

## Environment Agency

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

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

The Permit number is:                   EPR/WP3835LR  
The Operator is:                         RWE Generation UK Plc  
The Installation is:                       Coves Gas Turbine Power Station  
This Variation Notice number is:   EPR/WP3835LR/V006

### What this document is about

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

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

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions ('BAT Conclusions') for large combustion plant as detailed in document reference IEDC-7-1. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit

issued. It also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and philosophy and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been removed because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

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

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

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

## How this document is structured

### Glossary of terms

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- 8 Additional IED Chapter II requirements
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- 8.2 Black start
- 9 Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

## Glossary of acronyms used in this document

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

APC	Air Pollution Control
BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BATc	BAT conclusion
BREF	Best available techniques reference document
CCGT	Combined Cycle Gas Turbine
CEM	Continuous emissions monitor
CHP	Combined heat and power
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
Derogation	from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4) of IED where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs
EIONET	European environment information and observation network is a partnership network of the European Environment Agency
ELV	Emission limit value derived under BAT or an emission limit value set out in IED
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2010 No. 1154)
EWC	European waste catalogue
FSA	Food Standards Agency
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC) – now superseded by IED
LCP	Large Combustion Plant subject to Chapter III of IED
MSUL/MSDL	Minimum start up load/minimum shut-down load
NOx	Oxides of nitrogen (NO plus NO <sub>2</sub> expressed as NO <sub>2</sub> )
NPV	Net Present Value
SGN	Sector guidance note
TGN	Technical guidance note
TOC	Total Organic Carbon
WFD	Water Framework Directive (2000/60/EC)

## 1 Our decision

We have decided to issue the consolidated variation notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the consolidated variation notice.

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

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

## 2 How we reached our decision

### 2.1 Requesting information to demonstrate compliance with BAT Conclusions for Large Combustion Plant

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 01/05/18 requiring the Operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the large combustion plant BAT Conclusions document. The Notice also required that where the revised standards are not currently met, the operator should provide information that:

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

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 61 Notice requested that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61 Notice response from the Operator was received on 02/11/18.

We considered that the response did not contain sufficient information for us to commence the permit review. We therefore issued a further information requests to the Operator on 22/05/19. Suitable further information was provided by the Operator on 04/06/19, 15/07/19 and 02/10/19 respectively.

## **2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document**

Based on our records and previous regulatory activities with the facility we have no reason to consider that the operator will not be able to comply with the conditions that we include in the permit.

## **3 The legal framework**

The consolidated variation notice will be issued under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

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

We consider that the consolidated variation notice will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

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

## 4 The key issues

The key issues arising during this permit review are:

- Emissions to air and the emission limits applied to the plant.
- The energy efficiency levels associated with the Best Available Techniques (BAT-AEELs)
- The review and assessment of the availability of BAT for gas turbines operating <500 hours per year

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

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

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

- The upper value of the BAT AELs ranges specified were used unless use of the tighter limit was justified.
- The principle of no backsliding where if existing limits in the permit were already tighter than those specified in the BREF, the existing permit limits were retained.
- Where a limit was specified in both IED Annex V and the BAT Conclusions for a particular reference period, the tighter limit was applied and in the majority of cases this was from the BAT Conclusions.
- Where AELs are indicative in the BAT Conclusions, these were applied unless adequate justification was provided by the operator to demonstrate that an alternative limit was more appropriate.

The LCP(s) on site consist of LCP 284 and LCP 285 which are both gas oil fired Open Cycle Gas Turbines (OCGT).

The plant was put into operation before IED came into force and therefore the existing limits in the permit are from Part 1 of IED Annex V applicable to existing plant.

The ELVs and AELs are based on the following operating regime:

- <500 hours non-emergency plant

The following tables outline the limits that have been incorporated into the permit for LCP 284 and LCP 285.

The emission limits and monitoring requirements have been incorporated into Schedule 3 of the permit. All limits for <500 hour plants are indicative BAT-

AELs. It has been agreed as part of the Large Combustion Plant review that all BAT-AELs are to be incorporated into the permit, unless a tighter limit already exists. There are currently no emission limits specified in the permit, hence all relevant BAT-AELs have been incorporated into the permit. For NO<sub>x</sub> the only indicative BAT-AEL specified is for dual fuel boilers, which is not appropriate for this plant. The operator was asked to propose an appropriate NO<sub>x</sub> limit for the plant. This has then been incorporated into the permit.

The operator confirmed in an email dated 31/10/19 that they will be able to comply with the BAT-AELs as specified below upon permit issue and do not require until 17<sup>th</sup> August 2021 to comply. Table S3.1 in the permit has been amended to reflect this.

<b>Plant type</b>	Open Cycle Gas Turbine
<b>Age</b>	Permitted <b>before</b> publication of the LCP BREF and <b>before</b> IED
<b>Operating Hours</b>	Less than 500 hours/year non-emergency
<b>Fuel</b>	Gas oil

NO <sub>x</sub> limits (mg/Nm <sup>3</sup> ) – indicative in <i>italics</i>					
Averaging	IED (Annex V Part 1) - Existing	BREF	Expected permit limits	Basis	Limits apply
Annual	None	None	None	NA	NA
Monthly	None	None	None	NA	NA
Daily average or average over the sampling period	None	None	250	Operator Proposed limit	Concentration by calculation
95 <sup>th</sup> %ile of hr means	None	None	None	NA	NA

CO limits (mg/Nm <sup>3</sup> )					
Averaging	IED (Annex V Part 1) - Existing	BREF	Expected permit limits	Basis	Limits apply
Annual	None	None	None	NA	NA
Monthly	None	None	None	NA	NA
Daily	None	None	None	NA	NA
95 <sup>th</sup> %ile of hr means	None	None	None	NA	NA

SO <sub>2</sub> limits (mg/Nm <sup>3</sup> ) – indicative in <i>italics</i>					
Averaging	IED (Annex V Part 1) - Existing	BREF	Expected permit limits	Basis	Limits apply
Annual	None	None	None <sup>Note 1</sup>	NA	NA
Monthly	None	None	None	NA	NA



Daily or average over the sampling period	None	<i>66</i>	<i>66</i>	BREF	Concentration by calculation
95 <sup>th</sup> %ile of hr means	None	None	None	NA	NA

**Note 1:** Footnote 1 to Table 22 of BAT-C specifies that the annual AELs are not applicable to plants operating <1500 hours.

Dust limits (mg/Nm <sup>3</sup> ) – indicative in <i>italics</i>					
Averaging	IED (Annex V Part 1) - Existing	BREF	Expected permit limits	Basis	Limits apply
Annual	None	None	None	NA	NA
Monthly	None	None	None	NA	NA
Daily or average over the sampling period	None	<i>10</i>	<i>10</i>	BREF	Concentration by calculation
95 <sup>th</sup> %ile of hr means	None	None	None	NA	NA

#### 4.2 The energy efficiency levels associated with the Best Available Techniques Conclusions

An energy efficiency level associated with the best available techniques (BAT-AEEL) refers to the ratio between the combustion unit's net energy output(s) and the combustion unit's fuel/feedstock energy input at actual unit design. The net energy output(s) is determined at the combustion unit boundaries, including auxiliary systems (e.g. flue-gas treatment systems), and for the unit operated at full load.

Table 21 of the LCP BAT Conclusions sets out the BAT-AEELs for gas oil fired gas turbines. A footnote to the table specifies that the BAT-AEELs are not applicable to plant operating <1500 hours per year. The energy efficiency level of the plant is therefore not considered further in relation to this BAT Conclusion. We have however included a process monitoring requirement in table S3.4 of the consolidated variation notice. This is required to demonstrate that efficiency levels are maintained following any significant overhauls of equipment in order to fulfil the requirement of BAT Conclusion 2.

The operator provided a calculation of energy efficiency, rather than a full performance test, which we consider adequate for this plant.

#### 4.3 The review and assessment of Best Available Techniques for gas turbines operating less than 500 hours per year

Joint Environmental Programme (JEP) produced a document '*BAT Assessment for Existing Gas and Liquid Fuel Fired OCGTs, CCGTs and Dual-fuel GTs with a Thermal Input Rating of 50MWth or Greater Operating <500 Hours Per Year*' dated October 2018. The content of this document has been agreed in principle by the Environment Agency and we have therefore taken the document into account during our determination of this variation.

For the gas turbines of LCP284 and LCP285, the operator has provided BAT assessment for emissions of NOx that follows the approach described in this JEP report.

The techniques considered in the BAT assessment submitted by the operator, are those potentially applicable to gas turbines firing gas oil and operating less than 500 hours per year, according to BAT conclusion 37, namely:

- a. Water/Steam injection;
- b. Use of Dry Low NOx burners.

The technical information on the Olympus B gas turbines installed in LCP284 and LCP285, provided in support of this assessment, can be found in the JEP report JEP19AIB08 / UTG/18/PMP/774/R, '*BAT Assessment for Existing Gas and Liquid Fuel Fired OCGTs, CCGTs and Dual-fuel GTs with a Thermal Input Rating of 50MWth or Greater Operating <500 Hours Per Year*'.

According to this report, endorsed by us, the original equipment manufacturer and third-party service organisations advise that there are no commercially available options for NOx reduction for Olympus B gas turbines when firing on gas oil.

Based on this supporting information, and in line with the methodology set out in the JEP report '*BAT Assessment for Existing Gas and Liquid Fuel Fired OCGTs, CCGTs and Dual-fuel GTs with a Thermal Input Rating of 50MWth or Greater Operating <500 Hours Per Year*', the Operator has concluded that techniques a. and b. of BATc 37 are not available for LCP284 and LCP285 and that the currently permitted performance, along with continued appropriate maintenance, are BAT to prevent or reduce emissions of NOx from these gas turbines.

In all cases, the minimum BAT requirements are considered to be: i) the continued compliance with any permit requirements already in place to protect air quality and ii) the demonstration of an appropriate maintenance regime to maintain plant emissions performance.

We agree with the conclusions of the assessment provided by the operator and we consider accordingly that the techniques reported under BATc 37 are not applicable to LCP284 and LCP285.

## 5 Decision checklist regarding relevant BAT Conclusions

BAT Conclusions for large combustion plant, were published by the European Commission on 17<sup>th</sup> August 2017. There are 75 BAT Conclusions. Only the BAT Conclusions relevant to the particular fuel type used on site have been replicated below.

This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the Consolidated Variation Notice.

The overall status of compliance with the BAT conclusion is indicated in the table as:

- NA Not Applicable
- CC Currently Compliant
- FC Compliant in the future (within 4 years of publication of BAT conclusions)
- NC Not Compliant
- PC Partially Compliant

BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
<b>General</b>			
1	<p><b>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</b></p> <ul style="list-style-type: none"> <li>i. commitment of the management, including senior management;</li> <li>ii. definition of an environmental policy that includes the continuous improvement of the installation by the management;</li> <li>iii. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;</li> <li>iv. implementation of procedures <ul style="list-style-type: none"> <li>(a) Structure and responsibility</li> <li>(b) Training</li> <li>(c) Communication</li> <li>(d) Employee involvement</li> <li>(e) Documentation</li> <li>(f) Efficient process control</li> <li>(g) Maintenance programmes</li> <li>(h) Emergency preparedness and response</li> <li>(i) Safeguarding compliance with environmental legislation</li> </ul> </li> <li>v. checking performance and taking corrective action, paying particular attention to: <ul style="list-style-type: none"> <li>(a) monitoring and measurement (see also the Reference Document on the General Principles of Monitoring)</li> <li>(b) corrective and preventive action</li> <li>(c) maintenance of records</li> <li>(d) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;</li> </ul> </li> <li>vi. review of the EMS and its continuing suitability, adequacy and effectiveness by senior management;</li> <li>vii. following the development of cleaner technologies;</li> <li>viii. consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life;</li> <li>viii. consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life;</li> <li>ix. application of sectoral benchmarking on a regular basis.</li> </ul> <p>Etc - see BAT Conclusions</p>	CC	An Environment Management System (EMS) is in place, which is consistent with the requirements of BAT 1. The EMS is certified to ISO 14001:2015.

BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement													
	<p><b>Applicability.</b> The scope (e.g. level of detail) and nature of the EMS (e.g. standardised or non-standardised) will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have.</p>															
2	<p>BAT is to determine the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the gasification, IGCC and/or combustion units by carrying out a performance test at full load (1), according to EN standards, after the commissioning of the unit and after each modification that could significantly affect the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the unit. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>	CC	<p>The gas turbine engines installations are Rolls Royce Olympus 'B' rated dedicated oil fired engines. Their name plate efficiency according to JEP report UTG/18/ERG/773/R is 26.2%.</p> <p>There have been no upgrades to the plant since it was originally commissioned. As a result there has been no further energy efficiency testing has been undertaken.</p>													
3	<p><b>BAT is to monitor key process parameters relevant for emissions to air and water including those given below.</b></p> <table border="1" data-bbox="331 911 1514 1086"> <thead> <tr> <th data-bbox="331 911 701 943">Stream</th> <th data-bbox="701 911 1140 943">Parameter(s)</th> <th data-bbox="1140 911 1514 943">Monitoring</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 943 701 1050" rowspan="3">Flue-gas</td> <td data-bbox="701 943 1140 975">Flow</td> <td data-bbox="1140 943 1514 975">Periodic or continuous determination</td> </tr> <tr> <td data-bbox="701 975 1140 1007">Oxygen content, temperature, and pressure</td> <td data-bbox="1140 975 1514 1007">Periodic or continuous measurement</td> </tr> <tr> <td data-bbox="701 1007 1140 1050">Water vapour content <sup>(2)</sup></td> <td data-bbox="1140 1007 1514 1050"></td> </tr> <tr> <td data-bbox="331 1050 701 1086">Waste water from flue-gas treatment</td> <td data-bbox="701 1050 1140 1086">Flow, pH, and temperature</td> <td data-bbox="1140 1050 1514 1086">Continuous measurement</td> </tr> </tbody> </table>	Stream	Parameter(s)	Monitoring	Flue-gas	Flow	Periodic or continuous determination	Oxygen content, temperature, and pressure	Periodic or continuous measurement	Water vapour content <sup>(2)</sup>		Waste water from flue-gas treatment	Flow, pH, and temperature	Continuous measurement	CC	<p>Monitoring of the flue gas parameters listed under BAT 3 is not required for &lt;500 hour plant. It is considered that monitoring is required for NO<sub>x</sub>, SO<sub>2</sub>, CO and Dust as specified in table S3.1 in the permit is sufficient.</p>
Stream	Parameter(s)	Monitoring														
Flue-gas	Flow	Periodic or continuous determination														
	Oxygen content, temperature, and pressure	Periodic or continuous measurement														
	Water vapour content <sup>(2)</sup>															
Waste water from flue-gas treatment	Flow, pH, and temperature	Continuous measurement														
4	<p>BAT is to monitor emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p> <table border="1" data-bbox="331 1185 1514 1281"> <thead> <tr> <th data-bbox="331 1185 488 1281">Substance/Parameter</th> <th data-bbox="488 1185 804 1281">Fuel/Process/Type of combustion plant</th> <th data-bbox="804 1185 965 1281">Combustion plant total rated thermal input</th> <th data-bbox="965 1185 1142 1281">Standard(s) <sup>(4)</sup></th> <th data-bbox="1142 1185 1364 1281">Minimum monitoring frequency <sup>(5)</sup></th> <th data-bbox="1364 1185 1514 1281">Monitoring associated with</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 1281 488 1327"></td> <td data-bbox="488 1281 804 1327"></td> <td data-bbox="804 1281 965 1327"></td> <td data-bbox="965 1281 1142 1327"></td> <td data-bbox="1142 1281 1364 1327"></td> <td data-bbox="1364 1281 1514 1327"></td> </tr> </tbody> </table>	Substance/Parameter	Fuel/Process/Type of combustion plant	Combustion plant total rated thermal input	Standard(s) <sup>(4)</sup>	Minimum monitoring frequency <sup>(5)</sup>	Monitoring associated with							CC	<p>Monitoring is undertaken by determining the concentration by calculation for NO<sub>x</sub>, SO<sub>2</sub>, CO and Dust.</p> <p>There is no SCR/SNCR on site and therefore no requirement to monitor ammonia or SO<sub>3</sub>.</p>	
Substance/Parameter	Fuel/Process/Type of combustion plant	Combustion plant total rated thermal input	Standard(s) <sup>(4)</sup>	Minimum monitoring frequency <sup>(5)</sup>	Monitoring associated with											

BAT Concn. Number	Summary of BAT Conclusion requirement						Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	NH <sub>3</sub>	— When SCR and/or SNCR is used	All sizes	Generic EN standards	Continuous <sub>1</sub> ( <sup>6</sup> )( <sup>7</sup> )	BAT 7		
	NO <sub>x</sub>	— Coal and/or lignite including waste co-incineration	All sizes	Generic EN standards	Continuous <sub>1</sub> ( <sup>6</sup> )( <sup>8</sup> )	BAT 20 BAT 24 BAT 28 BAT 32 BAT 37 BAT 41 BAT 42 BAT 43 BAT 47 BAT 48 BAT 56 BAT 64 BAT 65 BAT 73		
		— Solid biomass and/or peat including waste co-incineration — HFO- and/or gas-oil-fired boilers and engines — Gas-oil-fired gas turbines — Natural-gas-fired boilers, engines, and turbines — Iron and steel process gases — Process fuels from the chemical industry — IGCC plants						
		— Combustion plants on offshore platforms	All sizes	EN 14792	Once every year <sub>1</sub> ( <sup>9</sup> )	BAT 53		
	N <sub>2</sub> O	— Coal and/or lignite in circulating fluidised bed boilers — Solid biomass and/or peat in circulating fluidised bed boilers	All sizes	EN 21258	Once every year <sub>1</sub> ( <sup>10</sup> )	BAT 20 BAT 24		
CO	— Coal and/or lignite including waste co-incineration — Solid biomass and/or peat including waste co-incineration	All sizes	Generic EN standards	Continuous <sub>1</sub> ( <sup>6</sup> )( <sup>8</sup> )	BAT 20 BAT 24 BAT 28 BAT 33 BAT 38 BAT 44 BAT 49 BAT 56			

BAT Concn. Number	Summary of BAT Conclusion requirement						Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		<ul style="list-style-type: none"> <li>— HFO- and/or gas-oil-fired boilers and engines</li> <li>— Gas-oil-fired gas turbines</li> <li>— Natural-gas-fired boilers, engines, and turbines</li> <li>— Iron and steel process gases</li> <li>— Process fuels from the chemical industry</li> <li>— IGCC plants</li> </ul>				BAT 64 BAT 65 BAT 73		
		<ul style="list-style-type: none"> <li>— Combustion plants on offshore platforms</li> </ul>	All sizes	EN 15058	Once every year <sup>(9)</sup>	BAT 54		
SO <sub>2</sub>		<ul style="list-style-type: none"> <li>— Coal and/or lignite incl waste co-incineration</li> <li>— Solid biomass and/or peat incl waste co-incineration</li> <li>— HFO- and/or gas-oil-fired boilers</li> <li>— HFO- and/or gas-oil-fired engines</li> <li>— Gas-oil-fired gas turbines</li> <li>— Iron and steel process gases</li> <li>— Process fuels from the chemical industry in boilers</li> <li>— IGCC plants</li> </ul>	All sizes	Generic EN standards and EN 14791	Continuous <sup>(6)</sup> <sup>(11)</sup> <sup>(12)</sup>	BAT 21 BAT 25 BAT 29 BAT 34 BAT 39 BAT 50 BAT 57 BAT 66 BAT 67 BAT 74		
SO <sub>3</sub>		<ul style="list-style-type: none"> <li>— When SCR is used</li> </ul>	All sizes	No EN standard available	Once every year	—		
Gaseous chlorides, expressed as HCl		<ul style="list-style-type: none"> <li>— Coal and/or lignite</li> <li>— Process fuels from the chemical industry in boilers</li> </ul>	All sizes	EN 1911	Once every three months <sup>(6)</sup> <sup>(13)</sup> <sup>(14)</sup>	BAT 21 BAT 57		

BAT Conc. Number	Summary of BAT Conclusion requirement						Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		— Solid biomass and/or peat	All sizes	Generic EN standards	Continuous <sub>(15)</sub> (16)	BAT 25		
		— Waste co-incineration	All sizes	Generic EN standards	Continuous <sub>(6)</sub> (16)	BAT 66 BAT 67		
HF		— Coal and/or lignite	All sizes	No EN standard available	Once every three months <sub>(6)</sub> (13)(14)	BAT 21 BAT 57		
		— Process fuels from the chemical industry in boilers						
		— Solid biomass and/or peat	All sizes	No EN standard available	Once every year	BAT 25		
		— Waste co-incineration	All sizes	Generic EN standards	Continuous <sub>(6)</sub> (16)	BAT 66 BAT 67		
Dust		— Coal and/or lignite	All sizes	Generic EN standards and EN 13284-1 and EN 13284-2	Continuous <sub>(6)</sub> (17)	BAT 22		
		— Solid biomass and/or peat				BAT 26		
		— HFO- and/or gas-oil-fired boilers				BAT 30		
		— Iron and steel process gases				BAT 35		
		— Process fuels from the chemical industry in boilers				BAT 39		
		— IGCC plants				BAT 51		
		— HFO- and/or gas-oil-fired engines				BAT 58 BAT 75		
		— Gas-oil-fired gas turbines	All sizes	Generic EN standards and EN 13284-2	Continuous	BAT 68 BAT 69		
Metals and metalloids except mercury (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V, Zn)		— Coal and/or lignite	All sizes	EN 14385	Once every year <sub>(18)</sub>	BAT 22		
		— Solid biomass and/or peat				BAT 26		
		— HFO- and/or gas-oil-fired boilers and engines				BAT 30		
		— Waste co-incineration	< 300 MW <sub>th</sub>	EN 14385	Once every six months <sub>(13)</sub>	BAT 68 BAT 69		



BAT Concn. Number	Summary of BAT Conclusion requirement						Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			≥ 300 MW <sub>th</sub>	EN 14385	Once every three months <sub>(19)</sub> (13)			
	— IGCC plants		≥ 100 MW <sub>th</sub>	EN 14385	Once every year <sub>(18)</sub>	BAT 75		
Hg	— Coal and/or lignite including waste co-incineration		< 300 MW <sub>th</sub>	EN 13211	Once every three months <sub>(13)</sub> (20)	BAT 23		
			≥ 300 MW <sub>th</sub>	Generic EN standards and EN 14884	Continuous <sub>(16)</sub> (21)			
	— Solid biomass and/or peat		All sizes	EN 13211	Once every year <sub>(22)</sub>	BAT 27		
	— Waste co-incineration with solid biomass and/or peat		All sizes	EN 13211	Once every three months <sub>(13)</sub>	BAT 70		
	— IGCC plants		≥ 100 MW <sub>th</sub>	EN 13211	Once every year <sub>(23)</sub>	BAT 75		
TVOC	— HFO- and/or gas-oil-fired engines		All sizes	EN 12619	Once every six months <sub>(13)</sub>	BAT 33 BAT 59		
	— Process fuels from chemical industry in boilers							
	— Waste co-incineration with coal, lignite, solid biomass and/or peat		All sizes	Generic EN standards	Continuous	BAT 71		
Formaldehyde	— Natural-gas in spark-ignited lean-burn gas and dual fuel engines		All sizes	No EN standard available	Once every year	BAT 45		
CH <sub>4</sub>	— Natural-gas-fired engines		All sizes	EN ISO 25139	Once every year <sub>(24)</sub>	BAT 45		
PCDD/F	— Process fuels from chemical industry in boilers		All sizes	EN 1948-1, EN 1948-2, EN 1948-3	Once every six months <sub>(13)</sub> (25)	BAT 59 BAT 71		
	— Waste co-incineration							
5	BAT is to monitor emissions to water from flue-gas treatment with at least the frequency given in BAT 5 and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.						NA	No emissions of process effluent from flue-gas treatment.

BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement																	
6	<p>In order to improve the general environmental performance of combustion plants and to reduce emissions to air of CO and unburnt substances, BAT is to ensure optimised combustion and to use an appropriate combination of the techniques given below.</p> <table border="1" data-bbox="342 496 1509 1098"> <thead> <tr> <th data-bbox="342 496 568 528">Technique</th> <th data-bbox="568 496 1010 528">Description</th> <th data-bbox="1010 496 1509 528">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="342 528 568 619">a. Fuel blending and mixing</td> <td data-bbox="568 528 1010 619">Ensure stable combustion conditions and/or reduce the emission of pollutants by mixing different qualities of the same fuel type</td> <td data-bbox="1010 528 1509 619" rowspan="2">Generally applicable</td> </tr> <tr> <td data-bbox="342 619 568 699">b. Maintenance of the combustion system</td> <td data-bbox="568 619 1010 699">Regular planned maintenance according to suppliers' recommendations</td> </tr> <tr> <td data-bbox="342 699 568 783">c. Advanced control system</td> <td data-bbox="568 699 1010 783">See description in Section 8.1</td> <td data-bbox="1010 699 1509 783">The applicability to old combustion plants may be constrained by the need to retrofit the combustion system and/or control command system</td> </tr> <tr> <td data-bbox="342 783 568 868">d. Good design of the combustion equipment</td> <td data-bbox="568 783 1010 868">Good design of furnace, combustion chambers, burners and associated devices</td> <td data-bbox="1010 783 1509 868">Generally applicable to new combustion plants</td> </tr> <tr> <td data-bbox="342 868 568 1098">e. Fuel choice</td> <td data-bbox="568 868 1010 1098">Select or switch totally or partially to another fuel(s) with a better environmental profile (e.g. with low sulphur and/or mercury content) amongst the available fuels, including in start-up situations or when back-up fuels are used</td> <td data-bbox="1010 868 1509 1098">Applicable within the constraints associated with the availability of suitable types of fuel with a better environmental profile as a whole, which may be impacted by the energy policy of the Member State, or by the integrated site's fuel balance in the case of combustion of industrial process fuels. For existing combustion plants, the type of fuel chosen may be limited by the configuration and the design of the plant</td> </tr> </tbody> </table>	Technique	Description	Applicability	a. Fuel blending and mixing	Ensure stable combustion conditions and/or reduce the emission of pollutants by mixing different qualities of the same fuel type	Generally applicable	b. Maintenance of the combustion system	Regular planned maintenance according to suppliers' recommendations	c. Advanced control system	See description in Section 8.1	The applicability to old combustion plants may be constrained by the need to retrofit the combustion system and/or control command system	d. Good design of the combustion equipment	Good design of furnace, combustion chambers, burners and associated devices	Generally applicable to new combustion plants	e. Fuel choice	Select or switch totally or partially to another fuel(s) with a better environmental profile (e.g. with low sulphur and/or mercury content) amongst the available fuels, including in start-up situations or when back-up fuels are used	Applicable within the constraints associated with the availability of suitable types of fuel with a better environmental profile as a whole, which may be impacted by the energy policy of the Member State, or by the integrated site's fuel balance in the case of combustion of industrial process fuels. For existing combustion plants, the type of fuel chosen may be limited by the configuration and the design of the plant	CC	<p>Environmental performance of the installation is improved through the adoption of techniques B, D and E as described below.</p> <p><b>B</b> – Maintenance contracts are in place. Inspection and Maintenance of the plant is undertaken during power outages, which occur at least annually. A list of works is produced following any outages. A number of overhauled gas turbines are kept in strategic reserve to replace any gas turbine if necessary.</p> <p><b>D</b> – The combustion equipment are Rolls Royce Olympus 'B' rated gas turbines. A feature of the combustion system is the relatively low firing temperatures. The NO<sub>x</sub> emissions from the plant are determined by the maximum possible peak flame temperature, they are stable and are relatively insensitive to combustor degradation. Therefore, the plant is considered to be of a good design.</p> <p><b>E</b> – The site uses Class D fuel (0.1% Sulphur). However Class A2 Gas Oil (Ultra low Sulphur or 10ppm) is burnt when reasonably available to the location (i.e. within commercial logistical and fuel quality constraints).</p> <p>Class D Gas Oil has not been purchased for this location since Dec 2012. With the exception of a 211 tonne transfer (from another RWE location), all of the circa 6,500</p>
Technique	Description	Applicability																		
a. Fuel blending and mixing	Ensure stable combustion conditions and/or reduce the emission of pollutants by mixing different qualities of the same fuel type	Generally applicable																		
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BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>tonnes of gas oil delivered to site since Dec 2012 has been Ultra Low Sulphur Gas Oil.</p> <p>The application of the techniques as described is considered sufficient to comply with the requirements of BAT 6.</p>
7	<p>In order to reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR) for the abatement of NO<sub>x</sub> emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised reagent to NO<sub>x</sub> ratio, homogeneous reagent distribution and optimum size of the reagent drops).</p> <p><b>BAT-associated emission levels</b>  The BAT-associated emission level (BAT-AEL) for emissions of NH<sub>3</sub> to air from the use of SCR and/or SNCR is &lt; 3–10 mg/Nm<sup>3</sup> as a yearly average or average over the sampling period. The lower end of the range can be achieved when using SCR and the upper end of the range can be achieved when using SNCR without wet abatement techniques. In the case of plants combusting biomass and operating at variable loads as well as in the case of engines combusting HFO and/or gas oil, the higher end of the BAT-AEL range is 15 mg/Nm<sup>3</sup>.</p>	NA	There is no SCR/SNCR on site and therefore this BAT 7 is not applicable
8	In order to prevent or reduce emissions to air during normal operating conditions, BAT is to ensure, by appropriate design, operation and maintenance, that the emission abatement systems are used at optimal capacity and availability.	NA	No abatement equipment is installed at this installation and therefore, BAT 8 is not applicable.
9	<p>In order to improve the general environmental performance of combustion and/or gasification plants and to reduce emissions to air, BAT is to include the following elements in the quality assurance/quality control programmes for all the fuels used, as part of the environmental management system (see BAT 1):</p> <ul style="list-style-type: none"> <li>(i) Initial full characterisation of the fuel used including at least the parameters listed below and in accordance with EN standards. ISO, national or other international standards may be used provided they ensure the provision of data of an equivalent scientific quality;</li> <li>(ii) Regular testing of the fuel quality to check that it is consistent with the initial characterisation and according to the plant design specifications. The frequency of testing and the parameters chosen from the table below are based on the variability of the fuel and an assessment of the relevance of pollutant releases (e.g. concentration in fuel, flue-gas treatment employed);</li> </ul>	CC	<p>The fuel is routinely analysed for all of the parameters listed for gas oil Ash, Nitrogen and Sulphur. Currently only periodic testing is undertaken for Carbon.</p> <p>A composite sample is taken upon completion of each batch delivery, which are made approximately once per year.</p> <p>In addition, density, moisture, Gross Calorific Value (GCV), Net Calorific Value (NCV), flash point are routinely analysed.</p>

BAT Conc. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement																							
	<p>(iii) Subsequent adjustment of the plant settings as and when needed and practicable (e.g. integration of the fuel characterisation and control in the advanced control system (see description in Section 8.1)).</p> <p><b>Description</b> Initial characterisation and regular testing of the fuel can be performed by the operator and/or the fuel supplier. If performed by the supplier, the full results are provided to the operator in the form of a product (fuel) supplier specification and/or guarantee.</p> <table border="1" data-bbox="331 576 1512 1342"> <thead> <tr> <th data-bbox="331 576 725 612">Fuel(s)</th> <th data-bbox="725 576 1512 612">Substances/Parameters subject to characterisation</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 612 725 815" rowspan="4">Biomass/peat</td> <td data-bbox="725 612 1512 649">— LHV</td> </tr> <tr> <td data-bbox="725 649 1512 686">— moisture</td> </tr> <tr> <td data-bbox="725 686 1512 722">— Ash</td> </tr> <tr> <td data-bbox="725 722 1512 815">— C, Cl, F, N, S, K, Na — Metals and metalloids (As, Cd, Cr, Cu, Hg, Pb, Zn)</td> </tr> <tr> <td data-bbox="331 815 725 1034" rowspan="4">Coal/lignite</td> <td data-bbox="725 815 1512 852">— LHV</td> </tr> <tr> <td data-bbox="725 852 1512 888">— Moisture</td> </tr> <tr> <td data-bbox="725 888 1512 925">— Volatiles, ash, fixed carbon, C, H, N, O, S</td> </tr> <tr> <td data-bbox="725 925 1512 1034">— Br, Cl, F — Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)</td> </tr> <tr> <td data-bbox="331 1034 725 1114" rowspan="2">HFO</td> <td data-bbox="725 1034 1512 1070">— Ash</td> </tr> <tr> <td data-bbox="725 1070 1512 1114">— C, S, N, Ni, V</td> </tr> <tr> <td data-bbox="331 1114 725 1193" rowspan="2">Gas oil</td> <td data-bbox="725 1114 1512 1150">— Ash</td> </tr> <tr> <td data-bbox="725 1150 1512 1193">— N, C, S</td> </tr> <tr> <td data-bbox="331 1193 725 1281" rowspan="2">Natural gas</td> <td data-bbox="725 1193 1512 1230">— LHV</td> </tr> <tr> <td data-bbox="725 1230 1512 1281">— CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>, C<sub>4+</sub>, CO<sub>2</sub>, N<sub>2</sub>, Wobbe index</td> </tr> <tr> <td data-bbox="331 1281 725 1342">Process fuels from the chemical industry<sup>(27)</sup></td> <td data-bbox="725 1281 1512 1342">— Br, C, Cl, F, H, N, O, S</td> </tr> </tbody> </table>	Fuel(s)	Substances/Parameters subject to characterisation	Biomass/peat	— LHV	— moisture	— Ash	— C, Cl, F, N, S, K, Na — Metals and metalloids (As, Cd, Cr, Cu, Hg, Pb, Zn)	Coal/lignite	— LHV	— Moisture	— Volatiles, ash, fixed carbon, C, H, N, O, S	— Br, Cl, F — Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)	HFO	— Ash	— C, S, N, Ni, V	Gas oil	— Ash	— N, C, S	Natural gas	— LHV	— CH <sub>4</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> , C <sub>4+</sub> , CO <sub>2</sub> , N <sub>2</sub> , Wobbe index	Process fuels from the chemical industry <sup>(27)</sup>	— Br, C, Cl, F, H, N, O, S		<p>Hydrogen content, pour point, viscosity, CFPP (Cold Filter Plugging Point), FAME (Fatty Acid Methyl-Esters) content and elemental analysis are periodically analysed.</p> <p>The operator is a member of the Joint Environmental Protocol and has confirmed that they will follow the requirements set out in the JEP document: 'Characterisation of Power Plant Fuels for Compliance with LCP BREF Conclusion BAT9'. We have agreed that for such operators they will be considered be in compliance with this BAT conclusion.</p>
Fuel(s)	Substances/Parameters subject to characterisation																									
Biomass/peat	— LHV																									
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HFO	— Ash																									
	— C, S, N, Ni, V																									
Gas oil	— Ash																									
	— N, C, S																									
Natural gas	— LHV																									
	— CH <sub>4</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> , C <sub>4+</sub> , CO <sub>2</sub> , N <sub>2</sub> , Wobbe index																									
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	<table border="1"> <tr> <td data-bbox="331 405 725 448"></td> <td data-bbox="725 405 1512 448">— Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)</td> </tr> <tr> <td data-bbox="331 448 725 523">Iron and steel process gases</td> <td data-bbox="725 448 1512 523">— LHV, CH<sub>4</sub> (for COG), C<sub>x</sub>H<sub>y</sub> (for COG), CO<sub>2</sub>, H<sub>2</sub>, N<sub>2</sub>, total sulphur, dust, Wobbe index</td> </tr> <tr> <td data-bbox="331 523 725 679">Waste <sup>(28)</sup></td> <td data-bbox="725 523 1512 679"> <ul style="list-style-type: none"> <li>— LHV</li> <li>— Moisture</li> <li>— Volatiles, ash, Br, C, Cl, F, H, N, O, S</li> <li>— Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)</li> </ul> </td> </tr> </table>		— Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)	Iron and steel process gases	— LHV, CH <sub>4</sub> (for COG), C <sub>x</sub> H <sub>y</sub> (for COG), CO <sub>2</sub> , H <sub>2</sub> , N <sub>2</sub> , total sulphur, dust, Wobbe index	Waste <sup>(28)</sup>	<ul style="list-style-type: none"> <li>— LHV</li> <li>— Moisture</li> <li>— Volatiles, ash, Br, C, Cl, F, H, N, O, S</li> <li>— Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)</li> </ul>		
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Waste <sup>(28)</sup>	<ul style="list-style-type: none"> <li>— LHV</li> <li>— Moisture</li> <li>— Volatiles, ash, Br, C, Cl, F, H, N, O, S</li> <li>— Metals and metalloids (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sb, Tl, V, Zn)</li> </ul>								
10	<p>In order to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC), BAT is to set up and implement a management plan as part of the environmental management system (see BAT 1), commensurate with the relevance of potential pollutant releases, that includes the following elements:</p> <ul style="list-style-type: none"> <li>— appropriate design of the systems considered relevant in causing OTNOC that may have an impact on emissions to air, water and/or soil (e.g. low-load design concepts for reducing the minimum start-up and shutdown loads for stable generation in gas turbines),</li> <li>— set-up and implementation of a specific preventive maintenance plan for these relevant systems,</li> <li>— review and recording of emissions caused by OTNOC and associated circumstances and implementation of corrective actions if necessary,</li> <li>— periodic assessment of the overall emissions during OTNOC (e.g. frequency of events, duration, emissions quantification/estimation) and implementation of corrective actions if necessary.</li> </ul>	CC	OTNOC conditions are covered in the Environment Management System, site documentation and procedures. There is a programme of regular preventative maintenance at the installation. Any environment incident is reviewed as part of an incident investigation and corrective and/or preventative actions implemented.						
11	<p>BAT is to appropriately monitor emissions to air and/or to water during OTNOC.</p> <p><b>Description</b></p> <p>The monitoring can be carried out by direct measurement of emissions or by monitoring of surrogate parameters if this proves to be of equal or better scientific quality than the direct measurement of emissions. Emissions during start-up and shutdown (SU/SD) may be assessed based on a detailed emission measurement carried out for a typical SU/SD procedure at least once every year, and using the results of this measurement to estimate the emissions for each and every SU/SD throughout the year.</p>	CC	No monitoring is undertaken during OTNOC. Emissions of NO <sub>x</sub> , SO <sub>2</sub> , CO and Dust are calculated based on concentration and not through active monitoring.						
12	In order to increase the energy efficiency of combustion, gasification and/or IGCC units operated ≥ 1 500 h/yr, BAT is to use an appropriate combination of the techniques given in BAT 12.	NA	This is not applicable as the plant is operated for <500 hours per year.						

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13	<p>In order to reduce water usage and the volume of contaminated waste water discharged, BAT is to use one or both of the techniques given below.</p> <table border="1" data-bbox="331 459 1514 762"> <thead> <tr> <th data-bbox="331 459 367 496">Technique</th> <th data-bbox="367 459 1081 496">Description</th> <th data-bbox="1081 459 1514 496">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 496 367 628">a.</td> <td data-bbox="367 496 1081 628">Water recycling Residual aqueous streams, including run-off water, from the plant are reused for other purposes. The degree of recycling is limited by the quality requirements of the recipient water stream and the water balance of the plant</td> <td data-bbox="1081 496 1514 628">Not applicable to waste water from cooling systems when water treatment chemicals and/or high concentrations of salts from seawater are present</td> </tr> <tr> <td data-bbox="331 628 367 762">b.</td> <td data-bbox="367 628 1081 762">Dry bottom ash handling Dry, hot bottom ash falls from the furnace onto a mechanical conveyor system and is cooled down by ambient air. No water is used in the process.</td> <td data-bbox="1081 628 1514 762">Only applicable to plants combusting solid fuels. There may be technical restrictions that prevent retrofitting to existing combustion plants</td> </tr> </tbody> </table>	Technique	Description	Applicability	a.	Water recycling Residual aqueous streams, including run-off water, from the plant are reused for other purposes. The degree of recycling is limited by the quality requirements of the recipient water stream and the water balance of the plant	Not applicable to waste water from cooling systems when water treatment chemicals and/or high concentrations of salts from seawater are present	b.	Dry bottom ash handling Dry, hot bottom ash falls from the furnace onto a mechanical conveyor system and is cooled down by ambient air. No water is used in the process.	Only applicable to plants combusting solid fuels. There may be technical restrictions that prevent retrofitting to existing combustion plants	NA	This is not applicable as there are limited process waters generated.
Technique	Description	Applicability										
a.	Water recycling Residual aqueous streams, including run-off water, from the plant are reused for other purposes. The degree of recycling is limited by the quality requirements of the recipient water stream and the water balance of the plant	Not applicable to waste water from cooling systems when water treatment chemicals and/or high concentrations of salts from seawater are present										
b.	Dry bottom ash handling Dry, hot bottom ash falls from the furnace onto a mechanical conveyor system and is cooled down by ambient air. No water is used in the process.	Only applicable to plants combusting solid fuels. There may be technical restrictions that prevent retrofitting to existing combustion plants										
14	<p>In order to prevent the contamination of uncontaminated waste water and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately, depending on the pollutant content.</p> <p><b>Description</b> Waste water streams that are typically segregated and treated include surface run-off water, cooling water, and waste water from flue-gas treatment.</p> <p><b>Applicability</b> The applicability may be restricted in the case of existing plants due to the configuration of the drainage systems.</p>	NA	This is not applicable as there are limited process waters generated.									
15	<p>In order to reduce emissions to water from flue-gas treatment, BAT is to use an appropriate combination of the techniques given in BAT 15, and to use secondary techniques as close as possible to the source in order to avoid dilution.</p>	NA	No flue gas treatment equipment installed.									
16	<p>In order to reduce the quantity of waste sent for disposal from the combustion and/or gasification process and abatement techniques, BAT is to organise operations so as to maximise, in order of priority and taking into account life-cycle thinking:</p> <ul style="list-style-type: none"> <li>(a) waste prevention, e.g. maximise the proportion of residues which arise as by-products;</li> <li>(b) waste preparation for reuse, e.g. according to the specific requested quality criteria;</li> <li>(c) waste recycling;</li> <li>(d) other waste recovery (e.g. energy recovery),</li> </ul>	CC	<p>There are no wastes produced as part of the combustion process as identified in the adjacent table under BAT 16.</p> <p>All other wastes are treated in accordance with the waste hierarchy.</p>									

BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement															
	<p>by implementing an appropriate combination of techniques such as:</p> <table border="1" data-bbox="331 432 1512 1026"> <thead> <tr> <th data-bbox="331 432 584 467">Technique</th> <th data-bbox="584 432 1099 467">Description</th> <th data-bbox="1099 432 1512 467">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 467 584 627">a. Generation of gypsum as a by-product</td> <td data-bbox="584 467 1099 627">Quality optimisation of the calcium-based reaction residues generated by the wet FGD so that they can be used as a substitute for mined gypsum (e.g. as raw material in the plasterboard industry). The quality of limestone used in the wet FGD influences the purity of the gypsum produced</td> <td data-bbox="1099 467 1512 627">Generally applicable within the constraints associated with the required gypsum quality, the health requirements associated to each specific use, and by the market conditions</td> </tr> <tr> <td data-bbox="331 627 584 759">b. Recycling or recovery of residues in the construction sector</td> <td data-bbox="584 627 1099 759">Recycling or recovery of residues (e.g. from semi-dry desulphurisation processes, fly ash, bottom ash) as a construction material (e.g. in road building, to replace sand in concrete production, or in the cement industry)</td> <td data-bbox="1099 627 1512 759">Generally applicable within the constraints associated with the required material quality (e.g. physical properties, content of harmful substances) associated to each specific use, and by the market conditions</td> </tr> <tr> <td data-bbox="331 759 584 868">c. Energy recovery by using waste in the fuel mix</td> <td data-bbox="584 759 1099 868">The residual energy content of carbon-rich ash and sludges generated by the combustion of coal, lignite, heavy fuel oil, peat or biomass can be recovered for example by mixing with the fuel</td> <td data-bbox="1099 759 1512 868">Generally applicable where plants can accept waste in the fuel mix and are technically able to feed the fuels into the combustion chamber</td> </tr> <tr> <td data-bbox="331 868 584 1026">d. Preparation of spent catalyst for reuse</td> <td data-bbox="584 868 1099 1026">Preparation of catalyst for reuse (e.g. up to four times for SCR catalysts) restores some or all of the original performance, extending the service life of the catalyst to several decades. Preparation of spent catalyst for reuse is integrated in a catalyst management scheme</td> <td data-bbox="1099 868 1512 1026">The applicability may be limited by the mechanical condition of the catalyst and the required performance with respect to controlling NO<sub>x</sub> and NH<sub>3</sub> emissions</td> </tr> </tbody> </table>	Technique	Description	Applicability	a. Generation of gypsum as a by-product	Quality optimisation of the calcium-based reaction residues generated by the wet FGD so that they can be used as a substitute for mined gypsum (e.g. as raw material in the plasterboard industry). The quality of limestone used in the wet FGD influences the purity of the gypsum produced	Generally applicable within the constraints associated with the required gypsum quality, the health requirements associated to each specific use, and by the market conditions	b. Recycling or recovery of residues in the construction sector	Recycling or recovery of residues (e.g. from semi-dry desulphurisation processes, fly ash, bottom ash) as a construction material (e.g. in road building, to replace sand in concrete production, or in the cement industry)	Generally applicable within the constraints associated with the required material quality (e.g. physical properties, content of harmful substances) associated to each specific use, and by the market conditions	c. Energy recovery by using waste in the fuel mix	The residual energy content of carbon-rich ash and sludges generated by the combustion of coal, lignite, heavy fuel oil, peat or biomass can be recovered for example by mixing with the fuel	Generally applicable where plants can accept waste in the fuel mix and are technically able to feed the fuels into the combustion chamber	d. Preparation of spent catalyst for reuse	Preparation of catalyst for reuse (e.g. up to four times for SCR catalysts) restores some or all of the original performance, extending the service life of the catalyst to several decades. Preparation of spent catalyst for reuse is integrated in a catalyst management scheme	The applicability may be limited by the mechanical condition of the catalyst and the required performance with respect to controlling NO <sub>x</sub> and NH <sub>3</sub> emissions		
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17	<p>In order to reduce noise emissions, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="331 1070 1512 1302"> <thead> <tr> <th data-bbox="331 1070 584 1106">Technique</th> <th data-bbox="584 1070 1099 1106">Description</th> <th data-bbox="1099 1070 1512 1106">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 1106 584 1302">a. Operational measures</td> <td data-bbox="584 1106 1099 1302">           These include:           <ul style="list-style-type: none"> <li>— improved inspection and maintenance of equipment</li> <li>— closing of doors and windows of enclosed areas, if possible</li> <li>— equipment operated by experienced staff</li> </ul> </td> <td data-bbox="1099 1106 1512 1302">Generally applicable</td> </tr> </tbody> </table>	Technique	Description	Applicability	a. Operational measures	These include: <ul style="list-style-type: none"> <li>— improved inspection and maintenance of equipment</li> <li>— closing of doors and windows of enclosed areas, if possible</li> <li>— equipment operated by experienced staff</li> </ul>	Generally applicable	CC	<p>In order to minimise noise the following techniques are adopted at the installation.</p> <p><b>A</b></p> <ul style="list-style-type: none"> <li>– Programme of daily, weekly and monthly inspections are in place. There is also a database of preventative maintenance routines.</li> <li>- When unoccupied all plant access points are locked for security and safety reasons.</li> </ul>									
Technique	Description	Applicability																
a. Operational measures	These include: <ul style="list-style-type: none"> <li>— improved inspection and maintenance of equipment</li> <li>— closing of doors and windows of enclosed areas, if possible</li> <li>— equipment operated by experienced staff</li> </ul>	Generally applicable																

BAT Conc. Number	Summary of BAT Conclusion requirement			Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		<ul style="list-style-type: none"> <li>— avoidance of noisy activities at night, if possible</li> <li>— provisions for noise control during maintenance activities</li> </ul>			<p>When occupied self-closing door mechanisms reduce noise levels when the building is occupied.</p> <ul style="list-style-type: none"> <li>- The plant is manned and operated by experienced and trained staff.</li> <li>- Site activities with the potential to create noise (e.g. maintenance) are typically only undertaken during the day and very rarely during the evenings or night if at all possible. There has been no requirement to undertake night work with potential to create noise since 2001 (Unit 1 major overhaul).</li> <li>- If unavoidable, the use of noise control measures will be assessed and implemented where possible to mitigate noise should such activities be necessary in the future</li> </ul> <p><b>B</b> – New blast cooler fans and silences were installed in 2015.</p> <p><b>C</b> – Between the main operational noise sources (Unit 1 and 2 Gas Turbine Houses) and the nearest sensitive receptor (residential dwelling approximately 100m to the east) attenuating any noise.</p> <p><b>D</b></p> <ul style="list-style-type: none"> <li>- Gas turbines are located within acoustic engine cells within Units 1 and 2 Gas Turbine Houses.</li> <li>- Gas turbine exhaust ducts are silenced before exhaust gasses are released to atmosphere.</li> </ul>
	b. Low-noise equipment	This potentially includes compressors, pumps and disks	Generally applicable when the equipment is new or replaced		
	c. Noise attenuation	Noise propagation can be reduced by inserting obstacles between the emitter and the receiver. Appropriate obstacles include protection walls, embankments and buildings	Generally applicable to new plants. In the case of existing plants, the insertion of obstacles may be restricted by lack of space		
	d. Noise-control equipment	This includes: <ul style="list-style-type: none"> <li>— noise-reducers</li> <li>— equipment insulation</li> <li>— enclosure of noisy equipment</li> <li>— soundproofing of buildings</li> </ul>	The applicability may be restricted by lack of space		
	e. Appropriate location of equipment and buildings	Noise levels can be reduced by increasing the distance between the emitter and the receiver and by using buildings as noise screens	Generally applicable to new plant		



BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement																		
			<ul style="list-style-type: none"> <li>- Ancillary equipment with the potential to create noise is housed where possible within dedicated buildings (e.g. Fuel Pump House, Fire Pump House etc.).</li> <li>- External equipment (e.g. transformers, blast coolers etc.) are appropriately shielded/silenced minimising noise as much as possible.</li> <li>- Audible control rooms alarms are deactivated overnight while the site is unmanned and monitored remotely.</li> <li>- The plant also operates infrequently (typically &lt;50 hours/year).</li> </ul> <p>The application of the techniques as described is considered sufficient to comply with the requirements of BAT 17.</p>																		
Table 13	<p style="text-align: center;">BAT-associated energy efficiency levels (BAT-AEELs) for HFO and/or gas oil combustion in boilers</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3" style="text-align: center;">Type of combustion unit</th> <th colspan="4" style="text-align: center;">BAT-AEELs <sup>(99)</sup> <sub>(100)</sub></th> </tr> <tr> <th colspan="2" style="text-align: center;">Net electrical efficiency (%)</th> <th colspan="2" style="text-align: center;">Net total fuel utilisation (%) <sub>(101)</sub></th> </tr> <tr> <th style="text-align: center;">New unit</th> <th style="text-align: center;">Existing unit</th> <th style="text-align: center;">New unit</th> <th style="text-align: center;">Existing unit</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">HFO- and/or gas-oil-fired boiler</td> <td style="text-align: center;">&gt; 36,4</td> <td style="text-align: center;">35,6–37,4</td> <td style="text-align: center;">80–96</td> <td style="text-align: center;">80–96</td> </tr> </tbody> </table>	Type of combustion unit	BAT-AEELs <sup>(99)</sup> <sub>(100)</sub>				Net electrical efficiency (%)		Net total fuel utilisation (%) <sub>(101)</sub>		New unit	Existing unit	New unit	Existing unit	HFO- and/or gas-oil-fired boiler	> 36,4	35,6–37,4	80–96	80–96	NA	Not applicable to gas turbines.
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HFO- and/or gas-oil-fired boiler	> 36,4	35,6–37,4	80–96	80–96																	
28	In order to prevent or reduce NO <sub>x</sub> emissions to air while limiting CO emissions to air from the combustion of HFO and/or gas oil in boilers, BAT is to use one or a combination of the techniques given in BAT 28.	NA	Not applicable to gas turbines.																		
29	In order to prevent or reduce SO <sub>x</sub> , HCl and HF emissions to air from the combustion of HFO and/or gas oil in boilers, BAT is to use one or a combination of the techniques given in BAT 29.	NA	Not applicable to gas turbines.																		

BAT Concn. Number	Summary of BAT Conclusion requirement	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement																			
30	In order to reduce dust and particulate-bound metal emissions to air from the combustion of HFO and/or gas oil in boilers, BAT is to use one or a combination of the techniques given in BAT 30.	NA	Not applicable to gas turbines.																			
31	In order to increase the energy efficiency of HFO and/or gas oil combustion in reciprocating engines, BAT is to use an appropriate combination of the techniques given in BAT 12 and BAT 31.	NA	Not applicable to gas turbines.																			
32	In order to prevent or reduce NO <sub>x</sub> emissions to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use one or a combination of the techniques given in BAT 32.	NA	Not applicable to gas turbines.																			
33	In order to prevent or reduce emissions of CO and volatile organic compounds to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use one or both of the techniques given in BAT 33.	NA	Not applicable to gas turbines.																			
34	In order to prevent or reduce SO <sub>x</sub> , HCl and HF emissions to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use one or a combination of the techniques given in BAT 34.	NA	Not applicable to gas turbines.																			
35	In order to prevent or reduce dust and particulate-bound metal emissions from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use one or a combination of the techniques given in BAT 35.	NA	Not applicable to gas turbines.																			
36	<p>In order to increase the energy efficiency of gas oil combustion in gas turbines, BAT is to use an appropriate combination of the techniques given in BAT 12 and below.</p> <table border="1"> <thead> <tr> <th>Technique</th> <th>Description</th> <th>Applicability</th> </tr> </thead> <tbody> <tr> <td>a. Combined cycle</td> <td>See description in Section 8.2</td> <td>Generally applicable to new units operated <math>\geq 1\,500</math> h/yr. Applicable to existing units within the constraints associated with the steam cycle design and the space availability. Not applicable to existing units operated <math>&lt; 1\,500</math> h/yr</td> </tr> </tbody> </table> <p><b>BAT-associated energy efficiency levels (BAT-AEELs) for gas-oil-fired gas turbines</b></p> <table border="1"> <thead> <tr> <th rowspan="3">Type of combustion unit</th> <th colspan="2">BAT-AEELs <sup>(132)</sup></th> </tr> <tr> <th colspan="2">Net electrical efficiency (%) <sup>(133)</sup></th> </tr> <tr> <th>New unit</th> <th>Existing unit</th> </tr> </thead> <tbody> <tr> <td>Gas-oil-fired open-cycle gas turbine</td> <td>&gt; 33</td> <td>25–35,7</td> </tr> <tr> <td>Gas-oil-fired combined cycle gas turbine</td> <td>&gt; 40</td> <td>33–44</td> </tr> </tbody> </table>	Technique	Description	Applicability	a. Combined cycle	See description in Section 8.2	Generally applicable to new units operated $\geq 1\,500$ h/yr. Applicable to existing units within the constraints associated with the steam cycle design and the space availability. Not applicable to existing units operated $< 1\,500$ h/yr	Type of combustion unit	BAT-AEELs <sup>(132)</sup>		Net electrical efficiency (%) <sup>(133)</sup>		New unit	Existing unit	Gas-oil-fired open-cycle gas turbine	> 33	25–35,7	Gas-oil-fired combined cycle gas turbine	> 40	33–44	CC	LCP284 and LCP285 consists of an existing open cycle gas turbine operating for less than 500 hours per year. The use of combined cycle is therefore not applicable as BAT for energy efficiency. BAT-AEELs are not applicable to units operated for less than 1,500 hours per year.
Technique	Description	Applicability																				
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Gas-oil-fired combined cycle gas turbine	> 40	33–44																				
37	In order to prevent or reduce NO <sub>x</sub> emissions to air from the combustion of gas oil in gas turbines, BAT is to use one or a combination of the techniques given below.	CC	There are no commercially available NO <sub>x</sub> reduction options for Rolls-Royce Olympus																			

BAT Concn. Number	Summary of BAT Conclusion requirement			Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement														
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	Technique	Description	Applicability																
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38	<p>In order to prevent or reduce CO emissions to air from the combustion of gas oil in gas turbines, BAT is to use one or a combination of the techniques given below.</p> <table border="1"> <thead> <tr> <th data-bbox="331 751 365 778"></th> <th data-bbox="365 751 600 778">Technique</th> <th data-bbox="600 751 824 778">Description</th> <th data-bbox="824 751 1509 778">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 778 365 836">a.</td> <td data-bbox="365 778 600 836">Combustion optimisation</td> <td data-bbox="600 778 824 836" rowspan="2">See description in Section 8.3</td> <td data-bbox="824 778 1509 836">Generally applicable</td> </tr> <tr> <td data-bbox="331 836 365 922">b.</td> <td data-bbox="365 836 600 922">Oxidation catalysts</td> <td data-bbox="824 836 1509 922">Not applicable to combustion plants operated &lt; 500 h/yr. Retrofitting existing combustion plants may be constrained by the availability of sufficient space</td> </tr> </tbody> </table> <p>As an indication, the emission level for NO<sub>x</sub> emissions to air from the combustion of gas oil in dual fuel gas turbines for emergency use operated &lt; 500 h/yr will generally be 145–250 mg/Nm<sup>3</sup> as a daily average or average over the sampling period.</p>				Technique	Description	Applicability	a.	Combustion optimisation	See description in Section 8.3	Generally applicable	b.	Oxidation catalysts	Not applicable to combustion plants operated < 500 h/yr. Retrofitting existing combustion plants may be constrained by the availability of sufficient space	CC	<p>The combustion process is optimised as described under BAT 6.</p> <p>Oxidation catalysts are not applicable for plant operated &lt;500 hr/yr.</p>			
	Technique	Description	Applicability																
a.	Combustion optimisation	See description in Section 8.3	Generally applicable																
b.	Oxidation catalysts		Not applicable to combustion plants operated < 500 h/yr. Retrofitting existing combustion plants may be constrained by the availability of sufficient space																
39	<p>In order to prevent or reduce SO<sub>x</sub> and dust emissions to air from the combustion of gas oil in gas turbines, BAT is to use the technique given below.</p> <table border="1"> <thead> <tr> <th data-bbox="331 1096 365 1123"></th> <th data-bbox="365 1096 488 1123">Technique</th> <th data-bbox="488 1096 712 1123">Description</th> <th data-bbox="712 1096 1509 1123">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 1123 365 1177">a.</td> <td data-bbox="365 1123 488 1177">Fuel choice</td> <td data-bbox="488 1123 712 1177">See description in Section 8.4</td> <td data-bbox="712 1123 1509 1177">Applicable within the constraints associated with the availability of different types of fuel, which may be impacted by the energy policy of the Member State</td> </tr> </tbody> </table> <p><b>BAT-associated emission levels for SO<sub>2</sub> and dust emissions to air from the combustion of gas oil in gas turbines, including dual fuel gas turbines</b></p> <table border="1"> <thead> <tr> <th colspan="2" data-bbox="331 1241 1509 1268">BAT-AELs (mg/Nm<sup>3</sup>)</th> </tr> <tr> <th data-bbox="331 1268 1025 1310">SO<sub>2</sub></th> <th data-bbox="1025 1268 1509 1310">Dust</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 1310 1025 1343"></td> <td data-bbox="1025 1310 1509 1343"></td> </tr> </tbody> </table>				Technique	Description	Applicability	a.	Fuel choice	See description in Section 8.4	Applicable within the constraints associated with the availability of different types of fuel, which may be impacted by the energy policy of the Member State	BAT-AELs (mg/Nm <sup>3</sup> )		SO <sub>2</sub>	Dust			CC	<p>The indicative BAT AEL for sulphur is 66 mg/Nm<sup>3</sup> as a daily average over the sampling period. The sulphur content of the fired Gas Oil is regulated to ≤ 0.1% by mass, equivalent to 55 mg/m<sup>3</sup> SO<sub>2</sub> in the flue gas (JEP report UTG/18/ERG/773/R). Therefore this ensures that emissions are less than the indicative BAT AEL.</p> <p>The applicable indicative AEL for dust is 10 mg/Nm<sup>3</sup> as a daily average or average over</p>
	Technique	Description	Applicability																
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BAT-AELs (mg/Nm <sup>3</sup> )																			
SO <sub>2</sub>	Dust																		

BAT Concn. Number	Summary of BAT Conclusion requirement					Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	Type of combustion plant	Yearly average <sup>(134)</sup>	Daily average or average over the sampling period <sup>(135)</sup>	Yearly average <sup>(134)</sup>	Daily average or average over the sampling period <sup>(135)</sup>		<p>the sampling period. Dust emission levels are quantified in JEP report UTG/18/ERG/773/R and the levels are less than the indicative BAT AEL.</p> <p>ELVs for both sulphur (66mg/Nm<sup>3</sup>) and dust (10 mg/Nm<sup>3</sup>) have been added to the permit in table S3.1 through the review.</p>
	New and existing plants	35–60	50–66	2–5	2–10		

## **6. Review and assessment of derogation requests made by the operator in relation to BAT Conclusions which include an associated emission level (AEL) value**

The IED enables a competent authority to allow derogations from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

*(a) the geographical location or the local environmental conditions of the installation concerned; or*

*(b) the technical characteristics of the installation concerned.*

As part of their Regulation 61 Note response, the operator has not requested a derogation from compliance with any AEL values.

## **7. Emissions to Water**

There are no emissions of process effluent to sewer or surface water. The consolidated permit incorporates the current discharge point W1 as shown on the site plan in schedule 7 of the permit.

## **8. Additional IED Chapter II requirements:**

### **8.1 <1500 non-emergency plant**

The BAT for balancing plant guidance (Draft V9, 2017) sets out additional restrictions on hours for <1500 hour non-emergency plant which are low efficiency. Table 1 of the guidance sets out categories for LCP peaking plant. The LCP at Cowes falls into category B because it's NO<sub>x</sub> emissions are below 500mg/m<sup>3</sup> and its efficiency at 26.2% is above that set out in table 2 of the guidance. Table 1 therefore confirms that there are no additional restrictions applied to the hours of operation.

### **8.2 Black Start**

In the event of a black out National Grid would call on combustion plant to operate and may require them to do so outside their permitted conditions. We have dedicated black start plant and they are permitted to run as such but this scenario is relevant to the rest of the large combustion plant which could be called depending on the circumstances.

A risk assessment will be carried out by Energy UK/Joint Environmental Programme on behalf of Large Combustion Plant connected to the National Transmission System. Air emissions modelling will be based on generic black start scenarios to establish whether they have the potential to have local impact on the environment or not (on a national basis). If the modelling demonstrates that no significant impacts are likely, the plant can operate under condition 2.3.7. This conditions allows the hourly ELVs for plants operating under a black start instruction to be discounted for the purpose of reporting. We would also require there to be a procedure in place for minimisation of emissions in the case of a black start event and for reporting in the event of a black start. This modelling and the procedures have not been agreed in advance of the issue of the permit review and therefore a condition linking back to an improvement condition have been included in the permit.

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

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

Aspect considered	Decision
<b>Receipt of application</b>	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
<b>The site</b>	
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have not assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process. We consider the revised permit will provide at least the same level of protection as those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.</p>
<b>Operating techniques</b>	
General operating techniques	<p>We have reviewed the techniques used by the operator where they are relevant to the BAT Conclusions and compared these with the relevant guidance notes.</p> <p>The permit conditions ensure compliance with the relevant BREF, BAT Conclusions. The ELVs deliver compliance with the BAT-AELs.</p>
<b>Permit conditions</b>	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide at least the same level of protection as



Aspect considered	Decision
	those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice.
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme to ensure that the operator will have a plan in place to ensure that the fuel is characterised in line with BAT 9.</p>
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>These are described in the relevant BAT Conclusions in Section 5 of this document.</p> <p>It is considered that the ELVs/equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment is secured.</p>
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>These are described in the relevant BAT Conclusions in Section 5 of this document.</p> <p>Table S3.3 Process monitoring requirements was amended to include the requirement to monitor energy efficiency after overhauls on site in line with BAT2.</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.</p>
Reporting	<p>We have specified reporting in the permit for the following parameters:</p> <ul style="list-style-type: none"> <li>• Nitrogen dioxide</li> <li>• Sulphur dioxide</li> <li>• Carbon Monoxide</li> <li>• Dust</li> </ul> <p>These are described in the relevant BAT Conclusions in Section 5 of this document.</p>

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