

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/BN1437IT
The Operator is: Molson Coors Brewing Company (UK) Limited
The Installation is: Burton Brewery
This Variation Notice number is: EPR/BN1437IT/V007

What this document is about

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

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

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

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

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

How this document is structured

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

1 Our decision

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

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 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 04/10/2022.

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 5 and 20. In relation to this/these BAT Conclusions, the Operator has committed compliance by 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 17/10/2023 concerning BATcs 1, 4, 5, 6, 7, 9, 11, 14, MCPs, cooling towers, CO₂ recovery, non-technical description, and updated site plan. A copy of the further information requests 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> | CC | <p>The Operator has provided information to support compliance with BATc 1. We have assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BATc 1.</p> <p>The Operator declared the EMS contains the following:</p> <ul style="list-style-type: none"> • Leadership commitment for the implementation of the EMS • Acknowledgement of the needs of internal and external stakeholders and risks associated with the site's activity • Environmental policy including the need for continuous performance improvements • Objectives and performance indicators in relation to significant environmental aspects • Procedures and actions are in place to achieve environmental objectives and minimise risks. • Clear description of roles and responsibilities in relation to environmental aspects and objectives including financial and human provisions • Policy for internal and external communications • Continuous training provisions for staff • Provisions for staff consultation in environmental decision-making programs • Operational planning and process control • Provisions for maintenance programs • Emergency preparedness and response protocols • Environmental considerations in relation to construction, maintenance, operation and decommissioning of plant or components. |

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|----------|---|----------------------------|--|
| | | | <ul style="list-style-type: none"> • Implementation of a monitoring and measurement programme • Application of sectoral benchmarking • Internal auditing and periodic independent external auditing of the EMS • Evaluation of causes of nonconformities, implementation of corrective actions • Periodic review, by senior management, of the EMS • Following and taking into account the development of cleaner techniques |
| 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 declared that:</p> <ul style="list-style-type: none"> • It has a regularly updated inventory of raw materials. • It has a process flow sheet showing the origin of emissions and a description of process integrated techniques • Actively monitoring water usage and minimisation opportunities • All effluent streams are monitored on site to establish pH concentration and weekly by sewage undertaker, Severn Trent. • It monitors the characteristics of waste gases • It continually monitor the energy, water and raw materials used along with the generation of waste. • It has implemented a monitoring strategy to understand how efficiency can be increased based on iterative KPIs. |
| 3 | <p>Monitoring key process parameters at key locations for emissions to water.</p> | CC | <p>The Operator has provided information to support compliance with BATc 3. We have</p> |

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| | 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). | | assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BATc 3. The Operator declared that it monitors volume and pH of the wastewater discharged to sewer. |
| 4 | 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. | NA | We are satisfied that BATc 4 is not applicable to this installation. This BATc is concerned with discharges to water of process effluent and this site is discharging all process water to sewer for processing by the sewage undertaker, Severn Trent. |
| 5 | Monitoring channelled emissions to air to the required frequencies and standards. BAT is to monitor channelled emissions to air with at least the frequency given and in accordance with EN standards. | CC | The Operator has provided information to support compliance with BATc 5. We have assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BATc 5. Consistent with the information provided by the Operator in the Reg.61 Response submitted and the RFI reply, we have taken this opportunity to include in the consolidated permit the following monitoring requirements and associated dust emissions for the following points not currently included in the extant permit: <ul style="list-style-type: none"> • Process related – A34 to A43 - EN 13284-1 (annually) |
| 6 | Energy Efficiency In order to increase energy efficiency, BAT is to use an energy efficiency plan (BAT 6a) and an appropriate combination of the common techniques listed in technique 6b within the table in the BATc. | CC | 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. |

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| | | | <p>The Operator provided a copy of the Energy Efficiency Plan in the form of a 'Glidepath Tool' showing targets and projections for energy. In addition, the Operator declared that they use a VOP (value optimisation project) tracker, which mirrors the glidepath projects and benefits.</p> <p>The following energy efficiency techniques are currently in use:</p> <ul style="list-style-type: none"> • Heat recovery through a two stage heat recovery system • Increase the degree of high gravity brewing across most products wherever feasible • LED lighting • Minimising blow down from the boiler with each boiler being fitted with automatic TDS control / blowdown. • Process control systems through SCADA • 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 (b) Optimisation of water flow (c) Optimisation of water nozzles and hoses (d) Segregation of water streams</p> <p>Techniques related to cleaning operations:</p> <p>(e) Dry cleaning (f) Pigging system for pipes (g) High-pressure cleaning (h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP)</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>Techniques currently use on site are:</p> <ul style="list-style-type: none"> • Reuse of approximately 40% of the wastewater destined to be discharged to sewer; water is also reused in CIP • Optimisation of chemical dosing and water use in CIP • Cleaning of equipment as soon as possible |

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| | (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 | | |
| 8 | Prevent or reduce the use of harmful substances 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. (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 | 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. The Operator declared the following techniques being used: <ul style="list-style-type: none"> • Proper selection of cleaning chemicals • Reuse of chemicals in CIP. |
| 9 | 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. | CC | 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. The Operator declared that only refrigerants with low GWP are used in this installation, namely, ammonia, R717A and R531A gases. As such, we consider the Operator has achieved compliance with this BATc. |
| 10 | 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 | CC | 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. The Operator declared that: <ul style="list-style-type: none"> • Separation of residue • Out of specification product, as well as part of the waste is reintroduced into the manufacturing process |

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| | | | <ul style="list-style-type: none"> Waste unsuitable to be reworked is sent off-site for AD or sold as a product. |
| 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 Operator declared that spill kits are located throughout the site and trained personnel is monitoring the containment of tanks through iFix software. Any and all spillages, including catastrophic loss of containment, are directed to the effluent drain leading to the sewage undertaker, Severn Trent.</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 (a) Equalisation (b) Neutralisation (c) Physical separate (eg screens, sieves, primary settlement tanks etc) Aerobic and/or anaerobic treatment (secondary treatment) (d) Aerobic and/or anaerobic treatment (eg activated sludge, aerobic lagoon etc) (e) Nitrification and/or denitrification (f) Partial nitrification - anaerobic ammonium oxidation Phosphorus recovery and/or removal (g) Phosphorus recovery as struvite (h) Precipitation (i) Enhanced biological phosphorus removal Final solids removal (j) Coagulation and flocculation</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.</p> <p>We have included improvement condition (IC14) for the Operator to undertake a feasibility study on the opportunity 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</p> |

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|--|---|----------------------------|---|--|-----------------------------|------------------------------|---------------------------|---------------------|---|-----------------------|----------------------------|----|---|
| | (k) Sedimentation (l) Filtration (eg sand filtration, microfiltration, ultrafiltration) (m) Flotation | | wastewater and any subsequent off-site treatment. We consider that the operator will be future compliant with BATc 12. Improvement condition (IC14) has been included in the permit to achieve compliance (see Annex 3). | | | | | | | | | | |
| 12 | <p>Emissions to water – treatment BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body</p> <table border="1" data-bbox="277 608 1086 927"> <thead> <tr> <th>Parameter</th> <th>BAT-AEL ⁽¹⁵⁾ ⁽¹⁶⁾ (daily average)</th> </tr> </thead> <tbody> <tr> <td>Chemical oxygen demand (COD) ⁽¹⁷⁾ ⁽¹⁸⁾</td> <td>25-100 mg/l ⁽¹⁹⁾</td> </tr> <tr> <td>Total suspended solids (TSS)</td> <td>4-50 mg/l ⁽²⁰⁾</td> </tr> <tr> <td>Total nitrogen (TN)</td> <td>2-20 mg/l ⁽²¹⁾ ⁽²²⁾</td> </tr> <tr> <td>Total phosphorus (TP)</td> <td>0,2-2 mg/l ⁽²³⁾</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 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⁾ | NA | We are satisfied that BAT-AELs are not applicable to this installation. The BAT-AELs are applicable only where there are discharges of process effluent to surface water and this installation does not discharge to water. All process effluent is discharged untreated to the foul sewer for treatment by Severn Trent waste water treatment works therefore, the BAT-AELs are not applicable. |
| 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>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;</p> | NA | We are satisfied that BATc 13 is not applicable to this Installation. A noise management plan is only required where noise nuisance at sensitive receptors is expected or has been substantiated. There have been no substantiated noise nuisances | | | | | | | | | | |

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| | <ul style="list-style-type: none"> - 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. | | from the site therefore an NMP is not a requirement for this site. |
| 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 declared the following noise management techniques are used:</p> <ul style="list-style-type: none"> • Appropriate location of equipment and buildings • Operational measures inclusive of production plans limiting noise generating activities during night and weekends • Noise control equipment such as noise reducers and acoustic rooms Ongoing projects include the addition of acoustic panels and covers to refrigeration plant. • Noise abatement by inclusion of noise barriers where possible. |
| 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>We are satisfied that BATc 15 is not applicable to this installation.</p> <p>An odour management plan is only required where odour nuisance at sensitive receptors is expected or has been substantiated. There have been no substantiated odour nuisances from the site therefore an OMP is not a requirement for this site.</p> |

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|--|---|---|---|---------------|--|-----------------------------------|---|-----------|---|---|-----|--|---|-----------|--|
| 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="282 440 1227 826"> <thead> <tr> <th data-bbox="282 440 452 491">Technique</th> <th data-bbox="452 440 680 491">Description</th> <th data-bbox="680 440 1227 491">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="282 491 452 603">(a)</td> <td data-bbox="452 491 680 603">Mashing-in at higher temperatures</td> <td data-bbox="680 491 1227 603">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="282 603 452 735">(b)</td> <td data-bbox="452 603 680 735">Decrease of the evaporation rate during wort boiling</td> <td data-bbox="680 603 1227 735">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="282 735 452 826">(c)</td> <td data-bbox="452 735 680 826">Increase of the degree of high-gravity brewing</td> <td data-bbox="680 735 1227 826">Production of concentrated wort, which reduces its volume and thereby saves energy.</td> </tr> </tbody> </table> | 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 declared that:</p> <ul style="list-style-type: none"> • All water used for mashing in is pre-heated via a paraflo using the hot wort from previous brews. • Evaporation rates have been optimised to approximately 4% and simmer strip process issued • High gravity brewing is used across the majority of products wherever feasible. |
| 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="277 948 1227 1267"> <thead> <tr> <th data-bbox="277 948 524 999">Technique</th> <th data-bbox="524 948 1227 999">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 999 524 1158">(a)</td> <td data-bbox="524 999 1227 1158">Recovery and (re)use of yeast after fermentation</td> </tr> <tr> <td data-bbox="277 1158 524 1267">(b)</td> <td data-bbox="524 1158 1227 1267">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 declared that yeast is recovered and re-used in fermentation. All waste yeast not re-used is captured as a by-product for use as an ingredient within the human food chain or as animal feed.</p> <p>While the installation uses filters made of natural materials, the Operator declared that only a small proportion of such filters are utilised on site which, after utilisation are composted. The majority of filters are membrane based for ease of reutilisation.</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</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>assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BATc 20.</p> <p>The Operator declared the following filtration systems are used for emission points A34 to A43:</p> <ul style="list-style-type: none"> • Cyclone: air emission points A34, A39, A40, A41. • Bag filter: air emission points A35, A36, A37, A38, A42, A43 | | | | | | | | | | |
| AEL | <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="275 671 1196 890"> <thead> <tr> <th data-bbox="275 671 454 762" rowspan="2">Parameter</th> <th data-bbox="454 671 645 762" rowspan="2">Description</th> <th colspan="2" data-bbox="645 671 1196 762">BAT-AEL (average over the sampling period)</th> </tr> <tr> <th data-bbox="645 762 891 826">New plants</th> <th data-bbox="891 762 1196 826">Existing plants</th> </tr> </thead> <tbody> <tr> <td data-bbox="275 826 454 890">Dust</td> <td data-bbox="454 826 645 890">mg/Nm³</td> <td data-bbox="645 826 891 890"><2 – 5</td> <td data-bbox="891 826 1196 890"><2 – 10</td> </tr> </tbody> </table> | Parameter | Description | BAT-AEL (average over the sampling period) | | New plants | Existing plants | Dust | mg/Nm ³ | <2 – 5 | <2 – 10 | 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 declared they will be compliant by 04/12/2023, and we have no reason to expect otherwise</p> <p>We have taken this opportunity to include ELVs at the higher limit, in line with this BAT-AEL, for emission points A34 to A41 at 10mg/m³. Emission points A42 and A43 (hammer mills 1 and 2) are associated with grain milling and the appropriate ELV will be included in accordance with BATc 28, Table 15, at the higher range of the BAT-AEL, namely 5 mg/m³ for each emission point.</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 | | | | | | | | | | | | | |

| 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 | | | | |
|--------------------------------|--|---|---|--------------------------------|-------------|----|--|
| EPL | <p>Environmental Performance Level – Energy consumption for the brewing sector</p> <table border="1" data-bbox="277 336 1182 427"> <thead> <tr> <th data-bbox="277 336 636 379">Unit</th> <th data-bbox="636 336 1182 379">Specific energy consumption (yearly average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 379 636 427">MWh/hl of products</td> <td data-bbox="636 379 1182 427">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 BAT-EPL for energy consumption. We have assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BAT-EPL.</p> <p>The Operator declared for 2021 an energy consumption level of 0.024 MWh/tonne of product which is within the range of 0.02-0.05 MWh/t.</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="277 670 1182 761"> <thead> <tr> <th data-bbox="277 670 636 713">Unit</th> <th data-bbox="636 670 1182 713">Specific waste water discharge (yearly average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 713 636 761">m³/hl of products</td> <td data-bbox="636 713 1182 761">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 BAT-EPL for wastewater discharge. We have assessed the information provided and we are satisfied that the Operator has demonstrated compliance with BAT-EPL.</p> <p>The Operator declared for 2021 a volume of wastewater discharged of 0.19 m³/hl of product which is within the range of 0.15-0.5 m³/hl.</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

- 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 of particulate emissions to air 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. This updated document now includes a series of renumbered and redefined air emissions points, A34 to A43, and the addition of ambient emission points B1 to B97.

Based on the dust air emission points identified by the Operator in the updated Reg.61 Response submitted on 27/10/2023, we have included, as part of this review, these emission points numbered A34 to A41 in the consolidated permit along with monitoring and reporting requirements as well as associated ELVs of 10 mg/m³ for each emission point. For air emission points A42 and A43 associated with grain milling, the ELV is set to 5 mg/m³ for each emission point.

Implementing the requirements of the Medium Combustion Plant Directive

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(s) below:

Boilers

| | |
|---|---|
| 1. Rated thermal input (MW) of the medium combustion plant. | 42.3 MWth |
| 2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant). | 3 X 14.1 Boiler |
| 3. Type and share of fuels used according to the fuel categories laid down in Annex II. | Natural gas 100% (gas oil is used for emergencies) |
| 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. | All three boilers were commissioned in February 2014. |

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.

Because the Operator still uses gas oil to Operate Boilers 1, 2, and 3 in emergencies, breakdown or maintenance operations, we have retained the existing ELVs as shown in the extant permit and added new ELVs, updated the reference period, monitoring frequency and standards as per the MCPD, Annex II, applicable from 2015.

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 an interim ELV and monitoring requirements from the date of permit issue. This is relevant for emission points A34 to A43.

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 [Document reference 500-2733 from 2006] during the application variation received in 2006. The site condition report did include a report on the baseline conditions as required by Article 22. The Operator has requested more time to prepare and submit a baseline report in their Reg.61 Response relating to Question 14 of the RHS Baseline tab.

The Operator is currently using a Site Protection and Monitoring Plan (SPMP) developed in 2008 and has submitted a copy of it which reference the original submission of the SCR and baseline report.

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 (IC12) 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 banded
 - 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 banded 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.

The majority of tanks described in the Reg.61 Response are not banded nor share a band with other tanks, even though some of these unbanded tanks contain caustic, acid, and/or hot solutions. We consider that an assessment of the site's containment measures is required to assess the efficiency of the prevention measures used at this site.

We have set improvement conditions in the permit to address the deficiencies in the existing tanks and containment measures on site (IC13). 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.

The Operator has provided evidence which demonstrates they carry out carbon dioxide recovery on site. The CO₂ emitted during the fermentation process is captured and stored in liquid form until required, at which point is used as a carbonating agent for drinks produced on site. Given the capture and storage efficiency, this installation is self-sufficient however, the site can import CO₂ if needed.

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 |
| IC1 | The Operator shall investigate improvements to the secondary containment of the storage of magnesium sulphate, calcium chloride, glycol, IMS and caramel. The Operator shall report to the Agency on the proposed improvements, along with the timescale for implementation. |
| IC2 | The Operator shall investigate the options for re-routing the basement calcium chloride pipe through areas of lower flood risk. The Operator shall report to the Agency on the proposed improvements, along with the timescale for implementation. |
| IC3 | The Operator shall investigate the release of phosphate via sewer to the aquatic environment. The Operator shall report to the Agency, detailing the nature of the source of phosphate, proposals for the reduction of phosphate discharge and the timescale for implementation. |
| IC4 | The Operator shall investigate the source of emissions to water and sewer of substances listed in List I and II of the Schedule to Groundwater Regulations 1998, S12746. The Operator shall report to the Agency on proposals for measures to reduce those discharges and the timescale for implementation. |
| IC5 | The Operator shall investigate the source of fugitive emissions to air of R22 refrigerant, chlorine gas, malt dust, and ammonia refrigerant and quantify the amount released. The Operator shall report to the Agency on proposals for measures to reduce those discharges and the timescale for implementation of those measures. |
| IC6 | The Operator shall submit proposals to the Agency for an inspection and maintenance programme for all sub-surface pipework, sumps and storage vessels, to include all subsurface and foul drainage systems. The proposals shall include a timescale for implementation and suggested frequency of future surveys. |
| IC7 | The Operator shall investigate the on or off-site recovery of waste minerals that are currently disposed of. The Operator shall submit a report to the Agency which shall include proposals for recovery of waste and timescales for implementation of the recovery route. |
| IC8 | The Operator shall develop and implement an Odour Management Plan for the installation, having regard to the techniques described in the Agency Technical Guidance Note IPPC 6.10 and the Technical Guidance Note IPPC H4, Horizontal Guidance for Odour Part 1 (Regulation and Permitting) and Part 2 (Assessment and Control). A copy of the Odour Management Plan shall be submitted to the Agency. |

| | |
|------|---|
| IC9 | The Operator shall develop and implement a Noise Management Plan for the installation, having regard to the techniques described in the Agency Technical Guidance Note IPPC 6.10 and the Technical Guidance Note IPPC H3, Horizontal Guidance for Noise Part 1 (Regulation and Permitting) and Part 2 (Assessment and Control). A copy of the Noise Management Plan shall be submitted to the Agency. |
| IC10 | The Operator shall investigate the sources of emissions to surface water of COD and Suspended Solids. The Operator shall report to the Agency on proposals for measures to reduce these discharges and the timescale for implementation of those measures. |

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 | 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 points [A34 to A43], identifying the fractions within the PM ₁₀ 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. | 12 months from permit issue or other date as agreed in writing with the Environment Agency |
| IC12 | The operator shall produce a climate change adaptation plan, which will form part of the EMS. The plan shall include, but not be limited to: <ul style="list-style-type: none"> • Details of how the installation has or could be affected by severe weather; • The scale of the impact of severe weather on the operations within the installation; • An action plan and timetable for any improvements to be made to minimise the impact of severe weather at the installation. The Operator shall implement any necessary improvements to a timetable agreed in writing with the Environment Agency. | 12 months from permit issue or other date as agreed in writing with the Environment Agency |
| IC13 | The Operator shall undertake a survey of the primary, secondary and tertiary containment at the site and review measures against relevant standard including: <ul style="list-style-type: none"> • CIRIA Containment systems for the prevention of pollution (C736) – Secondary, tertiary and other measures for industrial and commercial premises, • EEMUA 159 - Above ground flat bottomed storage tanks | 12 months from permit issue or other date as agreed in writing with the Environment Agency |

| | | |
|------|--|-----------------------------|
| | <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> | |
| IC14 | <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 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. In addition the report needs to consider the appropriate on-site monitoring of the effluent stream prior to disposal. (BAT 3, 4 and 12 Best Available Techniques Reference Document and BAT Conclusions document for the food, drink and milk industry dated December 2019).</p> | 12 months from permit issue |