

## **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/QP3539LE

The Operator is: Saltend Cogeneration Company Limited

The Installation is: Saltend Cogeneration Plant, Saltend, Hendon Road, Hull, HU12 8GA

This Variation Notice number is: EPR/ QP3539LE/V004

#### **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 notices 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 of 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 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 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.

Upon request from the operator its registered office has been updated within the permit. The operating restriction of 3066 hours per year for LCP 299 (secondary boiler) has also been removed.

LCP 298 has been limited to <500 hour operation, further information is provide below, this change has been initiated by the Environment Agency, but with the operators agreement.

## **How this document is structured**

Glossary

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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
CCGT	combined cycle gas turbine
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
TNP	Transitional National Plan
Black Start	means the procedure to recover from a total or partial shutdown of the UK Transmission System which has caused an extensive loss of supplies. This entails isolated power stations being started individually and gradually being reconnected to other power stations and substations in order to form an interconnected system again.
Trip to House Load	means the operating mode that, upon notification of a system-wide emergency (or similar) from the National grid, reducing either one or both of the operational LCPs 300 and 302 to approximately 100 MW electrical output to ensure the continuation of the supply of electricity to the Saltend Chemicals Park adjacent. The operating mode will then also be available to the National Grid for Black Start operation.

# 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 18/05/15.

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 issued a further information request on 28/09/15, further information was received on the 5/10/15, 20/10/15 and by telephone on the 9/10/15. A copy of the further information request was placed on our public register.

### 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.	3.1.3 Schedule 3, Table S3.3
33(1)b	For installations that have applied to derogate from the IED Annex V emission limits by means of the Limited Life Derogation, the operator shall submit annually a record of the number of operating hours since 1 January 2016;	Not applicable
37	Provisions for malfunction and breakdown of abatement equipment including notifying the EA.	Not applicable
38	Monitoring of air emissions in accordance with Ann V Pt 3	3.5, 3.6
40	Multi-fuel firing	Not applicable
41(a)	Determination of start-up and shut-down periods	2.3.7 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 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	2.3.5, 2.3.6
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



<b>IED Article Reference</b>	<b>IED requirement</b>	<b>Permit condition</b>
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 Consolidated 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 252** is changed to **LCP 300**
- **LCP 253** is changed to **LCP 301**
- **LCP 254** is changed to **LCP 302**
- **LCP 250** (start up boiler) is changed to **LCP 298**
- **LCP 251** (secondary boiler) is changed to **LCP 299**

LCP 300, 301 and 302 are 727.27 MWth CCGT's operating the majority of the time in combined mode. Through the introduction of the Trip to House Load operation LCP 300 or 302 could operate independently to provide 100MW to the adjacent Saltend Chemicals Park. Each LCP vents into its own dedicated windshield at emission points A1, A2 and A3 and burns natural gas only.

LCP 298 is a 79.27MWth start up boiler which provides back up steam for the Saltend Chemicals Park, The LCP vents into its own dedicated windshield at emission point A4 and burns natural gas only.

LCP 299 is a 153.19 MWth secondary boiler which provides start-up to one of the CCGT's. The LCP vents into its own dedicated windshield at emission point A5 and burns natural gas only.

Compliance Route:

The operator has proposed to operate LCP 300, 301, 302 and 299 under the TNP compliance route and LCP 298 under IED ELVs.

The operator's current proposals to achieve the stricter ELVs by 30 June 2020, are to apply the necessary pollution abatement techniques. This information is not in any way binding upon the operator and may change.

Net Rated Thermal Input:

The Applicant has stated that the Net Thermal Input for LCP 300, 301 and 302 is 727.27 MWth, 79.721 for LCP 298 and 153.19 MWth for LCP 299. The operator has stated '*the design heat input and net electrical output are based on 55% design efficiency for LCP 300, 301 and 302, 727.27 MWth energy input generates design net electrical out of 400 MW at an efficiency of 55%. LCP 298 and 299 data is taken from the equipments nameplate*'. For LCP

300, 301 and 302 the operator has not provided performance test standards, therefore based on this information IC9 has been set to carry out a performance test by the 31/12/16 on the specified LCP's.

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 LCP 300, 301, 302 and 299 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 thermal output of the combustion plant (%). IC12 has been set to request MSUL/MSDL limits for LCP 298 by 31/03/16.

We agree with all of these definitions and have set these thresholds in the table S1.5 of the permit accordingly.

The operator believes they may be able to lower the Stable Export Limit (SEL) of LCPs 300, 301 and 301 from the currently permitted 170MW to 150MW. The reduction of the SEL will result in the alteration of the MSUL and MSDL from 42.5% to 36.6% and a subsequent increase in the CO limit (further information and CO limit discussed in Emissions Limits section below). However, they have provided no further details on this and so we have set the MSUL/MSDL at 42.5%.

Emission limits:

LCP 300, 301, 302 and 299 will be subject to the TNP compliance regime and the operator has confirmed that they will comply with the 2014 BAT review paper for NO<sub>x</sub> (for more details see tables at the end of this section):

For CO the current permit limit of 25 mg/m<sup>3</sup> for the 95%ile of validated hourly averages, will be applied across the three reference periods as per the 'no blacksliding' rule. We have set the emission limits for these LCP's in line with the BAT paper and information provided by the operator in table S3.1, we have also set the standard annual emission target in table S3.4.

In line with the request to reduce the SEL the operator has proposed a reflective increase in the CO ELV to 55 mg/m<sup>3</sup> (based on trials conducted at low unit loads during commissioning after a major outage in 2014). The operator has provided an H1 Assessment of the environmental impacts and also a BAT justification. Further information provided below:

H1 Assessment

CO ELV Increase H1 Assessment Key Inputs		
Parameter	Value	Justification
Unit 1, 2 & 3 Effective Height	40.7 m	Stack height of 65 m & building height of 40.5 m
Secondary Boiler Effective Height	7.5 m	Stack height of 45 m & building height of 40.5 m
Unit 1, 2 & 3 Efflux Velocity	28 m/s	Taken from the Air Quality Assessment <sup>vii</sup>
Unit 1, 2 & 3 Total Flow	1 897 200 m <sup>3</sup> /hr	(Average volume flow for Units 1, 2 & 3 <sup>viii</sup> ) x 3600
Secondary Boiler Efflux Velocity	15 m/s	Taken from the Air Quality Assessment <sup>vii</sup>
Secondary Boiler Total Flow	108 000 m <sup>3</sup> /hr	Taken from the Air Quality Assessment <sup>vii</sup>
Unit 1, 2 & 3 CO ELVs	55 mg/m <sup>3</sup>	New ELV to allow lowering of SEL
SEC Boiler CO ELV	100 mg/m <sup>3</sup>	Annex V ELV <sup>viii</sup>
Short Term Process Contribution ("Modelled PC") for Carbon Monoxide	992 µg/m <sup>3</sup>	Taken as a ratio of the original maximum 8-hour mean ground level concentration of CO in the Air Quality Assessment <sup>ix</sup> <b>See below for further justification</b>

CO ELV Increase H1 Assessment Key Outputs		
Parameter	Value	Justification
Air Impact Screening Short Term EAL for CO	10 000 µg/m <sup>3</sup>	EA value used in H1 assessment tool
Process Contribution as a percentage of EAL for CO	9.93 %	Calculated by H1 assessment tool
Process Contribution > 10% of EAL?	No	Calculated by H1 assessment tool

The short term Process Contribution (PC) used as an input to the H1 assessment is derived as follows;

The Air Quality Assessment calculated a maximum 8-hour mean ground level concentration of CO of 61.3 µg/m<sup>3</sup> using an input CO emission concentration of 3.4 mg/m<sup>3</sup> from 3 units & the Secondary Boiler at full load<sup>ix</sup>.

Applying the ratio of these two numbers (0.018) to a CO emission concentration of 55 mg/m<sup>3</sup> gives an 8-hour mean ground level CO concentration of 992 µg/m<sup>3</sup>.

The H1 assessment therefore screens out the increase in CO emissions resulting from the proposed CO ELV increase as having an insignificant impact on emissions to air.

### BAT justification:

The Cogeneration Plant currently operates with a Stable Export Limit (SEL) of 170 MW. The reduction of the SEL as low as technically possible, whilst maintaining safe, stable and compliant operation, is a significant objective of the business in order to maintain the economic viability of the Cogeneration Plant in a challenging and versatile energy market.

It is well known that Start Up periods are specifically excluded from emission compliance as they represent a period prior to stable and low emission combustion conditions being established. The most significant limiting factor on low load operating of the Cogeneration Plant is CO emissions.

Analysis of operating data shows, approximately:

Average CO concentration during stable generation at 170 MW SEL or above: **10 mg/Nm<sup>3</sup>**

Average CO concentration during Start Up: **>900 mg/Nm<sup>3</sup>**

The volumetric release of CO is approximately **200 times** higher during a plant Start Up than stable generation at 170 MW SEL or above over an equivalent time period.

The ability to lower SEL below 170 MW and increase flexibility is not possible due to our current restrictive CO limits imposed on the Cogeneration Plant. The result of this is that the Cogeneration Plant is more likely to Shut Down and then Start Up again, in most cases on a daily basis and potentially across multiple units, to maintain economic viability whilst meeting the demands of National Grid.

This results in excessive Start Up and Shut Down periods representing inefficient combustion of gas and high NO<sub>x</sub> and CO emissions.

**The proposed limits are significantly below the benchmark IED CO limit for CCGT's of 100 mg/Nm<sup>3</sup>, yet allow the Cogeneration Plant to investigate the potential of lowering SEL below 170 MW, increasing the flexibility of the Cogeneration Plant for National Grid and reducing the number of inefficient Start Up and Shut Down periods.**

**It is more likely that the plant will operate overnight to provide frequency regulation services if the plant output (SEL) can be minimised (lower demand overnight and reduced cost).**

SCCL feel that this will have an overall net improvement on the Environmental Impact of the Cogeneration Plant and will submit data and assumed future operating data to support this approach should this be required.

SCCL can demonstrate good control of emissions from combustion activities at the installation and have control procedures in place to significantly minimise the likelihood of breaching limits.

We accept the operator's arguments above that an increase in the CO limit to 55mg/m<sup>3</sup> will have an insignificant impact and can be considered to be BAT. The MSUL/MSDL and CO figures will be confirmed on completion of plant testing which the operator anticipates will be completed by the end of Quarter 2 (April, May, June) 2016. This testing will be submitted to the Environment Agency for review and approval. Any reduction in the SEL and subsequent increase in the CO limit should only be implemented when formal approval from the Environment Agency has been received. An improvement condition (IC10) has been included within the permit by the Environment Agency under agreement from the operator.

Should the request to reduce the SEL and increase the CO limit be received and approved by the Environment Agency without the need to carry out further investigation or modelling this update will be processed as a administration variation up to 6 months after the permit takes affect (01.01.16). Any application received after this date will be processed and charged at the discretion on the Environment Agency.



LCP 299 (secondary boiler) will be subject to the TNP compliance regime, the operator has confirmed NO<sub>x</sub> ELVs of 140 mg/m<sup>3</sup> as per the current permit limits and the 2014 BAT review paper.

For CO the operator suggested ELVs of 100 mg/m<sup>3</sup> however in line with annex V of the IED and the 2014 BAT review paper, this was amended by the Environment Agency to 100 mg/m<sup>3</sup> per calendar month, 110 mg/m<sup>3</sup> 95% of validated daily means and 200 mg/m<sup>3</sup> 95% of validated hourly averages.

LCP 298 (start up boiler) will be subject to the IED ELV's for NO<sub>x</sub> and CO. The boiler is used to provide the main steam raising duty during gas turbine outages or during a gas turbine breakdown. This is typically for less than 100 hours per year. As per 4.1.6 of the IED Compliance Protocol (Jan 15) for this type of operation, reporting and compliance can be demonstrated through emission factors derived from historical data obtained by an accredited Test Laboratory or from the boiler manufacturer. The number of hours from LCP 298 are reported under Table 4.3 and have been limited to a maximum of 500 hours.

The NO<sub>x</sub> and CO limit for LCP 298 have been set at 110 mg/m<sup>3</sup>. These limits are 110% of the annex V limits, which is the factor we are using to convert from monthly to periodic limits. The operator has confirmed that they can achieve these limits.

The TNP ELVs and IED ELVs for each LCP are tabulated below:

<b>LCP 300, 301 and 302 NO<sub>x</sub></b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
60	95%ile of hourly averages	100	60
90	24 hourly averages	55	60
None	Monthly averages	50	60

<b>LCP 300, 301 and 302 CO</b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
25	95%ile of hourly averages	200	25
37.5	24 hourly averages	110	25
None	Monthly averages	100	25

<b>LCP 300, 301 and 302 CO (post SEL reduction) <sup>Note 1</sup></b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
25	95%ile of hourly averages	200	55
37.5	24 hourly averages	110	55
None	Monthly averages	100	55

Note 1: Figures apply should the operator apply for an SEL of 150MW and receive approval from the Environment Agency.

<b>LCP 299 NO<sub>x</sub> Gas</b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
140	95%ile of hourly averages	100	140
210	24 hourly averages	55	140
None	Monthly averages	50	140

<b>LCP 299 CO Gas</b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
None	95%ile of hourly averages	200	200
None	24 hourly averages	110	110
None	Monthly averages	100	100

<b>LCP 298 NO<sub>x</sub> Gas</b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
-	4380 operational hours or 2 years	110	110

<b>LCP 298 CO Gas</b>			
<b>Existing mg/m3</b>	<b>Reference Period</b>	<b>Annex V mg/m3</b>	<b>New Permit limit mg/m3</b>
-	4380 operational hours or 2 years	110	110

#### Trip to House Load operation:

The operator has requested the inclusion of a new service provision within their permit. Trip to House Load (TTHL), is a process whereby upon notification of a system-wide emergency (or similar) from the National Grid, the operator can trip all but one LCP and reduce the operational LCP to 100MWth input to ensure the continuation of the supply of electricity to the Saltend Chemicals Park adjacent. This mode is currently available on site but is not operational pending the operator securing a contact with National Grid for the service, anticipated 1<sup>st</sup> January 2016.

The operator has indicated that whilst in TTHL mode the LCP will not achieve its required ELV limits, however has provided a clear BAT argument which indicates a significant negative impact to the environment should Saltend Chemical Park be required to start up their own diesel fired generator for power. The operator has indicated that the TTHL has not been required on site for the past 15 years and would only require running in this mode for 2 hours per year as per the maintenance requirements imposed by National Grid. The service is not for the short term operating reserve (STOR) market. Based on the above the environmental impacts are likely to be small and the Environment Agency has agreed the new service provision in principle. We have included a improvement condition (IC11) in S1.3 to assess the impacts of this operational mode, along with a limit of 500hr operation in black

start/TTHL provision in condition 2.3.5 and operating techniques table S1.2. In accordance with the IED, no emission limits are required when operating less than 500 hours in emergency mode.

#### Black start operation:

The operator has included a request for the inclusion of a full Black start operation for LCPs 300, 301 and 302 (i.e the installation of new diesel engines to start the LCPs without the need for power from the national grid), to commence in 2017/18 after a full engineering study and capital investment in the sites infrastructure. The Environment Agency have rejected this request based on insufficient data and modelling supplied by the Operator. The operator has been informed of this decision and is aware a permit variation should be applied for upon completion of the works.

#### Gas Turbines:

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.

#### Energy efficiency:

The installation does not have 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 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 3.1.6 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.

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

Upon request by the operator on the 31<sup>st</sup> October 2015, the registered company office address has been updated from

Senator House  
85 Queen Victoria Street  
London  
EC4V 4DP

### **TO**

Level 20  
25 Canada Square  
London  
E14 5LQ  
United Kingdom

Within the operators IPPC permit application of 20/12/2005 (pg 9) a requirement to limit the operating hours of LCP 299 (secondary boiler) to 3066 hours per year was submitted. However this requirement was never transferred into permit QP3539LE, the operator has requested that this limit be removed, this has been agreed by the Environment Agency as the permit does not contain the hourly limit and as modelling of the boiler suggests no significant impact in changing its hours of operation to the Environment.