

Pembroke Power Station –Response to Regulation 60 Notice

Location: Pembroke Power Station

Permit Number: DP3333TA

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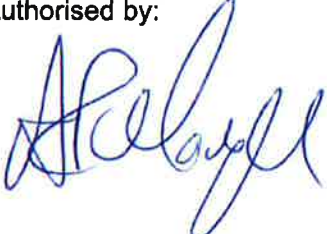
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Pembroke Power Station – Response to Regulation 60 Notice

Prepared by:



DAP Williams
Environmental Engineer

Reviewed by:	Authorised by:
	
Z Harrison EMD Team Manager	A Morgan Station Manger

This document has been prepared in response to the Regulation 60 Notice issued by the Natural Resources Wales on 18th November 2014.

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1 Introduction

This document sets out responses to a Regulation 60 notice issued by Natural Resources Wales in order to gain relevant information to vary the existing Environmental Permit for the site to ensure implementation of the Industrial Emissions Directive (IED) from January 2016.

2 Responses to questions

2.1 Question 1

The name (DEFRA LCP identifier) of each Large Combustion Plant (LCP) and its date of operational commencement. Please use the link below to obtain the DEFRA LCP identifier:-

http://cdr.eionet.europa.eu/gb/eu/lcpes/envusnpzq/UK_LCP_Inventories_2010_2012.zip/manage_document

Response

DEFRA LCP Identifier	Date of Operational Commencement
439/286 (A1)	10th November 2011 (Permit Issue)
439/382 (A2)	10th November 2011 (Permit Issue)
439/383 (A3)	10th November 2011 (Permit Issue)
439/384 (A4)	10th November 2011 (Permit Issue)
439/385 (A5)	10th November 2011 (Permit Issue)

Note: 439 is the previous LCP ID. The following three numbers are the new EIONET Plant ID's.

2.2 Question 2

For each LCP, state which compliance route you have selected.

If you have not yet made a final choice between two (or more) compliance routes for an LCP, then all compliance routes under consideration shall be identified here for each relevant LCP.

- i. Article 30(2) Annex V Part 1 – ELV
- ii. Article 30(2) Annex V Part 3(2)(a) – 10,000 hour operational plant.
- iii. Article 30(2) Annex V Part 1 – 1,500 Limited Hours Derogation (LHD). Note: this can apply to the whole or part of a LCP.
- iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation.
- v. Article 30(2) Annex V Part 2 – ELV
- vi. Article 30(2) Annex V Part 2 – 500 hour emergency operation.
- vii. Article 32 – Transitional National Plan (TNP).
- viii. Article 33 – Limited Lifetime Derogation (LLD).

ix. De-rating to less than 50 MW net rated thermal input

Response

DEFRA LCP Identifier	Compliance Route(s)
439/286 (A1)	i. Article 30(2) Annex V Part 1 – ELV and iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation*.
439/382 (A2)	i. Article 30(2) Annex V Part 1 – ELV and iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation*.
439/383 (A3)	i. Article 30(2) Annex V Part 1 – ELV and iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation*.
439/384 (A4)	i. Article 30(2) Annex V Part 1 – ELV and iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation*.
439/385 (A5)	i. Article 30(2) Annex V Part 1 – ELV and iv. Article 30(2) Annex V Part 1 – 500 hour emergency operation*.

* This option is in addition to the compliance route for normal CCGT Operation to cover Open Cycle Running.

2.3 Question 3

Provide evidence of any notification you may have already made in relation to the TNP and LLD.

Response

Not Applicable

2.4 Question 4

The configuration of each LCP:-

i. Identify the types(s) of combustion unit within the LCP:-

- Boiler
- Open Cycle Gas Turbine (OCGT)
- Combined Cycle Gas Turbine (CCGT)
- Engine
- Any other.

Response

Unit Type	Number of units	Fuel Options	Venting arrangements
CCGT	5 (A1, A2, A3, A4 & A5)	Natural Gas	5 single units venting into their own dedicated windshields

ii. For CCGTs, provide mode of operation details:-

Is the GT run on its own? If so, identify the windshield through which the combustion gases vent.

Response

The GT does run on its own and in this instance it goes through the same windshield as when in combined cycle mode.

Is the waste heat recovery boiler fired in auxiliary mode? If so, identify the windshield through which the combustion gases vent.

Response

No

iii. Identify the fuel options available for each combustion unit within the LCP.

Response

Included in table above.

iv. Identify how each combustion unit vents its waste gases:-

- Single unit venting into its own dedicated windshield.
- Multiple flues within a common windshield.
- Multiple units venting into a common 'chimney' stack.
- Any other combination.

Response

Included in table above.

2.5 Question 5

The net rated thermal input of the LCP and the method by which it was derived [including evidence of any de-rating or proposals for de-rating including a time scale for implementation.]

Response

DEFRA LCP Identifier	Rated thermal input	Method
439/286 (A1)	756MWth	Rated Output/Efficiency (from Performance Guarantee)
439/382 (A2)	756MWth	
439/383 (A3)	756MWth	
439/384 (A4)	756MWth	
439/385 (A5)	756MWth	

2.6 Question 6

Define the “minimum start up load” and “minimum shut-down load”, for each unit within the LCP as required by the Implementing Decision 2012/249/EU¹ in terms of:

- i. The output load (i.e. electricity, heat or power generated) (MW); and
- ii. This output load as a percentage of the rated thermal output of the combustion plant (%).

And / Or

- iii. At least three criteria (operational parameters and / or discrete processes as detailed in the Annex) or equivalent operational parameters that suit the technical characteristics of the plant, which can be met at the end of start-up or start of shut-down as detailed in Article (9) 2012/249/EU.

Response

Minimum start up load

Unit	Generated load (MW)	Percentage of rated electrical output (%)	Criteria/Operational parameters
439/286 (A1)	190MW	42%	N/A
439/382 (A2)	190MW	42%	N/A
439/383 (A3)	190MW	42%	N/A
439/384 (A4)	190MW	42%	N/A
439/385 (A5)	190MW	42%	N/A

Minimum start up load for low load operation only:

Unit	Generated load (MW)	Percentage of rated electrical output (%)	Criteria/Operational parameters
439/286 (A1)	N/A	N/A	GT speed 3000rpm, EV burner in service, SEV burners off. Steam turbine bypass valve closed and steam turbine at 3000rpm
439/382 (A2)	N/A	N/A	
439/383 (A3)	N/A	N/A	
439/384 (A4)	N/A	N/A	
439/385 (A5)	N/A	N/A	

Minimum shut-down load

Unit	Generated load (MW)	Percentage of rated electrical output (%)	Criteria/Operational parameters
439/286 (A1)	190MW	42%	N/A
439/382 (A2)	190MW	42%	N/A
439/383 (A3)	190MW	42%	N/A
439/384 (A4)	190MW	42%	N/A
439/385 (A5)	190MW	42%	N/A

Minimum shut-down load for low load operation only:

Unit	Generated load (MW)	Percentage of rated electrical output (%)	Criteria/Operational parameters
439/286 (A1)	N/A	N/A	GT speed 3000rpm, SEV burners off. Steam turbine bypass open and steam turbine speed <3000rpm
439/382 (A2)	N/A	N/A	
439/383 (A3)	N/A	N/A	
439/384 (A4)	N/A	N/A	
439/385 (A5)	N/A	N/A	

2.7 Question 7

For Coal fired power stations entering into the TNP or LLD, with reference to section 'Coal fired stations' in the IED BAT ESI Review paper 28 October 2014, will you comply with the Sector approach? If 'yes' you do not need to answer any further questions.

Response

Not applicable

2.8 Question 8

For Coal fired power stations entering into the TNP or LLD not able to comply with the Sector approach to ELVs, with reference to the IED BAT ESI Review paper 28 October 2014:-

- i. Provide your proposed ELVs and describe how they accord with the principles outlined in section 'Site Specific ELVs for Coal fired Plant' on page 4 of that paper.

Response

Not applicable

2.9 Question 9

For all other Chapter III LCPs, with reference to the IED BAT ESI Review paper 28 October 2014:-

- i. Provide your proposed ELVs and describe how they accord with the principles outlined on:-
- For Coal combustion plant entering as Article 30(2) – ELV plant, page 3 of that paper.
 - For all other combustion plant, page 8 of that paper.

Note: You do not need to provide proposed ELVs for Article 30(2) Annex V Part 2 – 500 hour GT emergency operation plant.

Response

<i>Unit</i>	<i>Substance</i>	<i>Proposed ELV</i>	<i>Reference period (24hr/monthly)</i>
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	50mg/nm3	Monthly
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	50mg/nm3	Daily
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	50mg/nm3	Hourly (95%ile of Hourly Average)
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	100mg/nm3	Monthly
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	100mg/nm3	Daily
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	200mg/nm3	Hourly (95%ile of Hourly Average)

Limits proposed consistent with the principles described in the IED BAT ESI Review paper 28 October 2014 which states that limits will not be tighter than Annex V unless a currently permitted ELV is already tighter.

ii. For open cycle gas turbines (OCGTs), combined cycle gas turbines (CCGTs) and combined heat and power (CHP), with reference to Annex V Part 1(6) and Part 2(6) of the IED, if you wish to apply for the higher oxides of nitrogen ELVs, provide the efficiency of each unit within the LCP, the LCP as a whole and with the method by which it was derived.

Not applicable

iii. For gas turbines (GTs), including CCGTs, with reference to (6) above and your review of emissions data, propose ELVs for each unit and the LCP for operation between Minimum Start-up Load (MSUL) / Minimum Shutdown Load (MSDL) and 70% load. Supply the method by which they were derived.

Response

Unit	Substance	Proposed ELV (MSUL/MSDL – 70% load)	Reference period (24hr/monthly)
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	No Limit Proposed	Monthly
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	No Limit Proposed	Daily
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	NOx	100mg/nm3	Hourly (95%ile of Hourly Average)
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	No Limit Proposed	Monthly
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	No Limit Proposed	Daily
439/286 (A1), 439/382 (A2), 439/383 (A3), 439/384 (A4) & 439/385 (A5).	CO	400mg/nm3	Hourly (95%ile of Hourly Average)

The limits proposed are based on site specific data and operational experience and can be discussed with NRW on-site.

2.10 Question 10

For gas fired plant only. With reference to Article 30(6), if you wish to apply for the derogation to not undertake monitoring when on standby fuels, where such fuels are used less than 240 hours/year, provide a justification.

Response

Not applicable

2.11 Question 11

Monitoring Requirements. With reference to the IED:-

a. Sulphur Dioxide, Oxides of Nitrogen, dust and Carbon Monoxide.

i. Annex V Part 3(1) - LCP which are less than 100MWth input, or

ii. Annex V Part 3(2)(a) – 10,000 hour operational plant.

If you currently use CEMs and you want to apply for six-monthly monitoring (Annex V Part 3(3)), provide a justification.

Response

Monitoring undertaken in compliance with the ESI – IED Compliance Protocol for Utility Boilers and Gas Turbines, January 2015. This includes monitoring of CO and NOx continuously and calculation of SO2 and PM from emission factors.

b. Sulphur Dioxide and dust

i. Annex V Part 3(2)(b) – combustion plant fired on natural gas.

If you currently use CEMs and you want to apply for six-monthly monitoring (Annex V Part 3(3)), provide a justification.

Response

Monitoring undertaken in compliance with the ESI – IED Compliance Protocol for Utility Boilers and Gas Turbines, January 2015. This includes monitoring of CO and NOx continuously and calculation of SO2 and PM from emission factors.

c. Sulphur Dioxide.

i. Annex V Part 3(2)(c) and (d) – combustion plant fired on oil with known sulphur content and combustion plant fired on biomass respectively

If you currently use CEMs and you want to apply for six-monthly monitoring (Annex V Part 3(3)), provide a justification.

Response

Monitoring undertaken in compliance with the ESI – IED Compliance Protocol for Utility Boilers and Gas Turbines, January 2015. This includes monitoring of CO and NOx continuously and calculation of SO2 and PM from emission factors.

d. Sulphur Dioxide and Oxides of Nitrogen.

i. If you currently undertake six-monthly monitoring and you want to apply for the Annex V Part 3(5) monitoring derogation, provide a justification and a copy of your procedures.

Response

Monitoring undertaken in compliance with the ESI – IED Compliance Protocol for Utility Boilers and Gas Turbines, January 2015. This includes monitoring of CO and NO_x continuously and calculation of SO₂ and PM from emission factors.

RWE Generation UK plc

RWE Generation UK plc
Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire
SN5 6PB

T +44 (0)1793 877777
F +44 (0)1793 892525
I <http://www.rwe.com>

Registered Office:
RWE Generation UK plc
Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire
SN5 6PB
Registered in England
& Wales: No. 3892782