor was known to be faulty and Engie had written a temporary protocol to allow the trim to be done manually. This is discussed further below. A new unit is on order, although it was stated that there was a long lead time for a replacement (~4 months). It was unclear when the fault was

originally found, how long it was before a replacement was ordered, and whether the lead time is reasonable.

Action 5: Please confirm the date when the O_2 sensor was found to be faulty and the date when replacement was subsequently ordered, including details of the supplier.

Fault with manual trim protocol (local instruction)

After the incident, it was discovered that the temporary manual trim protocol was lacking a default value for oxygen. Leaving this entry blank in the DCS system allowed an incorrect air/fuel ratio to establish, causing black smoke. This can be seen in the emissions results, where CO and NOx emissions are seen to spike due to incomplete combustion. Engie have since rectified this issue by inputting a default value of 6.5% oxygen in the DCS system. Clearly, this was an oversight which has now been remedied. The revised protocol has since been tested and operates correctly. As required under Permit Condition 1.1.1(a) the site management system should include the management of change, to ensure that any changes to the operating procedures are checked before sign-off. This may have prevented the incident. In view of this, a n*on-compliance, Permit condition 1.1.1(a), Category 3 (minor)* has been recorded. NRW accepts that the potential impact of the incident would have been low. A second *non-compliance* for the emission of black smoke has been recorded under *Permit condition, 3.2.1* Category 3 (minor), in relation to substances not controlled by ELVs.

Action 6: Please submit the completed incident review, including any improvements identified.

4. Monitoring Requirements

NRW was asked to clarify the requirements for the periodic monitoring of the GTs and boilers. The requirements have been summarised in the below table. See permit condition 2.3.2 which refers to the compliance protocol.

Periodic Monitoring Requirements (6 monthly and annual)

Permit reference	**Emission point**	**Parameter**	**Frequency**	**Comments**
Table S3.1 (a) (b) (c) (e) Table S4.1	A1 & A3, fired on oil or gas	SO_2 and dust mg/m^3	6 monthly by calculation	*Refer to protocol for the calculation for GTs
	A2, fired on oil or gas	SO_2 and dust mg/m^3	6 monthly by calculation	*Refer to protocol for the calculation for boilers. (Based on sulphur content of fuel or emission factors.)
	A4 & A5 fired on oil or gas	SO_2 and dust mg/m^3	6 monthly by calculation	
	A4 & A5 fired on oil or gas	NO_x (as NO_2) and CO mg/m^3	6 monthly by calculation	#The protocol (section 4.1.3) refers to operation >500hours requiring monitoring, and within 4380hours or every two years. Historically, A4 and A5 had annual extractive testing for NO_x and CO and it may be appropriate to

				continue.
Table S4.3	Total mass releases for LCP 60 (i.e. total releases for plant)	NO_x, SO_2, dust Tonnes	Annually, by calculation	*Refer to protocol for the calculation of mass releases based on fuel factors.

*Calculation can be based on standard emissions factors or historic monitoring derived emissions factors. For GT's, fired on natural gas, dust emissions are deemed to be zero. Guidance on dust reporting will be attached as a pdf.

#Discussion can be had with NRW over whether this approach remains appropriate, depending on the operating regime. [Action 7]

Compliance protocol at this link: https://www.energy-uk.org.uk/publication/272-governmentdocuments.html

Action 7: Please confirm the operating regime of the A4 and A5 MP boilers, including average running hours (on load) per year, including the feasibility of periodic monitoring. Please also include historic data for NOx (as NO2) and CO mg/m3 to enable the variability in emissions to be determined.

Please respond to the actions by **17th November 2017.**

END

Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	**Report ID: CAR_NRW0032279**

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

Site	Barry CHP	Permit Ref	JP3632ZH
Operator/Permit holder	Engie FM Ltd	Date	30/08/2017

Section 3 – Enforcement Response

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.

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.

Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

Criteria Ref.	**CCS Category**	**Action required/advised**	**Due Date**
See Section 1 above			
E1	C3	As per Action 6	17/11/2017
C2	C3	Please forward on the completed incident review, including any improvements identified.	17/11/2017
G1	X	See Action 7 in main text.	17/11/2017
B1	X	See Action 5 in main text.	17/11/2017
C2	X	See Action 4 in main text.	17/11/2017
B1	X	Action 3. See main text.	17/11/2017
C2	X	Action 2. See main text.	17/11/2017
B4	X	See Action 1 in main text.	17/11/2017

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 verbally or 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.

See our Enforcement and Civil Sanctions guidance for further information

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 that 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.

Section 6 – General information

Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW 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 (eg. 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 its service
- Freedom of Information Act/Environmental Regulations request

The NRW 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 NRW 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 fifteen working 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 you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

Welsh Language
If you would like this form in Welsh please contact your Regulatory Officer.