Thornton Park Manufacturing Facility Environmental Permit Variation Application

Best Available Techniques and Operating Techniques

Thorntons Limited

Thornton Park, Somercotes, Alfreton, Derbyshire, DE55 4XJ

Prepared by:

SLR Consulting Limited

5th Floor, 35 Dale Street, Manchester, M1 2HF
SLR Project No.: 410.066170.00001

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1.0 Introduction

SLR Consulting Limited (SLR) has been instructed by Thorntons Limited (Thorntons) to prepare a substantial Environmental Permit (EP) variation to the existing EP (EPR/WP3639QM) for the Thorntons chocolate and confectionery manufacturing facility (Installation) located at Thornton Park, Somercotes, Alfreton, Derbyshire, DE55 4XJ.

The Thornton Park site ("the site") is permitted as a Part A1 activity in accordance with the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended), specifically:

- Section 6.8 A(1)(d) Treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed (where the weight of the finished product excludes packaging) –
    - Animal and vegetable raw materials (other than milk only), both in combined and separate products, with a finished production capacity in tonnes per day greater than –
    - (aa) 75 where [the portion of animal material in percent of weight of the finished production capacity] is equal to 10 or more.
- Section 5.4 Part A(1)(a)(ii) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC concerning urban waste-water treatment(a) —
    - physico-chemical treatment.

The facility includes the following Directly Associated Activities (DAA):

- The use of natural gas fired steam and hot water raising boilers;
- Storage and handling of raw materials;
- Refrigeration plant for the refrigeration of raw materials and the storage of final product;
- Storage and handling of chemicals;
- Waste storage and handling; and
- Surface water drainage.

This EP variation does not alter any of the above activities with the exception of the following in relation to existing boilers and emission points to air:

- Air emission points A4 and A5 (boilers (each 0.15MWth) which provide hot water to the pipework serving the chocolate storage tanks): these two boilers discharge via one stack (A5) and not individual stacks as stated in the EP application.
- Air emission point A7 (boilers in the packaging building providing comfort heating (each being 676.5 kWth) which exhaust via one shared stack): two of the five gas fired boilers have been removed.
- Emission point A6 (0.15MWth boiler which provided hot water to the chocolate storage tank jackets): this boiler is no longer in place.

The assessments and drawings submitted in support of this EP variation application have been updated to reflect these changes.

In addition, this variation seeks to undertake the following additional production activities at the site:

- The production of Nutella (chocolate spread). This will include:
  - The installation of a new production line dedicated to Nutella manufacture (maximum annual production of circa 24,000 tonnes (circa 100 tonnes per day));
  - A new reverse osmosis water softening system;
  - The installation of raw material storage tanks/silos and management areas;
  - The installation of a new steam hazelnut roaster;
  - The installation of two natural gas fired boilers (each with a thermal rated input of 1.01 MWth) which will serve the hazelnut roaster (approximately 1,400 kg/h steam consumption @ 10 barg).
- Ferrero Collection Experience (FCE) production. Annual maximum production will be 1,550 tonnes per year (with a daily throughput of circa 13 tonnes). The production of this confectionary range will include:
  - the installation of a new preparation area within the existing manufacturing building; and
  - the installation of a new natural gas-fired oven (Buhler oven) in this preparation area.

Production Trail Dates

Production trials for the FCE will commence start of November 2025. Commencement of production trials for Nutella manufacture will be at a later date post FCE trials.

1.1 The Site

The site is located on Thornton Park, Somercotes, Alfreton, Derbyshire, DE55 4XJ, centred on National Grid reference SK 41096 54474. The site, which is located approximately 2.6km north of Ripley and 15km northeast Derby city centre, is situated within the greater Thornton's Park, which is itself located within a mixed residential, industrial and agricultural area.

The site is bound to the:

- North: The A38, beyond which is Oakerthorpe Brook and the town of Alfreton.;
- East: Woodland, Colliery Plantation and Venture Crescent Industrial Estate;
- South: Open land, sports ground, beyond which is the town of Swanswick; and
- West: Turnpike Business Park, beyond which is the B6179 and agricultural land.

The nearest residential properties are located on the outskirts of Alfreton, approximately 100m north of the site.

The nearest surface water feature are the drains located approximately adjacent to the south and east of the site.

The site location is presented on Drawing 001.

There are no receptors of European/international importance within 10km, including Ramsar Sites, Special Areas of Conservation and Special Protection Areas. There are numerous sites of national and local ecological importance within a 2km radius of the site, including:

- 20 Local Wildlife Sites (LWS), the closest being Colliery Plantation approximately 130m east;
- 2 Local Nature Reserves (LNR): Pennytown Ponds 1.2km east and Oakerthorpe LNR 1.5km northwest; and
- 3 ancient woodlands: unnamed Woodland 1.0km west, Broadoak Plantation 1.5km southwest and Carnfield Wood 1.7km northeast.

There are no National Nature Reserves or Sites of Special Scientific Interest (SSSI) within 2km of the site.

With respect to cultural heritage, there are multiple listed buildings within 2km of the site; the nearest is the House of Confinement approximately 570m to the north.

The proposed FCE and Nutella production will be undertaken in the main production buildings on the site.

1.2 Working Hours and Staff

The Installation currently generally operates on a 16/5 shift pattern (morning shift 6.00am – 2.00pm and afternoon shift 2.00pm – 10.00pm), with periods of shutdown generally being:

- Easter (2 days)
- Christmas (8 days)
- Whitsun (5 days).

Both manufacturing and cleaning activities are undertaken during these shifts

The proposed changes will increase the operational hours of the manufacturing facility to a 24/5 shift pattern (potentially extending to 24/7 in the future). The following manufacturing shifts will be in place for the proposed changes:

- Nutella manufacture - 3 shifts per day (Monday - Friday) with circa 15 employees per shift;
- FCE - 3 shifts per day (Monday - Friday) with circa 25 employees per shift.

2.0 The Installation

The site consists of a facility which manufactures chocolates and other confectionery products. The Installation comprises all areas of the site involved in the manufacture and storage of these products.

The proposed production of Nutella and FCE will be undertaken within the existing production and warehousing buildings, with raw material receipt and storage silos/tanks located internal and external to these buildings. Wastes generated by these new production processes will be stored within the existing waste storage areas. All proposed changes will be located within the extant permitted Installation boundary.

The site and Installation boundaries and the site layout are presented on Drawing 002.

The manufacturing activities for the production of Nutella and FCE are detailed in Section 3.0.

3.0 Overview of Proposed Manufacturing Activities

An overview of the proposed manufacturing activities as detailed in Section 3.0 are provided in the remainder of this section.

3.1 Nutella Manufacture

The new Nutella production will have a target productivity of circa 100 tonnes per day.

The manufacture of Nutella will be undertaken in the existing warehouse building on site. The manufacturing process will include the following:

- **Hazelnut preparation:** raw hazelnuts will be subject to cleaning, roasting and, milling. This will be undertaken in a new steam roaster.
- **Raw materials dosing room**: raw materials will be dosed and mixed in this room.
    - Granulated sugar will be piped (air transfer) from the newly installed external sugar tank to the new sugar receiver vessel located in this room;
    - Cocoa will be unloaded, grinded and piped to the receiver vessel;
    - Nutex (deodorised palm oil) will be piped (pumped) from the externally located Nutex tanks (3 new tanks) to the new Nutex receiver vessel in this room;
    - Skimmed milk powder (SMP) will be piped (air transfer) from the new SMP unloading station located in this room into the newly installed SMP receiver vessel;
    - The raw hazelnuts will be unloaded in the dumping area and transferred by bucket elevator to the steam roaster;
    - The roasted hazelnuts will be transferred by bucket elevator into the hazelnut mill and afterwards to the hazelnut Paste storage tank located in this room; and
    - Vanilla bags will be loaded and transferred into a new vanillin receiver vessel which is also located in this room.

    These raw materials will be mixed in a water jacketed (45°C (±2°C)) mixer.
- **Refining process:** The mixture will then be subject to pre-refining whereby the mixture is passed via a two roll refiner and then a 5 roll refiner; the refining process modifies the particle size of the product and generates a ‘flour'.
- **Conching:** following refining the ‘flour’ is transferred to a mixer (conche/plastifier), where the dosage of the remaining ingredients takes place (palm oil and lecithin) and the mass is mixed homogeneously. The semi-finished product is then transferred via a self-cleaning filter to an internally located storage tank (known as the ‘service tank’).
- **Tempering process:** The semi finished product will then be transferred from the service tank via heated water-jacketed pipes (45-50°C) to a tempering machine in order to pre-crystalize the semi-finished product. The semi finished product will be cooled (air cooled) and then transferred to the dosing machine.

    When the dosing machine is not running, the lines will switch to re-circulation mode in order to redirect the flow back to the service tank, passing through a de-crystalliser (hot water jacketed).
- **Dosing and packaging:** The semi finished product will be dosed into jars. The filled jars will then be sealed and capped with screw caps, dated and labeled or sleeved. The packed jars will then be sent to the existing maturation warehouse within 2 hours of production, for storage at 17°C (±1 °C); the maturation time is 72 hours. The finished product will then be dispatched to customers.

3.2 FCE Manufacture

The manufacture of the FCE will involve the manufacture of specific praline confectionary products. This will be undertaken in the existing manufacturing buildings on site. The manufacturing process will include the following:

- **Wafer production (new process to be located in the Wafer Preparation Area):** raw materials, all of which will be stored in the existing raw materials warehouse with the exception of sugar which will be piped to this area from the externally located sugar storage tanks, will be weighed in the newly developed Wafer Preparation Area. Key raw materials will be blended in a mixer to prepare a batter. The batter will then be transferred to an oven (new Buhler oven) for cooking, following which the cooked wafers will be subject to humidification in a humidifier before being transferred to the existing Buhler moulding line.
- **Buhler Moulding Line:** the wafers will be cut in a new dedicated cutting station and then shaped and filled with a cream filling.
  - **Semifinished – chocolate:** dark, milk and white chocolate is used for the lining of the chocolate wafer moulds, decoration of the finished chocolates, and also in the manufacture of the praline fillings. Dark, milk and white chocolate (stored in the existing chocolate bulk storage tanks) will be delivered directly to newly installed chocolate depositor vessels located in the manufacturing building. The chocolate will then be delivered to a chocolate service tank (either a dark, milk or white chocolate service tank) where it will be delivered to a tempering machine and then to a respective dosing plate for either shell, bottom or decoration moulding. When a number of the moulding processes are not running, the lines switch into re-circulation mode in order to redirect the flow back to the service tanks via a de-crystallizer.
  - **Semifinished Preparation – confectionary praline filling:** The raw materials, all of which will be stored in the existing raw materials warehouse, with the exception of sugar and palm oil (dependent on the type of the confectionary filling being manufactured) which will be piped to this area from the externally located storage tanks, will be weighed in and then blended in a mixer. The mixture will then be subject to refining (new process) where it will be passed via a pre-refiner and then a refiner which will modify the particle size of the product. The refined mixture will then be subject to final mixing and then transferred by a mobile tank to a storage room before being transferred to a dosing plate where is it used to fill the chocolate moulds.
  - **Praline Maturation and Storage:** The manufactured FCE chocolates will be transferred to an intermediate storage area where they will be packed and sealed into trays and then sealed into an outer box. The boxed chocolates will then be packed into cases and either transferred to the existing chilled warehouse for ‘hibernation’ prior to dispatch to customers, or directly to the existing storage warehouse, prior to dispatch to customers.

3.3 Distribution of Nutella & FCE

The finished Nutella and FCE products will be distributed from the on-site storage warehouses to Thorntons customers by HGV. The delivery is undertaken by the appointed third-party haulage company.

4.0 Operational Activities

4.1 Receipt and Storage of Raw Materials

4.1.1 Nutella

A range of food grade raw materials will be stored and used at the facility for the manufacture of Nutella.

Sugar will be supplied in bulk and will be stored in a newly installed silo to be located externally in the yard. Nutex will be stored in dedicated storage tanks also located externally in the yard area. Other raw materials will be delivered in bags/IBCs/small containers and stored in the existing raw material warehouse.

These raw materials and their storage arrangements are detailed in Table 4.1

Table 4-1: Nutella Raw Materials Storage Arrangements

Contents	Location	Storage Type	Storage Capacity per tank (kg)	Tank Construction Details	Spill/Leak Prevention Measures
Sugar	External	1 x bulk Tank	136,000 (160m^3)	Stainless steel construction	Level and pressure gauges, high level alarm.
Nutex (deodorised palm oil)	External	3 x bulk tanks	27,000 (30m^3)	Stainless steel construction	Level and pressure gauges, high level alarm. Transfer pipework (from these tanks to the internal raw materials room) is triplex jacketed (i.e. water heated jacket). No leak detection on pipework. *Secondary containment will be provided for these tanks; details will be provided once designed.*
Manteca (hazelnut paste)	Internal Raw Materials Area	4 x bulk tanks	27,000 (21.6m^3)	Stainless steel construction	Level and pressure gauges, high level alarm. Transfer pipework is triplex jacketed (i.e. water heated

Contents	Location	Storage Type	Storage Capacity per tank (kg)	Tank Construction Details	Spill/Leak Prevention Measures
					jacket). No leak detection on pipework.
Raw hazelnuts	Internal Raw Materials Area	Bulk bags	1,000	n/a	N/A.
Skimmed milk powder	Internal Raw Materials Area	Bulk bags	1,000	n/a	N/A
Lecithin	Internal Raw Materials Area	IBC	1,000	n/a	N/A.
Vanilla	Internal Raw Materials Area	Cardboard box	25	n/a	N/A.

4.1.1.1 Softened Water

In addition to the above raw materials, the Nutella manufacturing process will involve the use of softened water. Water (mains supply) will be subject to softening in a new reverse osmosis (RO) unit, which will generate circa 3m^3/hour of softened water. The RO system will not involve the use of chemicals.

4.1.2 FCE

A range of food grade raw materials will be stored and used at the facility for the manufacture of FCE.

The raw materials will be delivered in bags/IBCs/small containers and stored in the existing raw material warehouse.

These raw materials and their storage arrangements are detailed in Table 4.2.

Table 4-2: FCE Raw Materials Storage Arrangements

Contents	Location	Storage Type	Capacity (kg)	Tank Construction Details	Spill/Leak Prevention Measures
Wheat Flour	Internal Raw Materials Area	Bag	25	N/A	N/A
Nutex	Internal Raw Materials Area	CuBox	1,000	N/A	N/A
Saccharose	Internal Raw Materials Area	Bag	25	N/A	N/A
Soy Lechithin	Internal Raw Materials Area	CuBox	1,000	N/A	N/A

Contents	Location	Storage Type	Capacity (kg)	Tank Construction Details	Spill/Leak Prevention Measures
Salt	Internal Raw Materials Area	Bag	25	N/A	N/A
Baking Soda	Internal Raw Materials Area	Bag	25	N/A	N/A
Wheat starch	Internal Raw Materials Area	Bag	25	N/A	N/A
Cocoa	Internal Raw Materials Area	Bag	25	N/A	N/A
Skimmed milk	Internal Raw Materials Area	Bag	25	N/A	N/A

The following tank filling procedures are in place and are adhered to at all times::

- ISOP008 Standard Operating Procedure for Bulk Tanker Deliveries details the requirements for off-loading and clean-up of any spillages from bulk tankers; and
- TPI/02 Checklist for Incoming Tanker Deliveries.

4.2 Buhler Oven

A new Buhler oven will be installed on the FCE line, this will be used for the cooking of the wafers. The oven will be gas-fired (thermal rated input: 0.4MWth). There will be two emission points to air from this oven.

The gas oven is designed to achieve the following combustion emissions (at standard conditions 101.325 kPa, temperature 0°C, dry gas,17% oxygen):

- Carbon monoxide (CO): < 100 mg/m^3
- Nitrous oxides (NOx): < 200 mg/m^3.

4.3 Refrigeration

The proposed changes will not involve the installation of new chiller/refrigeration equipment. As such, the proposed changes will not result in the introduction of additional refrigerants to the Installation.

4.4 Cleaning

Thorntons has an existing cleaning schedule in place for daily, weekly and quarterly cleaning (example document reference TPM HYGIENECLEAN SCH JAN 15 CCH 0653). The internal Hygiene team are responsible for the cleaning of the floors, staircases, walls and celings, bins and drains in the operational and warehouse areas.. Production employees are responsible for the cleaning of the production lines and associated equipment. Schedules and procedures will be updated to include the cleaning requirements for the proposed changes as relevant.

The proposed changes will not result in the introduction of new cleaning chemicals to the site.

4.5 Maintenance

There is a dedicated department responsible for ongoing maintenance at the Installation. The site has a planned preventative maintenance (PPM) system in place. PPM involves daily, weekly and monthly checks including the relevant inspections depending on the equipment. . For larger plant there is a PPM planner in place, additionally Thorntons Insurance Company has a portal that details plant maintenance and testing requirements which is utilised on a monthly basis by the PPM department.

Thorntons has a Computer Maintenance Management System (CMMS) via which PPM is managed. This management system will be updated to include the FCE and Nutella manufacturing lines and equipment.

Engineering and maintenance activities are undertaken either directly on plant or in the Engineering Store and Workshop (formerly the Vehicle Maintenance building). Some maintenance activities are/will be undertaken by third party appointed specialist contractors, where required.

Hazardous substances including chemicals, oils and greases, cleaning solvents, etc. are all stored in small quantities in individual containers in dedicated storage areas/cabinets within the Engineering store and throughout the Installation.

4.6 Effluent Treatment

Process effluent in the main is generated as a result of the cleaning of the production lines. Basic treatment of the process effluent consists of the screening of fats and grease via fat traps in the foul drainage system external to the production areas and settlement of the screened effluent in the below ground level concrete effluent chamber located towards the central northern Installation boundary. The effluent is then directed to the pumping station where the effluent is subject to pH adjustment (auto dosing system), if required, prior to consented discharge to municipal sewer.

The proposed food grade raw materials for the production of Nutella and FCE are very similar/identical to those already in use at the Installation; the proposed changes will not result in the introduction of any new cleaning chemicals to those that are already in use at the site. As such, the proposed changes will not alter the composition of the wastewater discharged to the ETP, and there will be no changes to the treatment and discharge of wastewater.

The volume of wastewater that will be discharged to the ETP as a result of the new manufacturing activities is expected to increase to circa 6,740m^3 per year. This is based on:

- Nutella estimated wastewater volume of 6,600m^3 annually (based on 240 days production per year equates to circa 27.5m^3/day); and
- FCE estimated wastewater volume of 140 m^3 annually (based on 170 days production per year equates to circa1.4m^3/day).

4.7 Boilers

As part of this EP variation, Thorntons have proposed to install two new natural gas fired steam raising boilers at the facility which will serve the hazelnut roaster. The two new boilers will be located in what is the current warehouse building, one of which will be a duty standby; both boilers will not operate simultaneously. Each boiler will have a thermal rated input of 1.01MWth. There will be a dedicated emissions stack for each boiler (each being 10m agl).

4.7.1 Medium Combustion Plant Directive

The MCPD was incorporated into UK law in early 2018 via the Environmental Permitting (England and Wales) (Amendment) Regulations 2018. Whilst an Industrial Emissions Directive (IED) Chapter II Environmental Permit is required, specifically Chapter II of the IED states that:

"*Chapter II (of the IED) MCPs are in scope either where they are the primary activity i.e. where there is more than 50MWth total on the installation, or they are a Directly Associated Activity (DAA) to another Chapter II activity e.g. chemical manufacture. As a minimum, these MCPs must meet the requirements of the directive and there may be occasions where site specific BAT requires more stringent conditions*"

The MCPD, as set out in Schedule 25A of the EPR 2018, defines the scope, definitions, exclusions and how the regulations apply to types of medium combustion plant (MCP), MCP being combustion plant with a rated thermal input of 1 – 50MWth regardless of the type of fuel used.

Due to the rated thermal input of each of the two proposed steam boilers (1.01MWth each) serving the hazelnut roaster (i.e. >1MWth and <50MWth) they fall under the remit of the Medium Combustion Plant Directive (MCPD.

The stream boilers will operate for more than 500 hours per year, as a rolling average over 5 years, and will therefore be subject to emission limits and monitoring requirements; these requirements are discussed in sections 6.1 and 7.1.

4.7.2 Boiler Water Softening System Chemicals

The proposed two steam raising boilers serving the new hazelnut roaster will each have a water softening system (to be located on the same skid as the boiler). Water to be softened will be dosed with chemicals (stored in tanks on the boiler skid) to maintain the quality of water required for the steam system. These will be the same dosing chemicals that are currently in use at the environmental permitted site, as summarised below These chemicals and the proposed storage arrangements are listed in Table 4.7.

Table 4-3: Steam Raising Boilers Treatment Chemicals

Description	Use	Environmental Hazard Properties	Storage Container capacity (litres unless otherwise specified)	Storage Location
AKVO35 (70ppm max.)	Oxygen scavenger – removal of oxygen from boiler feed water to prevent corrosion.	Main ingredient: sodium bisulphite 38% wt) Water soluble. Depletes oxygen in water. Sulphites react in environment to form sulphates. No bioaccumulation.	100 litre above ground tank	Chemical storage tank with bund (110%) located internally
AKVOSCP (50ppm max.)	Polymer flushing agent	Main ingredients: neutralised phosphono-carboxylic acids (1-10%, propenoic acid/propanesulphonic acid sodium salt polymer (1-10%). Water soluble. Dangerous to aquatic environment.	100 litre above ground tank	Chemical storage tank with bund (110%) located internally

Description	Use	Environmental Hazard Properties	Storage Container capacity (litres unless otherwise specified)	Storage Location
		Biodegradable. No bioaccumulation.		
AKVO32 (10ppm max.).	pH control	Main ingredient – Sodium hydroxide. Water soluble. High pH dangerous to aquatic environment. Biodegradable. No bioaccumulation.	25 litre drum	Drum located internally.

5.0 Best Available Techniques Assessment

An assessment of operating procedures and techniques for the proposed modifications to the Installation 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, December 2019;
- Energy efficiency standards for industrial plants to get environmental permits, February 2016; and
- Reference Document on Best Available Techniques for Energy Efficiency, February 2009.

The BAT assessment is presented in Appendix A.

6.0 Emissions

6.1 Point Source Emissions to Atmosphere

The following changes relate to the existing boilers and emission points to air:

- Air emission points A4 and A5 (boilers (each 0.15MWth) which provide hot water to the pipework serving the chocolate storage tanks): these two boilers discharge via one stack (A5) and not individual stacks as stated in the EP application.
- Air emission point A7 (boilers in the packaging building providing comfort heating (each being 676.5 kWth) which exhaust via one shared stack): two of the five gas fired boilers have been removed.
- Emission point A6 (0.15MWth boiler which provided hot water to the chocolate storage tank jackets): this boiler is no longer in place.

The proposed new Nutella and FCE manufacturing activities will introduce 13 additional point source emissions which will continuously discharge to air during manufacturing activities:

- Natural gas fired boilers serving the hazelnut roaster - emission points reference D1 and D2 (it should be noted that one boiler will be a standby which will have its own stack; only one boiler will operate at any one time);

- New Buhler oven (FCE manufacturing process) - emission points B1.1 and B1.2;
- New steam hazelnut roaster – six emission points (C4, C5, C5.1, C5.2, C6 and C7);
- Nutella sugar storage silo dryer: emission point C1.1;
- Nutella sugar feed / discharge conveying dryer: emission point C2; and
- Nutella BIG BAG dumping area skimmed milk / cocoa dryer: emission point C3.

The location of these point source emissions to atmosphere are presented on Drawing 002 and discussed below.

6.1.1 Buhler Oven and Boiler Point Source Emissions to Air

The principal emissions to air from the combustion of natural gas by the boilers and Buhler oven will be nitrogen oxides (NOx).

The Buhler oven is excluded from MCP controls. As it is <1MWth and is also a direct gas fired oven which has the burner located within the oven chamber so that the hot combustion gases come into direct contact with the product.

Due to the thermal rated input of the burners for each steam raising boiler being 1.01MWth, the boilers fall under the remit of the Medium Combustion Plant Directive (MCPD).

6.1.2 Hazelnut Roaster Point Source Emissions to Air

Emissions to air from the hazelnut roaster (which will be continuous during production activities) will be subject to treatment (either via a tangential cyclone separator or dust filters which are designed to remove dust particles from the exhaust stream prior to discharge to air). The roaster will have six emission points:

- Hazelnut cleaning/destoning section (emission point C4);
- Hazelnut chamber heat (2 emission points to air) (emission points C5 & C5.1);
- Hazelnut chamber cooling (emission point C5.2)
- Hazelnut brushing unit in roasting area (emission point C6); and
- Hazelnut roaster grinding/mill (emission point C7).

6.1.2.1 Cyclone Separator

The destoning, heat chamber and cooling chamber release points (i.e. emission points C4, C5, C5.1 and C5.2) from the roaster will have a cyclone separator. The cyclone uses a rotating high speed flow of air within the conical cyclone unit rather than filters to remove particulates. The particulates removed from the exhaust stream are collected at the base of the cyclone in a hopper for removal as a waste, the cleaned exhaust stream is then discharged to air via a roof mounted vent (15m above ground level (agl)).

The cyclone separator will be designed specifically for the Thorntons manufacturing activity, therefore there is no manufacturer's specification data sheet for this system. The cyclone separator will be designed to remove 90% of particles from the hazelnut roaster exhaust streams. Emissions monitoring from a hazelnut roaster in operation at a Ferrero manufacturing facility in Germany (800-900kg/h hazelnuts (standard capacity)) recorded the following for removal of particles for the roaster exhaust streams:

- Cleaning/destoning emission to air: maximum 13.0mg/m^3 (average 10.7mg/m^3); and
- Roasting zone: maximum 9.27mg/m^3 (average 8.7mg/m^3).

6.1.2.2 Dust Filters

Emissions from the two emission points associated with brushing and grinding/milling (which will be continuous during the manufacturing process) will pass via an in-line dust filter prior to discharge to air. The filters are designed to achieve circa 99% filtration (based on the same filter system in use at other Ferrero manufacturing facilities) (the filter specification is presented in Appendix C of this document). There will be a monitoring system on each of the dust filters; if the dust filter system is not performing the monitoring system will automatically stop the process.

6.1.3 Raw Material Dryer Point Source Emissions to air

The following continuous emissions to air (during manufacturing) associated with the air driers for certain raw materials are:

- Emission point C1.1: Nutella sugar storage silo dryer;
- Emission point C2: Nutella sugar feed / discharge conveying dryer; and
- Emission point C3: Nutella BIG BAG dumping area skimmed milk / cocoa dryer.

Emissions from these three emission points will pass via an in-line filter prior to discharge to air. The filters are designed to achieve circa 99% filtration (based on the same filter system in use at other Ferrero manufacturing facilities) (the filter specification is presented in Appendix C of this document). There will be a monitoring system on each of the dust filters; if the dust filter system is not performing the monitoring system will automatically stop the process.

6.1.4 Emission Limits

6.1.4.1 Combustion Emission

Combustion emissions from the two natural gas-fired steam raising boilers will be required to meet the MCPD emission limit value (ELV) as stated in as stated in Table 1, Part 2 of Annex II of the MCPD for:

- nitrogen oxides (NOx) for new medium combustion plant of **100mg/m^3** (at a temperature of 273,15 K, a pressure of 101,3 kPa and 3% oxygen content for medium combustion plants using gaseous fuels) (there are no ELVs for SOx and dust for such plant**)**.

6.1.4.2 Particulates

The Food, Milk and Drink Industries BREF does not specify an associated emission limit (AEL) for particulates (dust) or monitoring requirements for this industrial process; therefore this EP variation application does not propose any particulate emission limits for point source emissions to air or monitoring requirements with respect to the aforementioned emission points to air.

6.1.5 Air Emission Risk Assessment

An air emissions risk assessment (AERA) (SLR ref: 410.066170.00001 AERA, January 2025) has been prepared as part of this EP variation, in order to address the cumulative impacts of emissions to air from the following proposed plant at the installation:

Combustion emissions

- Emission point D1: steam raising boiler (serving the Nutella hazelnut roaster) (1.1MWth). Two boilers are proposed one of which will be a duty standby, therefore only one boiler will operate at any one time.
- Emission points B1.1 and B1.2: Buhler oven serving the FCE waffle manufacturing process. The oven will have two emission points for the exhaust of natural gas combustion emissions.

Particulate emissions

- Hazelnut steam roaster: in total there will be six emission points to air from the hazelnut steam roaster:
  - Emission point C4: Hazelnut cleaning destoning
  - Emission point C5: Hazelnut heat chamber 1
  - Emission point C5.1: Hazelnut heat chamber 2
  - Emission Point C5.2: Hazelnut cooling chamber.
  - Emission point C6: Hazelnut roaster brushing
  - Emission point C7: Hazelnut roaster grinding mill
- Emission point C1.1: Nutella sugar storage silo dryer.
- Emission point C2: Nutella sugar feed / discharge conveying dryer.
- Emission point C3: Nutella BIG BAG dumping area skimmed milk / cocoa dryer.

In addition, the AERA has taken into account the changes to the existing boilers and emission points to air.

The AERA concluded that:

- The process contributions do not lead to any exceedances of the standards (long-term or short-term) for the protection of human health at any relevant exposure location outside of the Site; and
- The process contribution from the proposed changes is considered to cause ‘no likely damage’ to the assessed ecological sites.

This EP variation application does not propose any emission limits for emissions to air or monitoring requirements with respect to the aforementioned emission points to air, with the exception of the need for compliance of the NO_x emissions from the natural gas steam raising boilers serving the hazelnut steam roaster (emission points D1 and D2 (D2 being the duty stand-by boiler) with the 100mg/m^3 NO_x MCPD ELV. Monitoring will also be required for carbon monoxide (CO) in accordance with the MCPD Annex III, Part 1, 3(b), however an ELV will not be applied.

6.2 Odour

Due to the proposed new steam hazelnut roaster and the two associated ovens, an odour assessment has been completed (SLR ref: 410.066170.0001 AERA, January 2025) to consider the likely magnitude and offensiveness of odours. The assessment indicates that the likely worst-case odour effect at a sensitive receptor is ‘slight adverse’. Therefore, the likely significance of effects because of odours from site can be considered ‘not significant’.

6.3 Point Source Emissions to Sewer

There will be no change to the point source emissions to sewer. The site is connected to the Severn Trent Water Limited foul water municipal sewer system at discharge point FW1; this emission point is within the current EP. An additional floor drain is proposed for the FCE manufacturing area which will link into an existing fat trap that drains to the on-site effluent treatment system.

Process effluent generated by the manufacturing process is subject to basic treatment prior to discharge to sewer. Wastewater in the main is generated as a result of the cleaning of the production lines; blowdown from boilers and air compressors are also discharged to the on-site effluent drainage system.

The effluent is subject to simple screening to trap fats and greases, settlement in a final settlement chamber and pH adjustment, if required, prior to consented discharge (Severn Trent Water Limited discharge consent number 006594V, direction number 03, 05 May 2022) to municipal foul sewer via discharge point FW1.

An inspection chamber (Flume Chamber) is provided for the sampling of treated effluent prior to the point of discharge into the municipal sewer. An automated sampler is installed in the inspection chamber to enable effluent samples to be collected for the analysis as per the requirements of the Effluent Discharge Consent.

There are no proposed changes to the effluent treatment systems as a result of the proposed changes.

6.3.1 Effluent Monitoring

The effluent monitoring regime comprises:

- Weekly effluent flow measurement from the installed continuous flow meter.
- Weekly PPM including visual and operational checks of the effluent system by Thorntons, including checking the effluent pH.
- The appointed water treatment company samples and arranges for analysis by a third-party laboratory of a monthly sample of the treated effluent. Analysis is undertaken for suspended solids, COD, phosphorous and pH, in accordance with the requirements of the effluent discharge consent.
- Severn Trent Water Limited samples the treated effluent approximately 1 - 4 times a month, the samples being analysed for COD, suspended solids, phosphorous and pH, as required by their sample analytical schedule.

The facility is consented for the discharge of up to 350 cubic metres in any continuous period of 24 hours.

The consented discharge limits are detailed in Table 6.1.

The volume of treated wastewater discharged to sewer via emission point FW1 will not exceed the consented maximum discharge limit of 350m^3/24-hour period. It is estimated that the additional process wastewater which will be generated as a result of the proposed changes will be circa 6,740m^3 annually (circa 28.9m^3/day), based on:

- Nutella – circa 6,600m^3 annually (based on 240 days production per year equates to circa 27.5m^3/day); and
- FCE - circa 140 m^3 annually (based on 170 days production per year equates to circa 1.4m^3/day).

Currently the Installation is discharging on average 130m^3/day.

The proposed changes will not result in a change to the composition of the effluent discharged to the effluent treatment system.

Changes to the consented discharge limits for the discharge of treated wastewater to sewer are not considered necessary.

Table 6-1: Discharge Limits for Treated Effluent

Parameter	Limit	Reference Period
Discharge Volume (maximum)	350m^3	In any 24-hour period
Discharge Rate (maximum)	20 litres	Per second
Temperature	43 degrees centigrade	maximum
pH	6-10	n/a
Suspended solids	1,500mg/l	n/a
COD from acidified dichromate (expressed as O)	5,400mg/l	n/a
Maximum COD load	1,323kg	Maximum in any 24-hour period
Phosphorous	25mg/l	n/a
Fat, oil and grease	None visible	n/a

The treated process effluent does not contain hazardous pollutants which could be discharged to surface water or estuary following treatment at the sewage treatment works, therefore a specific substances assessment to assess potential risks to surface waters in accordance with EA guidance has not been undertaken for the purpose of this EP variation application.

6.4 Point Source Emissions to Water

The Installation has separate surface water and wastewater drainage systems.

Surface water runoff from roof areas and external roadways and a number of yard areas within the Installation drain is discharged to the on-site surface water drainage system. Surface water is directed via five discharge points SW1 – SW5, as indicated in the current EP:

- SW1 and SW3 discharge via outfalls to a land drain running adjacent to the east of the site. It is considered likely that this land drain discharges into Oakerthorpe Brook located on the other side of the A38 to the north. SW1 drains via an interceptor prior to discharge via a stormwater surge tank (this comprises a plastic below ground tank which restricts the water flow via hydrobrakes to avoid the risk of flooding); SW3 has a number of silt pits, there is no interceptor serving this discharge point.
- SW2 discharges via an outfall to a land drain running adjacent to the east of the site this being the same land drain as SW1 and SW3 discharge to. Prior to discharge via the outfall the surface water passes via stormwater surge tank (this comprises a plastic below ground tank which restricts the water flow avoiding the risk of flooding) and a catchpit and interceptor.
- SW4 discharges under the A38 into Oakerthorpe Brook. There is no interceptor serving this discharge point.
- SW5 discharges to the Severn Trent Water municipal surface water drainage system to the south west of the site. Surface water runoff includes that from the refuelling

island and diesel storage tanks area; the runoff from this area drains via an interceptor prior to off-site discharge.

The interceptors at the Installation are all alarmed. These alarms feed-back, via telemetry, to the appointed interceptor inspection/cleaning contractor who in the event of an issue will attend site in order to rectify the problem. The interceptors are subject to bi-annual visual inspection, cleaning and any required maintenance by this interceptor contractor and the interceptor monitoring equipment is serviced by the aforementioned appointed contractor twice a year.

The surface water drainage systems are subject to annual cleaning whereby an appointed specialist sucks out any silt and then jets the drains. The proposed activities will not result in a change to the surface water drainage system.

The proposed changes will not result in direct discharges of potentially contaminating materials to water or groundwater from the Installation.

6.5 Point Source Emissions to Land

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

6.6 Fugitive Emissions

Significant fugitive emissions as a result of the proposed production activities undertaken at the facility are considered unlikely:

- The manufacture of FCE and Nutella will be undertaken within existing production buildings. The manufacturing process will be undertaken in accordance with relevant food standards regulations.
- Raw materials and chemicals will be stored in dedicated storage containers/tanks either externally or internally within the Installation boundary. Bulk storage tanks are provided with level alarms and/or pressure gauges (as detailed in Table 4-1).

  The proposed Nutex (deodorised palm oil) bulk tanks, which will be located externally will be provided with secondary containment.

  The tanker off loading area for Nutex will also be provided with containment to reduce the risk of pollution as a result of potential spills/leaks during delivery activities.
- Waste materials will be stored in dedicated waste receptacles located within defined hard surfaced storage areas located in the Installation.
- Drains – the surface water drainage system is subject to annual cleaning and foul water drains in production areas are subject to a regular cleaning regime.
- Interceptors, which are alarmed, are subject to bi-annual inspection, maintenance and cleaning.

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

Thorntons maintains spill procedures and operating personnel are provided with training in the implementation of the spill procedures. Additionally, regular inspections (daily visual inspections and weekly inspections which involve the completion of a weekly inspection checklist record) of the Installation are undertaken in accordance with the site's Environmental Management System.

In addition to the above, a number of activities will intermittently generate dust which will be vented to atmosphere, as detailed below:

- New sugar truck unloading – storage silo conveying area;
- Sugar silo in the internally located mixing tower preparation area;
- Cocoa silo in the internally located mixing tower preparation area; and
- Skimmed milk power silo in the internally located mixing tower preparation area.

The vents for these emissions will discharge above roof height (circa 15m agl), or in the case of the external sugar silo 26m agl. Each vent will have a dust filter which will achieve circa 99% filtration (based on the same filter system in use at other Ferrero manufacturing facilities) (the filter specification is presented in Appendix C of this document). There will be a monitoring system on each of the dust filters; if the dust filter system is not performing the monitoring system will automatically stop the process.

The Installation has not received nuisance complaints from nearby residents and businesses in recent times.

6.7 Noise and Vibration

The facility is located in a mixed commercial/residential/rural area, the nearest sensitive receptors being 250m to the north and south. The production activities are undertaken within the production buildings.

The proposed changes will not result in the installation of potential noise generating equipment externally at the Installation. The proposed changes will result in a number of additional HGV movements on and off site. A noise assessment has been completed in support of this EP variation (410.066170.0001 Noise Assessment). No significant issues were identified by this assessment as a result of additional HGV movements.

The facility does not have a history of complaints from nearby residents or businesses, with only 1 complaint being raised several years ago regarding an externally located chiller unit, which was addressed by the installation of an acoustic barrier.

6.8 Pests

There is a Pest Control Policy in place at the facility (CQP06 Pest Control Policy); there is also a Group pest control policy within the quality management requirements for all facilities.

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

- Electronic fly killers for flying insects;
- Moth pheromone pot traps;
- Pheromone stumbling traps for crawling insects;
- Internal & External rodent non-toxic bait monitoring points; and
- For birds, spike dissuaders, nylon bird nets and a stroboscopic lamp.

Regular inspections for pests are in the main completed by an appointed third-party specialist. Thorntons has developed and delivered pest training to staff.

The appointed pest management specialist visits the Installation at least 3 – 4 times a week. The inspections 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.

There are trained individuals at the Installation (BPCA RSPH level 2 award in Pest Management) who complete quarterly pest control audits of the appointed pest control specialist practices at the Installation.

6.9 Accidents and Emergencies

Thorntons has established and maintains an Environmental Incident Response Plan (document reference ENV PR003) which documents the emergency response to be implemented in the event of an emergency situation including a spillage/leak from on-site activities. This plan includes details of emergency services and contact numbers for key site personnel. The plan is regularly reviewed, at least every 4 years, and where necessary revised to incorporate any additional accident or emergency scenarios arising from new plant and equipment that may be installed.

Thorntons also implement the management procedures outlined in the 'Ferrero Crisis Management Toolkit' when dealing with potential environmental incidents at the Installation. If the situation is to escalate, then a plan is put into place for additional active management.

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

An air emissions risk assessment has been completed and submitted as part of this EP variation application (document reference 410.066170.00001 AERA, January 2025).

The products of combustion from the hazelnut steam roaster boilers which will be released to air as a result of the site's activities will not result in an adverse impact on the environment.

The emission of particulates from the various point sources which will be released to air as a result of the site's activities will not result in an adverse impact on the environment.

7.1.1 Combustion Emission

Combustion emissions from the 2 natural gas-fired steam raising boilers will be required to meet the MCPD emission limit value (ELV) as stated in as stated in Table 1, Part 2 of Annex II of the MCPD for nitrogen oxides (NOx) for new medium combustion plant of **100mg/m^3**.

Monitoring of the NOx and CO emissions from the steam raising boilers will be undertaken within 4 months of first being put in operation and every 3 years thereafter.

Thorntons will ensure that the monitoring of NOx and CO emissions from these two emission points 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 NOx and CO will be undertaken by an appointed MCERTS certified air emissions monitoring specialist.

7.1.2 Particulates

The Food, Milk and Drink Industries BREF does not specify an associated emission limit (AEL) for particulates or monitoring requirements for this industrial process; therefore this EP variation application does not propose any particulate emission monitoring requirements with respect to the various point source emission to air as detailed in section 6.1.

7.2 Point Source Emissions to Sewer

The site is connected to the municipal foul sewer system. Effluent from the manufacturing process is discharged to sewer in accordance with the Severn Trent Water Limited discharge consent (consent number 006594V, direction number 2, 22nd April 2015). Monitoring of the effluent is undertaken in accordance with this discharge consent. An inspection chamber is provided for the sampling of treated 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 (December 2019) is not applicable as the relevant monitoring requirements relate to discharges made direct to a receiving water body. The effluent discharge from the Thorntons facility is discharged to sewer where it is subject to treatment at the municipal wastewater treatment works prior to discharge to water.

Blowdown from the proposed boilers will be discharged to the on-site effluent drainage system. The additional blowdown will be minor in quantity and is not expected to significantly impact the composition of the process effluent and discharge of treated effluent to sewer will be possible within the current permitted discharge consent limits.

Thorntons is therefore not proposing to alter the monitoring arrangements as stipulated in the discharge consent.

7.3 Point Source Emissions to Water

Existing Point source emissions to water from the Installation are limited to uncontaminated surface water runoff from roof areas and external roadways and a number of yards within operational areas of the Installation from point source emissions SW1, SW2, SW3, SW4 and SW5 (refer to section 5.4 for details of these discharges).

The proposed changes will not result in any changes to surface water discharges. The monitoring of surface water discharges is not proposed.

7.4 Odour

The activities undertaken at the facility do not inherently generate significant odours. Thorntons ensures the implementation of good working practices and the correct use and maintenance of plant to minimise the potential for odours. Third party odour complaints have not been received by the facility since commencement of operations in 1985.

A qualitative Odour Assessment has been undertaken (410.066170.00001 AERA, January 2025), as presented with this EP variation application. This concluded that the likely significance of effects because of odours from site can be considered ‘not significant’.

The monitoring of odour emissions is not proposed.

8.0 Resource Efficiency

8.1 Raw Material Consumption

Details of the raw food grade materials and the chemicals to be used in the proposed FCE and Nutella manufacturing activities at the Installation are provided in Section 4 of this BATOT.

The quantities of food grade raw materials used are dictated by the product recipe. 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 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 Thorntons. This approach minimises the quantity of quality control (QC) rejects. Where possible, Thorntons will re-work QC rejects to minimise the use of raw materials and the generation of waste.

Chemicals associated with production and maintenance are used in small volumes at the Installation. 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. Thorntons 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

Thorntons is a participant to a Climate Change Agreement, (CAA) (agreement reference FDF1/T00180). The agreement has a number of variable targets based on production output. Energy management techniques have been implemented to monitor, record and track energy consumption of the various activities undertaken at the Installation. The CCA Agreement is included in Appendix C.

Thorntons have developed an energy management system and gained ISO5001 certification of this management system in June 2022. An energy policy is managed under the energy management system. Thorntons currently undertakes submetering (electricity and gas) for some elements of the processes at the facility, this enables Thorntons to monitor key energy consuming plant/activities and where necessary seek measures to optimise/reduce energy usage.

8.2.1 Energy Use

The estimated annual usage of the main fuel types which the proposed changes will require is given below :

- Natural gas:
  - Nutella - 4,000MWh per year
  - FCE – 1,700MWh pr year.
- Electricity:
  - Nutella – 18,662MWh per year
  - FCE – 1,620MWh per year.

The additional energy consumption at the facility will generate 5,241,918kg of carbon dioxide (CO_2e) emissions as summarised in Table 8.1.

Table 8-1: Estimated Carbon Dioxide Emissions Associated with the Proposed Changes

Energy Source	Annual Primary Energy Consumption (kWh)	CO_2 Emission Factor (Kg CO_2e/kWh)*	Annual CO_2 Emission (kg)
Natural gas	5,700,000	0.18290	1,042,530
Electricity	20,282,000	0.20705	4,199,388
Total			**5,241,918**
* - 2024 UK greenhouse gas conversion factors (kWh gross CV for natural gas)			

In accordance with BAT (BATc 2) of the Food, Drink and Milk Industries BREF (December 2019), in order to increase energy efficiency and reduce emissions Thorntons maintain an inventory of energy consumption via the Carbon Desktop system which is subject to regular review. As part of the Energy Management System, Thorntons establish energy objectives and targets, monitor energy use and seek opportunities to reduce/optimise energy usage.

Energy consumption minimisation techniques employed at the facility are detailed in the BAT assessment presented in Appendix A.

8.3 Water Minimisation

The annual water consumption at the Thorntons facility will increase as a result of the proposed changes. Estimated increases in water consumption are summarised below:

- Nutella manufacture will result in the use of circa 12,000m^3 per year, comprising:
  - 10,200m^3 used in the product manufacturing process; and
  - 1,800m^3 for additional cleaning/sanitary requirements.
- FCE manufacture will result in the use of circa 336m^3 per year, comprising:
  - 135m^3 used in the product manufacturing process; and
  - 201m^3 for additional cleaning/sanitary requirements.

Thorntons do monitor key water consuming plant/activities and where necessary seek measures to optimise/reduce water usage

Water consumption minimisation techniques employed at the facility include:

- Use of pigging systems to clean production pipelines;
- Use of dry cleaning methods;
- Use of triggers on hoses;
- Tray wash, mould wash and plaque washer all recirculate water for washing plaques, trays, pallets and moulds;
- Ultrasonic cleaner for production belts and buckets which reuses water over the course of a week;
- Site wide sub metering of water usage to identify any water leaks;
- Full drain integrity survey completed on all external drains and restorative work completed;

- Closed loop water systems for chilled and hot water heating (systems);
- Cleaning in Place systems on appropriate equipment;
- Use of hot water and specialist detergent to improve cleaning efficiencies.

This is considered to be BAT in accordance with BAT (BATc 2) of the Food, Drink and Milk Industries BREF (December 2019).

Further details as to how the facility meets the BAT requirements for minimising water consumption are provided in Appendix A.

8.4 Waste Minimisation

The wastes and estimated quantities that will be generated by the proposed FCE and Nutella manufacturing activities at the facility are summarised in Table 8.3. The proposed changes will not result in the generation of any new waste types to those currently generated at the permitted Installation.

Waste generated at the Installation is sent either for recycling, anaerobic digestion, animal feed or use as energy from fuel; a very small amount of waste is sent to landfill where no alternative is available.

Table 8-2: Wastes

Waste Type	Estimate of Quantity Generated (tonnes)	
	FCE	**Nutella**
Food waste	169	14
Packaging waste	6	24
Estimated Total	**213**	

Wastes generated as a result of the proposed changes will be managed in accordance with the existing waste management processes and procedures in place at the site.

Waste is stored on the site in suitable waste receptacles. Wastes produced in the production buildings are collected in bins positioned in various locations within these buildings; these bins are then emptied on a regular basis either into the internal relevant compactor or are baled on-site for collection and recycling. All wastes are removed from site for off-site management by an appointed suitably permitted and licensed waste management company.

Thorntons, in accordance with the EMS, regularly reviews the site's waste generation using data obtained from the appointed waste contractors and undertakes a review of waste generated at the facility to identify potential waste minimisation opportunities and opportunities to move waste up the waste hierarchy. This is considered to be BAT in accordance with the Food, Drink and Milk Industries BREF (December 2019).

9.0 Environmental Management System

Thorntons has an Environmental Management System (EMS) which has been developed in line with the ISO14001 international standard; and formal certification of the EMS to ISO14001:2015 was granted in May 2021. The management system is regularly audited internally at both plant and Group level and by an external accredited auditor. Access to the EMS and associated documents is via the facility's intranet.

The EMS is considered to be compliant with the requirements as detailed in Environment Agency guidance Develop a management system: environmental permits, April 2023 and is considered to be BAT.

The proposed changes will be incorporated into the existing EMS, as required.

Appendix A BAT Assessment

Thornton Park Manufacturing Facility Environmental Permit Variation Application

Best Available Techniques and Operating Techniques

Thorntons Limited

SLR Project No.: 410.066170.00001

Appendix B Dust Filter Specification

Thornton Park Manufacturing Facility Environmental Permit Variation Application

Best Available Techniques and Operating Techniques

Thorntons Limited

SLR Project No.: 410.066170.00001

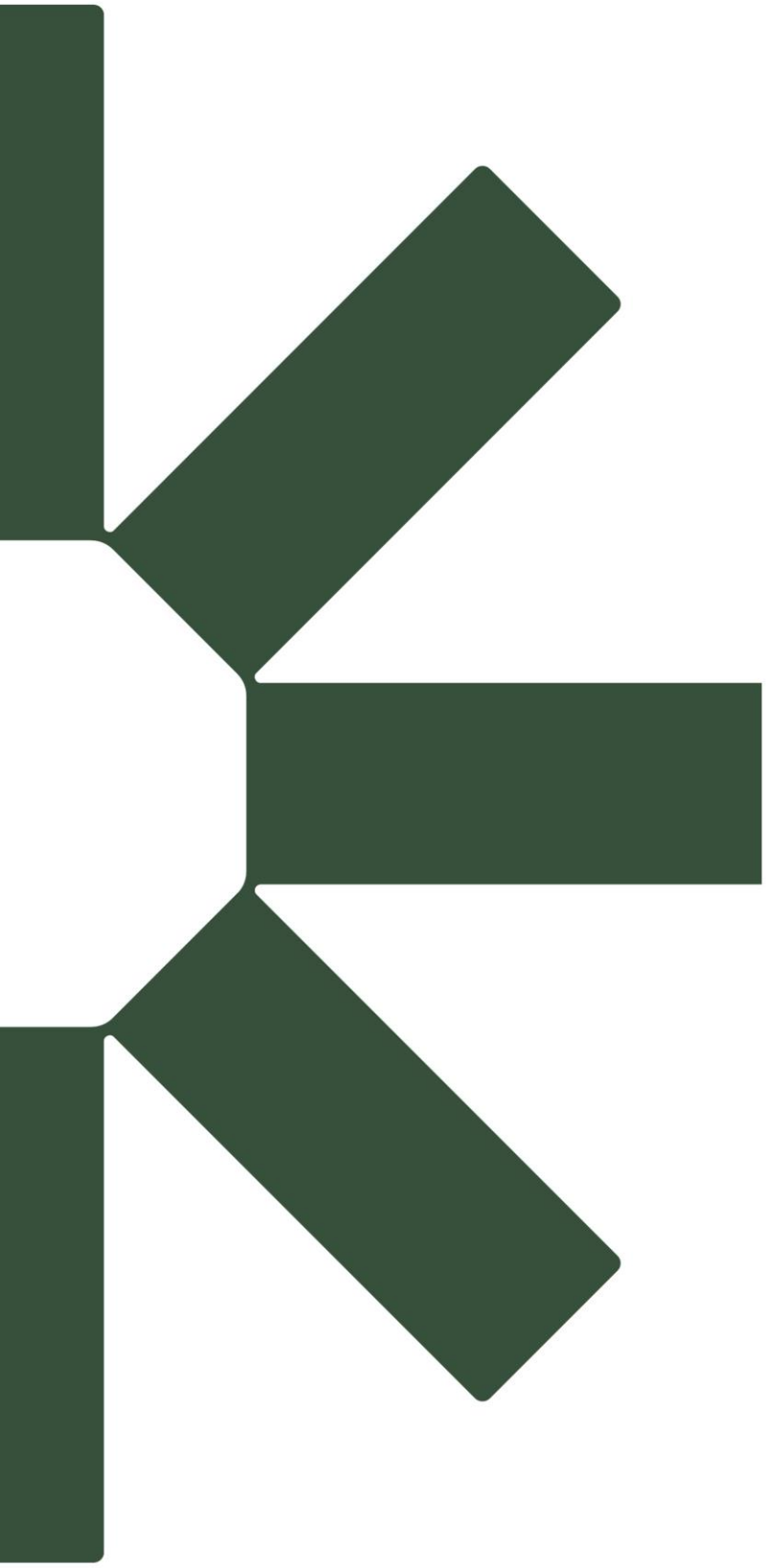
Appendix C CCA Agreement

Thornton Park Manufacturing Facility Environmental Permit Variation Application

Best Available Techniques and Operating Techniques

Thorntons Limited

SLR Project No.: 410.066170.00001



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