

## **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/XP3839XV  
The Operator is:                         SembCorp Utilities (UK) Limited  
The Installation is:                     Wilton No. 2 Gas Turbine  
This Variation Notice number is:   EPR/XP3839XV/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 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 responses 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:

- 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 and any changes to the operation of the installation.

The requirement to monitor noise within Tables S1.7, S4.6 and S5.1 has been removed, Section 1.2 A(1)(a) of table S1.1 has also been removed see Annex 1 for further information. The operator has expressed an interest in applying for the increased NO<sub>x</sub> ELV for highly efficient plants this has been included as an improvement condition in Table S1.3

## **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	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
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
MCR	Maximum Continuous Rating
MSUL/MSDL	Minimum start up load/minimum shut-down load
CCGT	Closed cycle gas turbines

# 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 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.
- For gas turbines, proposed emission limits for each unit between the MSUL/MSDL and 70% load, with a justification.

The Regulation 60 Notice response from the Operator was received on 31/03/15

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 07/08/15.

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.

<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.	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 S1.5
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	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
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 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 an updated LCP number in accordance with the most recent DEFRA LCP reference numbers. The LCP references have changed as follows:

- **LCP 429** is changed to **LCP 320**

This LCP consists of 1 x 133.1 MWth CCGT which vents via a single flue into its own dedicated windshield shown within the existing EPR permit at emission point A6. The unit burns 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 133.1MWth, this is based on a guarantee performance test report conducted by Aker Kvaerner during commissioning however the operator is unable to provide this report. An improvement condition has been included in Table S1.3 to provide further information to validate this figure 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 response to question 6 of the Reg 60, in terms of the output load (i.e. electricity, heat or power generated) (MW); and this output load as a percentage of the rated output of the combustion plant (%). We do not consider there is sufficient information to justify these values and have included an improvement condition (IC9) to review typical start-up and shutdown data to validate the MSUL and MSDL figures.

We have set the MSUL/MSDL to the equivalent load value that is used at present to start/end compliance reporting subject to the results of IC9.

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.

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 S 3.1 of the permit.

NO <sub>x</sub> (mg/m <sup>3</sup> )	Reference Period		
	Monthly average	Daily average	Hourly average
Existing permit	-	60	100
Annex V	50	55	100 (95%ile)
New permit limit	50	55	100

CO (mg/m <sup>3</sup> )	Reference Period		
	Monthly average	Daily average	Hourly average
Existing permit	-	100	200
Annex V	100	110	200(95%ile)
New permit limit	100	100	200

The ELV limits have been followed with the exception of the daily average for CO where a slightly tighter limit of 100 mg/m<sup>3</sup> has been applied based on the IED BAT Review concept of 'no backsliding'.

An improvement condition has been set (IC10) to provide further information to identify the MSUL /MSDL to baseload for Oxides of Nitrogen (NO<sub>x</sub>) and Carbon Monoxide (CO). These figures have been queried due to start up and shut down data provided by the operator and were amended from the operators initial request for 400 mg/m<sup>3</sup> and 1600 mg/m<sup>3</sup>, which were subsequently reduced to 300 mg/m<sup>3</sup> and 360 mg/m<sup>3</sup>.

The requirement to sample sulphur dioxide emissions from natural gas firing of gas turbines has been carried over from the original permit as requested by the operator with a limit of 10 mg/m<sup>3</sup>. It 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. The hourly reference period has been removed as covered by other monitoring requirements.

The operator requested to carry over the requirement to sample dust however 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.

#### Gas Turbines:

The IED Annex V ELVs apply to OCGTs, CCGTs and mechanical drive gas turbines when the load is >70%. This has been interpreted as 70% of the rated output load from the gas turbine. 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.

#### Reporting efficiency:

In order to ensure the efficiency of plant using fossil fuels 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:**

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.

**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.

An improvement condition to allow the consideration of an increased NO<sub>x</sub> ELV for highly efficient plants in accordance with IED Annex V, paragraph 6, note 3 has been added at the request of the operator.

<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
IC8	<p>The operator shall write to the Environment Agency for approval if an increase in the ELV limits set in table S3.1 of this permit is sought to the allowable limits set out in IED Annex V, Part 1, and paragraph 6.</p> <p>The written submission from the operator shall contain :-</p> <ul style="list-style-type: none"><li>• verification of the efficiency quoted for the plant</li><li>• An assessment of any efficiency gains that may be gained through the limit increase together with detailed proposals for validating this figure.</li><li>• an assessment of the impact of those increased emission limits from site on any air quality objectives.</li><li>• Any impact the increased emissions might have on local receptors.</li></ul>	6 months from permit issue date.

An improvement condition to provide a report on the daily ELV limits for MSUL/MSDL to baseload (IC10) has been added along with a requirement for LCPD site to supply emission data either via form AAE1 Or RTA 1.

<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
IC10	The operator shall provide a report, in writing, to the Environment Agency for acceptance, which identifies a daily emission limit value (ELV) for MSUL/MSDL to baseload. The written submission shall include a summary of relevant data with reference to the data sets used and a justification for the proposed ELV. The report shall also include an assessment of the impacts emissions at the proposed ELV using our H1 guidance equivalent methodology	31/01/16

<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
IC11	For LCPD LCP 429 (now LCP 320 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.	28/01/16

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

Further clarification from the site officer has indicated that Egdon Resources UK do not hold a permit relating to the site. The refining activity linked to the new gas pipeline defined in V002 Table S1.1 has also been removed as the company do not carry out this process.

### Other Part A installation permits relating to this installation

Operator	Permit Number	Date of Issue
Egdon Resources UK Limited	EPR/DP3837TC	17/09/10

### Table S1.1 activities

Activity listed in Schedule 1 of the PPC Regulations	Description of specified activity	Limits of specified activity
Section 1.2 A(1)(a): Refining gas where this is likely to involve the use of 1000 or more tonnes of gas in any 12-month period.	The operation of a gas refining activity by a different operator, Egdon Resources UK Limited, and the supply of the gas to this permitted activity.	From receipt of natural gas from Kirkleatham Gas Field to the supply to the Wilton No 2 Gas Turbine

Removed activity in Section 1.2 A(1)(a).

The requirement to monitor noise levels within the original permit (see below) has been updated/removed as per information provided by the site inspector which indicates reported noise levels are not linked to LCP 320. The relevant sections of S1.7 have been included within Table S1.2 and S4.6 and S5.1 have been removed.

### Table S1.7 Appropriate measures for noise

Measure	Dates
The operator shall implement the noise management plan as submitted in improvement condition 1.	01/05/09
The venting of steam during start up shall be minimized between the hours of 22:00hrs and 08:00hrs on any calendar day except where it is essential to maintain site security.	Issue date
Silencing equipment used as abatement on all equipment listed in Table 2.9-3 of the IPPC application shall be maintained as necessary to maintain correct operation as per permit application section 2.9.4.1 and inspected to the preventative maintenance schedule.	Issue date

### Table S4.6 Noise monitoring requirements

Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Noise survey at the points described in Table 2.9-2 of the IPPC application.	Noise	6 monthly	BS 4142:1997	

**Table S5.1 Reporting of monitoring data**

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Noise monitoring Parameters as required by condition 3.6.1	Noise survey at the points described in Table 2.9-2 of the IPPC application.	Every 12 months	DD/MM/YY