

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/BK9385IH
The Operator is: British Sugar PLC
The Installation is: Newark Sugar Factory
This Variation Notice number is: EPR/BK9385IH/V005

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 response also includes 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 responses to the regulation 60 notice requiring information. This is our decision document, which explains the reasoning for the 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 tTurbines”, 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.

In this document we only address our determination of substantive issues relating to the chapter III review.

We try to explain our decision as accurately, comprehensively and plainly as possible and we would welcome any feedback as to how we might improve our decision documents in the future.

How this document is structured

Glossary

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

Annex 1 – Review and assessment of changes that are not part of the Chapter III IED derived permit review.

GLOSSARY

Baseload	>4000 operating hours per annum
BAT	best available techniques
BREF	best available techniques reference document
CCGT	combined cycle gas turbine
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
LLD	Limited Life Derogation
MSUL/MSDL	Minimum start up load/minimum shut-down load
Peaking	500-1500 operating hours per annum
Part load operation	operation during a 24 hr period that includes loads between MSUL/MSDL and base load.
TNP	Transitional National Plan

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 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 Variation Notice contains several conditions that concern the operation of the non-LCP part of the installation 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 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 31/10/14, requiring the Operator to provide information for each LCP they operate, including:

- The type of plant, size and configuration,
- The proposed compliance route(s),
- Minimum start-up and shut-down loads,
- The proposed emission limits and how they accord with the 2014 BAT review paper,
- For gas fired plant, whether they wish to apply for derogation from monitoring when on standby fuels.

The Regulation 60 Notice response from the Operator was received on 13/03/15.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. We therefore issued further information requests to the Operator as follows:

Request	Date Received	Comments
Regulation 60 Notice response	13/03/15	Response received from the Operator to our request dated 31/10/14.
Additional information received	16/06/15	Response to request for further information (RFI) dated 15/06/15 (Q43 Reg 60) 2005 to 2015 NOx emission test data
Additional information received	24/06/15	Response to RFI dated 22/06/15 (Q42 Reg 60) Defining start-up and shut-down
Additional information received	12/08/15	Response to RFI dated 23/07/15 (Q41 Reg 60) Method for derivation of the net rated thermal input

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 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 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.	2.1.3
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.	2.2.1.4 Table 2.2.3
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	2.10
40	Multi-fuel firing	Table 2.2.2
41(a)	Determination of start-up and shut-down periods	2.1.4 Table 2.1.2
72b	For combustion plants which do not operate more than 1500 operating hours per year as a rolling average over a period of 5 years, the number of operating hours per year.	Not applicable
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 O ₂ 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.	Section 6, Interpretation
Ann V Pt 1	Emission limit values	2.2.1.3 Table 2.2.2
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	Section 6, Interpretation
Ann V Pt 2	Emission limit values	2.2.1.3 Table 2.2.2
AnnV Pt 3(1)	Continuous monitoring for >100MWth for specified substances	Not applicable
AnnV Pt 3(2, 3, 5)	Monitoring derogations	2.10.1 Table 2.2.2
AnnV Pt3(4)	Measurement of total mercury	Not applicable
AnnV Pt3(6)	EA informed of significant changes in fuel type or in mode of operation so can check Pt3 (1-4) still apply	2.1.1 Table 2.1.1
AnnV Pt3(7)	Monitoring requirements	2.10.1 Table 2.2.2
AnnV Part 3(8,9,10)	Monitoring methods	2.10
AnnV Pt 4	Monthly, daily, 95%ile hourly emission limit value compliance	2.10.1 Table 2.2.2
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 2.1.1 of the Variation Notice.

LCP 35 – Sulzer Boilers

LCP number

The variation notice uses an updated LCP number in accordance with the most recent DEFRA references. The LCP reference has changed as follows:

- **LCP 73** is changed to **LCP 35**

The LCP reference is added to Tables 1.1.1, 2.2.2 and 2.2.3 of the permit.

LCP Configuration:

This LCP consists of 2 x 41.54 MWth Sulzer boilers which vent via multiple flues within a single windshield at emission point A61/62. The unit burns natural gas and heavy fuel oil (HFO) as a standby fuel (answer to question 40 of the Reg 60 notice).

The LCP definition is added to Section 6 Interpretation.

Compliance Route:

The operator has proposed to operate this LCP 35 under the TNP compliance route.

For plant operating under the TNP, ELVs are set which have been derived for the period 2016 – 30 June 2020 (the duration of the TNP). At the end of this period it is expected that both Annex V and the revised LCP BREF will become applicable, in which case Annex V or the BAT conclusions must be achieved (whichever is stricter), or operators must have applied for a derogation from the BAT conclusion (if that is stricter: Annex V will apply in any event. The operator will apply, at the appropriate time, to vary the permit again to reflect this.

The operator's current proposals to achieve the stricter ELVs by 30 June 2020, are to undertake the necessary refurbishment works to comply. This information is not in any way binding upon the operator and may change.

We have amended condition 4.1.8. This is required for LCPs under the TNP to enable quarterly reporting of mass emissions.

Net Rated Thermal Input:

The Applicant has stated that the Net Thermal Input for each boiler is 41.54MWth. They have justified this figure by providing boiler design data (received by email 12 August 2015). Pages were taken from an original document from 1979 which outlines the performance testing carried out at that time. The second document (“ICL Boiler HFO to gas conversion data”) shows the conditions that the boilers now operate under, following their conversion to burn Natural Gas in the 1990s.

This data was not sufficient to be validated/audited. We have set an improvement condition to carry out a performance test by 31/12/16.

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 Regulation 60 response and the RFI response to question 42 received 24/06/15, both in terms of the output load (i.e. electricity, heat or power generated) (MW); and this output load as a percentage of the rated thermal output of the combustion plant (%).

We agree with all of these definitions and have set these thresholds in the permit in Tables 2.1.1 and 2.1.2 accordingly. We added condition 2.1.4 which makes reference to Table 2.1.2.

Standby fuels:

The operator normally uses gas fuel and has applied to use heavy fuel oil as a standby fuel. The response to question 44 in the Regulation 60 response confirms that a derogation not to undertake monitoring when on standby fuels is required. This is allowed under Article 30(6) where such fuels are used less than 240 hours per year.

Since it is BAT to use the cleaner gas fuel, the addition of condition 2.1.3 limits the use of heavy fuel oil to periods of up to 10 days during times of interruption to the gas supply. We have also incorporated the response as a specific operating technique required by the permit, through inclusion in Table 2.1.1 of the Variation Notice.

Table S4.1 is amended to record standby fuel usage (date, days, hours).

The standby fuel definition is added to Section 6 Interpretation.

Emission limits (A61/62):

Sulzer Boilers – Fired on Natural Gas

NO_x

Existing mg/m ³	Reference Period	Annex V mg/m ³	New Permit limit mg/m ³
650 (hourly)	-	110	645

The operator proposed an emission limit for nitrogen oxides of 645 mg/m³, slightly lower than the currently permitted level of 650 mg/m³. This limit was derived by calculating the average plus two standard deviations of measured emissions between 2005 and 2015. We have accepted this limit and as the plant will operate under the TNP and there is no deterioration from the existing permit emission limit.

We have amended Table 2.2.2 of the permit to include this limit, which applies when the Sulzer boilers are fired on natural gas.

Sulzer Boilers – Fired on Natural Gas

CO

Existing mg/m ³	Reference Period	Annex V mg/m ³	New Permit limit mg/m ³
100 (hourly)	-	110	100

The currently permitted carbon monoxide emission limit is 100 mg/m³. The operator did not propose an emission limit for this parameter.

We have included this limit in Table 2.2.2 of the permit, which applies when the Sulzer boilers are fired on natural gas.

Sulzer Boilers – Fired on Natural Gas

SO₂

Existing mg/m ³	Reference Period	Annex V mg/m ³	New Permit limit mg/m ³
No limit	-	35	-

There is currently no limit in the permit, a limit currently only applies when firing on HFO (see below).

We have not included a limit as the plant is under the TNP for this parameter; however monitoring will be required by calculation using emission factors.

Sulzer Boilers – Fired on Natural Gas

Dust

Existing mg/m ³	Reference Period	Annex V mg/m ³	New Permit limit mg/m ³
5	-	5	5

The currently permitted dust emission limit is 5 mg/m³.

We included the Annex V limit despite the plant being under the TNP for this parameter; this is based on no backsliding from the existing permit emission limit.

Monitoring will be required by calculation using emission factors.

Sulzer Boilers – Fired on Heavy Fuel Oil (standby)

We removed emission limits for the operation of the Sulzer boilers on standby fuel in accordance with Annex V of the IED (see Standby fuels above).

Annual limits (A61/62):

Table 2.2.3 is amended to include the TNP limits for LCP 35. This applies to LCPs within the scope of the TNP.

This table refers to a TNP register. We have added a definition to Section 6 Interpretation.

Monitoring & standards:

We added the standard for assessment of the monitoring location and for the measurement of oxygen and water vapour for clarity.

We added monitoring for stack gas volume flow in accordance with the IED.

We removed the continuous monitoring of particulate for the Sulzer boilers when operational on natural gas.

We removed monitoring for the operation of the Sulzer boilers on standby fuel (see Standby fuels above).

We added conditions 2.10.11 and 2.10.12 to implement the monitoring requirements in Annex V of the IED.

Annex 1: Review and assessment of changes that are not part of the Chapter III IED derived permit review.

The use of biogas	Biogas is no longer used in the No. 1 animal feed drier. All references to this in the permit are removed.
Table 2.2.2	Monitoring methods updated for all emission points.
Industrial Emissions Directive (IED)	
We amend the following conditions to implement the requirements of Chapter II of the IED.	
Condition 2.10.10	Condition amended to implement the protection of soil and groundwater monitoring. The original condition required the collection of site reference data.
Conditions 5.1.1 and 5.1.2	Conditions relating to notifications have been amended.