

Environment Agency

Review of an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2010 (as amended)

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/BX3295IU

The operator is: Veolia Energy & Utility Services UK plc

The Installation is: Billingham Fertiliser Works

This Variation Notice number is: EPR/BX3295IU/V004

What this document is about

All Environmental permits which permit the operation of large combustion plant (LCP), as defined by articles 28 and 29 of the Industrial Emissions Directive (IED), need to be varied to implement the special provisions for LCP given in the IED, by the 1 January 2016 (Article 82(3)). The IED makes special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V.

The IED provides a period of transition towards the new ELVs via Article 32, the Transitional National Plan (TNP). It also makes provision for plant that wish to be exempted from compliance with the new ELVs in Article 33, the Limited Life Derogation (LLD). Other derogations include limited operating hour regimes for sites using 500 hr or 1500 hr derogations. There are also options for exemption from emission limits based on operating hours.

The operator has submitted responses to our notice requiring information, issued under regulation 60(1) of the Environmental Permitting Regulations (EPR), which has provided us with information on which compliance route they wish to follow for each LCP. The responses also include specific details relating to each LCP, necessary for accurate implementation the IED requirements. A copy of the regulation 60 notice and the operator's response is available on the public register.

We have reviewed the permit for this installation, including all variations since the last permit consolidation, and referred to the operator's response to the regulation 60 notice requiring information. This is our decision document, which explains the reasoning for the consolidated variation notice that we have issued.

It explains how we have reviewed and considered the compliance routes and, where relevant, the emissions limits proposed by the operator for each LCP on the installation. This review has been undertaken with reference to the:

- Chapter III and annex V of the IED
- “IED BAT Non-ESI Review Paper, 28 October 2014” produced by the Environment Agency (referred to as the “2014 Non-ESI BAT review paper” in this document)
- “Electricity Supply Industry – IED compliance protocol for Utility Boilers and Gas Turbines”, published by the Joint Environmental Programme.

It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position.

As well as implementing the chapter III IED compliance of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. It also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and philosophy and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to chapter III review.

How this document is structured

Glossary

1. Our decision
2. How we reached our decision
3. The legal framework
4. Key Issues

GLOSSARY

Baseload	means: (i) as a mode of operation, operating for >4000hrs per annum; and (ii) as a load, the maximum load under ISO conditions that can be sustained continuously, i.e. maximum continuous rating
BAT	best available techniques
BREF	best available techniques reference document
Derogation	as set out in Article 15(4) of the IED
Emergency use	<500 operating hours per annum
ELV	emission limit value set out in either IED or LCPD
IED	Industrial Emissions Directive 2010/75/EC
LCP	large combustion plant – combustion plant subject to Chapter III of IED
LCPD	Large Combustion Plant Directive 2001/80/EC
MCR	Maximum Continuous Rating
MSUL/MSDL	Minimum start up load/minimum shut-down load
Part load operation	operation during a 24 hr period that includes loads between MSUL/MSDL and maximum continuous rating (MCR)

1 Our decision

We have decided to issue the Variation Notice to the operator. This will allow it to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The Consolidated Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of “tailor-made” or installation-specific conditions, or where our Permit template provides two or more options.

2 How we reached our decision

2.1 Requesting information relating to the requirements of Chapter III of and Annex V to the IED

We issued a Notice under Regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 27/05/15 requiring the operator to provide information for each LCP they operate, including:

- The type of plant, size and configuration.
- The proposed compliance route.
- Minimum start up and shut down loads.
- The proposed emission limits and how they accord with the 2014 BAT review paper.
- Any request to move from continuous to 6 monthly monitoring, or to derogate from 6 monthly monitoring, with a justification.

The Regulation 60 Notice response from the operator was received on 21/07/15.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. We therefore issued a further information request to the operator. Suitable further information was provided by the operator on 05/08/15.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review.

The operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 60 Notice response that appears to be confidential in relation to any party.

3 The legal framework

The Consolidated Variation Notice will be issued under Regulations 18 and 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Consolidated Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Meeting the requirements of the IED

The table below shows how each requirement of the IED has been addressed by the permit conditions.

IED Article Reference	IED requirement	Permit condition
30(6)	If there is an interruption in the supply of gas, an alternative fuel may be used and the permit emission limits deferred for a period of up to 10 days, except where there is an overriding need to maintain energy supplies. The EA shall be notified immediately.	Not applicable
32(4)	For installations that have applied to derogate from the IED Annex V emission limits by means of the transitional national plan, the monitoring and reporting requirements set by UK Government shall be complied with.	Not applicable
33(1)b	For installations that have applied to derogate from the IED Annex V emission limits by means of the Limited Life Derogation, the operator shall submit annually a record of the number of operating hours since 1 January 2016;	Not applicable
37	Provisions for malfunction and breakdown of abatement equipment including notifying the EA.	Not applicable
38	Monitoring of air emissions in accordance with Ann V Pt 3	3.5, 3.6
40	Multi-fuel firing	Not applicable
41(a)	Determination of start-up and shut-down periods	2.3.5 Schedule 1 Table S1.4
Ann V Pt 1(1)	All emission limit values shall be calculated at a temperature of 273,15 K, a pressure of 101,3 kPa and after correction for the water vapour content of the waste gases and at a standardised O2 content of 6 % for solid fuels, 3 % for combustion plants, other than gas turbines and gas engines using liquid and gaseous fuels and 15 % for gas turbines and gas engines.	Schedule 6, Interpretation
Ann V Pt 1	Emission limit values	3.1.2 Schedule 3, Table S3.1
Ann V Pt 1	For plants operating less than 500 hours per year, record the used operating hours	Not applicable
Ann V Pt 1(6(1))	Definition of natural gas	Schedule 6, Interpretation
Ann V Pt 2	Emission limit values	3.1.2 Schedule 3, Table S3.1
AnnV Pt 3(1)	Continuous monitoring for >100MWth for specified substances	Not applicable
AnnV Pt 3(2, 3, 5)	Monitoring derogations	3.5.1 Schedule 3, Table S3.1

IED Article Reference	IED requirement	Permit condition
AnnV Pt3(4)	Measurement of total mercury	3.5.1 Schedule 3, Table S3.1
AnnV Pt3(6)	EA informed of significant changes in fuel type or in mode of operation so can check Pt3 (1-4) still apply	2.3.1 Schedule 1, Table S1.2
AnnV Pt3(7)	Monitoring requirements	Not applicable
AnnV Part 3(8,9,10)	Monitoring methods	3.5, 3.6
AnnV Pt 4	Monthly, daily, 95%ile hourly emission limit value compliance	3.5.1 Schedule 3, Table S3.1
AnnV Pt7	Refinery multi-fuel firing SO2 derogation	Not applicable

4. Key Issues

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Where relevant and appropriate, we have incorporated the techniques described by the operator in their Regulation 60 Notice response as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.

The variation notice uses a LCP number in accordance with the most recent DEFRA LCP reference numbers. No reference number was previously allocated. The new number is LCP405

This LCP consists of 3 x 25 MWth boilers which vent via three separate flues within a single windshield at emission point A1. They aggregate to a single 75MWth LCP. The units burn natural gas.

Compliance Route:

The operator has proposed to operate this LCP under the ELV compliance route.

Net Rated Thermal Input:

The Applicant has stated that the Net Thermal Input is of each boiler is 25MWth. They have justified this figure as the original manufacturer's specification of the boilers. They have provided no explanation as to why a more accurate assessment of the thermal input cannot be made. A standard improvement condition has been included in the permit to prompt this assessment and provide a figure with a higher level of confidence.

Minimum start up load and Minimum shut-down load:

The operator has defined the "minimum start up load" and "minimum shut-down load" for the LCP in their response to question 6 of the Reg 60, in terms of the output load (i.e. heat generated) as one of three discrete processes or thresholds for 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 and

We agree with all of these definitions and have set these thresholds in table S1.4 of the permit accordingly. Standard permit condition 2.3.5 has been set to define the period of start up and shut down, referring to the thresholds in this table. Standard permit condition 3.5.1 has been set to require the operator to monitor the operational parameters.

Emission limits:

The operator has proposed limits in line with annex V of the IED and the 2014 BAT review paper. Consequently we have accepted the proposed limits and incorporated them into table S3.1 of the permit.

Under IED, this is a Chapter III LCP and will have a NO_x ELV of 140 and a CO ELV of 110, with 6 monthly periodic monitoring. The current permit includes an ELV of 140mg/m³ for NO_x. Question 6 of the EA's FAQ v14 guidance allows for site specific ELV's at low use plant. There have been no improvements made to the plant since the last permit review so there is no ELV headroom to remove. The 140 ELV for NO_x may therefore be used under this IED permit as it is BAT.

The current permit does not include an ELV for CO but this is a requirement of the IED. Question 3 of the EA's FAQ v14 guidance indicates that '*the most applicable short term emission limit value applicable where only periodic monitoring is required is the daily average value (i.e. 110% of the headline IED Annex V emission limit value)*'. Therefore the new permit includes an ELV for CO of 110mg/m³.

LCP	Parameter	Existing ELV	Reg60 ELV	New ELV
405	Oxides of Nitrogen	140	140	140
	Carbon Monoxide	-	110	110
	Sulphur Dioxide	-	-	35
	Dust	-	-	5

Whilst the plant is made up three separate boilers, they share a common windshield and comprise a single LCP. The emission limits apply to the LCP rather than to the individual boilers.

Reporting efficiency:

In order to ensure the efficiency of plant using fossil fuels or biomass is maximised and regularly recorded, condition 1.2.1(c), condition 4.2.2(b) and table S4.2 have been added to the permit.

Monitoring & standards:

The monitoring period must be representative of the emissions from the stack therefore a sampling period of 3x30minutes may obtain representative results from a stable process, or they may require something a little longer. The operator must justify their approach, so we have included an Improvement Condition (IC2) to review monitoring frequency, scheduling, standards and periods.

A row has been included in table S3.1 which requires the operator to confirm compliance with BS EN 15259 in respect of monitoring location and stack gas velocity profile in the event there is a significant operational change (such as a change of fuel type) to the LCP.

The JEP IED Compliance Protocol describes periodic monitoring at low use sites (Pages 21 and 22):

The requirement to then perform six-monthly discontinuous measurements is difficult to fulfil for plant operating sporadically, for reasons of cost and practicality, related to the timing of plant operations and the inappropriateness of operating the plant for the sole purpose of testing although, if it is possible to schedule testing within planned operations, the opportunity shall be taken. However, periodic monitoring must at least be undertaken after 4380 hours (six months) of operation or every two years, whichever is sooner, unless otherwise agreed in writing with the Competent Authority.

Alternatives to continuous monitoring, in this situation, are specified. In the case of utility boilers, an emission factor approach shall be adopted: SO₂ emissions derived from average fuel sulphur content for the reporting period; NO_x emissions based on historic data; dust emissions based on continuous indicative monitoring using a historic calibration. In the case of natural gas fired plant that are subject to this derogation, the operator will report using emission factors and will use indicative process measurements to verify that the CO emissions remain below the applicable ELV, as an alternative to six monthly periodic measurements using an accredited Test Laboratory. The results will be held on site for inspection. An emission factor approach will be used for NO_x reporting based on historic emissions data.

4.1.3 Low Load Factor Plant

In the case of low utilisation plant, with installed CEMs, the calibration requirements for the CEMs are particularly onerous and difficult to achieve, for reasons of cost and practicality. It is inappropriate to operate the plant for the sole purpose of calibrating the CEMs. Hence, the QA requirements shall be deferred until the plant is scheduled to operate at a higher load factor (> 500h per year) and such that at least three hours of operation per day can be scheduled in advance for stack testing. Functional tests shall be performed annually

The permit therefore requires the operator to conduct monitor after 4380 hours of operation or every two years, whichever is sooner, for NO_x, CO and SO₂. Surrogate methods may be used if agreed with the EA.

Particulate matter emissions from natural gas firing shall be reported on the basis of emission factors without continuous or periodic monitoring. Natural gas is an ash-free fuel and high efficiency combustion does not generate additional particulate matter. The fuel gas is always filtered resulting in a lower particulate concentration in the flue than in the surrounding air.

Natural gas is almost sulphur free; the residual sulphur in natural gas supplied through the high pressure grid equates to a flue gas SO₂ concentration of about 0.09 mg/Nm³, at 15% O₂ in the dry flue gas, and this rises to about 0.24 mg/Nm³ for odourised gas. An emission factor approach shall therefore be used to estimate emissions of SO₂ and dust from this LCP.

The JEP IED Compliance Protocol also describes how to calculate operating hours, as follows:

3.5.2 Operating Hours

For the purposes of calculating operating hours, an LCP comprised of multiple flues is considered to start running when the first unit to operate passes the MSUL threshold and stops running when the last operational unit falls below the MSDL threshold. Operating hours are calculated to the nearest minute and, for limited life time derogations, these are reported as the cumulative total from 00.00h 1 January 2016 to two decimal places.

Additional IED Chapter II requirements:

Condition 3.1.6 relating to protection of soil, groundwater and groundwater monitoring, has been added in compliance with IED requirements.

Conditions 4.3.1 and 4.3.2 relating to notifications have been amended in compliance with IED requirements.