

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/BK4723IL

The Operator is: Scottish Power Generation Limited

The Installation is: Blackburn Paper Mill CHP facility

This Variation Notice number is: EPR/BK4723IL/V002

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 the LCP, necessary for accurate implementation of the IED requirements. The operator has also requested minor amendments to the permit to change monitoring requirements to surface water, sewer and noise. A copy of the regulation 60 notice and the operator's response, together with the requested changes from the operator are 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 and requested changes to the

permit. 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 ESI Review Paper, 28 October 2014” produced by the Environment Agency (referred to as the “2014 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. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

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 and the changes the operator has requested to the operation of the installation (see annex 1).

How this document is structured

Glossary

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

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
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
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
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)
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 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 09/12/14 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.
- For gas turbines, proposed emission limits for each unit between the MSUL/MSDL and 70% load, with a justification.
- For gas fired plant, whether they wish to apply for derogation from monitoring when on standby fuels.
- 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 30/03/15.

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 02/06/15.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review [but not that it necessarily contained all the information we would need to complete that determination].

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 requested further information by e-mails on 27/10/15 (MSUL/MSDL), and 05/11/15 (Emission to sewer S1 and S2). A copy of each request was placed on our public register.

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.	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 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.	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	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

IED Article Reference	IED requirement	Permit condition
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	2.3.1 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 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 Variation Notice.

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

- **LCP 262** is changed to **LCP 304**

LCP 304

This LCP was a CHP providing steam and electrical power to a paper mill. The mill has been demolished and it now operates as a natural gas fired 119 MWth CCGT. It comprises a GT and an unfired heat recovery boiler which vent via a flue within a single windshield at emission point A1.

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 119MWth. They have justified this figure by providing reference to a performance test undertaken by Alstom Power on 19 March 2002, in accordance with ISO2314 standard. We have accepted this as the information provided by the operator complies with our guidance.

Minimum start up load and Minimum shut-down load:

The Operator has defined the "minimum start up load" (MSUL) and "minimum shut-down load" (MSDL) for the LCP in their response to question 6 of the Reg 60 Notice, request for further information, and e-mail clarification.

They have confirmed the limits in terms of :- the output load as a percentage of the rated output of the GT, and two processes that suit the technical characteristics of the plant, which can be met at the end of start-up or start of shut-down.

Initially in their response to the request for further information the operator had presented figures for a stable export limit (SEL), in addition to MSUL, which were below those of their proposed MSUL. This meant that the plant was capable of stable generation below the proposed MSUL which would not

comply with the Commissions Implementing Decision 2012/249/EU, on MSUL/MSDL. Following discussions and reference to the IED Compliance Protocol, they subsequently proposed revised figures and confirmed these by e-mail dated 25/11/15.

We agree with the definitions proposed in the table below 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.

Start-up and Shut-down thresholds		
Emission Point and Unit Reference	“Minimum Start-Up Load” Load in MW and as percent of rated power output (%) and/or when two of the criteria listed below for the LCP or unit have been met.	“Minimum Shut-Down Load” Load in MW and as percent of rated power output (%) and/or when two of the criteria listed below for the LCP or unit have been met.
A1 LCP304	<ul style="list-style-type: none"> • 23MW; 53.5% of the gas turbine load. • GT speed greater than idle. • Inlet guide veins to gas turbine compressor are equal to or > 29% open. 	<ul style="list-style-type: none"> • 20MW; 46.5% of the gas turbine load. • GT speed greater than idle. • Inlet guide veins to gas turbine compressor are <25% open.

Emission limits:

The operator has proposed limits in line with annex V of the IED, the 2014 BAT review paper, and their existing permit limits, as some of the current limits are lower than those in annex V of IED. Consequently we have accepted the proposed limits and incorporated them into table 3.1 of the permit.

Parameter	Reference Period	Current Permit – mg/m ³	Annex V IED – mg/m ³	Revised IED Permit – mg/m ³
NOx	95%ile hourly	90	100	90
	Daily	60	55	55
	Monthly		50	50
CO	95%ile hourly	75	200	75

	Daily	50	110	50
	Monthly		100	50

Sulphur dioxide emissions from natural gas firing of gas turbines and 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. For gas turbines we have not required any reporting as the dust emissions will always be reported as zero. This is because natural gas is an ash-free fuel and high efficiency combustion in the gas turbine does not generate additional particulate matter. The fuel gas is always filtered and, in the case of gas turbines, the inlet air is also filtered resulting in a lower dust concentration in the flue than in the surrounding air.

The IED Annex V ELVs for oxides of nitrogen and carbon monoxide apply to CCGTs when the load is >70%. This has been interpreted as 70% of the rated output load. The rated output load used here is the same as that used for calculating the percentage load when specifying the end of start-up and beginning of shut-down.

“Low Load” Gas Turbine Emission Limits set when the load varies between MSUL/MSDL and base load during the daily reference period:
IED Annex V ELVs for GTs apply when the load is >70%. The operator has not proposed any part load elv's, confirming in their response to the R60, RFI, that the plant is compliant with IED at all loads and therefore the same limits of:

- Carbon Monoxide – 50mg/m³
- Nitrogen dioxide – 55mg/m³

have been applied when the load varies between MSUL/MSDL and base load during the daily reference period.

Energy efficiency:

The installation does not currently operate as a CHP. 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(b), condition 4.2.2(b) and table S4.2 have been added to the permit.

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.

Resource efficiency metrics:

A more comprehensive suite of reporting metrics has been added to the permit template for ESI plant. Table S4.2 "Resource Efficiency Metrics" has been added requiring the reporting of various resource parameters, as this is an Electrical Supply Industry (ESI) power plant. This table is being used for all ESI plant.

Additional IED Chapter II requirements:

Condition 3.1.3 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.

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

The operator also submitted a request to change aspects of the current permit at the same time as sending us the Reg 60 response. These changes were outlined in their letter EPR_BK4723IL_Variation 2015 Dated 30 March 2015 which is available from our public register. The requested changes are as follows:

1. Changes to the permit introductory note:
 - to remove reference to the SAPPI paper mill and the link it had with the CHP plant.
 - remove reference to the package boilers as being part of the installation following decommissioning and preservation.
 - remove reference to cooling tower blowdown discharging to the paper mills process water system.
2. Correct Operator details and registered address from Alstom Power to Scottish Power together with the registered address.
3. Update of the Table S1.1 listed activities to remove reference to SAPPI, package boilers and discharge to SAPPI process water system.
4. Updated list of raw materials provided.
5. Removal of site specific conditions relating to noise and vibration monitoring.
6. Removal from the permit of air emission point A2 from the auxiliary boilers which have been decommissioned.
7. Changes to emissions of clean site surface water to River Roddlesworth at W1; and emissions to sewer at emission points S1 and S2.

We have reviewed each change in turn and accepted the majority of the requested variations, were we have not done so we have outlined our reasons for this and presented our reasons below.

1.Changes to the permit introductory note:

We have accepted the variations proposed to the introductory note, whilst maintaining some reference to why the plant was initially built as a CHP, to enable the reader to understand the process better. We have also recognised that the package boilers are now decommissioned.

2.Operators details and registered address:

No changes have been made. These were correct on the permit transfer Notice, dated 20 January 2006, and signed 13 January 2006.

3.Update of table of listed activities to remove reference to SAPPI:

As part of the IED permit review we have updated the table of listed activities, Table 1.1 in the revised permit, in accordance with our current template format. Reference to SAPPI paper has been removed.

4.Updated list of raw materials:

No amendment necessary

5.Removal of site specific conditions relating to noise:

The current permit contains conditions 6.6.1, 6.6.2 and 6.6.3. These conditions have requirements to undertake noise monitoring. They incorporate noise limits at identified receptors during normal operations, and require that this monitoring is carried out until such time that a monitoring programme had been agreed in writing with us. Whilst noise monitoring during normal operation may be beneficial, it is potentially not the time when a CHP plant will generate heightened noise. This could occur during periods of start-up and shutdown. There is also the potential that since the permit was issued in 2001 receptors may have changed. For these reasons we have agreed with the operator to remove these conditions and replace them with our standard noise conditions 3.4.1 and 3.4.2.

We have also set a new improvement condition IC 9.15, which will require the operator to submit proposals for a current noise assessment to us for agreement and then carry out that assessment. If this assessment identifies a reasonable likelihood of complaint then the operator will be expected to submit proposals together with timescales for improvement. In this way we can be assured that current noise from the plant is adequately assessed during a start-up, receptors remain valid and the operator undertakes any necessary improvement to agreed timescales.

IC 15 The operator shall provide a proposal in writing to the Environment Agency to undertake a current noise assessment for the site having regard to Environment Agency Guidance note H3 and BS4142. Upon agreement of the noise assessment proposal with the Environment Agency the operator shall

undertake the monitoring and conduct an assessment in accordance with BS4142. Where it is identified that there is a reasonable likelihood of complaints (as defined by BS4142) or the existing abatement is not considered to be the Best Available Technique (BAT). The operator shall provide proposals for improvements in writing which shall include agreed timescales for completion.

6.Removal of Air Emission Point A2 from the Permit:

We have agreed to the removal of air emission point A2 which was the reference in the permit to the point at which two auxiliary package boilers discharged their waste gases through a single stack. The operator has confirmed that these boilers are no longer required and have been decommissioned and placed into preservation.

7.Changes to emissions of clean site surface water to River Roddlesworth at W1 and emissions to sewer at emission points S1 and S2:

W1 This is an emission of clean uncontaminated surface water and storm water drainage from the site via an oil interceptor to the River Roddlesworth. The current permit requires monitoring of the discharge pH, and sets a limit of between pH 6-9. The operator has requested removal of this requirement for the following reasons:

- Low risk being only clean surface water.
- The surface water prior to discharge drains through an oil water interceptor which is checked monthly and maintained through the sites maintenance/management system. There is also a procedure in place to isolate and prevent the discharge in an emergency using a control valve.
- pH monitoring of the discharge between January 2003 and February 2015 shows that all readings were in the permitted range of pH6-9.

We are satisfied with this request and have specified in table S3.2 that emission point W1 is for “clean uncontaminated site drainage”. We have therefore agreed to the operators request based on the evidence they have provided and removed the requirement to monitor pH from table S3.2 in the revised permit.

S1: This is an emission from cooling tower blowdown. The current permit, table 6.4.1, identifies this as discharging to foul sewer via the SAPPI papermill process water and Trade Effluent system. The variation request made by the operator confirms that a valve has been installed to direct the flow away from the SAPPI process water system to the effluent treatment pump station which was part of the old SAPPI paper mill, and therefore requests that any reference to the **SAPPI process water system** is removed. In response to an e-mail question received 06/11/15 the operator has confirmed that S1 and S2 now combine prior to the pumping station on the old paper mill site before discharging to the United Utilities sewer. We have removed any reference to SAPPI from Table S3.3.

S2: This is an emission from the heat recovery steam generator (HRSG) blowdown, water treatment plant effluent, package boiler blowdown and negligible process related drainage to foul sewer via the SAPPI trade effluent system. The package boilers have been decommissioned and the request is to remove the package boiler blowdown from the discharge at S2. We are satisfied that the package boilers are decommissioned and have therefore agreed to this.

The operator has also requested that monitoring requirements of pH and Total chlorine are removed from the monitoring requirements of the permit at S1 and S2. They state that the emission is authorised by a trade effluent consent to discharge under the Water Industries Act 1991, issued by United Utilities to SAPPI Fine Paper Europe (Blackburn Mill) 11 December 2000. They further point out that the consent does not impose any limit on total chlorine to sewer. The chlorine arises from the treatment of the cooling water to prevent legionella growth for health and safety purposes, and would normally be up to 2mg/l in the cooling water for this purpose.

We have agreed to remove the requirement to monitor total chlorine from the permit, however, we have not agreed to the operators request to remove pH. This is because a review of our inspection records has shown that in 2009 there was an incident at the site where effluent with a pH of 3 was produced. This is at a level that could cause damage to drainage infrastructure and pipework. We therefore believe that compliance monitoring for pH is important in this instance and provides some reassurance and independence to any process control monitoring and prevents damage to drainage infrastructure and therefore the environment.