

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/EP3844QU
The Operator is: Damm 1876 Ltd
The Installation is: The Eagle Brewery
This Variation Notice number is: EPR/EP3844QU/V004

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 Conclusion 6. The operator does not currently comply with the requirements of BATc 6. In relation to these BAT Conclusions, the operator has committed compliance by 4 December 2023. We have therefore included Improvement Conditions IP6 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 19/07/2023 and 28/09/202. A copy of the further information request was placed on our public register.

The operator resubmitted all the R61 response documents, including additional information to respond to the RFI and updated to reflect the change in operator since the R61 notice was sent and received. The second additional information response related to BATc1, BATc2, BATc6, and BATc9.

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 provided some information to support compliance with BATc1, however, some aspects they noted they were not currently achieving compliance and would be future compliant for BATc1 (xix).</p> <p>We have included an improvement condition IP6 to ensure the relevant sections of the EMS are submitted for approval to ensure compliance against BATc1. The operator is required to complete the improvement condition and demonstrate compliance with BATc1 by the compliance date, 4 December 2023. 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 an Environmental Management System in place which integrates a regularly review of an inventory of water, energy and raw materials consumption as well as of wastewater and waste gas streams.</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 operator has identified, quantified and characterised all sources of process effluent within a monitoring programme. This includes the monitoring of the final outfall to sewer by analysing pH, COD, SS and Zinc. Daily volumes are trended and reporting at the site to functional heads. Additionally, a periodic analysis of composite samples by site and Anglian Water from the outfall is undertaken.</p> <p>The site has data on the flow and loading of the combined effluent streams, that is mainly composed by CIPs fluid and rinses, keg-deluge, factory housekeeping water, discharges from evaporative condensers and boilers blowdowns. The operator has stated that escalation and reporting procedures are in place.</p>

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			<p>The consequential impact of normal, abnormal and emergency releases to sewer and the ability to control and minimise impact on the release are understood and discharge can be contained if required.</p> <p>These potential impacts are mitigated against through the management, monitoring and maintenance of the site's component production processes.</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>We are satisfied that BATc 4 is not applicable to this Installation.</p> <p>The process effluent is treated on site and then discharged to foul sewer under a discharge consent so there are no direct discharges of process effluent to surface water.</p>
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 stated they are currently not complaint with BATc 5. We have assessed the information provided and we agree with the Operator that they are currently not compliant with BATc 5.</p> <p>The operator carries out handling and processing of malt on site, these activities give rise to dust. These are extracted and directed to atmosphere, via local exhaust ventilation to a 12 bag carousel reverse jet air filter unit. The unit is subject to regular maintenance by an external third party contractor.</p> <p>There is no current requirement to monitor releases as part of the existing permit. Monitoring in line with BATc5 will be implemented by 4 December 2023.</p> <p>We have included an improvement condition IP6 to ensure compliance against BATc 5. The operator is required to complete the improvement condition and demonstrate compliance with BATc 5 by the compliance date, 4 December 2023. See Annex 3.</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</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>

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	<p>combination of the common techniques listed in technique 6b within the table in the BATc.</p>		<p>The operator already uses techniques such as economiser in refrigeration plant, use of LED lights, brewing evaporation reduction.</p> <p>In addition, they have stated a new metering system is planned to be installed, full overhaul of the three boilers as well as overhaul of economiser of the larger boiler to be completed in 2024. Waste of electricity has been identified from compressed air leaks; the whole system will be upgraded by 2024 and full compressed air system to be surveyed by external company by 2023. A heat recovery system in the brewhouse and new CIP kits are also to be installed in 2024.</p> <p>The operator has an Energy Efficiency Plan which is integrated into their Environment Management System.</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> <ul style="list-style-type: none"> (a) water recycling and/or reuse (b) Optimisation of water flow (c) Optimisation of water nozzles and hoses (d) Segregation of water streams <p>Techniques related to cleaning operations:</p> <ul style="list-style-type: none"> (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 	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 implements the following techniques on sites in order to minimise water consumption and wastewater, in line with the techniques described:</p> <ul style="list-style-type: none"> a) Opportunities to recover and reuse rinse water within CIP systems and wider site have been implemented to reduce water consumption and the volume of water discharged from site. CIP rinse water is recovered for pre-rinse and water is recovered from rinsing bottles and used for conveyor lubrication system. Water is recovered from the pasteuriser tunnel. b) The manufacturing processes are automated and controlled by PLC systems. This includes temperatures, flow rates and levels. The design of the installation incorporates flow meters, VSD and timers for flushes that reduce consumption and minimise discharge. In conjunction with the third party hygiene chemical provider, wash system efficiency interventions and trending of data means that consumption is continuously being optimised. 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. The applicability of this is reviewed in line with food and safety concerns.

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			<ul style="list-style-type: none"> d) The routing and condition of raw, process and surface water drains are known and documented for the site. All process contaminated wastewater is directed to the on-site effluent drains for offsite treatment, in compliance with the site's consent. Uncontaminated rainwater and site run off is directed to surface water drains which outfall to controlled water. 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. 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. However, for food safety reasons cleaning frequency may be driven by time rather than product changes. The third-party hygiene chemical provider SLA negotiated through Group, that the operator and provider are required to work collaboratively, to undertake optimisation review and identify improvement. Chemical and water consumption is monitored where savings are driven with reference to budget and expected uses. i) Foaming systems are employed to allow more controlled dosing of chemicals and a reduction in rinse water. Their use is incorporated and expanded as part of the planned cleaning regimes. Opportunities for the application of foam washes is regularly reviewed to be expanded where food safety considerations allow. j) The site is an existing facility. New project proposals and process layout reconfigurations take into account the hygiene requirements of the process and ensure efficient cleaning can be facilitated. New equipment installations go through HAZOP and HACCP process to identify any potential issues. 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.
8	Prevent or reduce the use of harmful substances	CC	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.

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	<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</p> <p>(b) Reuse of cleaning chemicals in cleaning-in-place (CIP)</p> <p>(c) Dry cleaning</p> <p>(d) Optimised design and construction of equipment and process areas</p>		<p>The operator implements the following techniques to prevent or reduce the use of harmful substances:</p> <p>a) In partnership with specialist third party advisors, the site has identified the range and application of cleaning chemicals that are appropriate to the individual CIP systems, plus other chemicals that are used for hygiene, water and effluent treatment. The Group has single source providers of hygiene chemicals (and other chemical consumables required by site) covering all operations from a specialist supplier. The Group procured Service Level Agreement that requires the provider to identify, agree and only deploy chemicals that have been selected for their efficiency and safety from a technical, health and safety and environmental harm perspective. The SLA requires that they undertake a rolling review and assessment of chemical usage, in partnership with site representatives, to ensure appropriate stocks of chemicals are available on site and usage is in line with budget/production levels. The provider is contractually bound to identify reduction opportunities that are evaluated by site. This includes but is not limited to process validation exercises, problem solving and optimisation. The site plans to further engage with the supplier's local representative and review the performance of the contractor.</p> <p>Any changes to the chemical inventory are assessed through the site's change management procedure before use. This is to ensure that their use and disposal via the effluent drains cannot impact the site's ability to comply with its consent. The site chemical inventory will be assessed and benchmarked through the Surface Water Impact Assessment. This is to identify specific materials that may contain substances considered harmful to the aquatic environment or listed under the Water Framework Directive 2000/60/EC.</p> <p>b) 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. For all systems, the opportunity to recover chemicals has been investigated and is periodically reviewed in partnership with the hygiene chemicals provider. Total loss systems</p>

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			<p>have only been employed where it is technically feasible not to recirculate. In these cases, review mechanisms are in place to review the chemical use (planned against budget) and function of the dosing system through validation exercises to minimise dosing/rinse times. Opportunities to improve effectiveness of application and remove crude dosing arrangements through automation are continually reviewed. COSHH training is implemented in partnership with the chemical supplier. This is to help improve knowledge and effectiveness in chemical handling, dispensing and deployment to further minimise use as well as reduce potential harm.</p> <p>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. Adherence to these requirements is further enforced through process confirmation. This encourages operators to challenge each other via inspections and behavioural based observations. Opportunities to deploy dry clean methods are limited due to the nature of the products and raw materials. Within certain operations, including packing and malt handling/processing, dry cleaning is employed routinely.</p> <p>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 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</p> <p>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>	CC	<p>The operator has provided information to support compliance with BATc 9. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 9.</p> <p>The operator has confirmed the refrigerants used in the installation process include an ammonia plant and glycol.</p>

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			F-gas used on site are only used for purposes outside the scope of the installation for example air conditioning, BATc9 is not applicable to these refrigerants.
10	<p>Resource efficiency In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below:</p> <ul style="list-style-type: none"> (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 	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 implements the following resource efficiency techniques:</p> <ul style="list-style-type: none"> 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. c) All process residues are segregated at the point of generation to maximise opportunities for recovery/reuse.
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>	CC	<p>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.</p> <p>The site has identified 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 in consultation with Anglian Water. The site can exercise some control over the fate of wastewater to either bleed it to the sewer via the effluent balance tank 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>In the event of a worst-case catastrophic loss of a volume of material, the site has the ability to manually hold back discharge to drain within the headroom of the effluent plant and associated process drainage infrastructure.</p>
12	<p>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</p> <ul style="list-style-type: none"> (a) Equalisation (b) Neutralisation 	CC	<p>The operator has provided information to support compliance with BATc 12. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 12.</p> <p>The operator treats the process effluent on site by implementing the following techniques (a) Equalisation and (c) physical separate.</p>

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	(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 Final solids removal (j) Coagulation and flocculation (k) Sedimentation (l) Filtration (eg sand filtration, microfiltration, ultrafiltration) (m) Flotation		a) The balance tank and clarifier ensure the balancing of flows and pollutant loads tank including pH. c) The site operates a screen for the removal of gross debris and solids to protect downstream equipment, reduce bacteriological activity and reduce loading to sewer.										
12	Emissions to water – treatment BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body <table border="1" data-bbox="277 1010 972 1289"> <thead> <tr> <th>Parameter</th> <th>BAT-AEL ⁽¹⁶⁾ ⁽¹⁷⁾ (daily average)</th> </tr> </thead> <tbody> <tr> <td>Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾</td> <td>25-100 mg/l ⁽¹⁸⁾</td> </tr> <tr> <td>Total suspended solids (TSS)</td> <td>4-50 mg/l ⁽¹⁸⁾</td> </tr> <tr> <td>Total nitrogen (TN)</td> <td>2-20 mg/l ⁽¹⁸⁾ ⁽²²⁾</td> </tr> <tr> <td>Total phosphorus (TP)</td> <td>0.2-2 mg/l ⁽¹⁸⁾</td> </tr> </tbody> </table> <p>(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</p>	Parameter	BAT-AEL ⁽¹⁶⁾ ⁽¹⁷⁾ (daily average)	Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾	25-100 mg/l ⁽¹⁸⁾	Total suspended solids (TSS)	4-50 mg/l ⁽¹⁸⁾	Total nitrogen (TN)	2-20 mg/l ⁽¹⁸⁾ ⁽²²⁾	Total phosphorus (TP)	0.2-2 mg/l ⁽¹⁸⁾	NA	BAT-AELs are not applicable for the emissions to water as there are no direct discharge to a receiving body of water. All wastewater effluent is discharged from the sites water treatment plant to Anglian Water sewer.
Parameter	BAT-AEL ⁽¹⁶⁾ ⁽¹⁷⁾ (daily average)												
Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾	25-100 mg/l ⁽¹⁸⁾												
Total suspended solids (TSS)	4-50 mg/l ⁽¹⁸⁾												
Total nitrogen (TN)	2-20 mg/l ⁽¹⁸⁾ ⁽²²⁾												
Total phosphorus (TP)	0.2-2 mg/l ⁽¹⁸⁾												

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	<p>TOC is the preferred option because TOC monitoring does not rely on the use of very toxic compounds.</p> <p>(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.</p> <p>(21) The upper end of the range is 30 mg/l as a daily average only if the abatement efficiency is $\geq 80\%$ as a yearly average or as an average over the production period.</p> <p>(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>		
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, eg 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. 	NA	<p>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>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 elements of a noise management plan are in place. The site has a formal complaints procedure that requires updating to state that in the event of an issue this would be recorded and investigated.</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> <ul style="list-style-type: none"> (a) Appropriate location of equipment and buildings (b) Operational measures (c) Low-noise equipment (d) Noise control equipment (e) Noise abatement 	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> <ul style="list-style-type: none"> 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. 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

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>operated by trained personnel that are aware of the potential for the site to generate off-site impacts including statutory nuisance (noise, odour, dust, vermin, light, vibration etc). 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 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>
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. 	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>
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>	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 implements the following energy efficiency techniques:</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													
	<table border="1" data-bbox="280 252 974 531"> <thead> <tr> <th>Technique</th> <th>Description</th> <th>Applicability</th> </tr> </thead> <tbody> <tr> <td>(a)</td> <td>Mashing-in at higher temperatures</td> <td>The mashing-in of the grain is carried out at temperatures of approximately 65 °C, which reduces the use of cold water.</td> <td rowspan="3">May not be applicable due to the product specifications.</td> </tr> <tr> <td>(b)</td> <td>Decrease of the evaporation rate during wort boiling</td> <td>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>(c)</td> <td>Increase of the degree of high-gravity brewing</td> <td>Production of concentrated wort, which reduces its volume and thereby saves energy.</td> </tr> </tbody> </table> <p data-bbox="280 560 633 587">Applicable in addition to BAT6</p>	Technique	Description	Applicability	(a)	Mashing-in at higher temperatures	The mashing-in of the grain is carried out at temperatures of approximately 65 °C, which reduces the use of cold water.	May not be applicable due to the product specifications.	(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.		<p>a) Mashing-in at higher temperatures</p> <p>b) Decrease of the evaporation rate during wort boiling</p> <p>c) Increase of the degree of high-gravity brewing</p>
Technique	Description	Applicability														
(a)	Mashing-in at higher temperatures	The mashing-in of the grain is carried out at temperatures of approximately 65 °C, which reduces the use of cold water.	May not be applicable due to the product specifications.													
(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="280 735 974 970"> <thead> <tr> <th>Technique</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>(a)</td> <td>Recovery and (re)use of yeast after fermentation</td> <td>After fermentation, yeast is collected and can be partially reused in the fermentation process and/or may be further used for multiple purposes, e.g. as animal feed, in the pharmaceutical industry, as a food ingredient, as an aerobic/anaerobic wastewater treatment plant for biogas production.</td> </tr> <tr> <td>(b)</td> <td>Recovery and (re)use of natural fibre material</td> <td>After chemical, enzymatic or thermal treatment, natural fibre material (e.g. distillers' spent earth) may be partially reused in the filtration process. Natural fibre material can also be used, e.g. as a soil improver.</td> </tr> </tbody> </table>	Technique	Description	(a)	Recovery and (re)use of yeast after fermentation	After fermentation, yeast is collected and can be partially reused in the fermentation process and/or may be further used for multiple purposes, e.g. as animal feed, in the pharmaceutical industry, as a food ingredient, as an aerobic/anaerobic wastewater treatment plant for biogas production.	(b)	Recovery and (re)use of natural fibre material	After chemical, enzymatic or thermal treatment, natural fibre material (e.g. distillers' spent earth) may be partially reused in the filtration process. Natural fibre material can also be used, e.g. as a soil improver.	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 implements the following technique to reduce the quantity of waste sent for disposal:</p> <p>a) Yeast is collected and re-used for the next fermentation. The residues are also sent off site for use as a food ingredient.</p>					
Technique	Description															
(a)	Recovery and (re)use of yeast after fermentation	After fermentation, yeast is collected and can be partially reused in the fermentation process and/or may be further used for multiple purposes, e.g. as animal feed, in the pharmaceutical industry, as a food ingredient, as an aerobic/anaerobic wastewater treatment plant for biogas production.														
(b)	Recovery and (re)use of natural fibre material	After chemical, enzymatic or thermal treatment, natural fibre material (e.g. distillers' spent earth) may be partially reused in the filtration process. Natural fibre material can also be used, e.g. as a soil improver.														
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 satisfied that the operator has demonstrated compliance with BATc 20.</p> <p>The operator has a 12 bag carousel reverse jet air filter unit in place in order to reduce channelled dust emission to air from the handling and processing of malt. The unit is subject to regular maintenance by an external third party contractor.</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										
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="277 368 976 571"> <thead> <tr> <th rowspan="2">Parameter</th> <th rowspan="2">Description</th> <th colspan="2">BAT-AEL (average over the sampling period)</th> </tr> <tr> <th>New plants</th> <th>Existing plants</th> </tr> </thead> <tbody> <tr> <td>Dust</td> <td>mg/Nm³</td> <td><2 – 5</td> <td><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 stated they are currently not complaint with the BAT-AELs associated with BATc 20. We have assessed the information provided and we agree with the Operator that they are currently not compliant with the BAT-AELs 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 points A6 and A8. As the operator has not yet provided monitoring data we cannot confirm current compliance however, we believe the operator will be future compliant by 04/12/2023. As these are existing plant, we are including the future dated ELV of 10mg/m³ in the permit.</p> <p>We have included an improvement condition IP7 to ensure compliance against BATc 20. The operator is required to complete the improvement condition and demonstrate compliance with BATc 20 by the compliance date, 4 December 2023. See Annex 3.</p>
Parameter	Description			BAT-AEL (average over the sampling period)									
		New plants	Existing plants										
Dust	mg/Nm ³	<2 – 5	<2 – 10										
Brewing Sector Environmental Performance Levels													
EPL	<p>Environmental Performance Level – Energy consumption for the brewing sector</p> <table border="1" data-bbox="277 999 965 1118"> <thead> <tr> <th>Unit</th> <th>Specific energy consumption (yearly average)</th> </tr> </thead> <tbody> <tr> <td>MWh/hl of products</td> <td>0.02 – 0.05</td> </tr> </tbody> </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 0.045 MWh/hl of products, which is within the EPL range for soft drinks demonstrating good energy efficiency.</p>						
Unit	Specific energy consumption (yearly average)												
MWh/hl of products	0.02 – 0.05												
EPL	<p>Environmental Performance Level – Specific waste water discharge for the brewing sector</p> <table border="1" data-bbox="277 1251 976 1370"> <thead> <tr> <th>Unit</th> <th>Specific waste water discharge (yearly average)</th> </tr> </thead> <tbody> <tr> <td>m³/hl of products</td> <td>0.15 – 0.50</td> </tr> </tbody> </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 0.033 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

- 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.

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 Operator has completed a H1 assessment of emissions for typical figures of production at the time of permitting.

The existing H1 assessment remains valid for the revised capacity threshold now placed 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.

Emission points of a similar nature have been merged to allow S3.1 to be more readable this includes emission points A2a & A2b, A3a – A3b, A4a & A4b, A11 – A13, and A14 – A1.

Implementing the requirements of the Medium Combustion Plant Directive

For the existing combustion plant with a rated thermal input less than 1 MW we will not be including any emission limit values or monitoring requirements within the permit, unless any site-specific conditions require us to do this.

This applies to the following combustion plants are present on site:

Combustion plant name	Size of combustion plant
Office H/W Boiler	2 x 328 kW
Eagle centre H/W boiler	2 x 135 kW
Northgate H/W boiler	50 kW

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

1. Rated thermal input (MW) of the medium combustion plant.	7.0 MWth	7.0 MWth	10.5 MWth
2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant).	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
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.	October 1974	October 1975	December 1980

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.

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.

For emission points noted to be future complaint we would incorporate a future dated ELV and monitoring requirements from the date of permit issue. This is relevant for emission point A6 and A8 against BAT 20 for dust emissions from the bag filter.

We have incorporated an improvement condition (IP7) to ensure the monitoring is carried out as soon as reasonably practical prior to December 2023 for these emission points.

The operator provided confirmation that emission point A9 does not exhaust to the atmosphere therefore, although the emission is from the handling of malt and adjuncts BAT-AELs are not applicable to this emission point.

We have added an improvement condition (IP8) 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.

The operator has provided a revised risk assessment using the Environment Agency's H1 software tool for the following substances of EDTA and Zinc for emission point S2 of process effluent to sewer.

The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment, the emissions of EDTA and Zinc may be screened out as environmentally insignificant.

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 [‘PPC051/ASR’ document named ‘Application Site Report The Eagle Brewery Charles Wells Ltd Bedford’ January 2005] during the original application received on 24/03/2005. 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 (IP9) 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. We are satisfied that the existing tanks and containment measures on site meet the standards set out in CIRIA C736.

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.

The operator has provided an appropriate feasibility study for the recovery of carbon dioxide recovery which indicates they will implement CO₂ recovery as set out in the report. Carbon dioxide recovery has been included as a DAA in the permit.

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.

Superseded Improvement Conditions – Removed from permit as marked as “complete”	
Reference	Improvement Condition
IP1	The Operator shall submit to the Agency a written summary of the procedures and other operational controls in place to ensure that the risk of overflow/spillage from the effluent screening skip is minimised. The summary shall also include any necessary improvements identified, along with timescales for their implementation.
IP2	The Operator shall submit to the Agency a written report on the feasibility of installing pressure drop monitoring, or similar instantaneous bag failure detection, linked to process control systems, on the fabric filters at emission points A12 and A14, as identified in Permit Table 2.2.1.
IP3	The Operator shall install bunding (to the requirements given in Box 5 of Agency Technical Guidance Note (IPPC H7, August 2003), or if not feasible, other appropriate secondary containment approved in writing by the Agency, for the storage of CIP chemicals within the installation brewhouse building.
IP4	The Operator shall undertake a CCTV survey (or other appropriate method of investigation) of all installation drainage, and submit a written report of the survey findings to the Agency.
IP5	The Operator shall submit their written plans for re-routing of installation drainage around the effluent tank and nearby caustic cleaning agent and propionic acid storage area, along with timescales for implementation to be approved by the Agency.

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
IP6	The operator shall submit, for approval by Environment Agency, a report setting out how the 'Narrative' BAT where BAT is currently not achieved has been achieved before 4 December 2023. The report shall include, but not be limited to, the following: <ol style="list-style-type: none"> 1) Methodology for achieving BAT. 2) Associated targets /timelines for reaching compliance by 4 December 2023. 	04/12/2023

	<p>3) How BAT has achieved compliance.</p> <p>The report shall address the compliance with BAT Conclusions for Food, Drink and Milk Industries with respect to BAT 1 and 5.</p> <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	
IP7	<p>The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the Best Available Techniques Conclusion Associated Emission Levels (BAT-AELs) where BAT is currently not achieved but will be achieved before 4 December 2023.</p> <p>The report shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1) Performance against the BAT-AELs. 2) Methodology applied for reaching the BAT-AELs. 3) The report shall address the BAT Conclusions for Food, Drink and Milk industries with respect to the following: <ul style="list-style-type: none"> • BAT 20 Table 7 (compliance with BAT-AELs for channelled dust emissions to air from handling and processing of malt and adjuncts) <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	04/12/2023
IP8	<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 A6 and A8 identifying the fractions within the PM10 and PM2.5 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>	31/10/2024 unless otherwise agreed in writing with the Environment Agency
IP9	<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>	31/10/2024 unless otherwise agreed in writing with the Environment Agency