

## **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/BJ7590IB

The Operator is: Iggesund (Workington) Paperboard Limited

The Installation is: Workington Paper Mill

This Variation Notice number is: EPR/BJ7590IB/V003

#### **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 a response 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 response 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 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 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
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
FGD	flue gas desulphurisation
GT	gas turbine
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
MCR	Maximum Continuous Rating
Mid merit	1500-4000 operating hours per annum
MSUL/MSDL	Minimum start up load/minimum shut-down load
OCGT	Open Cycle Gas Turbine
Peaking	500-1500 operating hours per annum
Part load operation	operation during a 24 hr period that includes loads between MSUL/MSDL and maximum continuous rating (MCR)
SCR	selective catalytic reduction
SNCR	selective non catalytic reduction
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 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 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 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 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.
- Minimum start up and shut down loads.
- The proposed emission limits and how they accord with the 2014 BAT review paper.

The Regulation 60 Notice response from the Operator was received on 25/03/2015.

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.

### 2.2 Requests for Further Information during determination

Although we were able to consider the Regulation 60 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment, and issued a further information request on 18/08/2015). A copy of the further information request was placed on our public register.

In addition to the response to our further information request, we received additional information during the determination from Iggesund by email on the 27/11/2015 regarding MSUL. We made a copy of this information available to the public in the same way as the response to our information request.

### 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.

<b>IED Article Reference</b>	<b>IED requirement</b>	<b>Permit condition</b>
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.	2.3.9, 4.2.6 4.3.1d
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	2.3.8 Schedule 1 Table S1.5
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	Not applicable
AnnV Pt 3(1)	Continuous monitoring for >100MWth for specified substances	3.5, 3.6 Schedule 3, Table S3.1
AnnV Pt 3(2, 3, 5)	Monitoring derogations	3.5.1 Schedule 3, Table S3.1
AnnV Pt3(4)	Measurement of total mercury	Not applicable

<b>IED Article Reference</b>	<b>IED requirement</b>	<b>Permit condition</b>
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	3.5.1 Schedule 3, Table S3.1
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 SO <sub>2</sub> 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 Variation Notice.

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

- **LCP 438** is changed to **LCP 186**
- **LCP 440** is changed to **LCP 187**

### **LCP 186**

This LCP consists of a bubbling fluidised bed boiler which vent via a single stack at emission point A2. The unit burns clean biomass, virgin timber products and clean recovered wood.

### **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 147.5MWth. The operator has not provide sufficient evidence to support the value provided. Improvement Program IP10 has been included in the permit.

IP10:- The operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP186 and LCP 187. The net rated thermal input is the 'as built' value unless the plant has been modified significantly resulting in an improvement of the plant efficiency or output that increases the rated thermal input (which typically requires a performance test to demonstrate that guaranteed improvements have been realised).

Evidence to support this figure, in order of preference, shall be in the form of:-

- a) Performance test results\* during contractual guarantee testing or at commissioning (quoting the specified standards or test codes),
- b) Performance test results after a significant modification (quoting the specified standards or test codes),
- c) Manufacturer's contractual guarantee value,

- d) Published reference data, e.g., Gas Turbine World Performance Specifications (published annually);
- e) Design data, e.g., nameplate rating of a boiler or design documentation for a burner system;
- f) Operational efficiency data as verified and used for heat accountancy purposes
- g) Data provided as part of Due Diligence during acquisition,

\*Performance test results shall be used if these are available.

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 Regulation 60. The operator response has not met the criteria required by the Environment Agency. Improvement Program IP11 has been included in the permit.

IP11:- The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the “minimum start up load” and “minimum shut-down load”, for each unit within the LCP as required by the Implementing Decision 2012/249/EU in terms of:

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

And / Or

- c) 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.

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.

Release point A2 – ELVs mg/m<sup>3</sup>

Period	Current	IED	Applied for	Granted
Oxides of nitrogen				
Monthly	-	250	-	200
Daily	200	275	200	200
95%ile hr	400	500	-	400

The current 95%ile hourly and daily ELVs are tighter than Annex V hence they have been retained. The Monthly ELV has been calculated in line with the methodology set out in our IED BAT Non-ESI Review Paper, 28 October 2014.

Release point A2 – ELVs mg/m<sup>3</sup>

Carbon Monoxide				
<b>Monthly</b>	-	-	-	200
<b>Daily</b>	200	-	200	200
<b>95%ile hr</b>	400	-	-	400

The IED does not set ELVs for CO on appliances fired on biomass. Under the principles of 'no backsliding', we have retained the current 95%ile hourly and daily ELVs and calculated a monthly ELV in line with the methodology set out in our IED BAT Non-ESI Review Paper, 28 October 2014.

Release point A2 – ELVs mg/m<sup>3</sup>

Sulphur dioxide				
<b>Monthly</b>	-	200	-	200
<b>Daily</b>	200	220	200	200
<b>95%ile hr</b>	400	400	-	400

The current 95%ile hourly ELV is the same as that in Annex V. The daily ELV is tighter than Annex V hence it has been retained. The Monthly ELV has been calculated in line with the methodology set out in our IED BAT Non-ESI Review Paper, 28 October 2014.

Release point A2 – ELVs mg/m<sup>3</sup>

Dust				
<b>Monthly</b>	-	20	-	20
<b>Daily</b>	20	22	20	20
<b>95%ile hr</b>	40	40	-	40

The current 95%ile hourly ELV is the same as that in Annex V. The daily ELV is tighter than Annex V hence it has been retained. The Monthly ELV has been calculated in line with the methodology set out in our IED BAT Non-ESI Review Paper, 28 October 2014.

Release point A2 – ELVs mg/m<sup>3</sup>

Ammonia				
Average value over monitoring period	5	-	5	5

ELVs for Ammonia are not a requirement of Annex V. The current permit ELV has been retained.

### **LCP 187**

This LCP consists of 2 x 35MWth gas fired boilers which vent via multiple flues within a single windshield at emission point A3 & A4. 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 70MWth. The operator has not provide sufficient evidence to support the value provided. Improvement Program IP10 has been included in the permit.

IP10:- The operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP186 and LCP 187. The net rated thermal input is the 'as built' value unless the plant has been modified significantly resulting in an improvement of the plant efficiency or output that increases the rated thermal input (which typically requires a performance test to demonstrate that guaranteed improvements have been realised).

Evidence to support this figure, in order of preference, shall be in the form of:-

- a) Performance test results\* during contractual guarantee testing or at commissioning (quoting the specified standards or test codes),
- b) Performance test results after a significant modification (quoting the specified standards or test codes),
- c) Manufacturer's contractual guarantee value,
- d) Published reference data, e.g., Gas Turbine World Performance Specifications (published annually);
- e) Design data, e.g., nameplate rating of a boiler or design documentation for a burner system;
- f) Operational efficiency data as verified and used for heat accountancy purposes
- g) Data provided as part of Due Diligence during acquisition,

\*Performance test results shall be used if these are available.

#### **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. The operator response has not met the criteria required by the Environment Agency. Improvement Program IP11 has been included in the permit.

IP11:- The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the “minimum start up load” and “minimum shut-down load”, for each unit within the LCP as required by the Implementing Decision 2012/249/EU in terms of:

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

And / Or

- c) 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.

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.

Release points A3 and A4 – ELVs mg/m<sup>3</sup>

Period	Current	IED	Applied for	Granted
NO <sub>x</sub> ELV	100	110	100	100
CO ELV	20	110	20	20
SO <sub>2</sub> ELV	35	38.5	35	35
Dust	5	5.5	5	5

The IED (Annex V, Part 4, section 1) requires that each series of periodic measurements must comply with the “emission limit values” set out in the relevant section of Annex V. This is somewhat imprecise as three different ELVs are set, each with a different time basis (monthly, daily and hourly as defined in Annex V, Part 4, Section 1). Periodic monitoring is usually undertaken for a limited time period (ranging from 30 minutes to a number of hours depending on the details of monitoring standard applicable at the time). Consequently, we believe 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). This is our BAT position and explain the figures quoted under the ‘IED’ column. However, the current permit limits are all tighter than these values hence they have all been retained.

The sampling period will reflect that specified in relevant CEN standards or that in relevant guidance. The monitoring results should be expressed as an average over the sampling period(s) corrected to the relevant reference conditions. There shall be no subtraction of any sampling uncertainty levels from the reported result. However, the sampling uncertainty of the reference

monitoring method will be taken into account when assessing compliance. The limit value will be set as an absolute ELV with no percentile allowances (i.e. a 100% compliance basis over the sampling period).

Gas fired plant – LCP187:

Sulphur dioxide emissions from natural gas firing of boilers will be reported as six monthly concentrations on the basis of the fuel sulphur content without continuous or periodic monitoring since only trace quantities of sulphur are present in UK natural gas. Dust emissions for natural gas fired boilers will, likewise, be reported on the basis of emission factors without continuous or periodic monitoring

Energy efficiency:

The installation operates as a CHP providing heat and power to the associated paper and pulp site. The current permit does not have the generic condition for the operator to undertake a 2-yearly review of potential CHP opportunities as it is a dedicated CHP plant for the paper and pulp site. Therefore, in line with the DEFRA Part A guidance, to report on the scope for further improvement, a condition has been included for the operator to carry out a 4-yearly efficiency review.

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.

Notifications:

Schedule 5, Part C, takes account of the malfunction and breakdown requirements. A breach of permit condition is NOT implicit in notification under Part C.

Monitoring & standards:

Standards for assessment of the monitoring location and for measurement of oxygen, water vapour, temperature and pressure have been added to the permit template for clarity.

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.

There is a requirement to continue to report for 2015 in the transition from LCPD to IED LCP Reporting process annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015. For this reason an Improvement condition has been added to table S1.3

IP12:-

For LCPD LCP438 and 440 (now LCP186 and LCP187 under IED). Annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015 shall be submitted to the Environment Agency using form AAE1 via the NERP Registry. If the LCPD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry.

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.

**END.**