

## Environment Agency

# Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016

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

The Permit number is: EPR/JP3430LC  
The Operator is: E.ON UK Cogeneration Limited  
The Installation is: Thornhill Power Station  
This Variation Notice number is: EPR/JP3430LC/V004

### What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication of updated decisions on best available techniques (BAT) conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for large combustion plant published on 17<sup>th</sup> August 2017. This is our decision document, which explains the reasoning for the consolidated variation notice that we are issuing.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions ('BAT Conclusions') for large combustion plant as detailed in document reference IEDC-7-1. 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 considering the review of the operating techniques used by the Operator for the operation of the plant and activities 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

issued. 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 removed 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 the new BAT Conclusions.

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

Throughout this document we will use a number of expressions. These are as referred to in the glossary and have the same meaning as described in “Schedule 6 Interpretation” of the Permit.

We try to explain our decision as accurately, comprehensively and plainly as possible. We would welcome any feedback as to how we might improve our decision documents in future. A lot of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

## How this document is structured

### Glossary of terms

- 1 Our decision
- 2 How we reached our decision
  - 2.1 Requesting information to demonstrate compliance with BAT  
Conclusions for Large Combustion Plant
  - 2.3 Summary of how we considered the responses from public consultation.
- 3 The legal framework
- 4 Key Issues
- 5 Review and assessment of changes that are not part of the BAT  
Conclusions derived permit review.

## Glossary of acronyms used in this document

(Please note that this glossary is standard for our decision documents and therefore not all these acronyms are necessarily used in this document.)

APC	Air Pollution Control
BAT	Best Available Technique(s)
BATc	BAT conclusion
BREF	Best available techniques reference document
CCGT	Combined Cycle Gas Turbine
CEM	Continuous emissions monitor
CHP	Combined heat and power
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DLN	Dry Low NOx burners
EIONET	European environment information and observation network is a partnership network of the European Environment Agency
ELV	Emission limit value derived under BAT or an emission limit value set out in IED
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2010 No. 1154)
IC	Improvement Condition
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC) – now superseded by IED
LCP	Large Combustion Plant subject to Chapter III of IED
MSUL/MSDL	Minimum start up load/minimum shut-down load
NOx	Oxides of nitrogen (NO plus NO <sub>2</sub> expressed as NO <sub>2</sub> )
NPV	Net Present Value
OCGT	Open Cycle Gas Turbine
SGN	Sector guidance note
TGN	Technical guidance note
TNP	Transitional National Plan
WFD	Water Framework Directive (2000/60/EC)

## 1 Our decision

We have decided to issue the consolidated 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 to demonstrate compliance with BAT Conclusions for Large Combustion Plant

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 1<sup>st</sup> May 2018 requiring the Operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the large combustion plant BAT Conclusions document. The Notice also required that where the revised standards are not currently met, the operator should provide information that:

- Describes the techniques that will be implemented before 17<sup>th</sup> August 2021, which will then ensure that operations meet the revised standard, or
- Justifies why standards will not be met by 17<sup>th</sup> August 2021, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- Justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

The Regulation 61 Notice response from the Operator was received on 31<sup>st</sup> October 2018.

### **3 The legal framework**

The consolidated variation notice will be issued under Regulation 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 the consolidated variation notice 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.

## 4 The key issues

The key issues arising during this permit review are:

- The proposed operating regime of the plant following the Transitional National Plan (TNP).
- Emissions to air and the emission limits applied to the plant.

We therefore describe how we determined these issues in most detail in the relevant sections of this document.

### 4.1 The proposed operating regime of the plant following the TNP

In response to the Regulation 61 notice, the operator confirmed that they will not operate the LCP beyond the implementation date of the LCP BAT Conclusions which is 17<sup>th</sup> August 2021. They therefore did not provide any additional detail in response to the BAT Conclusions. They confirmed that the LCP will meet the mandatory limits for the plant set out in Annex V of the IED for existing plant.

### 4.2 Emissions to air and the emission limits applied to the plant

A number of general principles were applied during the permit review. These included:

- The principle of no backsliding where if existing limits in the permit were already tighter than those specified in Chapter III, the existing permit limits were retained.

The power station incorporates a single gas turbine with an associated heat recovery boiler, a single steam turbine, an electrical generator, a steam condensing and cooling system and a water treatment and polishing plant. The LCP (DEFRA reference LCP95) has a total aggregated net rated thermal input of 106MWth and typically provides an electrical output of 50MWe, in combined mode.

The plant was put into operation before IED came into force and therefore the existing limits in the permit are from Part 1 of IED Annex V applicable to existing plant. The LCP can operate in both Combined Cycle Gas Turbine (CCGT) mode and Open Cycle Gas Turbine (OCGT) mode. The same ELVs are applicable to both.

The following tables outline the limits that have been incorporated into the permit for LCP95, where these were derived from and the reference periods at which they apply. The emission limits refer to concentrations, expressed as the mass of emitted substance per volume of flue-gas under the following standard conditions: dry gas at a temperature of 273,15 K, pressure of 101,3 kPa and 15% volume reference oxygen concentration in flue gases. In line with Chapter III of IED, the permit specifies that the emission limits apply

above 70% load. The emission limits and monitoring requirements have been incorporated into Schedule 3 of the permit.

An additional daily limit from start up/shut down to baseload has been added to the post TNP limits in table S3.1a. Although this is not a regulatory requirement, it was requested by the Emissions Methodology Working Group of the Joint Environmental Protocol to ensure consistency across the sites. We have included a corresponding footnote.

NOx limits (mg/Nm <sup>3</sup> )						
Averaging	IED (Annex V Part 1) – Existing	BREF	Expected permit limits	Basis	Limits apply	Monitoring
Annual	None	NA	None	NA	70% to baseload	Continuous
Monthly	50	NA	50	IED	70% to baseload	
Daily	55	NA	55	IED	70% to baseload	
95 <sup>th</sup> %ile of hr means	100	NA	60 (limit in existing permit)	No backsliding	70% to baseload	

CO limits (mg/Nm <sup>3</sup> )						
Averaging	IED (Annex V Part 1) – Existing	BREF	Expected permit limits	Basis	Limits apply	Monitoring
Annual	None	NA	None	NA	70% to baseload	Continuous
Monthly	100	NA	100 (existing permit limit)	IED and no backsliding	70% to baseload	
Daily	110	NA	100 (existing permit limit)	No backsliding	70% to baseload	
95 <sup>th</sup> %ile of hr means	200	NA	100 (existing permit limit)	No backsliding	70% to baseload	

## 5 Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

This document should be read in conjunction with the application, supporting information and notice.

Aspect considered	Decision
<b>Receipt of application</b>	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
<b>The facility</b>	
The regulated facility	<p>We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility' and Appendix 2 of RGN 2 'Defining the scope of the installation'.</p> <p>The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit. Table S1.1 has been amended to preclude the operation of the Large Combustion Plant LCP95 from 17th August 2021.</p>
<b>The site</b>	
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>A full assessment of the application and its potential to affect the site(s)/species/habitat has not been carried out as part of the permit review process. We consider that the review will not affect the features of the site(s)/species/habitat as the conditions will provide at least the same level of protection as those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.</p> <p>We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.</p>
<b>Operating techniques</b>	
General operating techniques	<p>We have reviewed the techniques used by the operator where they are relevant to the BAT Conclusions and compared these with the relevant guidance notes.</p> <p>We have introduced a limit on operating hours in Open Cycle Mode for the LCP in line with our guidance 'BAT for Balancing</p>

Aspect considered	Decision
	Plant' as we do not consider this mode of operation as BAT for plant operating over 1,500 hours.
<b>Permit conditions</b>	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide at least the same level of protection as those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice.
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions.
Improvement programme	Based on the information on the application, we do not consider that we need to impose an improvement programme. We have removed the existing improvement conditions as these are confirmed completed.
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit. ELVs have been set for the LCP for the following parameters from the end of the TNP in table S3.1a to the permit:</p> <ul style="list-style-type: none"> <li>• Nitrogen dioxide</li> <li>• Carbon monoxide</li> </ul> <p>An additional daily limit from start up/shut down to baseload has been added to the post TNP limits in table S3.1a. Although this is not a regulatory requirement, it was requested by the Emissions Methodology Working Group of the Joint Environmental Protocol to ensure consistency across the sites. We have included a corresponding footnote.</p> <p>It is considered that the ELVs/equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment is secured.</p>
Monitoring	We have not amended the monitoring requirements in the permit.
Reporting	We have amended the reporting requirements in the permit. We have added in a reporting requirement in for operating hours to be reported over a 5 year rolling average to demonstrate compliance with the less than 1500 hour operational limit.

Aspect considered	Decision
<b>Operator competence</b>	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
<b>Growth Duty</b>	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>