Best Available Techniques & Operating Techniques

Environmental Permit Application

Yew Tree Dairy PartCo Limited

1 Pit Hey Place,
West Pimbo Industrial Estate,
Skelmersdale
WN8 9PS

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Basis of Report

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1.0 Introduction

Yew Tree Dairy PartCo Limited (YTD) has appointed SLR Consulting Limited (SLR) to prepare an application for an Environmental Permit (EP), for their milk processing facility located at 1 Pit Hey Place, West Pimbo Industrial Estate, Skelmersdale, WN8 9PS (the site).

The Skelmersdale facility treats and processes milk via pasteurisation, evaporation and drying with a throughput greater than 200 tonnes per day.

The facility includes the following listed activities under the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended):

- Section 6.8 Part A(1)(e) *Treating and processing milk, the quantity of milk received being more than 200 tonnes per day (average value on an annual basis).*
- Section 5.4 Part A(1)(a) Disposal, recovery or a mix of disposal and recovery of non-hazardous waste with a capacity exceeding 50 tonnes per day involving one or more of the following activities: (ii) physico-chemical treatment.
- Schedule 25A Medium Combustion Plants: Medium Combustion Plant Directive .

YTD took ownership of the site in 2010 when milk was processed at less than 200 tonnes per day. Since then, production has increased in phases and the site now processes up to approximately 2,000 tonnes of milk per day. YTD do not currently hold an Environmental Permit for the site and are seeking to regularise this by applying for a Part A(1) bespoke Environmental Permit (EP) from the Environment Agency (EA).

This Best Available Techniques and Operating Techniques (BATOT) report is an integrated document which describes both the operating techniques that will be implemented at the plant to ensure compliance with the conditions of the EP and to demonstrate that the permitted activities comply with best available techniques (BAT).

Key technical standards laid out in the following documents apply to the design and operation of the plant:

- Environment Agency. Develop a management system: environmental permits guidance, published February 2016 last updated August 2022;
- Environment Agency. Risk assessments for your environmental permit guidance published February 2016 last updated August 2022;
- Environment Agency. Best Available Techniques: environmental permits, published February 2016;
- Environment Agency. Surface water pollution risk assessment for your environmental permit, published February 2016, last updated February 2022;
- European Commission. Reference Document on Best Available Techniques in the Food, Drink and Milk Industries published December 2019; and
- European Commission. Reference Document on Best Available Techniques for Energy Efficiency published February 2009, updated September 2021.

1.1 The Site

The site is centred on National Grid Reference SD 49412 04239. The site, which is located approximately 2km south of Skelmersdale, is within an industrial area.

The following drawings are presented in Section 9 of this EP application:

- Drawing 001: Site location.
- Drawing 002: Site layout.

- Drawing 003: Emission points
- Drawing 004: Site Setting Plan - Local Receptors
- Drawing 005: Site Setting Plan - Cultural and Natural Heritage
- Drawing 006: Chemical Storage Areas.

1.2 Surrounding Land Uses

A summary of the immediate surrounding land use is provided in Table 1-1.

Table 1-1 Immediate Land Uses Surrounding the Site

Direction	Land-Use
North	Commercial buildings associated with the Pimbo Industrial Estate are located to the north, including Europarts, located immediately north of the site boundary. The M58 motorway is located approximately 300m north of the site. A residential housing estate is located approximately 435m north.
South	Commercial buildings associated with the Pimbo Industrial Estate are located to the south, including Pit Hey Close roadway, located immediately south of the site boundary. The River Tawd is located approximately 275m southwest of the site. Holland Moss is located approximately 445m south of the site.
East	Commercial buildings associated with the Pimbo Industrial Estate are located to the east, including Walker Engineering, located immediately east of the site boundary.
West	Commercial buildings associated with the Pimbo Industrial Estate are located to the west, including Pimbo Road, located immediately west of the site boundary. The River Tawd is located approximately 430m west of the site, with Holland Moss is located beyond.

The site location is presented on Drawing 001. The nearest residential properties are located approximately 435m to the north of the site along Miller Close.

The Ravenhead Brickworks site of special scientific interest (SSSI) is located approximately 1.5km to the northeast of the site. Nine local wildlife sites have been identified within 2km. The closest of these sites Holland Moss; is approximately 400 m to the southwest of the site. There are no receptors of European/international importance (i.e., RAMSAR, Special Areas of Conservation and Special Protection Areas) within 2km.

There are several Listed Buildings located within a 2km radius of the site. With the closest a Grade II Listed Building (Sutches Farmhouse) located approximately 950m to the northeast.

1.3 Production Activities Overview

The main production building is located in the south west portion of the site. A storage warehouse for powdered milk products is located in the northwest portion of the site. The evaporation / drying room is located along the northern site boundary. The central yard is used for delivery of raw milk and despatch of milk products. Refer to Drawing 002 for the site layout.

Milk is delivered to the site in road tankers from which it is pumped into feed tanks. Transfer from tankers takes place within a dedicated, bunded tanker bay in the main yard which captures any accidental spillage. Once emptied, the road tankers are washed out within another area of the yard before leaving the site. Any full tankers temporarily stored prior to unloading are reverse parked over one of the loading bay areas which benefits from bunding such that any leaks will be collected within the site drainage system.

All milk processing is carried out within enclosed buildings. The processing consists of pasteurisation, evaporation to concentrate the milk and drying of the concentrate. Liquid and dry products are packaged before dispatch off site. Dry products are also stored in the warehouse.

The site operates three steam generators which provide heating and steam for the process. These steam generators have a rated thermal input of 4.5MWth each and are run on natural gas. The site operates two dryers that are used to dry milk to create milk powder. These dryers have a rated thermal input of 8MWth each and are run on natural gas. Dust is removed from the two dryer exhaust stacks by bag filtration units.

Heat exchangers are integrated into the site processes to make optimum use of heating/cooling requirements. The site also employs 9 chiller units, 6 refrigeration units and air conditioning to maintain the required milk product temperature.

The processes produce several liquid effluent waste streams. Condensate from the vacuum evaporation process is recycled back into the process using reverse osmosis (RO) plant and is not discharged to sewer. Smaller amounts of waste milk and milky wastewater are stored separately and tankered off-site for recovery as pig-feed. In addition, wash water is produced from the clean in place (CIP) activities within the buildings.

The site benefits from an impermeable surface and sealed drainage. The external yardage slopes such that surface water drainage and any spills will be contained within the site, and drains are located in the vicinity of the tanker unloading, loading and washing areas to collect any accidental spillages and surface water run-off into the site drainage system.

All internal drainage, contaminated yard drainage and wash water is collected in a sump and over-pumped to the waste water tank. This is transferred to sewer under a trade effluent discharge consent with United Utilities. The contaminated water drainage system also contains a 300,000-litre underground attenuation tank which provides a tertiary containment buffer for accidental spills.

Uncontaminated surface water runoff from roofs and areas of the site which are not part of the process operations is collected in a separate drainage system and released to the local surface water drainage network.

An emergency diesel generator for back-up power and three kerosene tanks (2 x 10,000 L and 1 x 60,000lt) are located on site. The kerosene tanks are to provide back-up fuel for the steam generators in the case of interruption to the gas supply. A 2,500-litre diesel tank is also located on site to serve the forklift trucks.

2.0 The Installation

The site comprises offices and production facilities that include the process area, filling area, wrapping area, fridge storage, evaporator and drying room. The site also includes raw material storage, storage warehouse for powdered milk storage, raw milk delivery area, despatch area, waste storage, engineering workshop, chilling plant and kerosene storage for use as a dual fuel in case of a power shortage to the facility.

2.1 Site Boundary

The EP boundary will mirror the site boundary.

2.2 Working Hours and Staff

The site operates 365 days a year. The Company currently employs approximately 196 full time staff and 150 agency staff. The site operates 24 hours a day with 7/7 shift patterns. The facility is operational 365 days a year.

3.0 Overview of Operational Activities

An overview of the operational activities as detailed in Section 3.0 is provided in the following sub-sections.

3.1 Food Grade Raw Materials

3.1.1 Raw Materials – Milk

Raw milk is received at the site for production of pasteurised cream, milk and powdered milk. A maximum volume of 1.25 million litres of raw milk is received at the site each day. The volume received can fluctuate seasonally, with more milk received in the spring months.

3.2 Process

Processing of raw milk into various products is carried out in stages. Figure 1 below provides a outline process flow diagram for production of the liquid products.

Figure 1 Process Flow - Liquid

The raw milk is collected by insulated milk tankers. Once the raw milk arrives at the dairy it is quality tested in the small onsite laboratory. If the raw milk does not meet acceptable parameters then the load is rejected and removed from the site.

Raw milk is stored in milk tanks that are temperature-controlled at or below 6ºC. Organic raw milk is stored in separate tanks after receipt. Organic raw milk follows the same process as raw milk but is segregated throughout.

Raw milk is passed through the pasteuriser to achieve a temperature of approximately 56ºC. All cream is then blended into raw skim to give the required fat percentage for the product. Excess cream is removed at this stage and stored raw for processing. Organic cream is stored and processed separately.

Next, milk is homogenised at a pressure of approximately 3000 psi. Pasteuisation of milk is then undertaken. Pasteurised milk is stored in finished milk tanks. Milk is stored at <6°C in jacketed temperature-controlled tanks.

A portion of cream is chilled and directly filled into bulk road tankers using piped transfer. Milk for concentrate is stored in finished tanks prior to evaporation.

All milk and cream retail containers are filled using specifically designed liquid fillers. Fillers are dedicated to fill specific sized product. The product range includes Whole, Semi Skimmed, Skimmed and 1% Milk, Single, Whipping and Double Cream. Product is filled in 1Pt, 2Pt, 4Pt, 1ltr, 1.5ltr and 2ltr poly bottles, 13.62 litre bags and Tetra Pal Cartons. All fillers are washed using the CIP system.

All finished product is stored within the dairy cold store until dispatch or collection. All cold stored products are monitored during the day to ensure correct storage temperatures are maintained.

All non-conforming products are controlled by the ‘Dairy Work in Progress and Quarantine Procedure’. All non-conforming products are reported through the dairy non-conformance system. The rejected product is taken off site to be destroyed.

All equipment is cleaned using the automated CIP. All temperatures, contact times and chemical dilution strengths are set within the system to ensure uniformity during cleaning. All cleaning chemicals are manufactured for use in the food and beverage industry. Cleaning is verified using microbiological and chemical analysis.

3.2.1 Process Flow – Concentrates and Powders

Milk for concentrate and powder products is removed from the ‘liquid milk process flow’ after homogenisation. Figure 2 below provides an outline process flow diagram for Concentrates and Powders.

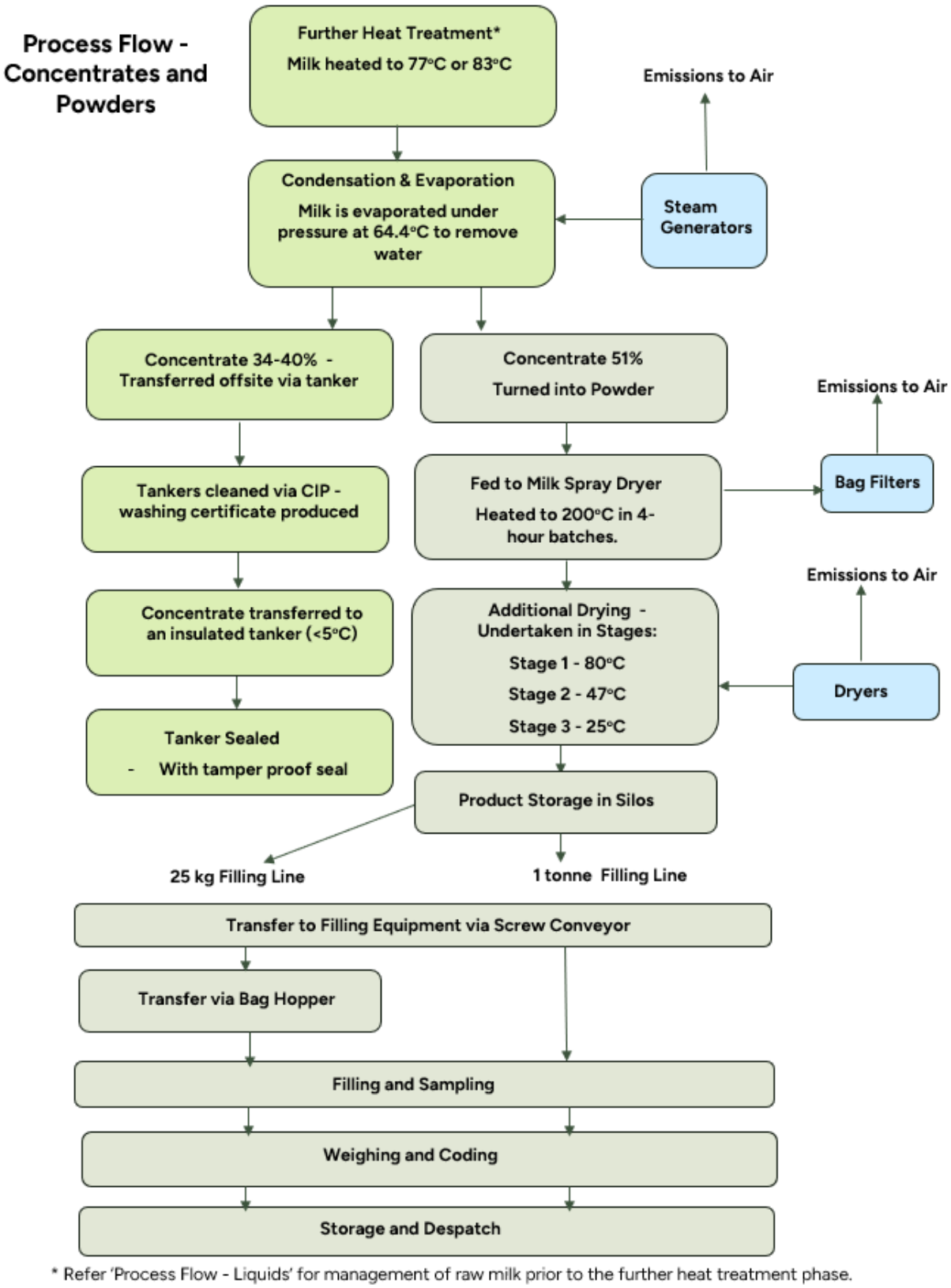

Figure 2 Process Flow - Concentrates and Powders

Milk is heated to 77°C (low heat) or 83°C for 85 seconds, to evaporate the internal liquid. The concentrated liquid is then either removed by bulk milk tankers or transferred for spray drying. Tankers are washed onsite using the automated CIP system. Reload tankers are

accompanied with a washing certificate prior to loading. Product is stored in an insulated tanker at less than 5ºC.

Concentrate at 51% is stored in concentrate tanks prior to feeding the milk spray dryer. The maximum storage time is 4 hours, and all tanks are washed immediately after use. Concentrate is filtered as it is forced into spray nozzles. Filtration is completed at the high-pressure pumps prior to entering the dryer.

Spray drying is completed at a temperature of approximately 200ºC. Lighter product is taken into the bag filter. The concentrate is then moved by pressure and blown to the powder storage silos prior to filling. All drying air is passed through filters. All products stored within the powder silos is at the finished product stage prior to packing.

The product is moved to the filling equipment using the screw conveyor. Magnets are used to remove contaminants prior to the product entering the filling hopper. Product is stored in the bagging hopper which acts as a reservoir of powder to ensure continual filling.

Product is also filled into 25kg bags at this stage of the process. A double heat seal is applied when the bag is filled. All individual bags are ‘metal detected’.

Product is also transported to the 1 tonne bag filling line equipment via a screw conveyor. Magnets are used to remove contaminants prior to the product entering the filling hopper. Product is then filled into the bags.

All products are stored in the warehouse and despatched as required to customers. Despatch is based on a ‘positive release’ basis and a release certificate is required prior to powder being removed from storage.

3.3 Laboratory

The laboratory is used to test the milk for quality and also the amount of fats and total solids. Test are completed on the following stages of the process:

- Raw milk;
- Skimmed milk and cream;
- Cleaning;
- Storage in tanks; and
- Shelf-life testing.

3.4 Distribution of Products

The finished milk products are temporarily stored in the fridge storage area prior to being distributed from the on-site storage despatch area to customers by road transport. Cream is stored in onsite insulated tanks prior to collection by food grade tankers for distribution to customers. Powdered milk is stored in the warehouse prior to being distributed to customers by road transport.

Dispatch and distribution operations are outsourced to an appointed third-party organisation. No road transport refuelling occurs on site.

3.5 Clean In Place (CIP)

CIP is in operation at the site. The CIP operations are automated for tanks and include the following inputs:

- Recovered water from previous CIP operations for pre-rinsing;
- RO water;
- Caustic diluted 1%;
- Acid diluted to 1%; and

- Food grade disinfectant.

CIP occurs periodically after a set number of production runs. Bulk caustic and acid tanks are stored on bunds in the 2 Channel and 4 Channel CIP rooms (refer Drawing 006).

3.5.1 Process Cleaning

Cleaning is also a manual operation in production areas and involves scraping and bagging of solid materials and the use of trigger hoses for final cleaning. Cleaning processes are operated under standard procedures and operatives are trained in cleaning processes. Cleaning is undertaken on impermeable hardstanding with drainage that leads to a sump which is over pumped to the effluent tank.

3.5.2 Drainage Cleaning

Process drain gullies in the process building are cleaned on a weekly basis. The drains are flushed with hot water. The drains are then foam cleaned with a Powerfoam solution. The drains run to a sump which is over pumped to the effluent tank.

3.6 Cooling

Onsite raw milk tanks are insulated but not cooled. The site has nine chiller units that run on fluorinated gas F407c. These chillers cool the glycol which in turn is used to cool the pasteurisers down to -3^{o}C.

Six fridge units are located onsite for localised cooling contain fluorinated gas R449A. Air conditioning in offices and electric rooms contain fluorinated gas R32.

The fluorinated gases used onsite have zero ozone depleting potential and low global warming potential. YTD confirm that these fluorinated gases are being phased out and replaced with alternatives.

Fluorinated gases are contained within closed loop cooling systems and are maintained by a suitably qualified external contractor. Glycol is stored in two indoor 20,000 L glycol tanks in the glycol room.

Daily checks are undertaken on cooling equipment for leaks and these systems are subject to planned preventative maintenance (PPM).

3.7 Heating

Heat and steam are provided by the three-steam generators located on site. These generators have a rated thermal input of 4.5MWth each. Typically, the site operates two steam generators at a time, at 60% capacity. The steam generators operate 24 hours a day, seven days a week.

The site operates two dryers with 8MWth rated thermal input burners. Two heat exchangers located in the evaporator room are linked to the dryers. The dryers are typically run at 55% capacity. However, this can change seasonally when the volume of milk received fluctuates.

3.8 Emission Points to Air

An overview of onsite combustion equipment and dust emission points is presented below. Further detail is provided in the air emissions risk assessment submitted as part of this application (reference 416.065368.00001_AERA).

A summary of the specifications of each combustion plant and the dust emission points is presented in Table 3.1 below.

Table 3-1 Emission Points to Air

Emission Point	Description	Fuel Type	Purpose	Location	Emissions Stack Details
A1	Steam Generator 1	Natural Gas*	Generates steam and heat for the process	Steam generator room	14.5 m
A2	Steam Generator 2	Natural Gas*	Generates steam and heat for the process	Steam generator room	14.5 m
A3	Steam Generator 3	Natural Gas*	Generates steam and heat for the process	Steam generator room	14.5 m
A4	Dryer 1	Natural Gas*	Provides heating for the drying process	Drying room	44 m
A5	Dryer 2	Natural Gas*	Provides heating for the drying process	Drying room	44 m
A6	Dust emission release point	-	Dust emissions	Evaporator room	44 m
A7	Dust emission release point	-	Dust emissions	Evaporator room	44 m
A8	Emergency generator	Diesel	Provides back up power in case of an emergency (refrigerators / lighting)	Outdoor service area	6 m

3.8.1 Steam Generators

The site operates three steam generators which provide heating and steam for the process. These steam generators have a rated thermal input of 4.5MWth each and during normal operation run on natural gas. However, the generators are ‘dual fuel’ and can operate on kerosene in case of an interruption to the natural gas supply to the site. Two 10,000lt integrally bunded kerosene tanks are located in the outdoor ’service area’ adjacent to the steam generator room to provide a backup fuel in case of an emergency. The steam generators were installed in 2012.

Two steam generators are operational for approximately 8,700 hours per year. One steam generator is used as a back up. The steam generators are maintained under the PPM at the site and regular maintenance is undertaken on the steam generators by a third-party contractor.

3.8.2 Dryers

The site operates two dryers that are used to dry milk to create milk powder. These dryers have a rated thermal input of 8MWth each and during normal operation are run on natural gas. However, the dryers are ‘dual fuel’ and can operate on kerosene in case of an interruption to the natural gas supply to the site. An outdoor 60,000lt bunded kerosene tank is located to the drying room to provide back up in case of an emergency.

The dryers had their burners replaced in 2022. The dryers are operational for approximately 8,700 hours per year. The dryers are maintained under PPM at the site and regular maintenance is undertaken on the steam generators by a third-party contractor.

3.8.3 Dust Emission Release Points

Dust from the evaporative and drying process is emitted to air through two stacks which contain bag filters to remove particulate.

3.8.4 Emergency Generator

The emergency diesel fired generator is in place to provide backup electricity for the site to power lighting and refrigeration in case of an emergency. The emergency generator is tested 20 minutes per month to ensure that it is working in case of an emergency. The generator will not be operated for more than 50 hours per year. Diesel to power the generator is contained within a double skinned belly tank.

3.9 Transformers

No transformers are located within the proposed EP boundary.

3.10 Waste Production

Wastes produced by the site are summarised in Table 3-2.

Waste product (milk) from the production area is collected in the floor drains. Automatic sampling by the SCADA testing diverts this to the waste product tank. The waste product tank is emptied daily and transferred offsite to be used as pig feed.

Waste process effluent in the production area is also collected in the floor drains. Automatic sampling by the SCADA testing diverts waste effluent to the waste effluent tank. Effluent is discharged to sewer on a continuous basis, at a rate less than or equal to 350m^3 per day.

An RO process was introduced in May 2024 which enables waste evaporative water to be re-used in the process. This has reduced effluent emissions to sewer.

Waste sediment from the dryers is stored in the dryer waste tank in the north of the loading yard. This sediment is transferred offsite for use in an anaerobic digester (AD). Waste dryer sediment is collected 2-3 times a week.

Waste plastic and cardboard from filling and packaging activities undertaken at the site are compacted and baled prior to being removed offsite by a suitably licenced contractor for recycling. These waste streams are collected on demand as required (i.e., when the receptacle is full). All waste generated at the site is sent either for recycling, AD, or animal feed; no solid waste is disposed of to landfill.

Waste accumulation within production areas is controlled. Waste is removed from site by licensed and approved contractors. Waste transfer notes for each load are obtained and filed on site and copies held in the waste contractor’s portal. Waste streams are clearly labelled and segregated, as detailed on the standard operating procedures (SOP) for waste removal routes.

Table 3-2 Wastes Produced at the Site

Waste Stream	Source of Waste	Steps Employed to Minimise Amount Generated?	Onwards Recovery / Disposal Method
Waste effluent	Process	SCADA process continuously monitors effluent and separates waste product from waste effluent reducing the amount of effluent sent to sewer. RO process has been introduced (May 2024) which enables waste evaporative water to be re-used in the process. This has reduced effluent emissions to sewer significantly	Reuse / segregation / emissions to sewer
Waste product	Process	SCADA process continuously monitors effluent and separates waste product from waste effluent. Waste product is removed from site daily and used as pig feed.	Re use
Waste sediment from evaporative process	Evaporative process	Sediment removed periodically to increase the efficiency of the process.	Transferred offsite for energy generation.
Packaging	Filling and packing process	Waste plastic and cardboard waste segregated for recycling.	Recycling
Laboratory waste	Used testing materials (non-hazardous)	Uncontaminated lab waste segregated for recycling as commercial waste.	Transferred offsite for energy generation.

4.0 Infrastructure & Equipment

4.1 Site Surfacing & Drainage

4.1.1 Surfacing

Operational areas of the site benefit from a containment system comprising an impermeable concrete surface and sealed drainage.

4.1.2 Sub-surface Structures

The precise locations of subsurface drains, pipework and interceptors are recorded and relevant documentation maintained on site. Separate drainage systems at the site are provided for:

- Uncontaminated rainwater;
- Process effluent; and
- Foul drainage.

Refer to Appendix A for the site drainage plan. The drains were recently inspected via a CCTV survey by ‘Drain Alert’ on 30 May 2024 (refer Appendix B). Drain Alert stated the following after the survey:

'General condition of the networks is excellent, a clear unobstructed flow was observed throughout site. No structural defects were found'.

4.1.3 Management & Operational Techniques

Plant operatives undergo awareness training to ensure a full understanding of the containment engineering which will minimise the environmental impact of the site. The engineered containment system is subject to routine visual inspection. Identified breaches in the engineered containment are remedied to ensure continued integrity of the facility, and to prevent pollution of surface or groundwater. Records of inspection and maintenance are maintained by the Site Manager.

4.2 Raw Materials

A list of the raw materials used at the site is provided in Table 4-1 below. Table 4-2 below also presents a list of chemicals used on site for maintenance which are stored indoors within the workshop in small volumes. The majority of these chemicals are 'food grade' and suitable for use in a milk processing facility.

The site undertakes a Control of Substances Hazardous to Health (COSHH) assessment prior to the use of chemicals, and if the chemical is found to present a hazard to health, it will be added to the COSHH inventory and appropriate safeguards implemented.

Material Safety Data Sheets (MSDS) for any potentially hazardous materials or chemicals are kept on site. The MSDS gives information on how chemicals should be handled, stored and disposed of, and what to do in the event of an accident.

Table 4-1 Raw Materials

Raw Material	Location	Indoors / Outdoors	Volume (L)
Refrigerants			
Glycol	Glycol Room	Indoors	20,000
Glycol			20,000
Clean in Place Chemicals			
Caustic - Caustic 32	4 Channel CIP & 2 Channel CIP	Indoors	2 x 8,000
	Tank Wash	Outdoors	1,000
Acid	4 Channel CIP & 2 Channel CIP	Indoors	2 x 10,000
	Tank Wash	Outdoors	1,000
Dosing			
Chlorine Dioxide	Adjacent to the Workshop	Outdoors	20,000
Corroban 28	Adjacent to steam generators	indoors	1,000
Raw Milk			
Milk - Receipt Tanks 1-8	Southwest Corner of Site	Outdoors	8 x 275,000
Fuel			
Kerosene	Service area	Outdoors	2 x 10,000
	Northern yard	Outdoors	60,000
Diesel	Yard	Outdoors	2,500
Emergency Generator (Diesel)	Service area	Outdoors	1,000

Table 4-2 Maintenance Chemicals

Maintenance Chemicals	
CCO profood plus 2	Silicone Spray
220 Gear Oil	Food lube PTFE
Ultramax 46 Oil	Food tek dry PTFE
Trojan 230	Metal cutting lubricant
Libra EP 2	Ceramic anti seize spray
Antox 71 E Plus	Silicone Spray
Premium EP2 Grease	Multipurpose spray oil
Purity FC2 synthetic	Electrical Cleaner
Water displacing penetrating spray	Anti spatter spray
Heavy duty cleaner degreaser	Heavy duty chain spray
Powerfoam (drain cleaning)	

Wherever possible, raw materials are selected that minimise environmental risk. Consideration is given to such factors as degradability, bioaccumulation potential, product contamination and toxicity. Reviews are frequently undertaken to ensure that all raw materials are appropriate for use, that consumption is optimised and that opportunities for reduction and improvements are implemented.

Alternative raw materials are evaluated for their environmental impact on an on-going basis and, where there is no overriding quality requirement substitution will be given appropriate consideration. The on-going programme of professional and technical development for all site personnel ensures awareness of new developments in product availability and their implication.

4.3 Chemical Storage

Drawing 006 illustrates the location of chemical storage at the site. Standard operating procedures are in place for bulk tanker deliveries which details the requirements for off-loading and dealing with spillages from bulk tankers. The site has a dedicated storage areas for raw milk, skimmed milk and cream.

Cleaning chemicals and dosing chemicals are stored in 25L containers or IBCs, which are stored in dedicated bunded storage areas at the site. The site operates an accidental release and spillage procedure which outlines the steps to follow in case of a release and also the clean-up measures to be employed.

4.3.1 Containment

Primary and secondary containment are described within Appendix C Tank Inventory. Tertiary containment at the site includes:

- Indoors - within production building. Any spill would overflow into floor drains and to a sump where it would be contained and tested for quality. Depending on the results, the liquid is either directed to one of the effluent tanks for disposal to sewer or tankered offsite to a suitably licenced facility.
- Yard area - drains to a 300,000lt underground attenuation tank. This tank needs to be over pumped to be emptied. The material in the 300,000lt can be either directed to the effluent tank for disposal to sewer or tankered offsite to a suitably licenced facility depending on testing results.

Bunds (110% of container volume) are provided for containers containing liquids whose spillage could be harmful to the environment.

4.3.2 Tank Management

Appendix C presents the tank inventory for the site. A range of tanks is used to store the following:

- Raw materials;
- Intermediate products (including skim milk);
- Finished products (cream);
- Cleaning chemicals (caustic and acid);
- Dosing chemicals (chlorine dioxide);
- Refrigerant chemicals (glycol);
- Waste effluent;
- Waste product; and
- Fuel.

The tanks are monitored via the SCADA computerised system, with 90% of onsite tanks contain high level alarms. The tanks and bunds visually inspected regularly.

4.3.3 Raw Material Storage

Outdoor raw material storage includes 8 x 275,000 L raw milk tanks; 2 x 100,000 L bulk cream tanks and a 1 x 10,000 L bulk cream tank.

The raw milk tanks are located adjacent to the car park in the southwest corner of the site. The bulk cream tanks and skim milk tanks are located in the yard. Should a spill occur from any of these tanks; the spill would enter the surface water drainage system and be captured within the 300,000 L underground attenuation tank. It is possible to test the contents of the attenuation tank, prior to discharge. Also, the attenuation tank has no outlet and must be over pumped to be discharged. Liquid within the attenuation tank can either be over pumped to effluent drainage or pumped to a tanker for offsite disposal at a suitably licensed facility.

Indoor raw material storage includes:

- 3 x 275,000 L skim milk tanks adjacent to the evaporative room;
- 2 x 180,000 L skim milk tanks adjacent to the evaporative room;
- 3 x 1,500 L cream tanks in the process room;
- 1 x 200 L cream tank in the process room; and
- 4 x 10,000 cream tanks on the first floor.

The cream tanks on the first floor are double skinned. The raw material tanks on the ground floor are located on impermeable concrete and drains run to a sump that collects wash water and spills.

Drawing 006 presents raw material storage locations.

4.3.4 Intermediate Material Storage

The tank inventory in Appendix C presents the full detail of balance tanks, dryer concentrate tanks and evaporative tanks used in the process. These tanks are all located indoors on impermeable concrete.

4.3.5 Cleaning Chemical Storage

The following chemical storage areas are located indoors and on impermeable concrete surfacing:

- 1 x 8,000lt caustic tank in the 4 Channel CIP;
- 1 x 10,000lt acid tank in the 4 Channel CIP;
- 1 x 8,000lt caustic tank in the 2 Channel CIP;
- 1 x 10,000lt acid in the 2 Channel CIP;
- 1 x 1,000lt caustic IBC adjacent to the tank wash;
- 1 x 1,000lt acid IBC adjacent to the tank wash;
- 2 x 20,000lt glycol tanks in the glycol room;
- IBCs of steam generator dosing chemical in the steam generator room; and
- Small containers of maintenance chemicals in the workshop.

Small volumes of maintenance chemicals in the workshop are stored on impermeable concrete away from indoor drains. Small spills are cleaned up using onsite spill kits. Used spill kit materials are transferred of site for disposal by a suitably licenced contractor.

A 20,000lt double skinned chlorine dioxide tank was installed in May 2024 outdoors in the northwest of site. Chlorine dioxide will be used as a dosing chemical in the RO process. The tank is located on impermeable hardstanding.

4.3.6 Fuel Storage

Outdoor fuel storage at the site includes the following:

- 1 x 60,000lt kerosene tank, located in the northern end of the yard;
- 2 x 10,000lt kerosene tanks, located in the service area;
- 1 x 2,500lt diesel tank located in the northwest corner of the yard; and
- 1 x 1,000lt diesel belly tank in the emergency generator in the service area.

Each kerosene tank is reported to be integrally bunded. The diesel tanks are reported to be double skinned. Each fuel tank is located on concrete impermeable hardstanding.

The onsite kerosene tanks are used to store kerosene as an emergency ‘dual fuel’ for the onsite dryers and heat exchangers in the event of disruption to the power supply. YTD has confirmed that kerosene has not been utilised on site since the installation of the kerosene tanks in 2022.

4.3.7 Product Storage - Powdered Milk

Powdered milk is stored within 25kg or 1 tonne sealed bags within the warehouse. The warehouse is subject to good housekeeping procedures and the potential for dust generation is low.

4.3.8 Waste Storage

Waste storage at the site occurs in the following enclosed tanks:

- 1 x 90,000lt waste effluent tank in the southwest corner of the site;
- 1 x 40,000lt waste product tank in the southwest corner of the site;
- 1 x 20,000lt waste effluent tank in the northern yard area;

- 1 x 45,000lt waste product tank in the northern yard area; and
- 1 x 40,000lt waste sediment tank in the northern yard area.

The tanks are located on impermeable concrete.

4.4 Plant & Equipment

The key items of process plant and equipment that will be used at the site are detailed below. All items of plant and equipment will be maintained in accordance with the manufacturer's recommendations.

The key components will include, but not be limited to:

4.4.1 Fixed Plant

The following fixed plant is held on site:

- 3 No. Pasteurisers / Separators;
- 2 No. Homogenisers;
- 2 No. Dryers;
- 2 No. Heat exchangers in the evaporative room;
- 3 No. Steam generators;
- Filling lines; and
- Emergency diesel-fuelled generator.

4.4.2 Mobile Plant

The following items of mobile plant are held on site:

- Forklift Truck;
- Telehandler; and
- Pallet Trucks.

4.5 Site Security

The site has a number of security measures in place to limit the likelihood of arson or vandalism. Security on site includes:

- Security fencing surrounding the site;
- Lockable gates;
- Security lighting;
- Lockable entrances to the building;
- Inspection and maintenance procedures; and
- Monitored CCTV system covering full extent of the site.

All visitors and contractors are required to register in and out via a visitors' book and are then provided with a site induction. Visitors are escorted by a member of staff. This minimises the risk of unauthorised visitors being present at the site.

Any breach in security is reported to the Site Manager (or in their absence, their deputy) and the emergency services as appropriate.

Site boundary checks are completed regularly to ensure site security is maintained. Any defects or damage which may compromise the integrity of the enclosure will be made secure by temporary repair by the end of the working day. Permanent repairs will be affected as soon as practicable. All inspections and any defects, damage, or repairs will be recorded by a site operative.

In the event of a breach of security at the site, the cause will be investigated, and appropriate mitigation measures implemented, such as repair of security infrastructure, and/or additional deterrents. This will be recorded in the site diary. Records maintained include inspections and maintenance of perimeter fencing and gates, doors and locks, breaches of security, investigations and actions taken.

5.0 Best Available Techniques Assessment

An assessment of operating procedures and techniques for the proposed modifications to the site has been undertaken with respect to the following documents:

- Best Available Techniques: environmental permits, February 2016;
- Reference Document on Best Available Techniques (BREF) in the Food, Drink and Milk Industries, November 2019;
- Reference Document on Best Available Techniques for Energy Efficiency, February 2009.

The BAT assessment is presented in Appendix D.

6.0 Emissions

6.1 Point Source Emissions to Atmosphere

There are eight-point source emissions for discharge to air of combustion emissions at the site as shown in Table 6-1.

Table 6-1 Emission Points to Air

Emission Point	Equipment	Emissions
A1	Steam Generator 1	Nitrogen oxides (NOx) and carbon monoxide (CO)
A2	Steam Generator 2	
A3	Steam Generator 3	
A4	Dryer 1	Nitrogen oxides (NOx) and carbon monoxide (CO)
A5	Dryer 2	
A6	Dust Emission Point 1	Dust (abated with bag filter)
A7	Dust Emission Point 2	Dust (abated with bag filter)
A8	Emergency Generator	Nitrogen oxides (NOx) and carbon monoxide (CO)

Refer to Drawing 003 for the location of point source emissions to air.

6.1.1 Medium Combustion Plant Directive

Under the Environmental Permitting (England and Wales) Regulations (EPR) (Amendment) 2018[1], a medium combustion plant (MCP) is defined as a combustion plant (such as an engine, boiler or turbine) burning any fuel, with a rated thermal input equal to or greater than 1 MWth but less than 50MWth.

A specified generator (SG) is defined as combustion plant with a capacity of between 1MWth to 50MWth burning any fuel which is used for the purpose of generating electricity. Schedule 25A of the EPR 2018 amendment, defines the scope, definitions, exclusions and how the regulations apply to types of MCP and SG.

Table 6-2 provides a summary of the combustion units at the site and whether the MCP or SG requirements apply.

Table 6-2 Medium Combustion Plant Summary

Stack	Combustion Equipment	Fuel	Commissioned	Rated Thermal Input	SG Requirements Apply?	MCP Requirements Apply?	ELV must be met?
A1	Steam Generator 1	Natural Gas*	1998	4.5 MWth	No	Yes	Yes
A2	Steam Generator 2	Natural Gas*	1998	4.5 MWth	No	Yes	Yes
A3	Steam Generator 3	Natural Gas*	1998	4.5 MWth	No	Yes	Yes
A4	Dryer 1	Natural Gas*	2016 - burner upgraded 2022	8 MWth	No	Yes	N/A
A5	Dryer 2	Natural Gas*	2019 - burner upgraded 2022	8 MWth	No	Yes	N/A
A8	Emergency generator	Diesel	-	<1 MWth	No	No	N/A
** Dual fuel equipment - can be powered by kerosene in the event of an emergency.							

6.1.1.1 Steam Generators

The principal emissions to air from the steam generators are nitrogen oxides (NOx) and carbon monoxide (CO) from the combustion of natural gas.

Due to the thermal rated input of the steam generators, being 4.5MWth, they fall under the remit of the MCP. The steam generators and dryers at the facility do not generate electricity. As such, only MCP requirements apply to these combustion units and no SG requirements apply.

As the steam generators were installed in 2012, they are considered to be an ‘existing’ MCP and therefore must be permitted from 01 January 2029.

[1] [1] EU Directive 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants. EUR-Lex - 32015L2193 - EN - EUR-Lex (europa.eu)

Combustion emissions from the natural gas-fired steam raising boiler will be required to meet the MCPD emission limit value (ELV) as stated in as stated in Table 1, Part 1 of Annex II of the MCPD for:

- Nitrogen oxides (NOx) = **250mg/m^3**
- This ELV will apply from 1st January 2030.

As kerosene will be used less than 50 hours per year as a dual fuel for the steam generators, a lower NOX MCPD ELV of 200 mg/Nm^3 does not apply.

As part of this EP application, YTD would like to incorporate the natural gas fired steam generators (emission points A1 to A3) into the EP as a MCP. This will ensure that the steam generators are incorporated in the EP prior to 01 January 2029.

6.1.1.2 Dryers

The principal emissions to air from the natural gas fired dryers are nitrogen oxides (NOx) and carbon monoxide (CO) from the combustion of natural gas.

Due to the thermal rated input of the two dryers being 8MWth each, they fall under the remit of the MCPD. As the dryers had new burners installed in 2022, they are considered to be 'new' MCP and therefore must be permitted from the issue of EP.

Combustion emissions from the natural gas-fired dryers will be required to meet the MCPD emission limit value (ELV) as stated in as stated in Table 1, Part 1 of Annex II of the MCPD for:

- Nitrogen oxides (NOx) = **250mg/m^3**
- This ELV will apply from the issue of the EP.

As kerosene will be used less than 50 hours per year as a dual fuel for the dryers, a lower NO_X MCPD ELV of 200 mg/Nm^3 does not apply.

As part of this EP application, YTD would like to incorporate the natural gas fired dryers (emission points A4 and A5) into the EP as a MCP.

6.1.1.3 Emergency Generator

Due to the thermal rated input of the emergency generator diesel pumps, being <1MWth[2], it does not fall under the remit of the MCP. Emergency generators are also excluded from SG requirements.

6.1.2 Summary of Air Emissions Risk Assessment

An air emissions risk assessment (AERA) has been completed for all the combustion units onsite (416.065368.00001_AERA). The AERA assessment has quantified and assessed the potential air quality impacts associated with combustion emissions from the steam generators, dryers, heat exchangers and emergency generator using EA approved techniques against published standards for the protection of human health and designated ecological sites. The AERA concluded that:

[2] The thermal rated input has been calculated from the KVA (kilovoltAmps rating), as the thermal rated input could not be identified from the information provided by site Calculations are sourced from the AMP Technical Committee (AMPS-Guidance-for-determination-of-thermal-input-power-of-generators-.pdf)[2]:

Generator set ratings are often quoted in KVA at a 0.8 power factor. Where this is the case electrical power is determined by:

Pe(r) = KVA * 0.8 Where Pe(r) = Rated electrical power (KW)

KVA = kiloVoltAmps rating KVA = 900/0.8 = 1,125 (1.12 MVA)

The calculation for MWth derived from MVA output is based on a power factor 0.8 and a conversion efficiency of 0.93 for MWth to MWelec.

1.12 MVA = (1.12*0.8)/0.93 = 0.96 MWth

- The process contributions do not lead to any exceedances of the AQALs (long-term or short-term) for the protection of human health at any relevant exposure location outside of the Site; and
- The emissions from the plant are considered to cause 'no adverse effect' to the designated ecological sites.

6.2 Point Source Emissions to Sewer

The site drainage system is connected to the United Utilities sewer system at discharge point W1 and W2 as shown on Drawing 003. Process effluent is treated in the on-site RO system prior to release, enabling evaporative water from the drying process to be reused in the process. Other wastewater released to sewer is mainly generated as a result of onsite cleaning activities and potential spills which are is discharged into the same effluent drainage system.

Discharge to sewer is under a trade effluent discharge consent (TEDC) (United Utilities discharge consent dated 01 July 2024, reference QSF) to sewer via discharge point W1 and W2.

6.2.1 Effluent Monitoring

The effluent monitoring regime currently comprises:

- An automatic composite sample taken by YTD across a 24-hour period that includes COD, pH and suspended solids
- Regular visual and operational checks of the effluent system by YTD, including checking the effluent pH.
- United Utilities samples the effluent regularly, the samples being analysed for the analytes listed within the effluent discharge consent.

YTD have confirmed that the maximum effluent flow rate is 4 L/s as per the TEDC.The effluent is not treated prior to discharge, only heavy solids are removed. TEDC limits for effluent are presented in Table 6-3 below.

Table 6-3 Discharge Limits for Effluent

Parameter	Limit 01 July 2024	Reference Period
Discharge Volume (maximum)	350m^3	In any 24-hour period
Discharge Rate (maximum)	4litres	Per second
Temperature	43.3 degrees centigrade	maximum
pH	6-10	n/a
COD	1000 kg/d	In any 24-hour period
Settled COD	3,500 mg/L	
Suspended Solids	300kg/d	In any 24-hour period
Total suspended solids	1000 mg/L	n/a
Sulphates	1000mg/L	n/a
Phosphorous	50mg/l	n/a
Cyanides and cyanogen compounds	1 mg/L	n/a

Parameter	Limit 01 July 2024	Reference Period
Sulphides, hydrosulphides, polysulphides and substances that produce hydrogen sulphide	1 mg/L	n/a

A summary of the latest effluent monitoring results undertaken by United Utilities is provided in Appendix E. Effluent discharged to sewer is within the consented discharge limits.

6.2.2 Surface Water Risk Assessment

The process effluent is discharged to the local Sewage Treatment Works (STW) where it undergoes further treatment prior to discharge into the River Tawd.

A surface water risk assessment has been carried out to confirm that the impact of the discharge post treatment in the STW on the final receiving water is satisfactory. This was carried out in accordance with EA guidance[3] and is provided in Section 6 (416.065368.00001_SWRA) of this application.

The SWRA assessed the effluent discharge from YTD's site in Skelmersdale to the River Douglas via Newborough sewage treatment works.

Biological Oxygen Demand and Suspended Solids were modelled using the Environment Agency's River Quality Planning software and found not to pose a significant risk of EQS exceedance in the downstream watercourse quality. Furthermore, they were found not to pose a significant risk of reducing the quality of the watercourse by a significant amount (more than 10% of the EQS compared to upstream quality).

The pH of the effluent was found to be within the acceptable limits of the MAC-EQS. The discharge was therefore deemed to have passed the H1 assessment.

6.3 Point Source Emissions to Surface Water

Clean, uncontaminated surface water run off from roofs and non-process areas of the site is collected in a separate drainage system from process effluent. It is discharged into the municipal storm water drainage system which flows into the River Tawd.

There are no direct emissions to surface water from effluent or wastewater generated by the production activities undertaken on site.

6.4 Point Source Emissions to Land

The activities undertaken on site will not result in emissions to land.

6.5 Fugitive Emissions

Significant fugitive emissions as a result of production activities undertaken at the site are considered unlikely for the following reasons:

- The manufacture of pasteurised milk, cream and powered milk is undertaken within production buildings. The manufacturing processes are undertaken in accordance with relevant food standards regulations.

[3] Surface water pollution risk assessment for your environmental permit, gov.uk, last updated February 2022

- Raw materials and chemicals are stored in dedicated storage containers/tanks either externally or internally within the proposed EP boundary; bulk storage tanks are provided with level alarms and/or spill/leak protection measures.
- Waste materials are stored in dedicated enclosed tanks located within defined hard surfaced storage areas located on the site, which drain to the 300,000lt underground attenuation tank in case of a spill.
- The effluent drains in production areas are subject to a regular cleaning regime. The surface water and effluent drainage systems were subjected to a camera survey on 30 May 2024 that found no defects and clear, unobstructed flow (refer Appendix B).
- The site refrigeration systems comprise fluorinated gases and glycol. Refrigeration systems are subject to regular scheduled maintenance and leak testing; this is undertaken by an approved specialist contractor.
- The site maintains spill procedures and operating personnel are provided with training in the implementation of the spill procedures. Additionally, regular inspections of the site are undertaken in accordance with the site's Environmental Management System (EMS).

A summary of the storage arrangements for raw materials, chemicals, fuels and for wastes at the site are provided in Section 4.0.

The site has not received nuisance complaints from nearby residents and businesses since the commencement of operation in 2010.

6.6 Dust

Potential for dust generation at the site may arise from the production of milk powder. This activity is undertaken indoors. The dryers used to dry the milk also have two emission points to air that comprise bag filters to minimise the release of dust. These emission points are continuously monitored by the onsite SCADA system. Powdered milk is stored in sealed bags within the warehouse. The warehouse doors are shut when not in use. As a result of these measures it is considered that the risk of dust emissions is not significant. A qualitative assessment of potential fugitive dust emissions is provided in the Environmental Risk Assessment (refer 410.065368.00001_ERA) submitted as part of this EP application.

6.7 Odour

The manufacturing processes do not result in the generation of significant odours. Production occurs indoors and waste is stored in enclosed tanks. The site has not received nuisance odour complaints from nearby residents and businesses since the start of operation in 2010. Waste solids are removed from site daily and used as pig feed. Therefore, it is considered that the risk of odour nuisance is not significant, and this permit application does not propose any monitoring of odour emissions. A qualitative assessment of potential odorous emissions is provided in the Environmental Risk Assessment (refer 410.065368.00001_ERA) submitted as part of this EP application.

6.8 Noise and Vibration

Production activities are undertaken within the manufacturing building. Equipment located externally at the site, which could potentially be noisy, are the compressors (located in acoustic housing).

All production equipment and on-site vehicles such as forklift trucks, have been designed in accordance with European noise standards; the equipment is subject to regular preventative maintenance in accordance with the manufacturer's requirements. All plant that is a potential

noise source is either located within a building, is surrounded by acoustic enclosures or has sound attenuation/anti-vibration installations.

The site has not received nuisance complaints from nearby residents and businesses since the start of operation in 2010. A quantitative assessment of the potential for noise impacts from the site has been undertaken as part of this application (416.065368.00001_NIA). This assessment concluded that the noise levels within the assessed area have a minimal impact on residential receptors and that a site-specific Noise Management Plan is not required.

6.9 Pests

Pest management arrangements are in place at the site, this includes a contract with an appointed pest control company who regularly visit site to ensure pest control is adequate.

Regular inspections for pests include:

- Visual inspection for signs of pests/infestation;
- Checking of all pest monitoring points for activity and that each one is serviced/clean/intact/tethered in place; and
- Replacement of any lures/baits/damaged devices, as required.

6.10 Accidents and Emergencies

The site has and established accident and emergency procedure. This procedure details the emergency response to be implemented in the event of an emergency situation including a spillage/leak or fire. This procedure is regularly reviewed, and where necessary revised to incorporate any additional accident or emergency scenarios arising from new plant and equipment that may be installed. Appropriate training is provided to employees and contractor staff to ensure that response to an incident is prompt and efficient.

7.0 Monitoring

7.1 Point Source Emissions to Atmosphere

7.1.1 Steam Generators

Emissions from the combustion of natural gas in the steam generators (emission points A1 to A3) will be required to comply with the 250 mg/Nm^3 NOx MCPD ELV from 1st January 2030 and be monitored for carbon monoxide.

As kerosene will be used less than 50 hours per year as a dual fuel for the steam generators, a NO_X MCPD ELV of 200 mg/Nm^3 does not apply.

7.1.2 Dryers

The dryers are exempt from MCP requirements.

YTD have indicated that dust emissions from the dryers will meet BAT AEL (2-10 mg/Nm^3) presented in BAT Conclusion 23 of the Food, Drink and Milk BRef[4]. The two dust emission points are continuously monitored in real time via the SCADA system.

[4] Commission Implementing Decision (EU) 2019/2031 of 12 November 2019 establishing best available techniques (BAT) conclusions for the food, drink and milk industries, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C(2019) 7989).

7.1.3 Emergency Generator

No monitoring required as they do not fall under the remit of MCPD[5]. Periodic testing of the emergency kerosene fired generator is carried out and emissions recorded.

7.1.4 Methodology

The site will ensure that the monitoring of emissions is undertaken in accordance with the requirements stated in EA guidance document *M5 Monitoring of Stack Emissions from Medium Combustion Plants and Specified Generators*, which provides a standardised approach to monitoring stack gas emissions from plants regulated under the Medium Combustion Plant Directive (https://www.gov.uk/government/publications/m5-monitoring-of-stack-gas-emissions-from-medium-combustion-plants-and-specified-generators).

The monitoring of emissions will be undertaken by an appointed MCERTS certified air emissions monitoring specialist. The characteristics of the waste gas streams from the channelled emission points to air from combustion sources are currently monitored periodically by an external consultant.

7.2 Point Source Emissions to Sewer

The site is connected to the United Utilities sewer system. Effluent from the production process is discharged to sewer in accordance with the United Utilities trade effluent discharge consent (dated 01 July 2024 reference QSF). Monitoring of the effluent is undertaken in accordance with this discharge consent. An inspection chamber is provided for the sampling of effluent prior at the point of discharge into the municipal sewer. An automated sampler is installed in the inspection chamber.

Compliance with BAT 4 of the Food, Drink and Milk Industries BREF (final draft October 2018)) is not applicable as the relevant monitoring requirements, as detailed in Appendix D, these relate to discharges made direct to a receiving water body.

The effluent discharge from the site is discharged to sewer where it is subject to treatment at the municipal wastewater treatment works prior to final discharge. It is therefore not proposed to alter the monitoring arrangements already undertaken as stipulated in the discharge consent.

7.3 Noise and Vibration

YTD have assessed potential impacts of noise generated by the site on local receptors (refer 416.065368.00001_NIA). This assessment concluded that the noise levels within the assessed area have a minimal impact on residential receptors and that a site-specific Noise Management Plan is not required.

8.0 Resource Efficiency

8.1 Raw Material Consumption

Details of the food grade raw materials and the chemicals in use at the site are provided in Section 4 of this BATOT. YTD confirm that milk processing is controlled by a computerised SCADA system and that raw material inventories are regularly reviewed and monitored.

Food grade raw materials are stored appropriately in accordance with food hygiene standards to ensure quality is maintained and the organisation employs a stock control

[5] Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants

system to ensure that these raw materials are used prior to expiry of their shelf life, thus reducing wastage.

In accordance with food safety requirements, rigorous quality control (QC) is employed at various stages during the manufacturing process to ensure that all products are of the highest quality as demanded by YTD. This approach minimises the quantity of QC rejects. Where possible, YTD will re-work QC rejects to minimise the use of raw materials and the generation of waste.

Hygiene and cleaning chemicals in use in production areas are designed for use in food production facilities. Other chemicals associated with production and maintenance are used in small volumes at the site. All chemicals in use on site are subject to a Control of Substances Hazardous to Health (COSHH) assessment, this includes assessment of the potential environmental hazards. YTD ensure that all hazardous chemicals are stored appropriately to minimise the risk of release to the environment.

Staff involved with cleaning activities and the use of cleaning chemicals undergo training to ensure these chemicals are used and stored appropriately.

8.2 Energy Efficiency

External contractor 'Inspired Energy' audited the site in order to apply to the Climate Change Levy (CCL) scheme on behalf of the site on 30th December 2023.

An energy efficiency plan was prepared as a result of the CCL audit. Energy management techniques have been implemented to monitor, record and track energy consumption of the various activities undertaken at the site.

8.2.1 Energy Use

The estimated annual usage of the main fuel types is summarised in Table 8-1.

Table 8-1 Annual Energy Consumption and Carbon Dioxide Emissions

Energy Source	Annual Primary Energy Consumption (kWh)	CO_2 Emission Factor (Kg CO_{2e}/kWh)*	Annual CO_2 Emission 2023 (kg)
Electricity	14,000,000 (kWh)	0.207	2,898,000
Natural gas	85,000,000 (kWh)	0.18256	15,517,600
Diesel	24,000 (L)	2.66	62,400
Kerosene**	0 (L)	2.66	0
Total			**18,478,000**

* - 2023 UK greenhouse gas conversion factors

** Diesel CO2 Emission Factor adopted for kerosene

In accordance with BAT (BAT 2) of the Food, Drink and Milk Industries BREF (November 2019), in order to increase energy efficiency and reduce emissions the site maintain an inventory of energy consumption via the SCADA system which is subject to regular review.

Energy consumption minimisation techniques employed at the site include:

- Burner regulation and control;

- Use of energy-efficient motors;
- Heat recovery with heat exchangers and/or heat pumps;
- Use of LED lighting;
- Optimising steam distribution systems;
- Preheating feed water;
- SCADA process control system;
- Reducing heat losses by insulation; and
- Use of variable speed drives.

Further details as to how the site meets the BAT requirements for minimising energy consumption are provided in Appendix D.

8.3 Water Minimisation

YTD installed a RO plant in May 2024. Evaporative water from the drying process is treated with chlorine dioxide and then re-used in the CIP process. Mains water is no longer used in the process, except in an emergency or due to RO plant stoppage.

The site currently undertakes submetering for some elements of the processes at the site which enables the monitoring of key water consuming plant/activities and where necessary seek measures to optimise/reduce water usage. The site also undertake the following water minimisation activities:

- Water recycling and/or reuse through the RO system;
- Optimisation of water flow;
- Optimisation of water nozzles and hoses;
- Optimisation of chemical dosing and water use in CIP;
- Optimised design and construction of equipment and process areas. Floor levels slope to acro drains that flow to sumps which are over pumped to the waste water tank, prior to discharge;
- Use of the SCADA system to automates process controls and increase the efficiency of the process; and
- Cleaning of equipment as soon as possible.

8.4 Waste Minimisation

YTD, in accordance with the EMS, regularly reviews waste generation using data obtained from the appointed waste contractors and undertakes a review of waste generated at the site to identify potential waste minimisation opportunities. This is considered to be BAT in accordance with the Food, Drink and Milk Industries BRef.

YTD has measures in place to ensure that:

- The waste hierarchy (referred to in Article 3 of the Waste Framework Directive) is applied in the generation of waste on site by the activities;
- Waste production will be avoided wherever possible;
- Any waste generated by the activities is treated in accordance with the waste hierarchy; and

- Where disposal is necessary, as opposed to recovery, that it is undertaken in a manner which minimises its impact on the environment.

All waste generated at the site is sent either for recycling, re-use, or for energy generation. No waste is disposed of to landfill.

9.0 Environmental Management System (EMS)

The site has an EMS which is accessible electronically. The EMS is aligned to the BRCGS Global Food Safety Standard.

The EMS is accessible electronically. The EMS is structured as follows:

- Top Level Policies - Policies and brief outlines of systems and procedures.
- Procedures - Procedures which define the processes, practices and documented information required by your organization to help reduce waste, prevent pollution and minimise resource use.
- Work Instructions or Standard Operating Procedures - Some procedures require a detailed work instruction or Standard Operating Procedure in order to provide key training and support for specific operating processes. These are designed by trained personnel with the appropriate levels of experience and expertise within these areas. Photos and diagrams are used for training as appropriate.
- Records / Forms - Forms, record sheets or other documentation for collecting data relating to Environmental Management requirements.

9.1 Policy

The site has developed an environmental policy. The policy is displayed on notice boards at the site and is included in the EMS Manual.

The policy clearly defines the organisation's commitment to ensure that the impact of business activities upon the environment is kept to a minimum, ensure legal compliance, minimise the environmental impacts of emissions, efficient use of energy, water, materials and natural resources, use of energy efficient products and services and for continuous improvement of environmental performance. The Policy is reviewed at least annually at the Management Review meeting. The policy commits to the setting and reviewing of objectives and targets.

9.2 Organisation

The site has established and maintains documented procedures for identifying and recording environmental aspects for all its activities, products and services and has developed a register of environmental aspects and impact. Where significant, the environmental aspects have been considered in the development, implementation and maintenance of the EMS. These are also considered when introducing new or modified activities, products and services. YTD has also documented in the EMS a procedure for the setting and managing of environmental Objectives and Targets.

The site has documented within the EMS the structure and responsibility within the organisation. Senior management have overall responsibility for the provision and maintenance of an effective EMS policy and improvement programme and will ensure that the requirements of the EMS are addressed in all management and business decisions.

The site has established a procedure for periodic internal audits of environmental documents, procedures, implementation and compliance status to determine whether the EMS conforms to planned arrangements, and to determine whether it has been

appropriately implemented and maintained in accordance with its Environmental Policy. The EMS is externally verified through certification and surveillance audits by the appointed management system certification organisation.

Any environmental issues are escalated, and corrective actions are established, recorded in the sites tracker document and communicated to the relevant personnel to be completed within agreed timescales. Documentation is retained and actions signed off when completed.

10.0 Operations and Maintenance

10.1 Operational Control

The site implements a range of operational controls to minimise the impact on the environment. The environmental impact of the site's activities is minimised by:

- The choice and control of material inputs;
- Minimising raw material, energy and water usage; and
- maintaining the site in accordance a planned preventative maintenance programme.

Operational controls implemented at the site are maintained within the EMS. Operational control procedures are currently being updated have been established to ensure that activities and operations are undertaken to ensure environmental performance is achieved in line with the Environmental Policy.

10.2 Planned Preventative Maintenance (PPM)

There is a dedicated department responsible for ongoing maintenance at the site. The site has a PPM system in place. PPM involves daily checks including visual inspections, analysis of product quality, lant gauges, etc. There is a daily checklist detailing the checks that are required and records of the results of these checks. For larger plant there is PPM planner in place, additionally YTD's Insurance Company details plant maintenance and testing requirements that have to be undertaken to satisfy the insurance policy.

YTD also a computerised system (supervisory control and data acquisition – SCADA) that monitors performance to allow maintenance issues to be identified quickly.

Engineering and maintenance activities are undertaken either directly on plant or in the workshop. Some maintenance activities are undertaken by third party appointed specialist contractors, for example the maintenance of chillers, refrigeration systems, and steam generators.

Maintenance chemicals, such as oils and greases, cleaning solvents, etc. are all stored in small quantities in individual containers in dedicated storage areas/cabinets within the workshop.

10.3 Competence and Training

The site has an established training programme to ensure that the training needs of all employees, including those whose activities may affect the environment, are identified and that the necessary knowledge and skills are provided through appropriate education, training and experience. Training needs are identified primarily by line management but may be identified as a consequence of monitoring/inspections/audits.

An induction programme provides all new recruits and, if appropriate, contractors with basic environmental awareness. This includes environmental awareness training and spill training. All new starters within production have on the job training and start learning through a buddy system with an experienced trained operator. Additional on-the-job training

and more specialist formal training is provided as required. Training records are held within a training matrix which is the responsibility of departmental managers and are in place to continuously monitor personnel and role progression.

11.0 Accidents, Incidents and Non-Conformance

The site has and established accident and emergency procedure, including the management of environmental incidents and accidents that may arise.

The site also maintains systems to ensure non-conformances are investigated and that actions are taken to correct and prevent the causes. Systems are in place for investigating and managing all environmental corrective and preventative actions. Accidents, incidents (including environmental incidents such as spillages and leaks), and non-conformances are reported and tracked. A qualitative assessment of accident risks is provided in the Environmental Risk Assessment (refer 410.065368.00001_ERA) submitted as part of this EP application.

Appendix A Site Drainage Plan & Key

Best Available Techniques & Operating Techniques

Environmental Permit Application

Yew Tree Dairy PartCo Limited

SLR Project No.: 416.065368.00001

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A.1 Appendix A – Drainage Plan Key

Blue – Surface Water Drainage

Red – Effluent

Appendix B CCTV Survey

Best Available Techniques & Operating Techniques

Environmental Permit Application

Yew Tree Dairy PartCo Limited

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Appendix C Tank Inventory

Best Available Techniques & Operating Techniques

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Appendix D BAT Assessment

Best Available Techniques & Operating Techniques

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Appendix E United Utilities Monitoring Data

Best Available Techniques & Operating Techniques

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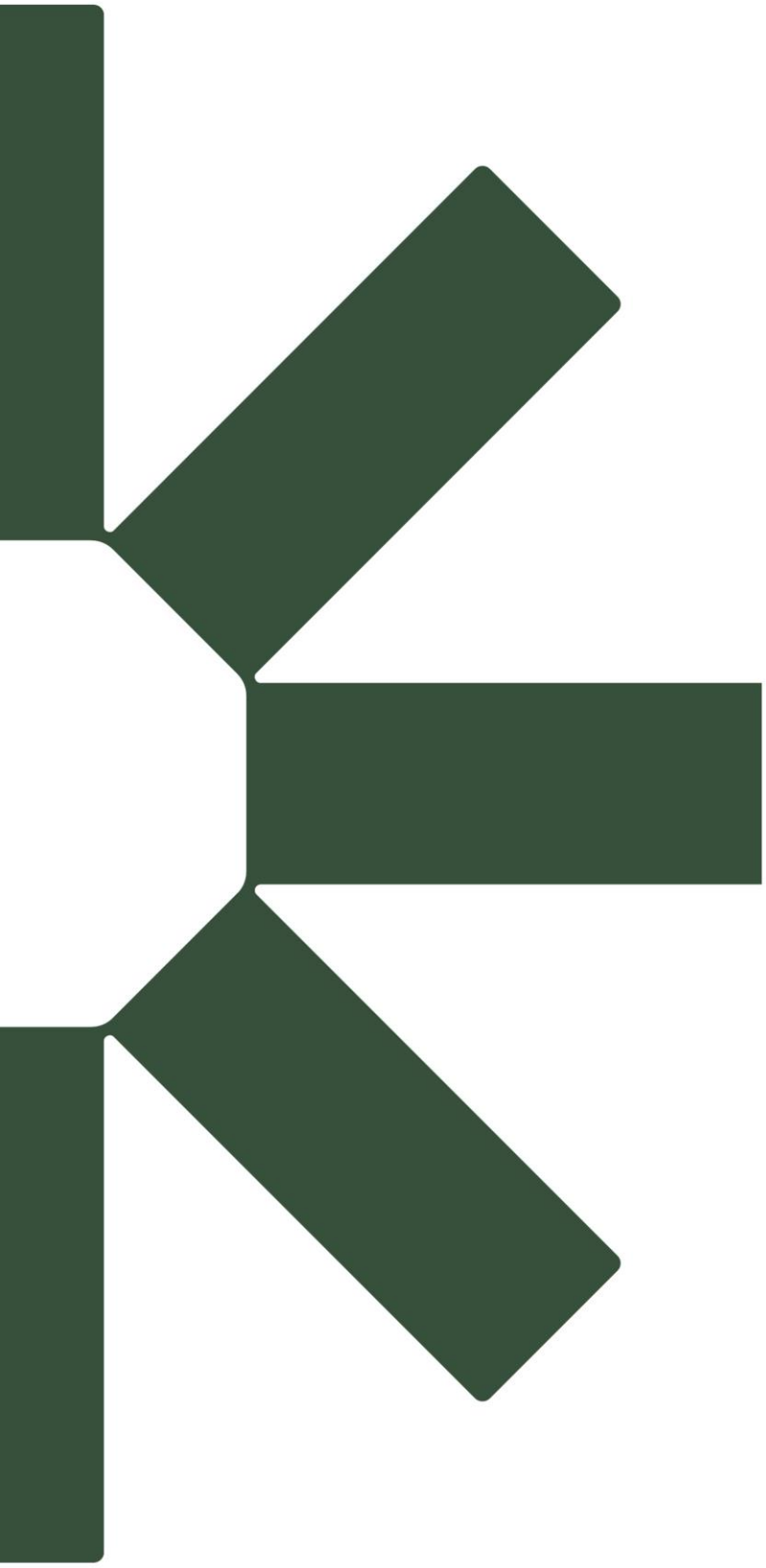

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