

## **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/BX2108IQ  
The Operator is: British Sugar PLC  
The Installation is: Wisington Sugar Factory  
This Variation Notice number is: EPR/BX2108IQ/V009

#### **What this document is about**

All Environmental permits which permit the operation of large combustion plant (LCP), as defined by articles 28 and 29 of the Industrial Emissions Directive (IED), need to be varied to implement the special provisions for LCP given in the IED, by the 1 January 2016 (Article 82(3)). The IED makes special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V.

The IED provides a period of transition towards the new ELVs via Article 32, the Transitional National Plan (TNP). It also makes provision for plant that wish to be exempted from compliance with the new ELVs in Article 33, the Limited Life Derogation (LLD). Other derogations include limited operating hour regimes for sites using 500 hr or 1500 hr derogations. There are also options for exemption from emission limits based on operating hours.

The operator has submitted a response to our notice requiring information, issued under regulation 60(1) of the Environmental Permitting Regulations (EPR), which has provided us with information on which compliance route they wish to follow for each LCP. The response also includes specific details relating to each LCP, necessary for accurate implementation the IED requirements. A copy of the regulation 60 notice and the operator's response is available on the public register.

We have reviewed the permit for this installation, including all variations since the last permit consolidation, and referred to the operator's response to the regulation 60 notice requiring information. This is our decision document, which explains the reasoning for the variation notice that we have issued.

It explains how we have reviewed and considered the compliance routes and, where relevant, the emissions limits proposed by the Operator for each LCP on the installation. This review has been undertaken with reference to the:

- Chapter III and annex V of the IED
- “IED BAT Non-ESI Review Paper, 28 October 2014” produced by the Environment Agency (referred to as the “2014 Non-ESI BAT review paper” in this document)
- “Electricity Supply Industry – IED compliance protocol for Utility Boilers and Gas Turbines”, published by the Joint Environmental Programme.

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

In this document we therefore address only our determination of substantive issues relating to chapter III review.

## **How this document is structured**

Glossary

1. Our decision
2. How we reached our decision
3. The legal framework
4. Key Issues

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   |
| MSUL/MSDL     | Minimum start up load/minimum shut-down load  |
| OCGT          | Open Cycle Gas Turbine  |
| TNP           | Transitional National Plan  |

# 1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the Variation Notice.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The Variation Notice contains several conditions that concern the operation of the non-LCP part of the installation taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of “tailor-made” or installation-specific conditions, or where our Permit template provides two or more options.

## 2 How we reached our decision

### 2.1 Requesting information relating to the requirements of Chapter III of and Annex V to the IED

We issued a Notice under Regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 31/10/14 requiring the Operator to provide information for each LCP they operate, including:

- The type of plant, size and configuration.
- The proposed compliance routes.
- Minimum start up and shut down loads.
- The proposed emission limits and how they accord with the 2014 BAT review paper.
- 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 25/03/15.

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 as follows:

| <b>Request</b>                  | <b>Date Received</b> | <b>Comments</b>   |
|---------------------------------|----------------------|---|
| Regulation 60 Notice response   | 25/03/15             | Response received from the Operator to our request dated 31/10/14                                   |
| Additional information received | 24/07/15             | Response to RFI dated 24/07/15 (Q41 Reg 60)<br>Method for derivation of the net rated thermal input |

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.

We requested further information as detailed below. We made a copy of this information available to the public in the same way as the responses to our information requests.

| <b>Request</b>                  | <b>Date Received</b> | <b>Comments</b>   |
|---------------------------------|----------------------|---|
| Additional information received | 02/10/15             | Response to email sent 02/10/15: use of GT stack (HRSG by-pass)   |
| Additional information received | 12/10/15             | Response to email sent 07/10/15: GT/HRSG operation and use of DFO |
| Additional information received | 21/12/15             | Email confirming abnormal conditions for HRSG only operation      |

### 3 The legal framework

The Variation Notice will be issued under Regulations 18 and 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

## Meeting the requirements of the IED

The table below shows how each requirement of the IED has been addressed by the permit conditions.

| <b>IED Article Reference</b> | <b>IED requirement</b>   | <b>Permit condition</b>                      |
|------------------------------|--|--|
| 30(6)                        | If there is an interruption in the supply of gas, an alternative fuel may be used and the permit emission limits deferred for a period of up to 10 days, except where there is an overriding need to maintain energy supplies. The EA shall be notified immediately.   | Not applicable                               |
| 32(4)                        | For installations that have applied to derogate from the IED Annex V emission limits by means of the transitional national plan, the monitoring and reporting requirements set by UK Government shall be complied with.  | 3.1.4<br>Schedule 3, Table S3.4              |
| 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;   | 2.3.9 and 2.3.10<br>4.2.2(d)                 |
| 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  | 3.3, 3.4                                     |
| 40                           | Multi-fuel firing  | Not applicable                               |
| 41(a)                        | Determination of start-up and shut-down periods  | 2.3.11<br>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 <sub>2</sub> 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,<br>Interpretation                |
| Ann V Pt 1                   | Emission limit values  | 3.1.2<br>Schedule 3, Tables S3.1(a), S3.1(b) |
| Ann V Pt 1                   | For plants operating less than 500 hours per year, record the used operating hours   | 2.3.7, 2.3.8, 4.2.2(d)                       |
| Ann V Pt 1(6(1))             | Definition of natural gas  | Schedule 6,<br>Interpretation                |

| <b>IED Article Reference</b> | <b>IED requirement</b>   | <b>Permit condition</b>                               |
|------------------------------|--|---|
| Ann V Pt 2                   | Emission limit values  | 3.1.2<br>Schedule 3, Tables S3.1(a), S3.1(b), S3.1(c) |
| AnnV Pt 3(1)                 | Continuous monitoring for >100MWth for specified substances  | 3.3, 3.4<br>Schedule 3, Table S3.1(a)                 |
| AnnV Pt 3(2, 3, 5)           | Monitoring derogations   | 3.3.1<br>Schedule 3, Tables S3.1(a) and S3.1(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 | Not applicable  |
| AnnV Pt3(7)                  | Monitoring requirements  | Not applicable  |
| AnnV Part 3(8,9,10)          | Monitoring methods   | 3.3, 3.4  |
| AnnV Pt 4                    | Monthly, daily, 95%ile hourly emission limit value compliance  | 3.3.1<br>Schedule 3, Tables S3.1(a) and S3.1(b)       |
| 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.

We have also incorporated in Table S1.2 the oxygen reference conditions that apply during abnormal operation when the HRSG is operating alone.

### LCP number:

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

- **LCP 106** is changed to **LCP 38**
- **LCP 69** is changed to **LCP 36**

The LCP reference is added to Tables S1.1, S3.1(a), S3.1(b) and S3.4 of the permit.

### LCP Configurations:

| <b>LCP 38 - TNP</b> |   |
|---------------------|---|
| <b>GT/HRSG</b>      | Consists of a 102 MWth gas turbine and a heat recovery steam generator (HRSG) with supplementary firing of 106 MW thermal input; to generate steam and electricity.<br><br>They are fired on natural gas with distillate fuel oil (DFO) as standby fuel and discharge via the HRSG stack at emission point A62.   |
| <b>GT</b>           | The gas turbine can be operated on its own in open cycle, exhausting through the HRSG via emission point A62.<br><br>The gas turbine can also operate on its own in open cycle for the purpose of calibrating the combustion characteristics for emissions control following maintenance and is vented through a dedicated stack at emission point A63 (HRSG by-pass, separate windshield). |
| <b>HRSG</b>         | The HRSG is not normally run as an auxiliary boiler except when the gas turbine is not available. It discharges via the HRSG stack at emission point A62.   |

| <b>LCP 36 - LLD</b> |   |
|---------------------|---|
| <b>Boilers</b>      | <p>Consists of 3 x ICL boilers, each with 45 MW thermal input (135 MW). They are fired on natural gas with DFO as standby fuel.</p> <p>The 3 x ICL boilers discharge via multiple flues (A66, A67, A68) within a single windshield.</p> |

Compliance Routes:

| <b>LCP 38 - TNP</b>   |
|---|
| <p>The operator has proposed to operate this LCP under the <b>TNP</b> compliance route.</p> <p>For plant operating under the TNP, ELVs are set which have been derived for the period 2016 – 30 June 2020 (the duration of the TNP). At the end of this period it is expected that both Annex V and the revised LCP BREF will become applicable, in which case Annex V or the BAT conclusions must be achieved (whichever is stricter), or operators must have applied for a derogation from the BAT conclusion (if that is stricter: Annex V will apply in any event). The operator will apply, at the appropriate time, to vary the permit again to reflect this.</p> <p>The operator's current proposals to achieve the stricter ELVs by 30 June 2020, are to undertake the necessary refurbishment works to comply. This information is not in any way binding upon the operator and may change.</p> <p>This compliance route is incorporated into the sites operating techniques by inclusion in Table S1.2 of the permit.</p> <p>We have added condition 2.3.5 which requires LCP 38 to be operated in accordance with the IED Compliance protocol.</p> <p>We have added condition 4.2.5 which enables quarterly reporting of mass emissions for the TNP.</p> |

| <b>LCP 36 - LLD</b>   |
|---|
| <p>The operator has proposed to operate this LCP under the <b>LLD</b> compliance route.</p> <p>Plants operating under the LLD are subject to a limit on operating hours for the period 2016 – 31 December 2023.</p> <p>This compliance route is incorporated into the sites operating techniques by inclusion in Table S1.2 of the permit.</p> <p>We have also added conditions 2.3.5, 2.3.8, 2.3.9 and 2.3.10 which requires</p> |

LCP 36 to be operated in accordance with the IED Compliance protocol and specifies limits on the operational hours.

Net Rated Thermal Input:

|                      |  |
|----------------------|--|
| <b>LCP 38</b>        | The CHP comprises a gas turbine, with a 102 MW thermal input and a Heat Recovery Steam Generator (HRSG) with supplementary firing (106 MW thermal input).  |
| <b>LCP 36</b>        | There are three ICL Boilers, each of 45 MW thermal input.  |
| <b>AB1 &amp; AB2</b> | The ICL boilers can be supplemented by two Maxecon auxiliary steam boilers ( <b>AB1 &amp; AB2</b> ) of 8 and 10 MW thermal input, discharging via two separate flues at emission points A69 and A70. The units are operated from time to time for limited periods for operational security reasons, and to supply steam to the liquid sugar plant. |

We asked the Applicant to provide the method by which they derived these figures. In their response they provided figures for the heat input at base load for the gas turbine dated 5<sup>th</sup> September 1996, the HRSG boiler performance parameters dated 5<sup>th</sup> June 1997 and the specification for the ICL boilers.

This data was not sufficient to justify the net rated thermal input. We have set an improvement condition in Table S1.3 to address this deficiency.

Minimum start-up and Minimum shut-down load:

The Operator has defined the “minimum start up load” and “minimum shut-down load” for LCP 38 and LCP 36 in their response to question 51 of the Regulation 60 Notice. They have defined it as three thresholds for operational parameters that suit the technical characteristics of the plant, which can be met at the end of start-up or start of shut-down.

The Operator confirms that for start-up and shut-down of the HRSG, the figures are based on the values for the boiler design data.

We agree with all of these definitions and have set these thresholds in the Permit in table S1.4 accordingly. We have added condition 2.3.11 which makes reference to this table.

Standby fuels:

The operator normally uses gas fuel and has applied to use DFO as a standby fuel. Since it is BAT to use the cleaner gas fuel, DFO use is limited to periods of up to 10 days during interruption of the gas supply by the addition of condition 2.3.6. The addition of this condition means that ELVs are not required when operating on DFO unless ELVs are already set in the permit. The permit has ELVs for NO<sub>x</sub> and CO (see below).

Emission limits:

**LCP 38 – A62 (TNP) - GT/HRSG - normal operating conditions**

GT/HRSG – Fired on Natural Gas

**NO<sub>x</sub>**

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup> |
|-------------------------------|---------------------------------|------------------------------|--|
| 75 (half<br>Hourly)           | 95%ile of<br>hourly<br>averages | 100                          | 75                                       |
| None                          | 24 hourly<br>averages           | 55                           | 55                                       |
| None                          | Monthly<br>averages             | 50                           | 50                                       |

GT/HRSG – Fired on DFO

**NO<sub>x</sub>**

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup> |
|-------------------------------|---------------------------------|------------------------------|--|
| 125 (half<br>Hourly)          | 95%ile of<br>hourly<br>averages | 180                          | 125                                      |
| None                          | 24 hourly<br>averages           | 99                           | 99                                       |
| None                          | Monthly<br>averages             | 90                           | 90                                       |

GT/HRSG – Fired on Natural Gas/DFO

**CO**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 100 (half Hourly)          | 95%ile of hourly averages | 200                       | 100                                |
| None                       | 24 hourly averages        | 110                       | 100                                |
| None                       | Monthly averages          | 100                       | 100                                |

**LCP 38 – A62 (TNP) - HRSG ONLY – not under normal operating conditions**

HRSG – Fired on Natural Gas

**NO<sub>x</sub>**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 85 (half Hourly)           | 95%ile of hourly averages | 200                       | 85                                 |
| None                       | 24 hourly averages        | 110                       | 85                                 |
| None                       | Monthly averages          | 100                       | 85                                 |

HRSG – Fired on DFO

**NO<sub>x</sub>**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 125 (half Hourly)          | 95%ile of hourly averages | 400                       | 125                                |
| None                       | 24 hourly averages        | 220                       | 125                                |
| None                       | Monthly averages          | 200                       | 125                                |

HRSG – Fired on Natural Gas/DFO

**CO**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 100 (half Hourly)          | 95%ile of hourly averages | 200*                      | 100                                |
| None                       | 24 hourly averages        | 110*                      | 100                                |
| None                       | Monthly averages          | 100*                      | 100                                |

\* Annex V limits only apply to HRSG fired on natural gas

**LCP 38 – A62 (TNP) - GT/HRSG & HRSG ONLY**

Fired on gas and DFO

**SO<sub>2</sub>**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| None                       | 95%ile of hourly averages | 500                       | None                               |
| None                       | 24 hourly averages        | 275                       | None                               |
| None                       | Monthly averages          | 250                       | None                               |

We have added condition 2.3.6 (For LCP 38 referenced in schedule 1, table S1.1, standby fuel DFO may be used for periods of up to 10 days during times of interruption to the gas supply). This means that there is no requirement to set ELVs unless they are already in the permit. We have set monitoring by calculation based on emission factors (see below).

Fired on gas and DFO

**Dust**

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup> |
|-------------------------------|---------------------------------|------------------------------|--|
| None                          | 95%ile of<br>hourly<br>averages | 50                           | None                                     |
| None                          | 24 hourly<br>averages           | 27                           | None                                     |
| None                          | Monthly<br>averages             | 25                           | None                                     |

We have added condition 2.3.6 (For LCP 38 referenced in schedule 1, table S1.1, standby fuel DFO may be used for periods of up to 10 days during times of interruption to the gas supply). This means that there is no requirement to set ELVs unless they are already in the permit. We have set monitoring by calculation based on emission factors.

For natural gas fired GT, monitoring by calculation is only required for SO<sub>2</sub>.

For natural gas fired boilers, monitoring by calculation is required for BOTH SO<sub>2</sub> and dust.

**LCP 38 – A63 (TNP) - GT ONLY - not under normal operating conditions**

Emission limits (A63):

GT – Fired on Natural Gas

**NO<sub>x</sub>**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 60 (half Hourly)           | 95%ile of hourly averages | 100                       | No limit set                       |
| None                       | 24 hourly averages        | 55                        | No limit set                       |
| None                       | Monthly averages          | 50                        | No limit set                       |

GT – Fired on DFO

**NO<sub>x</sub>**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 125 (half Hourly)          | 95%ile of hourly averages | 180                       | No limit set                       |
| None                       | 24 hourly averages        | 99                        | No limit set                       |
| None                       | Monthly averages          | 90                        | No limit set                       |

GT – Fired on Natural Gas/DFO

**CO**

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup> |
|----------------------------|---------------------------|---------------------------|------------------------------------|
| 100 (half Hourly)          | 95%ile of hourly averages | 200                       | No limit set                       |
| None                       | 24 hourly averages        | 110                       | No limit set                       |
| None                       | Monthly averages          | 100                       | No limit set                       |

GT - Fired on gas and DFO

**SO<sub>2</sub>**

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup> |
|-------------------------------|---------------------------------|------------------------------|--|
| None                          | 95%ile of<br>hourly<br>averages | -                            | None                                     |
| None                          | 24 hourly<br>averages           | -                            | None                                     |
| None                          | Monthly<br>averages             | -                            | None                                     |

We have added condition 2.3.6 (For LCP 38 referenced in schedule 1, table S1.1, standby fuel DFO may be used for periods of up to 10 days during times of interruption to the gas supply). This means that there is no requirement to set ELVs unless they are already in the permit. We have set monitoring by calculation based on emission factors (see below).

GT - Fired on DFO

**Dust**

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup> |
|-------------------------------|---------------------------------|------------------------------|--|
| None                          | 95%ile of<br>hourly<br>averages | -                            | None                                     |
| None                          | 24 hourly<br>averages           | -                            | None                                     |
| None                          | Monthly<br>averages             | -                            | None                                     |

We have added condition 2.3.6 (For LCP 38 referenced in schedule 1, table S1.1, standby fuel DFO may be used for periods of up to 10 days during times of interruption to the gas supply). This means that there is no requirement to set ELVs unless they are already in the permit. We have set monitoring by calculation based on emission factors.

For natural gas fired GT, monitoring by calculation is only required for SO<sub>2</sub>.

The operator confirmed in their response received 02/10/15 that the use of the by-pass at emission point A63 is less than 500 hours per year which is classed as 'emergency use' under the IED. There is no requirement to set ELVs; however the operating hours will be recorded to ensure that this exclusion applies. We have added condition 2.3.7 which limits operation in open cycle (GT only) mode to 500 hours.

We have accepted the limits set out in the tables above as the plant will operate under the TNP and there is no deterioration from the existing permit emission limits.

We have included these limits in Table S3.1(a) of the permit, and set the other limits in line with the guidance in line with the non-ESI 2014 BAT review paper.

Annual limits (A62/63):

Table S3.4 is amended to include the TNP limits for LCP 38. This applies to LCPs within the scope of the TNP.

This table refers to a TNP register. We have added a definition to Section 6 Interpretation.

We amended condition 3.1.4 which makes reference to Table S3.4.

We added an improvement condition requiring submission of emissions of dust, sulphur dioxide and oxides of nitrogen for LCP 38 for the period 01/01/15 to 31/12/15. This is required for all LCP sites.

**LCP 36 – ICL Boilers-A66/A67/A68 (LLD)**

**NO<sub>x</sub>**

Boilers – Fired on Natural Gas

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup>   |
|----------------------------|---------------------------|---------------------------|--|
| None                       | 95%ile of hourly averages | 200                       | 200<br><br>Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner |
| None                       | 24 hourly averages        | 110                       |  |
| None                       | Monthly averages          | 100                       |  |

Boilers – Fired on DFO

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup>   |
|----------------------------|---------------------------|---------------------------|--|
| None                       | 95%ile of hourly averages | 400                       | 220<br>Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner |
| None                       | 24 hourly averages        | 220                       |  |
| None                       | Monthly averages          | 200                       |  |

**CO**

Boilers – Fired on Natural Gas

| Existing mg/m <sup>3</sup> | Reference Period          | Annex V mg/m <sup>3</sup> | New Permit limit mg/m <sup>3</sup>   |
|----------------------------|---------------------------|---------------------------|--|
| None                       | 95%ile of hourly averages | 200                       | 110<br>Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner |
| None                       | 24 hourly averages        | 110                       |  |
| None                       | Monthly averages          | 100                       |  |

## SO<sub>2</sub>

### Boilers – Fired on Natural Gas

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup>   |
|-------------------------------|---------------------|------------------------------|--|
| None                          | -                   | 35                           | 35<br><br>Concentration<br>by calculation<br>every 4380<br>operational<br>hours or 2<br>years,<br>whichever is<br>sooner |

### Boilers – Fired on DFO

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup>  |
|-------------------------------|---------------------------------|------------------------------|---|
| None                          | 95%ile of<br>hourly<br>averages | 500                          | 250<br><br>Concentration<br>by calculation<br>every 4380<br>operational<br>hours or 2<br>years,<br>whichever is<br>sooner |
| None                          | 24 hourly<br>averages           | 275                          |   |
| None                          | Monthly<br>averages             | 250                          |   |

## Dust

### Boilers – Fired on Natural Gas

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup>  |
|-------------------------------|---------------------|------------------------------|---|
| None                          | -                   | 5                            | 5<br><br>Concentration<br>by calculation<br>every 4380<br>operational<br>hours or 2<br>years,<br>whichever is<br>sooner |

### Boilers – Fired on Natural DFO

| Existing<br>mg/m <sup>3</sup> | Reference<br>Period             | Annex V<br>mg/m <sup>3</sup> | New Permit<br>limit<br>mg/m <sup>3</sup>   |
|-------------------------------|---------------------------------|------------------------------|--|
| None                          | 95%ile of<br>hourly<br>averages | 50                           | 25<br><br>Concentration<br>by calculation<br>every 4380<br>operational<br>hours or 2<br>years,<br>whichever is<br>sooner |
| None                          | 24 hourly<br>averages           | 27                           |  |
| None                          | Monthly<br>averages             | 25                           |  |

We have retained the existing monitoring (using emission factors) of emissions of oxides of nitrogen, carbon monoxide, sulphur dioxide and dust in Table S3.1(b).

ELVs have been set based on the historic performance of the plant.

The operator provided NO<sub>x</sub> monitoring data for the period 1999 to 2001 to justify the higher limit (see below). They confirmed that 2001 was the last time the boilers were run for any length of time.

| Date       | NOx<br>mg/m3 |
|------------|--------------|
| 21/01/1999 | 182          |
| 10/12/1999 | 154          |
| 12/01/2000 | 154          |
| 24/03/2000 | 139          |
| 13/06/2000 | 158          |
| 15/06/2001 | 169          |

We have added conditions 2.3.8 to 2.3.10 for the following reasons:

**2.3.8** limits the operation of LCP 36 to 500 hours per year (unless otherwise agreed with the Environment Agency) in line with the original permit restrictions on operating hours.

**2.3.9** limits operation of LCP 36 to 10,000 hours which allows exclusion from continuous monitoring.

For >100MWth plant, in order not to have CEMs and so be able to report emissions using factors or manufacturer's data, <10,000 hours life span derogation is required.

**2.3.10** also places limits on operational hours (17,500 operating hours starting from 1 January 2016 and ending no later than 31 December 2023) which is required for LLD plant.

In view of the remaining lifespan, and in accordance with the IED, we have not required installation of CEMs.

#### Gas Fired LCPs:

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.

#### Oil fired LCPs:

Sulphur dioxide emissions from oil firing of gas turbines and boilers will be reported as six monthly concentrations on the basis of the known fuel sulphur content without continuous or periodic monitoring.

### Monitoring & Standards:

We added the standard for assessment of the monitoring location and for the measurement of oxygen and water vapour for clarity.

A row has been included in table S3.1(a) 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.

We amended condition 3.4.1 to implement the monitoring requirements in Annex V of the IED.

We amended Table S4.1 to include parameters for LCP 38 and LCP 36.

### Reporting efficiency:

In order to ensure the efficiency of plant (using fossil fuels) is maximised and regularly recorded, condition 1.2.2 has been added to the permit.

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

| <b>Industrial Emissions Directive (IED)</b>                |  |
|--|--|
| <b>Implement the requirements of Chapter II of the IED</b> |  |
| <b>3.1.7</b>   | Condition added to implement the protection of soil and groundwater monitoring.  |
| <b>4.3.1 and 4.3.2</b>                                     | Conditions relating to notifications have been amended.  |
| <b>Other Changes – Odour &amp; Noise</b>                   |  |
| <b>3.5.1 and 3.5.2</b>                                     | We add conditions 3.5.1 and 3.5.2 for odour which were deleted in error by consolidation of the permit (EPR/BX2109IQ/V006) |
| <b>3.6.1 and 3.6.2</b>                                     | We add conditions 3.6.1 and 3.6.2 for noise which were deleted in error by consolidation of the permit (EPR/BX2109IQ/V006) |