

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/EP3843QL
The Operator is: CMBC Supply Limited
The Installation is: Banks's Brewery, Wolverhampton
This Variation Notice number is: EPR/EP3843QL/V002

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 07/06/2022 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 07/10/2022.

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 1, 9 and 11. The operator does not currently comply with the requirements of BATc 1, 9 and 11. In relation to these BAT Conclusions, the operator has committed compliance by 4 December 2023. We have therefore included Improvement Conditions IC11 in relation to BATc 1 & 11 and IC12 in relation to BATc 9 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered before 4 December 2023.

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 a further information request on 14/09/2023. The request for further information covered clarification on the following BATc's 1, 2, 3, 4, 5, 6, 9 and 12. A copy of the further information request was placed on our public register.

3 The legal framework

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

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

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

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

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.

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>	FC	<p>The operator has provided information to support compliance with BATc 1. We have assessed the information provided, we are not satisfied that the operator has demonstrated compliance with BATc 1</p> <p>Whilst the Operator has a EMS in place, the EMS doesn't cover all of the requirements as set out in BATc 1. This is applicable to the following sub points; i, ii, vi, x, xvii and xix.</p> <p>The Operator is progressing a review of the site EMS and its alignment to the requirements of BATc 1, with an expectation that the operator will submit for approval a revised EMS by 4th December 2023.</p> <p>We consider that the operator will be future compliant with BATc 1. Improvement condition (IC11) has been included in the permit to achieve compliance (see Annex 3).</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 provided information to support compliance with BATc 2. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 2.</p> <p>The Operator has demonstrated compliance to BATc 2 through the provision of</p> <ul style="list-style-type: none"> • Hazard Analysis and Critical Control Point (HACCP) flow diagrams that cover all production processes • The metering of water consumption across the site.

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
			<ul style="list-style-type: none"> • The characterisation of the waste water stream • The monitoring of the waste gas stream and emissions of particulate matter from the malt extraction system • The tracking of energy consumption, raw materials, residues and waste streams
3	<p>Monitoring key process parameters at key locations for emissions to water. 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>There is no effluent treatment undertake at the site, all process effluent is discharged directly to the foul sewer. There are six (S1-S6) separate discharges to sewer, each serving a different process on site. All sources of process effluent have been identified, quantified and characterised with a monitoring programme. The following parameters are monitored in the effluent stream Chemical Oxygen Demand, Suspended Solids, pH and Phosphorous.</p>
4	<p>Monitoring emissions to water to the required frequencies and standards. 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>We are satisfied that BATc 4 is not applicable to this Installation.</p> <p>The Operator uses chlorine tablets for water disinfection, after the tablet has dissolved there are traces of residual chlorine in the water. The level of concentration of chlorine left in the effluent is negligible with a calculated concentration of 0.00038mg/l based on average daily discharge volumes. Due to the low concentration the monitoring of chlorine isn't required.</p>

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			The site discharges all process effluent to the foul sewer under a trade effluent consent from Severn Trent Water. There are no direct discharges to surface water other than uncontaminated surface water from site roofs and surfaces.
5	<p>Monitoring channelled emissions to air to the required frequencies and standards.</p> <p>BAT is to monitor channelled emissions to air with at least the frequency given and in accordance with EN standards.</p>	FC	<p>The operator has provided information to support future compliance with BATc 5, we have assessed the information provided and we are satisfied that the operator has demonstrated future compliance with BATc 5, where they are not currently compliant.</p> <p>The current permit doesn't require the Operator to undertake any monitoring of the emissions from the Malt Extraction System. However, the Operator has provided a monitoring report (September 2022) for the emission point to the appropriate EN Standard (EN 13284-1), the monitoring report also demonstrates that the Operator is able to meet the appropriate BAT-AEL (BATC 20). The Operator has ensured that annual monitoring will be in place post 04/12/2023.</p>
6	<p>Energy Efficiency</p> <p>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>	CC	<p>The operator has provided information to support compliance with BATc 6. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 6.</p> <p>The Operator has provided a copy of the Energy Efficient Plan (BATc 6a) which forms part of the wider Carlsberg Group commitment to a zero carbon footprint ambition.</p> <p>In addition the Operator uses the following techniques on site to improve energy efficiency;</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
			<ul style="list-style-type: none"> • Burner regulation and control • Energy-efficient motors • Heat recovery with heat exchangers and/or heat pump • Lighting • Minimising blowdown from the boiler • Optimising steam distribution systems • Preheating feed water (including the use of economisers) • Process control systems • Reducing compressed air system leaks • Reducing heat losses by insulation • Variable speed drives
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</p> <p>(b) Optimisation of water flow</p> <p>(c) Optimisation of water nozzles and hoses</p> <p>(d) Segregation of water streams</p> <p>Techniques related to cleaning operations:</p> <p>(e) Dry cleaning</p> <p>(f) Pigging system for pipes</p> <p>(g) High-pressure cleaning</p> <p>(h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP)</p> <p>(i) Low-pressure foam and/or gel cleaning</p> <p>(j) Optimised design and construction of equipment and process areas</p> <p>(k) Cleaning of equipment as soon as possible</p>	CC	<p>The operator has provided information to support compliance with BATc 7. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 7.</p> <p>The operator undertakes the following techniques:</p> <p>a) The site uses reverse osmosis to recycles water generated from process which is then topped up and used for cleaning. In addition, boiler condensate returns to the hot well, further minimising water consumption/discharge. CIP rinse water is recovered for pre-rinse and water is recovered from rinsing bottles and used for conveyor lubrication system. Cask washing water is recovered from last rinse for first rinse. Heat and water are both recovered from the pasteuriser tunnel.</p> <p>b) The manufacturing processes are automated and controlled by PLC systems, this includes temperature and flow rates. Flow meters, VSD and timers for flushes</p>

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			<p>are used to reduce the consumption of water.</p> <p>c) Hoses guns and trigger controls are partially employed, and the pressure of the delivery systems regulated for the needs of the operator in the area.</p> <p>d) The routing and condition of raw, process and surface water drains is known and documented for the site. All process contaminated wastewater is directed to the on-site effluent drains for offsite treatment. Uncontaminated rainwater and site run off is directed to surface water drains which outfall to controlled water.</p> <p>e) The site operates a “Clean As You Go” policy and where possible SOPs prescribe dry cleaning techniques which is subject to process confirmation within each area. Compressed air is used to convey spent grain and dry cleaning methods used in this area and in warehousing</p> <p>g) Minimal pressure system is required for routine cleaning.</p> <p>h) The design and operation of these systems is aligned with the Group standards covering instrumentation, control, measurements and maintenance of dosing and flow parameters. All CIP systems are automated and optimised to minimise use of water and detergent through the monitoring of conductivity to detect product/water mix.</p> <p>i) Foaming systems are employed to allow more controlled dosing of chemicals and a reduction in rinse water</p> <p>k) Cleaning equipment is carried out to prevent product hardening through hygiene operations for specific equipment and as part of the “Clean As You Go” policy.</p>

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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> <ul style="list-style-type: none"> (a) Proper selection of cleaning chemicals and/or disinfectants (b) Reuse of cleaning chemicals in cleaning-in-place (CIP) (c) Dry cleaning (d) Optimised design and construction of equipment and process areas 	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> <p>The operator undertakes the following techniques:</p> <ul style="list-style-type: none"> a) The Operator works in partnership with specialist third party advisors, to identify the range and application of cleaning chemicals that are appropriate for the individual CIP systems, plus other chemicals that are used for hygiene, water and effluent treatment. b) The site has CIP systems in place that cover a wide range of processing and conveying equipment. Where reuse and/or recovery of chemicals is possible from a food safety perspective these have been implemented, such as recovery of the final rinse for use in pre-rinse/make up e.g. lines and tanks. c) Cleaning methods employed are integral within the documented procedures in each area. The operators are trained in clear, unambiguous cleaning procedures and applying a “Clean As You Go” policy. Within certain operations, including packing and malt handling/processing, dry cleaning is employed routinely. d) The equipment and process design as well as the implementation of this design, has taken into account the hygiene requirements of the process and ensures efficient cleaning. New equipment installations go through a formal hazard

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>identification and HACCP process to identify any potential issues and opportunities. Existing optimisation opportunities are identified periodically in partnership with the operators and hygiene chemical supplier.</p>
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.</p>	FC	<p>The operator has provided information to support compliance with BATc 9. We have assessed the information provided, we are not satisfied that the operator has demonstrated compliance with BATc 9.</p> <p>The Operator has provided a copy of the F Gas register that indicates that the site has a number of chiller units which currently operate on refrigerants that have a higher global warming potential (GWP). We have requested that the site provide a replacement plan for the refrigerant systems at the installation</p> <p>We consider that the operator will be future compliant with BATc 9. Improvement condition (IC12) has been included in the permit to achieve compliance (see Annex 3).</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 (f) Use of waste water for land spreading</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>The Operator uses the following techniques to increase resource efficiency on site. b) Waste yeast is recovered from the process and sent off the site for human consumption. Spent grain is sent off the site for animal feed.</p>

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			<p>c) All process residues are segregated at the point of generation to maximise opportunities for recovery/reuse.</p> <p>In addition to the above techniques the site is also looking for opportunities to match developments in technology with the quantity and loading levels at the brewery. This could help further reduce waste beer and waste yeast being removed from the site.</p>
11	<p>Waste water buffer storage In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water.</p>	FC	<p>The operator has provided information to support compliance with BATc 11. We have assessed the information provided and we are not satisfied that the operator has demonstrated compliance with BATc 11</p> <p>The Operator has stated the site can identify normal and abnormal operations that may generate higher loadings are accounted for as part of the planned management controls and production scheduling. Site consent limits have been reviewed and set to reflect the differences in flow and loading in consultation with Severn Trent. The site can exercise some control over the fate of wastewater to either bleed it to the sewer under controlled conditions to minimise the potential for shock to the receiving works and maintain compliance or direct offsite via tanker for third party treatment.</p> <p>The Operator has advised that the site currently doesn't have any controls in place in the case of worst-case scenario catastrophic loss of containment.</p>

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			We consider that the operator will be future compliant with BATc 11. Improvement condition (IC11) has been included in the permit to achieve compliance (see Annex 3).
12	<p>Emissions to water – treatment</p> <p>In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below.</p> <p>Preliminary, primary and general treatment</p> <p>(a) Equalisation</p> <p>(b) Neutralisation</p> <p>(c) Physical separate (eg screens, sieves, primary settlement tanks etc)</p> <p>Aerobic and/or anaerobic treatment (secondary treatment)</p> <p>(d) Aerobic and/or anaerobic treatment (eg activated sludge, aerobic lagoon etc)</p> <p>(e) Nitrification and/or denitrification</p> <p>(f) Partial nitrification - anaerobic ammonium oxidation</p> <p>Phosphorus recovery and/or removal</p> <p>(g) Phosphorus recovery as struvite</p> <p>(h) Precipitation</p> <p>(i) Enhanced biological phosphorus removal</p> <p>Final solids removal</p> <p>(j) Coagulation and flocculation</p> <p>(k) Sedimentation</p> <p>(l) Filtration (eg sand filtration, microfiltration, ultrafiltration)</p> <p>(m) Flotation</p>	FC	<p>The operator has provided information to support compliance with BATc 12. We have assessed the information provided and we are not satisfied that the operator has demonstrated compliance with BATc 12.</p> <p>The Operator currently has no form of effluent treatment on site, all process effluent is discharged directly to the foul sewer under a trade effluent consent.</p> <p>BATc 12 requires a combination of the stated techniques to be implemented at the site to reduce emissions to water. We have included improvement condition (IC15) for the Operator to undertake a feasibility study on the feasibility of installing effluent treatment and include a review of treatment options available along with their associated benefits. Where no effluent treatment is provided justification is required, taking into account the nature of the wastewater and any subsequent off-site treatment.</p> <p>We consider that the operator will be future compliant with BATc 12. Improvement condition (IC15) has been included in the permit to achieve compliance (see Annex 3).</p>
12	<p>Emissions to water – treatment</p> <p>BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body</p>	NA	We are satisfied that the BAT-AELs associated with BATc 12 are not applicable to this Installation.

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	<table border="1" data-bbox="280 252 1086 571"> <thead> <tr> <th data-bbox="280 252 627 316">Parameter</th> <th data-bbox="627 252 1086 316">BAT-AEL ⁽¹⁵⁾ ⁽¹⁶⁾ (daily average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="280 316 627 379">Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾</td> <td data-bbox="627 316 1086 379">25-100 mg/l ⁽¹⁹⁾</td> </tr> <tr> <td data-bbox="280 379 627 443">Total suspended solids (TSS)</td> <td data-bbox="627 379 1086 443">4-50 mg/l ⁽²⁰⁾</td> </tr> <tr> <td data-bbox="280 443 627 507">Total nitrogen (TN)</td> <td data-bbox="627 443 1086 507">2-20 mg/l ⁽²¹⁾ ⁽²²⁾</td> </tr> <tr> <td data-bbox="280 507 627 571">Total phosphorus (TP)</td> <td data-bbox="627 507 1086 571">0,2-2 mg/l ⁽²³⁾</td> </tr> </tbody> </table> <p data-bbox="280 582 1220 1117"> (16) The BAT-AELs may not apply to the production of citric acid or yeast (17) No BAT-AEL applies for biochemical oxygen demand (BOD). As an indication, the yearly average BOD5 level in the effluent from a biological waste water treatment plant will generally be ≤ 20 mg/l. (18) The BAT-AEL for COD may be replaced by a BAT-AEL for TOC. The correlation between COD and TOC is determined on a case-by-case basis. The BAT-AEL for TOC is the preferred option because TOC monitoring does not rely on the use of very toxic compounds. (20) The lower end of the range is typically achieved when using filtration (e.g. sand filtration, microfiltration, membrane bioreactor), while the upper end of the range is typically achieved when using sedimentation only. (21) The upper end of the range is 30 mg/l as a daily average only if the abatement efficiency is ≥ 80 % as a yearly average or as an average over the production period. (22) The BAT-AEL may not apply when the temperature of the waste water is low (e.g. below 12 °C) for prolonged periods. </p>	Parameter	BAT-AEL ⁽¹⁵⁾ ⁽¹⁶⁾ (daily average)	Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾	25-100 mg/l ⁽¹⁹⁾	Total suspended solids (TSS)	4-50 mg/l ⁽²⁰⁾	Total nitrogen (TN)	2-20 mg/l ⁽²¹⁾ ⁽²²⁾	Total phosphorus (TP)	0,2-2 mg/l ⁽²³⁾		<p data-bbox="1520 252 2078 370">The site discharges all process effluent to the foul sewer under a trade effluent consent from Severn Trent Water. There are no direct discharges to surface water.</p>
Parameter	BAT-AEL ⁽¹⁵⁾ ⁽¹⁶⁾ (daily average)												
Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾	25-100 mg/l ⁽¹⁹⁾												
Total suspended solids (TSS)	4-50 mg/l ⁽²⁰⁾												
Total nitrogen (TN)	2-20 mg/l ⁽²¹⁾ ⁽²²⁾												
Total phosphorus (TP)	0,2-2 mg/l ⁽²³⁾												
13	<p data-bbox="280 1136 1220 1412"> Noise management plan 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: - a protocol containing actions and timelines; - a protocol for conducting noise emissions monitoring; - a protocol for response to identified noise events, eg complaints; </p>	NA	<p data-bbox="1520 1129 2078 1248">BAT 13 is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated, or if forms part of an existing permit requirement.</p> <p data-bbox="1520 1289 2078 1436">The site does not have a history of substantiated noise complaints either directly to the site or via the regulator. There is no formal noise management plan implemented however, within the site governance systems</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>- 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.</p> <p>Note: BAT13 is only applicable where a noise nuisance at sensitive receptors is expected and/or has been substantiated.</p>		<p>elements of a noise management plan are in place.</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> <p>(b) Operational measures</p> <p>(c) Low-noise equipment</p> <p>(d) Noise control equipment</p> <p>(e) Noise abatement</p> <p>for detail of each technique, refer BAT 14 table in BATCs</p>	CC	<p>The operator has provided information to support compliance with BATc 14. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 14.</p> <p>The operator implements the following techniques in order to prevent or reduce noise emissions:</p> <p>a) Plant or equipment with the greatest potential to create excessive noise is internal or enclosed (e.g. compressors, boilers, all main processing equipment) with the exception of the warehouse operations.</p> <p>b) Plant and equipment are subject to PPM and condition-based inspection that would detect abnormalities in operation that could lead to excessive noise. The site operates a closed-door policy with respect to all areas of production (loading operations excepted). The site is operated by trained personnel that are aware of the potential for the site to generate off-site impacts including statutory nuisance. Noise is a consideration of the activities of contractors and projects and is routinely assessed as part of the evaluation of RAMS during planned and reactive construction and maintenance activities. All areas of the site are subject to inspection and process confirmation</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>audits. These would identify abnormal operations/activities that may give rise to noise nuisance potential.</p> <p>c) Consideration of noise is part of equipment specification, which would identify opportunities to include the requirement for low noise equipment such as fans, pumps and compressors, where this is applicable for both temporary and new equipment.</p> <p>d) Consideration of noise is part of the part of the change management process and in the design brief for new installations (including specification of building fabric in addition to the location and layout of process and ancillary equipment). Environmental noise would be driven by the need to meet both planning and permitting which, if the need for a technical assessment is demonstrated, would identify noise control and mitigation methods to address noise nuisance potential.</p>
15	<p>Odour Management</p> <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>BAT 15 is only applicable to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.</p>	NA	<p>BAT 15 is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated, or if forms part of an existing permit requirement.</p> <p>There is no existing permit requirement and the site has no recent history of odour complaints therefore an odour management plan is not required.</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												
BREWING BAT CONCLUSIONS (BAT 18 – 20)															
18	<p>Energy efficiency – Brewing Sector</p> <p>In order to increase energy efficiency, BAT is to use an appropriate combination of the techniques specified in BAT 6 and of the techniques given below.</p> <table border="1" data-bbox="282 432 1227 818"> <thead> <tr> <th data-bbox="282 432 454 475">Technique</th> <th data-bbox="454 432 680 475">Description</th> <th data-bbox="680 432 1227 475">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="282 475 454 592">(a)</td> <td data-bbox="454 475 680 592">Mashing-in at higher temperatures</td> <td data-bbox="680 475 1227 592">The mashing-in of the grain is carried out at temperatures of approximately 60 °C, which reduces the use of cold water.</td> </tr> <tr> <td data-bbox="282 592 454 724">(b)</td> <td data-bbox="454 592 680 724">Decrease of the evaporation rate during wort boiling</td> <td data-bbox="680 592 1227 724">The evaporation rate can be reduced from 10 % down to approximately 4 % per hour (e.g. by two-phase boiling systems, dynamic low-pressure boiling).</td> </tr> <tr> <td data-bbox="282 724 454 818">(c)</td> <td data-bbox="454 724 680 818">Increase of the degree of high-gravity brewing</td> <td data-bbox="680 724 1227 818">Production of concentrated wort, which reduces its volume and thereby saves energy.</td> </tr> </tbody> </table> <p>Applicable in addition to BAT6</p> <p>See Tables below for the EPL figures</p>	Technique	Description	Applicability	(a)	Mashing-in at higher temperatures	The mashing-in of the grain is carried out at temperatures of approximately 60 °C, which reduces the use of cold water.	(b)	Decrease of the evaporation rate during wort boiling	The evaporation rate can be reduced from 10 % down to approximately 4 % per hour (e.g. by two-phase boiling systems, dynamic low-pressure boiling).	(c)	Increase of the degree of high-gravity brewing	Production of concentrated wort, which reduces its volume and thereby saves energy.	CC	<p>The operator has provided information to support compliance with BATc 18. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 18.</p> <p>The Operator undertakes all of the techniques as listed under BATc 18 at the site.</p>
Technique	Description	Applicability													
(a)	Mashing-in at higher temperatures	The mashing-in of the grain is carried out at temperatures of approximately 60 °C, which reduces the use of cold water.													
(b)	Decrease of the evaporation rate during wort boiling	The evaporation rate can be reduced from 10 % down to approximately 4 % per hour (e.g. by two-phase boiling systems, dynamic low-pressure boiling).													
(c)	Increase of the degree of high-gravity brewing	Production of concentrated wort, which reduces its volume and thereby saves energy.													
19	<p>In order to reduce the quantity of waste sent for disposal, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="282 1018 1200 1329"> <thead> <tr> <th data-bbox="282 1018 517 1061">Technique</th> <th data-bbox="517 1018 1200 1061">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="282 1061 517 1219">(a)</td> <td data-bbox="517 1061 1200 1219">Recovery and (re)use of yeast after fermentation</td> </tr> <tr> <td data-bbox="282 1219 517 1329">(b)</td> <td data-bbox="517 1219 1200 1329">Recovery and (re)use of natural filter material</td> </tr> </tbody> </table>	Technique	Description	(a)	Recovery and (re)use of yeast after fermentation	(b)	Recovery and (re)use of natural filter material	CC	<p>The operator has provided information to support compliance with BATc 19. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 19.</p> <p>The Operator collects and recovers the yeast after fermentation for re-use during the next fermentation. Residues are sent of site for use as a food ingredient.</p>						
Technique	Description														
(a)	Recovery and (re)use of yeast after fermentation														
(b)	Recovery and (re)use of natural filter material														
20	<p>In order to reduce channelled dust emissions to air, BAT is to use a bag filter or both a cyclone and a bag filter.</p>	CC	<p>The operator has provided information to support compliance with BATc 20. We have assessed the information provided and we are</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>satisfied that the operator has demonstrated compliance with BATc 20.</p> <p>The site uses both a bag filter and a cyclone as abatement techniques on the emission point from the malt extraction system (A11).</p>										
20	<p>BAT-associated emission level (BAT-AEL) for channelled dust emissions to air from handling and processing of malt and adjuncts</p> <table border="1" data-bbox="277 539 1196 753"> <thead> <tr> <th data-bbox="277 539 456 624" rowspan="2">Parameter</th> <th data-bbox="456 539 640 624" rowspan="2">Description</th> <th colspan="2" data-bbox="640 539 1196 624">BAT-AEL (average over the sampling period)</th> </tr> <tr> <th data-bbox="640 624 893 687">New plants</th> <th data-bbox="893 624 1196 687">Existing plants</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 687 456 753">Dust</td> <td data-bbox="456 687 640 753">mg/Nm³</td> <td data-bbox="640 687 893 753"><2 – 5</td> <td data-bbox="893 687 1196 753"><2 – 10</td> </tr> </tbody> </table> <p>The associated monitoring is given in BAT 5.</p>	Parameter	Description	BAT-AEL (average over the sampling period)		New plants	Existing plants	Dust	mg/Nm ³	<2 – 5	<2 – 10	FC	<p>The operator has provided information to support compliance with the BAT-AEL associated with BATc 20. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the BAT-AEL associated with BATc 20.</p> <p>The Operator carries out handling and processing of malt on site, these activities give rise to dust. There is no current requirement to monitor releases as part of the existing permit. The BAT-AELs for BATc 20 is applicable to this installation for emission point A11.</p> <p>The Operator has demonstrated compliance of the BAT-AEL through the submission of an emissions report dated September 2022 for the emissions from the malt extraction system (A11). The results of the monitoring gave an emission value of 0.29 mg/Nm³ which demonstrates that the site is capable of meeting the BAT-AELs for existing plant. As such we will be including the BAT-AEL as an ELV at the higher end of the range (10mg/Nm³) in the issued variation.</p> <p>The BAT-AEL for dust is future dated to apply from the 4th December 2023.</p>
Parameter	Description			BAT-AEL (average over the sampling period)									
		New plants	Existing plants										
Dust	mg/Nm ³	<2 – 5	<2 – 10										

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				
Brewing Sector Environmental Performance Levels							
EPL	Environmental Performance Level – Energy consumption for the brewing sector <table border="1" data-bbox="275 389 1182 517"> <tr> <td data-bbox="275 389 633 469">Unit</td> <td data-bbox="633 389 1182 469">Specific energy consumption (yearly average)</td> </tr> <tr> <td data-bbox="275 469 633 517">MWh/hl of products</td> <td data-bbox="633 469 1182 517">0.02 – 0.05</td> </tr> </table>	Unit	Specific energy consumption (yearly average)	MWh/hl of products	0.02 – 0.05	CC	<p>The operator has provided information to support compliance with the EPL for energy consumption.</p> <p>The Operator reports that the site achieved a specific energy consumption of 0.03 MWh/hl of products, which is within the EPL range for the brewing sector.</p>
	Unit	Specific energy consumption (yearly average)					
MWh/hl of products	0.02 – 0.05						
EPL	Environmental Performance Level – Specific waste water discharge for the brewing sector <table border="1" data-bbox="275 670 1182 798"> <tr> <td data-bbox="275 670 633 750">Unit</td> <td data-bbox="633 670 1182 750">Specific waste water discharge (yearly average)</td> </tr> <tr> <td data-bbox="275 750 633 798">m³/hl of products</td> <td data-bbox="633 750 1182 798">0.15 – 0.50</td> </tr> </table>	Unit	Specific waste water discharge (yearly average)	m ³ /hl of products	0.15 – 0.50	CC	<p>The operator has provided information to support compliance with the EPL for specific wastewater discharge.</p> <p>The operator reports that the site achieved a specific wastewater discharge of 0.308 m³/hl of products, which is within the EPL range for brewing.</p>
	Unit	Specific waste water discharge (yearly average)					
m ³ /hl of products	0.15 – 0.50						

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

Updating permit during permit review consolidation

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.

This included some other administrative changes to the permit to ensure cross-sector consistency, including:

- An updated introductory note
- Site plan
- Table S1.1 overhaul
 - Activity Reference (AR) renumbering
 - Updated listed activities
 - Addition of production capacity
 - Directly associated activities (DAAs) standardisation
- Standardisation of reporting parameters.

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 site was originally permitted on a volume of 64,894 tonnes/year, which equates to 177.8 tonnes/day. The Operator has provided a revised capacity of 363.3 tonnes/day, this is based on a maximum theoretical brewing capacity which has been calculated as the theoretical maximum of the copper vessels which is 8000HL and a maximum brews per day of 4.5 with a density factor of 1.01. The original quoted production capacity of 177 tonnes/day reflected the maximum average output of the brewery per day from a peak year of production.

Whilst the production capacity has increased from 177 tonnes/day since the original permit was issued we are satisfied that the associated risks have not changed as whilst the site has a larger theoretical capacity the 177 tonnes/day will not normally be exceeded.

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.

Implementing the requirements of the Medium Combustion Plant Directive

Existing Medium Combustion Plant (1MW-50MW)

We asked the Operator to provide information on all combustion plant on site in the Regulation 61 Notice as follows:

- Number of combustion plant (CHP engines, back-up generators, boilers);
- Size of combustion plant – rated thermal input (MWth)
- Date each combustion plant came into operation

The Operator provided the information in the table below:

Boilers

	Boiler 1	Boiler 2	Boiler 3	Boiler 4
1. Rated thermal input (MW) of the medium combustion plant.	7.4	7.8	7.4	4.7
2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant).	Boiler	Boiler	Boiler	Boiler
3. Type and share of fuels used according to the fuel categories laid down in Annex II.	Natural gas	Natural gas	Natural gas	Natural gas
4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018.	Boiler installed 1970, burner 1992	Sep 2018	Jan 92	Jan 82

We have reviewed the information provided and we consider that the declared combustion plant qualify as “existing” medium combustion plant.

For existing medium combustion plant with a rated thermal input greater than 5 MW, the emission limit values set out in tables 2 and 3 of Part 1 of Annex II MCPD shall apply from 1 January 2025. This is applicable for Boilers 1-3. As Boiler 4 shares the same emission point as Boiler 3, for the purposes of the MCPD we have aggregated the two boilers and as such we have included the relevant ELVs and monitoring requirements for Boiler 4 which shall apply from 1 January 2025.

We have included the appropriate emission limit values for existing medium combustion plant as part of this permit review. See Table S3.1 in the permit. We have also included a new condition 3.1.4 within the permit which specifies the monitoring requirements for the combustion plant in accordance with the MCPD.

Particulate Emissions

BAT-AELs are derived for those substances identified as key environmental issues during the BREF review process.

If the operator has identified current compliance against BAT-AELs we will implement the relevant emission limit value (ELV) from the date of permit issue. This is relevant

for emission point A11 against BAT 20 for dust emissions from the bag filter and cyclone.

We have added an improvement condition (IC13) for size fractionation of particulate emissions because a BAT-AEL applies for dust emissions to air. The justification for this IC is that there are a number of activities within the FDM sector which may result in release of particulates to air e.g. drying, milling and grinding. Overall there is little available information on how much fine particulates are released. This IC is a one-off exercise requiring operators to monitor and report on the fractions of fine particulate (PM₁₀ and PM_{2.5}) emissions and increase our understanding of potential health effects. Where BAT-AELS may apply to multiple emission points e.g. grain milling, we may accept limited representative monitoring rather than expecting them to monitor every single emission point.

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 [Application Site Report for Park Brewery, Wolverhampton Ref GP3939BL Dated 21st November 2005] during the original application received on 24/06/2005. 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 and/or ground water to be unlikely.

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 (IC16) 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 the each 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 improvement conditions in the permit to address the deficiencies in the existing tanks and containment measures on site (IC14). See Improvement conditions in Annex 3 of this decision document.

Carbon Dioxide Recovery

We asked the Operator as part of the Regulation 61 Notice to confirm whether carbon dioxide (CO₂) is recovered from the fermentation stage of the process. Where this recovery is not currently in place, we asked them to provide a summary of any feasibility study carried out.

CO₂ recovery is a recognised technique to be considered in the determination of BAT as described in Chapter 4.4.4.3 of the FDM BREF. The stated environmental benefits include reduced carbon emissions from the permitted installation.

The economics of on-site recovery at the time of the BREF review was a relevant factor in determining whether CO₂ recovery was included as a specific BAT Conclusion. It was noted at the time that industrial gas suppliers were able to provide CO₂ obtained as a co-product from other sectors, such as during ammonia production, at low cost and as readily available resource.

This situation has now changed in the UK over the last two years, primarily due to energy prices. Ammonia is no longer produced in the UK and the CO₂ supply chain is fragile and dependent on imports. Defra and Department for Business and Trade are keen on diversification of CO₂ supply to increase supply resilience.

It is therefore appropriate to include an improvement condition (IC15) for breweries and cider mills which have not yet investigated the feasibility of carbon dioxide recovery, to ensure a report of a feasibility study is submitted by the operator for approval from the Environment Agency.

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).

We also consider that we need to set improvement conditions relating to changes in the permit not arising from the review of compliance with BAT conclusions. The justifications for these are provided in Annex 5 of this decision document. Use this paragraph if IC need to be set arising from other permit changes effected at the same time as the BATc permit review.

Previous improvement conditions marked as complete in the previous permit.

Superseded Improvement Conditions – Removed from permit as marked as “complete”	
Reference	Improvement Condition
IC1 - IC10	Complete

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
IC11	<p>The operator shall submit, for approval by Environment Agency, a report demonstrating achievement of the 'Narrative' BAT where BAT is currently not achieved, but will be achieved before 4 December 2023. The report shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Methodology applied for achieving BAT • Demonstrating that BAT has been achieved. <p>The report shall address the BAT Conclusions for Food, Drink and Milk Industries with respect to BAT 1 & 11.</p> <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	04/12/2023
IC12	<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>	04/12/2023

	<p>To demonstrate compliance against BAT 9, the operator shall develop a replacement plan for the refrigerant system(s) 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. <p>An action log with timescales, for replacement of end-of-life equipment using refrigerants with the lowest practicable GWP.</p>	
IC13	<p>The Operator shall submit a written report to the Environment Agency of monitoring carried out to determine the size distribution of particulate matter in the exhaust gas emissions to air from emission point [A11], identifying the fractions within the PM₁₀ and PM_{2.5} ranges. The monitoring shall be carried out under representative operating conditions and shall be in accordance with EN ISO 23210 unless otherwise agreed with the Environment Agency.</p>	03/11/2024 or other date as agreed in writing with the Environment Agency
IC14	<p>The Operator shall undertake a survey of the primary, secondary and tertiary containment at the site and review measures against relevant standard including:</p> <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 <p>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</p> <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. <p>The operator shall implement the proposed improvements in line with the timescales agreed by the Environment Agency.</p>	03/11/2024 or other date as agreed in writing with the Environment Agency
IC15	<p>The Operator shall submit a written report to the Environment Agency for technical assessment and approval on the feasibility of installing effluent treatment and include a review of treatment options</p>	03/11/2024 or other date as agreed in writing with

	available along with their associated benefits. Justification is required where no on-site treatment is provided, taking into account the nature of the wastewater and any subsequent off-site treatment (BAT 12 Best Available Techniques Reference Document and BAT Conclusions document for the food, drink and milk industry dated December 2019).	the Environment Agency
IC16	<p>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:</p> <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. <p>The Operator shall implement any necessary improvements to a timetable agreed in writing with the Environment Agency.</p>	03/11/2024 or other date as agreed in writing with the Environment Agency
IC17	The Operator shall submit a report of a feasibility study into recovery of carbon dioxide generated during the fermentation stage. The report shall take into account information provided in Chapter 4.4.4.3 of the Food Drink and Milk Industries BREF and will quantify current emissions of carbon dioxide from the fermenters. Where recovery is feasible, the report shall include timescales for implementation.	03/05/2025 or other date as agreed in writing with the Environment Agency