

Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016 (as amended)

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/XP3039ZS
The Operator is: Arla Foods Limited
The Installation is: Aylesbury Dairy
This Variation Notice number is: EPR/XP3039ZS/V007

What this document is about

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

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

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

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

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

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

How this document is structured

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

1 Our decision

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

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 11/08/2021 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that:

- describes the techniques that will be implemented before 4 December 2023, which will then ensure that operations meet the revised standards, or
- justifies why standards will not be met by 4 December 2023, and confirmation of the date when the operation of those processes will cease within the Installation or an explanation of why the revised BAT standards are not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised BAT standards described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT-AEL) described in the BAT Conclusions Document, the Regulation 61 Notice required that the Operator make a formal request for derogation from compliance with that BAT-AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61 Notice response from the Operator was received on 22/10/2021.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review but not that it necessarily contained all the information we would need to complete that determination.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the Installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we have no reason to consider that the Operator will not be able to comply with the techniques and standards described in the BAT Conclusions.

2.3 Requests for further information during determination

Although we were able to consider the Regulation 61 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment, and issued a further information request on 06/10/2022, to request further clarification on BATc 3 & 6. A response was received on 30/12/2022. A copy of both the further information request and response was placed on our public register.

3 The legal framework

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

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

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

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

Annex 1: Decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Food, Drink and Milk Industries, were published by the European Commission on 4 December 2019.

There are 37 BAT Conclusions.

BAT 1 – 15 are General BAT Conclusions (Narrative BAT) applicable to all relevant Food, Drink and Milk Installations in scope.

BAT 16 – 37 are sector-specific BAT Conclusions, including Best Available Techniques Associated Emissions Levels (BAT-AELs) and Associated Environmental Performance Levels (BAT-AEPLs):

BAT 16 & 17	BAT Conclusions for Animal Feed
BAT 18 – 20	BAT Conclusions for Brewing
BAT 21 – 23	BAT Conclusions for Dairies
BAT 24	BAT Conclusions for Ethanol Production
BAT 25 & 26	BAT Conclusions for Fish and Shellfish Processing
BAT 27	BAT Conclusions for Fruit and Vegetable Processing
BAT 28	BAT Conclusions for Grain Milling
BAT 29	BAT Conclusions for Meat Processing
BAT 30 – 32	BAT Conclusions for Oilseed Processing and Vegetable Oil Refining
BAT 33	BAT Conclusions for Soft Drinks and Nectar/Fruit Juice Processed from Fruit and Vegetables
BAT 34	BAT Conclusions for Starch Production
BAT 35 – 37	BAT Conclusions for Sugar Manufacturing

In addition to the BAT Conclusions for the Food, Drink and Milk Industries the following BAT Conclusions from the Waste Treatment Bref (published 10th August 2018) also apply

- BAT 15 – Emissions to air (minimise use of flaring)
- BAT 16 – Emissions to air (reduce emissions from flaring)
- BAT 21 – Emissions from accidents and incidents
- BAT 38 – Emissions to air from anaerobic treatment of waste.

This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the Consolidated Variation Notice.

The overall status of compliance with the BAT conclusion is indicated in the table as:

NA – Not Applicable

CC – Currently Compliant

FC – Compliant in the future (within 4 years of publication of BAT Conclusions)

NC – Not Compliant

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
GENERAL BAT CONCLUSIONS (BAT 1-15)			
1	<p>Environmental Management System - Improve overall environmental performance.</p> <p>Implement an EMS that incorporates all the features as described within BATc 1.</p>	CC	<p>The operator has provided information to support compliance with BATc 1. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 1.</p> <p>The operator has a EMS externally accredited to the ISO14001 standard.</p>
2	<p>EMS Inventory of inputs & outputs. Increase resource efficiency and reduce emissions.</p> <p>Establish, maintain and regularly review (including when a significant change occurs) an inventory of water, energy and raw materials consumption as well as of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the features as detailed within the BATCs.</p>	CC	<p>The operator has provided information to support compliance with BATc 2. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 2.</p> <p>The operator has an externally accredited EMS to the ISO14001 standard. The Site holds inventories for Water, Energy, Raw Material Consumption, Waste Water & Waste Gas Streams which form part of the National & Site EMS system. In addition the site monitors and tracks water, energy and raw material consumption. These are reviewed at regular intervals.</p>
3	<p>Monitoring key process parameters at key locations for emissions to water.</p> <p>For relevant emissions to water as identified by the inventory of waste water streams (see BAT 2), BAT is to monitor key process parameters (e.g. continuous monitoring of waste water flow, pH and temperature) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).</p>	CC	<p>The operator has provided information to support compliance with BATc 3. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 3.</p> <p>The site operates an anaerobic digestion plant which treats process effluent prior to discharge to the Thames Water foul sewer. Monitoring of the effluent is undertaken to ensure the quality meets the consent limits. Composite samples are taken daily to test for key parameters (COD, Ammoniacal Nitrogen, Phosphate and Chloride) as per the discharge consent. The</p>

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			<p>supplied data shows the site is able to operate within the constraints of the trade effluent consent.</p> <p>Uncontaminated surface water arising from roofs and non-operational areas will be discharged to the Grand Union Canal via the onsite balance pond. Discharges are monitored by a drain detector system to prevent uncontrolled releases.</p>
4	<p>Monitoring emissions to water to the required frequencies and standards. BAT is to monitor emissions to water with at least the frequency given [refer to BAT 4 table in BATc] and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>	NA	<p>All process effluent is treated on site prior to discharge to the foul sewer.</p> <p>We are therefore satisfied that BATc 4 is not applicable for this site</p> <p>However, monitoring and sampling is carried out to approved MCERTs standard. The effluent is monitored by on a continuous basis to ensure the limits of the consent are achieved. In addition the sewage undertaken periodically undertakes spot samples.</p>
5	<p>Monitoring channelled emissions to air to the required frequencies and standards. BAT is to monitor channelled emissions to air with at least the frequency given and in accordance with EN standards.</p>	NA	<p>The site only processes liquid milk products, no drying is undertaken at the site, as such the relevant monitoring requirements for emissions to air from the dairy sector do not apply.</p> <p>We are therefore satisfied that BATc 5 is not applicable for this site</p>
6	<p>Energy Efficiency In order to increase energy efficiency, BAT is to use an energy efficiency plan (BAT 6a) and an appropriate combination of the common techniques listed in technique 6b within the table in the BATc.</p>	CC	<p>The operator has provided information to support compliance with BATc 6. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 6.</p> <p>The site has a standard for the mapping energy use at the and identifies opportunities for energy savings. The purpose with this</p>

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			<p>standard is to set the requirements for energy mapping in Arla Foods to ensure that a site has an updated overview of energy sources, energy production (electricity/cooling/heating/compressed air) and how the energy has been used at the site</p> <p>The site has a 3% year on year energy reduction target to achieve each year. The site implemented measures energy consumption and benchmarks progress against KPI's. Improvements projects identified on an ongoing basis through CI which can contribute to meeting energy efficiency targets</p> <p>The site has implemented the following energy efficiency techniques including</p> <ul style="list-style-type: none"> • CHPs and waste heat boiler in place. • Condensate return in place on boilers. • Boiler blowdown minimised through use of a conductivity probe. • Compressed air systems are optimised. • Variable speed drives in use on pumps and motors. • Frequency controllers in use on motors.
7	<p>Water and wastewater minimisation</p> <p>In order to reduce water consumption and the volume of waste water discharged, BAT is to use BAT 7a and one or a combination of the techniques b to k given below.</p> <p>(a) water recycling and/or reuse</p> <p>(b) Optimisation of water flow</p> <p>(c) Optimisation of water nozzles and hoses</p> <p>(d) Segregation of water streams</p> <p>Techniques related to cleaning operations:</p> <p>(e) Dry cleaning</p>	CC	<p>The operator has provided information to support compliance with BATc 7. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 7.</p> <p>The site has implemented a number of water minimisation techniques across the site including;</p> <ul style="list-style-type: none"> • The collection of recovery water and reuse as pre-rinse in CIP.

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	(f) Pigging system for pipes (g) High-pressure cleaning (h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP) (i) Low-pressure foam and/or gel cleaning (j) Optimised design and construction of equipment and process areas (k) Cleaning of equipment as soon as possible		<ul style="list-style-type: none"> • Boiler condensate returns to hot well boiler. • The manufacturing processes are automated and controlled by a PLC system. This includes temperatures, flows and levels. • Cleaning water is pressure controlled. Hoses with nozzles used for some environmental cleaning. • Regular maintenance plan in place. • Condensate return in place on boilers. Cooling water reused on pasteurised. • CIP systems are automated and optimised to minimise use of water and detergent. Final CIP rinse is reused as the first rinse in the next clean. Cleaning frequency is driven by time periods for milk rather than product changes i.e. cleaning must take place at least every 24 hours even without product changes. weekly review meeting in place with external company who maintain chemical system at the site. • The use of low pressure foam cleaning • New equipment installations go through HAZOP and HACCP process to identify any potential issues. • The cleaning of equipment as soon as possible, as per Arla standards.
8	Prevent or reduce the use of harmful substances In order to prevent or reduce the use of harmful substances, e.g. in cleaning and disinfection, BAT is to use one or a combination of the techniques given below. (a) Proper selection of cleaning chemicals and/or disinfectants (b) Reuse of cleaning chemicals in cleaning-in-place (CIP) (c) Dry cleaning (d) Optimised design and construction of equipment and process areas	CC	The operator has provided information to support compliance with BATc 8. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 8. Only cleaning chemicals appropriated to the CIP system are used, in addition other chemicals used for environmental cleaning,

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>water and effluent treatment. The chemicals in use are maintain by external company and any changes required go ahead after Arla sign off.</p> <p>Cleaning chemicals are re used on site, the final CIP rinse is reused as the first rinse in the next clean.</p> <p>Dry cleaning isn't appropriate due to the nature of the raw materials processed on site.</p> <p>The project proposal and development process takes into account the hygiene requirements of the process and ensure efficient cleaning can be facilitated. New equipment installations go through HAZOP and HACCP process to identify any potential issues.</p>
9	<p>Refrigerants In order to prevent emissions of ozone-depleting substances and of substances with a high global warming potential from cooling and freezing, BAT is to use refrigerants without ozone depletion potential and with a low global warming potential.</p>	CC	<p>The operator has provided information to support compliance with BATc 9. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 9.</p> <p>The site has an F-Gas register which tracks all refrigeration equipment on site. All equipment is checked annual for any leaks and defects.</p> <p>All refrigeration units are maintained by external company who aligned with current legislation such as awareness/plan for replacement of drop-in refrigerants and the site Engineering department monitor that periodic schedule through SAP/PPM.</p>
10	<p>Resource efficiency In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below: (a) Anaerobic digestion (b) Use of residues (c) Separation of residues (d) Recovery and reuse of residues from the pasteuriser</p>	CC	<p>The operator has provided information to support compliance with BATc 10. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 10.</p>

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	(e) Phosphorus recovery as struvite (f) Use of waste water for land spreading		The site has an AD plant on site to treat effluent arising from the process. Any milk that is deemed unsuitable for processing is sent for animal feed. All waste streams on site are segregated for recycling. To minimise waste from the pasteuriser the initial flush of residual milk is stored in interface tanks, the use of residual milk in the final product is agreed with each customer.
11	<p>Waste water buffer storage In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water.</p>	CC	<p>The operator has provided information to support compliance with BATc 11. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 11.</p> <p>The waste water treatment plant has a 800m³ buffer tank, effluent is continuously monitored and can be diverted back through the treatment process if required. The bund wall is monitored frequently. The site's drainage system is monitoring remotely and in the event of a spill or incident the system auto activates and closes to prevent emission to water.</p> <p>The balance pond collects surface water and is protected by an auto system to close the outlet in the event of an incident. Spill kits are available across the site to clean up small spills, training is given to staff along with planned spill drills to raise awareness.</p> <p>In addition, the AD energy centre is completely bunded to prevent any escape of effluent should there be any failure of the treatment system. The capacity of the bund is sufficient to contain the effluent within the treatment area.</p>
12	Emissions to water – treatment	CC	The operator has provided information to support compliance with BATc 12. We have

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	<p>In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below.</p> <p>Preliminary, primary and general treatment</p> <p>(a) Equalisation</p> <p>(b) Neutralisation</p> <p>(c) Physical separate (eg screens, sieves, primary settlement tanks etc)</p> <p>Aerobic and/or anaerobic treatment (secondary treatment)</p> <p>(d) Aerobic and/or anaerobic treatment (eg activated sludge, aerobic lagoon etc)</p> <p>(e) Nitification and/or denitrification</p> <p>(f) Partial nitrification - anaerobic ammonium oxidation</p> <p>Phosphorus recovery and/or removal</p> <p>(g) Phosphorus recovery as struvite</p> <p>(h) Precipitation</p> <p>(i) Enhanced biological phosphorus removal</p> <p>Final solids removal</p> <p>(j) Coagulation and flocculation</p> <p>(k) Sedimentation</p> <p>(l) Filtration (eg sand filtration, microfiltration, ultrafiltration)</p> <p>(m) Flotation</p>		<p>assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 12.</p> <p>The site operates a WWTW that incorporates wastewater balancing, screening, buffering and pH control, Nitrification and Dissolved Air Flotation (DAF). In addition the site operates an AD plant for further treated of the effluent. The treated effluent is either fed into the RO plant for water recovery or discharged to the foul sewer under a trade effluent consent (Thames Water). Only uncontaminated surface is discharged direct to water from the balance bond to the Drayton Mead Brook.</p>										
12	<p>Emissions to water – treatment</p> <p>BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body</p> <table border="1" data-bbox="280 1145 1214 1348"> <thead> <tr> <th>Parameter</th> <th>BAT-AEL (°) (°) (daily average)</th> </tr> </thead> <tbody> <tr> <td>Chemical oxygen demand (COD) (°) (°)</td> <td>25-100 mg/l (°)</td> </tr> <tr> <td>Total suspended solids (TSS)</td> <td>4-50 mg/l (°)</td> </tr> <tr> <td>Total nitrogen (TN)</td> <td>2-20 mg/l (°) (°)</td> </tr> <tr> <td>Total phosphorus (TP)</td> <td>0,2-2 mg/l (°)</td> </tr> </tbody> </table>	Parameter	BAT-AEL (°) (°) (daily average)	Chemical oxygen demand (COD) (°) (°)	25-100 mg/l (°)	Total suspended solids (TSS)	4-50 mg/l (°)	Total nitrogen (TN)	2-20 mg/l (°) (°)	Total phosphorus (TP)	0,2-2 mg/l (°)	NA	<p>The site discharges all effluent after treatment to the foul sewer under a trade effluent consent, the only discharges to water are those of uncontaminated surface water from the balance bond to the Drayton Mead Brook.</p> <p>We are therefore satisfied that BATc 12 is not applicable for this site.</p>
Parameter	BAT-AEL (°) (°) (daily average)												
Chemical oxygen demand (COD) (°) (°)	25-100 mg/l (°)												
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Total nitrogen (TN)	2-20 mg/l (°) (°)												
Total phosphorus (TP)	0,2-2 mg/l (°)												
13	<p>Noise management plan</p> <p>In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up, implement and regularly review a noise management plan, as</p>	CC	<p>The operator has provided information to support compliance with BATc 13. We have assessed the information provided and we are</p>										

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	<p>part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> - a protocol containing actions and timelines; - a protocol for conducting noise emissions monitoring; - a protocol for response to identified noise events, eg complaints; - a noise reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures. 		<p>satisfied that the operator has demonstrated compliance with BATc 13.</p> <p>The site has an approved noise management plan in place. The noise management plan is reviewed annually as a minimum requirement.</p>
14	<p>Noise management</p> <p>In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below.</p> <ul style="list-style-type: none"> (a) Appropriate location of equipment and buildings (b) Operational measures (c) Low-noise equipment (d) Noise control equipment (e) Noise abatement 	CC	<p>The operator has provided information to support compliance with BATc 14. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 14.</p> <p>The site implements the following noise minimisation techniques;</p> <ul style="list-style-type: none"> • Reduced vehicle speeds on site • No reversing beepers or horns • No running of chiller trailers on diesel engines • Annual internal/external noise level checks • Monitoring of complaints and reports of nuisances • Ongoing maintenance of refrigeration equipment.
15	<p>Odour Management</p> <p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> - a protocol containing actions and timelines; - a protocol for conducting odour monitoring. - a protocol for response to identified odour incidents eg complaints; 	CC	<p>The operator has provided information to support compliance with BATc 15. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 15.</p> <p>The site has an approved odour management plan in place. The odour management plan is reviewed annually as a minimum requirement.</p>

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	- 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.																		
	DAIRY SECTOR BAT CONCLUSIONS (BAT 21-23)																		
21	<p>Energy efficiency – Dairy Sector</p> <p>In order to increase energy efficiency, BAT is to use an appropriate combination of the techniques specified in BAT 6 and of the techniques given below.</p> <table border="1" data-bbox="311 523 1010 970"> <thead> <tr> <th data-bbox="311 523 353 555">Technique</th> <th data-bbox="353 523 510 555">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="311 555 353 608">(a) Partial milk homogenisation</td> <td data-bbox="353 555 510 608">The cream is homogenised together with a small proportion of skimmed milk. The size of the homogeniser can be significantly reduced, leading to energy savings.</td> </tr> <tr> <td data-bbox="311 608 353 660">(b) Energy-efficient homogeniser</td> <td data-bbox="353 608 510 660">The homogeniser's working pressure is reduced through optimised design and thus the associated electrical energy needed to drive the system is also reduced.</td> </tr> <tr> <td data-bbox="311 660 353 713">(c) Use of continuous pasteurisers</td> <td data-bbox="353 660 510 713">Flow-through heat exchangers are used (e.g. tubular, plate and frame). The pasteurisation time is much shorter than that of batch systems.</td> </tr> <tr> <td data-bbox="311 713 353 766">(d) Regenerative heat exchange in pasteurisation</td> <td data-bbox="353 713 510 766">The incoming milk is preheated by the hot milk leaving the pasteurisation section.</td> </tr> <tr> <td data-bbox="311 766 353 855">(e) Ultra-high-temperature (UHT) processing of milk without intermediate pasteurisation</td> <td data-bbox="353 766 510 855">UHT milk is produced in one step from raw milk, thus avoiding the energy needed for pasteurisation.</td> </tr> <tr> <td data-bbox="311 855 353 908">(f) Multi-stage drying in powder production</td> <td data-bbox="353 855 510 908">A spray-drying process is used in combination with a downstream dryer, e.g. fluidised bed dryer.</td> </tr> <tr> <td data-bbox="311 908 353 970">(g) Precooling of ice-water</td> <td data-bbox="353 908 510 970">When ice-water is used, the returning ice-water is pre-cooled (e.g. with a plate heat exchanger), prior to final cooling in an accumulating ice-water tank with a coil evaporator.</td> </tr> </tbody> </table> <p>Applicable in addition to BAT6</p>	Technique	Description	(a) Partial milk homogenisation	The cream is homogenised together with a small proportion of skimmed milk. The size of the homogeniser can be significantly reduced, leading to energy savings.	(b) Energy-efficient homogeniser	The homogeniser's working pressure is reduced through optimised design and thus the associated electrical energy needed to drive the system is also reduced.	(c) Use of continuous pasteurisers	Flow-through heat exchangers are used (e.g. tubular, plate and frame). The pasteurisation time is much shorter than that of batch systems.	(d) Regenerative heat exchange in pasteurisation	The incoming milk is preheated by the hot milk leaving the pasteurisation section.	(e) Ultra-high-temperature (UHT) processing of milk without intermediate pasteurisation	UHT milk is produced in one step from raw milk, thus avoiding the energy needed for pasteurisation.	(f) Multi-stage drying in powder production	A spray-drying process is used in combination with a downstream dryer, e.g. fluidised bed dryer.	(g) Precooling of ice-water	When ice-water is used, the returning ice-water is pre-cooled (e.g. with a plate heat exchanger), prior to final cooling in an accumulating ice-water tank with a coil evaporator.	CC	<p>The operator has provided information to support compliance with BATc 21 We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 21.</p> <p>In order to increase energy efficiency, the site has implemented the following techniques;</p> <p>The partial homogenisation of milk through the use of an energy efficient homogeniser. In addition the site uses continuous pasteurisers to reduce the time pasteurisation time and preheats the incoming milk with heat from the milk leaving the pasteurisation section.</p> <p>The other techniques given in BATc 21 are not applicable to the site.</p>
Technique	Description																		
(a) Partial milk homogenisation	The cream is homogenised together with a small proportion of skimmed milk. The size of the homogeniser can be significantly reduced, leading to energy savings.																		
(b) Energy-efficient homogeniser	The homogeniser's working pressure is reduced through optimised design and thus the associated electrical energy needed to drive the system is also reduced.																		
(c) Use of continuous pasteurisers	Flow-through heat exchangers are used (e.g. tubular, plate and frame). The pasteurisation time is much shorter than that of batch systems.																		
(d) Regenerative heat exchange in pasteurisation	The incoming milk is preheated by the hot milk leaving the pasteurisation section.																		
(e) Ultra-high-temperature (UHT) processing of milk without intermediate pasteurisation	UHT milk is produced in one step from raw milk, thus avoiding the energy needed for pasteurisation.																		
(f) Multi-stage drying in powder production	A spray-drying process is used in combination with a downstream dryer, e.g. fluidised bed dryer.																		
(g) Precooling of ice-water	When ice-water is used, the returning ice-water is pre-cooled (e.g. with a plate heat exchanger), prior to final cooling in an accumulating ice-water tank with a coil evaporator.																		

BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement																				
22	<p>In order to reduce the quantity of waste sent for disposal, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="286 360 1189 995"> <thead> <tr> <th data-bbox="286 360 539 403">Technique</th> <th data-bbox="539 360 1189 403">Description</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="286 403 1189 443"><i>Techniques related to the use of centrifuges</i></td> </tr> <tr> <td data-bbox="286 443 539 515">(a) Optimised operation of centrifuges</td> <td data-bbox="539 443 1189 515">Operation of centrifuges according to their specifications to minimise the rejection of product.</td> </tr> <tr> <td colspan="2" data-bbox="286 515 1189 555"><i>Techniques related to butter production</i></td> </tr> <tr> <td data-bbox="286 555 539 643">(b) Rinsing of the cream heater with skimmed milk or water</td> <td data-bbox="539 555 1189 643">Rinsing of the cream heater with skimmed milk or water which is then recovered and reused, before the cleaning operations.</td> </tr> <tr> <td colspan="2" data-bbox="286 643 1189 683"><i>Techniques related to ice cream production</i></td> </tr> <tr> <td data-bbox="286 683 539 754">(c) Continuous freezing of ice cream</td> <td data-bbox="539 683 1189 754">Continuous freezing of ice cream using optimised start-up procedures and control loops that reduce the frequency of stoppages.</td> </tr> <tr> <td colspan="2" data-bbox="286 754 1189 794"><i>Techniques related to cheese production</i></td> </tr> <tr> <td data-bbox="286 794 539 882">(d) Minimisation of the generation of acid whey</td> <td data-bbox="539 794 1189 882">Whey from the manufacture of acid-type cheeses (e.g. cottage cheese, quark and mozzarella) is processed as quickly as possible to reduce the formation of lactic acid.</td> </tr> <tr> <td data-bbox="286 882 539 995">(e) Recovery and use of whey</td> <td data-bbox="539 882 1189 995">Whey is recovered (if necessary using techniques such as evaporation or membrane filtration) and used, e.g. to produce whey powder, demineralised whey powder, whey protein concentrates or lactose. Whey and whey concentrates can also be used as animal feed or as a carbon source in a biogas plant.</td> </tr> </tbody> </table>	Technique	Description	<i>Techniques related to the use of centrifuges</i>		(a) Optimised operation of centrifuges	Operation of centrifuges according to their specifications to minimise the rejection of product.	<i>Techniques related to butter production</i>		(b) Rinsing of the cream heater with skimmed milk or water	Rinsing of the cream heater with skimmed milk or water which is then recovered and reused, before the cleaning operations.	<i>Techniques related to ice cream production</i>		(c) Continuous freezing of ice cream	Continuous freezing of ice cream using optimised start-up procedures and control loops that reduce the frequency of stoppages.	<i>Techniques related to cheese production</i>		(d) Minimisation of the generation of acid whey	Whey from the manufacture of acid-type cheeses (e.g. cottage cheese, quark and mozzarella) is processed as quickly as possible to reduce the formation of lactic acid.	(e) Recovery and use of whey	Whey is recovered (if necessary using techniques such as evaporation or membrane filtration) and used, e.g. to produce whey powder, demineralised whey powder, whey protein concentrates or lactose. Whey and whey concentrates can also be used as animal feed or as a carbon source in a biogas plant.	CC	<p>The operator has provided information to support compliance with BATc 22 We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 22.</p> <p>The site operates a centrifuge to the design specification to minimise the rejection of product. The cream heater is purged with water prior to cleaning.</p> <p>The other techniques listed under BATc 22 are not applicable to the site as the only produces liquid products.</p>
Technique	Description																						
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23	<p>In order to reduce channelled dust emissions to air from drying, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="277 1106 1173 1398"> <thead> <tr> <th data-bbox="277 1106 495 1161">Technique</th> <th data-bbox="495 1106 730 1161">Description</th> <th data-bbox="730 1106 1173 1161">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 1161 495 1249">(a) Bag filter</td> <td data-bbox="495 1161 730 1398" rowspan="3">See Section 14.2 Page 34 of the Bref</td> <td data-bbox="730 1161 1173 1249">May not be applicable to the abatement of sticky dust.</td> </tr> <tr> <td data-bbox="277 1249 495 1305">(b) Cyclone</td> <td data-bbox="730 1249 1173 1305">Generally applicable.</td> </tr> <tr> <td data-bbox="277 1305 495 1398">(c) Wet scrubber</td> <td data-bbox="730 1305 1173 1398"></td> </tr> </tbody> </table> <p>The associated monitoring is given in BAT 5.</p>	Technique	Description	Applicability	(a) Bag filter	See Section 14.2 Page 34 of the Bref	May not be applicable to the abatement of sticky dust.	(b) Cyclone	Generally applicable.	(c) Wet scrubber		NA	<p>The site only produces liquid milk products, no drying takes place on site.</p> <p>We are therefore satisfied that BATc 23 is not applicable for this site.</p>										
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BATC No.	Summary of BAT Conclusion requirement for Food, Drink and Milk Industries	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement												
23	<p>BAT-associated emission level (BAT-AEL) for channelled dust emissions to air from drying</p> <table border="1" data-bbox="275 331 1171 555"> <thead> <tr> <th>Parameter</th> <th>Description</th> <th>BAT-AEL (average over the sampling period)</th> </tr> </thead> <tbody> <tr> <td>Dust</td> <td>Mg/Nm³</td> <td><2-10 ⁽¹⁾</td> </tr> </tbody> </table> <p>(1) The upper end of the range is 20 mg/Nm³ for drying of demineralised whey powder, casein and lactose.</p>	Parameter	Description	BAT-AEL (average over the sampling period)	Dust	Mg/Nm ³	<2-10 ⁽¹⁾	NA	<p>The site only produces liquid milk products, no drying takes place on site.</p> <p>We are therefore satisfied that BATc 23 is not applicable for this site.</p>						
Parameter	Description	BAT-AEL (average over the sampling period)													
Dust	Mg/Nm ³	<2-10 ⁽¹⁾													
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EPL	<p>Environmental Performance Level – Energy consumption for the dairy sector</p> <table border="1" data-bbox="275 735 1229 1066"> <thead> <tr> <th>Main product (at least 80 % of the production)</th> <th>Unit</th> <th>Specific energy consumption (yearly average)</th> </tr> </thead> <tbody> <tr> <td>Market milk</td> <td rowspan="4">MWh/tonne of raw materials</td> <td>0.1-0.6</td> </tr> <tr> <td>Cheese</td> <td>0.10-0.22 ⁽¹⁾</td> </tr> <tr> <td>Powder</td> <td>0.2-0.5</td> </tr> <tr> <td>Fermented milk</td> <td>0.2-1.6</td> </tr> </tbody> </table> <p>(1) The specific energy consumption level may not apply when raw materials other than milk are used.</p>	Main product (at least 80 % of the production)	Unit	Specific energy consumption (yearly average)	Market milk	MWh/tonne of raw materials	0.1-0.6	Cheese	0.10-0.22 ⁽¹⁾	Powder	0.2-0.5	Fermented milk	0.2-1.6	CC	<p>The operator has provided information to support compliance with the EPL for energy. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with EPL for energy.</p> <p>The operator reports the site achieves a specific energy consumption of 0.069 MWh/tonne, which is well below the EPL range.</p>
Main product (at least 80 % of the production)	Unit	Specific energy consumption (yearly average)													
Market milk	MWh/tonne of raw materials	0.1-0.6													
Cheese		0.10-0.22 ⁽¹⁾													
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EPL	<p>Environmental Performance Level – Specific waste water discharge for the dairy sector</p> <table border="1" data-bbox="275 1158 1229 1369"> <thead> <tr> <th>Main product (at least 80 % of the production)</th> <th>Unit</th> <th>Specific waste water discharge (yearly average)</th> </tr> </thead> <tbody> <tr> <td>Market milk</td> <td rowspan="3">m³/tonne of raw materials</td> <td>0.3 - 3.0</td> </tr> <tr> <td>Cheese</td> <td>0.75 - 2.5</td> </tr> <tr> <td>Powder</td> <td>1.2 – 2.7</td> </tr> </tbody> </table>	Main product (at least 80 % of the production)	Unit	Specific waste water discharge (yearly average)	Market milk	m ³ /tonne of raw materials	0.3 - 3.0	Cheese	0.75 - 2.5	Powder	1.2 – 2.7	CC	<p>The operator has provided information to support compliance with the EPL for specific waste water discharge. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with EPL for specific waste water discharge.</p> <p>The operator reports the site achieves a specific waste water discharge of 0.46m³/tonne, which is within the EPL range.</p>		
Main product (at least 80 % of the production)	Unit	Specific waste water discharge (yearly average)													
Market milk	m ³ /tonne of raw materials	0.3 - 3.0													
Cheese		0.75 - 2.5													
Powder		1.2 – 2.7													

Relevant waste treatment BAT conclusions

BATC No.	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement												
15	<p>BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.</p> <table border="1" data-bbox="259 357 1205 679"> <thead> <tr> <th data-bbox="259 357 315 400"></th> <th data-bbox="315 357 568 400">Technique</th> <th data-bbox="568 357 954 400">Description</th> <th data-bbox="954 357 1205 400">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="259 400 315 568">a.</td> <td data-bbox="315 400 568 568">Correct plant design</td> <td data-bbox="568 400 954 568">This includes the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves.</td> <td data-bbox="954 400 1205 568">Generally applicable to new plants. A gas recovery system may be retrofitted in existing plants.</td> </tr> <tr> <td data-bbox="259 568 315 679">b.</td> <td data-bbox="315 568 568 679">Plant management</td> <td data-bbox="568 568 954 679">This includes balancing the gas system and using advanced process control.</td> <td data-bbox="954 568 1205 679">Generally applicable.</td> </tr> </tbody> </table>		Technique	Description	Applicability	a.	Correct plant design	This includes the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves.	Generally applicable to new plants. A gas recovery system may be retrofitted in existing plants.	b.	Plant management	This includes balancing the gas system and using advanced process control.	Generally applicable.	CC	<p>The operator has provided information to support compliance with BATc 15. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 15.</p> <p>The anaerobic digestion plant is built to the required standard, there is a regular maintenance plan in place. Biogas as a result of the anaerobic digestion process is sent to the neighbouring site for unitisation (multi operator permit).</p> <p>The efficiency and operation of the anaerobic digestion plant is continuously monitored as part of the sites wider management systems.</p>
	Technique	Description	Applicability												
a.	Correct plant design	This includes the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves.	Generally applicable to new plants. A gas recovery system may be retrofitted in existing plants.												
b.	Plant management	This includes balancing the gas system and using advanced process control.	Generally applicable.												
16	<p>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.</p> <table border="1" data-bbox="259 868 1160 1337"> <thead> <tr> <th data-bbox="259 868 315 911"></th> <th data-bbox="315 868 584 911">Technique</th> <th data-bbox="584 868 936 911">Description</th> <th data-bbox="936 868 1160 911">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="259 911 315 1050">a.</td> <td data-bbox="315 911 584 1050">Correct design of flaring devices</td> <td data-bbox="584 911 936 1050">Optimisation of height and pressure, assistance by steam, air or gas, type of flare tips, etc., to enable smokeless and reliable operation and to ensure the efficient combustion of excess gases.</td> <td data-bbox="936 911 1160 1050">Generally applicable to new flares. In existing plants, applicability may be restricted, e.g. due to maintenance time availability.</td> </tr> <tr> <td data-bbox="259 1050 315 1337">b.</td> <td data-bbox="315 1050 584 1337">Monitoring and recording as part of flare management</td> <td data-bbox="584 1050 936 1337">This includes continuous monitoring of the quantity of gas sent to flaring. It may include estimations of other parameters (e.g. composition of gas flow, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions (e.g. NO_x, CO, hydrocarbons), noise). The recording of flaring events usually includes the duration and number of events and allows for the quantification of emissions and the potential prevention of future flaring events.</td> <td data-bbox="936 1050 1160 1337">Generally applicable.</td> </tr> </tbody> </table>		Technique	Description	Applicability	a.	Correct design of flaring devices	Optimisation of height and pressure, assistance by steam, air or gas, type of flare tips, etc., to enable smokeless and reliable operation and to ensure the efficient combustion of excess gases.	Generally applicable to new flares. In existing plants, applicability may be restricted, e.g. due to maintenance time availability.	b.	Monitoring and recording as part of flare management	This includes continuous monitoring of the quantity of gas sent to flaring. It may include estimations of other parameters (e.g. composition of gas flow, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions (e.g. NO _x , CO, hydrocarbons), noise). The recording of flaring events usually includes the duration and number of events and allows for the quantification of emissions and the potential prevention of future flaring events.	Generally applicable.	CC	<p>The operator has provided information to support compliance with BATc 16. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 16.</p> <p>Existing flare in place which is used periodically as required. Operation maintenance in place. In addition the Operator has continuous monitoring in place. Bio gas generated from the onsite AD processes is piped to a mixing skid and blended with natural gas and used in the onsite CHPs.</p>
	Technique	Description	Applicability												
a.	Correct design of flaring devices	Optimisation of height and pressure, assistance by steam, air or gas, type of flare tips, etc., to enable smokeless and reliable operation and to ensure the efficient combustion of excess gases.	Generally applicable to new flares. In existing plants, applicability may be restricted, e.g. due to maintenance time availability.												
b.	Monitoring and recording as part of flare management	This includes continuous monitoring of the quantity of gas sent to flaring. It may include estimations of other parameters (e.g. composition of gas flow, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions (e.g. NO _x , CO, hydrocarbons), noise). The recording of flaring events usually includes the duration and number of events and allows for the quantification of emissions and the potential prevention of future flaring events.	Generally applicable.												

21	<p>In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1 of the WT BATc's).</p> <table border="1" data-bbox="266 233 1238 788"> <thead> <tr> <th data-bbox="266 233 607 272">Technique</th> <th data-bbox="607 233 1238 272">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="266 272 607 480">a. Protection measures</td> <td data-bbox="607 272 1238 480"> <p>These include measures such as:</p> <ul style="list-style-type: none"> — protection of the plant against malevolent acts; — fire and explosion protection system, containing equipment for prevention, detection, and extinction; — accessibility and operability of relevant control equipment in emergency situations. </td> </tr> <tr> <td data-bbox="266 480 607 612">b. Management of incidental/accidental emissions</td> <td data-bbox="607 480 1238 612"> <p>Procedures are established and technical provisions are in place to manage (in terms of possible containment) emissions from accidents and incidents such as emissions from spillages, firefighting water, or safety valves.</p> </td> </tr> <tr> <td data-bbox="266 612 607 788">c. Incident/accident registration and assessment system</td> <td data-bbox="607 612 1238 788"> <p>This includes techniques such as:</p> <ul style="list-style-type: none"> — a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections; — procedures to identify, respond to and learn from such incidents and accidents. </td> </tr> </tbody> </table>	Technique	Description	a. Protection measures	<p>These include measures such as:</p> <ul style="list-style-type: none"> — protection of the plant against malevolent acts; — fire and explosion protection system, containing equipment for prevention, detection, and extinction; — accessibility and operability of relevant control equipment in emergency situations. 	b. Management of incidental/accidental emissions	<p>Procedures are established and technical provisions are in place to manage (in terms of possible containment) emissions from accidents and incidents such as emissions from spillages, firefighting water, or safety valves.</p>	c. Incident/accident registration and assessment system	<p>This includes techniques such as:</p> <ul style="list-style-type: none"> — a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections; — procedures to identify, respond to and learn from such incidents and accidents. 	CC	<p>The operator has provided information to support compliance with BATc 21. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 21.</p> <p>The Operator has an approved site EMS which is externally accredited to the ISO14001 standard. The site has implemented emergency protection measures in place. The waste treatment centre is protected by a bund wall and the onsite drainage is protected by an automated drain detection system.</p> <p>The has an incident reporting tool for registration of incidents with root cause analysis, raise/track preventative actions, follow ups and reviews etc. All site based employees has access to raise incidents/their concerns through the system.</p>
Technique	Description										
a. Protection measures	<p>These include measures such as:</p> <ul style="list-style-type: none"> — protection of the plant against malevolent acts; — fire and explosion protection system, containing equipment for prevention, detection, and extinction; — accessibility and operability of relevant control equipment in emergency situations. 										
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c. Incident/accident registration and assessment system	<p>This includes techniques such as:</p> <ul style="list-style-type: none"> — a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections; — procedures to identify, respond to and learn from such incidents and accidents. 										
38	<p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>Implementation of a manual and/or automatic monitoring system to:</p> <ul style="list-style-type: none"> • ensure a stable digester operation; • minimise operational difficulties, such as foaming, which may lead to odour emissions; • provide sufficient early warning of system failures which may lead to a loss of containment and explosions. <p>This includes monitoring and/or control of key waste and process parameters, e.g.:</p> <ul style="list-style-type: none"> • pH and alkalinity of the digester feed; • digester operating temperature; • hydraulic and organic loading rates of the digester feed; • concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; • biogas quantity, composition (e.g. H₂S) and pressure; • liquid and foam levels in the digester. 	CC	<p>The operator has provided information to support compliance with BATc 38. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 38.</p> <p>The emissions from the anaerobic digestion plant are monitored and controlled by an automatic monitoring system which has been installed by an external company. The supplied operations and maintenance manual covers each of the control and process parameters as listed within the BAT conclusions.</p>								

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

Updating permit during permit review consolidation

We have updated permit conditions to those in the current generic permit template as a part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

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

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

Production threshold

The Environment Agency is looking to draw a “line in the sand” for permitted production capacity; a common understanding between the Operator and regulator for the emissions associated with a (maximum) level of production, whereby the maximum emissions have been demonstrated as causing no significant environmental impact.

For the dairy sector the threshold for the activity is based on the quantity of milk received at the site. We have included a daily limit of the volume of milk permitted at the site within table S1.1 of the permit for the section 6.8 listed activity and we need to be confident that the level of emissions associated with this production level have been demonstrated to be acceptable.

The existing volume of raw milk permitted at the site has not increased since the previous variation and therefore the assessment for emissions to water/sewer remain valid for capacity threshold now placed within table S1.1 of the permit.

Emissions to Air

We asked the operator to list all emission points to air from the installation in the Regulation 61 notice. And to provide a site plan indicating the locations of all air emission points.

The operator has provided an up to date air emission plan.

Implementing the requirements of the Medium Combustion Plant Directive

Existing Medium Combustion Plant (1MW-50MW)

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

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

The Operator provided the information in the table(s) below:

Combined heat and power (CHP) engines

1. Rated thermal input (MW) of the medium combustion plant.	CHP1 4.5 MWth	CHP2 4.5 MWth	CHP3 4.7 MWth
2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant).	Gas engine	Gas engine	Gas engine
3. Type and share of fuels used according to the fuel categories laid down in Annex II.	Mix of biogas and natural gas	Mix of biogas and natural gas	Mix of biogas and natural gas
4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018.	2013	2013	2020

Boilers

1. Rated thermal input (MW) of the medium combustion plant.	LPHW Boiler 2.22 MWth	Steam Boiler 1 5.093 MWth	Steam Boiler 2 5.093 MWth
2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant).	Boilers	Boilers	Boilers
3. Type and share of fuels used according to the fuel categories laid down in Annex II.	Natural gas	Natural gas	Natural gas
4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018.	2013	2013	2013

We have reviewed the information provided for each of the MCP on site. The three CHPs have the ability to be fuelled either on a blend of biogas originating from the onsite AD plant and natural gas, or solely on natural gas. We have retained the limits and monitoring requirements for when the CHPs are fired on a blend of natural gas and biogas as per the previous variation (EPR/XP3039ZS/V006) issued on 22/05/2023. We have added, at the request of the operator separate limits for when the CHPs are fuelled solely on natural gas. For the three boilers on site we have retained the limits and monitoring requirements from the previously issued variations. It should be noted that the ELVs imposed meet the requirements of the MCPD when calculated using the reference conditions as stipulated in the permit.

Emissions to Water and implementing the requirements of the Water Framework Directive

We asked the Operator to provide information on all emissions to water at the installation in the Regulation 61 Notice as follows;

- Identify any effluents which discharge directly to surface or groundwater;
- Provide an assessment of volume and quality, including results of any monitoring data available;
- and for any discharges to water / soakaway whether a recent assessment of the feasibility of connection to sewer has been carried out.

The operator has previously provided assessments for all emissions to water at the installation. The operator has declared that the volume of effluent being discharged to the foul sewer has increased from 1,200m³ to 1,500m³ per day. As there has been no change to the activities undertaken at the site and subsequent effluents generated at the installation since the original risk assessment was taken. Consequently, we agree that the original risk assessments remain valid at this time.

Soil & groundwater risk assessment (baseline report)

The IED requires that the operator of any IED installation using, producing or releasing “relevant hazardous substances” (RHS) shall, having regarded the possibility that they might cause pollution of soil and groundwater, submit a “baseline report” with its permit application. The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the regulated facility and at cessation of activities. It must enable a quantified comparison to be made between the baseline and the state of the site at surrender.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site’s current or approved future use. To do this, the Operator has to submit a surrender application to us, which we will not grant unless and until we are satisfied that these requirements have been met.

The Operator submitted a site condition report [Application Site Condition Report Arla Foods Limited, Aylesbury Dairy dated September 2012] during the original application received on 12/12/2012]. The site condition report included a report on the baseline conditions as required by Article 22. We reviewed that report and considered that it adequately described the condition of the soil and groundwater at that time.

Hazardous Substances

Hazardous substances are those defined in Article 3 of Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures

The operator has provided a short risk assessment on the hazardous substances stored and used at the installation. The risk assessment was a stage 1-3 assessment as detailed within EC Commission Guidance 2014/C 136/03.

The stage 1 assessment identified the hazardous substances used / stored on site. The stage 2 assessment identified if hazardous substances are capable of causing pollution. If they are capable of causing pollution they are then termed Relevant Hazardous Substances (RHS). The Stage 3 assessment identified if pollution prevention measures are fit for purpose in areas where hazardous substances are used / stored. This includes drains as well.

The outcomes of the three stage assessment identified that pollution of soil and/or ground water to be unlikely.

Climate Change Adaptation

The operator has considered if the site is at risk of impacts from adverse weather (flooding, unavailability of land for land spreading, prolonged dry weather / drought).

The operator has identified the installation as likely to be or has been affected by prolonged dry weather/drought, which we consider to be a severe weather event.

The operator has submitted a climate change adaptation plan, which considers, as a minimum the impact of severe weather on the operations within the installation.

We consider the climate change adaptation plan to be appropriate for the installation.

Containment

We asked the Operator via the Regulation 61 Notice to provide details of the each above ground tanks which contain potentially polluting liquids at the site, including tanks associated with the effluent treatment process where applicable.

The Operator provided details of all tanks;

- Tank reference/name
- Contents
- Capacity (litres)
- Location
- Construction material(s) of each tank
- The bunding specification including
 - Whether the tank is banded
 - If the bund is shared with other tanks
 - The capacity of the bund
 - The bund capacity as % of tank capacity

- Construction material of the bund
- Whether the bund has a drain point
- Whether any pipes penetrate the bund wall
- Details of overfill prevention
- Drainage arrangements outside of bunded areas
- Tank filling/emptying mitigation measures (drips/splashes)
- Leak detection measures
- Details of when last bund integrity test was carried out
- Maintenance measures in place for tank and bund (inspections)
- How the bund is emptied
- Details of tertiary containment

and whether the onsite tanks currently meet the relevant standard in the Ciria “Containment systems for the prevention of pollution (C736)” report.

We reviewed the information provided by the operator. We are satisfied that the existing tanks and containment measures on site meet the standards set out in CIRIA C736.

Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 61 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

Previous improvement conditions marked as complete in the previous permit.

Superseded Improvement Conditions – Removed from permit as marked as “complete”	
Reference	Improvement Condition
IC1	Following completion of the commissioning process, the Operator shall provide the Environment Agency with a written post-commissioning report for approval, which shall include: <ol style="list-style-type: none"> 1. A review of the performance of the facility against the conditions of this Permit. 2. Details of procedures developed during commissioning for achieving and demonstrating satisfactory process control.
IC2	Following the commissioning of the plant, the Operator shall submit to the Agency a report assessing the impacts of noise from the installation by existing and proposed (phase 2) developments. The report shall contain results of the monitoring carried out in accordance with Pre-operational condition POC 2 with conclusions on the impacts and identifying options to further reduce noise from the installation with timescales for implementation. The plan shall be implemented by the Operator in accordance with the Environment Agency's written approval
IC3	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the accreditation of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to accreditation
IC4	The Operator shall submit a written report to the Environment Agency, which will contain a comprehensive review of the options available for the re-use of waste water for potable applications. The review shall detail any identified proposals for improving the recovery and utilisation of waste water and shall provide a timetable for their implementation
IC5	The Operator shall review the control measures for odour on site, and update the site Odour Management Plan accordingly. The review should include a planned preventative maintenance schedule for the site and consider what further contingency measures should be in place. The plan shall include a firm timetable for the installation of any suitable control measures identified.

Previous pre-operational measures marked as complete in the previous permit.

Superseded Improvement Conditions – Removed from permit as marked as “complete”	
Reference	Pre-operational measures
POC4	At least 8 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the new AD facility, the operator shall provide a written commissioning plan (including timescales for completion) for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the measures to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved by the Environment Agency.

No improvement conditions have added to the permit as a result of the variation.

Annex 4: Pre-operational Conditions

The following pre-operational condition has been added to the permit as a result of the variation.

Reference	Pre-operational measures
POC5	At least 2 weeks before prior to the burning of biogas in the onsite CHPs (CHP1, CHP2 & CHP3) the operator shall establish the methane emissions in the exhaust gas from engines burning biogas and compare these to the manufacturer’s specification and benchmark levels agreed in writing with the Environment Agency. The operator shall, as part of the methane leak detection and repair (LDAR) programme, develop proposals to assess the potential for methane slip and take corrective actions where emissions above the manufacturer’s specification or appropriate benchmark levels are identified.