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Greencore Foods (UK) Ltd Environmental Permit Application

Permit Number: EPR/XXXX

EHS reference:	202122086
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Contents

Non-Technical Summary

Greencore Food to Go Limited facility 'Greencore Boston' located on The Found Riverside Industrial Estate, Marsh Lane, Boston, PE21 7PJ produces a mixture of freshly prepared salads. Production is seasonal, higher production volumes generally occur in the summer months relative to winter. The site receives a changeable mix of bulk ingredients, generally comprising various meats, vegetables, fruits, grains, sauces, dairy products and oils. Goods-in are stored frozen, chilled or at ambient temperature. The production process is variable by product, raw materials are processed into salads by specific combinations of washing, chopping, steam cooking, blast chilling, mixing, and bagging. Salads are then potted and lidded on an assembly line prior to despatch. The facility is operational 24 hours a day 7 days a week and employs between 800 and 1000 people at any time.

As a result of internal review of activities, a number of iterative changes to manufacturing capabilities, efficiency gains and adaptations to its product mix to reflect the changing needs of customer, the operator has concluded that the facility is now is obligated under the Environmental Permitting (England and Wales) Regulations (EPR) 2016, as amended, in relation to the following activities:

Section 6.8 A(1) (d)(iii)

Treatment and processing of animal and vegetable raw materials (other than milk only), both in combined and separate products, with a finished product production capacity in tonnes per day greater than —

(aa)75 if A is equal to 10 or more.

(bb) 300-(22.5 x A) in any other case,

Where 'A' is the proportion of animal material in percent of weight of the finished product production capacity.

The effluent treatment is considered a permittable activity under the following schedule reference:

Section 5.4 A (1) (a) (ii)

Disposal, recovery or a mix of disposal and recovery of non-hazardous waste

(a) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day (or 100 tonnes per day if the only waste treatment is anaerobic digestion) involving one or more of the following activities and excluding activities covered by Council directive 91/271/EEC concerning urban wastewater treatment -

(ii) physico-chemical treatment.

There are a number of directly associated activities on the site which support the obligated activity, including:

- Chilled storage of raw materials;
- Operation of the ammonia plant refrigeration;
- Operation of boilers for the generation of hot water and steam [A1, A2, A3, A4, A5] with a combined operational net thermal input of 2.054 MWth;
- Storage of waste prior to disposal off-site;
- Storage of hazardous substances for hygiene and engineering activities.

The operator is therefore now making an application for an Environmental Permit to cover its current operations.

Emissions to air from the site are from two process steam raising boilers and two of the three identical hot water boilers; an engineering solution is in place to ensure only two of these three hot water boilers can run simultaneously. These have been assessed and found to have an insignificant impact on surrounding ecological and human receptors.

Emissions from the effluent plant are transferred to Anglian Water through the combined drain at the north of site for further treatment prior to release back into the environment. The operator is currently undergoing an effluent monitoring project. The business has committed funds for the purpose of developing on site infrastructure to reduce the risk of discharge consent breaches. The results of this study will be used to effectively invest in effluent treatment infrastructure in 2023. Surface water run-off from the site is routed via the surface water drainage system to either the Black Sluice controlled water on the southeast of site, from the surface water drains at the north of site (see Table 2a) or runs off the south yard to the unmade ground to the south of Site.

The operator has measures in place to protect drainage systems from spills of raw materials or wastes, including self-bunding of the polypropylene effluent tank (Tank 3), level controls through alarms and pump set points, roofed bunds for externally stored IBCs, spill procedures and spill kits. All potential accident scenarios, mitigation measures and response actions are included in the site's emergency procedures. Details of the full tank inventory and containment measures are provided within the application, see Appendix C – Site condition report Section 4.

There is considered to be no significant risk of fugitive emissions to air, odour or noise and vibration from the site.

The process is operated in accordance with the site Hazard Analysis and Critical Control Point (HACCP) plan, with operating procedures and risk assessments in place for all manufacturing operations. The process is operated in such a way as to maximise yield and minimise wastage. The operator has a rolling Continuous Improvement (CI) plan in place with opportunities regularly identified and tracked to completion.

The operator is reviewing and implementing its updated Environmental Management System (EMS) which will incorporate all the requirements of BAT and the forthcoming Environmental Permit.

Raw materials are delivered via bulk tanker, in drums, IBC's, sacks, bags and smaller containers and stored internally within the warehouse and raw material tank farm. A full raw materials inventory is provided within the application.

Energy use, water use, raw materials use, and waste arisings are all measured and monitored. The operator is part of the underlying Climate Change Agreement for the food and drink sector. See Appendix G – Climate Change Agreement.

Sensitive ecological and human receptors around the site have been identified and a risk assessment carried out on the potential for the site to impact upon these receptors. Air emissions modelling was carried out to assess the impact of emissions to air from the boilers. This concluded that emissions are within guideline levels and will not have a significant impact on human or ecological receptors.

The risk assessment concludes that while there is a risk of pollution of the surface water drainage system, containment and mitigation measures in place and proposed are sufficient to manage the risk to an acceptable level.

1 What operations are you applying for?

Table 1a Types of Activities

Schedule 1 listed activities						
Installation Name	**Schedule 1 References**	**Description of the activity**	**Activity daily capacity**	**Annex IIA or IIB (disposal and recovery) codes**	**Hazardous waste treatment capacity**	**Non-hazardous waste treatment capacity**
Greencore Boston	6.8 Part A(1)(d)(iii)	Treatment and processing of animal and vegetable raw materials (other than milk only), both in combined and separate products, with a finished product production capacity in tonnes per day greater than— (aa)75 if A is equal to 10 or more.	75 tonnes*	-	-	-
	5.4 Part A(1)a(ii)	Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per involving physico-chemical treatment.	575m³**	D9	-	575m³**

Directly associated activities (See note 4)	
Name of DAA	Description of the DAA (please identify the schedule 1 activity it serves)
Steam/Heat Generation	3 x boilers producing hot water for production processes [Engineered solution limits boiler use to 2 running and 1 on standby] 2 x boilers producing steam for production processes
Raw Materials Storage	Some bulk storage of materials in goods-in raw materials warehouse
Refrigeration Plant	Operation of the ammonia plant refrigeration
Waste Storage	Storage of segregated waste streams in yard

**This is the sites total pro-rata theoretical capacity running on each line 24 hours/day 7 days per week. In reality, daily production tonnage is significantly lower.*

*** This is the total allowable discharge volume under the sites current discharge consent.*

2 Emissions to Air, Water and Land

Table 2a Emissions

POINT SOURCE EMISSIONS TO AIR				
Emission Point Ref.	**Parameter**	**Concentration**	**Unit**	**Source**
A1	NOx CO	30.6 37.6	mg/m^3	Boiler House 1
A2	NOx CO	23.4 160	mg/m^3	Boiler House 1
A3	NOx CO	Not measured. Not measured	mg/m^3	Boiler House 1
A4 - A7	Air	NA	NA	Pressure release valves and vents from tanks.
A8	NOx CO	184 6.8	mg/m^3	Boiler House 2
A9	NOx CO	444 156	mg/m^3	Boiler House 2
A10	Air & Steam	NA	NA	Vent from Tray wash
POINT SOURCE EMISSIONS TO WATER (OTHER THAN SEWERS)				
W1	Clean surface water run-off	-	-	Clean surface water run-off north of site
W2	Clean surface water run-off	-	-	Clean surface water run-off north of site
W3	Clean surface water run-off	-	-	Clean surface water run-off to ditch southeast of site
W4	Clean surface water run-off	-	-	Clean surface water run-off to ditch southeast of site
W5	Clean surface water run-off	-	-	Clean surface water run-off to ditch southeast of site
W6	Clean surface water run-off	-	-	Clean surface water run-off to ditch southeast of site
POINT SOURCE EMISSIONS TO SEWERS, ETP'S OR OTHER TRANSFERS OFF SITE				

S1	Settled COD Fat, oil & grease Total Suspended Solids Temperature pH	4,000 mg/l 250.0 mg/l 1,000 mg/l 43 °C 6 - 10	Used water from the following processes: 1) General hygiene sanitising of factory vessels and equipment after the preparation and washing of salads and vegetables 2) Tray washing 3) Boiler blowdown 4) Softener backwash 5) Compressor condensate.

POINT SOURCE EMISSIONS TO LAND
N/A

3 Operating Techniques

3.1 Technical Standards

Table 3a Technical Standards

Description of the Schedule 1 Activity or DAA	**Relevant Technical Guidance Note**	**Document Reference**
6.8 A(1)(d)(ii) Treatment and processing of animal and vegetable raw materials with a capacity over 75 tonnes per day.	Food, Drink and Milk Industries BREF, 2006 Food, Drink and Milk Industries BREF, 2018 Food and Drink Sector Guidance Note EPR 6.10	Section 3a Main Application Document
5.4 A(1)(a)(ii) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day by physico-chemical treatment.	As above	Section 3a Main Application Document

3.2 Process Description

3.2.1 Site Summary

Greencore Food to Go Limited facility 'Greencore Boston' located on The Found Riverside Industrial Estate, Marsh Lane, Boston, PE21 7PJ produces a mixture of freshly prepared salads. Production is seasonal, higher production volumes generally occur in the summer months relative to winter. The site receives a changeable mix of bulk ingredients, generally comprising various meats, vegetables, fruits, grains, sauces, dairy products and oils. Goods-in are stored frozen, chilled or at ambient temperature. The production process is variable by product, raw materials are processed into salads by specific combinations of washing, chopping, steam cooking, blast chilling, mixing, and bagging. Salads are then potted and lidded on an assembly line prior to despatch. The facility is operational 24 hours a day 7 days a week and employs between 800 and 1000 people at any time.

A diagram coded by key areas is outlined in Figure 3a.

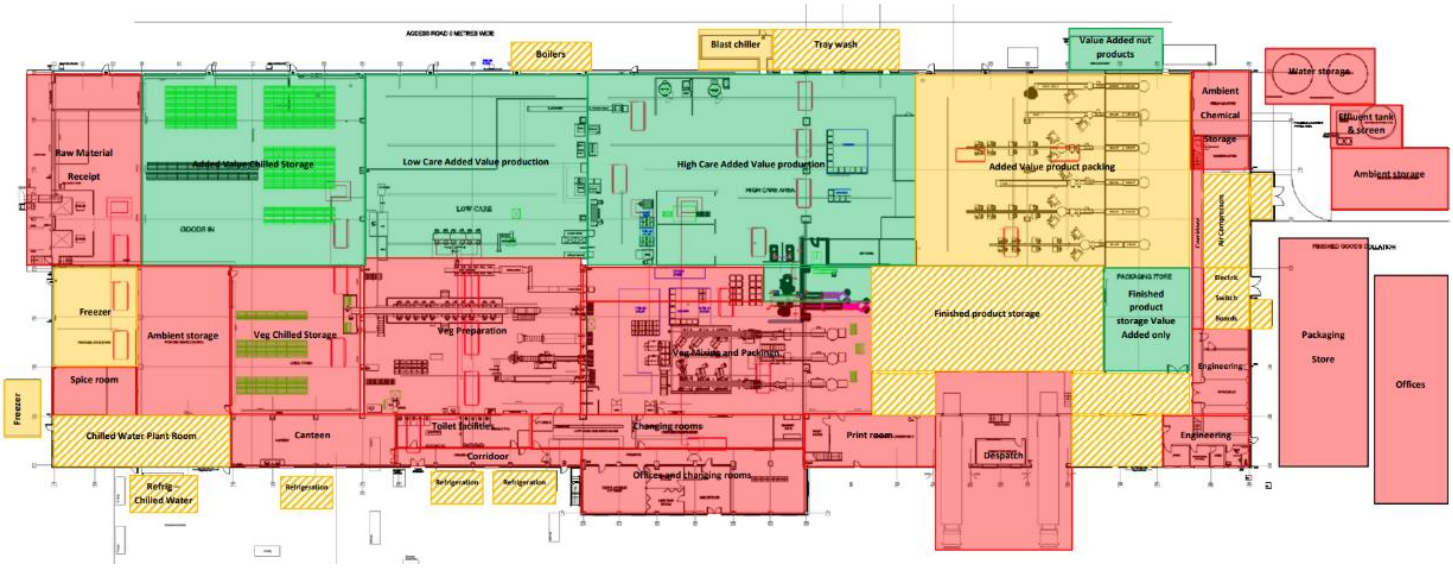

Figure 3a Internal Site layout

3.2.2 Overview of the Process

The facility produces a wide range of 'wet & dry salads' for supermarkets and food outlets. The term 'wet salads' refers to product such as coleslaw, couscous salad, beetroot salad, chickpea salad, tuna mayonnaise etc. 'Dry salads' are produced on other lines; these comprise of bagged salad and prepared vegetables. All raw materials enter through a goods-in location, are received, and logged before entering controlled temperature storage. The sequence of production processes is variable by product specification; however, all lines are fed from the raw materials storage facilities. Raw food materials are processed to salads which are then bagged or potted, lidded and labelled prior to despatch.

3.2.2.1 Materials Intake and Storage

All incoming materials are delivered by road, HGVs are unloaded in the yard located at the southern end of the facility, from here items are transferred to designated storage locations. Every item received at site is checked against the delivery note, and this includes damage, contamination, quality, and temperature for chilled and frozen materials. Depending on customer requirements the site receives variable mixes of food bulk ingredients, generally comprising various meats, fish, vegetables, fruit, pasta, rice, couscous, mayonnaise, other sauces, and oils. The facility also receives hygiene chemicals and a range of engineering materials. The delivery format includes IBCs, plastic barrels, tubs, big bags, etc. that is optimised to ensure quality during transportation of materials that are received from a number of suppliers globally.

Accepted materials are transferred to stores. Foods are stored in dedicated temperature-controlled facilities (Goods-in Freezer, Chiller or Ambient). By volume, the most used hygiene chemicals, sodium hypochlorite, Holquat, TWH, and Nipac, are stored on covered bunds in the external IBC store adjacent to the effluent treatment tanks. One IBC of each is also stored on a bund within the internal chemical storage room at the north end of the main building while in use. A variety of other hygiene chemicals listed under the CLP regulations are stored in carriable plastic containers of various sizes. These are stored in COSHH cabinets within the internal chemical storeroom. A range of engineering chemicals, predominantly hydrocarbon-based lubricants, aerosols and adhesives, are stored within a locked storage units within the internal engineering workshops.

Entry of personnel and delivery of materials to the site is strictly controlled. The site has 24-hour manned security presence, and the site is securely fenced.

3.2.2.2 Manufacturing Process

The production facility is chilled to a set temperature by the means of an ammonia refrigeration plant and the temperatures are controlled and monitored in all production areas. Numerous production lines are used to process raw materials into salads, all of which are fed from the shared food storage areas, the processes move material from south to north. The production process varies dependent on product; however, all salads are prepared following a combination of the following steps:

- 'Washing' with flumes and salad spinners then 'chopping' with slicers and dicers
- 'Steam cooking' with Cook Quench Chill (CQC) systems or Nilams
- Blast chilling
- Mixing & Dressing with in-line depositors and glass mixers
- Vegetable/Salad Bagging

All salads then enter an assembly line and packing line. Dry prepared vegetables or salad is automatically packed and sealed into a bag, then packed into trays or boxes before being despatched.

All wet salads are weighed before assembly. The salads are deposited into a container/pot either manually or through an automated process, the containers/pots are lidded and labelled. The pots and containers are then packed into outer cases or returnable crates prior to despatch.

The product build dictates the packaging requirements. The product requirements are automatically updated to ensure that the correct type and amount of packaging is available at any given time, as to not compromise the production process of the respective end-product. The packaging materials used comply with the existing packaging legislation including Packaging Essential Requirements.

Finished goods are despatched from a single outbound area located in the northeast section of the facility. Products are loaded onto Greencore or 3rd party vehicles. Products leave site from the north via the road running along the eastern edge of the Site.

Representative examples of process steps for a wet salad (such as a tuna mayonnaise salad) and dry salad (a bag of mixed leaves) are shown in Figure 3b:

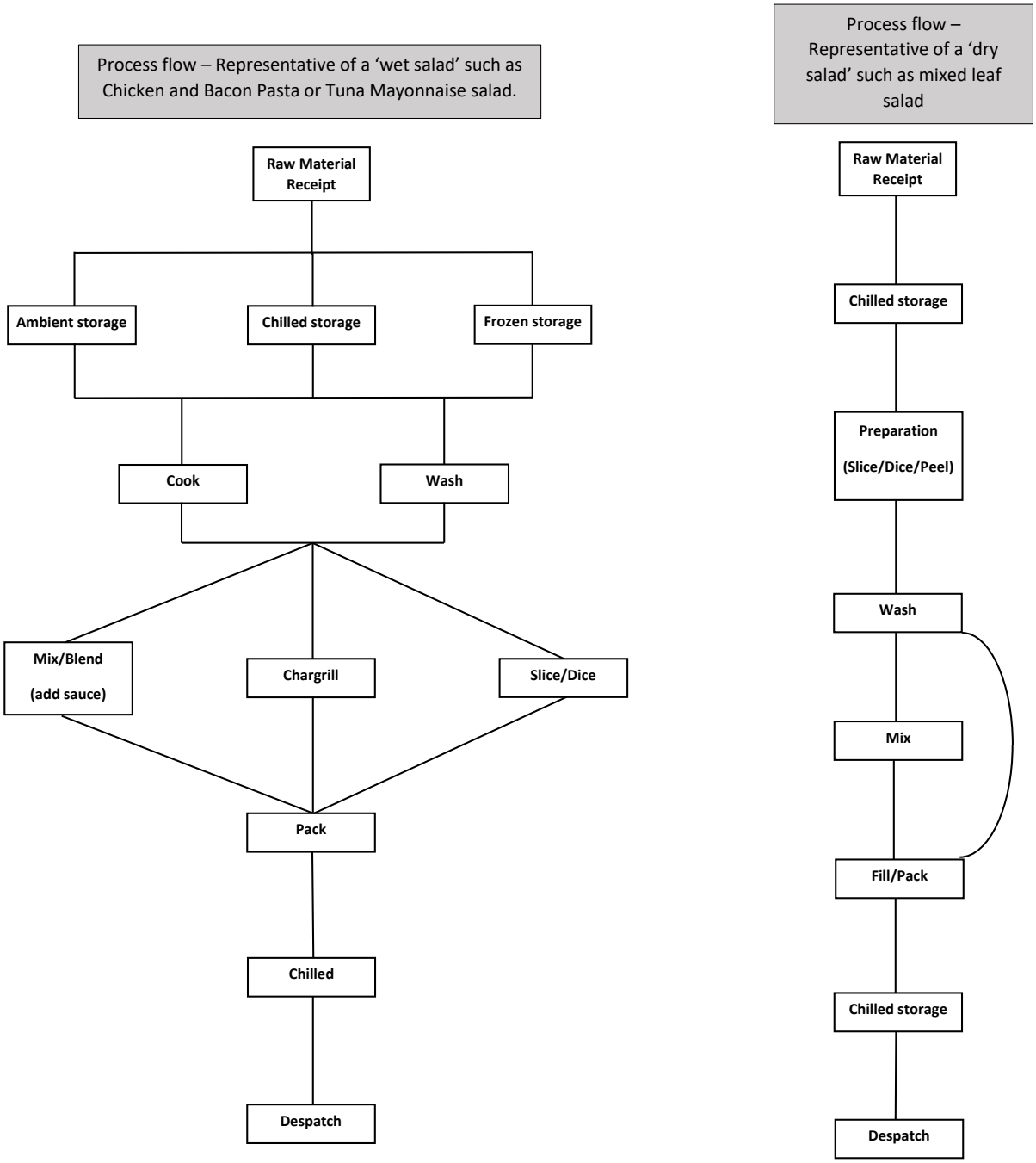

Figure 3b Production process flow diagram

3.2.2.3 Process heat

Process hot water is supplied by two of the three identical 500 kW maximum continuous rating (equivalent to 0.569 MWth input each) Lochinvar natural gas-powered hot water boilers [A1, A2 & A3]. These were commissioned in 2020. There is an engineered solution in place to ensure only two of the three boilers can operate at one time; the third boiler acts as a backup. Process steam is supplied by up to two identical 400 kW maximum continuous rating (equivalent to 0.458 MWth input each) Fulton natural gas-powered steam boilers. These were installed in 2009 and 2012.

An air quality assessment to determine the impact of the continuous cumulative operation of these combustion units has been undertaken (see Section 8). This assessment concluded that the impacts on pollutant levels at all human and ecological receptors were not predicted to be significant.

3.2.2.4 Process Cooling

Production lines are strictly controlled in terms of temperature. The site is chilled to a set temperature by the means of an ammonia refrigeration located adjacent to the main waste storage area at the southern end of the site. The plant and temperatures are controlled and monitored in all production areas. The ammonia plant has been operational since May 2021. The servicing and PPMs associated with the plant are managed and completed by a specialist 3rd party contractor.

3.2.2.5 Hygiene/Cleaning operations

Where possible production is planned to minimise washdowns. Hygiene is predominantly carried out in situ. Internal drains are fitted with catch pots to remove gross solids, the remaining water drains to one of the two effluent sumps, from here it is pumped onto effluent treatment. A detailed waste management procedure (SHEMS044) is in place to maximise efficiency and minimise waste. The site operates clean as you go and dry-cleaning policies in addition to Clean In Place and general sanitising of factory undertaken by the site hygiene team.

Hygiene chemical stock and ordering from the dedicated chemicals supplier limiting the inventory held on site. All team members are trained in chemical awareness. Effectiveness of cleaning is carried out in line with food hygiene and customer requirements. A process is in place for the management of spillages (SOP – 073); where possible spillages are cleaned in place rather than flushed to drain. Spill kits have been strategically placed around site by risk assessment. Details on the containment of cleaning chemicals are outlined in the materials inventory is provided within the application.

3.2.2.6 Effluent Treatment

Wastewater treated on site originates from the following processes: i) Clean In Place and general sanitising of factory after the preparation and washing of salads and vegetables, ii) tray washing, iii) boiler blowdown, iv) softener backwash, vi) compressor condensate. After removal of some solids by filtration (e.g., drain catch pots), process effluent is received in either one of two 25m^3 concrete drainage sumps; the low care sump east of the facility or high care sump located on the west.

From the sumps, effluent was pumped through a solids separation screen (2mm) which removes process debris (salads), the debris discharges into dolav collection bins and enters an appropriate waste stream. The two ‘screened’ effluent streams are then mixed as they enter a 40m^3 double skinned polypropylene buffer tank, with cascade aeration. This balance tank provides a method of balancing and homogenising the effluent. Effluent is pumped to drain over a calibrated ‘v’ notch to measure flow volume. Prior to discharge, the effluent passes through a 4-bottle auto sampler to allow for effluent chemistry monitoring.

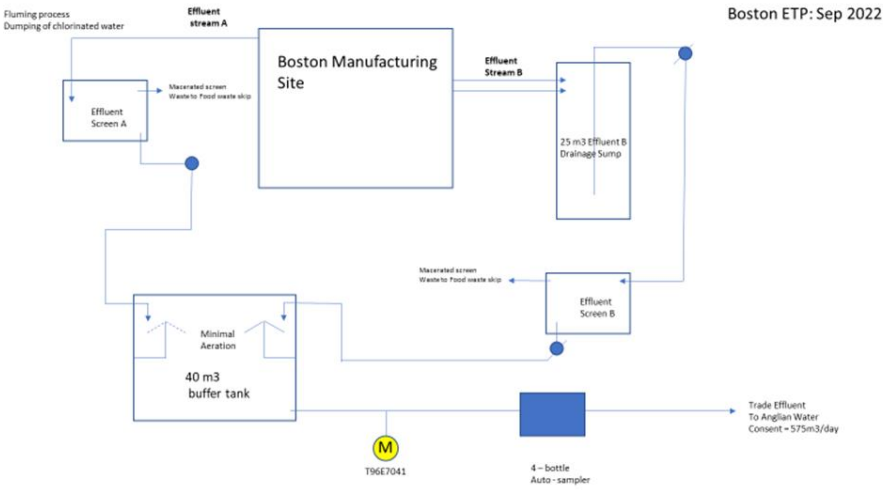

Figure 3c Generalised View of the Effluent Treatment Process Flow

3.2.2.7 Maintenance Systems

The operator utilises a computerised maintenance management system. The system maintains a computer database of information about most key maintenance operations. The completion of this system is planned for Summer 2023. This information assists in the planning prescription of engineering maintenance and inspection tasks which includes but is not limited to:

- Equipment data management
- Preventive maintenance
- Reactive maintenance (in the form of a Work Order System or Equipment Failure Reports)
- Calibrations / Asset Tracking
- Labour / Scheduling / Planning
- Breakdown Reports
- Inventory control
- Analytic and Reports

Maintenance best practices on a range of equipment, assets, and property is shared across the Greencore group for additional learnings and application of templates and analysis of PPM performance KPIs

3.3 BAT Assessment

A summary of the relevant BAT requirements from the BREF and UK Guidance Note for Food and Drink can be found in Appendix B.

3.3.1 General Requirements

Table 3.3.1 Technical Standards

Are fugitive emissions an important issue?	No
Is odour an important issue?	No
Is noise and vibration an important issue?	No

3.3.2 Fugitive Emissions to Sewer, Surface Water and Groundwater

Raw materials and ingredients are stored internally with hygiene and effluent plant chemicals are stored either within internal hygiene and engineering stores, or externally in IBCs that are sat on roofed or unroofed drip tray bunds of an appropriate size. All structural concrete is suitable for use for heavy duty and industrial settings.

Surface water and foul drainage is separate. There are surface water drains in the yard areas where waste are stored, however, the drains in the areas around external hygiene and effluent chemical storage drain to the effluent plant. In the event of a spill, spill kit materials would be deployed with the aim of preventing the spill reaching the surface water drainage system. In the event of contamination of effluent meaning it is out of specification for discharge to foul sewer, effluent can be held back in the effluent pits or balance tank until it can be effectively treated and brought within consent limits, or if this is not possible effluent would be tankered off-site. Spill response measures are provided in the yard to prevent pollution from leaks and spills.

Procedures for receipt of all ingredients and chemicals are in place as part of the site's Environmental Management System (EMS). Spill kits and drain covers are in place in the yard for use in the event of a leak or spill; operatives are trained in the use of spill kits.

There are seven bulk liquid storage vessels on site. These are used for holding process water, fire suppression water, holding raw effluent, balancing effluent and for use in the ammonia plant. All tanks are visually inspected regularly to validate good working order. Containment through level checks and self bunding provide appropriate protection from overtops, spills and leaks from the tanks. In the event of a spill kit, spill procedures and hardstanding condition are all of an appropriate standard to effectively protect ground and groundwater. A full list of tanks can be found in Appendix E - Raw Materials and Tank Inventory.

Waste containers are labelled and located within the designated waste compound at the south yard. Mobile bunds are employed for all liquid wastes. The waste containers are fully covered and regularly removed from site. IBC's of hygiene, effluent and boiler treatment are stored internally on mobile bunds when not in use. All IBC's and other containers are stored with lids, caps and valves secured and in place.

Regular Health and Safety walks and GMP audits take place which include external yard areas, these would include visual inspection of storage facilities and associated infrastructure, bunds, housekeeping and the tertiary hard standing.

Fugitive Emissions to Air

There are no external sources of dust. There is the potential for fugitive emissions to air from refrigeration plant leaks. All refrigeration plant is subject to ongoing planned preventative maintenance and checks in accordance with manufacturers recommendations, under a service contract. This minimises any possibility of fugitive leaks of refrigerant gas.

Odour

The processing operations are all located internally within enclosed buildings and as such there is routinely a negligible risk of odour from these operations. All raw materials arrive in enclosed containers and are unloaded directly into internal bays. No odour complaints have been received in the last 3 years.

Processing buildings also operate air handling systems which vent from the building. In addition, there are potential sources of fugitive release of odour:

- Raw materials receipt and unloading
- Effluent Plant
- Waste Storage

- Site Drains
- Building entrances and exits

The emphasis in the management of odour from the site is on prevention, and as such preventative maintenance, management, monitoring and inspection of all potential sources of odour are the main control measures, alongside efficient operation of the effluent plant.

Noise

There is limited potential for noise on the site. The main sources of noise are vehicle movements on and off site for deliveries and product distribution; movement of forklifts around the site; potential for noise during offloading and loading of raw materials and products; operation of compressors and process machinery. Compressors are within an enclosed building, as is all other process equipment. Tanker engines are switched off during loading and offloading for safety reasons and to minimise noise. Deliver times are scheduled to minimise impact on surrounding receptors. The site received a local noise complaint in the last year. The issue was identified and corrected, there was no regulatory involvement in the compliant.

Pests

The operator has an ongoing pest control contract in place with a third-party provider.

3.3.3 Types and Amounts of Raw Materials

See Appendix E – Raw Materials Inventory.

3.3.4 Management Systems

See Appendix B – BAT Assessment – BAT Numbers 1 and 2.

3.3.5 Accident Management Plan

Table 3.3.4 Accident Management Plan

Incident/Abnormal Circumstance	Likelihood	Consequence	Prevention Measures	Mitigation Measures
Equipment breakdowns	Medium	Dependent on equipment: Effluent pump breakdown; valve/plc malfunction - Release of out of specification effluent; Boiler/refrigeration plant malfunction – inability to operate process; Process plc malfunction – inability to operate process	Planned Preventative Maintenance of all equipment; Service contracts for boilers, refrigeration plant, compressors, effluent plant;	Effluent plant has contingency capacity via the two reception pits and balance tank in which effluent can be held back if required; effluent will be tankered off-site if required; Service contracts/agreed response times in place for boiler, compressors, effluent plant, and refrigeration plant.
Bulk vessel overfilling	Low	Spillage of effluent chemicals or raw materials from vessel with potential to enter surface water course.	Tank level checking prior to off-loading; Tank high level alarms; Pump set points;	Bunding; Spill kits; Spill procedures; If catastrophic spill overtops bund, containment systems direct losses back to effluent plant reception pit
Spill from IBC, container, or drum	Medium	Spillage of chemicals (acid/caustic or other treatment/hygiene chemicals), or other liquid/food waste with potential to enter surface water course.	Mobile bunds; all containers stored with lids and valves closed; Some containers stored in bulk storage container with integral bund; all storage away from traffic routes;	Bunding; Spill kits; Spill procedures;
Fire	Medium	Emission of smoke/dust to air	Site fire risk assessment; Fire detection systems; Planned Preventative Maintenance of all equipment; Site permit to work system (hot works)	Fire response plan; Crisis Manual; fire suppression systems
Contaminated Firewater	Low	Release of contaminated water to sewer/surface water/ground	Site fire risk assessment; Planned Preventative Maintenance of all equipment; Site permit to work system (hot works)	All internal drains directed to effluent;

Release of out of specification effluent	Low	Potential impact at WWTW Breach of effluent consent	Balance tank	Effluent can be held back in the balance tank if there is a known problem with consent levels;
Blocked Drains	Low	Odour nuisance	Planned Preventative Maintenance of drainage system;	Contractor call-out
Flooding	Low – site is not within a flood zone. There are no records to show the site has ever flooded.	Mobilisation of pollutants on site with potential to migrate to drainage system/brook/ground.	Dedicated storage areas; Bunding;	Crisis Manual; Isolation of utilities; Lock off all vessel valves
Vandalism	Low	Spills/litter/damage to property/nuisance	24 hour site security; CCTV; full perimeter fencing	Crisis Manual; Spill procedures
Bad weather	Low/Medium	Suppliers unable to deliver; Workforce unable to get to work;	Risk Register and Crisis Manual for response to loss of suppliers. Localised workforce.	Risk Register and Crisis Manual for response to loss of suppliers or difficulties with workforce getting to work.

4 Monitoring

4.1 Describe the measures you use for monitoring emissions

There is currently no requirement for emissions monitoring from the process. The operator does not propose any further monitoring.

See Section 8 for further details on emissions impact assessment.

4.2 Point source emissions to air only

As above.

5 Environmental Impact Assessment

5a Have your proposals been the subject of an EIA under Council Directive 85/337/EEC?

No

6 Resource Efficiency and Climate Change

6.1 Describe the basic measures for improving how energy efficient your activities are

The site is subject to a Climate Change Agreement and has reduction targets in place as part of this scheme, and its own internal management system targets. Energy use is regularly monitored, measured and tracked using the in-house weekly tool for data recording. The site is also subject to the ESOS scheme and regular energy audits have been undertaken, providing energy savings recommendations, as part of this scheme. Where feasible, these are reviewed and implemented by the site.

6.2 Provide a breakdown for any changes to the energy your activities use up and create

Table 6.2.1 below shows energy use for the period December 2021 to end of November 2022.

Table 6.2.1 Energy Use

Period	Electricity (kWh)	Natural Gas (kWh)	LPG (kWh)	Production (tonnes)	Total Energy (kWh)	SEC (kWh/tonne)
12 months	4232184	3569733	1081766	17853.38	8883683	497.6

Table 6.2.2 Summary of Site Boilers

Boiler Type	Location	Associated Emission Point	Net Thermal Input (MW)	Commissioning year
Lochinvar natural gas-powered hot water boilers	Boiler House 1	A1	0.569	2020
Lochinvar natural gas-powered hot water boilers	Boiler House 1	A2	0.569	2020

[Backup] Lochinvar natural gas-powered hot water boilers	Boiler House 1	A3	0.569	2020
Fulton natural gas-powered steam generating boilers	Boiler House 2	A4	0.458	2009
Fulton natural gas-powered steam generating boilers	Boiler House 2	A5	0.458	2012

6.3 Have you entered into, or will you enter into, a climate change levy agreement? If not, describe the specific measures you use for improving your energy efficiency.

Yes, the operator is part of the underlying climate change agreement for the food and drink sector, agreement identifier FDF1/T00631. See Appendix G – Climate Change Agreement

6.4 Explain and justify the raw and other materials, other substances and water that you will use.

6.4.1 Water

Water is mainly used for hygiene and other associated cleaning activities however smaller volumes are used as part of the make-up of certain products.

Water is metered into the site and volume of discharge to sewer is monitored and reported on a period basis. Table 6.4.1 below shows water use for the 12 months to end of September 2022.

Table 6.4.1 Water Management

Period (e.g. month)	Water Use (m^3)	Effluent Volume (m^3)
1	13,479	13,784
2	13,065	14,895
3	15,479	16,677
4	12,660	13,874
5	14,532	15,425
6	17,466	12,824
7	18,314	14,580
8	13,935	14,580
9	29,147	17,589
10	21,395	14,714

11	18,595	14,973
12	30,635	18,435

6.4.2 Ingredients

Raw materials/ingredients are selected on the basis of the recipe requirements, operator can minimise waste by ordering correct pack sizes etc. and scheduling production to ensure all ingredients are used up. The operator continually analyses the inventory levels of raw materials to ensure alignment with production planning and efficient use of ingredients.

6.5 Describe how you avoid producing waste in line with Council Directive 2006/12/EC on waste.

Products can sometimes be reworked but may be limited due to food safety requirements. The operator can minimise waste by ordering correct pack sizes etc. and scheduling production to ensure all ingredients are used up. The operator continually reviews production runs for food quality purposes, to identify issues and prevent food wastage. Any significant trending would be addressed through continual improvement projects. This in turn addressed, behavioural improvements to ensure efficient production and reduction in waste, including unnecessary hygiene cleaning and keeping water and chemical usage on an 'as required' basis.

Table 6.5 below shows waste volumes and disposal routes for the 12-month period to the end of September 2022.

Table 6.5 Waste Streams and Disposal Routes

Waste Stream/By-Product	Source of Waste	State (e.g. solid/liquid)	Class (Haz or Non-Haz)	Storage Location	Disposal Route e.g. recycled, recovered, composted, landfilled etc	Approximate annual quantity (tonnes)
Food waste	Production and finished product waste	Solids	Non-Haz	Bulk trailer in rear yard	Anaerobic digestion	3860
Cardboard	Raw materials Packaging	Solid	Non-Haz	Baled, stored in in yard	Recycled	311
General waste	Office & production	Solid	Non-Haz	Skips in rear yard	Recovery	901
WEEE	Office	Solid	Non-Haz	Dolav stored internally	Recycling	5
Pallets	Incoming ingredients	Solid	Non-Haz	Pallet area in rear yard	Re-Used	577
Scrap metal	Factory	Solid	Non-Haz	Skip	Recycling	4.61 t
Confidential	office	Solid	Non-Haz	Office areas	Recycling	6.2 t
Other hazardous wastes	Production, office, facilities, hygiene and engineering.	Solids, liquids and oils	Haz	Labelled and robust containers	Various	5 +

7 Installations that include a combustion plant (excluding waste incinerators)

Is the aggregated net thermal input of your combustion plant more than 20 MW?

No

8 Environmental Risk Assessment

The following section addresses the potential impact of the proposed changes on the surrounding area.

8.1 Sensitive Receptors

A desk-top study was undertaken in order to identify any sensitive human receptor locations in the vicinity of the site that required specific consideration during the assessment. These receptors are summarised in Table 8.1.

Table 8.1 Sensitive Human Receptors

	Receptor	National Grid Reference	
		X	Y
R1	Residential - Marsh Avenue	533036.1	342451.3
R2	Residential - Marsh Avenue	533031.6	342482.0
R3	Residential - Marsh Avenue	533023.9	342520.4
R4	Residential - Marsh Avenue	533016.9	342560.7
R5	Residential - Marsh Avenue	533011.1	342608.1
R6	Residential - The Old Dairy	533035.4	342405.2
R7	Residential - The Old Dairy	533044.4	342378.4
R8	Residential - The Old Dairy	533052.7	342344.5
R9	Residential - The Old Dairy	533091.7	342283.7
R10	Residential - Wyberton Low Road	533170.5	342128.8
R11	Residential - Heron Way	533446.2	341999.6
R12	Residential - Heron Way	533496.1	341998.5
R13	Residential - Marsh Lane	533521.5	342104.7
R14	Residential - Marsh Lane	533658.0	342467.4
R15	Residential - Rectory Road	533585.3	343090.0

8.2 Ecological Receptors

Atmospheric emissions from the facility have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The Conservation of Habitats and Species Regulations (2010) and subsequent amendments require competent authorities to review applications and consents that have the potential to impact on ecological designations. A Nature and Heritage Conservation Screening Report provided by the EA indicated the following sites should be considered within the assessment:

- The Wash & North Norfolk Coast Special Area of Conservation (SAC);
- The Wash Special Protection Area (SPA);
- The Wash Ramsar;
- Havenside Local Nature Reserve (LNR);
- Havenside Local Wildlife Site (LWS);
- Botolphs Park Pond LWS;
- Tytton Lane West Pits, West LWS;
- Tytton Lane West Pits, East LWS; and,

- Slippery Gowt Sea Bank South Forty Foot Drain LWS.

These receptors are summarised in Table 8.2.

Table 8.2 Sensitive Ecological Receptors

Receptor		National Grid Reference	
		X	Y
E1	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	534289.0	334982.2
E2	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	535301.0	337372.7
E3	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	535931.6	339954.0
E4	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	539906.1	341376.6
E5	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	541138.1	343429.9
E6	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	541944.7	344647.1
E7	The Wash & North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar	542560.7	345747.1
E8	Havenside LNR and LWS	534007.2	342707.2
E9	Havenside LNR and LWS	534219.2	342444.7
E10	Havenside LNR and LWS	534444.6	342148.5
E11	Havenside LNR and LWS	534582.6	341987.0
E12	Havenside LNR and LWS	534771.1	341704.3
E13	Botolphs Park Pond LWS	531646.0	342013.7
E14	Tytton Lane West Pits, West LWS	531640.3	341883.8
E15	Tytton Lane West Pits, East LWS	531792.9	341889.4
E16	Slippery Gowt Sea Bank South Forty Foot Drain LWS	534364.2	341929.0

8.3 Impact of Emissions to Air

The principal emissions to atmosphere from the installation are identified in Table 2a. Atmospheric emissions from boilers at the site have the potential to cause air quality impacts at sensitive locations.

Emissions monitoring was carried out on the 28th of September 2022, to provide an up-to-date data set of emissions from the existing site boilers plant. This information was used to conduct an Air Quality Assessment in order to determine baseline conditions and quantify potential effects.

Dispersion modelling was undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the relevant energy plant. The results indicated that impacts on pollutant concentrations were not predicted to be significant at any human or ecological receptor location in the vicinity of the site. This assessment is available to review in Appendix D.

8.4 Point Source Emissions to Sewer, Surface Water and Groundwater

Sections 3.3.2 Fugitive Emissions and 3.3.5 Accident Management Plan have described the sites approach to managing the risk posed by storage of potential pollutants on the site. This is summarised in the risk assessment below in Table 8.

The risk posed from site effluent to the receiving controlled water has been assessed utilising the governments guidance on 'Surface water pollution risk assessment for your environmental permit' and current version of the H1 assessment tool. The full assessment is available in Appendix F – Surface Water Risk Assessment, the assessment concludes:

'The facility generates effluent wastewater as a by-product of the salad production process. This effluent comprises production wastewater following cleaning and processing works and contains a predominance of cleaning water and residual food grade cleaning chemicals using during the Site processes. The effluent is treated on Site prior to discharge to sewer and further treatment by Anglian Water at their Boston WwTW. The final receiving water body is the surface waters of the River Haven.

Of the chemical inventory reviewed only EDTA has published STRF and EQS values. As the substance analysed did not pass all of Tests 3, 4a and 4b within the EA's test of insignificance, the emission of EDTA from the Boston Site to the River Haven could not be screened out. However, once all mitigating factors and inaccuracies are considered, it is unlikely that the site's emission of EDTA will have a significant detrimental impact on the receiving water quality.

The remaining chemical constituents do not feature on the EA priority substance or freshwater EQS schedule. Greencore has performed a qualitative risk appraisal of those compounds to appraise potential risks. This assessment has concluded that the food grade cleaning product's (i.e., acids, alkali, amines) pollution potential would be readily mitigated through on-Site processing and effluent treatment, and further removed at the Boston WwTW via reaction with organic substances during filtration and sludge treatments.'

8.5 Odour

No odour complaints have been received at the installation.

The processing operations are all located internally within enclosed buildings and as such there is routinely a negligible risk of odour from these operations. All raw materials arrive in enclosed containers and are unloaded directly into internal bays. No odour complaints have been received in the last 3 years.

Processing buildings also operate air handling systems which vent from the building. In addition, there are potential sources of fugitive release of odour:

- Raw materials receipt and unloading
- Effluent Plant
- Waste Storage
- Site Drains
- Building entrances and exits

The emphasis in the management of odour from the site is on prevention, and as such preventative maintenance, management, monitoring and inspection of all potential sources of odour are the main control measures, alongside efficient operation of the effluent plant.

8.6 Noise

There is limited potential for noise on the site. The main sources of noise are vehicle movements on and off site for deliveries and product distribution; movement of forklifts around the site; potential for noise during offloading and loading of raw materials and products; operation of compressors and process machinery.

Compressors are within an enclosed building, as is all other process equipment. Tanker engines are switched off during loading and offloading for safety reasons and to minimise noise. Deliver times are scheduled to minimise impact on surrounding receptors. The site received a local noise complaint in the last year. The issue was identified and corrected, there was no regulatory involvement in the compliant.

8.7 Habits assessment

A further habitats assessment has been paid for as part of the EPR application process. This assessment is to be conducted by the regulator.

Table 8.3 Environmental Risk Assessment

Hazard	Receptor	Pathway	Risk Management Technique	Probability of Exposure	Consequence (Severity)	Overall Residual Risk
Emissions to air – boilers emission points A1-A5	See Tables 8.1 and 8.2 Sensitive receptors	Air dispersion	Boiler plant burner controls	High	Low	Low - See Appendix D
Emissions of trade effluent to sewer from discharge point S1	Boston WwTW	Sewerage drainage system	Compliance with trade effluent discharge consent.	High - Emissions during hours of operation	Low – compliant with consent	Low – See Appendix F
Odour – processing activity	See Table 8.1 Human receptors	Air dispersion	No further management required	Medium	Low	Low – controls in place will be adequate to minimise potential for odour nuisance complaints.
Odour – waste storage	See Table 8.1 Human receptors	Air dispersion	Covered/enclosed containers; regular uplifts	Medium	Low	Low – controls in place will be adequate to minimise potential for odour nuisance complaints.
Noise – processing activity	See Table 8.1 Human receptors	Airborne	PPM for all equipment; Housing for noisy equipment; Engines switched off during loading/unloading; Enclosed loading bay	Medium - Emissions during hours of operation; restrictions on vehicle movements at unsociable hours.	Medium – Local complaints dealt with. No escalation to regulator	Medium – Operations managed to minimise noise. Previous complaints remedied in timely manner.
Pests	See Table 8.1 Human receptors	Airborne; overground	Pest Control Programme	Medium	Low	Low – no complaints received.
Fugitive Emissions to Air – dust, litter etc.	See Tables 8.1 and 8.2 Sensitive receptors	Air dispersion	Yard inspections	Low – no dusty wastes	Low	Low – no complaints received.
Fugitive emissions to air – processing e.g. refrigerants	See Tables 8.1 and 8.2 Sensitive receptors	Air dispersion	Contracted maintenance programme.	Low - Potential for emissions during maintenance or in the event of a breakdown	Low – No impact	Low – records show no significant refrigerant losses.
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – bulk oil and acetic acid tanks	Controlled waters; Boston WwTW	Drainage system; overground;	Tank integrity checks; High level alarms; Delivery procedures; Spill procedures and training; Surface water system flow control improvement	Low – routine compliance with consent to discharge. No major spill instances.	Medium – minor impacts with no pollution occurring	Low – minor leaks and spills routinely cleared up with no impact. Impact on the river Haven from effluent assessed as low.

Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – effluent balance tank	Controlled waters; Boston WwTW	Drainage system; overground;	Tank integrity checks; High level alarms; Delivery procedures; Spill procedures and training; Surface water system flow control improvement	Low – routine compliance with consent to discharge. No major spill instances.	Medium – minor impacts with no pollution occurring	Low – minor leaks and spills routinely cleared up with no impact. Impact on the river Haven from effluent assessed as low.
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – effluent treatment chemicals	Controlled waters; Boston WwTW	Drainage system; overground;	IBC storage on mobile bunds; Delivery procedures; Spill procedures;	Low – regular deliveries but no incidents reported	Low – minor impacts with no pollution occurring	Low – minor leaks and spills routinely cleared up with no impact.
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – hygiene Chemicals	Controlled waters; Boston WwTW	Drainage system; overground;	IBC storage on mobile bunds; Delivery procedures; Spill procedures;	Low – regular deliveries but no incidents reported	Low – minor impacts with no pollution occurring	Low – minor leaks and spills routinely cleared up with no impact.
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – Waste storage	Controlled waters; Boston WwTW	Drainage system; overground;	IBC storage on mobile bunds; Delivery procedures; Spill procedures;	Low – regular uplifts but no incidents reported	Low – minor impacts with no pollution occurring	Low – minor leaks and spills routinely cleared up with no impact.
Fugitive Emissions to surface water, sewer and groundwater – catastrophic failure – bulk tanks	Controlled waters; Boston WwTW	Drainage system; overground;	Tank integrity checks; Bunding and bund inspections; High level alarms; Delivery procedures; traffic management; Spill procedures and training;	Low	High – catastrophic failure of balance tank could lead to local surface water pollution.	Medium - Risk considered very unlikely.

9 Appendices

Appendix A – Site Plans

i) Site layout map

ii) Site drainage map

iii) Site emission point map

Appendix B – BAT Assessment

BAT Assessment against Food, Drink and Milk Industries BREF, 2018

Appendix C – Site Condition Report

Appendix D – Air Dispersion Modelling

Appendix E – Raw Materials and tank inventory

Appendix F – Surface Water Risk Assessment

Appendix G – Climate Change Agreement

Appendix H – Discharge Consent

Appendix I – Boston CCA