

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 (as amended)

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

The Permit number is: EPR/BL8392IX
The Operator is: H J Heinz Manufacturing UK Limited
The Installation is: Kitt Green Manufacturing Site
This Variation Notice number is: EPR/BL8392IX/V007

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 by the European Commission of updated decisions on best available techniques (BAT) Conclusions.

We have reviewed the permit for this installation against the BAT Conclusions for the Food, Drink and Milk Industries published on 4th December 2019 in the Official Journal of the European Union. In this decision document, we set out the reasoning for the consolidated variation notice that we have issued.

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. 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 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 issue. Where this has not already been done, 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 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 the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our decision
2. How we reached our decision
3. The legal framework
4. Annex 1 – Review of operating techniques within the Installation against BAT Conclusions.
5. Annex 2 – Review and assessment of changes that are not part of the BAT Conclusions derived permit review
6. Annex 3 – Improvement Conditions

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow the Operator to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice that updates the whole permit.

We consider that, in reaching our 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 Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 08/06/2022 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that:

- describes the techniques that will be implemented before 4 December 2023, which will then ensure that operations meet the revised standards, or
- justifies why standards will not be met by 4 December 2023, and confirmation of the date when the operation of those processes will cease within the Installation or an explanation of why the revised BAT standards are not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised BAT standards 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 required that the Operator make a formal request for derogation from compliance with that BAT-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 09/10/2022.

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 61 Notice response that appears to be confidential in relation to any party.

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 experience in the regulation of the installation we consider that the Operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusions 6a Energy Efficiency Plan, and 9 refrigeration. In relation to these BAT Conclusions, we do not fully agree with the Operator in respect of their current stated capability as recorded in their response to the Regulation 61 Notice. We have therefore included Improvement Conditions IC 7 and IC 8 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered within 3 months of the variation being issued.

2.3 Requests for further information during determination

Although we were able to consider the Regulation 61 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment, and issued two further information requests on 01/11/2023 and 20/03/2024. A copy of each further information request was placed on our public register.

3 The legal framework

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

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

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

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

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Food, Drink and Milk Industries, were published by the European Commission on 4 December 2019.

There are 37 BAT Conclusions.

BAT 1 – 15 are General BAT Conclusions (Narrative BAT) applicable to all relevant Food, Drink and Milk Installations in scope.

BAT 16 – 37 are sector-specific BAT Conclusions, including Best Available Techniques Associated Emissions Levels (BAT-AELs) and Associated Environmental Performance Levels (BAT-AEPLs):

BAT 16 & 17	BAT Conclusions for Animal Feed
BAT 18 – 20	BAT Conclusions for Brewing
BAT 21 – 23	BAT Conclusions for Dairies
BAT 24	BAT Conclusions for Ethanol Production
BAT 25 & 26	BAT Conclusions for Fish and Shellfish Processing
BAT 27	BAT Conclusions for Fruit and Vegetable Processing
BAT 28	BAT Conclusions for Grain Milling
BAT 29	BAT Conclusions for Meat Processing
BAT 30 – 32	BAT Conclusions for Oilseed Processing and Vegetable Oil Refining
BAT 33	BAT Conclusions for Soft Drinks and Nectar/Fruit Juice Processed from Fruit and Vegetables
BAT 34	BAT Conclusions for Starch Production
BAT 35 – 37	BAT Conclusions for Sugar Manufacturing

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.

In addition to the BAT Conclusions for the Food, Drink and Milk Industries; the following BAT Conclusions also apply (as “secondary” BREF BAT Conclusions) due to the site activities:

- Large Combustion Plant (LCP) BAT Conclusions, published 17 August 2017 (relevant to FDM sites operating LCP):

BAT 1 - 17 (General BAT Conclusions), BAT 28 – 30 and BAT 40 – 45.

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

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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
GENERAL BAT CONCLUSIONS (BAT 1-15)			
1	<p>Environmental Management System - Improve overall environmental performance.</p> <p>Implement an EMS that incorporates all the features as described within BATc 1.</p>	CC	<p>The Operator has provided information to support compliance with BATc 1. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 1.</p> <p>The Operator has an EMS externally accredited to the ISO 14001 standard which takes into account all relevant requirements to improve overall environmental performance.</p>
2	<p>EMS inventory of inputs & outputs. Increase resource efficiency and reduce emissions.</p> <p>Establish, maintain and regularly review (including when a significant change occurs) an inventory of water, energy and raw materials consumption as well as of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the features as detailed within the BATCs.</p>	CC	<p>The Operator has an EMS externally accredited to the ISO 14001 standard which takes into account all relevant requirements to increase resource efficiency and reduce emissions.</p>
3	<p>Monitoring key process parameters at key locations for emissions to water.</p> <p>For relevant emissions to water as identified by the inventory of waste water streams (see BAT 2), BAT is to monitor key process parameters (e.g. continuous monitoring of waste water flow, pH and temperature) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).</p>	CC	<p>The Operator has provided information to support compliance with BATc 3. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 3.</p> <p>The site operates an effluent treatment system consisting of solids removal (through screening), then passing the effluent through a Dissolved Air Floatation (DAF) unit.</p> <p>The screenings are either, macerated to a slurry and sent for bio-processing, or conveyed into a skip and sent for composting. The DAF sludge is tankered off-site for bio-processing.</p> <p>A coagulant (liquid lime – Kalic) and a polymer, are added to the effluent stream to</p>

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			<p>remove suspended solids, oils/greases and hence Chemical Oxygen Demand (COD).</p> <p>The Operator has confirmed that key process parameters are monitored continuously on the site's wastewater treatment plant. The on-site Site Services and Infrastructure team monitor the wastewater treatment plant on a 24/7 basis. Continuous monitoring includes the flow rate, temperature and pH levels of the outfall of surface water (emission points W1, W2 and W3) to Ackhurst Brook.</p> <p>The Operator also measures and maintain Flow rate, pH, Chemical Oxygen Demand (COD), separable oil and greases and suspended solids after wastewater is treated, before being sent to United Utilities Waste Water Treatment Works. This enables plant performance to be effectively managed.</p>
4	<p>Monitoring emissions to water to the required frequencies and standards.</p> <p>BAT is to monitor emissions to water with at least the frequency given [refer to BAT 4 table in BATc] 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>	NA	<p>The site has no direct discharges of process effluent to surface water.</p> <p>The operator treats all process effluent on site within the permitted effluent treatment plant. Following this, waste water is treated by United Utilities at a waste water treatment facility on Hoscar Moss, Burscough, before being discharged to sewer.</p> <p>The only parameter relevant for discharges to sewer is chloride but this is not a parameter of concern for the activities carried out on site: vegetable processing, use of solvents and operation of large combustion plant, and so is not applicable.</p> <p>We are therefore satisfied that BATc 4 is not applicable for this site.</p>

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5	<p>Monitoring channelled emissions to air to the required frequencies and standards. BAT is to monitor channelled emissions to air with at least the frequency given and in accordance with EN standards.</p>	CC	No processes described under BATc 5 are carried out on site, as it does not address vegetable processing. Therefore, we are satisfied that BATc 5 is not applicable to this installation.
6	<p>Energy Efficiency In order to increase energy efficiency, BAT is to use an energy efficiency plan (BAT 6a) and an appropriate combination of the common techniques listed in technique 6b within the table in the BATc.</p>	FC	<p>Energy consumption monitored, reported and reviewed on a regular basis. The Operator focusses on gas and electricity consumption per tonne of finished product. A 5 year and 10 year 'energy efficiency improvement and investment strategy' has been defined.</p> <p>The operator confirmed that they utilise a variety of energy saving techniques on site, this includes:</p> <ul style="list-style-type: none"> • burner regulation and control • energy-efficient motors • heat recovery with heat exchangers for process hot water • using LED lighting for new lighting installations and are implementing an LED replacement programme for existing lighting • minimising blowdown from the boiler • optimising steam distribution systems; steam trap regular inspections to reduce losses across the distribution • preheating feed water (including the use of economisers) • process control systems • reducing compressed air system leaks • reducing heat losses by insulation • variable speed drives. <p>The Operator did not submit an Energy Efficiency Plan (EEP) to address the</p>

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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>requirements of BATc 6a with their Regulation 61 response.</p> <p>We have included improvement condition IC 7 in the permit to achieve compliance. IC 7 requests an EEP to be sent to the Environment Agency for approval.</p> <p>The operator is required to complete this improvement condition and demonstrate compliance with the BAT Conclusions within 3 months of the variation being issued.</p>
7	<p>Water and wastewater minimisation</p> <p>In order to reduce water consumption and the volume of waste water discharged, BAT is to use BAT 7a and one or a combination of the techniques b to k given below.</p> <p>(a) water recycling and/or reuse (b) Optimisation of water flow (c) Optimisation of water nozzles and hoses (d) Segregation of water streams</p> <p>Techniques related to cleaning operations:</p> <p>(e) Dry cleaning (f) Pigging system for pipes (g) High-pressure cleaning (h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP) (i) Low-pressure foam and/or gel cleaning (j) Optimised design and construction of equipment and process areas (k) Cleaning of equipment as soon as possible</p>	CC	<p>The operator uses all the techniques listed at appropriate stages of the process, and the water usage is monitored frequently.</p> <p>Key measures include:</p> <ul style="list-style-type: none"> • Water recycling and/or re-use – cooling water and condensate is returned to the cooling towers • Water flow: pressures are controlled to set points using variable drives • Optimisation of water nozzles and hoses: cleaning operations have hose nozzles, taps are fitted with aeration devices and water pressure has been reduced • High-pressure cleaning: pressure has been reduced from 15 to 20 bar for all blue hose work, other water pressure is at 6 bar • Dry cleaning and cleaning in place are used where possible.
8	<p>Prevent or reduce the use of harmful substances</p> <p>In order to prevent or reduce the use of harmful substances, e.g. in cleaning and disinfection, BAT is to use one or a combination of the techniques given below.</p> <p>(a) Proper selection of cleaning chemicals and/or disinfectants (b) Reuse of cleaning chemicals in cleaning-in-place (CIP)</p>	CC	<p>The operator has provided information to support compliance with BATc 8. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 8.</p> <ul style="list-style-type: none"> • Proper selection of cleaning chemicals and/or disinfectants: the Operator has

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	(c) Dry cleaning (d) Optimised design and construction of equipment and process areas		<p>confirmed they employ a third party to assess harmful substances using Sygol software (Control of Substances Hazardous to Health, COSHH)</p> <ul style="list-style-type: none"> • Cleaning in Place (CIP): all CIPs have an automated dosage control for chemicals. On pasta line P16 and beans line 97, CIPs recirculates the chemical to increase effectiveness of contact times • Dry cleaning used where applicable in dry environments such as powder buildings and packaging areas • Optimised design and construction of equipment and process areas.
9	<p>Refrigerants In order to prevent emissions of ozone-depleting substances and of substances with a high global warming potential from cooling and freezing, BAT is to use refrigerants without ozone depletion potential and with a low global warming potential (GWP).</p>	FC	<p>The Operator has demonstrated a detailed understanding of the requirements of BAT 9 and has stated that all new refrigeration systems will use refrigerants with GWP: R32. F-Gas types used on site are R404A, R407C, R410A, R417A, R449A, R134A.</p> <p>We have assessed the information provided and we are not satisfied that the operator has demonstrated compliance with BATc 9.</p> <p>We have included improvement condition IC 8 in the permit to achieve compliance. The operator is required to complete the improvement conditions and demonstrate compliance with the BAT Conclusions within 3 months of the variation being issued.</p>
10	<p>Resource efficiency In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below: (a) Anaerobic digestion (b) Use of residues (c) Separation of residues (d) Recovery and reuse of residues from the pasteuriser (e) Phosphorus recovery as struvite</p>	CC	<p>The operator has provided information to support compliance with BATc 10. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 10.</p> <p>Kraft Heinz operates on a resource efficient basis. Organic waste is sent off site for</p>

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	(f) Use of waste water for land spreading		anaerobic digestion (AD) to produce biogas. Separation of residues: trade waste from the site is screened for organic matter, which is also sent off site for AD. Waste dry beans are sent off site to be used as animal feed.
11	Waste water buffer storage In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water.	CC	The operator has provided information to support compliance with BATc 11. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 11. The operator confirmed that all the site's trade effluent is treated separately to all other water systems. They have a 1500m ³ capacity buffer tank. The system capacity allows for surges in wastewater flows which may occur from time to time, due either to process changes or climatic conditions.
12	Emissions to water – treatment In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below. Preliminary, primary and general treatment (a) Equalisation (b) Neutralisation (c) Physical separate (eg screens, sieves, primary settlement tanks etc) Aerobic and/or anaerobic treatment (secondary treatment) (d) Aerobic and/or anaerobic treatment (eg activated sludge, aerobic lagoon etc) (e) Nitrification and/or denitrification (f) Partial nitrification - anaerobic ammonium oxidation Phosphorus recovery and/or removal (g) Phosphorus recovery as struvite (h) Precipitation (i) Enhanced biological phosphorus removal	NA	The operator treats all process effluent on site within the permitted effluent treatment plant. Following this, waste water is treated by United Utilities at a waste water treatment centre on Hoscar Moss, Burscough. There is no discharge of process effluent to water, therefore BAT 12 is not applicable.

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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										
	Final solids removal (j) Coagulation and flocculation (k) Sedimentation (l) Filtration (eg sand filtration, microfiltration, ultrafiltration) (m) Flotation												
12	<p>Emissions to water – treatment BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body</p> <table border="1" data-bbox="309 611 1227 810"> <thead> <tr> <th>Parameter</th> <th>BAT-AEL (°) (°) (daily average)</th> </tr> </thead> <tbody> <tr> <td>Chemical oxygen demand (COD) (°) (°)</td> <td>25-100 mg/l (°)</td> </tr> <tr> <td>Total suspended solids (TSS)</td> <td>4-50 mg/l (°)</td> </tr> <tr> <td>Total nitrogen (TN)</td> <td>2-20 mg/l (°) (°)</td> </tr> <tr> <td>Total phosphorus (TP)</td> <td>0,2-2 mg/l (°)</td> </tr> </tbody> </table>	Parameter	BAT-AEL (°) (°) (daily average)	Chemical oxygen demand (COD) (°) (°)	25-100 mg/l (°)	Total suspended solids (TSS)	4-50 mg/l (°)	Total nitrogen (TN)	2-20 mg/l (°) (°)	Total phosphorus (TP)	0,2-2 mg/l (°)	NA	There is no direct discharge of process effluent to water, therefore the BAT AELs for direct emissions to a receiving water body are not applicable.
Parameter	BAT-AEL (°) (°) (daily average)												
Chemical oxygen demand (COD) (°) (°)	25-100 mg/l (°)												
Total suspended solids (TSS)	4-50 mg/l (°)												
Total nitrogen (TN)	2-20 mg/l (°) (°)												
Total phosphorus (TP)	0,2-2 mg/l (°)												
13	<p>Noise management plan</p> <p>In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up, implement and regularly review a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> - a protocol containing actions and timelines; - a protocol for conducting noise emissions monitoring; - a protocol for response to identified noise events, e.g. complaints; - a noise reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures. 	CC	<p>The operator has provided information to support compliance with BATc 13. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 13.</p> <p>The operator has a noise management operational control procedure for managing noise complaints as part of their environmental management system.</p> <p>The site has no recent history of noise complaints, the most recent noise complaint was made in 2017 due to a faulty fan, and remedial action was taken to rectify the problem.</p>										
14	<p>Noise management</p> <p>In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below.</p> <p>(a) Appropriate location of equipment and buildings</p>	CC	The operator employs the following techniques to minimise noise for occupational health reasons and to reduce off site noise impacts:										

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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) Operational measures (c) Low-noise equipment (d) Noise control equipment (e) Noise abatement		<p>Use of low noise equipment:</p> <ul style="list-style-type: none"> The noise impact (in dBA) is evaluated before buying new equipment. <p>Operational measures:</p> <ul style="list-style-type: none"> The Operator has a live works management system which includes routine inspection and maintenance of equipment, to prevent noise arising from malfunction. Staff operating the equipment are trained to observe and report possible faults All external doors and windows of enclosed areas are closed where possible to reduce the risk of noise at nearby sensitive receptors The Operator has put operational controls in place to avoid conducting noisy activities at night. <p>Noise control equipment includes:</p> <ul style="list-style-type: none"> Noise reducers deployed on newest dust extraction systems to minimise impact on surrounding residents during the automated filter cleaning process Insulation of equipment Enclosure of noisy equipment Soundproofing of buildings: investment of over £300k to sound proof an external operational area with an acoustic building, to reduce the risk of noise impact on local sensitive receptors.
15	Odour Management	NA	An odour management plan is only required where odour nuisance at sensitive receptors is expected or has been substantiated. There

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> - a protocol containing actions and timelines; - a protocol for conducting odour monitoring. - a protocol for response to identified odour incidents eg complaints; - an odour prevention and reduction programme designed to identify the source(s); to measure/estimate odour exposure: to characterise the contributions of the sources; and to implement prevention and/or reduction measures. 		<p>have been no substantiated odour nuisance from the site therefore an OMP is not a requirement for this site.</p> <p>We are therefore satisfied that BATc 15 is not applicable for this site.</p>
	Fruit and vegetable processing sector BAT conclusions		
27	<p>Energy efficiency – vegetable processing sector</p> <p>In order to increase energy efficiency, BAT is to use an appropriate combination of the techniques specified in BAT 6 and to cool fruit and vegetables before deep freezing.</p> <p>The temperature of the fruit and vegetables is lowered to around 4 °C before they enter the freezing tunnel by bringing them into direct or indirect contact with cold water or cooling air. Water can be removed from the food and then collected for reuse in the cooling process.</p>	NA	<p>Carrots, onions and other raw vegetables are delivered to site in a frozen condition and are not cooked on site. We are therefore satisfied that BAT 27 is not applicable for this site.</p>
	Vegetable Processing Sector Environmental Performance Levels		

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	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								
AEPL	Environmental Performance Level – energy consumption for the vegetable processing sub-sector	CC	<p>The operator has provided information to support compliance with the AEPL for specific energy consumption. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the AEPL.</p> <p>The data provided by the operator, obtained for 2021 demonstrates that the specific energy consumption for the site, 0.72 MWh/tonne of product, falls within the specified range. Many different ingredients are processed, and various products manufactured, however, the average MWh/tonne for the site as a whole meets the AEPL.</p>								
	<table border="1"> <thead> <tr> <th data-bbox="309 343 633 395">Specific process</th> <th data-bbox="633 343 936 395">Unit</th> <th data-bbox="936 343 1218 395">Specific energy consumption (yearly average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="309 395 633 464">Potato processing (excluding starch production)</td> <td data-bbox="633 395 936 464" rowspan="2">MWh/tonne of products</td> <td data-bbox="936 395 1218 464">1,0-2,1 ⁽¹⁾</td> </tr> <tr> <td data-bbox="309 464 633 504">Tomato processing</td> <td data-bbox="936 464 1218 504">0,15-2,4 ⁽²⁾ ⁽³⁾</td> </tr> </tbody> </table>			Specific process	Unit	Specific energy consumption (yearly average)	Potato processing (excluding starch production)	MWh/tonne of products	1,0-2,1 ⁽¹⁾	Tomato processing	0,15-2,4 ⁽²⁾ ⁽³⁾
	Specific process			Unit	Specific energy consumption (yearly average)						
	Potato processing (excluding starch production)			MWh/tonne of products	1,0-2,1 ⁽¹⁾						
Tomato processing	0,15-2,4 ⁽²⁾ ⁽³⁾										
<p>⁽¹⁾ The specific energy consumption level may not apply to the production of potato flakes and powder. ⁽²⁾ The lower end of the range is typically associated with the production of peeled tomatoes. ⁽³⁾ The upper end of the range is typically associated with the production of tomato powder or concentrate.</p>											
AEPL	Environmental Performance Level – Specific waste water discharge for the vegetable processing sub-sector	CC	<p>The operator has provided information to support compliance with AEPL for specific waste water discharge. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the AEPL.</p> <p>The data provided by the operator, obtained for 2021 demonstrates that the specific waste water discharge for the site, an average of 2.99 m³/tonne of product for 2021 as a whole, falls within the specified range for vegetable processing.</p>								
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	Specific process			Unit	Specific waste water discharge (yearly average)						
	Potato processing (excluding starch production)			m ³ /tonne of products	4,0-6,0 ⁽¹⁾						
Tomato processing when water recycling is possible	8,0-10,0 ⁽²⁾										
<p>⁽¹⁾ The specific waste water discharge level may not apply to the production of potato flakes and powder. ⁽²⁾ The specific waste water discharge level may not apply to the production of tomato powder.</p>											

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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								
General											
1	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 features listed in the BATc document.	CC	<p>The operator has provided information to support compliance with BATc 1. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 1.</p> <p>The operator has an EMS externally accredited to the ISO 14001 standard which takes into account all relevant requirements to improve overall environmental performance.</p>								
2	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.	CC	The operator has provided a calculation of the efficiency of the plant that demonstrates compliance with the requirements.								
3	<p>BAT is to monitor key process parameters relevant for emissions to air and water including those given below.</p> <table border="1" data-bbox="322 1257 1326 1439"> <thead> <tr> <th data-bbox="322 1257 636 1295">Stream</th> <th data-bbox="636 1257 1008 1295">Parameter(s)</th> <th data-bbox="1008 1257 1326 1295">Monitoring</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 1295 636 1369" rowspan="2">Flue-gas</td> <td data-bbox="636 1295 1008 1369">Flow</td> <td data-bbox="1008 1295 1326 1369">Periodic or continuous determination</td> </tr> <tr> <td data-bbox="636 1369 1008 1439">Oxygen content, temperature, and pressure</td> <td data-bbox="1008 1369 1326 1439">Periodic or 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	CC	The operator monitors key flue-gas parameters using a continuous emissions monitor. Flue gas flow (Oxides of Nitrogen), temperature, and pressure are continuously monitored to enable the required correction of emissions to the reporting conditions. The site does not carry out any flue-gas treatment.
Stream	Parameter(s)	Monitoring									
Flue-gas	Flow	Periodic or continuous determination									
	Oxygen content, temperature, and pressure	Periodic or continuous measurement									

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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											
	<table border="1"> <tr> <td data-bbox="318 290 636 336"></td> <td data-bbox="636 290 1008 336">Water vapour content ⁽³⁾</td> <td data-bbox="1008 290 1330 336"></td> </tr> <tr> <td data-bbox="318 336 636 410">Waste water from flue-gas treatment</td> <td data-bbox="636 336 1008 410">Flow, pH, and temperature</td> <td data-bbox="1008 336 1330 410">Continuous measurement</td> </tr> </table>		Water vapour content ⁽³⁾		Waste water from flue-gas treatment	Flow, pH, and temperature	Continuous measurement							
	Water vapour content ⁽³⁾													
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>	FC	<p>The Operator monitors the required parameter of NOx continuously in accordance with BS EN14181.</p> <p>However, the Operator was required to monitor CO 'at least every six months' in the extant permit (V005). The requirement to monitor CO will increase in frequency to continuously in accordance with BS EN14181. Therefore we consider the Operator will be future compliant with BATc 4.</p>											
5	<p>BAT is to monitor emissions to water from flue-gas treatment 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>	NA	<p>The Operator does not undertake flue-gas treatment.</p>											
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"> <thead> <tr> <th data-bbox="331 1139 376 1171"></th> <th data-bbox="376 1139 528 1171">Technique</th> <th data-bbox="528 1139 900 1171">Description</th> <th data-bbox="900 1139 1317 1171">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 1171 376 1347">a.</td> <td data-bbox="376 1171 528 1347">Fuel blending and mixing</td> <td data-bbox="528 1171 900 1347">Ensure stable combustion conditions and/or reduce the emission of pollutants by mixing different qualities of the same fuel type</td> <td data-bbox="900 1171 1317 1347" rowspan="2">Generally applicable</td> </tr> <tr> <td data-bbox="331 1347 376 1442">b.</td> <td data-bbox="376 1347 528 1442">Maintenance of the</td> <td data-bbox="528 1347 900 1442">Regular planned maintenance according to suppliers' recommendations</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	Regular planned maintenance according to suppliers' recommendations	CC	<p>The operator employs the techniques below to improve the general environmental performance of its combustion plant and to reduce emissions to air of CO:</p> <p>Maintenance of the combustion system: planned regular maintenance is carried out with quarterly combustion analysis. Burners are serviced twice annually.</p> <p>Advanced control system: there is a digital control system on all boilers. Burners 3 and 4 have been upgraded.</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											
b.	Maintenance of the	Regular planned maintenance according to suppliers' recommendations												

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant				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
		combustion system				<p>Good design of the combustion equipment: there is O₂ trim on all the site's burners.</p> <p>Fuel choice: the Operator is currently reviewing their onsite fuel consumption and has submitted a pre-application. They propose to replace the existing process hot water plant with a Heat Pump Technology designed to use the waste heat from the cooling water return system. The aim is to reduce overall fuel consumption at the site.</p>
7	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 _x emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised reagent to NO _x ratio, homogeneous reagent distribution and optimum size of the reagent drops)				NA	This is not applicable as the site does not use selective catalytic/non-catalytic reduction for abatement.
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	This is not applicable as the site does not use any emission abatement systems.

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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				
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> <p>(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;</p> <p>(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);</p> <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>Description 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="322 946 1323 1114"> <thead> <tr> <th data-bbox="322 946 658 1018">Fuel(s)</th> <th data-bbox="658 946 1323 1018">Substances/Parameters subject to characterisation</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 1018 658 1114">Natural gas</td> <td data-bbox="658 1018 1323 1114"> <ul style="list-style-type: none"> — LHV — CH₄, C₂H₆, C₃, C₄⁺, CO₂, N₂, Wobbe index </td> </tr> </tbody> </table>	Fuel(s)	Substances/Parameters subject to characterisation	Natural gas	<ul style="list-style-type: none"> — LHV — CH₄, C₂H₆, C₃, C₄⁺, CO₂, N₂, Wobbe index 	CC	<p>The Operator quality assurance/controls:</p> <ul style="list-style-type: none"> • Natural gas fuel quality is stable within the UK and is prescribed by the Gas Safety (Management) Regulations (GS(M)R), with regards to Wobbe Index (47.2 – 51.4 MJ/m³ at 15°C, 101.3 kPa, based on the Gross Calorific Value). Most gas turbines and boilers can tolerate this Wobbe Index variation, about the midrange point, but actual variations are currently smaller than this in practice. Natural Gas composition is not prescribed by the GS(M)R and there is some variation in the concentrations of methane, other hydrocarbons, and inert gas components. However, the methane concentration is always above 80%, in compliance with the IED definition of natural gas. The BAT 9 requirement is therefore satisfied by reference to the GS(M)R requirements, for Wobbe Index and typical NCV and compositional variations. • Regular testing: through regular combustion analysis the Operator checks the flue-gas remains in specification - Monitored with the Ops Control process in the ISO 14001 EMS. • Advanced control system: there is a digital control system on all boilers. Burners 3 and 4 have been upgraded. • Flue-gasses monitored through combustion monitoring • Low NOx Burner (LNB) Flue-Gas Recirculation (FGR) - Low NOx Burner
Fuel(s)	Substances/Parameters subject to characterisation						
Natural gas	<ul style="list-style-type: none"> — LHV — CH₄, C₂H₆, C₃, C₄⁺, CO₂, N₂, Wobbe index 						

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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						
			inclusive of flue-gas recirculation to reduce NO _x levels, <ul style="list-style-type: none"> • Combustion Optimisation - Utilising O₂ trim on the burners 						
10	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: <ul style="list-style-type: none"> — 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), — set-up and implementation of a specific preventive maintenance plan for these relevant systems, — review and recording of emissions caused by OTNOC and associated circumstances and implementation of corrective actions if necessary, — periodic assessment of the overall emissions during OTNOC (e.g. frequency of events, duration, emissions quantification/estimation) and implementation of corrective actions if necessary. 	CC	The combustion plant runs within the scope of the original design, and any changes to OTNOC will be identified through the Operator's management of change process. There are specific controls defined with the permit which denote the constraints on disruption of gas flow, procedures in place regarding the disruption to metering and defined fall back approach.						
11	BAT is to appropriately monitor emissions to air and/or to water during OTNOC. Description 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.	CC	NO _x emissions to air are monitored on a continuous basis. As per the Operator's management of change process mentioned under BATc 10 above. Upon failure, the business would act accordingly to reinstate either temporary monitoring and/or revert to the approach detailed in the GHG emissions permit.						
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 below. <table border="1" data-bbox="322 1430 1321 1469"> <thead> <tr> <th data-bbox="322 1430 544 1469">Technique</th> <th data-bbox="544 1430 954 1469">Description</th> <th data-bbox="954 1430 1321 1469">Applicability</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Technique	Description	Applicability				CC	The Operator provided information to support compliance with BATc 12 in the document: "Risk Management Site
Technique	Description	Applicability							

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant			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
	a.	Combustion optimisation	See description in Section 8.2. Optimising the combustion minimises the content of unburnt substances in the flue-gases and in solid combustion residues	Generally applicable	<p>Procedure, Boiler Plant and Process Steam Use”, reference: KG OEP 3.01.</p> <p>The Operator details plant efficiency daily and consumption of gas water and steam. These are benchmarked and actioned accordingly.</p>
b.	Optimisation of the working medium conditions	Operate at the highest possible pressure and temperature of the working medium gas or steam, within the constraints associated with, for example, the control of NO _x emissions or the characteristics of energy demanded			
c.	Optimisation of the steam cycle	Operate with lower turbine exhaust pressure by utilisation of the lowest possible temperature of the condenser cooling water, within the design conditions			
d.	Minimisation of energy consumption	Minimising the internal energy consumption (e.g. greater efficiency of the feed-water pump)			
e.	Preheating of combustion air	Reuse of part of the heat recovered from the combustion flue-gas to preheat the air used in combustion	Generally applicable within the constraints related to the need to control NO _x emissions		
f.	Fuel preheating	Preheating of fuel using recovered heat	Generally applicable within the constraints associated with the boiler design and the need to control NO _x emissions		

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant			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
	g.	Advanced control system	See description in Section 8.2. Computerised control of the main combustion parameters enables the combustion efficiency to be improved	Generally applicable to new units. The applicability to old units may be constrained by the need to retrofit the combustion system and/or control command system	
	h.	Feed-water preheating using recovered heat	Preheat water coming out of the steam condenser with recovered heat, before reusing it in the boiler	Only applicable to steam circuits and not to hot boilers. Applicability to existing units may be limited due to constraints associated with the plant configuration and the amount of recoverable heat	
	i.	Heat recovery by cogeneration (CHP)	Recovery of heat (mainly from the steam system) for producing hot water/steam to be used in industrial processes/activities or in a public network for district heating. Additional heat recovery is possible from: — flue-gas — grate cooling — circulating fluidised bed	Applicable within the constraints associated with the local heat and power demand. The applicability may be limited in the case of gas compressors with an unpredictable operational heat profile	
	j.	CHP readiness	See description in Section 8.2.	Only applicable to new units where there is a realistic potential for the future use of heat in the vicinity of the unit	
	k.	Flue-gas condenser	See description in Section 8.2.	Generally applicable to CHP units provided there is enough	

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant			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
				demand for low-temperature heat	
	i.	Heat accumulation	Heat accumulation storage in CHP mode	Only applicable to CHP plants. The applicability may be limited in the case of low heat load demand	
	m.	Wet stack	See description in Section 8.2.	Generally applicable to new and existing units fitted with wet FGD	
	n.	Cooling tower discharge	The release of emissions to air through a cooling tower and not via a dedicated stack	Only applicable to units fitted with wet FGD where reheating of the flue-gas is necessary before release, and where the unit cooling system is a cooling tower	
	o.	Fuel pre-drying	The reduction of fuel moisture content before combustion to improve combustion conditions	Applicable to the combustion of biomass and/or peat within the constraints associated with spontaneous combustion risks (e.g. the moisture content of peat is kept above 40 % throughout the delivery chain). The retrofit of existing plants may be restricted by the extra calorific value that can be obtained from the drying operation and by the limited retrofit possibilities offered by some boiler designs or plant configurations	

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant			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.	Minimisation of heat losses	Minimising residual heat losses, e.g. those that occur via the slag or those that can be reduced by insulating radiating sources	Only applicable to solid-fuel-fired combustion units and to gasification/IGCC units	
	q.	Advanced materials	Use of advanced materials proven to be capable of withstanding high operating temperatures and pressures and thus to achieve increased steam/combustion process efficiencies	Only applicable to new plants	
	r.	Steam turbine upgrades	This includes techniques such as increasing the temperature and pressure of medium-pressure steam, addition of a low-pressure turbine, and modifications to the geometry of the turbine rotor blades	The applicability may be restricted by demand, steam conditions and/or limited plant lifetime	
	s.	Supercritical and ultra-supercritical steam conditions	Use of a steam circuit, including steam reheating systems, in which steam can reach pressures above 220,6 bar and temperatures above 374 °C in the case of supercritical conditions, and above 250 – 300 bar and temperatures above 580 – 600 °C in the case of ultra-supercritical conditions	Only applicable to new units of ≥ 600 MW _{th} operated > 4 000 h/yr. Not applicable when the purpose of the unit is to produce low steam temperatures and/or pressures in process industries. Not applicable to gas turbines and engines generating steam in CHP mode. For units combusting biomass, the applicability may be constrained by high-temperature corrosion in the case of certain biomasses	

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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									
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="322 357 1326 817"> <thead> <tr> <th data-bbox="322 357 497 395">Technique</th> <th data-bbox="497 357 958 395">Description</th> <th data-bbox="958 357 1326 395">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 395 497 625">a Water recycling</td> <td data-bbox="497 395 958 625">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="958 395 1326 625">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="322 625 497 817">b Dry bottom ash handling</td> <td data-bbox="497 625 958 817">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="958 625 1326 817">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	CC	<p>The operator employs the following techniques:</p> <ul style="list-style-type: none"> Water usage is minimised by the optimising boiler cycles which ensure minimal blow-down from the plant Optimisation and testing of water conductivity daily, inclusive of water SolKE reports to monitor consumption to react quickly. <p>Note: Dry bottom ash handling is not applicable as the site does not use solid fuels.</p>
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>Description 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>Applicability The applicability may be restricted in the case of existing plants due to the configuration of the drainage systems.</p>	CC	<p>The operator operates a centralised wastewater treatment plant. All wastewater streams generated on site are mixed in large buffering lagoons before being treated and then discharged to the river. This means there is no need to separate water streams dependant on their pollutant content. A full description of the wastewater treatment plant is given in the responses to Generic BATC 11 and 12 for FDM.</p> <p>The Operator has confirmed that the only discharged water is the Boiler blow-down water which is drained to the site's trade effluent and treated as required in the sewage discharge consent.</p>									
15	<p>In order to reduce emissions to water from flue-gas treatment, BAT is to use an appropriate combination of the techniques given, and to use secondary techniques as close as possible to the source in order to avoid dilution.</p>	NA	<p>Not applicable. The site does not carry out any flue-gas treatment</p>									

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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												
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> <p>(a) waste prevention, e.g. maximise the proportion of residues which arise as by-products;</p> <p>(b) waste preparation for reuse, e.g. according to the specific requested quality criteria;</p> <p>(c) waste recycling;</p> <p>(d) other waste recovery (e.g. energy recovery),</p> <p>by implementing an appropriate combination of techniques.</p>	NA	<p>Not applicable. The site does not carry out any flue-gas treatment</p>												
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="320 727 1326 1414"> <thead> <tr> <th data-bbox="320 727 551 767">Technique</th> <th data-bbox="551 727 983 767">Description</th> <th data-bbox="983 727 1326 767">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="320 767 551 1179">a Operational measures</td> <td data-bbox="551 767 983 1179"> <p>These include:</p> <ul style="list-style-type: none"> — improved inspection and maintenance of equipment — closing of doors and windows of enclosed areas, if possible — equipment operated by experienced staff — avoidance of noisy activities at night, if possible — provisions for noise control during maintenance activities </td> <td data-bbox="983 767 1326 1179">Generally applicable</td> </tr> <tr> <td data-bbox="320 1179 551 1283">b Low-noise equipment</td> <td data-bbox="551 1179 983 1283">This potentially includes compressors, pumps and disks</td> <td data-bbox="983 1179 1326 1283">Generally applicable when the equipment is new or replaced</td> </tr> <tr> <td data-bbox="320 1283 551 1414">c Noise attenuation</td> <td data-bbox="551 1283 983 1414"> <p>Noise propagation can be reduced by inserting obstacles between the emitter and the receiver. Appropriate obstacles include</p> </td> <td data-bbox="983 1283 1326 1414">Generally applicable to new plants. In the case of existing plants, the insertion of obstacles may</td> </tr> </tbody> </table>	Technique	Description	Applicability	a Operational measures	<p>These include:</p> <ul style="list-style-type: none"> — improved inspection and maintenance of equipment — closing of doors and windows of enclosed areas, if possible — equipment operated by experienced staff — avoidance of noisy activities at night, if possible — provisions for noise control during maintenance activities 	Generally applicable	b Low-noise equipment	This potentially includes compressors, pumps and disks	Generally applicable when the equipment is new or replaced	c Noise attenuation	<p>Noise propagation can be reduced by inserting obstacles between the emitter and the receiver. Appropriate obstacles include</p>	Generally applicable to new plants. In the case of existing plants, the insertion of obstacles may	CC	<p>The operator employs the following techniques:</p> <ul style="list-style-type: none"> • Operational Measures: PM Schedules for operational equipment and inclusive of doors working correctly to retain any nuisance noise. • Low Noise Equipment: Veolia carry out a noise survey every 2 years or periodically if the equipment has changed to identify any risk of potential noise issues. • Noise Attenuation: All boiler operations are internal. All external release valves are subject to PMs as addressed in the 'Operational Measures' bullet point above • Buildings are located away from the residential neighbours at the Kitt Green site, on the industrial elevation side at the North East of the site.
Technique	Description	Applicability													
a Operational measures	<p>These include:</p> <ul style="list-style-type: none"> — improved inspection and maintenance of equipment — closing of doors and windows of enclosed areas, if possible — equipment operated by experienced staff — avoidance of noisy activities at night, if possible — provisions for noise control during maintenance activities 	Generally applicable													
b Low-noise equipment	This potentially includes compressors, pumps and disks	Generally applicable when the equipment is new or replaced													
c Noise attenuation	<p>Noise propagation can be reduced by inserting obstacles between the emitter and the receiver. Appropriate obstacles include</p>	Generally applicable to new plants. In the case of existing plants, the insertion of obstacles may													

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant			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
		protection walls, embankments and buildings	be restricted by lack of space		
	d	Noise-control equipment This includes: — noise-reducers — equipment insulation — enclosure of noisy equipment — soundproofing of buildings	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 conclusions for the combustion of coal and/or lignite

BATc 18 – BATc 23 are considered to be not applicable to the site as the boilers are only operated on natural gas.

BAT conclusions for the combustion of solid biomass and/or peat

BATc 24 – BATc 27 are considered to be not applicable to the site as the boilers are only operated on natural gas.

Combustion of liquid fuels

Table 13	BAT-associated energy efficiency levels (BAT-AEELs) for HFO and/or gas oil combustion in boilers				NA	The units do not operate > 1,500 hours/year with these fuels. Gas oil or another equivalent substitute fuel to be agreed in writing with the Environment Agency, are only to be used as an emergency fuel in the case of a disruption to the site's natural gas supply. The site is currently using Industrial Heating Oil (IHO) as a backup fuel. The permit ensures this can only be done for a period of 10 days. All monitoring will be the same as described in BAT 8 in addition to the volume of gas oil or other equivalent fuel consumed.
	Type of combustion unit	BAT-AEELs ⁽⁹⁹⁾ ₍₁₀₀₎				
		Net electrical efficiency (%)		Net total fuel utilisation (%) ⁽¹⁰¹⁾		
		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	

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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																								
28	<p>In order to prevent or reduce NO_x 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 below.</p> <table border="1" data-bbox="320 384 1323 1441"> <thead> <tr> <th data-bbox="320 384 551 456">Technique</th> <th data-bbox="551 384 730 456">Description</th> <th data-bbox="730 384 1323 456">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="320 456 551 528">a Air staging</td> <td data-bbox="551 456 730 979" rowspan="4">See descriptions in Section 8.3</td> <td data-bbox="730 456 1323 746" rowspan="4">Generally applicable</td> </tr> <tr> <td data-bbox="320 528 551 600">b Fuel staging</td> </tr> <tr> <td data-bbox="320 600 551 671">c Flue-gas recirculation</td> </tr> <tr> <td data-bbox="320 671 551 743">d Low-NO_x burners (LNB)</td> </tr> <tr> <td data-bbox="320 743 551 815">e Water/steam addition</td> <td data-bbox="551 743 730 815"></td> <td data-bbox="730 746 1323 815">Applicable within the constraints of water availability</td> </tr> <tr> <td data-bbox="320 815 551 979">f Selective non-catalytic reduction (SNCR)</td> <td data-bbox="551 815 730 979"></td> <td data-bbox="730 815 1323 979">Not applicable to combustion plants operated < 500 h/yr with highly variable boiler loads. The applicability may be limited in the case of combustion plants operated between 500 h/yr and 1 500 h/yr with highly variable boiler loads</td> </tr> <tr> <td data-bbox="320 979 551 1206">g Selective catalytic reduction (SCR)</td> <td data-bbox="551 979 730 1206">See descriptions in Section 8.3</td> <td data-bbox="730 979 1323 1206">Not applicable to combustion plants operated < 500 h/yr. There may be technical and economic restrictions for retrofitting existing combustion plants operated between 500 h/yr and 1 500 h/yr. Not generally applicable to combustion plants of < 100 MW_{th}</td> </tr> <tr> <td data-bbox="320 1206 551 1370">h Advanced control system</td> <td data-bbox="551 1206 730 1370"></td> <td data-bbox="730 1206 1323 1370">Generally applicable to new combustion plants. 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="320 1370 551 1441">i Fuel choice</td> <td data-bbox="551 1370 730 1441"></td> <td data-bbox="730 1370 1323 1441">Applicable within the constraints associated with the availability of different types of fuel, which</td> </tr> </tbody> </table>	Technique	Description	Applicability	a Air staging	See descriptions in Section 8.3	Generally applicable	b Fuel staging	c Flue-gas recirculation	d Low-NO _x burners (LNB)	e Water/steam addition		Applicable within the constraints of water availability	f Selective non-catalytic reduction (SNCR)		Not applicable to combustion plants operated < 500 h/yr with highly variable boiler loads. The applicability may be limited in the case of combustion plants operated between 500 h/yr and 1 500 h/yr with highly variable boiler loads	g Selective catalytic reduction (SCR)	See descriptions in Section 8.3	Not applicable to combustion plants operated < 500 h/yr. There may be technical and economic restrictions for retrofitting existing combustion plants operated between 500 h/yr and 1 500 h/yr. Not generally applicable to combustion plants of < 100 MW _{th}	h Advanced control system		Generally applicable to new combustion plants. The applicability to old combustion plants may be constrained by the need to retrofit the combustion system and/or control command system	i Fuel choice		Applicable within the constraints associated with the availability of different types of fuel, which	NA	<p>For further information please see the row above and LCP BATc 8.</p> <p>The ELVs do not apply as the units do not operate > 1,500 hours/year with these fuels.</p>
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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 below.				NA	The site is permitted to use gas oil as a backup fuel, or another equivalent substitute to be agreed in writing with the Environment Agency. The site is currently using Industrial Heating Oil (IHO) as a backup fuel. Therefore, the site does not undertake analysis for the components in its flue-gas.																							
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	b	Bag filter					
c.	Multicyclones	See description in Section 8.5. Multicyclones can be used in combination with other dedusting techniques	d			Dry or semi-dry FGD system	See descriptions in Section 8.5. The technique is mainly used for SO _x , HCl and/or HF control
e	Wet flue-gas desulphurisation (wet FGD)	See description in Section 8.5. The technique is mainly used for SO _x , HCl and/or HF control	f.			Fuel choice	See description in Section 8.5
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 below.					NA	NA, gas oil, or another equivalent substitute fuel to be agreed in writing with the Environment Agency, are only to be used as an emergency fuel in the case of a disruption to the site's natural gas supply. The site is currently using Industrial Heating Oil (IHO) as a backup fuel. Condition 2.3.5 of the permit states that it may only be used for periods of up to 10 days whilst gas supply is interrupted.
Technique e		Description	Applicability				
a	Combine d cycle	See description in Section 8.2	NO AEEL				

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	<p align="center">BAT-associated energy efficiency levels (BAT-AEELs) for the combustion of HFO and/or gas oil in reciprocating engines</p> <table border="1"> <thead> <tr> <th data-bbox="322 355 987 395" rowspan="3">Type of combustion unit</th> <th colspan="2" data-bbox="987 355 1323 395">BAT-AEELs ⁽¹¹⁹⁾</th> </tr> <tr> <th colspan="2" data-bbox="987 395 1323 467">Net electrical efficiency (%) ⁽¹²⁰⁾</th> </tr> <tr> <th data-bbox="987 467 1151 539">New unit</th> <th data-bbox="1151 467 1323 539">Existing unit</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 539 987 611">HFO- and/or gas-oil-fired reciprocating engine — single cycle</td> <td data-bbox="987 539 1151 611">41,5– 44,5 ⁽¹²¹⁾</td> <td data-bbox="1151 539 1323 611">38,3– 44,5 ⁽¹²¹⁾</td> </tr> <tr> <td data-bbox="322 611 987 683">HFO- and/or gas-oil-fired reciprocating engine — combined cycle</td> <td data-bbox="987 611 1151 683">> 48 ⁽¹²²⁾</td> <td data-bbox="1151 611 1323 683">No BAT-AEEL</td> </tr> </tbody> </table>	Type of combustion unit	BAT-AEELs ⁽¹¹⁹⁾		Net electrical efficiency (%) ⁽¹²⁰⁾		New unit	Existing unit	HFO- and/or gas-oil-fired reciprocating engine — single cycle	41,5– 44,5 ⁽¹²¹⁾	38,3– 44,5 ⁽¹²¹⁾	HFO- and/or gas-oil-fired reciprocating engine — combined cycle	> 48 ⁽¹²²⁾	No BAT-AEEL						
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33	<p>In order to prevent or reduce emissions of CO and volatile organic compounds (VOCs) 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 below.</p> <table border="1"> <thead> <tr> <th data-bbox="318 507 353 545"></th> <th data-bbox="353 507 568 545">Technique</th> <th data-bbox="568 507 824 545">Description</th> <th data-bbox="824 507 1330 545">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 545 353 619">a</td> <td data-bbox="353 545 568 619">Combustion optimisation</td> <td data-bbox="568 545 824 619"></td> <td data-bbox="824 545 1330 619">Generally applicable</td> </tr> <tr> <td data-bbox="318 619 353 753">b</td> <td data-bbox="353 619 568 753">Oxidation catalysts</td> <td data-bbox="568 619 824 753">See descriptions in Section 8.3</td> <td data-bbox="824 619 1330 753">Not applicable to combustion plants operated < 500 h/yr. The applicability may be limited by the sulphur content of the fuel</td> </tr> </tbody> </table> <p>BAT-associated emission levels (BAT-AELs) for NO_x emissions to air from the combustion of HFO and/or gas oil in reciprocating engines</p> <table border="1"> <thead> <tr> <th data-bbox="318 849 654 1034" rowspan="3">Combustion plant total rated thermal input (MW_{th})</th> <th colspan="4" data-bbox="654 849 1330 887">BAT-AELs (mg/Nm³)</th> </tr> <tr> <th colspan="2" data-bbox="654 887 927 960">Yearly average</th> <th colspan="2" data-bbox="927 887 1330 960">Daily average or average over the sampling period</th> </tr> <tr> <th data-bbox="654 960 766 1034">New plant</th> <th data-bbox="766 960 927 1034">Existing plant ⁽¹²³⁾</th> <th data-bbox="927 960 1061 1034">New plant</th> <th data-bbox="1061 960 1330 1034">Existing plant ⁽¹²⁴⁾ ⁽¹²⁵⁾</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 1034 654 1107">≥ 50</td> <td data-bbox="654 1034 766 1107">115–190 ⁽¹²⁶⁾</td> <td data-bbox="766 1034 927 1107">125–625</td> <td data-bbox="927 1034 1061 1107">145–300</td> <td data-bbox="1061 1034 1330 1107">150–750</td> </tr> </tbody> </table> <p>As an indication, for existing combustion plants burning only HFO and operated ≥ 1 500 h/yr or new combustion plants burning only HFO,</p> <ul style="list-style-type: none"> — the yearly average CO emission levels will generally be 50–175 mg/Nm³, — the average over the sampling period for TVOC emission levels will generally be 10–40 mg/Nm³. 		Technique	Description	Applicability	a	Combustion optimisation		Generally applicable	b	Oxidation catalysts	See descriptions in Section 8.3	Not applicable to combustion plants operated < 500 h/yr. The applicability may be limited by the sulphur content of the fuel	Combustion plant total rated thermal input (MW _{th})	BAT-AELs (mg/Nm ³)				Yearly average		Daily average or average over the sampling period		New plant	Existing plant ⁽¹²³⁾	New plant	Existing plant ⁽¹²⁴⁾ ⁽¹²⁵⁾	≥ 50	115–190 ⁽¹²⁶⁾	125–625	145–300	150–750	NA	The operator operates natural gas fired steam raising boilers. The units do not operate > 1,500 hours/year with these fuels.
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BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant				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
	a Fuel choice	See descriptions 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			
b Duct sorbent injection (DSI)		There may be technical restrictions in the case of existing combustion plants Not applicable to combustion plants operated < 500 h/yr				
c Wet flue-gas desulphurisation (wet FGD)		There may be technical and economic restrictions for applying the technique to combustion plants of < 300 MW _{th} . Not applicable to combustion plants operated < 500 h/yr. There may be technical and economic restrictions for retrofitting existing combustion plants operated between 500 h/yr and 1 500 h/yr				
BAT-associated emission levels (BAT-AELs) for SO₂ emissions to air from the combustion of HFO and/or gas oil in reciprocating engines						
Combustion plant total rated thermal input (MW_{th})		BAT-AELs for SO₂ (mg/Nm³)				
		Yearly average		Daily average or average over the sampling period		
		New plant	Existing plant ⁽¹²⁷⁾	New plant	Existing plant ⁽¹²⁸⁾	
All sizes		45–100	100–200 ⁽¹²⁹⁾	60–110	105–235 ⁽¹²⁹⁾	
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 below.				NA	The operator operates natural gas fired steam raising boilers. The units do not operate > 1,500 hours/year with these fuels.
Technique		Description	Applicability			
a	Fuel choice		Applicable within the constraints associated with the availability of different types of fuel, which			

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant				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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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 data-bbox="318 912 488 979">Technique</th> <th data-bbox="488 912 698 979">Description</th> <th colspan="2" data-bbox="698 912 1330 979">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 979 353 1206">a</td> <td data-bbox="353 979 488 1206">Combine d cycle</td> <td data-bbox="488 979 698 1206">See description in Section 8.2</td> <td data-bbox="698 979 1330 1206"> Generally applicable to new units operated ≥ 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 </td> </tr> </tbody> </table> <p>BAT-associated energy efficiency levels (BAT-AEELs) for gas-oil-fired gas turbines</p> <table border="1"> <thead> <tr> <th data-bbox="318 1270 882 1394" rowspan="3">Type of combustion unit</th> <th colspan="2" data-bbox="882 1270 1330 1311">BAT-AEELs ⁽¹³²⁾</th> </tr> <tr> <th colspan="2" data-bbox="882 1311 1330 1353">Net electrical efficiency (%) ⁽¹³³⁾</th> </tr> <tr> <th data-bbox="882 1353 1079 1394">New unit</th> <th data-bbox="1079 1353 1330 1394">Existing unit</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 1394 882 1436">Gas-oil-fired open-cycle gas turbine</td> <td data-bbox="882 1394 1079 1436">> 33</td> <td data-bbox="1079 1394 1330 1436">25–35,7</td> </tr> </tbody> </table>				Technique	Description	Applicability		a	Combine d cycle	See description in Section 8.2	Generally applicable to new units operated ≥ 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 ⁽¹³²⁾		Net electrical efficiency (%) ⁽¹³³⁾		New unit	Existing unit	Gas-oil-fired open-cycle gas turbine	> 33	25–35,7	NA	The operator operates natural gas fired steam raising boilers. The units do not operate > 1,500 hours/year with these fuels.
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BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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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Gas-oil-fired combined cycle gas turbine	> 40	33–44																
37	<p>In order to prevent or reduce NO_x 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="318 411 353 456">Technique</th> <th data-bbox="353 411 555 456">Description</th> <th data-bbox="555 411 1330 456">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 456 353 523">a</td> <td data-bbox="353 456 555 523">Water/steam addition</td> <td data-bbox="555 456 1330 523">See description in Section 8.3</td> </tr> <tr> <td data-bbox="318 523 353 590">b</td> <td data-bbox="353 523 555 590">Low-NO_x burners (LNB)</td> <td data-bbox="555 523 1330 590">The applicability may be limited due to water availability</td> </tr> <tr> <td data-bbox="318 590 353 888">c</td> <td data-bbox="353 590 555 888">Selective catalytic reduction (SCR)</td> <td data-bbox="555 590 1330 888">Only applicable to turbine models for which low-NO_x burners are available on the market</td> </tr> <tr> <td colspan="2" data-bbox="318 888 555 895"></td> <td data-bbox="555 888 1330 895">Not applicable to combustion plants operated < 500 h/yr. There may be technical and economic restrictions for retrofitting existing combustion plants operated between 500 h/yr and 1 500 h/yr. Retrofitting existing combustion plants may be constrained by the availability of sufficient space</td> </tr> </tbody> </table>	Technique	Description	Applicability	a	Water/steam addition	See description in Section 8.3	b	Low-NO _x burners (LNB)	The applicability may be limited due to water availability	c	Selective catalytic reduction (SCR)	Only applicable to turbine models for which low-NO _x burners are available on the market			Not applicable to combustion plants operated < 500 h/yr. There may be technical and economic restrictions for retrofitting existing combustion plants operated between 500 h/yr and 1 500 h/yr. Retrofitting existing combustion plants may be constrained by the availability of sufficient space	NA	The operator operates natural gas fired steam raising boilers. The units do not operate > 1,500 hours/year with these fuels.
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Technique	Description	Applicability																
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39	In order to prevent or reduce SO _x and dust emissions to air from the combustion of gas oil in gas turbines, BAT is to use the technique given.	NA	The operator operates natural gas fired steam raising boilers. The units do not															

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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																																							
			operate > 1,500 hours/year with these fuels.																																							
Combustion of gaseous fuels																																										
40	<p>In order to increase the energy efficiency of natural gas combustion, BAT is to use an appropriate combination of the techniques given in BAT 12 and below.</p> <table border="1" data-bbox="322 480 1323 900"> <thead> <tr> <th data-bbox="322 480 360 555">Technique</th> <th data-bbox="360 480 479 555">Description</th> <th data-bbox="479 480 1323 555">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 555 360 900">a</td> <td data-bbox="360 555 479 900">Combined cycle See description in Section 8.2</td> <td data-bbox="479 555 1323 900">Generally applicable to new gas turbines and engines except when operated < 1 500 h/yr. Applicable to existing gas turbines and engines within the constraints associated with the steam cycle design and the space availability. Not applicable to existing gas turbines and engines operated < 1 500 h/yr. Not applicable to mechanical drive gas turbines operated in discontinuous mode with extended load variations and frequent start-ups and shutdowns. Not applicable to boilers</td> </tr> </tbody> </table> <p>BAT-associated energy efficiency levels (BAT-AEELs) for the combustion of natural gas</p> <table border="1" data-bbox="322 963 1323 1453"> <thead> <tr> <th data-bbox="322 963 555 1209" rowspan="3">Type of combustion unit</th> <th colspan="5" data-bbox="555 963 1323 1007">BAT-AEELs ⁽¹³⁶⁾ ⁽¹³⁷⁾</th> </tr> <tr> <th colspan="2" data-bbox="555 1007 779 1107">Net electrical efficiency (%)</th> <th data-bbox="779 1007 1016 1107" rowspan="2">Net total fuel utilisation (%) ⁽¹³⁸⁾ ⁽¹³⁹⁾</th> <th colspan="2" data-bbox="1016 1007 1323 1107">Net mechanical energy efficiency (%) ⁽¹³⁹⁾ ⁽¹⁴⁰⁾</th> </tr> <tr> <th data-bbox="555 1107 651 1209">New unit</th> <th data-bbox="651 1107 779 1209">Existing unit</th> <th data-bbox="1016 1107 1151 1209">New unit</th> <th data-bbox="1151 1107 1323 1209">Existing unit</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 1209 555 1283">Gas engine</td> <td data-bbox="555 1209 651 1283">39,5–44 ⁽¹⁴¹⁾</td> <td data-bbox="651 1209 779 1283">35–44 ⁽¹⁴¹⁾</td> <td data-bbox="779 1209 1016 1283">56–85 ⁽¹⁴¹⁾</td> <td colspan="2" data-bbox="1016 1209 1323 1283">No BAT-AEEL.</td> </tr> <tr> <td data-bbox="322 1283 555 1356">Gas-fired boiler</td> <td data-bbox="555 1283 651 1356">39–42,5</td> <td data-bbox="651 1283 779 1356">38–40</td> <td data-bbox="779 1283 1016 1356">78–95</td> <td colspan="2" data-bbox="1016 1283 1323 1356">No BAT-AEEL.</td> </tr> <tr> <td data-bbox="322 1356 555 1453">Open cycle gas turbine, ≥ 50 MWth</td> <td data-bbox="555 1356 651 1453">36–41,5</td> <td data-bbox="651 1356 779 1453">33–41,5</td> <td data-bbox="779 1356 1016 1453">No BAT-AEEL</td> <td data-bbox="1016 1356 1151 1453">36,5–41</td> <td data-bbox="1151 1356 1323 1453">33,5–41</td> </tr> </tbody> </table>	Technique	Description	Applicability	a	Combined cycle See description in Section 8.2	Generally applicable to new gas turbines and engines except when operated < 1 500 h/yr. Applicable to existing gas turbines and engines within the constraints associated with the steam cycle design and the space availability. Not applicable to existing gas turbines and engines operated < 1 500 h/yr. Not applicable to mechanical drive gas turbines operated in discontinuous mode with extended load variations and frequent start-ups and shutdowns. Not applicable to boilers	Type of combustion unit	BAT-AEELs ⁽¹³⁶⁾ ⁽¹³⁷⁾					Net electrical efficiency (%)		Net total fuel utilisation (%) ⁽¹³⁸⁾ ⁽¹³⁹⁾	Net mechanical energy efficiency (%) ⁽¹³⁹⁾ ⁽¹⁴⁰⁾		New unit	Existing unit	New unit	Existing unit	Gas engine	39,5–44 ⁽¹⁴¹⁾	35–44 ⁽¹⁴¹⁾	56–85 ⁽¹⁴¹⁾	No BAT-AEEL.		Gas-fired boiler	39–42,5	38–40	78–95	No BAT-AEEL.		Open cycle gas turbine, ≥ 50 MWth	36–41,5	33–41,5	No BAT-AEEL	36,5–41	33,5–41	CC	<p>The site operates four natural gas fired steam raising boilers, each with a capacity of 24 thermal megawatts. The LCP net total thermal capacity is 96 MW.</p> <p>BATc 40a is not applicable to gas boilers.</p> <p>Regarding the BATc 40 AEEL, the Operator provided information to support compliance in the document: “Risk Management Site Procedure, Boiler Plant and Process Steam Use”, reference: KG OEP 3.01:</p> <p>The boiler plant will be operated to maximum efficiency to minimise the environmental impacts of air pollution and resource use. The boiler plant is capable of running at 91% gross thermal efficiency through use of the economiser. This is the target efficiency to which Veolia aim to maintain, during normal running scenarios. The Operator provided data from December 2023 to demonstrate they achieved an 87.39% net efficiency, in their response to our request for further information, dated 15/04/2024.</p>
Technique	Description	Applicability																																								
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Gas-fired boiler	39–42,5	38–40	78–95	No BAT-AEEL.																																						
Open cycle gas turbine, ≥ 50 MWth	36–41,5	33–41,5	No BAT-AEEL	36,5–41	33,5–41																																					

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	<p style="text-align: center;">Combined cycle gas turbine (CCGT)</p> <table border="1" data-bbox="322 344 1323 632"> <tr> <td data-bbox="322 344 555 416">CCGT, 50–600 MW_{th}</td> <td data-bbox="555 344 651 416">53–58,5</td> <td data-bbox="651 344 779 416">46–54</td> <td data-bbox="779 344 1016 416">No BAT-AEEL</td> <td data-bbox="1016 344 1323 416">No BAT-AEEL</td> </tr> <tr> <td data-bbox="322 416 555 488">CCGT, ≥ 600 MW_{th}</td> <td data-bbox="555 416 651 488">57–60,5</td> <td data-bbox="651 416 779 488">50–60</td> <td data-bbox="779 416 1016 488">No BAT-AEEL</td> <td data-bbox="1016 416 1323 488">No BAT-AEEL</td> </tr> <tr> <td data-bbox="322 488 555 560">CHP CCGT, 50–600 MW_{th}</td> <td data-bbox="555 488 651 560">53–58,5</td> <td data-bbox="651 488 779 560">46–54</td> <td data-bbox="779 488 1016 560">65–95</td> <td data-bbox="1016 488 1323 560">No BAT-AEEL</td> </tr> <tr> <td data-bbox="322 560 555 632">CHP CCGT, ≥ 600 MW_{th}</td> <td data-bbox="555 560 651 632">57–60,5</td> <td data-bbox="651 560 779 632">50–60</td> <td data-bbox="779 560 1016 632">65–95</td> <td data-bbox="1016 560 1323 632">No BAT-AEEL</td> </tr> </table>	CCGT, 50–600 MW _{th}	53–58,5	46–54	No BAT-AEEL	No BAT-AEEL	CCGT, ≥ 600 MW _{th}	57–60,5	50–60	No BAT-AEEL	No BAT-AEEL	CHP CCGT, 50–600 MW _{th}	53–58,5	46–54	65–95	No BAT-AEEL	CHP CCGT, ≥ 600 MW _{th}	57–60,5	50–60	65–95	No BAT-AEEL		
CCGT, 50–600 MW _{th}	53–58,5	46–54	No BAT-AEEL	No BAT-AEEL																			
CCGT, ≥ 600 MW _{th}	57–60,5	50–60	No BAT-AEEL	No BAT-AEEL																			
CHP CCGT, 50–600 MW _{th}	53–58,5	46–54	65–95	No BAT-AEEL																			
CHP CCGT, ≥ 600 MW _{th}	57–60,5	50–60	65–95	No BAT-AEEL																			
41	<p>In order to prevent or reduce NO_x emissions to air from the combustion of natural gas in boilers, BAT is to use one or a combination of the techniques given</p>	CC	<p>The operator has provided information to support compliance with BATc 41 We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 41.</p> <p>The Operator employs the techniques below:</p> <ul style="list-style-type: none"> • The Boiler plant uses an advanced distributed control system to operate its combustion process. • Use of Low-NOx burners, inclusive of flue-gas recirculation to reduce NOx levels. • Combustion Optimisation - Utilising O₂ trim on the burners. 																				

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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
42	In order to prevent or reduce NO _x emissions to air from the combustion of natural gas in gas turbines, BAT is to use one or a combination of the techniques given.	NA	<p>We are satisfied that BATc 42 is not applicable to this Installation.</p> <p>This BATc is not applicable to Kitt Green Manufacturing Site as the site does not operate gas turbines.</p>
43	In order to prevent or reduce NO _x emissions to air from the combustion of natural gas in engines, BAT is to use one or a combination of the techniques given.	NA	<p>We are satisfied that BATc 43 is not applicable to this Installation.</p> <p>This BATc is not applicable to Kitt Green Manufacturing Site as the site does not operate gas engines.</p>
44	In order to prevent or reduce CO emissions to air from the combustion of natural gas, BAT is to ensure optimised combustion and/or to use oxidation catalysts.	CC	<p>Kitt Green Manufacturing Site control CO emissions by optimising the combustion process.</p> <p>The operator employs the techniques below to improve the general environmental performance of its combustion plant and to reduce emissions to air of CO:</p> <p>Maintenance of the combustion system: planned regular maintenance is carried out with quarterly combustion analysis. Burners are serviced twice annually.</p>

BAT C. No.	Summary of BAT Conclusion requirements for Large Combustion Plant	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>Advanced control system: there is a digital control system on all boilers. Burners 3 and 4 have been upgraded.</p> <p>Good design of the combustion equipment: there is O₂ trim on all the site's burners.</p> <p>Fuel choice: the Operator is currently reviewing their onsite fuel consumption and has submitted a pre-application. They propose to replace the existing process hot water plant with a Heat Pump Technology designed to use the waste heat from the cooling water return system. The aim is to reduce overall fuel consumption at the site.</p>
45	In order to reduce non-methane volatile organic compounds (NMVOC) and methane (CH ₄) emissions to air from the combustion of natural gas in spark-ignited lean-burn gas engines, BAT is to ensure optimised combustion and/or to use oxidation catalysts.	NA	<p>We are satisfied that BATc 45 is not applicable to this Installation.</p> <p>This BATc is not applicable to Kitt Green Manufacturing Site as the site does not operate spark-ignited lean-burn gas engines.</p>

Annex 2: Review and assessment of changes that are not part of the BAT Conclusions derived permit review

Updating permit during permit review consolidation

- Activity name
- Introductory note updated
- Site plan
- Table S1.1 overhaul
 - Activity Reference (AR) renumbering
 - Updated listed activities
 - Addition of production capacity
 - Directly associated activities (DAAs) standardisation

We have updated permit conditions to those in the current generic permit template as a part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

Production/Capacity threshold

The Environment Agency is looking to draw a “line in the sand” for permitted production capacity; a common understanding between the Operator and regulator for the emissions associated with a (maximum) level of production, whereby the maximum emissions have been demonstrated as causing no significant environmental impact.

We have included a permitted production level (capacity) within table S1.1 of the permit for the section 6.8 listed activity and we need to be confident that the level of emissions associated with this production level have been demonstrated to be acceptable.

The H1 assessment is not valid for the maximum capacity stated within the permit or if production is now higher. We have included an improvement condition within the permit (IC 9) which requires the operator to revisit their H1 risk assessment for particulate emissions to air at the capacity limit figure that is now stated within table S1.1 of the permit.

Emissions to Air

We asked the operator to list all emission points to air from the installation in the Regulation 61 notice. And to provide a site plan indicating the locations of all air emission points.

The operator has provided an up-to-date air emission plan.

Existing large combustion plant (>50MW)

The site operates Large Combustion Plant – LCP174.

A full BAT assessment against the LCP BAT conclusions has been undertaken as detailed in Annex 1.

LCP backup fuel

The site was previously only permitted to use gas oil as a backup fuel for the LCP. The Operator requested to use Industrial Heating Oil (IHO) as a backup fuel instead. They provided the technical specification for this on 15/04/2024. The specification is from Crown Oil and demonstrates that in this case, the IHO meets the requirement for sulphur content of liquid fuels, which is a maximum of 0.1% sulphur.

Therefore we agreed to this change based on the technical specification provided, and amended the permit to reflect that gas oil or an equivalent substitute to be agreed in writing with the Environment Agency may be used as a backup fuel.

VOC releases: emission points A5 to A12

Permitted activity AR3 is as follows:

Section 6.4 Part B(a)(iv): A manufacturing process which involves the use of more than 5 tonnes of organic solvent in any 12 month reporting period.

Forming and welding of un-made cans, lacquering of some of the welded seams and product code printing.

The installation manufactures over 1 billion steel cans a year, formed from flat tin-coated sheets and pre-formed ends. a proportion of the cans have an internal lacquer coating; these are produced from a pre-lacquered steel sheet, requiring repair over the welded side seam once formed. This repair is called 'side striping' and is undertaken by one of two methods. The majority, approximately 90%, will utilise a powder side stripe with the remaining 10% using a liquid lacquer. This lacquer is sprayed on and force-dried through a gas fired oven. This process is the source of emissions of VOCs. This process must meet the requirements of the Industrial Emissions Directive (IED) if the annual solvent usage exceeds the threshold of five tonnes. The powder side stripe must meet the Best Available Techniques as defined in 'Surface Treatment using Organic Solvents including Wood and Wood Products Preservation with Chemicals' BREF Document 2020. A review of these BAT conclusions has not been undertaken whilst reviewing the Food, Drink and Milk BAT Conclusions, as we only have to consider BAT Conclusions published before the principle BAT Conclusions, in this case: Food, Drink and Milk.

This Part B activity includes the total amount of solvent used by the permitted installation and not just the canning line. Solvent is also in the inks for product coding.

Emission limit values

There are emission limits for solvent activities included in table S3.1B of the permit with notes of their applicable thresholds, for emission points A5 to A12. These limits are detailed in Chapter V, Annex VII of the EU Industrial Emissions Directive (IED) 2010/75/EU.

This part of IED has not been updated since the previous variation and remains relevant, therefore we have not amended the existing limits for total VOC (as carbon), total class B VOC (as carbon), and fugitive emission values as a result of this variation.

In previous variations, there was no limit set for particulate from emission points A5 to A12. There was a note referring to the outcome of improvement conditions IC 4 and IC 5, which are now complete.

Process guidance note 6/07(11): Statutory guidance for printing and coating of metal packaging, last revised in June 2014 specifies a limit of 50 mg/m³. However, the Operator provided monitoring results to show that they could meet a stricter limit of 5mg/m³. Therefore, after consultation with the Operator, we have incorporated a particulate limit of 5mg/m³ in this variation.

Emissions to Water and implementing the requirements of the Water Framework Directive

We asked the Operator to provide information on all emissions to water at the installation in the Regulation 61 Notice as follows;

- Identify any effluents which discharge directly to surface or groundwater;
- Provide an assessment of volume and quality, including results of any monitoring data available;
- and for any discharges to water / soakaway whether a recent assessment of the feasibility of connection to sewer has been carried out.

The operator has previously provided assessments for all emissions to water at the installation. The operator declares there has been no change to activities and subsequent effluents generated at the installation since this risk assessment was taken. Consequently, we agree that the original risk assessments remain valid at this time.

Soil & groundwater risk assessment (baseline report)

The IED requires that the operator of any IED installation using, producing or releasing “relevant hazardous substances” (RHS) shall, having regarded the possibility that they might cause pollution of soil and groundwater, submit a “baseline report” with its permit application. The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the regulated facility and at cessation of activities. It must enable a quantified comparison to be made between the baseline and the state of the site at surrender.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site’s current or approved future use. To do this, the Operator has to submit a surrender application to us, which we will not grant unless and until we are satisfied that these requirements have been met.

The Operator submitted a site condition report as part of their original application, received on 20/09/2004. The site condition report included a report on the baseline conditions as required by Article 22. We reviewed that report and considered that it adequately described the condition of the soil and groundwater at that time.

The Operator submitted a summary report which referenced the site condition report and baseline report. We have reviewed the information and we consider that it adequately describes the current condition of the soil and groundwater. Consequently, we are satisfied that the baseline conditions have not changed.

Hazardous Substances

Hazardous substances are those defined in Article 3 of Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures.

The operator has provided a short risk assessment on the hazardous substances stored and used at the installation. The risk assessment was a stage 1-3 assessment as detailed within EC Commission Guidance 2014/C 136/03.

The stage 1 assessment identified the hazardous substances used / stored on site. The stage 2 assessment identified if hazardous substances are capable of causing pollution. If they are capable of causing pollution they are then termed Relevant Hazardous Substances (RHS). The Stage 3 assessment identified if pollution prevention measures are fit for purpose in areas where hazardous substances are used / stored. This includes drains as well.

The outcomes of the three stage assessment identified that pollution of soil / groundwater to be possible and monitoring is required for some of these hazardous substances.

The operator has provided a monitoring plan for review, listing the relevant hazardous substances and the current/proposed monitoring to take place. This monitoring plan has been incorporated within table S1.2 Operating Techniques of the Permit.

Climate Change Adaptation

The operator has considered if the site is at risk of impacts from adverse weather (flooding, unavailability of land for land spreading, prolonged dry weather / drought) .

The operator has identified the installation as likely to be or has been affected by prolonged dry weather/ drought, which we consider to be a severe weather event.

We do not consider the operator to have submitted a suitable climate change adaptation plan for the installation. We have included an improvement condition into the permit (IC 10) to request a climate change adaptation plan is submitted by the operator for approval from the Environment Agency.

Containment

We asked the Operator via the Regulation 61 Notice to provide details of each of the above ground tanks which contain potentially polluting liquids at the site, including tanks associated with the effluent treatment process where applicable.

The Operator provided details of all tanks;

- Tank reference/name
- Contents
- Capacity (litres)
- Location
- Construction material(s) of each tank
- The bunding specification including
 - Whether the tank is bunded
 - If the bund is shared with other tanks
 - The capacity of the bund
 - The bund capacity as % of tank capacity
 - Construction material of the bund
 - Whether the bund has a drain point
 - Whether any pipes penetrate the bund wall
- Details of overfill prevention
- Drainage arrangements outside of bunded areas
- Tank filling/emptying mitigation measures (drips/splashes)
- Leak detection measures
- Details of when last bund integrity test was carried out
- Maintenance measures in place for tank and bund (inspections)
- How the bund is emptied
- Details of tertiary containment

and whether the onsite tanks currently meet the relevant standard in the CIRIA “Containment systems for the prevention of pollution (C736)” report.

We reviewed the information provided by the operator and their findings. We are not satisfied that the existing tanks and containment measures on site meet the standards set out in CIRIA C736.

We have set an improvement condition in the permit to address the deficiencies in the existing tanks and containment measures on site (IC 11). See Improvement condition in Annex 3 of this decision document.

Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 61 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

Previous improvement conditions marked as complete in the previous permit. Please note that these were previously abbreviated to 'IP' for Improvement Programme and are now abbreviated to 'IC' for Improvement Condition.

Superseded Improvement Conditions – Removed from permit as marked as “complete”	
Reference	Improvement Condition
IC1	The Operator shall provide the Environment Agency with a report confirming that the regulatory requirements of the Solvent Emissions Directive (SED) have been met.
IC2	The Operator shall install differential pressure gauges on emission points which have the potential to release particulate to air. Procedure(s) shall be implemented to ensure that appropriate surveillance of the gauges is undertaken to minimise the release of particulate to air. Confirmation in writing shall be submitted to the Environment Agency on installation of the pressure gauges and the procedure(s) should be available for inspection.
IC3	The Operator shall investigate minimising the releases of Volatile Organic Compounds (VOCs) and Particulates from emission points A5 to A12, as defined in Table S4.1(b) of this variation. A report shall be provided, including any identified improvements and implementation time-scales for approval by the Environment Agency.
IC4	Following completion of the improvements defined by IP3, the Operator shall submit a proposal to undertake a programme of monitoring of Volatile Organic Compounds (VOCs) and Particulates from emission points A5 to A12, as defined in Table S4.1(b) of this variation. The proposal shall detail the appropriate parameters, during appropriate operational conditions, and take into account the requirements of Environment Agency Technical Guidance Notes M1 and M2.

IC5	<p>The Operator shall carry out monitoring of emissions to air, agreed in IP4, having regard to Section 2.10 Environment Agency Sector Guidance Note.</p> <p>The results from the air monitoring shall be used to assess the environmental impact of the Volatile Organic Compounds (VOCs) and Particulate, emissions to air. The impact shall be assessed using the Agency's H1 Guidance or equivalent.</p> <p>The results of the monitoring and impact assessment shall be provided to the Agency in writing. The report shall be used to assess the requirement for setting any additional monitoring parameters.</p>
IC6	<p>For LCPD LCP 428 (now LCP 174 under IED). Annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015 shall be submitted to the Environment Agency using form AAE1 via the NERP Registry. If the LCPD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry.</p>

The following improvement conditions have added to the permit as a result of the variation.

Improvement programme requirements		
Reference	Reason for inclusion	Justification of deadline
IC7	<p>The operator shall submit an energy efficiency plan for approval by the Environment Agency. This report shall address the BAT Conclusions for Food, Drink and Milk Industries with respect to BAT 6.</p>	<p>3 months from permit issue or as agreed in writing with the Environment Agency</p>
IC8	<p>The operator shall use refrigerants without ozone depletion potential and with a low global warming potential (GWP) in accordance with BAT 9 from the Food, Drink and Milk Industries BATCs.</p> <p>To demonstrate compliance against BAT 9, the operator shall develop a replacement plan for the refrigerant systems at the installation. This shall be incorporated within the existing environmental management system by the specified date.</p> <p>The plan should include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Where practicable, retro filling systems containing high GWP refrigerants e.g. R-404A with lower GWP alternatives as soon as possible. • An action log with timescales, for replacement 	<p>3 months from permit issue or as agreed in writing with the Environment Agency</p>

	of end-of-life equipment using refrigerants with the lowest practicable GWP.	
IC9	The operator shall review and update the H1 risk assessment for particulate emissions to air at the capacity levels stated within table S1.1 of this permit. The H1 shall be submitted to the Environment Agency for review.	3 months from permit issue or as agreed in writing with the Environment Agency
IC10	The operator shall produce a climate change adaptation plan, which will form part of the EMS. The plan shall include, but not be limited to: <ul style="list-style-type: none"> • Details of how the installation has or could be affected by severe weather; • The scale of the impact of severe weather on the operations within the installation; • An action plan and timetable for any improvements to be made to minimise the impact of severe weather at the installation. The Operator shall implement any necessary improvements to a timetable agreed in writing with the Environment Agency.	12 months from permit issue or as agreed in writing with the Environment Agency
IC11	The Operator shall undertake a survey of the primary, secondary and tertiary containment at the site and review measures against relevant standard including: <ul style="list-style-type: none"> • CIRIA Containment systems for the prevention of pollution (C736) – Secondary, tertiary and other measures for industrial and commercial premises, • EEMUA 159 - Above ground flat bottomed storage tanks The operator shall submit a written report to the Environment Agency approval which outlines the results of the survey and the review of standard and provide details of <ul style="list-style-type: none"> • current containment measures • any deficiencies identified in comparison to relevant standards, • improvements proposed • time scale for implementation of improvements. The operator shall implement the proposed improvements in line with the timescales agreed by the Environment Agency.	12 months from permit issue or as agreed in writing with the Environment Agency