BAT (Best Available Technique) Assessment

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1 Environmental Management System

BAT 1. In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the following features:

1.1 (i) Commitment, leadership and accountability

Commitment, leadership, and accountability of the management, including senior management, for the implementation of an effective EMS

Is this EMS feature fully implemented and up to date at your site?

Comments
The Brioche Pasquier Milton Keynes facility is part of the wider Brioche Pasquier Group corporate entity which seeks to align all its operations with the corporate commitments and strategies issued by the Group that underpin corporate commitments and performance in relation to sustainability and the environment. This includes effective governance at all production sites that help them to achieve regulatory compliance. There are also continuous improvement programmes at all sites that align with the corporate standards and commitments to environmental management - using one way of working, sharing of knowledge and commitment to the operation of the framework of an EMS. Ahead of the determination of the permit, the site will review its existing environmental governance documentation to ensure alignment with the Food and Drink general BAT conclusions 1 (i-xx) and that of ISO14001:2015. The site will continue to resource the framework of its documented system which identifies current roles and responsibilities with respect to the environment.
Actions

1.2 (ii) Analysis of context, interested parties, risks and legal requirements

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 as well as of the applicable legal requirements relating to the environment

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) The EMS describes the context of the overall organisation with risks and opportunities identified and evaluated by the site, which is reviewed and updated at least annually ahead of the management review. An Environmental Interested Parties Register identifies the environmental expectations and concerns from stakeholders relevant to the site and be reviewed annually. The stakeholders identified includes customers, authorities, certification bodies, employees and non-governmental organisations relevant to the site and its activities. The screened requirements identified are used by site to periodically evaluate compliance with the relevant stakeholder expectations (including regulatory reporting obligations). There are no specific additional requirements and/or specifications identified between customers or contracted partners and any new requirements would be identified before a new supply agreement is made. Where changes are then required to contractual agreements these will be documented and communicated to the relevant parties.
Actions
• BW to set up the annual review – completed 23/04/2025

1.3 (iii) Environmental policy

Development of an environmental policy that includes the continuous improvement of the environmental performance of the installation (this needs to be clear in the central policy vs the site)

Is this EMS feature fully implemented and up to date at your site?

Comments
The Brioche Pasquier UK Ltd Environmental Policy statement has an explicit commitment to continuous improvement.
Actions

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1.4 (iv) Objectives and performance indicators

Establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements

Is this EMS feature fully implemented and up to date at your site?

Comments
Brioche Pasquier Group's has clear sustainability objectives within a governance framework and related environmental KPIs for all sites to fulfil. Further specific KPIs and activities relevant to the EMS may be defined locally, according to the risk assessment, determined by the environmental aspect evaluation and site priorities that are in alignment with the sustainability agenda. Target reviews are conducted regularly by site and group. The latest targets encompass utility reduction (electricity and gas decrease) and water reduction targets per tonne of product. Associated opportunities and actions are identified, managed and tracked by site. The tracking of performance is facilitated with data on raw material yield, energy, water and waste water/treatment plant parameters using various platforms and reporting tools as a means of visualising relevant datasets. KPI reporting tools are reviewed daily by site and function, weekly and monthly by site leadership and working groups.
Actions

1.5 (v) Procedures and actions

Planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site has formal governance systems in place that ensure that agreed actions to deliver improvement programmes and/or mitigate environmental risk are managed through to completion. In addition to the embedded Business Improvement way of work and associated management tools, the site systematically identifies and periodically evaluates its environmental risks and opportunities. Risks requiring mitigation are targeted with plans to reduce the risk to as low as is reasonably possible, and the opportunities are reviewed with action plans documented and monitored, where relevant through the EHS function and associated forums. The assessment of compliance obligations, risks and opportunities for improvements is periodically reviewed based on KPI, audit and trend analysis. Actions that require investigation, corrective and preventative actions are managed through a structured tool.
Actions

1.6 (vi) Structures, roles and responsibilities

Determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) A Register of responsibilities is in place which covers responsibilities of leadership at the site that drives an agenda of continuous improvement and associated action plans are implemented and reviewed locally to ensure alignment. Clear accountability is embedded in the document together with responsibilities signed off by the relevant personnel currently in post. Accountability cannot be delegated but responsibility allocated to the appropriate function. Accountable people must therefore be able to demonstrate adequate awareness and understanding of the relevant environmental issues, risks and controls in their part of the organisation. These managers are required to give proportionate attention to each of them. Environment with performance is reviewed on a period basis in addition to the documented annual management review.
Actions

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1.7 (vii) Competence and awareness of staff

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)

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the organisation of environmental training across the site includes overarching general environmental training against a competency framework and specific operation control environmental procedures. The general induction (inclusive of environmental awareness – basic knowledge of the site and environmental issues and controls) is delivered to all personnel including contractors. Furthermore, personnel are signed off on operational control work instructions. These instructions have been identified by departmental matrices and include environmental considerations of the aspects of their work. These records are retained within personnel files. All SOPs are subject to period audit and verification. Further training and awareness training resources support the EMS and the management of future permit obligations.
Actions

1.8 (viii) Internal and external communication

Internal and external communication

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site has in place effective methods for external communication on environmental matters including dialogue with regulatory bodies and authorities. Relevant records of communication with external stakeholders such as suppliers, neighbours, customers and authorities are retained. The site has an established framework for handling complaints. This consists of the required documentation and the tracking of investigation and any associated actions to close out. The process includes the recording of communication of actions taken with the relevant stakeholders and escalation within Group.
Actions

1.9 (ix) Employee involvement

Fostering employee involvement in good environmental management practices

Is this EMS feature fully implemented and up to date at your site?

Comments
There are various forums and reporting systems where employees can raise their concerns or share good practice with management team or with their colleagues. All employees have the opportunity to contribute through the tiered systems of dialogue and associated communication points. The fostering of employee involvement is an inherent part of site induction and dialogue with individuals, in addition to specific awareness sessions.
Actions

1.10 (x) Manual and written procedures

Establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the operator has an established documented manual, which provides a route map to other related procedures, and related documentation that defines the operational control and record requirements of the system. The core documents are described within the manual management. The site retains relevant documentation related to permits, legal obligations and licenses.

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Actions

1.11 (xi) Operational planning and process control

Effective operational planning and process control

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site has an EMS incorporating the requirements of ISO14001:2015. This defines the operational control and record requirements of the system that has been adopted and tailored to the site. Documented operational planning and process controls are in accordance with the anticipated permit requirements and the operational techniques have been described within the permit application supporting documents. The site has developed relevant operational control procedures, risk assessments, set various specifications at various process steps to comply with its legal requirements and its significant environmental aspects, and to deliver on its objectives and targets. These include but are not limited to emergency response procedures waste, chemicals, and infrastructure checks.
Actions

1.12 (xii) Maintenance programmes

Implementation of appropriate maintenance programmes

Is this EMS feature fully implemented and up to date at your site?

Comments
Brioche Pasquier operate asset and food safety standards to ensure that buildings and equipment are maintained to a good standard. This includes (but is not limited to) emergency protection equipment and other equipment that is used in the management of significant environmental aspects, health and safety, and where there are legal requirements regarding its maintenance. Formal electronic preventive maintenance programmes are in place across the engineering and facilities functions which together covers all buildings, equipment and infrastructure. The system is prioritised based on an assessment of risk in relation to the possible impact on the environment, quality or safety of product and people. The programme includes frequencies and replacement inventory requirements of certain environmentally critical assets. All equipment related to environmentally critical areas (such as flow meters, effluent and utility distribution) are managed by engineering and facilities in partnership with competent third party providers. Where it is identified that maintenance or inspection activities are not performed at the defined frequencies, a non-conformance is raised.
Actions

1.13 (xiii) Emergency preparedness and response

Emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site has business continuity and emergency response plans that are documented, trained out and tested. The site is fenced to prevent unauthorised access and operates manned 24-hour security together with CCTV covering the facility. The site assesses fire and explosion risk as a part of its response to DSEAR, asset and fire protection. Fire prevention measures are employed to reduce risk to life and reduce risk low as is reasonably practicable. An accident plan is present on site which includes emergency procedures that are trained out to relevant personnel. Emergency response plans are subject to periodic testing and all critical response equipment are identified and inspected as part of a planned schedule.
Actions

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1.14 (xiv) Lifecycle environmental impacts

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

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the Project Management processes consider environmental impacts as part of the change management process.
Actions

1.15 (xv) Monitoring and measurement programme

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

Is this EMS feature fully implemented and up to date at your site?

Comments
The site has in place a monitoring and measurement programme that is determined and prescribed (monitoring standards, frequency and reporting) by its compliance obligations including but not limited to its anticipated EPR permit conditions and the Anglian Water consent. Site KPI's and associated action plans are rolled out during the annual target process. The targets encompass utility reduction (electricity and gas) and water with associated actions identified, managed, visualised and tracked through a number of platforms. The site has a system of meter reads and submetering. KPI reporting tools are reliably populated and formally reviewed daily and weekly by site and monthly by Group. Indicators tracked by site include water consumption and effluent discharge.
Actions

1.16 (xvi) Benchmarking

Application of sectoral benchmarking on a regular basis

Is this EMS feature fully implemented and up to date at your site?

Comments
Annual reports on KPI data allow for benchmarking between sites within the Brioche Pasquier Group and across the sector.
Actions

1.17 (xvii) Auditing

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

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site will resource an internal audit programme that demonstrates the effectiveness of the EMS. The frequency of audits is defined according the relative risk and importance of the area/issue taking into account the previous audit results or changes made since the last audit. The results of the internal audit will be documented and include evidence of the conformity as well as non-conformity together with proposals for any improvements. Corrective actions and root cause analysis is undertaken where relevant.
Actions

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1.18 (xviii) Nonconformities and corrective actions

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

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) and (xvii) actions arising from audits or inspections or as a result of incident investigations are recorded and tracked to close out.
Actions

1.19 (xix) Management review

Periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness

Is this EMS feature fully implemented and up to date at your site?

Comments
As BAT 1 (i) the site undertakes documented management reviews which a follow a predetermined fixed agenda to ensure that all activities within the system are reviewed and evaluated. An action plan (including timescales, responsibility and status) of agreed actions is documented and tracked to completion. The records of the management review are communicated to relevant employees and a record retained.
Actions

1.20 (xx) Cleaner techniques

Following and taking into account the development of cleaner techniques

Is this EMS feature fully implemented and up to date at your site?

Comments
Heads of function are responsible for tracking developments in technology in their areas including the identification of applicable cleaner technologies, alongside the SHE function at both site and Group level. Brioche Pasquier is part of industry forums and working parties and share innovation and learning across sites and within the sector.
Actions

2 Water and Effluent Emissions

2.1 BAT 3: Water emissions monitoring

BAT 3: For relevant emissions to water as identified by the inventory of wastewater 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).

Do you monitor key process parameters at key locations for all identified relevant emissions to water?

Comments
Effluent KPIs are monitored and reported within the business. The site reports daily flow data to sewer in addition to effluent plant operator periodically checks on final composite and spot samples on the final outfall COD, suspended solids, in addition to inline pH and flow monitoring. Anglian Water sample periodically for charging and compliance purposes. An SLA is in place with a third party specialist to review and optimised equipment performance. See BAT 3 response document
Actions

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2.2 BAT 4: Frequency of water emissions monitoring

BAT 4. BAT is to monitor emissions to water with at least the frequency given below and in accordance with EN standards.

If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

2.2.1 Chemical oxygen demand (COD)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Chemical oxygen demand (COD) [6] [7]	No EN standard available	Once every day [8]	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.
[7] TOC monitoring and COD monitoring are alternatives. TOC monitoring is the preferred option because it does not rely on the use of very toxic compounds.
[8] If the emission levels are proven to be sufficiently stable, a lower monitoring frequency can be adopted but in any case, at least once every month.

Is chemical oxygen demand (COD) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.2 Total nitrogen (TN)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Total nitrogen (TN) [6]	Various EN standards available (e.g. EN 12260, EN ISO 11905-1)	Once every day [8]	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.
[8] If the emission levels are proven to be sufficiently stable, a lower monitoring frequency can be adopted but in any case, at least once every month.

Is total nitrogen (TN) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.3 Total organic carbon (TOC)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Total organic carbon (TOC) [6] [7]	EN 1484	Once every day [8]	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.
[7] TOC monitoring and COD monitoring are alternatives. TOC monitoring is the preferred option because it does not rely on the use of very toxic compounds.
[8] If the emission levels are proven to be sufficiently stable, a lower monitoring frequency can be adopted but in any case, at least once every month.

Is total organic carbon (TOC) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.4 Total phosphorus (TP)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with

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Total phosphorus (TP) [6]	Various EN standards available (e.g. EN ISO 6878, EN ISO 15681-1 and -2, EN ISO 11885)	Once every day [8]	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.
[8] If the emission levels are proven to be sufficiently stable, a lower monitoring frequency can be adopted but in any case, at least once every month.

Is total phosphorus (TP) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.5 Total suspended solids (TSS)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Total suspended solids (TSS) [6]	EN 872	Once every day [8]	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.
[8] If the emission levels are proven to be sufficiently stable, a lower monitoring frequency can be adopted but in any case, at least once every month.

Is total suspended solids (TSS) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.6 Biochemical oxygen demand (BOD_n)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Biochemical oxygen demand (BODn) [6]	EN 1899-1	Once every month	BAT 12

[6] The monitoring only applies in the case of a direct discharge to a receiving water body.

Is biochemical oxygen demand (BODn) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

2.2.7 Chloride (Cl^-)

Substance/parameter	Standard(s)	Minimum monitoring frequency	Monitoring associated with
Chloride (Cl^-)	Various EN standards available (e.g. EN ISO 10304-1, EN ISO 15682)	Once every month	-

Is Chloride (Cl^-) monitored with at least the stated frequency and in accordance with EN standards?

Comments
Not applicable, the site does not discharge trade effluent directly to controlled water.
Actions

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2.3 BAT 8: Harmful substances – cleaning & disinfection

BAT 8. 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.

2.3.1 8a) Proper selection of cleaning chemicals and/or disinfectants

Avoidance or minimisation of the use of cleaning chemicals and/or disinfectants that are harmful to the aquatic environment, in particular priority substances considered under the Water Framework Directive 2000/60/EC.

When selecting the substances, hygiene and food safety requirements are taken into account.

Have you implemented proper selection of cleaning chemicals and/or disinfectants to prevent or reduce the use of harmful substances?

Comments
In partnership with specialist third party advisors the site has identified the range and application of cleaning chemicals, plus other chemicals that are used for hygiene, water and effluent treatment. The site has single source providers of hygiene chemicals (and other chemical consumables required by site) covering all operations from a specialist supplier. The Group periodically reviews suppliers and issue a Service Level Agreement that requires the provider to identify, agree and only deploy chemicals that have been selected for their efficiency and safety from a technical, health and safety and environmental harm perspective. The SLA requires that they undertake a rolling review and assessment of chemical usage, in partnership with site representatives, to ensure appropriate stocks of chemicals are available on site and usage is in line with budget/production levels. The provider is contractually bound to identify reduction opportunities that are evaluated by site. This includes but is not limited to process validation exercises, problem solving and optimisation. Any changes to the chemical inventory are assessed through the site's change management procedure before use. This is to ensure that their use and disposal via the effluent drains cannot impact the site's ability to comply with its consent. The site chemical inventory will be assessed and benchmarked through the Surface Water Impact Assessment. This is to identify specific materials that may contain substances considered harmful to the aquatic environment or listed under the Water Framework Directive 2000/60/EC.
Actions

2.3.2 8b) Reuse of cleaning chemicals in cleaning-in-place (CIP)

Collection and reuse of cleaning chemicals in CIP.

When reusing cleaning chemicals, hygiene and food safety requirements are taken into account.

Have you implemented reuse of cleaning chemicals in cleaning-in-place (CIP) to prevent or reduce the use of harmful substances?

Comments
Site has various CIP systems covering a range of processing and conveying equipment. Where reuse and/or recovery of chemicals is possible from a food safety perspective these have been implemented, such as recovery of the final rinse for use in pre-rinse/make up e.g. lines, silos, tanks. For all systems employed the opportunity to recover chemicals was included within the design specification and is periodically reviewed in partnership with the hygiene chemicals provider. Review mechanisms are in place to review the chemical use (planned against budget) and function of the dosing system through validation exercises to minimise dosing/rinse times. Additional COSHH training is implemented in partnership with the chemical supplier to improve knowledge and effectiveness in chemical handling, dispensing and deployment to further minimise use as well as reduce potential harm.
Actions

2.3.3 8c) Dry cleaning

Removal of as much residual material as possible from raw materials and equipment before they are cleaned with liquids, e.g. by using compressed air, vacuum systems or catchpots with a mesh cover.

Applicability: Generally applicable.

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Have you implemented dry cleaning to prevent or reduce the use of harmful substances?

Comments
Cleaning methods employed are integral within the documented procedures in each area. The operators are trained in clear, unambiguous cleaning procedures and applying a “Clean As You Go” policy. Adherence to these requirements is further enforced through process confirmation. This encourages operators to challenge each other via inspections and behavioural based observations. Where possible dry-cleaning techniques are used. Cleaning procedures specify removal of solid debris prior to washing.
Actions

2.3.4 8d) Optimised design and construction of equipment and process areas

The equipment and process areas are designed and constructed in a way that facilitates cleaning. When optimising the design and construction, hygiene requirements are taken into account.

Applicability: Generally applicable.

Have you implemented optimised design and construction of equipment and process areas to prevent or reduce the use of harmful substances?

Comments
The site is relatively new and has recently expanded so equipment and process design as well as the implementation of this design, have taken into account the hygiene requirements of the process and ensures efficient cleaning. Any new equipment installations go through HAZOP and HACCP processes to identify any potential issues and opportunities. Optimisation opportunities are identified periodically in partnership with the operators and hygiene chemical supplier.
Actions

2.4 BAT 11: Waste water buffer storage capacity

BAT 11. In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water.

Description: The appropriate buffer storage capacity is determined by a risk assessment (taking into account the nature of the pollutant(s), the effects of these pollutants on further waste water treatment, the receiving environment, etc.).

The waste water from this buffer storage is discharged after appropriate measures are taken (e.g. monitoring, treatment, reuse).

Applicability: For existing plants, the technique may not be applicable due to lack of space and/or due to the layout of the waste water collection system.

Have you implemented an appropriate buffer storage capacity for waste water to prevent uncontrolled emissions to water?

Comments
See BAT 11 Supporting Document.
Actions

2.5 BAT 12: Reducing emissions to water

BAT 12. In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below.

Preliminary, primary and general treatment

2.5.1 12a) Equalisation

Balancing of flows and pollutant loads by using tanks or other management techniques.

Typical pollutants targeted: All pollutants

Applicability: Generally applicable.

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Have you implemented equalisation to reduce emissions to water?

Comments
There is no requirement for the balancing of flow of effluent from the factory to comply with the site's trade effluent consent. The inherent dilution and buffering of the site discharge within the sewer means that buffering in accordance with BAT intention is effectively achieved within the municipal system due to the low volumes of effluent discharged at the site.
Actions

2.5.2 12b) Neutralisation

The adjustment of the pH of waste water to a neutral level (approximately 7) by the addition of chemicals. Sodium hydroxide (NaOH) or calcium hydroxide ($Ca(OH)_2$) is generally used to increase the pH, whereas sulphuric acid (H_2SO_4), hydrochloric acid (HCl) or carbon dioxide (CO_2) is generally used to decrease the pH. The precipitation of some substances may occur during neutralisation.

Typical pollutants targeted: All pollutants

Applicability: Generally applicable.

Have you implemented neutralisation to reduce emissions to water?

Comments
There is no requirement for pH adjustment/trimming prior to final discharge of treated effluent to ensure routine compliance.
Actions

2.5.3 12c) Physical separation

E.g. screens, sieves, grit separators, oil/fat separators, or primary settlement tanks

Typical pollutants targeted: Gross solids, suspended solids, oil/grease

Applicability: Generally applicable.

Have you implemented physical separation to reduce emissions to water?

Comments
Gross solids are prevented from entering the effluent stream through the deployment of catch pots together with a 'Clean as You Go' approach to the use of dry cleaning methods for the sweeping of debris and floor wastes.
Actions

2.5.4 12d) Aerobic and/or anaerobic treatment (secondary treatment)

E.g. activated sludge process, aerobic lagoon, upflow anaerobic sludge blanket (UASB) process, anaerobic contact process, membrane bioreactor

Typical pollutants targeted: Biodegradable organic compounds

Applicability: Generally applicable.

Have you implemented aerobic and/or anaerobic treatment to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment. This technology is not feasible at site due to the current loading and volumes of effluent generated however, the feasibility and cost benefit of incorporating this technology is periodically reviewed. Any change would be subject to a variation in the permit.

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Actions

Nitrogen removal

2.5.5 12e) Nitrification and/or denitrification

A two-step process that is typically incorporated into biological waste water treatment plants. The first step is the aerobic nitrification where microorganisms oxidise ammonium (NH_4^+) to the intermediate nitrite (NO_2^-), which is then further oxidised to nitrate (NO_3^-). In the subsequent anoxic denitrification step, microorganisms chemically reduce nitrate to nitrogen gas.

Typical pollutants targeted: Total nitrogen, ammonium/ammonia

Applicability: Nitrification may not be applicable in the case of high chloride concentrations (e.g. above 10 g/l). Nitrification may not be applicable when the temperature of the waste water is low (e.g. below 12 °C).

Have you implemented nitrification and/or denitrification to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent post DAF plant without the need for further on-site treatment.
Actions

2.5.6 12f) Partial nitritation — Anaerobic ammonium oxidation

A biological process that converts ammonium and nitrite into nitrogen gas under anaerobic conditions. In waste water treatment, anaerobic ammonium oxidation is preceded by a partial nitrification (i.e. nitritation) that converts about half of the ammonium (NH_4^+) into nitrite (NO_2^-).

Typical pollutants targeted: Total nitrogen, ammonium/ammonia

Applicability: May not be applicable when the temperature of the waste water is low.

Have you implemented partial nitritation — anaerobic ammonium oxidation to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment.
Actions

Phosphorus recovery and/or removal

2.5.7 12g) Phosphorus recovery as struvite

Phosphorus is recovered by precipitation in the form of struvite (magnesium ammonium phosphate).

Typical pollutants targeted: Total phosphorus

Applicability: Only applicable to waste water streams with a high total phosphorus content (e.g. above 50 mg/l) and a significant flow.

Have you implemented phosphorus recovery as struvite to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment.
Actions

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2.5.8 12h) Precipitation

Typical pollutants targeted: Total phosphorus

Applicability: Generally applicable.

Have you implemented precipitation to reduce emissions to water?

Not Applicable. The site can discharge in routine compliance with its consent post DAF plant without the need for further on-site treatment.
Actions

2.5.9 12i) Enhanced biological phosphorus removal

A combination of aerobic and anaerobic treatment to selectively enrich polyphosphate-accumulating microorganisms in the bacterial community within the activated sludge. These microorganisms take up more phosphorus than is required for normal growth.

Typical pollutants targeted: Total phosphorus

Applicability: Generally applicable.

Have you implemented enhanced biological phosphorus removal to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent post DAF plant without the need for further on-site treatment.
Actions

Final solids removal

2.5.10 12j) Coagulation and flocculation

Coagulation and flocculation are used to separate suspended solids from waste water and are often carried out in successive steps. Coagulation is carried out by adding coagulants with charges opposite to those of the suspended solids. Flocculation is carried out by adding polymers, so that collisions of microfloc particles cause them to bond to produce larger flocs.

Typical pollutants targeted: Suspended solids

Applicability: Generally applicable.

Have you implemented coagulation and flocculation to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment.
Actions

2.5.11 12k) Sedimentation

The separation of suspended particles by gravitational settling.

Typical pollutants targeted: Suspended solids

Applicability: Generally applicable.

Have you implemented sedimentation to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment.

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Actions

2.5.12 12l) Filtration

The separation of solids from waste water by passing it through a porous medium, e.g. sand filtration, microfiltration, ultrafiltration

Typical pollutants targeted: Suspended solids

Applicability: Generally applicable.

Have you implemented filtration to reduce emissions to water?

Comments
The plant can achieve consent without the need of this technology.
Actions

2.5.13 12m) Flotation

The separation of solid or liquid particles from waste water by attaching them to fine gas bubbles, usually air. The buoyant particles accumulate at the water surface and are collected with skimmers.

Typical pollutants targeted: Suspended solids

Applicability: Generally applicable.

Have you implemented flotation to reduce emissions to water?

Comments
Not Applicable. The site can discharge in routine compliance with its consent without the need for further on-site treatment.
Actions

2.6 BAT-associated emission levels for direct emissions to a receiving water body

The BAT-associated emission levels (BAT-AELs) for emissions to water given in Table 1 apply to direct emissions to a receiving water body.

The BAT-AELs apply at the point where the emission leaves the installation.

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]

[17] No BAT-AEL applies for biochemical oxygen demand (BOD). As an indication, the yearly average BOD_5 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.

[19] The upper end of the range is 125 mg/l for dairies as daily averages only if the abatement efficiency is ≥ 95 % as a yearly average or as an average over the production period.

[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.

[23] The upper end of the range is 4 mg/l for dairies as daily averages only if the abatement efficiency is ≥ 95 % as a yearly average or as an average over the production period.

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2.6.1 BAT-AEL for COD

Parameter	BAT-AEL (15) (16) (daily average)
Chemical oxygen demand (COD) [17] [18]	25-100 mg/l [19]

Do you meet the BAT-AEL for chemical oxygen demand (COD)?

Comments
Not applicable –the site does not discharge directly to surface water.
Actions

2.6.2 BAT-AEL for TSS

Parameter	BAT-AEL (15) (16) (daily average)
Total suspended solids (TSS)	4-50 mg/l [20]

Do you meet the BAT-AEL for total suspended solids (TSS)?

Comments
Not applicable –the site does not discharge directly to surface water.
Actions

2.6.3 BAT-AEL for TN

Parameter	BAT-AEL (15) (16) (daily average)
Total nitrogen (TN)	2-20 mg/l [21] [22]

Do you meet the BAT-AEL for total nitrogen (TN)?

Comments
Not applicable –the site does not discharge directly to surface water.
Actions

2.6.4 BAT-AEL for TP

Parameter	BAT-AEL (15) (16) (daily average)
Total phosphorus (TP)	0,2-2 mg/l [23]

Do you meet the BAT-AEL for total phosphorus (TP)?

Comments
Not applicable –the site does not discharge directly to surface water.
Actions

3 Air emissions

3.1 BAT 5: Frequency of air emissions monitoring

BAT 5. BAT is to monitor channelled emissions to air with at least the frequency given below and in accordance with EN standards.

3.1.1 Dust

Substance/parameter	Specific process	Standard(s)	Minimum monitoring frequency	Monitoring associated with

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Dust	Drying processes	EN 13284-1	Once every year	BAT 23

Is dust monitored with at least the stated frequency and in accordance with EN standards?

Comments
There is no current requirement to monitor emissions that are released to the from the process.
Actions

3.2 BAT 9: Harmful Substances – Refrigerants

BAT 9. 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.

Description: Suitable refrigerants include water, carbon dioxide or ammonia.

Have you implemented the use of refrigerants without ozone depletion potential and with a low global warming potential?

Comments
The site has information within an F-Gas register in a format that is consistent with the F-Gas Regulations. F-gases are only associated air conditioning equipment with all process cooling served by two ammonia plants. The site has in place operations and maintenance programmes determined by the gas type, charge weight and Global Warming Potential that are under contract with a competent third party. The provider will periodically review the compatibility of existing assets to replace with a gas of lower GWP or run to fail and replacement with equipment that use the lowest practical GWP refrigerant gas.
Actions

3.3 BAT 13: Noise management plan

BAT 13. 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.

Applicability: BAT 13 is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated.

Does your noise management plan incorporate all the required elements:

- ☐ **a protocol containing actions and timelines?**
- ☐ **a protocol for conducting noise emissions monitoring?**
- ☐ **a protocol for response to identified noise events, e.g. complaints?**
- ☐ **a noise reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures?**

Comments
The site does not have a history of substantiated noise complaints either directly to the site or via the regulator. There is no formal noise management plan implemented however, within the site governance systems elements of a noise management plan are in place. The site has a formal complaints procedure that requires updating to state that in the event of an issue this would be recorded and investigated.
Actions

3.4 BAT 14: Noise emissions

BAT 14. 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.

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3.4.1 14a) Appropriate location of equipment and buildings

Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating buildings' exits or entrances.

Applicability: For existing plants, the relocation of equipment and buildings' exits or entrances may not be applicable due to lack of space and/or excessive costs.

Are equipment and buildings appropriately located to reduce noise emissions?

Comments
The 'box within a box' design of the site means there is limited potential for breakout of noise from the manufacturing and warehouse operation. The majority of sources of operational noise is therefore from chillers/HVAC equipment and from HGV movements. Noise nuisance potential from both vehicle movements and fixed plant have been assessed as part of the planning application and no adverse impact predicted. Plant and equipment are subject to PPM and condition-based inspection that would detect abnormalities in operation that could lead to excessive noise. The site operates a closed-door policy with respect to all areas of production (loading operations excepted). The site is operated by trained personnel that are aware of the potential for the site to generate off-site impacts including statutory nuisance (noise, odour, dust, vermin, light, vibration etc). Noise is a consideration of the activities of contractors and projects and is routinely assessed as part of the evaluation of RAMS during planned and reactive construction and maintenance activities. All areas of the site are subject to inspection and process confirmation audits that would identify abnormal operations/activities that may give rise to noise nuisance potential.
Actions

3.4.2 14b) Operational measures

These include:

(i) improved inspection and maintenance of equipment;
(ii) closing of doors and windows of enclosed areas, if possible;
(iii) equipment operation by experienced staff;
(iv) avoidance of noisy activities at night, if possible;
(v) provisions for noise control, e.g. during maintenance activities.

Applicability: Generally applicable.

Have you implemented operational measures to reduce noise emissions?

Comments
There is no active management programme required to address noise reduction measures. Consideration of noise is part of equipment specification, which would identify opportunities to include the requirement for low noise equipment such as fans, pumps and compressors, where this is applicable for both temporary or new equipment. Certain activities are scheduled during normal operational hours, which will have the effect of controlling noise nuisance potential. Equipment performance is part of the procurement specification which will consider the use and applicability of low noise equipment options or equipment will be otherwise enclosed. The design of any new plant will include features to reduce plant noise leakage, sound suppression to external equipment and inherently quiet fan assemblies to ensure no increase on the current background noise.
Actions

3.4.3 14c) Low-noise equipment

This includes low-noise compressors, pumps and fans.

Applicability: Generally applicable.

Have you implemented low-noise equipment to reduce noise emissions?

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Comments
There is no active management programme required to address noise reduction measures. Consideration of noise was part of equipment specification within the plant design and would be part of any new project, which would identify opportunities to include the requirement for low noise equipment such as fans, pumps and compressors, where this is applicable for both temporary or new equipment.
Actions

3.4.4 14d) Noise control equipment

This includes:

(i) noise reducers;
(ii) insulation of equipment;
(iii) enclosure of noisy equipment;
(iv) soundproofing of buildings.

Applicability: May not be applicable to existing plants due to lack of space.

Have you implemented noise control equipment to reduce noise emissions?

Comments
The requirement for noise control equipment has not been identified. Consideration of noise was part of equipment specification within the plant design and would be part of any new project, which would identify opportunities to include the requirement for low noise equipment such as fans, pumps and compressors, where this is applicable for both temporary or new equipment.
Actions

3.4.5 14e) Noise abatement

Inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).

Applicability: Applicable only to existing plants, as the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may not be applicable due to lack of space.

Have you implemented noise abatement to reduce noise emissions?

Comments
The requirement for noise control equipment has not been identified. Consideration of noise was part of equipment specification within the plant design and would be part of any new project, which would identify opportunities to include the requirement for low noise equipment such as fans, pumps and compressors, where this is applicable for both temporary or new equipment. Environmental noise would be driven by the need to meet both planning and permitting which, if the need for a technical assessment is demonstrated, would identify further mitigation measures beyond the existing control exercised.
Actions

3.5 BAT 15: Odour emissions

BAT 15. 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.

Applicability: BAT 15 is only applicable to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.

Does your odour management plan incorporate all of the required elements:

☒ a protocol containing actions and timelines?

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☒ a protocol for conducting odour monitoring. It may be complemented by measurement/estimation of odour exposure or estimation of odour impact?

☒ a protocol for response to identified odour incidents, e.g. 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?

Comments
Whilst odour is not considered a significant issue at the site, odour nuisance potential which considers on-site sources and local receptors, is periodically reviewed as part of the EMS. Odour is a specific component of the site checks, and a complaints and escalation procedure is in place.
Actions

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4 Efficiency

4.1 BAT 2: Environmental impact inventory

BAT 2. In order to increase resource efficiency and to reduce emissions, BAT is to 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.

Applicability: The level of detail of the inventory will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have.

At this stage, only indicate whether your environmental management system incorporates this information or not. Further details on the specific information required will be explored later in the assessment.

4.1.1 Production processes

Does your environmental management system incorporate information about the food and milk production processes, including:

☐ **simplified process flow sheets that show the origin of the emissions?**

☐ **descriptions of process-integrated techniques and waste water/waste gas treatment techniques to prevent or reduce emissions, including their performance?**

☐ **any/all other relevant information about the food and milk production processes?**

Comments
The EMS identifies and documents the site's interactions with the environment and references the site's normal, abnormal and emergency emissions. This exercise is informed by the input/output process flows that are core to the management of food hygiene and safety through the Hazard Analysis and Critical Control Point (HACCP) review process. HACCP plans show the input of raw materials and utilities (including heat and water) in addition to origin of emissions (including waste) from the production process. The site measures ingredient through mass balance calculation for efficiency and traceability. The main production processes are semi-automated, optimised and continually reviewed from a yield and efficiency perspective. There are appropriate operational control procedures in place that are integrated to manage and control emissions in accordance with plant performance objectives supported by a comprehensive metering, monitoring, measurement and KPI programme that are aligned with corporate standards and integrated within the governance systems at the site. The operator anticipates that the EPR permit will require requires the periodic review and reporting to the regulator of water, energy, raw materials and waste.
Actions

4.1.2 Water consumption and usage

Does your environmental management system incorporate information about water consumption and usage (e.g. flow diagrams and water mass balances), and identification of actions to reduce water consumption and waste water volume?

Comments
The site has detailed knowledge of the water delivery, treatment and distribution network. Through the mapping of consumption via targeting submetering, the site is able to account for consumption and targets a utilisation. Data allows the site to regularly review its water use against budget and from a mass balance perspective. In addition to performance with respect to utility KPIs reviewed regularly Improvement initiatives are continuously reviewed and delivered through the continuous improvement process and in conjunction with third-party providers where appropriate.
Actions

4.1.3 Waste water streams

Does your environmental management system incorporate information about the quantity and characteristics of the waste water streams, such as:

a) average values and variability of flow, pH and temperature;

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b) average concentration and load values of relevant pollutants/parameters (e.g. TOC or COD, nitrogen species, phosphorus, chloride, conductivity) and their variability?

Comments
All sources of process effluent have been identified, quantified and characterised with a monitoring programme that includes the continuous monitoring of the influent and final outfall to sewer. Average daily concentrations of key consent parameters are obtained and trended and reporting of performance to the engineering manager, SHE lead and SLT. Site operates in routine compliance with its Anglian Water consent parameters. Operating process parameters have been established and controls implemented to allow the daily reporting of indicators of plant performance to inform operations. The site has suitable and sufficient data on the flow and loading of the sources of process effluent streams. Deployment of probes at critical points within the process and wastewater infrastructure to inform operations on factors that may impact the ability to release effluent (both normal and abnormal). Escalation and reporting procedures are in place and physical controls that prevent discharge to sewer in the event of incident. The consequential impact of normal, abnormal and emergency releases and the ability to control and minimise impact on the plant and/or receiving water are understood and effectively mitigated through the management, monitoring and maintenance of the component drainage and discharge assets. A change management process is in place that would prompt for the review of these.
Actions

4.1.4 Waste gas streams

Does your environmental management system incorporate information about the characteristics of the waste gas streams, such as:

a) average values and variability of flow and temperature;
b) average concentration and load values of relevant pollutants/parameters (e.g. dust, TVOC, CO, NOX, SOX) and their variability;
c) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, water vapour, dust).

Comments
T there is no current obligation to monitor releases to atmosphere. With respect to combustion plant emissions, the combustion process is optimised and periodically monitored through the inspection of burner controls. This is to ensure there is complete combustion to minimise the formation of carbon monoxide.
Actions

4.1.5 Resource efficiency

Does your environmental management system incorporate information about:

☐ **energy consumption and usage,**

☐ **the quantity of raw materials used,**

☐ **the quantity and characteristics of residues generated, and**

☐ **identification of actions for continuous improvement of resource efficiency**

Comments
Energy consumption, raw materials and waste streams are monitored and tracked. The information collected is used to generate recommendations for improvement projects, which are taken forward for business case/capex where feasible. The site monitors and reports it's absolute and relative performance at a group level on a monthly basis, this drives continual improvement and allows changes to be flagged and investigated. The framework of the EMS and Business Improvement programmes provides the governance for the setting, reporting and reviewing of objectives and targets with respect to consumption and usage.
Actions

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4.1.6 Monitoring strategy

Does your environmental management system incorporate information on the 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).

Comments
Energy consumption, raw materials and waste (and food waste) streams are monitored and tracked as close to the point of use/generation as is feasible. The site has a comprehensive sub-meter network covering the majority of electricity, gas and water use which is subject to a CAPEX in 2024 that will allow the visualisation, recording and trending alongside existing Building Management System and local SCADA. The site reports key performance indicator data on a daily basis for the site and on a monthly basis at Group level for review. This allows ongoing trends to be tracked and managed. This reporting is sent to Group level on a monthly basis ahead of annual collation and includes all food losses – food content of general waste, food waste and losses to drain (through effluent analysis). Business Improvement teams are employed to provide a structured approach to diagnose both the problems and opportunities in all facets of the business. They provide the support framework and analytical knowledge and tools to facilitate this in all aspects of the site operations. Key parameters are the reduction of energy, water and other utility consumption, food waste, waste and the net impact that has on the environmental effect from the business. The site has a prescriptive monitoring plan that provides an audit trail for data down to the individual item of plant/equipment as appropriate. The governance framework for the environmental monitoring and improvement programme is embedded within the site governance systems.
Actions

4.2 BAT 6: Energy efficiency

BAT 6. In order to increase energy efficiency, BAT is to use BAT 6a and an appropriate combination of the common techniques listed in technique b below.

4.2.1 6a) Energy efficiency plan

An energy efficiency plan, as part of the environmental management system, entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example for the specific energy consumption) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the installation.

Do you have an energy efficiency plan incorporating:

☐ **defined and calculated specific energy consumption (SEC) of the activity/activities?**

☐ **key performance indicators that are set on an annual basis?**

☐ **planned periodic improvement targets and related actions?**

Comments
While there is no single document that describes the site-specific Energy Efficiency Plan, continuous improvement in energy efficiency is embedded within all onsite activities and fundamental to the monitoring and targeting of site utility performance. Energy consumption is trended alongside other key performance metrics and can be visualised via various dashboards which are available to relevant site personnel. These and other systems are also used by site team to monitor energy and other utility meters on site. Energy efficiency improvements are mandated by Group, this includes annual energy efficiency targets. The steps taken to increase energy efficiency has led to improvements in energy efficiency recorded and reported. Utility use is reviewed regularly and progress against targets monthly on a period basis on site and corporately via utility and efficiency forums. The trending and review of performance is undertaken monthly at site. The corporate targeting setting and KPI reporting requirements define how energy is reported and tracked against a benchmark SEC across the business. KPI and utility budgets are set annually in consultation with Group and the Continuous

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Improvement governance process provides the framework for the identification and delivery of specific improvement measures. The site maintains records of completed, ongoing and planned energy efficiency improvement projects. These opportunities and progress are reviewed on a monthly basis. Periodic energy/sustainability surveys have been completed at site which contribute to the opportunities database. This provides evidence of action that is reported within the corporate Purpose Led Performance sustainability report in alignment with Group commitments. The site encompasses all applicable techniques identified in BATc 6 alongside others in cooperation with specialist utility champions within the business
Actions

4.2.2 6b) Burner regulation and control

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented burner regulation and control to increase energy efficiency?

Comments
All combustion plant operations are optimised through burner control 6 monthly annual balancing and efficiency testing, PPM and inspections in line with the suppliers O&M in conjunction with third parties.
Actions

4.2.3 6b) Cogeneration

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented cogeneration to increase energy efficiency?

Comments
This technology has been discounted as it does not align with the corporate objectives and carbon roadmap
Actions

4.2.4 6b) Energy-efficient motors

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented energy-efficient motors to increase energy efficiency?

Comments
Energy efficiency of motors was a consideration of the design and operation of the site and the Capex and change management process. Variable speed drives specified on pumps and frequency controllers on motors implemented where appropriate.
Actions

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4.2.5 6b) Heat recovery with heat exchangers and/or heat pumps (including mechanical vapour recompression)

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented heat recovery with heat exchangers and/or heat pumps to increase energy efficiency?

Comments
Heat is recovered from various parts of the process and is inherent within the design and operation of the individual assets. The utility programme will continually review further opportunities in relation to heat recovery, as part of utility reduction measures.
Actions

4.2.6 6b) Lighting

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented heat recovery with heat exchangers and/or heat pumps to increase energy efficiency?

Comments
The site has LED units installed as a standard across all production areas and back rooms.
Actions

4.2.7 6b) Minimising blowdown from the boiler

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented minimising blowdown from the boiler to increase energy efficiency?

Comments
Boiler blowdown is automated and minimised through TDS controls. Blowdown is undertaken validated via instrumentation to optimise timing of the blowdown. The programme is supported by the embedded facilities function.
Actions

4.2.8 6b) Optimising steam distribution systems

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented optimising steam distribution systems to increase energy efficiency?

Comments
Hot and cold water distribution systems have been installed to optimise energy efficiency.
Actions

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4.2.9 6b) Preheating feed water (including the use of economisers)

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented preheating feed water to increase energy efficiency?

Comments
Heat is recovered from various parts of the process and is inherent within the design and operation of the individual assets, including pre-heating of boiler feedwater.
Actions

4.2.10 6b) Process control systems

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented process control systems to increase energy efficiency?

Comments
PLC and control systems are employed variously for optimisation and track trend parameters; including pressure and temperature, VSDs, time etc. The efficiency of the process is continually reviewed where measures are introduced to optimise the operation of the process, with respect to yield and utility consumption. The CI programme targets energy efficiency measures to deliver year on year improvement in energy efficiency that the site is held accountable to deliver.
Actions

4.2.11 6b) Reducing compressed air system leaks

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented reducing compressed air system leaks to increase energy efficiency?

Comments
Compressed air systems are optimised and maintained inhouse and in conjunction with third party specialists.
Actions

4.2.12 6b) Reducing heat losses by insulation

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented reducing heat losses by insulation to increase energy efficiency?

Comments
Chilled water and pumps, headers hot and cold pipework are lagged to high specification.
Actions

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4.2.13 6b) Variable speed drives

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented variable speed drives to increase energy efficiency?

Comments
VSD are installed across the installation and the functions of assets continually evaluated.
Actions

4.2.14 6b) Multiple-effect evaporation

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented multiple-effect evaporation to increase energy efficiency?

Comments
N/A
Actions

4.2.15 6b) Use of solar energy

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented use of solar energy to increase energy efficiency?

Comments
On site PV is under consideration.
Actions

4.2.16 6b) Any other energy efficiency techniques

Consider and where relevant record comments and action(s) on:

1. Applicability to your activity/activities
2. Historic/planned implementation
3. Opportunities for further review/future implementation

Have you implemented any other techniques to increase energy efficiency?

Comments
N/A
Actions

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4.3 BAT 7: Water consumption and waste water discharge

BAT 7. 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.

4.3.1 7a) Water recycling and/or reuse

Recycling and/or reuse of water streams (preceded or not by water treatment), e.g. for cleaning, washing, cooling or for the process itself.

Applicability: May not be applicable due to hygiene and food safety requirements.

Have you implemented water recycling and/or reuse to reduce water consumption and the volume of waste water discharged?

Comments
Opportunities to recover and reuse water within the process are limited for food safety reasons however are reviewed regularly as part of the Brioche Pasquier Improvement programme.
Actions

4.3.2 7b) Optimisation of water flow

Use of control devices, e.g. photocells, flow valves, thermostatic valves, to automatically adjust the water flow.

Applicability: May not be applicable due to hygiene and food safety requirements.

Have you implemented optimisation of water flow to reduce water consumption and the volume of waste water discharged?

Comments
The manufacturing processes are controlled using a combination of set points including temperatures, flow rates, levels etc. The design of the installation incorporates flow meters, and VSD that reduce consumption and minimise discharge. All thermostatically controlled censor taps are in place.
Actions

4.3.3 7c) Optimisation of water nozzles and hoses

Use of correct number and position of nozzles; adjustment of water pressure.

Applicability: May not be applicable due to hygiene and food safety requirements.

Have you implemented optimisation of water nozzles and hoses to reduce water consumption and the volume of waste water discharged?

Comments
Specific nozzles are used depending on use (for cleaning) to minimise water/chemical consumption. Hose guns and trigger controls employed, and the pressure of the delivery systems is regulated (4 bar or lower) for the needs of the operator in the area. The applicability of this is reviewed in line with food and safety concerns.
Actions

4.3.4 7d) Segregation of water streams

Water streams that do not need treatment (e.g. uncontaminated cooling water or uncontaminated run-off water) are segregated from waste water that has to undergo treatment, thus enabling uncontaminated water recycling.

Applicability: The segregation of uncontaminated rainwater may not be applicable in the case of existing waste water collection systems.

Have you implemented segregation of water streams to reduce water consumption and the volume of waste water discharged?

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Comments
The routing and condition of raw, process and surface water drains is known and documented for the site. All process contaminated wastewater is directed to the effluent drains for treatment. Uncontaminated rainwater and site run off is directed to surface water drains which outfall to controlled water.
Actions

4.3.5 7e) Dry cleaning

Removal of as much residual material as possible from raw materials and equipment before they are cleaned with liquids, e.g. by using compressed air, vacuum systems or catchpots with a mesh cover.

Applicability: Generally applicable.

Have you implemented dry cleaning to reduce water consumption and the volume of waste water discharged?

Comments
The site operates a "Clean As You Go" policy and where possible SOPs prescribe dry cleaning techniques which is subject to process confirmation within each area. Dry cleaning only in packing and limited use of floor scrubbers.
Actions

4.3.6 7f) Pigging system for pipes

Use of a system made of launchers, catchers, compressed air equipment, and a projectile (also referred to as a 'pig', e.g. made of plastic or ice slurry) to clean out pipes. In-line valves are in place to allow the pig to pass through the pipeline system and to separate the product and the rinsing water.

Applicability: Generally applicable.

Have you implemented pigging system for pipes to reduce water consumption and the volume of waste water discharged?

Comments
This technology is has been evlauited and not considered applicable for the processes undertaken at the site. Product recovery and minimise water consumption/generation of effluent is already optimised
Actions

4.3.7 7g) High-pressure cleaning

Spraying of water onto the surface to be cleaned at pressures ranging from 15 bar to 150 bar.

Applicability: May not be applicable due to health and safety requirements.

Have you implemented high-pressure cleaning to reduce water consumption and the volume of waste water discharged?

Comments
High pressure cleaning systems are not employed within the manufacturing area for food safety reasons. Cold water power washers and hand scrubbing are employed externally where applicable and in accordance with food safety.
Actions

4.3.8 7h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP)

Optimising the design of CIP and measuring turbidity, conductivity, temperature and/or pH to dose hot water and chemicals in optimised quantities.

Applicability: Generally applicable.

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Have you implemented optimisation of chemical dosing and water use in cleaning-in-place (CIP) to reduce water consumption and the volume of waste water discharged?

Comments
CIP is optimised through the use of dosing HACCP and associated set points comprising pH, conductivity, temperature and cleanliness testing that determine chemical dosing required.
Actions

4.3.9 7i) Low-pressure foam and/or gel cleaning

Use of low-pressure foam and/or gel to clean walls, floors and/or equipment surfaces.

Applicability: Generally applicable.

Have you implemented low-pressure foam and/or gel cleaning to reduce water consumption and the volume of waste water discharged?

Comments
Foaming and dosatron systems are employed to allow more controlled dosing of chemicals and a reduction in rinse water. Their use is incorporated as part of the planned cleaning regimes.
Actions

4.3.10 7j) Optimised design and construction of equipment and process areas

The equipment and process areas are designed and constructed in a way that facilitates cleaning. When optimising the design and construction, hygiene requirements are taken into account.

Applicability: Generally applicable.

Have you implemented optimised design and construction of equipment and process areas to reduce water consumption and the volume of waste water discharged?

Comments
The site is an existing facility. New project proposals and process layout reconfigurations take into account the hygiene requirements of the process and ensure efficient cleaning can be facilitated. New equipment installations go through change management and HACCP process to identify any potential issues.
Actions

4.3.11 7k) Cleaning of equipment as soon as possible

Cleaning is applied as soon as possible after use of equipment to prevent wastes hardening.

Applicability: Generally applicable.

Have you implemented cleaning of equipment as soon as possible to reduce water consumption and the volume of waste water discharged?

Comments
Cleaning equipment is carried out to prevent product hardening through hygiene operations for specific equipment and as part of the “Clean As You Go” policy. The main cleaning is undertaken during a specific hygiene window due to the proximity of lines and for food safety concerns.
Actions

4.4 BAT 10: Resource efficiency

BAT 10. In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below.

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4.4.1 10a) Anaerobic digestion

Treatment of biodegradable residues by microorganisms in the absence of oxygen, resulting in biogas and digestate. The biogas is used as a fuel, e.g. in a gas engine or in a boiler. The digestate may be used, e.g. as a soil improver.

Applicability: May not be applicable due to the quantity and/or nature of the residues.

Have you implemented anaerobic digestion to increase resource efficiency?

Comments
This technology is not appropriate due to the low volume of waste materials and effluent generated.
Actions

4.4.2 10b) Use of residues

Residues are used, e.g. as animal feed.

Applicability: May not be applicable due to legal requirements.

Have you implemented use of residues to increase resource efficiency?

Comments
Food waste collection is optimised to aid recovery and redistribution. The site continuously reviews options with respect to re-using residues. For some materials it is not currently feasible to achieve reliable segregation from other waste streams that may contain animal by products. It is essential that an in depth review and sufficient trialling is carried out to ensure compliance and to manage the likelihood of contamination. Non conforming product etc is sent for redistribution for human consumption e.g. Fairshare.
Actions

4.4.3 10c) Separation of residues

Separation of residues, e.g. using accurately positioned splash protectors, screens, flaps, catchpots, drip trays and troughs.

Applicability: Generally applicable.

Have you implemented separation of residues to increase resource efficiency?

Comments
Residues are separated at the point of generation so a decision can actively be made on how the material is to be handled and further treated/recovered.
Actions

4.4.4 10d) Recovery and reuse of residues from the pasteuriser

Residues from the pasteuriser are fed back to the blending unit and are thereby reused as raw materials.

Applicability: Only applicable to liquid food products.

Have you implemented recovery and reuse of residues from the pasteuriser to increase resource efficiency?

Comments
N/A
Actions

4.4.5 10e) Phosphorus recovery as struvite

Typical pollutants targeted: Total phosphorus

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Applicability: Only applicable to waste water streams with a high total phosphorus content (e.g. above 50 mg/l) and a significant flow.

Have you implemented phosphorus recovery as struvite to increase resource efficiency?

Comments
N/A
Actions

4.4.6 10f) Use of waste water for land spreading

After appropriate treatment, waste water is used for land spreading in order to take advantage of the nutrient content and/or to use the water.

Applicability: Only applicable in the case of a proven agronomic benefit, a proven low level of contamination and no negative impact on the environment (e.g. on the soil, the groundwater and surface water).

The applicability may be restricted due to the limited availability of suitable land adjacent to the installation.

The applicability may be restricted by the soil and local climatic conditions (e.g. in the case of wet or frozen fields) or by legislation.

Have you implemented use of waste water for land spreading to increase resource efficiency?

Comments
N/A – not directly from the production process.
Actions

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