

## 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/BS5428IP  
The Operator is:                         INOVYN ChlorVinyls Limited  
The Installation is:                     Runcorn Halochemicals Manufacturing  
This Variation Notice number is:   EPR/BS5428IP/V006

#### 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 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.

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 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 response 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 combustion plant part of the permit to reflect the conditions contained in our current generic combustion 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.

## **How this document is structured**

### Glossary

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

## Glossary

BAT	best available techniques
Derogation	as set out in Article 15(4) of the IED
ELV	emission limit value set out in either IED or LCPD
EPR	Environmental Permitting (England and Wales) Regulations 2010
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

In respect of the LCP part of the permit, the terms “particulates” and “particulate matter” have been changed to “dust” in line with the terminology of Chapter III of IED.

# 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 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 October 2014 requiring the Operator to provide information for each LCP they operate, including:

- The type of plant, size and configuration,
- The proposed compliance route(s),
- Minimum start up and shut down loads,
- For all LCPs, the proposed emission limits and how they accord with the 2014 BAT review paper,

The Regulation 60 Notice response from the Operator was received on 30 March 2015.

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 clarifying information in order to complete our permit review assessment, and issued a further information request by email on 9 September 2015. Copies of the email and response were 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.

IED Article Reference	IED requirement	Permit condition
30(6)	If there is an interruption in the supply of gas, an alternative fuel may be used and the permit emission limits deferred for a period of up to 10 days, except where there is an overriding need to maintain energy supplies. The EA shall be notified immediately.	Not applicable
32(4)	For installations that have applied to derogate from the IED Annex V emission limits by means of the transitional national plan, the monitoring and reporting requirements set by UK Government shall be complied with.	Not applicable
33(1)b	For installations that have applied to derogate from the IED Annex V emission limits by means of the Limited Life Derogation, the operator shall submit annually a record of the number of operating hours since 1 January 2016;	Not applicable
37	Provisions for malfunction and breakdown of abatement equipment including notifying the EA.	Not applicable
38	Monitoring of air emissions in accordance with Ann V Pt 3	Annex E condition 2.2.1.3 and section 2.3
40	Multi-fuel firing	Annex E Table E.2.3

IED Article Reference	IED requirement	Permit condition
41(a)	Determination of start-up and shut-down periods	Annex E Table E.2.1(a)
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.	Core, Section 6, Interpretation
Ann V Pt 1	Emission limit values	Annex E condition 2.2.1.2 and Table E.2.3
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	Core, Section 6, Interpretation
Ann V Pt 2	Emission limit values	Annex E condition 2.2.1.2 and Table E.2.3
Ann V Pt 3(1)	Continuous monitoring for >100MWth for specified substances	Not applicable [1]
Ann V Pt 3(2, 3, 5)	Monitoring derogations	Table SE(2.2) for SO <sub>2</sub> and dust calculation
Ann V Pt3(4)	Measurement of total mercury	Not applicable [3]
Ann V Pt3(6)	EA informed of significant changes in fuel type or in mode of operation so can check Pt3 (1-4) still apply	Annex E condition 2.1.1
Ann V Pt3(7)	Monitoring requirements	Annex E condition 2.2.1.3 and Table E.2.4
Ann V Part 3(8,9,10)	Monitoring methods	Annex E condition 2.2.1.3 and section 2.3
Ann V Pt 4	Monthly, daily, 95%ile hourly emission limit value compliance	Annex E condition 2.2.1.2 and Table E.2.3
Ann V Pt7	Refinery multi-fuel firing SO <sub>2</sub> derogation	Not applicable

Note [1]: Although this plant is <100 MW per LCP, the operator has elected to continue with continuous monitoring for NO<sub>x</sub> and CO emissions.

Note [2]: All fuel is gaseous. Hydrogen has zero dusts and sulphur; natural gas has trace levels of S and dust.

Note [3]: Hg is potentially present in hydrogen fuel feed (as it comes from mercury cell chlorine plant). Quarterly monitoring is specified.

## 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:

**LCP200** is changed to **LCP189**

**LCP201** is changed to **LCP190**

**LCP202** is changed to **LCP191**

The Power Services part of the installation consists of 3 x 99 MWth (net thermal input) Boilers of identical design and each an LCP which vent via multiple flues within a single structure (not windshilded) at emission points RBP-01, RBP-02 and RBP-03. It was decided that this configuration of combustion units and stacks was a group of three LCPs rather than a single LCP. It was considered by the operator that it was not technically or economically feasible (mainly because of adverse back pressure impacts on sharing flues) to connect as a single emission point, the three stacks. At this stage we agreed with this consideration that this was a three-LCP plant. This satisfies Article 29(2) of IED.

The units burn natural gas and hydrogen in any proportion. There is no standby fuel.

### **Compliance Route**

The operator has proposed to operate the LCPs under the ELV compliance route.

### **Net Rated Thermal Input**

The Applicant has stated that although the Net Thermal Input is 3 x 99 MWth the overall capacity of the plant is 285 MWth. They have justified these values on the basis of performance testing completed in 2009 (3-4 years after the plant was installed) in accordance with the standard DIN 1942 indirect method by Austrian Energy. The EN standard was not available during the design stage of the boiler project and hence DIN was used. Inovyn have records of this performance monitoring on site for future inspection as required.

We are satisfied that this represents a valid method of justification.

### **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, both in terms of the output load (i.e. heat generated) (MW); and this output load as a percentage of the rated thermal output of the combustion plant (%). We agree

with all of these definitions and have set these thresholds in the Permit in table E2.1(a) accordingly.

### **Emission limits**

#### **For ELV plant:**

The operator has proposed limits in line with Part 1 of Annex V of the IED and the 2014 BAT review paper. Consequently we have accepted the proposed limits and incorporated them into table E.2.3 of the permit.

- NO<sub>x</sub> ELV has improved from 150 mg/m<sup>3</sup> to 100 mg/m<sup>3</sup> (for natural gas burning). NO<sub>x</sub> ELV for hydrogen burning is unchanged at 200 mg/m<sup>3</sup>.
- CO ELV has been added as it was not monitored previously.
- The operator proposed limits for SO<sub>2</sub> and dust which have been incorporated into the permit as they are also the limits required by IED.
- The fuel mix for the boiler operation includes hydrogen gas from another plant on the site of the installation. The ELV for NO<sub>x</sub> specified in table 6 in Part 1 of Annex V of the IED for “combustion plant firing other gases...” has therefore been included in the permit when the fuel stream is 100% hydrogen. For the occasions natural gas and hydrogen are blended as a single fuel stream a formula based on the relative proportions of the gases has been incorporated into table E.2.3 of the permit to enable the calculation of the ELV. This method of ELV calculation was the same in the previous permit (now adjusted for the reduction in NO<sub>x</sub> ELV) and is in compliance with IED Article 40(1) regarding multi-fuel firing. In addition two footnotes are added to table E.2.3 to explain how the daily and annual means are derived from the monthly mean.
- Mercury vapour in very small quantities is a known contaminant of the hydrogen gas evolved from the mercury cell plant. No ELV has been imposed but routine monitoring is required to ensure the environmental impact (if any) is understood. Mercury is not a feature of the membrane cell plant (MCP, operated by the other company) and the hydrogen off-gas from this plant is therefore not contaminated with mercury. Monitoring for mercury in the situation where the *only* source of hydrogen is from the MCP is consequently not required.

### **Reporting efficiency**

DEFRA guidance requires the Agency to ensure that the efficiency of plant using fossil fuels is maximised and regularly recorded. The conditions in section 2.7 *Energy Efficiency* in the Core part of the varied permit require this.

Condition 4.1.3 regarding performance reporting requirements has been amended to include (in paragraph 4.1.3 (c)) specific reporting requirements for the LCPs. No change has been made to paragraphs (a) or (b) in respect of Annex E as there are other non-LCP aspects covered.

### **Notifications**

As there is no abatement plant associated with the LCP, Schedule 1 *Notification of abnormal emissions*, in the Core part of the permit, Part C

(which takes account of abatement plant malfunction and breakdown notification requirements) is not required and has therefore not been included.

### **Monitoring & standards**

Standards for assessment of the monitoring location and for measurement of oxygen, temperature and pressure feature in the existing permit conditions (Annex E) 2.2.1.4(b). Gas samples are dried prior to analysis so water vapour sampling is not required.

Direct monitoring of sulphur dioxide and dust emissions have not been included in the monitoring regime. However:

- SO<sub>2</sub> emissions from natural gas firing will be reported 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 from natural gas firing will be reported on the basis of emission factors without continuous or periodic monitoring. Emission factors for the dust calculation are those which are published periodically in the compliance protocol referenced in condition 2.1.2 of Annex E and the operator is required to comply with this. Natural gas is an ash-free fuel and high efficiency combustion does not generate additional dust.

A row has been included in the ELV table E.2.4 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**

As this is a non-ESI plant, additional reporting metrics have not been included in the permit.

### **Additional IED Chapter II requirements**

None required; the periodic groundwater and soil monitoring condition and the amended notifications condition were incorporated in an earlier variation.

### **Conditions deleted from the old permit**

Condition 4.1.9 relating to a specific reporting requirement is no longer required as the same requirement is covered by condition 4.1.3.

Conditions 6.1.4 and 6.1.5 in the interpretation have been deleted because they refer to how compliance with the limits is assessed (with regard to the requirements of Annex V, Part 4 for continuous and non-continuous monitoring). The limits specified in Table E.2.3 specify the assessment criteria by including the limits of the criteria without requiring a separate condition.

Condition 6.1.6 in the interpretation has been deleted because it refers to plant no longer on the installation (Weaver Power Station).

Conditions 2.2.1.5 and 2.2.1.6 in Annex E have been deleted because they have been replaced by several updated IED/LCP conditions inserted in section 2.3 of Annex E.