

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/EP3836NU
The Operator is: Muller UK & Ireland Group LLP
The Installation is: Droitwich Dairy
This Variation Notice number is: EPR/EP3836NU/V003

What this document is about

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

We have reviewed the permit for this installation against the BAT Conclusions for the Food, Drink and Milk Industries published on 4th December 2019 in the Official Journal of the European Union. In this decision document, we set out the reasoning for the consolidated variation notice that we have issued. It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position.

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

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

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

How this document is structured

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

1 Our decision

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

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 30/07/2021 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 01/11/2021.

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 consider that the Operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusion BATc 6. The operator does not currently comply with the requirements of BATc 6. In relation to this BAT Conclusion, the operator has committed compliance by 4 December 2023. We have therefore included Improvement Condition (IC1) in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered before 4 December 2023.

2.3 Requests for further information during determination

Although we were able to consider the Regulation 61 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment, and issued a further information request on 31/10/2022. The request for further information requested clarification on the capacity of the site, the following BATc 3, 6, 11 and details on the water emissions, air emissions on site combustion plant, and a revised site plan. A response to the request for further information was received on 30/11/2022. A copy of 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 |

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. 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 tracks environmental KPIs (energy, water, product use and wastage). The site uses Carbon Desktop to monitor gas, electric, water and effluent daily but up to every 15 minutes were applicable.</p> |
| 3 | <p>Monitoring key process parameters at key locations for emissions to water. For relevant emissions to water as identified by the inventory of waste water streams (see BAT 2), BAT is to monitor key process parameters (e.g. continuous monitoring of waste water flow, pH and temperature) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).</p> | CC | <p>The operator has provided information to support compliance with BATc 3. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 3.</p> <p>The Operator undertakes continuous monitoring of the following parameters COD, TSS, pH, conductivity and ammonia for effluent pre and post treatment prior to discharge to the sewer.</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 by the onsite effluent treatment plant prior to discharge to the foul sewer for further treatment. The only parameter relevant for discharges to sewer is chloride but this is not a parameter of concern for this particular process (milk production) so</p> |

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| | | | <p>is not applicable. For information, the effluent is monitored on an hourly basis to ensure the limits of the trade effluent consent are achieved.</p> <p>We are therefore satisfied that BATc 4 is not applicable for this site</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 refer to BAT5 table in BATc 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 BAT monitoring requirements for 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 part compliance with BATc 7. We have assessed the information provided and we are not satisfied that the operator has demonstrated compliance with BATc 6.</p> <p>The site has an energy efficiency plan in place which monitors the key KPIs for gas and electricity are monitored through performance management system and annual improvement targets are met..</p> <p>The site has implemented the following energy efficiency techniques including</p> <ul style="list-style-type: none"> - All new motors are to the latest EU Standard - Heat recovery is used on all pasteurisers, regen on milk pipes and the recovery of hot water. - ongoing projects to upgrade to LED lighting with sensors. - Pre-heating of feed water. - Insulation of all pipework. - Projects in place to replace current drivers with variable speed drivers. |

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| 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 for detail of each technique, refer BAT 7 table in BATc.</p> <p>(a) water recycling and/or reuse (b) Optimisation of water flow (c) Optimisation of water nozzles and hoses (d) Segregation of water streams Techniques related to cleaning operations: (e) Dry cleaning (f) Pigging system for pipes (g) High-pressure cleaning (h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP) (i) Low-pressure foam and/or gel cleaning (j) Optimised design and construction of equipment and process areas (k) Cleaning of equipment as soon as possible</p> | CC | <p>The operator has provided information to support part compliance with BATc 7. We have assessed the information provided and we are not 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"> - Water recycling and reuse across the site where possible including the use of reverse osmosis. - The segregation of water streams - The use of CIP, high pressure cleaning and the cleaning of equipment as soon as possible. |
| 8 | <p>Prevent or reduce the use of harmful substances</p> <p>In order to prevent or reduce the use of harmful substances, e.g. in cleaning and disinfection, BAT is to use one or a combination of the techniques given in BAT8 [for detail of each technique, refer to BAT 8 table in BATc]</p> | CC | <p>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.</p> <p>The cleaning chemicals used on site are appropriate for the cleaning undertaken at the site and collection and reuse of chemicals through the use of CIP. In addition the operator avoids chemicals that are harmful to the environment, the collection and reuse of cleaning chemicals through CIP and the optimised design of the treatment and CIP processes.</p> |
| 9 | <p>Refrigerants</p> <p>In order to prevent emissions of ozone-depleting substances and of substances with a high global warming potential from cooling and freezing, BAT is to use refrigerants without ozone depletion potential and with a low global warming potential.</p> | CC | <p>The operator has provided information to support compliance with BATc 9. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 9.</p> |

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| | | | <p>The Operator has stated that the site uses ammonia for refrigeration processes, this is a non-ozone depleting substance. F-gases are used in air conditioning units but these do not form part of the production process and are therefore excluded from the BATc requirements (and will be regulated under F-gas Regulations).</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 (e) Phosphorus recovery as struvite (f) Use of waste water for land spreading</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> <p>The Operator has demonstrated that minimal waste is produced from the processing of raw milk, measures include the sending of off spec products to animal feed where possible, in line with appropriate regulation. The recovery and re-blending of residues from the pasteurisers. The Operator has the ability to use land spreading for the spreading of sludge from the ETP when permitted (weather conditions)</p> |
| 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>Uncontaminated surface water arising from yards areas is discharged via interceptors and a penstock valve to the Elmbridge Brook, Roof water is discharged directly to the Elmbridge Brook.</p> <p>The Site has procedures in place for the detection of spills and prevention measures in place to prevent off site discharges. There are a number of pen stock valves located at the site</p> |

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| | | | that can be closed in the event there is loss of containment. | | | | | | | | | | |
| 12 | <p>Emissions to water – treatment In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below. Preliminary, primary and general treatment (a) Equalisation (b) Neutralisation (c) Physical separate (eg screens, sieves, primary settlement tanks etc) Aerobic and/or anaerobic treatment (secondary treatment) (d) Aerobic and/or anaerobic treatment (eg activated sludge, aerobic lagoon etc) (e) Nitrification and/or denitrification (f) Partial nitrification - anaerobic ammonium oxidation Phosphorus recovery and/or removal (g) Phosphorus recovery as struvite (h) Precipitation (i) Enhanced biological phosphorus removal Final solids removal (j) Coagulation and flocculation (k) Sedimentation (l) Filtration (eg sand filtration, microfiltration, ultrafiltration) (m) Flotation</p> | CC | <p>The operator has provided information to support compliance with BATc 12. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 12.</p> <p>The Operator treats all process effluent on site within the permitted effluent treatment plant prior to discharging the treated effluent to the foul sewer under agreement from the sewage undertaker. The effluent treatment plant incorporates the following processes, the balancing of effluent, the neutralising of the pH, physical separation through the use of screens, the use of a DAF plant, the reduction of nitrogen, the removal of sludge from site and the use of MBRs (membrane bioreactor)</p> | | | | | | | | | | |
| 12 | <p>Emissions to water – treatment BAT-associated emission levels (BAT-AELs) for direct emissions to a receiving water body</p> <table border="1" data-bbox="280 1061 1214 1262"> <thead> <tr> <th data-bbox="280 1061 770 1102">Parameter</th> <th data-bbox="770 1061 1214 1102">BAT-AEL (°) (°) (daily average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="280 1102 770 1144">Chemical oxygen demand (COD) (°) (°)</td> <td data-bbox="770 1102 1214 1144">25-100 mg/l (°)</td> </tr> <tr> <td data-bbox="280 1144 770 1185">Total suspended solids (TSS)</td> <td data-bbox="770 1144 1214 1185">4-50 mg/l (°)</td> </tr> <tr> <td data-bbox="280 1185 770 1227">Total nitrogen (TN)</td> <td data-bbox="770 1185 1214 1227">2-20 mg/l (°) (°)</td> </tr> <tr> <td data-bbox="280 1227 770 1262">Total phosphorus (TP)</td> <td data-bbox="770 1227 1214 1262">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 treated effluent to the foul sewer, there are no direct discharges to the water course as such the relevant BAT-AELs for the dairy sector do not apply.</p> <p>We are therefore satisfied that BAT AELs associated with BATc 12 is not applicable for this site.</p> |
| 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 (°) | | | | | | | | | | | | |
| 13 | <p>Noise management plan In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up, implement and regularly review a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: - a protocol containing actions and timelines;</p> | NA | <p>A noise management plan is only required where odour nuisance at sensitive receptors is expected or has been substantiated. There have been no substantiated odour nuisance from the site therefore an NMP is not a requirement for this site.</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 |
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| | <p>- a protocol for conducting noise emissions monitoring;</p> <p>- a protocol for response to identified noise events, eg complaints;</p> <p>- 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> <p>Note: BAT13 is only applicable where a noise nuisance at sensitive receptors is expected and/or has been substantiated.</p> | | <p>We are therefore satisfied that BATc 13 is not applicable for this site.</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> <p>(a) Appropriate location of equipment and buildings</p> <p>(b) Operational measures</p> <p>(c) Low-noise equipment</p> <p>(d) Noise control equipment</p> <p>(e) Noise abatement</p> | CC | <p>The operator has provided information to support compliance with BATc 14. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 14.</p> <p>The operator has implemented several procedures to reduce noise emissions from the site including;</p> <ul style="list-style-type: none"> • The housing of equipment within buildings • All equipment is on a Planned Preventative Maintenance (PPM) Plan to ensure equipment is well maintained • Low noise equipment is used where possible such as compressors. |
| 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> <p>- a protocol containing actions and timelines;</p> <p>- a protocol for conducting odour monitoring.</p> <p>- a protocol for response to identified odour incidents eg complaints;</p> <p>- 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.</p> <p>BAT 15 is only applicable to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.</p> | 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 which has been assessed as part of the variation application undertaken alongside the permit review.</p> <p>The odour management plan outlines the monitoring that has been undertaken at the site and the control measures the site takes to mitigate against odour emissions. The odour</p> |

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|---|--|----------------------------|---|---|---|--|--|--|--|--|--|---|---|---|--|--|--|---|---|------------------------------|--|----|---|
| | | | management plan details how complaints are managed at the site. | | | | | | | | | | | | | | | | | | | | |
| DAIRY SECTOR BAT CONCLUSIONS (BAT 21-23) | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | <p>Energy efficiency – Dairy Sector 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="293 443 927 847"> <thead> <tr> <th>Technique</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>(a) Partial milk homogenisation</td> <td>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>(b) Energy-efficient homogeniser</td> <td>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>(c) Use of continuous pasteurisers</td> <td>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>(d) Regenerative heat exchange in pasteurisation</td> <td>The incoming milk is preheated by the hot milk leaving the pasteurisation section.</td> </tr> <tr> <td>(e) Ultra-high-temperature (UHT) processing of milk without intermediate pasteurisation</td> <td>UHT milk is produced in one step from raw milk, thus avoiding the energy needed for pasteurisation.</td> </tr> <tr> <td>(f) Multi-stage drying in powder production</td> <td>A spray-drying process is used in combination with a downstream dryer, e.g. fluidised bed dryer.</td> </tr> <tr> <td>(g) Precooling of ice-water</td> <td>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 style="text-align: right;">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 Operator has stated that</p> <ul style="list-style-type: none"> • They homogenise the cream with small quantities of milk before recombination to minimise the size and energy of the homogeniser plant. • The homogeniser is run at a reduce pressure. • The pasteurisers are continuously run 24/7 | | | | |
| 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. | | | | | | | | | | | | | | | | | | | | | | |
| 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="293 954 927 1394"> <thead> <tr> <th>Technique</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td colspan="2"><i>Techniques related to the use of centrifuges</i></td> </tr> <tr> <td>(a) Optimised operation of centrifuges</td> <td>Operation of centrifuges according to their specifications to minimise the rejection of product.</td> </tr> <tr> <td colspan="2"><i>Techniques related to butter production</i></td> </tr> <tr> <td>(b) Rinsing of the cream heater with skimmed milk or water</td> <td>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"><i>Techniques related to ice cream production</i></td> </tr> <tr> <td>(c) Continuous freezing of ice cream</td> <td>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"><i>Techniques related to cheese production</i></td> </tr> <tr> <td>(d) Minimisation of the generation of acid whey</td> <td>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>(e) Recovery and use of whey</td> <td>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. | NA | <p>The site doesn't undertake any of the processes relevant to the techniques listed under BAT 22</p> <p>We are therefore satisfied that techniques associated with BATc 22 are not applicable for this site.</p> |
| 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. | | | | | | | | | | | | | | | | | | | | | | |
| 23 | In order to reduce channelled dust emissions to air from drying, BAT is to use one or a combination of the techniques given below. | NA | The site doesn't undertake any drying processes on site as such the relevant BAT | | | | | | | | | | | | | | | | | | | | |

| 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 | |
|--|--|--------------------------------------|---|----------------------------|---|---|
| | Technique | Description | Applicability | | | |
| | (a) Bag filter (b) Cyclone (c) Wet scrubber | See Section 14.2 Page 34 of the Bref | May not be applicable to the abatement of sticky dust. Generally applicable. | | requirements for the abatement of emissions to air from drying processes do not apply. We are therefore satisfied that techniques associated with BATc 23 are not applicable for this site. | |
| The associated monitoring is given in BAT 5. | | | | | | |
| 23 | BAT-associated emission level (BAT-AEL) for channelled dust emissions to air from drying | | | NA | The site doesn't undertake any drying processes on site as such the relevant BAT-AELs for the emissions to air from drying do not apply. We are therefore satisfied that BAT AELs associated with BATc 23 is not applicable for this site. | |
| | Parameter | Description | BAT-AEL (average over the sampling period) | | | |
| | Dust | Mg/Nm ³ | <2-10 ⁽¹⁾ | | | |
| | (1) The upper end of the range is 20 mg/Nm ³ for drying of demineralised whey powder, casein and lactose. | | | | | |
| Dairy Sector Environmental Performance Levels | | | | | | |
| EPL | Environmental Performance Level – Energy consumption for the dairy sector | | | | CC | The operator has provided information to support compliance with the energy EPL. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the energy consumption for market milk. The market milk figure of 0.1 – 0.6 MWh/tonne is appropriate for this installation. The Operator has states that the site achieved a specific energy consumption of 0.1MWh/tonne as an average over the three years (2018-2020) which is well within the target, reflecting good energy management in place at this installation. |
| | Main product (at least 80 % of the production) | Unit | Specific consumption | energy (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 | | | | | |
| (1) The specific energy consumption level may not apply when raw materials other than milk are used. | | | | | | |

| BATC No. | Summary of BAT Conclusion requirement for Food, Drink and Milk Industries | Status NA/ CC / FC / NC | Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement | | | | | | | | | | |
|--|--|---|---|---|-------------|--|-----------|--------|------------|--------|-----------|----|---|
| EPL | <p>Environmental Performance Level – Specific waste water discharge for the dairy sector</p> <table border="1" data-bbox="277 309 1232 456"> <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 waste water EPL. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the energy consumption for waste water discharge for the dairy sector.</p> <p>The market milk figure of 0.3 – 3.0 m³/tonne of specific waste water discharge of raw materials is appropriate for this installation. The Operator has states that the site achieved a specific waste water discharge of 0.4 m³/tonne of raw material as an average over the three years (2018-2020) which is well within the target, reflecting good management at this installation.</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 | | | | | | | | | | | |

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

Updating permit during permit review consolidation

- Activity name
- Introductory note (updated)
- Site plan
- Table S1.1 overhaul
 - Activity Reference (AR) renumbering
 - Updated listed activities
 - Addition of production capacity
 - Directly associated activities (DAAs) standardisation

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

Production/Capacity Threshold

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

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.

Whilst the volume of raw milk permitted at the site has increased since the previous variation we are satisfied that the associated risks have not changed, due to the effluent treatment plant capacity being assessed when originally permitted.

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.

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

| | CHP1 | CHP2 |
|---|-------------|-------------|
| 1. Rated thermal input (MW) of the medium combustion plant. | 2.5 | 2.5 |
| 2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant). | CHP | CHP |
| 3. Type and share of fuels used according to the fuel categories laid down in Annex II. | 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. | 2022 | 2022 |

Boilers

| | Boiler 1 | Boiler 2 | Boiler 3 |
|---|-------------|-------------|-------------|
| 1. Rated thermal input (MW) of the medium combustion plant. | 1.8 | 1.8 | 1.9 |
| 2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant). | Boiler | Boiler | Boiler |
| 3. Type and share of fuels used according to the fuel categories laid down in Annex II. | Natural gas | Natural gas | Natural gas |
| 4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018. | 2000 | 2002 | 2004 |

We have reviewed the information provided and we consider that the boilers qualify as “existing” medium combustion plant. Tighter limits than those specified within the MCPD have been included for the three boilers following the previous variation (V002). The limits set for the CHPs reflect the limits specified in the MCPD for the size and type of fuel used by the CHPs as specified in the MCPD, these limits were also added under the previous variation (V002).

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

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

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

The operator has previously provided assessments for all emissions to water at the installation. The operator declares there has been no change to activities and subsequent effluents generated at the installation since this risk assessment was taken. Consequently, we agree that the original risk assessments remain valid at this time.

Soil & groundwater risk assessment (baseline report)

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

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

The Operator submitted a site condition report [Ground Investigation and Test Report, dated 20/10/1999] during the original application received on 16/11/2000. 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, if transporting hazardous substances.

The outcomes of the three stage assessment identified that pollution of soil / groundwater to be possible and monitoring is required for these hazardous substance(s).

The Operator has indicated that relative hazardous substances (RHS) are present but that the current soil and/or groundwater measurements are adequate to enable a baseline to be defined and monitored for the RHSs that have been identified. Given the age of the site we accept the Operators approach.

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

The Operator provided details of all tanks;

- Tank reference/name
- Contents
- Capacity (litres)
- Location
- Construction material(s) of each tank
- The bunding specification including
 - Whether the tank is bunded
 - If the bund is shared with other tanks
 - The capacity of the bund
 - The bund capacity as % of tank capacity
 - Construction material of the bund
 - Whether the bund has a drain point
 - Whether any pipes penetrate the bund wall
- Details of overfill prevention
- Drainage arrangements outside of bunded areas
- Tank filling/emptying mitigation measures (drips/splashes)
- Leak detection measures
- Details of when last bund integrity test was carried out
- Maintenance measures in place for tank and bund (inspections)
- How the bund is emptied
- Details of tertiary containment

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

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

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).

The following improvement conditions have been marked as complete and removed from the permit.

| Superseded Improvement Conditions – Removed from permit as marked as “complete” | |
|--|--|
| Reference | Improvement Condition |
| 9.1 | The Operator shall complete and submit a report on potential environmental improvements to the Permitted Installation. For each of the subject areas identified in Section 2 of the appropriate technical guidance, the report shall assess the costs and benefits of alternative techniques that may provide environmental improvement. This shall include, but not be limited to, those techniques listed in guidance. The methodologies used should be based on those given in Agency guidance note H1 and should justify, against the Best Available Techniques (BAT) criteria, where potential improvements are not planned to be implemented. The Operator shall complete an updated report every 36 months. |
| 9.2 | The Operator shall complete and submit a report on progress towards establishing an Environmental Management System having regard to section 2.1 of the General Sector Guidance, S0.01. The report shall include the estimated timetable for obtaining accreditation to ISO 14001 for the Environmental Management System. |
| 9.3 | The Operator shall prepare a Site Closure Plan which details the actions to be taken on the definitive cessation of operations to avoid any pollution risk and to return the site of the installation to a satisfactory state. The plan shall be reviewed and updated as necessary on an annual basis. |
| 9.4 | The operator shall complete a report on sludge management and submit it to the Environment Agency. This will cover the environmental as well as economic costs and benefits of the potential options and justification for the chosen option. The report will include records of how the sludge has been disposed of and the volumes disposed. The operator shall complete and submit an updated report every 12 months. |
| 9.5 | The operator shall complete an evaluation of the effluent treatment plant and submit it as a report to the Environment Agency. This will cover the environmental as well as economic costs and benefits resulting from its operation, compared to the previous discharge to sewer. Figures for the water efficiency ratios shall be included. |