ETP BAT Assessment – WASTE BREF

This Best Available Techniques (BAT) document has been prepared in line with the conclusions for the best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council.

The process of this BAT Assessment is to review the systems in place to support the permit application for the replacement Effluent Treatment Plant at the Newcastle Emlyn Creamery.

The document has been prepared in line with the BAT requirements relevant to the proposed effluent treatment plant.

The effluent plant replacement project has been fully described and outlined in the supporting permit documents for the project, and this assessment should be reviewed in conjunction with the additional documentation.

In respect of the discharge limits for identified substances applicable to the proposed treatment / discharge processes as per table 6.1 of the BAT conclusions document:

Figures are based on treatment of a water based liquid waste

	BAT	Actual (Designed Specification)
COD	30 – 300mg/l	110mg/l
TSS	5 – 60mg/l	40mg/l
Cadmium	0.01-0.05 mg/l	0.1mg/l
Mercury	0.5-5 µg/l	0.3mg/l

This document should be viewed in conjunction with the Best Available Techniques (BAT) prepared in line with the conclusions for the food, drink, and milk industries, under Directive 2010/75/EU of the European Parliament

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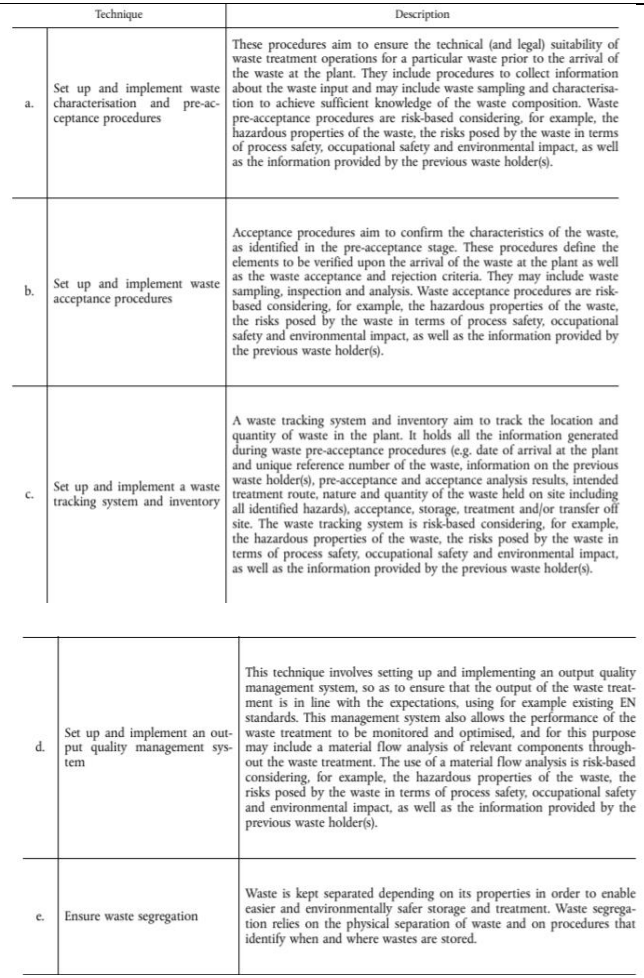
BAT Assessment – Newcastle Emlyn Creamery ETP					
best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council					
Guidance / Reference	**Assessment Area**	**BAT**	**BAT Requirement**	**How does Dairy Partners Comply**	**Are project techniques considered BAT**
BAT 1	Environmental Management Systems	In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the following features:	- commitment of the management, including senior management; - definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; - planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; - implementation of procedures paying particular attention to: structure and responsibility, recruitment, training, awareness and competence, communication, employee involvement, effective process control,	DP Environmental Policy DP/EMS/001 – Introduction to site Environment DP Environmental Policy DP/EMS/014 – Identification of Environmental Objectives DP/EMS/011 – Internal Environmental Audits DP/EMS/001 Environmental Policy DP/EMS/005 – Env Communications	YES

				Environmental Policy	
			maintenance programmes,	DP/EMS/019 – MCERTS SOPs	
			emergency preparedness and response,	DP/EMS/019 – MCERTS SOPs	
			safeguarding compliance with environmental legislation;	DP/EMS/002 – Emergency and contingency plan DP/EMS/003 – Environmental accident	
			checking performance and taking corrective action, paying particular attention to:	DP/EMS/007 – Environmental Management Review	
			- monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM),		
			- corrective and preventive action,		
			- maintenance of records,	Environmental Policy DP/EMS/011 – Internal Environmental Audits MCERTs Audit	
			- independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;		
			- review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;	DP/EMS/011 – Internal Environmental Audits MCERTs Audit	
			- following the development of cleaner technologies;		
			- consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;	DP/EMS/007 – Environmental Management Review	

				Environmental Policy Decommissioning plan	
BAT 2.	Waste Identification	In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques		a)The waste entering the plant is standard process water, all products used in the manufacturing process are known, and all are chosen due to food manufacturing guidance. Waste streams have been monitored for the life of the previous asset, there will be no changes to the characteristics of the waste water being treated. b)The plant is treating waste from the food manufacturing plant only, there are no additional wastes entering the system from outside of the production line. c)Waste in the system will be related to the production during the day, spillages etc. in the food production lines will be monitored and tracked through the system, but there will be no requirement for a	YES

	Technique	Description
a.	Set up and implement waste characterisation and pre-acceptance procedures	These procedures aim to ensure the technical (and legal) suitability of waste treatment operations for a particular waste prior to the arrival of the waste at the plant. They include procedures to collect information about the waste input and may include waste sampling and characterisation to achieve sufficient knowledge of the waste composition. Waste pre-acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).
b.	Set up and implement waste acceptance procedures	Acceptance procedures aim to confirm the characteristics of the waste, as identified in the pre-acceptance stage. These procedures define the elements to be verified upon the arrival of the waste at the plant as well as the waste acceptance and rejection criteria. They may include waste sampling, inspection and analysis. Waste acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).
c.	Set up and implement a waste tracking system and inventory	A waste tracking system and inventory aim to track the location and quantity of waste in the plant. It holds all the information generated during waste pre-acceptance procedures (e.g. date of arrival at the plant and unique reference number of the waste, information on the previous waste holder(s), pre-acceptance and acceptance analysis results, intended treatment route, nature and quantity of the waste held on site including all identified hazards), acceptance, storage, treatment and/or transfer off site. The waste tracking system is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).
d.	Set up and implement an output quality management system	This technique involves setting up and implementing an output quality management system, so as to ensure that the output of the waste treatment is in line with the expectations, using for example existing EN standards. This management system also allows the performance of the waste treatment to be monitored and optimised, and for this purpose may include a material flow analysis of relevant components throughout the waste treatment. The use of a material flow analysis is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).
e.	Ensure waste segregation	Waste is kept separated depending on its properties in order to enable easier and environmentally safer storage and treatment. Waste segregation relies on the physical separation of waste and on procedures that identify when and where wastes are stored.

			<table><tr><th colspan="2">Technique</th><th>Description</th></tr><tr><td>f.</td><td>Ensure waste compatibility prior to mixing or blending of waste</td><td>Compatibility is ensured by a set of verification measures and tests in order to detect any unwanted and/or potentially dangerous chemical reactions between wastes (e.g. polymerisation, gas evolution, exothermal reaction, decomposition, crystallisation, precipitation) when mixing, blending or carrying out other treatment operations. The compatibility tests are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</td></tr><tr><td>g.</td><td>Sort incoming solid waste</td><td>Sorting of incoming solid waste (1) aims to prevent unwanted material from entering subsequent waste treatment process(es). It may include: — manual separation by means of visual examinations; — ferrous metals, non-ferrous metals or all-metals separation; — optical separation, e.g. by near-infrared spectroscopy or X-ray systems; — density separation, e.g. by air classification, sink-float tanks, vibration tables; — size separation by screening/sieving.</td></tr></table>	specific waste tracking process. d)Internal laboratory is set-up for monitoring of key parameters in line with the permit requirements, this data is monitored and recorded daily on the monitoring spreadsheet. Discharge volumes from the site are monitored via an MCERTS certified flow meter. e)Waste segregation is minimal, the process will create solids which will be removed from the process in the form of sludge. The sludge is removed from the process as part of the dissolved air filtration step, the solids are then segregated into a waste sludge tank which is then removed by road tanker and transported to AD treatment at a 3rd party location. F)The treatment process is monitored by telemetry to ensure the various reactions required such as	

				chemical dosing for pH correction, and polymer addition to ensure removal of solids. All dosing and chemical addition is completed by auto dosing with automatic monitoring throughout the process, including pre-set alarms and diverts for out of specification effluent. The process also includes human interaction in the form of a plant specific operator, for 24hr coverage the plant also feeds into the site Scada system for 24hr monitoring. The electrical control panel is equipped with a Siemens S7-1500 series PLC including 12" Full colour HMI to control, adjust and monitor the complete process in the most user friendly way. Including eWon modem with GSM functionality, for remote support and which can send an SMS text message for each alarm	
BAT 3	Waste Identification	In order to facilitate the reduction of	Information about the characteristics of the waste to be treated and the waste treatment processes, including:	MCERTS SOPs, contain process flow diagrams of	YES

		emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:	- simplified process flow sheets that show the origin of the emissions; - descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; Information about the characteristics of the wastewater streams, such as: - average values and variability of flow, pH, temperature, and conductivity; - average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances/micropollutants); - data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);	the treatment in simplified format. Operations manual for the new plant have been developed by the vendor The water from the process is stable, monitoring has been completed on the flow during the design stage, this included a significant period of 24hr sampling to ensure the waste stream was understood so the design of the plant was correct. Additionally internal sample data was available regarding the effluent flow into the old asset throughout its lifespan. In respect of flow, the food manufacturing process is managed at a standard rate based on the ability of the plant and the duration of the make and then the cleaning process, there can be no deviation from the known parameters. Additional tests are completed on the milk products prior to manufacturing, so the	

				content of heavy metals in the raw materials is known. All chemicals are supplied by the same vendor, cleaning is mainly automated (CIP) meaning the cycles do not permit mixing and reduces the risk of reaction. All cleaning chemicals are pre-mixed at low concentration based on advice from the vendor, internal visual checks on surfaces to monitor the effectiveness of cleans, as well as compliance with legislation for food preparation cleanliness.	

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BAT 4	Waste Storage	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below.	<table><tr><th></th><th>Technique</th><th>Description</th><th>Applicability</th></tr><tr><td>a.</td><td>Optimised storage location</td><td>This includes techniques such as: — the storage is located as far as technically and economically possible from sensitive receptors, watercourses, etc.; — the storage is located in such a way so as to eliminate or minimise the unnecessary handling of wastes within the plant (e.g. the same wastes are handled twice or more or the transport distances on site are unnecessarily long).</td><td>Generally applicable to new plants.</td></tr><tr><td>b.</td><td>Adequate storage capacity</td><td>Measures are taken to avoid accumulation of waste, such as: — the maximum waste storage capacity is clearly established and not exceeded taking into account the characteristics of the wastes (e.g. regarding the risk of fire) and the treatment capacity; — the quantity of waste stored is regularly monitored against the maximum allowed storage capacity; — the maximum residence time of waste is clearly established.</td><td rowspan="3">Generally applicable.</td></tr><tr><td>c.</td><td>Safe storage operation</td><td>This includes measures such as: — equipment used for loading, unloading and storing waste is clearly documented and labelled; — wastes known to be sensitive to heat, light, air, water, etc. are protected from such ambient conditions; — containers and drums are fit for purpose and stored securely.</td></tr><tr><td>d.</td><td>Separate area for storage and handling of packaged hazardous waste</td><td>When relevant, a dedicated area is used for storage and handling of packaged hazardous waste.</td></tr></table>	a)Storage of chemicals, sludge and water pre treatment is within stainless steel tanks on plinths away from road access to prevent impact accidental or malicious. The vessels/tanks are placed on a graded base which leads into a central sump, any spillage is pumped back into the treatment process. In the event of a catastrophic failure the base is big enough to hold the volume of the largest vessel. Tanks are fitted with high level alarms to avoid overfilling during the delivery process (chemicals), treatment process, as well as high level alarms within the balance tank. The plant has been designed with over one days maximum treatment capacity built in for emergencies. The treatment process is continuous and under normal operation there is no requirement for	YES

				any liquid waste to be stored on site. Solids/sludge will be removed by road tanker on a regular basis to prevent any reaction within the tank and to remove the risk of odour due to stagnating waste. Tank connections for chemicals i.e. acid or alkali-based products are of differing fittings removing the risk of mixing in the storage vessels.	
BAT 5	Handling and transfer of waste	In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.	Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements: — handling and transfer of waste are carried out by competent staff; — handling and transfer of waste are duly documented, validated prior to execution and verified after execution; measures are taken to prevent, detect and mitigate spills; — operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.	The treatment process of the production water is monitored by fully trained and competent effluent plant operators, there is also remote support built into the system allowing the vendor to dial in and monitor/operate and direct the onsite operative if required. Sludge will be removed for transfer to AD by a licenced waste contractor, this will be transported by road tanker with the 3rd party operator fully competent.	YES

				All licences for 3rd party support will be subject to internal review and audit as part of the waste management system, copies of licences will be held on file within the EMS.	
BAT 6.	Monitoring	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3),	BAT is to monitor key process parameters (e.g. wastewater flow, pH, temperature, conductivity, BOD) 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).	Telemetry is set-up to automatically monitor effluent entering the plant in order to ensure any dosing is correctly maintained. Flow from the plant to final discharge is monitored by an MCERTS certified flowmeter, which is connected to a data logging system monitoring all flows from the plant. Samples are taken from the discharge in line with the internal monitoring identified in BAT 2, daily monitoring of all permit parameters is completed on the final discharge point as identified in the current EPR permit for the site	YES

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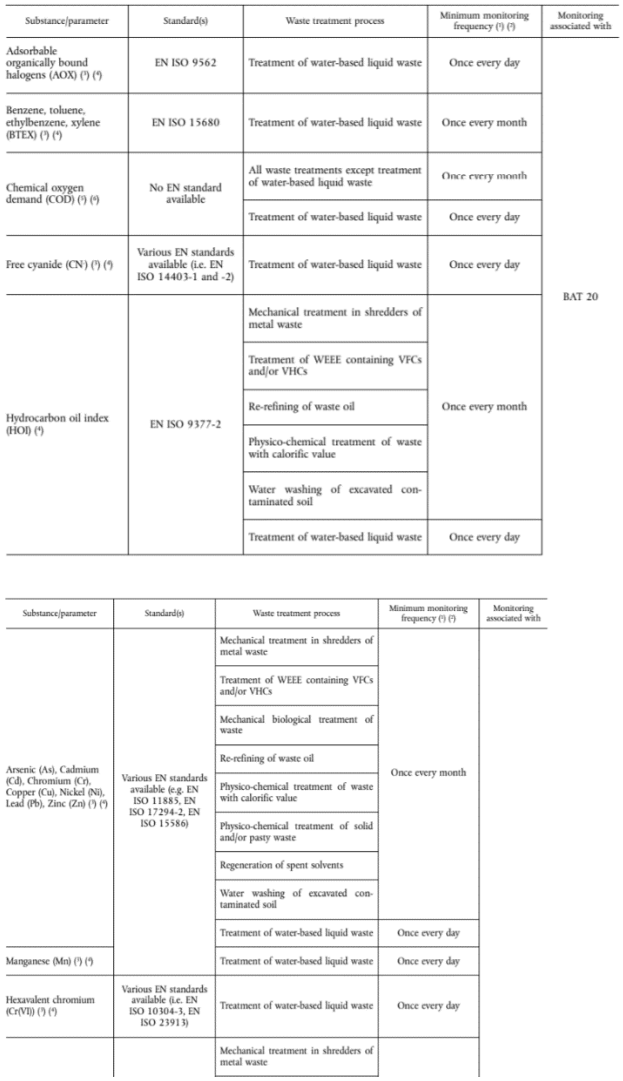
BAT 7	Monitoring	BAT is to monitor emissions to water with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.		Dairy partners will continue to comply with the current permit monitoring requirements, confirmation of monitoring is as follows: COD – completed daily with internal testing within the laboratory Mercury – current permit requires this waste stream to be monitored annually, however monthly sampling can be included as required. Cadmium – as above TSS -as per current permit requirement of once per month, however the internal lab is already testing and recording this daily Nitrite already monitored monthly	YES

Substance/parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1) (2)	Monitoring associated with
Adsorbable organically bound halogens (AOX) (3) (4)	EN ISO 9562	Treatment of water-based liquid waste	Once every day	BAT 20
Benzene, toluene, ethylbenzene, xylene (BTEX) (3) (4)	EN ISO 15680	Treatment of water-based liquid waste	Once every month	
Chemical oxygen demand (COD) (3) (4)	No EN standard available	All waste treatments except treatment of water-based liquid waste	Once every month	
		Treatment of water-based liquid waste	Once every day	
Free cyanide (CN-) (3) (4)	Various EN standards available (i.e. EN ISO 14403-1 and -2)	Treatment of water-based liquid waste	Once every day	
Hydrocarbon oil index (HOI) (4)	EN ISO 9377-2	Mechanical treatment in shredders of metal waste	Once every month	
		Treatment of WEEE containing VFCs and/or VHCs		
		Re-refining of waste oil		
		Physico-chemical treatment of waste with calorific value		
		Water washing of excavated contaminated soil		
		Treatment of water-based liquid waste	Once every day	

Substance/parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1) (2)	Monitoring associated with
Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Nickel (Ni), Lead (Pb), Zinc (Zn) (3) (4)	Various EN standards available (e.g. EN ISO 11885, EN ISO 17294-2, EN ISO 15586)	Mechanical treatment in shredders of metal waste	Once every month	
		Treatment of WEEE containing VFCs and/or VHCs		
		Mechanical biological treatment of waste		
		Re-refining of waste oil		
		Physico-chemical treatment of waste with calorific value		
		Physico-chemical treatment of solid and/or pasty waste		
		Regeneration of spent solvents		
		Water washing of excavated contaminated soil		
		Treatment of water-based liquid waste	Once every day	
Manganese (Mn) (3) (4)		Treatment of water-based liquid waste	Once every day	
Hexavalent chromium (Cr(VI)) (3) (4)	Various EN standards available (i.e. EN ISO 10304-3, EN ISO 23913)	Treatment of water-based liquid waste	Once every day	
		Mechanical treatment in shredders of metal waste		

			Mercury (Hg) (7) (8) — Various EN standards available (i.e. EN ISO 17852, EN ISO 12846): Mechanical treatment in shredders of metal waste — Once every month Treatment of WEEE containing VFCs and/or VHCs — Once every month Mechanical biological treatment of waste — Once every month Re-refining of waste oil — Once every month Physico-chemical treatment of waste with calorific value — Once every month Physico-chemical treatment of solid and/or pasty waste — Once every month Regeneration of spent solvents — Once every month Water washing of excavated contaminated soil — Once every month Treatment of water-based liquid waste — Once every day PFOA (7) / PFOS (7) — No EN standard available — All waste treatments — Once every six months Phenol index (9) — EN ISO 14402: Re-refining of waste oil — Once every month; Physico-chemical treatment of waste with calorific value — Once every month; Treatment of water-based liquid waste — Once every day Total nitrogen (Total N) (9) — EN 12260, EN ISO 11905-1: Biological treatment of waste — Once every month; Re-refining of waste oil — Once every month; Treatment of water-based liquid waste — Once every day Total organic carbon (TOC) (5) (6) — EN 1484: All waste treatments except treatment of water-based liquid waste — Once every month; Treatment of water-based liquid waste — Once every day Total phosphorus (Total P) (9) — Various EN standards available (i.e. EN ISO 15681-1 and -2, EN ISO 6878, EN ISO 11885): Biological treatment of waste — Once every month; Treatment of water-based liquid waste — Once every day Total suspended solids (TSS) (6) — EN 872: All waste treatments except treatment of water-based liquid waste — Once every month; Treatment of water-based liquid waste — Once every day		
BAT 8.	Monitoring	BAT is to monitor channelled emissions to air with at least the frequency given		Other than the potential for odour which is covered later in the BAT assessment, there are no emissions to air directly	N/A

		below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.		associated to this treatment process.	
BAT 9	Monitoring	BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.		Not applicable to this process	N/A

BAT 10	Monitoring	BAT is to periodically monitor odour emissions.	Odour emissions can be monitored using: — EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); — when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The monitoring frequency is determined in the odour management plan (see BAT 12). Applicability The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.	Although odour is not expected due to the enclosed nature of storage vessels, cleaning schedules and general operation of the plant including the flow of effluent through the system which is designed for continuous operation and therefore no stagnation in the process. Odour management plan outlines the cleaning processes and monitoring required. There have not been any identified odour problems linked to the effluent treatment process in the past 24 months	YES
BAT 11	Monitoring	BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and wastewater, with a frequency of at least once per year.	Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.	Monitoring of all raw materials is completed by the finance department, this is recorded daily, monthly and annually across the manufacturing site. Data has already been pulled together for the new asset including expected water use, chemical use and energy figures. The ETP will be	YES

				monitored in line with the current monitoring processes and will be managed by the finance team. Data for energy and raw material use is subject to review and cost analysis which is discussed monthly at director level.	
BAT 12.	Emissions to air	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:	a protocol containing actions and timelines; — a protocol for conducting odour monitoring as set out in BAT 10; — a protocol for response to identified odour incidents, e.g. complaints; — an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.	Odour management plan Complaints are documented in line with the environmental communications document DP/EMS/005 PPM is in place to ensure key cleaning actions are completed in the process See BAT 10	YES

<table>
<tr>
<td>BAT 13.</td>
<td>Emissions to air</td>
<td>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below.</td>
<td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a.</td><td>Minimising residence times</td><td>Minimising the residence time of (potentially) odorous waste in storage or in handling systems (e.g. pipes, tanks, containers), in particular under anaerobic conditions. When relevant, adequate provisions are made for the acceptance of seasonal peak volumes of waste.</td><td>Only applicable to open systems.</td></tr>
<tr><td>b.</td><td>Using chemical treatment</td><td>Using chemicals to destroy or to reduce the formation of odorous compounds (e.g. to oxidise or to precipitate hydrogen sulphide).</td><td>Not applicable if it may hamper the desired output quality.</td></tr>
<tr><td>c.</td><td>Optimising aerobic treatment</td><td>In the case of aerobic treatment of water-based liquid waste, it may include:
— use of pure oxygen;
— removal of scum in tanks;
— frequent maintenance of the aeration system.
In the case of aerobic treatment of waste other than water-based liquid waste, see BAT 36.</td><td>Generally applicable.</td></tr>
</table>
</td>
<td>a)The treatment process is continuous (waste water), meaning that residence times are minimal, the effluent moves through the treatment system and is not stored for any significant period.

Waste water will continue at the same flows as it is based on the manufacturing process, milk supply is continuous at a known volume throughout the year.
Sludge will be removed from the sludge tank, daily and will be removed by a rad tanker via an inline charcoal filter

b)The system has a back-up chemical dosing process for odours should it be required

c)The Dissolved Air Filtration system is run using plant air from a compressor housed in the main cheese making plant (fresh air)</td>
<td>YES</td>
</tr>
</table>

				System is subject to regular cleaning by the effluent plant operator All maintenance on the plant is monitored via the onsite PPM schedule 'Workmate' and is recorded and filed to prove completion. All tanks etc. are enclosed, only the DAF unit is classed as an open system	
BAT 14.		In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.	<table><tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr><tr><td>a.</td><td>Minimising the number of potential diffuse emission sources</td><td>This includes techniques such as: — appropriate design of piping layout (e.g. minimising pipe run length, reducing the number of flanges and valves, using welded fittings and pipes); — favouring the use of gravity transfer rather than using pumps; — limiting the drop height of material; — limiting traffic speed; — using wind barriers.</td><td>Generally applicable.</td></tr></table>	a)long lengths of pipework has been welded and weld tested, minimal use of flanges only at connection points to pumps etc. to allow for maintenance without the need to break welds etc. Gravity transfer within the system has been evaluated and where possible utilised, however pups do remain in place where liquid has to be moved at a particular rate for treatment purposes. b)All valves and gaskets meet the requirement of b, this is highlighted	YES

			b. Selection and use of high-integrity equipment This includes techniques such as: — valves with double packing seals or equally efficient equipment; — high-integrity gaskets (such as spiral wound, ring joints) for critical applications; — pumps/compressors/agitators fitted with mechanical seals instead of packing; — magnetically driven pumps/compressors/agitators; — appropriate service hose access ports, piercing pliers, drill heads, e.g. when degassing WEEE containing VFCs and/or VHCs. Applicability may be restricted in the case of existing plants due to operability requirements. c. Corrosion prevention This includes techniques such as: — appropriate selection of construction materials; — lining or coating of equipment and painting of pipes with corrosion inhibitors. Generally applicable. d. Containment, collection and treatment of diffuse emissions This includes techniques such as: — storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment (e.g. conveyor belts); — maintaining the enclosed equipment or buildings under an adequate pressure; — collecting and directing the emissions to an appropriate abatement system (see Section 6.1) via an air extraction system and/or air suction systems close to the emission sources. The use of enclosed equipment or buildings may be restricted by safety considerations such as the risk of explosion or oxygen depletion. The use of enclosed equipment or buildings may also be constrained by the volume of waste. e. Dampening Dampening potential sources of diffuse dust emissions (e.g. waste storage, traffic areas, and open handling processes) with water or fog. Generally applicable. f. Maintenance This includes techniques such as: — ensuring access to potentially leaky equipment; — regularly controlling protective equipment such as lamellar curtains, fast-action doors. Generally applicable.	within the operations manual and supplied as built drawings from the vendor c)Balance tanks and aeration tanks have been constructed of stainless steel, pipework has also been constructed of this material. Chemical tanks have been designed for longevity and are corrosion proof d)No requirement, however inline charcoal filters are in place on pumping points for sludge for use during the transfer of sludge to road tanker e)No dusts generated during this wet process f)Design of the plant has considered all future maintenance in line with safety requirements i.e. CDM regulations. All equipment has been added to the PPM schedule/system in place at the manufacturing site g)Cleaning schedules are in place for the effluent	

			<table><tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr><tr><td>g.</td><td>Cleaning of waste treatment and storage areas</td><td>This includes techniques such as regularly cleaning the whole waste treatment area (halls, traffic areas, storage areas, etc.), conveyor belts, equipment and containers.</td><td>Generally applicable.</td></tr><tr><td>h.</td><td>Leak detection and repair (LDAR) programme</td><td>See Section 6.2. When emissions of organic compounds are expected, a LDAR programme is set up and implemented using a risk-based approach, considering in particular the design of the plant and the amount and nature of the organic compounds concerned.</td><td>Generally applicable.</td></tr></table>	plant operator as part of the daily duties h)See f	
BAT 15.		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		Not applicable to this process	N/A
BAT 16		In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.		Not applicable to this process	N/A
BAT 17	Noise and Vibration	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to	I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; III. a protocol for response to identified noise and vibration events, e.g. complaints	Covered within the Noise management plan. Additional monitoring is required when the plant is operational to test/check the reliability	Additional works required

<table>
<tr><td></td><td></td><td>set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</td><td>IV. a noise and vibration 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.</td><td>of the information issued during the design stage</td><td></td></tr>
<tr><td>BAT 18.</td><td>Noise and Vibration</td><td>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to
use one or a combination of the techniques given below</td><td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a.</td><td>Appropriate location of equipment and buildings</td><td>Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating building exits or entrances.</td><td>For existing plants, the relocation of equipment and building exits or entrances may be restricted by a lack of space or excessive costs.</td></tr>
<tr><td>b.</td><td>Operational measures</td><td>This includes techniques such as:
(i) inspection and maintenance of equipment;
(ii) closing of doors and windows of enclosed areas, if possible;
(iii) equipment operation by experienced staff;
(iv) avoidance of noisy activities at night, if possible;
(v) provisions for noise control during maintenance, traffic, handling and treatment activities.</td><td rowspan="2">Generally applicable.</td></tr>
<tr><td>c.</td><td>Low-noise equipment</td><td>This may include direct drive motors, compressors, pumps and flares.</td></tr>
<tr><td>d.</td><td>Noise and vibration control equipment</td><td>This includes techniques such as:
(i) noise reducers;
(ii) acoustic and vibrational insulation of equipment;
(iii) enclosure of noisy equipment;
(iv) soundproofing of buildings.</td><td>Applicability may be restricted by a lack of space (for existing plants).</td></tr>
</table>
</td><td>a)New ETP has been moved further away from the main residential receptors, however this move is minimal based on space available for installation

b)All ETP pumps and associated equipment will be on a PPM schedule

main pumps have been placed in an enclosure which has been sited behind the balance tanks for additional noise shielding from the closest residential receptors, enclosure has been designed with noise reductions in place</td><td>See BAT 17</td></tr>
</table>

			<table><tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr><tr><td>e.</td><td>Noise attenuation</td><td>Noise propagation can be reduced by inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).</td><td>Applicable only to existing plants, as the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may be restricted by a lack of space. For mechanical treatment in shredders of metal wastes, it is applicable within the constraints associated with the risk of deflagration in shredders.</td></tr></table>	and pumps have additional screening fitted. ETP is operated by trained individuals, additionally remote access is available for the vendor to monitor key items and direct maintenance as required Removal of sludge will be completed during daytime operation hours, there are no expected high noise emitters from normal processing c)All equipment has been chosen based on its low noise, design period focussed on the key equipment and specifications were agreed based on finding the lowest noise emitting solution available on the market for the system installed. d)Enclosures are in place for the larger pumps, as directed earlier this enclosure has added noise attenuation both in the building and on	

<table>
<tr><td></td><td></td><td></td><td></td><td>the pumps themselves, the position of the enclosure has also been chosen so that the balance tanks can act as a screen</td><td></td></tr>
<tr><td>BAT 19</td><td>Emissions to Water</td><td>In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.</td><td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a.</td><td>Water management</td><td>Water consumption is optimised by using measures which may include:
— water-saving plans (e.g. establishment of water efficiency objectives, flow diagrams and water mass balances);
— optimising the use of washing water (e.g. dry cleaning instead of hosing down, using trigger control on all washing equipment);
— reducing the use of water for vacuum generation (e.g. use of liquid ring pumps with high boiling point liquids).</td><td>Generally applicable.</td></tr>
<tr><td>b.</td><td>Water recirculation</td><td>Water streams are recirculated within the plant, if necessary after treatment. The degree of recirculation is limited by the water balance of the plant, the content of impurities (e.g. odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).</td><td>Generally applicable.</td></tr>
<tr><td>c.</td><td>Impermeable surface</td><td>Depending on the risks posed by the waste in terms of soil and/or water contamination, the surface of the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.</td><td>Generally applicable.</td></tr>
</table>
</td><td>a)Water is monitored as part of the finance department monitoring process and reviewed monthly at director level.

b)Water within the factory environment is recovered, this includes the use of process water after treatment through the reverse osmosis plant.

Water for the ETP is supplied from the factory environment and is made up of recirculated / Borehole water

c)See BAT 4, all plinth surfaces have been created using impermeable materials
d)See BAT 4, high level alarms have been built into all tanks, all spillages would be contained in a graded bund with a central sump, all spillages would be</td><td>YES</td></tr>
</table>

	Technique	Description	Applicability
d.	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as: — overflow detectors; — overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel); — tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; — isolation of tanks, vessels and secondary containment (e.g. closing of valves).	Generally applicable.
e.	Roofing of waste storage and treatment areas	Depending on the risks posed by the waste in terms of soil and/or water contamination, waste is stored and treated in covered areas to prevent contact with rainwater and thus minimise the volume of contaminated run-off water.	Applicability may be constrained when high volumes of waste are stored or treated (e.g. mechanical treatment in shredders of metal waste).
f.	Segregation of water streams	Each water stream (e.g. surface run-off water, process water) is collected and treated separately, based on the pollutant content and on the combination of treatment techniques. In particular, uncontaminated waste water streams are segregated from waste water streams that require treatment.	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the water collection system.
g.	Adequate drainage infrastructure	The waste treatment area is connected to drainage infrastructure. Rainwater falling on the treatment and storage areas is collected in the drainage infrastructure along with washing water, occasional spillages, etc. and, depending on the pollutant content, recirculated or sent for further treatment.	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the water drainage system.
h.	Design and maintenance provisions to allow detection and repair of leaks	Regular monitoring for potential leakages is risk-based, and, when necessary, equipment is repaired. The use of underground components is minimised. When underground components are used, and depending on the risks posed by the waste contained in those components in terms of soil and/or water contamination, secondary containment of underground components is put in place.	The use of above-ground components is generally applicable to new plants. It may be limited however by the risk of freezing. The installation of secondary containment may be limited in the case of existing plants.

	Technique	Description	Applicability
i.	Appropriate buffer storage capacity	Appropriate buffer storage capacity is provided for waste water generated during other than normal operating conditions using a risk-based approach (e.g. taking into account the nature of the pollutants, the effects of downstream waste water treatment, and the receiving environment). The discharge of waste water from this buffer storage is only possible after appropriate measures are taken (e.g. monitor, treat, re-use).	Generally applicable to new plants. For existing plants, applicability may be limited by space availability and by the layout of the water collection system.

feedback into the treatment system from this point.

e)Storage tanks are enclosed as per the design

f)Process water and site run-off is segregated, however due to the site and processes involved in milk delivery, methods are in place to be able to divert run-off to the treatment plant if a spill occurs.

g)The ETP has its own drainage system, any spillages are contained and fed back into the treatment process

h)There is no below ground pipework in the new installation, the connection to the plant is via the old production pipework and due to the nature of the factory this is located underground. All treatment and storage is above ground

i) The new effluent plant has been designed with

<table>
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<td></td>
<td>2 days full production (waste water) storage
The site will have 1 x balance tank (911m3),</td>
<td></td>
</tr>
<tr>
<td>BAT 20.</td>
<td>Emissions to Water</td>
<td>In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below.</td>
<td>
<table>
<tr><th colspan="2">Technique (1)</th><th>Typical pollutants targeted</th><th>Applicability</th></tr>
<tr><td colspan="4">Preliminary and primary treatment, e.g.</td></tr>
<tr><td>a.</td><td>Equalisation</td><td>All pollutants</td><td rowspan="3">Generally applicable.</td></tr>
<tr><td>b.</td><td>Neutralisation</td><td>Acids, alkalis</td></tr>
<tr><td>c.</td><td>Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks</td><td>Gross solids, suspended solids, oil/grease</td></tr>
<tr><td colspan="4">Physico-chemical treatment, e.g.</td></tr>
<tr><td>d.</td><td>Adsorption</td><td>Adsorbable dissolved non-biodegradable or inhibitory pollutants, e.g. hydrocarbons, mercury, AOX</td><td rowspan="4">Generally applicable.</td></tr>
<tr><td>e.</td><td>Distillation/rectification</td><td>Dissolved non-biodegradable or inhibitory pollutants that can be distilled, e.g. some solvents</td></tr>
<tr><td>f.</td><td>Precipitation</td><td>Precipitable dissolved non-biodegradable or inhibitory pollutants, e.g. metals, phosphorus</td></tr>
<tr><td>g.</td><td>Chemical oxidation</td><td>Oxidisable dissolved non-biodegradable or inhibitory pollutants, e.g. nitrite, cyanide</td></tr>
</table>
</td>
<td>The waste water from Dairy Partners will be screened by an existing mesh filter and will be collected in a pump pit. From this pump pit it will be fed to the new balance tank by existing pumps.

In the balance tank 2-way p pH correction is in place.

From the balance tank the water will be pumped to the coagulation/flocculation/ flotation system. In the pipe flocculator, a coagulant, a neutraliser and a flocculant will be dosed for coagulation and flocculation of the suspended and emulsified pollution.

The flocks which are formed are separated by a</td>
<td>YES</td>
</tr>
</table>

	Technique (1)	Typical pollutants targeted	Applicability
h.	Chemical reduction	Reducible dissolved non-biodegradable or inhibitory pollutants, e.g. hexavalent chromium (Cr(VI))	
i.	Evaporation	Soluble contaminants	
j.	Ion exchange	Ionic dissolved non-biodegradable or inhibitory pollutants, e.g. metals	
k.	Stripping	Purgeable pollutants, e.g. hydrogen sulphide (H_2S), ammonia (NH_3), some adsorbable organically bound halogens (AOX), hydrocarbons	
	Biological treatment, e.g.		
l.	Activated sludge process	Biodegradable organic compounds	Generally applicable.
m.	Membrane bioreactor		
	Nitrogen removal		
n.	Nitrification/denitrification when the treatment includes a biological treatment	Total nitrogen, ammonia	Nitrification may not be applicable in the case of high chloride concentrations (e.g. above 10 g/l) and when the reduction of the chloride concentration prior to nitrification would not be justified by the environmental benefits. Nitrification is not applicable when the temperature of the waste water is low (e.g. below 12 °C).
	Solids removal, e.g.		
o.	Coagulation and flocculation	Suspended solids and particulate-bound metals	Generally applicable.
p.	Sedimentation		
q.	Filtration (e.g. sand filtration, microfiltration, ultrafiltration)		
r.	Flotation		

DAF unit. The sludge which is generated by the DAF unit will be pumped into the sludge tanks. The
Redox DAF unit will be equipped with an automatic micro bubble diffuser cleaning system and is therefore clog-free.

The DAF unit will be equipped with a cover, operated by gas springs. The treated water after the DAF system will be pumped to the biological treatment system. A transfer tank and transfer

FBR (Flotation Bio Reactor) biological Treatment

In the biological treatment
system, the pollution is decomposed by aerobic biological bacteria that live in flock-like colonies, called activated sludge.

The effluent from the DAF
is fed into a selector which is built inside the

				aeration tank. In the feed line to the selector, the turbidity of the water will be monitored. In case a preset level is exceeded, an alarm will be generated. In the selector the water is mixed with a set amount of activated sludge. In the selector tank the proper conditions exist for the activated sludge to absorb most of the dissolved pollution, which prevents excessive concentrations of filamentous bacteria to be formed. Phosphoric acid and urea will be dosed into the selector in order to obtain a correct nutrient balance. From the selector tank the water flows into the aeration tank. In the aeration tank the activated sludge bacteria utilise oxygen to decompose pollution into mainly carbon dioxide and water. The required oxygen	

				is supplied by a bottom aeration system fed by blowers. The aeration grids can be lifted out for maintenance purposes. The separation of treated water and biomass is done by a second DAF unit. In the feed line to this DAF unit polymer will be dosed to enhance the separation of the activated sludge. Most of the activated sludge will be returned to the selector tank and aeration tank. A part of the sludge will be directed to the sludge tank as waste activated sludge, based on MLSS measurement in the aeration tank. The effluent quality of the DAF will be monitored continuously. In case either the pre-set COD, TSS or ammonia level is exceeded, the water will be led to a transfer tank, from where it will be	

<table>
<tr><td></td><td></td><td></td><td></td><td>pumped into the out of spec tanks.

The present 250 m³ and 150m³ tanks with mixers will be used for this purpose.</td><td></td></tr>
<tr><td>BAT 21</td><td>Emissions from accidents and incidents</td><td>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).</td><td><table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a.</td><td>Protection measures</td><td>These include measures such as:
— 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>b.</td><td>Management of incidental/accidental emissions</td><td>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.</td></tr>
<tr><td>c.</td><td>Incident/accident registration and assessment system</td><td>This includes techniques such as:
— 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>
</table></td><td>DP/EMS/002 – Emergency and contingency plan
DP/EMS/003 – Environmental accident

a)The ETP has been positioned within the perimeter of the factory, fences are in place and locked gates prevent unauthorised access

All equipment is accessible above ground, with access to key panels and isolators clear and in open locations

b)Additional measures will be included based on the operational manual, however spillages etc. are covered within the site emergency procedures, these will require updating to reflect the new installation</td><td>Emergency processes to be updated using the operations manual for the new installation with clear guides on isolations etc.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td>c)current EMS has relevant recording and reporting mechanisms built in</td><td></td></tr>
<tr><td>BAT 22</td><td>Material efficiency</td><td>In order to use materials efficiently, BAT is to substitute materials with waste.</td><td></td><td>Although pH correction is built into the system, with stand alone tanks, some correction will occur during the disposal of CIP chemicals, this is likely to reduce the volume of chemicals required in the main process</td><td>Under continual review</td></tr>
<tr><td>BAT 23</td><td>Energy Efficiency</td><td>In order to use energy efficiently, BAT is to use both of the techniques given below.</td><td><table><tr><th colspan="2">Technique</th><th>Description</th></tr><tr><td>a.</td><td>Energy efficiency plan</td><td>An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</td></tr><tr><td>b.</td><td>Energy balance record</td><td>An energy balance record provides a breakdown of the energy consumption and generation (including exportation) by the type of source (i.e. electricity, gas, conventional liquid fuels, conventional solid fuels, and waste). This includes:
(i) information on energy consumption in terms of delivered energy;
(ii) information on energy exported from the installation;
(iii) energy flow information (e.g. Sankey diagrams or energy balances) showing how the energy is used throughout the process.
The energy balance record is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</td></tr></table></td><td>Environmental Policy

DP/EMS/014 – Environmental Objectives

DP/EMS/007 – Environmental Management Review

(New ETP to be included in energy management audit process)

All energy is tracked and monitored by the finance team, energy consumption is an important part of the overhead costs associated to production, meaning a more efficient plant</td><td>Not Currently Compliant

Energy efficiency plan to be included in EMS</td></tr>
</table>

				reduces the costs of making the product and therefore leads to increased profit, this is reviewed monthly at director level.	
BAT 24	Reuse of packaging	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).	Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).	Chemicals will be delivered to bulk tanks reducing the requirement for additional storage. Any chemicals issued in containers will be sent back to the supplier for reuse this process is already in place at the site	YES
BAT 33	General BAT conclusions for the biological treatment of waste	In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.	The technique consists of carrying out the pre-acceptance, acceptance and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.	See BAT 2 Surface water and process water is split. Additional screening at the front end removes solids from the process ahead of the main treatment. Effluent stream is standard, only effluent from the manufacturing process is treated, therefore the plant is designed on the understanding of the effluent make-up including the cleaning	YES

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<td>chemicals in use, and worst case scenarios in resect of product spillage within the main production area

System is continuously monitored and automatic adjustment is made at the front end of the treatment process in respect of optimum pH to allow the effluent to move through the system.

The system has been developed to ensure the biological treatment operates at the optimum levels</td>
<td></td>
</tr>
<tr>
<td>BAT 34</td>
<td>Emissions to air</td>
<td>In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H2S and NH3, BAT is to use one or a combination of the techniques outlined</td>
<td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a.</td><td>Adsorption</td><td>See Section 6.1.</td></tr>
<tr><td>b.</td><td>Biofilter</td><td>See Section 6.1.
A pretreatment of the waste gas before the biofilter (e.g. with a water or acid scrubber) may be needed in the case of a high NH_3 content (e.g. 5-40 mg/Nm³) in order to control the media pH and to limit the formation of N_2O in the biofilter.
Some other odorous compounds (e.g. mercaptans, H_2S) can cause acidification of the biofilter media and necessitate the use of a water or alkaline scrubber for pretreatment of the waste gas before the biofilter.</td></tr>
<tr><td>c.</td><td>Fabric filter</td><td>See Section 6.1. The fabric filter is used in the case of mechanical biological treatment of waste.</td></tr>
<tr><td>d.</td><td>Thermal oxidation</td><td>See Section 6.1.</td></tr>
<tr><td>e.</td><td>Wet scrubbing</td><td>See Section 6.1. Water, acid or alkaline scrubbers are used in combination with a biofilter, thermal oxidation or adsorption on activated carbon.</td></tr>
</table>
</td>
<td>Odours are controlled through front end design i.e. enclosed tanks, lids on DAF units etc.

Cleaning and maintenance routines are in place, with the ETP operator washing down key systems daily.

Sludge removal will be completed via connection to a charcoal filter (C), odour will be captured and release avoided.</td>
<td>YES</td>
</tr>
</table>

<table>
<tr>
<td>BAT 35</td>
<td>Emissions to water and water use</td>
<td>In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given</td>
<td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th><th>Applicability</th></tr>
<tr><td>a.</td><td>Segregation of water streams</td><td>Leachate seeping from compost piles and windrows is segregated from surface run-off water (see BAT 19f).</td><td>Generally applicable to new plants.
Generally applicable to existing plants within the constraints associated with the layout of the water circuits.</td></tr>
<tr><td>b.</td><td>Water recirculation</td><td>Recirculating process water streams (e.g. from dewatering of liquid digestate in anaerobic processes) or using as much as possible other water streams (e.g. water condensate, rinsing water, surface run-off water). The degree of recirculation is limited by the water balance of the plant, the content of impurities (e.g. heavy metals, salts, pathogens, odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).</td><td>Generally applicable.</td></tr>
<tr><td>c.</td><td>Minimisation of the generation of leachate</td><td>Optimising the moisture content of the waste in order to minimise the generation of leachate.</td><td>Generally applicable.</td></tr>
</table>
</td>
<td>Surface water and process water is split.

Reverse osmosis (RO systems have been installed within the main production facility to use as much water generated during milk processing as possible, this water is already being used for cleaning in the main process and in turn reduces the volume of water being sent for treatment.</td>
<td>YES</td>
</tr>
<tr>
<td>BAT 52</td>
<td>Environmental performance</td>
<td>In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2)</td>
<td>Monitoring the waste input, e.g. in terms of:

— bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential

(e.g. inhibition of activated sludge));
— feasibility of emulsion breaking, e.g. by means of laboratory-scale tests.</td>
<td>Waste input is known, the effluent/waste type does not differ based on the inputs to the manufacturing process i.e. milk.

Cleaning chemicals, and volumes are known, all CIP within the food manufacturing process is monitored and chemical use is reviewed and reported.

Sampling and assessment of the waste was completed at the design stage, the effluent make-up</td>
<td>YES</td>
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<td>running into the plant front end is also subject to test and internal reporting

Sludge is sent for AD and is subject to testing at the nominated plant.</td>
<td></td>
</tr>
<tr>
<td>BAT 53</td>
<td>Emissions to air</td>
<td>In order to reduce emissions of HCl, NH3 and organic compounds to air, BAT is to apply BAT 14d and
to use one or a combination of the techniques given.</td>
<td>
<table>
<tr><th colspan="2">Technique</th><th>Description</th></tr>
<tr><td>a.</td><td>Adsorption</td><td rowspan="4">See Section 6.1.</td></tr>
<tr><td>b.</td><td>Biofilter</td></tr>
<tr><td>c.</td><td>Thermal oxidation</td></tr>
<tr><td>d.</td><td>Wet scrubbing</td></tr>
</table>
</td>
<td>See BAT 34</td>
<td>YES</td>
</tr>
</table>