

Natural Resources Wales permitting decisions

Variation and Consolidation of a bespoke Permit – AB InBev UK Limited

We have decided to issue a Natural Resources Wales initiated variation and consolidated permit for Magor Brewery in Magor, Caldicot operated by AB InBev UK Limited.

The permit number is EPR/BX7282IS.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

The permit has been varied following the publication of the revised Best Available Techniques (BAT) Reference Documents (BREF) for Food, Drink and Milk Industries. The associated BAT conclusions to this document were published on 4 December 2019 in the Official Journal of the European Union.

This variation incorporates the changes required by the Industrial Emissions Directive following a statutory review of permits in the Food, Drink and Milk sector. These include the amendment of the wording of several permit conditions relating to notifications, changes to emissions limits and monitoring requirements.

We are satisfied that the operator will be compliant with the published BAT conclusions which will apply from 4 December 2023.

Purpose of this document

This decision document:

- explains how we have carried out our statutory review of the Operator's Permit;
- why we have decided to vary the Permit as a result of that review; and
- why we have included the specific conditions in the revised Permit through the variation notice we are issuing.

It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position.

Structure of this document

- Assessment of Magor Brewery against the published BAT conclusions for Food, Drink and Milk Industries.
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions for Food, Drink and Milk Industries
- Annex 2 – Decision Checklist regarding relevant BAT Conclusions for Waste Treatment

Assessment of Magor Brewery against the published BAT conclusions for Food, Drink and Milk Industries

1. Our decision

We have issued a variation, which will allow the Operator to operate the installation, subject to the conditions in the varied permit.

The variation does three things:

- it consolidates the original permit to reflect changes made through earlier variations;
- it brings the permit into line with our modern regulatory template; and
- it varies the permit where appropriate to reflect the outcome of our statutory review and incorporate Best Available Techniques (BAT) and Associated Emission Limit Values (BAT-AELs).

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

The original permit, issued on 24/06/2005, ensured that the installation, employed BAT and ensured a high level of protection for human health and the environment. We have altered the permit as a result of the statutory review, and we are confident that the new requirements will deliver a superior level of protection to that which was previously

achieved. Where a site is not currently compliant with BAT, Improvement Conditions have been included to bring the site up standard by 4 December 2023.

2. The legal framework

The variation and consolidation Notice (which includes the consolidated permit as Schedule 2) will be issued under Regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 (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 Industrial Emissions Directive (IED);
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Variation and Consolidated Permit, 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.

3. How we reached our decision

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 on 27 April 2020 requiring the operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Regulation 61(1) Notice required the operator to:

- Describe the techniques that will be implemented before 4 December 2023, which will then ensure that operations meet the revised standard, or
- Justify 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 standard is not applicable to those processes, or

- Justify why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.
- Where their permitted activity involves the use, production or release of a hazardous substance, as defined in Article 3(18) of the Industrial Emissions Directive, the Operator was required to carry out a risk assessment considering the possibility of soil and groundwater contamination at the permitted installation with such substances. Where risk of such contamination is established prepare a baseline report containing information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definite cessation of the activity.
- Where their permitted activity involves the use, production, storage or release of priority hazardous substances and any other relevant substances., as defined by the Water Framework Directive, the Operator was required to carry out a risk screening assessment considering the presence of priority hazardous substances at the permitted installation. Where a risk of these substances is established the operator is to sample the effluent and screen for the priority hazardous substances. If these substances are found to be present in the effluent stream, then assessment using the H1 tool and potential detailed modelling will be required to demonstrate that the effluent discharge will not have a significant impact to the receiving water.

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 Food, Drink and Milk BAT Conclusions Document, the Regulation 61(1) Notice requested that the operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61(1) Notice response from the operator was received on 30/10/2020.

We considered that the response contained sufficient information for us to commence determination of the permit review. The operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61(1)

Notice response that appears to be confidential in relation to any part.

4. Key issues/Regulation 61 response

BAT Conclusions for the Food, Drink and Milk Industries were published as Commission Implementing Decision EU 2019/2031 in the Official Journal of the EU on 4 December 2019. There are 37 BAT Conclusions. Annex 1 provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This should be read in conjunction with the permit/variation notice issued.

A detailed response was received from the Operator. Where the operator has concluded that they have achieved BAT, and we are in agreement, no further information or justification has been sought by Natural Resources Wales.

Baseline site condition report

Where their permitted activity involves the use, production or release of a hazardous substance, as defined in Article 3(18) of the Industrial Emissions Directive, the Operator was required to carry out a risk assessment considering the possibility of soil and groundwater contamination at the permitted installation with such substances. Where risk of such contamination is established prepare a baseline report containing information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definite cessation of the activity.

The Operator referenced their baseline report (1700003382_ABInBev_SCR_2) submitted to Natural Resources Wales in March 2020 in support of a permit variation application and stated that the information remains applicable. We consider this appropriate and no further controls are required such as an improvement condition.

5. Changes we have made

Improvement Conditions

Based on the information provided in the Regulation 61(1) response, we consider that we need to set improvement conditions. These conditions are set out below. We are using these conditions to require the operator to provide Natural Resources Wales with details that need to be established or confirmed during operations. The improvement conditions ensure compliance by 2023.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IP1	The Operator shall submit a written report to the Agency on the feasibility of modifying the horizontal stacks associated with the No. 1 and No.2 CHP leading to emission points A5 and A6 to vertical emission stacks. Details of any improvements with associated timescales shall be approved by the Agency.	01/09/05
IP2	The Operator shall provide a report in writing to the Agency detailing the current monitoring method used to determine effluent at W2, having regard to EN, ISO and BS standards. The monitoring method shall be approved by the Agency.	01/09/05
IP3	The Operator shall submit a written report to the Agency describing the monitoring and reporting methodology and timetable for implementation for the determination of mass concentration of hydrogen sulphide generated from the effluent treatment plant averaged every half hour. This report shall be approved by the Agency.	01/10/05
IP4	The Operator shall review and update where necessary all the bunding on the main brewery site. The bunding is to be in accordance with the Agency Guidance IPPC H7, Version 1, August 2003	01/11/05
IP5	The Operator shall review the drainage of the ETP site's surface water discharge to the Mill Reen and shall install measures to protect the Reen from contamination.	01/11/05
IP6a	The Operator shall submit a written report to be approved by the Agency outlining the monitoring strategy and reporting format for ambient monitoring of sulphur dioxide at the effluent treatment site. The monitoring strategy shall be based on: • a minimum of three monitoring locations, one having regard for the local footpath to the east of the effluent treatment plant, one having regard to the Severn Estuary Ramsar to the south of the effluent treatment plant and one being upwind of the prevailing wind direction; • a minimum of 2 months continuous monitoring whilst the flare is fully operational. In designing the monitoring strategy, the Operator shall have regard for the monitoring guidance notes M8 'Environment Monitoring Strategy - Ambient Aid (published 2000)' and M9 'Monitoring Methods for Ambient Aid (Published 2000)'.	01/11/05
IP6b	The Operator shall submit a written report to the Agency on the results and assessment of the ambient monitoring of sulphur dioxide at the effluent treatment site to the strategy submitted in response to IP6a and approved by the Agency. Where improvements are identified these shall be submitted in the report with a timetable for implementation to be approved by the Agency.	01/11/05
IP7	The Operator shall assess the emissions performance and efficiency of No. 1 and No.2 CHP units with reference to the draft 'IPPC Sector Guidance Note - Combustion Activities', March 2005 and the 'Draft Reference Document on Best Available Techniques for Large Combustion Plants', November 2004. A written report shall be submitted to the Agency including the results of any emissions monitoring (to include details of methods used) and an impact assessment of the emissions from No. 1 and No.2 CHP in combination with other combustion plant within the installation. The report shall also include a justification for any significant performance differences between No. 1 and No.2 CHP units. Where air dispersion modelling is proposed, the methodology for assessing the releases from air emission points A5 and A6 shall be approved by the Agency prior to assessment. Any improvements proposed, with a timetable for implementation, shall be approved by the Agency.	01/12/05

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IP8	The Operator shall submit a written report on the performance of the effluent treatment plant following the commissioning of the UASB. The assessment of the performance should make reference to the sector guidance IPPC S6.10, Version 1, August 2003, and where any improvements are identified these, with a timetable for implementation, should be included in the report to be approved by the Agency.	01/01/06
IP9	The Operator shall carry out an assessment of the options available for reducing copper and zinc emissions from the effluent treatment plant at the effluent treatment site via emission point W2. A summary of the assessment shall be sent to the Agency in writing together with a timetable to implement any necessary improvements identified.	01/01/06
IP10	The Operator shall submit a written report on an assessment of methods for the handling of hydrogen sulphide generated from the effluent treatment plant with reference to the BREF "Common Waste Water and Waste Gas Treatment/Management Systems in the Chemicals Sector, February 2003. The assessment shall include proposals, with a timetable for implementation, for methods to reduce the impact of air emissions beyond the installation boundary. This assessment shall also include the consideration of raising the stack height of the flare associated with the UASB.	01/02/06
IP11	The Operator shall submit a written Closure Plan that shall be agreed with the Agency. The Plan shall have regard to the requirements set out in section 2.11 of General Sector Guidance for Food and Drink S6.10, issue 1, August 2003.	01/03/06
IP12a	The Operator shall submit a report to be approved by the Agency outlining the monitoring strategy and reporting format for ambient monitoring of oxides of nitrogen from the emission points A1, A2, A3, A4, A5 and A6. The monitoring strategy shall be based on: • a minimum of two monitoring locations one being upwind of the prevailing wind direction. Any monitoring locations placed downwind of the prevailing wind direction shall have regard for the findings of any modelling submitted as part of IP7; • a minimum of 2 months continuous monitoring whilst the CHP units are fully operational. In designing the monitoring strategy, the Operator shall have regard for the monitoring guidance notes M8 'Environmental Monitoring Strategy - Ambient Air' (published 2000) and M9 'Monitoring Methods for Ambient Air' (Published 2000).	01/03/06
IP12b	The Operator shall submit a written report to the Agency on the results and assessment of the ambient monitoring of oxides of nitrogen from the emission points A1, A2, A3, A4, A5 and A6 to the strategy submitted in response to IP12a and approved by the Agency. Where improvements are identified these shall be submitted in the report with a timetable for implementation to be approved by the Agency.	01/12/06
IP13	The Operator shall provide an odour management plan in writing to the Agency, covering all odour emissions from the ETP installation. The plan shall investigate techniques by which the releases of the odorous substances may be further reduced and shall propose a plan and time scale, to be submitted to the Agency for approval.	01/04/06
IP14	The Operator shall submit a written report to the Agency assessing the method used for taking a 01/06/06 composite sample from the effluent treatment plant. This Shall include details of whether this is time-based or flow-based, and a discussion of the suitability of the method. Any improvements identified, with timetable for implementation, shall be approved by the Agency..	01/04/06

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IP15	The Operator shall assess the operating performance and efficiency of No.1 and No.2 Hot Temperature Hot Water and No.4 and No.5 steam boilers. A written report shall be submitted to the Agency including details of the results of the efficiency tests and any actions (with timetable) proposed to be approved by the Agency. The report shall also include information on the net and gross thermal input for each of the boiler plant.	01/06/06
IP16	The Operator shall undertake a water efficiency audit of the installation. The audit shall have regard to Section 2.4.3 of the Agency Guidance Note IPPC S6.10, Version 1, August 2003 and shall provide a breakdown of significant water use by department or activity and shall establish the current installation performance (for example titre water/kg of product) and water efficiency objectives. A summary of the audit shall be submitted to the Agency in writing with a timetable to implement any improvements identified. Improvements shall be approved by the Agency.	01/08/06
IP17	The Operator shall demonstrate to the Agency that the composite water sampler used for the collection of samples on W2 is fit for purpose by comparing the manufacturers stated performance of the composite water sampler with the performance criteria for equivalent equipment having an MCERTs certificate as given in document 'Continuous water monitoring equipment part 1: Performance Standards and conformity testing procedures for automatic waste water sampling equipment version 1 , February 2003'. Where this comparison shows that the composite water sampler does not meet the criteria in the above document, the operator shall propose a timescale whereby either the composite water sampler will be able to meet the criteria or for the purchase of suitable replacement equipment. Any timescales shall be approved by the Agency.	01/12/06
IP18	The operator shall demonstrate to the Agency that the pH probe used for continuous monitoring of pH at W2, is fit for purpose by comparing the manufacturers stated performance of the pH probe with the performance criteria for equivalent equipment having an MCERTs conformance certificate as given in document 'Continuous water monitoring equipment part 2: Performance Standards for on-line analysers, Turbidity and pH meters; ammonia, COD, TOC, dissolved O ₂ , total phosphorous, nitrate and total oxidised nitrogen analysis version 1, February 2003'. Where this comparison shows that the pH probe does not meet the criteria in the above document, the operator shall propose a timescale whereby either the pH probe will be able to meet the criteria or for the purchase of suitable replacement equipment. Any timescales shall be approved by the Agency.	01/12/06

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC19	(a) The Operator shall submit to NRW the maximum capacity of the installation that was used in the most recent risk assessment submitted to NRW. (b) The Operator shall submit to NRW for approval the maximum capacity of the installation at the current time. (c) If the maximum capacity of the installation has increased from the time of the last submitted risk assessment and the current time, the Operator shall review and update the risk assessment to account for the current maximum capacity. The risk assessment shall be submitted to NRW for review. Notes: The capacity is to be taken and presented using the same units from the relevant sub-section of Section 6.8, Part 2, Schedule 1 of the Environmental Permitting Regulations 2016 (as from time to time amended). Capacity is to be taken as the maximum possible capacity of the installation, not the maximum actual production. The risk assessment should follow the methodology set out in The Environmental Risk Assessment (EPR-H1). You may use a methodology other than EPR-H1 however the methodology must address the same issues as in EPR-H1 to an equivalent level of detail.	(a) and (b) Within 6 months of permit variation issue (c) Within 9 months of permit variation issue (if applicable)
IC20	The Operator shall submit for written approval a methodology for meeting the process parameters listed in table S3.4 as per BAT 38 for the anaerobic treatment of waste. The methodology shall identify each of the process parameters and detail the frequency and techniques in place to record the data. Where a process parameter can not be monitored justification should be provided and/or a suitable alternative proposed. The methodology should include trigger levels for each of the parameters with associated procedures in place if trigger levels are exceeded.	4 June 2023 or otherwise agreed in writing with Natural Resources Wales

IC19 has been included on the permit for the Operator to demonstrate that the current risk assessment is appropriate for the maximum capacity of the Installation.

IC20 has been included on the permit for the Operator to demonstrate compliance with BAT38 of the Waste Treatment BRef regarding anaerobic treatment of waste.

Other changes

There have been changes to the operating techniques table within the permit to reflect the information provided in the Regulation 61(1) response.

Operational Changes

There are no operational changes at the installation following the Regulation 61(1) response. However, it should be noted that a recent variation (EPR/BX7282IS/V007) was approved to upgrade plant, amend emissions points, extend the site boundary and downgrade the boilers to a Part B activity for burning any fuel in a boiler with a net

rated thermal input of 20 or more megawatts, but a rated thermal input of less than 50 megawatts.

Capacity creep

We have included an improvement condition (IC19) in order to establish the current maximum capacity at the installation and to determine if there has been a change since the last risk assessment submitted to NRW. If there has been an increase in the maximum capacity, what we call capacity creep, we have asked the Operator to review and update their risk assessment and submit to us for review. We have also implemented a maximum capacity limit into Table S1.1 of the permit in line with the IC response to prevent any further capacity creep at the installation.

Medium Combustion Plant (MCP) / Specified Generator (SG)

The installation has four existing MCPs already listed in Table S1.1 as a Directly Associated Activity and with associated emissions points (A1 – A4) in Table S3.1. The existing MCPs are natural gas boilers, 2x 18 MWth, 1x 4.06 MWth and 1x 7.1 MWth input. Emission Limit Values (ELVs) and monitoring for existing MCPs is not required until 1st January 2025 at the earliest. As this is some way off, we decided to maintain any existing ELVs and monitoring requirements in the permit and not to impose new stricter ELVs ahead of time.

Emissions to Water

As part of our delivery of the Water Framework Directive requirements, we need to identify and assess the impact for all discharges to surface waters and/or sewer from the site for priority hazardous substances and any other relevant substances. The emissions monitoring for these substances should be carried out using the methods and standards described in the M18 guidance on “Monitoring of discharges to water and sewer”.

With reference to the risk assessment guidance on the gov.uk website entitled “Surface water pollution risk assessment for your environmental permit” (accessible via: <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit>) the company carried out the following assessments:

- Screening tests for priority hazardous pollutants and any other relevant priority hazardous substances.

- For any substance which is not screened out by the screening tests further modelling, as described in the risk assessment guidance “Surface water pollution risk assessment for your environmental permit”.

The Operator has a total of four point source emissions to water listed in their permit. Three are discharges of uncontaminated surface water to:

- (i) Mill Reen (emission point W3)
- (ii) Waundeilad Reen (emission point W4)
- (iii) Highways drainage (emission point W5)

The final and fourth point source emission to water is of treated process effluent from the effluent treatment plant discharged to the Severn Estuary. The Operator is permitted to discharge the following priority hazardous substances and other relevant priority substances as listed below:

- Copper
- Cadmium
- Chromium
- Mercury
- Nickel
- Zinc
- Arsenic

The Operator has completed the risk assessment including the screening tests as requested in the Regulation 61(1) Notice. The Operator has completed the assessment in line with the following guidance: “Surface water pollution risk assessment for your environmental permit” (accessible via: <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit>). The screening tests have been completed for all metals stated above using maximum allowable concentrations and maximum discharge flow (permitted emission limit values within the permit) to provide a conservative assessment. The Operator has used all applicable annual average (AA) environmental quality standards (EQS) and maximum allowable concentration (MAC) EQS for estuaries/coastal waters as per the referenced guidance. Arsenic, cadmium, iron and nickel screened out in Screening Test 1. Mercury, chromium, copper and zinc did not screen out in Screening Test 1 however did screen out in Screening Test 2. Therefore, no further assessment of any of the relevant substances is required and it can be concluded there is no significant impact on the Severn Estuary from discharge of any

of the relevant substances. We have reviewed the assessment in line with the referenced guidance and are in agreement with the conclusions of the assessment.

The specific BAT Conclusions on water emissions were also reviewed based on the Food, Drink and Milk BREF and the following changes are made to the ELVs for emissions to water taking into account BAT Conclusion 12 from the BREF. BAT-AELs apply on for direct emissions to a receiving water body of process effluent, BAT-AELs nor monitoring requirements apply to discharges of uncontaminated surface water.

BAT AELs have been amended for the following parameters. (BAT AELs)

Parameter	Limit	Compliance period
pH	>5, <9	Until 3rd December 2023
Temperature	30 °C	
Biochemical Oxygen Demand (BOD)	200 mg/l	
Chemical Oxygen Demand (COD)	450 mg/l	
Suspended solids	150 mg/l	
Total copper and its compounds	0.01 mg/l as annual average	
Total cadmium and its compounds	0.005 mg/l as annual average	
Total chromium and its compounds	0.015 mg/l as annual average	
Total mercury and its compounds	0.0005 mg/l as annual average	
Total nickel and its compounds	0.03 mg/l as annual average	
Total zinc and its compounds	0.07 mg/l as annual average	
Total arsenic and its compounds	0.025 mg/l as annual average	

Parameter	Limit	Compliance period
pH	>5, <9	
Temperature	30 °C	
Biochemical Oxygen Demand (BOD)	200 mg/l	
Chemical Oxygen Demand (COD)	100 mg/l	
Suspended solids	50 mg/l	
Total copper and its compounds	0.01 mg/l as annual average	

Total cadmium and its compounds	0.005 mg/l as annual average	From 4 th December 2023
Total chromium and its compounds	0.015 mg/l as annual average	
Total mercury and its compounds	0.0005 mg/l as annual average	
Total nickel and its compounds	0.03 mg/l as annual average	
Total zinc and its compounds	0.07 mg/l as annual average	
Total arsenic and its compounds	0.025 mg/l as annual average	
Total nitrogen	20 mg/l	
Total phosphorus	2 mg/l	
Chloride	No limit set	

Where BAT associated emission levels are identified (BAT-AELs), limits may be prescribed at the top end of the range unless the proximity of sensitive receptors requires a tighter limit or if tighter limits are previously on the permit, this ensures no backsliding of emission limits.

Emissions to Water – Article 15(4) Derogations

No derogations.

Emissions to Air

There were changes to the Emission Limit Values (ELVs) for emissions to air taking into account BAT conclusions from the Food, Drink and Milk BREF.

The BAT-AEL stated in BAT 20 is applicable to the Brewing industry. However, the installation uses closed system resulting in no emissions of dust to air. Therefore, the activities are not in scope of the BAT-AELs listed within the BREF.

Emissions to Air – Article 15(4) Derogations

No derogations.

Other IED BREFs relevant to the permit review

There is a Section 5.4 activity listed within Table S1.1 of the permit relating to the Effluent Treatment Process of process effluent from the main activity. The Waste Treatment Activity involves Anaerobic Digestion therefore as per the UK Regulators Interpretation Document the following BAT Conclusions of the Waste Treatment BREF Document (EU 2018) are relevant:

- BAT 15 and BAT 16 for flaring of systems
- BAT 21 emissions from accidents and incidents
- BAT 38 monitoring of key process variables

6. Conclusion

We consider that the installation already employed what used to be BAT, and that the operator has achieved significant improvements in performance since the permit was originally granted. The revised BREF and its BAT-AELs provide the opportunity to consider further environmental improvements.

Coupled with the consolidation and modernisation of the permit, we believe this variation provides a sound basis for ongoing regulation of the installation and we are satisfied that the operator is currently achieving or will be achieving all relevant BAT by 4 December 2023.

We believe that we have ensured compliance with all relevant legal requirements in carrying out this review and making our determination on the variation.

Annex 1: Decision checklist regarding relevant BAT Conclusions for Food, Drink and Milk Industries

BAT Conclusions for the Food, Drink and Milk Industries were published as Commission Implementing Decision EU 2019/2031 in the Official Journal of the EU on 4 December 2019. There are 37 BAT Conclusions. This checklist 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 permit.

All BAT Conclusions arising are listed by number in order below;

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
OVERALL ENVIRONMENTAL PERFORMANCE				
1	Environment Management System (EMS) – <u>ALL</u> of the following:			
	I.	Commitment, leadership and accountability of the management, including senior management for the implementation of an effective EMS		Compliant in the future The Operator has stated that they are currently compliant with BAT 1 with the exception of BAT 1 ii. The Installation is operated according to an EMS and corporate standard. The one aspect that requires improvement is adherence with BAT 1 ii. - the context of the organisation and the needs and expectations of interested parties. The Operator has stated that they will be compliant with this by 4 December 2023.
	II.	An analysis that includes the determination of the organisation’s context, the identification of the needs and expectations of interested parties, the identification of characteristics of the installation that are associated with possible risks for the environment (or human health) as well as of the applicable legal requirements relating to the environment.		
	III.	Development of an environmental policy that includes the continuous improvement of the environmental performance of the installation		
	IV.	establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements;		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	V.	Planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks;	
	VI.	Determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;	
	VII.	Ensuring the necessary competence and awareness of staff whose work may affect the environmental performance of the installation (e.g. by providing information and training);	
	VIII.	Internal and external communication	
	IX.	Fostering employee involvement in good environmental management practices;	
	X.	Establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records;	
	XI.	Effective operational planning and process control;	
	XII.	Implementation of appropriate maintenance programmes;	
	XIII.	Emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations;	
	XIV.	When (re)designing a (new) installation or a part thereof, consideration of its environmental impacts throughout its life, which includes construction, maintenance, operation and decommissioning;	
	XV.	Implementation of a monitoring and measurement programme, if necessary, information can be found in the Reference Report on Monitoring of Emissions to Air and Water from IED Installations;	
	XVI.	Application of sectoral benchmarking on a regular basis;	
	XVII.	Periodic independent (as far as practicable) internal auditing and periodic independent external auditing in order to assess the environmental performance and to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	XVIII.	Evaluation of causes of nonconformities, implementation of corrective actions in response to nonconformities, review of the effectiveness of corrective actions, and determination of whether similar nonconformities exist or could potentially occur;	
	XIX.	Periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;	
	XX.	Following and taking into account the development of cleaner techniques.	
	(i)	Noise Management Plan (BAT 13)	See BAT 13
	(ii)	Odour Management Plan (BAT 15)	See BAT 15
	(iii)	Inventory of water, energy and raw materials consumption as well as of waste water and waste gas streams (BAT 2)	See BAT 2
	(iv)	Energy Efficiency Plan (BAT 6a)	See BAT 6a
2	Establish and maintain a waste water and waste gas inventory as part of the EMS - <u>ALL</u> of the following:		
	<i>Information about the food, drink and milk production processes, including;</i>		
	I.(a)	simplified process flow sheets that show the origin of the emissions	Compliant in the future The Operator has provided a description of the process flow and origin of emissions. The Operator should provide reference to process flow sheets by 4 December 2023.
	I.(b)	descriptions of process-integrated techniques and waste water/waste gas treatment techniques to prevent or reduce emissions, including their performance	Currently compliant The Operator has provided a description of techniques used to prevent or reduce emissions associated with energy and water usage and wastewater at the Installation. This includes details of monitoring to improve performance.
	II.	Information about water consumption and usage and identification of actions to reduce water consumption and waste water volume (BAT 7)	See BAT 7

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	Information on quantity and characteristics of the waste water streams, such as:	
	III.(a)	Average values and variability of flow, pH and temperature
	III.(b)	Average concentration and load values of relevant pollutants/parameters (e.g. TOC/COD, nitrogen species, phosphorus, chloride, conductivity) and their variability
	Information on characteristics of waste gas streams, such as:	
	IV.(a)	<i>Mean and variability of:</i>
		Flow
		temperature
	IV.(b)	<i>Mean concentration, load and variability of relevant substances:</i>
		Dust
		TVOC
		CO
		NO _x
		SO _x
	IV.(c)	<i>Presence of other substances that may affect the waste gas treatment system or plant safety:</i>
		O ₂
		Water vapour
		Dust
	V.	Information about energy consumption and usage, the quantity of raw materials used, as well as the quantity and characteristics of residues generated, and identification of actions for continuous improvement of resource efficiency (BAT 6 and BAT 10)
		Currently compliant See BAT 3
		Compliant in the future The Operator has stated that the oxides of nitrogen (as NO ₂) and carbon monoxide emissions from the four main boilers are monitored every six months, and from the CHP every three months, as required by the environmental permit. However, currently no trending is carried out on the collected data, or on the flow and temperature of the emissions from the Installation. Information about the presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, water vapour, dust) is not collected. The Operator has committed to reviewing this aspect and applying required changes by 4 December 2023.
		See BAT 6 and BAT 10

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	VI.	Identification and implementation of an appropriate monitoring strategy with the aim of increasing resource efficiency, taking into account energy, water and raw materials consumption. Monitoring can include direct measurements, calculations or recording with an appropriate frequency. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level).	Currently compliant Energy usage at the Installation is monitored and measured through the EMS, along with water and raw material consumption and waste production. These are reported to the European and Global business levels, who manage site level targets and KPIs. Specific resource and energy-efficiency initiatives are identified, investigated and implemented at both site and European levels. This includes identification of actions to reduce water consumption and wastewater volume. See BAT 7.
MONITORING			
3	For relevant emissions to water as identified by the inventory of waste water streams (BAT 2): monitor key process parameters at key locations		
	Key process parameters		
	Waste water flow		Currently compliant The Operator has stated that flow, temperature and pH and other relevant parameters as identified in BAT2 are monitored before the discharge point.
	pH		
	Temperature		
	Key monitoring locations		
	Pre-treatment inlet and/or outlet		
	Final treatment inlet		
	Discharge point (to the environment)		
	Other location		
4	Monitoring of water emissions: monitor emissions to water with at least the frequency given below and in accordance with EN standards:		
	Refer to monitoring emissions to water table in BRef document		Compliant in the future Total Nitrogen, Total Phosphorus and Chloride in wastewater discharges are not currently monitored by

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		the Operator therefore they have been implemented in the permit from the compliance date.
5	Refer to monitoring emissions to air table in BRef document Monitoring parameters depend on sector	Not Applicable No channelled emissions to air of dust therefore no changes to monitoring as required by the BREF.
6	Energy Efficiency: BAT is to use 6a and appropriate combination of common techniques	
	a.	Energy Efficiency Plan
	b.	Use of common techniques
Currently compliant The Operator has stated that an Energy Efficiency Plan is established for the business with KPIs, targets and actions implemented at site and department levels. It has also stated that a combination of all the techniques listed is used with the exception of solar power which is currently under evaluation.		
7	Water consumption and waste water discharge BAT is to use 7a and one or a combination of techniques in b to k	
	a.	Water recycling and/or reuse
	b.	Optimisation of water flow
	c.	Optimisation of water nozzles and hoses
	d.	Segregation of water streams
	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
Currently compliant The Operator has stated that they currently use a combination of techniques listed to reduce water consumption and wastewater discharge. These techniques are: • Water recycling and reuse in the brewer reservoir • Optimisation of water flow – thermostatic control valves, photocells, flow valves and automated valves • High-pressure cleaning		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	j.	Optimised design and construction of equipment and process areas	• Optimisation of chemical dosing and water use in cleaning-in-place (CIP) • Low-pressure foam and/or gel cleaning • Optimised design and construction of equipment and process areas • Cleaning of equipment as soon as possible The Operator has also stated that the operation of the wastewater treatment plant is under review and the potential for segregation of water streams will be incorporated into this review.
	k.	Cleaning of equipment as soon as possible	
8	Harmful substances. BAT is to use one or a combination of the techniques given below:		Currently compliant The Operator has stated that it uses a combination of techniques listed to reduce use of harmful substances. These include: • Proper selection of cleaning chemicals and/or disinfectants – approved at European business level in conjunction with chemical supplier • Optimised design and construction of equipment and process areas
	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	
9	BAT is to use refrigerants without ozone depletion potential and with a low global warming potential		Currently compliant The Operator uses ammonia for refrigeration which has a global warming potential of zero.
10	Increase resource efficiency, use one or a combination of the techniques given below		Currently compliant
	a.	Anaerobic digestion	
	b.	Use of residues	

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	c.	Separation of residues		The Operator uses a combination of techniques listed in BAT 10. These include: - Upflow anaerobic sludge blanket - Biogas generated on site is used in CHP plant to power the wastewater treatment site - Yeast is collected from the Installation for use in food manufacture or as animal feed - PWR system to recover residues and feed them back into the system The Operator has stated that it will undertake investigation of the phosphorous content of wastewater, although it expects that this is unlikely to be above 50 mg/l.
	d.	Recovery and reuse of residues from pasteuriser		
	e.	Phosphorus recovery as struvite		
	f.	Use of waste water for land spreading		
EMISSIONS TO WATER				
11	Prevent uncontrolled emissions to water, provide an appropriate buffer storage capacity for waste water			Currently compliant The Operator has stated that it has an appropriate buffer storage capacity which can hold 24 hours-worth of effluent at the ETP site and a further 6 to 8 hours of wastewater at the brewery site. The wastewater from the buffer storage is discharged following treatment and monitoring.
12	Reduce emissions to water, use an appropriate combination of the techniques given below			Currently compliant The Operator uses a several techniques to reduce emissions to water. These include:
	a.	Equalisation		
	b.	Neutralisation		
	c.	Physical separation		
	d.	Aerobic and/or anaerobic treatment		

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	e.	Nitrification and/or denitrification		- Equalisation/neutralisation - Initial balancing/pH correction carried out at the brewery site - Anaerobic treatment - UASB reactors used, followed by aerobic trickling filters 3-stage gravity settlement process which can be assisted by polytannate coagulate dosing
	f.	Partial nitrification		
	g.	Phosphorus recovery as struvite		
	h.	Precipitation		
	i.	Enhanced biological phosphorus removal		
	j.	Coagulation and flocculation		
	k.	Sedimentation		
	l.	Filtration		
	m.	Flotation		
	BAT-AELs for direct emissions to a receiving water body. Table 1 and associated notes. Associated monitoring given in BAT 4.			
Chemical oxygen demand COD	25–100 mg/L		Compliant in the future The existing ETP is compliant with the upper end of 100 mg/L for COD. The current limit of 450 mg/L will be reduced to 100mg/L. The existing ETP is compliant with the upper end of 50 mg/L for TSS. The current limit of 150 mg/L will be reduced to 50mg/L. Total nitrogen and total phosphorus are not currently measured. The Operator has committed to measuring and being compliant with total nitrogen and total phosphorous BAT-AELs from the compliance date.	
Total suspended solids TSS	4–50 mg/L			
Total nitrogen	2–20 mg/L			
Total phosphorus	0.2–2.0 mg/L			
NOISE				

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
13	Set up, implement, and regularly review a Noise Management Plan (as part of the EMS) where nuisance is expected and/or has been substantiated. Include ALL of the following:	
	I.	A protocol containing actions and timelines
	II.	A protocol for conducting noise emissions monitoring
	III.	A protocol for response to identified noise events, e.g. complaints
	IV.	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.
Not Applicable The Operator has stated that a Noise Management Plan is not required.		
14	Techniques to prevent, or where not practicable reduce noise and vibration emissions. Use one or a combination of the following:	
	a.	Appropriate location of equipment and buildings
	b.	Operational measures – see examples
	c.	Low-noise equipment – see examples
	d.	Noise control equipment – see examples
	e.	Noise abatement – see examples
Currently compliant The Operator has stated that the site is surrounded by an embankment which acts as noise abatement and layout is appropriate for noise control. Operational controls include a PPM schedule, use of experienced staff to operate equipment and closure of doors and windows. Noise levels are also considered when purchasing new equipment.		
ODOUR		
15	Set up, implement, and regularly review an Odour Management Plan (as part of the EMS) where nuisance is expected and/or has been substantiated. Include ALL of the following:	
	I.	Protocol with actions and timelines
	II.	Odour monitoring protocol
	III.	Odour complaint response plan/protocol
	IV.	Odour prevention and reduction programme
Not Applicable The Operator has stated that a risk assessment and modelling were carried out for the original application. These found that the overall risk of odour was not significant. They also consider the current odour management controls to be appropriate and no odour complaints have been recorded. On this basis, they		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			state that an odour management plan is not required in accordance with BAT15's applicability.
BAT CONCLUSIONS FOR BREWING			
18	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:		
	a.	Mashing-in at higher temperatures	Currently compliant The Operator has stated that they are currently compliant with the techniques listed to increase energy efficiency at breweries. These include: • Mashing-in at higher temperatures • Decrease of the evaporation rate during wort boiling • Increase of the degree of high-gravity brewing
	b.	Decrease of the evaporation rate during wort boiling	
	c.	Increase of the degree of high-gravity brewing	
Indicative	Indicative environmental performance levels for specific energy consumption Table 5		Currently compliant The Operator has stated that the average energy consumption for the installation was 0.028 MWh/hl of product for 2019.
	0.02-0.05 MWh/hl of products		
Indicative	Indicative environmental performance levels for specific waste water discharge Table 6		Currently compliant The Operator has stated that the average wastewater discharge for the installation was 0.27 m³/hl of product for 2019.
	0.15-0.50 m³/hl of products		
19	In order to reduce the quantity of waste sent for disposal, BAT is to use one or both of the techniques given below:		
	a.	Recovery and (re)use of yeast after fermentation	Currently compliant The Operator has stated that a percentage of yeast is reused in the fermentation process and that spent

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
				yeast is collected for use as a food ingredient or animal feed.
	b.	Recovery and (re)use of natural filter material		Currently compliant The Operator has stated that waste kieselguhr is applied as a soil improver via land injection.
20	In order to reduce channelled dust emissions to air, BAT is to use a bag filter or both a cyclone and a bag filter.			
	BAT-AELs for channelled dust emissions to air from handling and processing of malt and adjuncts Table			
	Dust	New plants < 2-5 mg/Nm ³	Existing plants < 2-10 mg/Nm ³	Not Applicable The Operator has stated that there are currently no channelled dust emissions to air from the handling and processing of malt and adjuncts therefore the BAT-AEL is not applicable.

Annex 2: Decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Waste Treatment Bref were published as Commission Implementing Decision EU 2018/1147 in the Official Journal of the EU on 17 August 2018. There are 53 BAT Conclusions. This checklist 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 following BAT Conclusions are deemed relevant as defined in the UK Regulators Interpretation Document and additional guidance. All other aspects of the Waste Treatment BAT Conclusions are considered already covered in the BAT Conclusions for the Food, Drink and Milk Industries.

All BAT Conclusions arising are listed by number in order below;

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
15	Use flaring only for safety reasons or non-routine operating conditions (OTNOC). Use <u>both</u> of the following:	
	a.	Correct plant design – see examples
	b.	Plant management including gas system balancing and advanced process control
16	Reduce emissions to air when flaring is unavoidable. Use <u>both</u> of the following:	
	a.	Correct design of flaring devices – see examples
	Compliant in the future	
	The Operator has stated that they will address the plant design during a review and subsequent upgrades to wastewater treatment plant by December 2023.	
	Compliant in the future	
	The Operator has stated that plant management and process controls will be addressed during a review and subsequent upgrades to wastewater treatment plant by December 2023.	
	Currently compliant	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			The Operator has stated in their response that the flare stack was installed specifically for its current purpose and was assessed during the original permit application.
	b.	Monitoring and recording as part of flare management – see examples	Compliant in the future The Operator has stated that the flow of gas sent for flaring is monitored continuously; however other parameters listed under BAT16 are not estimated. The process of flaring will be reviewed as part of the wastewater treatment plant review and subsequent upgrades, to be completed within the next two years.
EMISSIONS FROM ACCIDENTS AND INCIDENTS			
21	Techniques to prevent or limit the environmental consequences of accidents and incidents, as part of the Accident Management Plan. Use ALL of the following:		
	a.	Protection measures – see examples	Compliant in the future The Operator has stated that the Installation applies a high level of security to prevent access to unauthorised persons. Other protection systems (including fire and explosion) will be reviewed as part of the wastewater treatment plant review and upgrade process by the compliance deadline.
	b.	Management of incidental or accidental emissions	Currently compliant The Operator has stated that the Installation's EMS includes procedures and operational controls to manage emissions from accidents and incidents in accordance with BAT requirements.
	c.	Incident/accident registration and assessment system – see examples	Currently compliant The Operator has stated that a record is kept of environmental incidents including details of investigations and corrective actions. Investigations are carried out and records kept by both AB InBev and SUEZ, with findings and conclusions being shared.

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	CFCs	0.5-10	
BIOLOGICAL TREATMENT OF WASTE: ANAEROBIC METHODS			
38	Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements:		
	Implement a manual and/or automatic monitoring system to:		
	Ensure a stable digester operation	Compliant in the future The Operator has not reviewed the Installation's compliance against BAT38. An Improvement Condition has been added to the Operator's permit.	
	Minimise operational difficulties and associated odour emissions		
	Provide sufficient early warning of system failures		
	Windrow porosity, height and width		
	Monitoring and/or control of key waste and process parameters – examples below:		
	pH and alkalinity of the digester feed	Compliant in the future The Operator has not reviewed the Installation's compliance against BAT38. An Improvement Condition has been added to the Operator's permit.	
	Digester operating temperature		
	Hydraulic and organic loading rates of the digester feed		
	Volatile fatty acids and NH3 concentrations within digester & digestate		
	Biogas quantity, composition (e.g. H2S) and pressure		
	Liquid and foam levels in the digester		
	H2 formation potential upon mixing of flue-gas treatment residues/ashes with water		

Annex 3: Consultation on the draft decision where an Article 15(4) derogation has been applied

Not Applicable