AB World Foods Environmental Permit Application

Application Reference Number: EPR/VP3908PL/A001

Prepared for: AB World Foods

Prepared by:
Jess Rick
Principal Consultant

EHS Projects Ltd ❖ Landmark House ❖ 20 Broomgrove Road ❖ Sheffield ❖ S10 2LR

Contents

Non-Technical Summary

AB World Foods Leigh, part of the ABF grocery group, produces hot filled and pasteurised sauces, pastes, pickles and chutneys that are ambient and stable and pappadums that are fried in oil. Various packaging mediums are used including: - glass jars, plastic jars, pots and thermoformed plastic cartons. Finished goods are transported from site and distributed by a third-party logistics company.

Further to completion of an Environment Agency sector focussed questionnaire, a visit by Alex Wilson of the Environment Agency to the site and further investigation by EHS Projects of the site's potential regulatory obligation, AB World Foods (the operator) considers the production of pastes and sauces at the site 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.

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

- Storage of raw materials in bulk tanks (oils and acetic acid);
- IBC and drum storage;
- 2 x steam raising boilers;
- 2 x thermal oil boilers;
- 3 x cooling towers;
- Odour abatement plant
- Storage of waste prior to disposal off-site;
- Treatment of effluent prior to discharge.

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 waste water treatment -

(ii) physico-chemical treatment;

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 the two steam raising boilers, two thermal oil boilers serving the fryers, and the odour abatement plant which treats exhaust air from the fryers. 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 Leigh Wastewater Treatment Works for further treatment prior to release back into the environment. If there is a known issue with effluent being out of consent, it can be held back in the effluent reception pit or balancing tank until compliance can be achieved. Surface water run-off from the site is routed via the surface water drainage system to Westleigh Brook. The site has a programme of planned improvements to the drainage system in place, to ensure that the final outfalls to surface water drains can be blocked off to prevent a release off-site in the event of a major spillage.

The operator has measures in place to protect drainage systems from spills of raw materials or wastes, including secondary containment of bulk tanks, level sensors for tanks, spill procedures and spill kits, and the ability to contain spills within the effluent reception pit. All potential accident scenarios, mitigation measures and response actions are included in the Accident Management Plan within this application. A full tank inventory and containment measures are provided within the application.

There is considered to be no significant risk of fugitive emissions to air, odour or noise and vibration from the site. An Odour Management Plan has been submitted as part of this application.

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 on the CI tracker.

The operator is currently developing a Health, Safety and Environmental Management System which will incorporate all the requirements of the forthcoming Environmental Permit.

Raw materials are delivered in drums, IBC's, sacks, bags and smaller containers and stored internally within the warehouse. 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, Agreement Identifier: FDF1/T00447v2, Facility Identifier FDF1/F00499.

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 and odour abatement plant. 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 planned improvements 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**
Kiribati Way Sauce and Paste Manufacturer	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.	434.8 tonnes*	-	-	-
	5.4 Part A(1)a(ii)	Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per involving physico-chemical treatment.	250m3**	D9	-	250m3**

Directly associated activities (See note 4)		
Name of DAA	Description of the DAA (please identify the schedule 1 activity it serves)	
Steam/Heat Generation	2 x boilers producing steam for cooking vessels 2 x thermal oil boilers for fryers (one in place as back up – only one run at a time).	
Odour Abatement Plant	Odour abatement plant treating exhaust gases from 2 x fryers and cookhouse vessels, using carbon wash.	
Cooling Towers	Cooling towers serving pasteurisers	
Raw Materials Storage	Some bulk storage e.g. oil, acetic acid, plus raw materials warehouse.	
Waste Storage	Storage of segregated waste streams in yard.	
For installations that take waste	**Total storage capacity**	N/A
	Annual throughput (tonnes each year)	N/A

***This is the sites total theoretical capacity running a single product on each line 24 hours/day. 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 2 Emissions

POINT SOURCE EMISSIONS TO AIR				
Emission Point Ref.	**Parameter**	**Concentration**	**Unit**	**Source**
A1	NOx CO	139 24	mg/m^3	Steam Boiler 1
A2	NOx CO	150 336	mg/m^3	Steam Boiler 2
A3	NOx CO	311 3.8	mg/m^3	New Thermal Oil (Wanson) Boiler
A4	NOx CO	311* 3.8*	mg/m^3	Old Thermal Oil (Wanson) Boiler
A5	VOC Particulates	23 3.9	mg/m^3	Odour Abatement Plant
POINT SOURCE EMISSIONS TO WATER (OTHER THAN SEWERS)				
W1	Clean surface water run-off	-	-	Clean surface water run-off
W2	Clean surface water run-off	-	-	Clean surface water run-off
POINT SOURCE EMISSIONS TO SEWERS, ETP'S OR OTHER TRANSFERS OFF SITE				
S1	Settled COD Total Suspended Solids Cyanides or cyanogen compounds Separable grease and oil Sulphates as SO^4 Sulphides, hydrosulphides, polysulphides Toxic metals individually or in total pH	5,000 1,500 1 200 1,000 1 10,000 6-10	mg/l mg/l mg/l mg/l mg/l mg/l ug/l	Cleaning and Hygiene; process effluent
POINT SOURCE EMISSIONS TO LAND				
N/A				

*Old Wanson Boiler was not monitored due to unavailability, data from the new boiler has been used as a proxy. This old boiler is decommissioned so cannot be used and would have to be commissioned back into service if the new one was not operating and could not be fixed.

3. Operating Techniques

3a 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

Process Description

Site Summary

AB World Foods Leigh, part of the ABF grocery group, produces hot filled and pasteurised sauces, pastes, pickles and chutneys that are ambient and stable and pappadums that are fried in oil. Various packaging mediums are used including: - glass jars, plastic jars, pots and thermoformed plastic cartons. Finished goods are transported from site and distributed by a third-party logistics company.

Raw Materials Intake and Storage

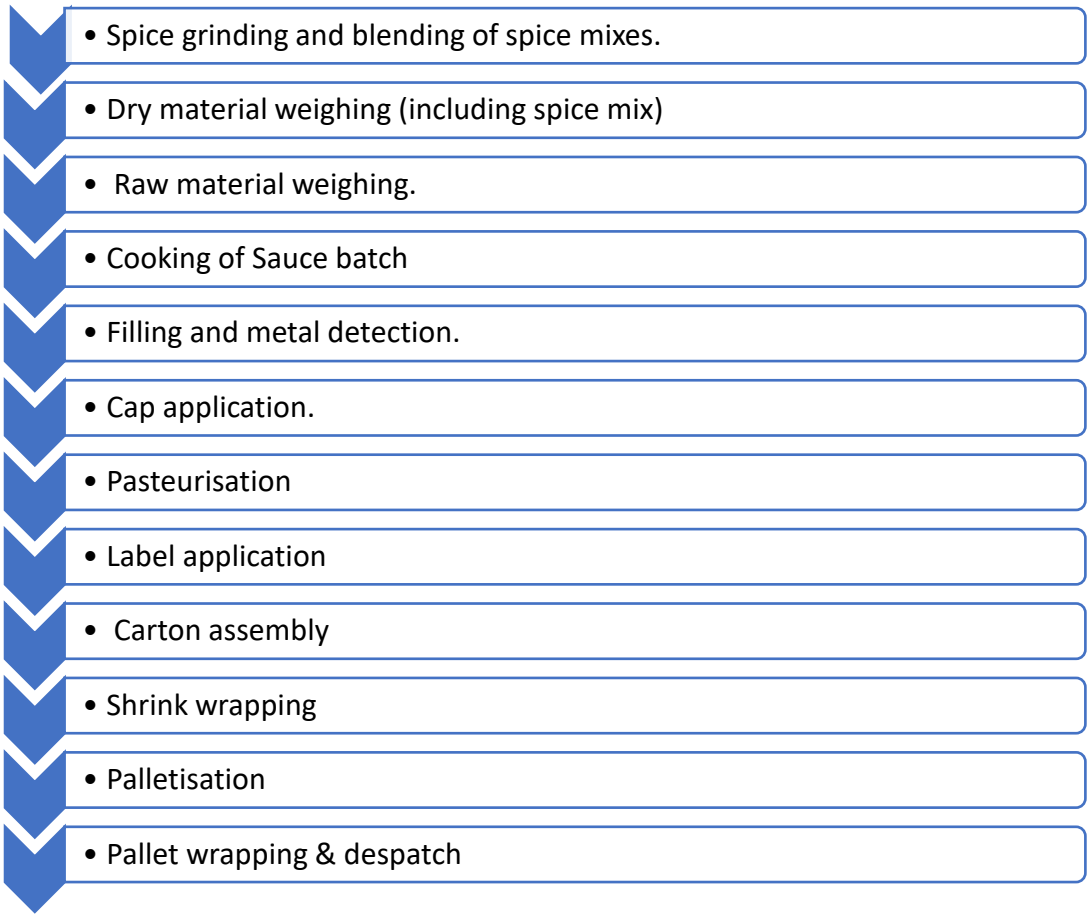
Raw materials are unloaded under the shelter of the raw material canopy prior to being put into storage. The site receives dried, chilled and frozen ingredients (the delivery format is optimised to ensure quality during transportation) from a number of suppliers globally. Raw materials may be received in a variety of packaging formats including plastic barrels, tubs, tins, sacks, big bags and others.

The site also has bulk storage for Rapeseed oil (4 tanks) and Acetic acid (2 tanks). The tank inventory in Table 4 provides further details of these tanks. All bulk tanks are bunded, receipt is controlled, and spill kits are stored at point of receipt. Internally all drainage is connected to the site effluent system. Any chemicals stored externally are on bunded platforms.

Sauce Processes

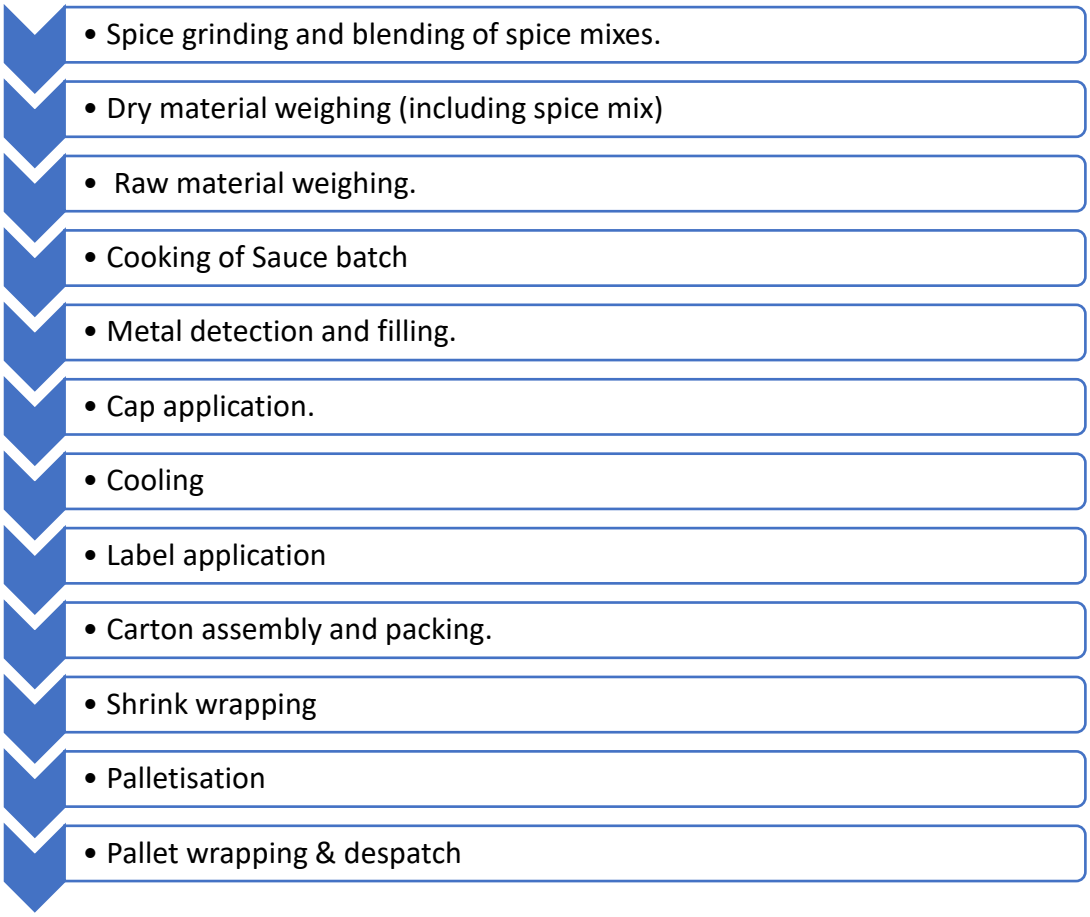
The process flow for sauce in glass can be seen in Figure 1 below:

Figure 1 Sauce in Glass Process Flow



The process flow for sauce in plastic jars can be seen in Figure 2 below:

Figure 2 Sauce in Plastic Jar Process Flow



Paste Processes

The process flow for paste, pickles and chutney in glass and plastic jars can be seen in Figure 3 below.

Figure 3 Process flow for paste, pickles and chutney in glass and plastic jars.

Spice Grinding

Spices are decanted from 25kg sacks to a hopper that feeds bulk silos.

Spice mixes are made of a blend of spices from the silos with the addition of various other spices that are of smaller quantities, these are added to the mix by hand. Finished spice blends are stored in bulk bins, usually 750kg. Packaging material is removed from the area, baled and disposed of via the site waste provider. The site is zero to landfill.

LEV is in place in the grinding room to remove dust. Dust is collected in an enclosed hopper (DCE unit) which is periodically emptied and disposed of via the site waste provider.

Raw Material Weighing

Raw materials are removed from their packaging prior to being weighed for batch addition. Packaging is removed from the area for baling and disposal via the site waste provider.

Ingredients which are stored within our cold/chilled store and dry store areas such as herbs, spices, vegetables, seeds, flours and dairy products which may come in fresh, dried or frozen form, are

decanted from an internal store into stainless steel tubs, segregated and marked up for traceability and allergen purposes. These are then stored in the assembly area for use in the next stage. The ingredients are weighed out as per specification and put into batches for the assigned sauce or paste. The tubs of ingredients are then tipped into the cooking or mixing tank.

Cooking

Cooking takes place in the cookhouse. Batch size is predominantly 3 tonnes. Water is added as part of the recipe, metered from the site supply. Batches are heated to 88 degrees Celsius. Steam is used to heat the batches, supplied by 2 natural gas fired steam boilers which are used to supply steam for the site.

Cooking takes place in one of four cooking vessels. These are sealed steam cooking tanks with extraction and ventilation to atmosphere via a carbon wash odour abatement system. Condensate from the vessels is returned to the boiler hotwell.

Between different recipe types the tanks are cleaned using CIP systems and the pipework to the fillers is cleaned through using pigs prior to being flushed.

Perforated baskets are used to remove solids from the washdown residue. This is removed to IBC and is removed from site via our waste provider. The remaining liquid runs to drain whereby it flows to the effluent pit.

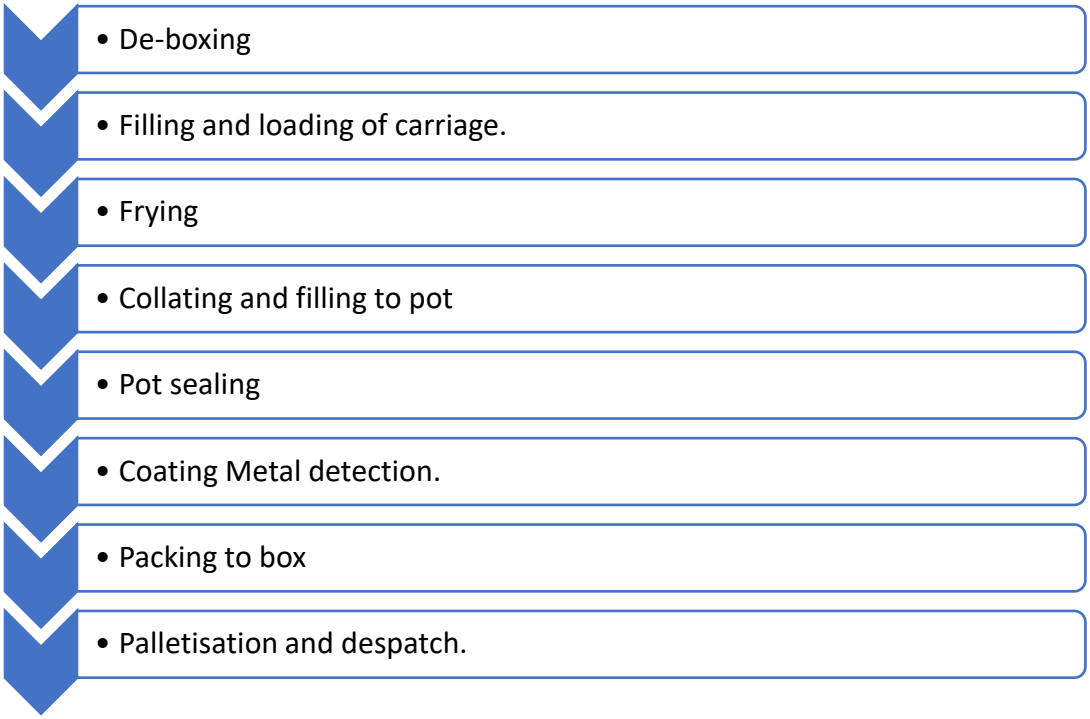
Pasteurising

This process is set using Camden guidelines and is designed around our worst-case scenario product. Heat profiling of the pasteuriser is carried out every 3 years. The pasteuriser has two zones, heating and cooling. Hot water is supplied from the boiler. Cold water is supplied from the cold-water supply via cooling towers which are located to the west of the site. The cooling towers are controlled by the site services team and monitored closely for legionella in accordance with the L8-ACOP (approved code of practice). Used cooling water is returned to the cooling tower hotwell for reuse.

Poppadum Process

The process flow for the pappadum process can be seen in Figure 4 below:

Figure 4 Pappadum Process Flow



Two fryers are operated simultaneously**,** each has a capacity of 800 litres of rapeseed oil. The oil is heated to a temperature of 185 to 197 degrees celsius. Pappadums are fed into the fryer where they travel on a conveyor, which passes under weirs coating them in oil, this will be adjusted to achieve a pre-determined fried size of the finished product. Fumes from the fryer are extracted by a sealed stack which flows to an electrostatic filter and then to the odour abatement and carbon wash system, after which they are vented to atmosphere via the stack. The extraction pipework is cleaned at regular intervals to maintain effectiveness. The oil is heated by circulating it round a heat exchanger which is connect to a gas fired thermal fluid boiler (Wanson's).

Each fryer has a fire suppression system within the hood as well as flame detection overhead.

Oil can be reused a number of times prior to being changed. Used oil is pumped to the used oil bulk tanks for disposal. The operator receives Certificates of Analysis for the fryer oil which covers FFA checks; oil is monitored in the fryers during production and any sign of deterioration, such as 'soapy appearance' which would indicate the presence of FFAs would prompt an oil change.

Process heat

Process heat is supplied by two natural gas fired steam raising Beel boilers rated at 3.6 MW thermal input each. These are operated concurrently and modulate up and down automatically. These boilers provide steam for cooking and pasteurisation. Heat for the fryers is supplied by two natural gas fired thermal oil Wanson boilers rated at 1.368MW thermal input each. There is only ever one Wanson boiler operating at once, the old boiler is decommissioned, but kept on site for business continuity back up/redundancy.

Process Cooling

The site operates two cooling towers which supply cooling water for the pasteurisers, both operated at once. Cool water is supplied to the hot fill cooler and returned to the cooling tower hotwell from where it passes through the cooling towers, ready to be used again.

Chillers are also used on the site to cool the various chilled areas. These utilise R407c refrigerant gas and are maintained by an external contractor. The freezer storage area utilises R404a as a refrigerant.

Effluent Plant Operation

Wastewater from the factory gravitates to a pit (100 m^3) from where it is pumped (controlled by level switches in the sump) over a screen, which removes all particles larger than 1mm diameter. These are compacted and drop into an IBC for removal by the site waste provider. Oil is skimmed from the wastewater and is collected in an IBC and removed for recycling.

Screened water gravitates to a 115 m^3 balance tank, (agitated) and from here is pumped through a dissolved air flotation plant. Chemicals are be added before the DAF, which will create "flocs" (coagulated and flocculated fats and proteins present in the wastewater and caused by chemical reaction with them). These float to the top of the DAF and are skimmed off and pumped to a 30 m^3 sludge storage tank for off-site disposal (to an anaerobic digester). Both the balance and sludge tanks are lidded. Chemicals are automatically dosed, in the main these are non-hazardous (organic coagulant and water-based polymer). Depending on the incoming wastewater pH, some acid (50% sulphuric) or caustic soda solution (30%) may be required for treatment efficiency and consent compliance. This is an automatic process. Chemicals are delivered in IBC containers except polymer, which is in 25 litre tubs. All storage of dosing chemicals is internal.

The site has recently implemented an improvement to wastewater management which involves wash down water from the fryers which is high in alkalinity being collected in a stainless-steel IBC at the point of wash down. This is intercepted before the effluent pit to preserve the pH of the effluent as the nature of site products is predominantly acidic. This washdown water is "trickled" into the effluent pit and is therefore acts as a substitute for using virgin caustic.

Odour Abatement Plant Operation

Exhaust air from the cooking vessels and fryers is directed to the odour abatement plant. Fumes from the fryer are extracted by a sealed stack which flows to an electrostatic filter and then to the odour abatement and carbon wash system, after which they are vented to atmosphere via the stack. The extraction pipework is cleaned at regular intervals to maintain effectiveness. The cooking tanks have extraction and ventilation to atmosphere via the carbon wash odour abatement system. The carbon is changed at regular intervals and is controlled by the engineering team.

Hygiene/Cleaning operations

Cleaning is undertaken by the site Hygiene team. CIP systems are used for some cooking vessels and filling lines; there is a bin wash within the cookhouse, and a tub/barrel wash in the warehouse. There are hoses in place around the factory for use by the hygiene team.

Where possible production is planned to minimise washdowns. Hygiene is predominantly carried out in situ. Drains are fitted with catch pots and each production tank drains to waste via a collection basket to remove solids. Detailed work instructions are in place to maximise efficiency and minimise waste.

All team members are trained in chemical awareness- cleaning is done by risk assessment of frequency and determined by in depth analysis and swab testing. Effectiveness of cleaning is carried out approximately 25 times / year in line with customer requirements.

Recycling bins are readily available on all lines. Where possible spillages are cleaned in place rather than flushed to drain. Spill kits have been strategically placed around site by risk assessment. Cleaning chemicals are kept in a locked store in the warehouse, bulk chemicals are kept in bunded storage and controlled accordingly.

3b General Requirements

Table 3b General Requirements

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

Fugitive Emissions to Sewer, Surface Water and Groundwater

Raw materials and chemicals are stored in bulk tanks and IBC's in the external yard area. The yard is all hardstanding, with all concrete compliant with the latest addition of BS5328 at time of construction (2000) and use of sulphate resistant cement. All structural concrete is RC40 suitable for use for heavy duty and industrial settings. 50mm concrete blinding is placed below the base slab. There are sealed joints to all concrete slabs.

All pipes are clay (to BSEN295) or stainless steel, with chemically resistant collars and stainless steel manhole covers, bedded in concrete.

Other underground structures include the hotwell and coldwell and effluent pit which are lined concrete.

Surface water and foul drainage is separate and there are surface water drains in the yard areas where chemicals and waste are stored, including an Aco drain running along the perimeter of the waste storage area. A petrol interceptor is shown on the site surface water drainage drawing after the Aco drain, however it is unknown if this was installed and maintained. The two final outfalls to Westleigh Brook are shown on the drawings to have trash screens to prevent large items entering the brook and flap valves to prevent pests or water re-entering the pipes, however there is currently no other means of shutting off the outfall to the stream in the event of a major spillage in the yard. 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 reception pit or balance tank (combined capacity of 215m^3) until it can be effectively treated and brought within consent limits, or if this is not possible effluent would be tankered off-site.

Measures provided in the yard to prevent leaks and spills include bunding to bulk acetic acid and oil tanks. The two new oil tanks (to be installed in 2020) have a 32.89 m^3 capacity concrete bund (110% of 1 tank), which drains to blind sump with a water control pump unit to test and discharge clean bund water, and a low level probe to notify of any rise in the level of liquid in the bund. If the contents of

the bund are contaminated they will be pumped to IBC for disposal as waste. The delivery point is external to the bund, but drip trays can be used during deliveries. The tanks have high level alarms.

The acetic acid tanks are within a concrete bund of 19m^3 capacity (approximately 125% of one tank), the delivery connection points are within the bund. The tanks have a high level alarm. There is a locked sump outlet to empty the bund if required.

Existing rapeseed oil and used oil tanks are within a common concrete bund with a capacity of 63m^3 – more than 110% of the whole capacity of all tanks. Delivery points are within the bund. The existing used oil tanks will be removed, the existing rapeseed oil tanks will be used for the used oil and 2 new tanks will be installed (see above).

Procedures for receipt of acetic acid, rapeseed oil and tankering off of waste oil and effluent sludge are in place as part of the site's developing Health, Safety and Environmental Management System. 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.

IBC's of effluent screenings/skimmings are also stored on mobile bunds within the yard. The IBC's are fully covered and regularly removed from site. The maximum number of IBC's to be stored in the yard is set at 18. IBC's of effluent and boiler treatment chemicals are also stored in the yard. Effluent chemicals are stored within the DAF plant building on mobile bunds; boiler and cooling tower treatment chemicals are stored in a locked cage on mobile bunds. All IBC's are stored with lids, caps and valves secured and in place.

IBC's and smaller containers of hygiene chemicals are stored in a self-bunded container in the rear yard and connected directly to tub-washing areas within the building.

The effluent plant balance tank and sludge tank are not bunded, although the tankering off connection point on the sludge tank is bunded.

Waste is stored in designated, labelled areas of the yard in compactors, skips and IBC's.

Regular Health and Safety walks and GMP audits take place which include external yard areas, these would include visual inspection of storage facilities and bunds.

Table 4 Vessel Inventory

Tank Ref:	Type	Capacity	Material of construction of tank and Condition	Location (internal/external)	Potential Emissions (venting/leaks/ spills)	Emission Control Technique Primary, secondary & tertiary including PPM
1	Effluent Pit	100m^3	Stainless steel lined concrete	External	Leaks due to breach of integrity	Visual Inspection
2	Coldwell	50m^3	Stainless Steel	External	Leaks due to breach of integrity	Visual Inspection
3	Hotwell	18m^3	Stainless Steel	External	Leaks due to breach of integrity	Concrete Bund
6	Recovered Oil Tank 1	10m^3	Stainless Steel	External	Leaks, spills during delivery, bund/tank overfill	Common Concrete Bund 63m^3
7	Recovered Oil Tank 2	10m^3	Stainless Steel	External		
8	Fresh Oil Tank 1	17m^3	Stainless Steel	External		
9	Fresh Oil Tank 2	17m^3	Stainless Steel	External		
10	Acetic Acid Tank 1	15m3	Stainless Steel	External	Leaks, spills during delivery, bund/tank overfill	Concrete Bund 19m3
11	Acetic Acid Tank 1	15m3	Stainless Steel	External		Concrete Bund 19m3
13	Effluent Balance Tank	115 m3	Stainless Steel	External	Leaks due to breach of integrity, collision	Visual Inspection
14	Effluent Sludge Tank	30m3	Stainless Steel	External	Leaks, spills during delivery, bund/tank overfill	Visual Inspection
15	Effluent Outfall Chamber		Stainless Steel lined concrete	External	Leaks due to breach of integrity	Visual Inspection
38	Sprinkler Waster Tank	552m3	Stainless Steel	External	Leaks due to breach of integrity	Visual Inspection
16	Chopped Tomato Tank	3m^3	Stainless Steel	Internal - Cookhouse	Leaks due to breach of integrity, overfill	All internal drains are directed to the effluent plant.
17	Crushed Tomato Tank	2.5m^3	Stainless Steel	Internal - Cookhouse		
18	Tomato Paste Tank	2.5m^3	Stainless Steel	Internal - Cookhouse		
19	Imli Tank	3m^3	Stainless Steel	Internal - Cookhouse		

20	Scanima 1	3m³	Stainless Steel	Internal - Cookhouse		
21	Scanima 2	3m³	Stainless Steel	Internal - Cookhouse		
22	Terlet	3m³	Stainless Steel	Internal - Cookhouse		
23	Kells	3m³	Stainless Steel	Internal - Cookhouse		
24	Multiline 9	3m³	Stainless Steel	Internal - Cookhouse		
25	Multiline 8	3m³	Stainless Steel	Internal - Cookhouse		
26	Portionable Paste 7	3m³	Stainless Steel	Internal - Cookhouse		
27	10oz Tank 1	3m³	Stainless Steel	Internal - Cookhouse		
28	10 oz Tank 3	3m³	Stainless Steel	Internal - Cookhouse		
29	SIG Buffer Tank 1	3m³	Stainless Steel	Bottling Hall		
30	SIG Buffer Tank 2	3m³	Stainless Steel	Bottling Hall		
33	Hot Oil Tank	3m³		Frying Room		
34	Fire Suppression Water Tank	2.27m³	Carbon Steel	RTE Packing Room	Leaks due to breach of integrity	
39	CIP x 2	0.57m³	Stainless Steel	Bottling Hall		
41	Starch	0.8m³	Stainless Steel	Cookhouse		
44	New Oil Tank	29,900 l		External	Leaks, spills during delivery, bund/tank overfill	32,890 l capacity concrete bund (110% of 1 tank), drain to blind sump with water control pump unit to test and discharge clean bund water.
45	New Oil Tank	29,900 l		External		

Fugitive Emissions to Air

There are no external sources of dust. Dust from the grinding room is extracted via an LEV system and dust stored in an external enclosed hopper prior to periodic disposal. Any dusty wastes, such as waste ingredients, are stored in enclosed IBC's or barrels in designated waste storage areas.

There is the potential for fugitive emissions to air from refrigeration plant leaks. The two chillers contain R407c, the freezer refrigeration plant contains R404a.

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 sauce and paste 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. The pappadum process is also located internally but fryer exhaust gases are collected and ducted to the on-site odour abatement plant. No odour complaints have been received in the last 3 years.

There is the potential for releases to air from the fryers to be odorous (A5). Processing buildings also operate air handling systems which vent from the building which have the potential to be odorous. In addition, there are potential sources of fugitive release of odour:

- Raw materials receipt and unloading
- Effluent Plant
- Effluent Sludge Tank Emptying
- 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 odour abatement plant. An Odour Management Plan is included at Appendix C which details the measures taken to prevent odour from the installation.

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 – noise suppression is in place on compressors and grinding room. Tanker engines are switched off during loading and offloading for safety reasons and to minimise noise. Restrictions are in place on compactor use after 8pm. The site has never received any complaints of noise nuisance. See Table 11 for closest sensitive receptors to the site.

Pests

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

3c Types and Amounts of Raw Materials

Table 5 Raw Materials Inventory

Schedule 1 Activity	Description of raw materials and Composition	Max Amount (kgs or time supply)	Annual Throughput (kgs each year)	Description of Use including main hazards
Food Production				
6.8 Part A(1)(d)(iii)	Ground herbs, spices and spice mixes	277,449	3,783,357	Ingredients
	Vegetables and Fruit	107,600 plus variable depending on ingredient – weeks supply to 6 months supply	5,535,086	Ingredients
	Dairy Products (butter, cream, yoghurt)	2 days supply for majority of products	1,566,915	Ingredients
	Pappadum raw material	35,000	191,623,912	Ingredients
	Salt	31,700	596,925	Ingredients
	Sugar	35,000	893,976	Ingredients
	Oils (Vegetable and Nut)	9,100 plus 2.5 days supply of rapeseed oil	2,643,298	Ingredients
	Flours	27,500	1,614,918	Ingredients
	Acids/Vinegars	36,000 litres	281,811	Ingredients
	Nuts	29,050	504,731	Ingredients
	Pastes/paste mixes	1,515 plus weeks supply of some pastes	1,033,768	Ingredients
	Mango Chutney	1 weeks supply	1,768,727	Ingredients
	Colours and Flavours	3,625	15,134	Ingredients
	Starch	1,500	7,186	Ingredients
	Other (e.g. raising agents, misc ingredients)	10,805	56,284	Ingredients
Hygiene Chemicals				
5.4 Part A(1)a(ii)	Caustic 32%	3000 ltrs	40,000 ltrs	DAF unit pH adjustment; corrosive

5.4 Part A(1)a(ii)	Sulphuric Acid 50%	2000 ltrs	12,000 ltrs	DAF unit pH adjustment; corrosive
6.8 Part A(1)(d)(iii)	Powerfoam 50	2000 ltrs	24,00 ltrs	cleaning of plant/equipment removing soil containing fats & grease. Mildly alkaline
6.8 Part A(1)(d)(iii)	Chlorofoam	2000 ltrs	12,000 ltrs	helps break down fats and proteins during the cleaning of plant/equipment. Alkaline foam detergent containing sodium hypochlorite
6.8 Part A(1)(d)(iii)	Klenz 2	3,000 ltrs	36,000 ltrs	is a defoamed caustic based detergent designed for CiP. Corrosive
6.8 Part A(1)(d)(iii)	Multikleen	2,000 ltrs	12,000 ltrs	for hard surface cleaning of plant/equipment in food processing. Highly effective in removal of soil containing fats/grease. Corrosive
6.8 Part A(1)(d)(iii)	Bioklenz	150 ltrs	1,800 ltrs	powerful terminal disinfectant containing a complex formulation of organic amine biocide with sequestrants & surfactants for use in food manufacturing.
6.8 Part A(1)(d)(iii)	Klenzklor extra	150 ltrs	1,800 ltrs	heavy duty, caustic based, low foam detergent containing sodium hypochlorite for CiP applications, Effective in dissolving fats and breaking down organic matter.
5.4 Part A(1)a(ii)	Hydrex 6861	2,000 ltrs	12,000 ltrs	DAF unit water treatment

5.4 Part A(1)a(ii)	Hydrex 6521	150 ltrs	1,725 ltrs	DAF unit water treatment

3d Management Systems

The site is developing an integrated a Health, Safety and Environment management system which incorporates the following:

- Documented Environmental Policy setting out the businesses vision and values in relation to environmental management;
- A documented Aspects Register identifying all activities on site with an assessment of environmental impact;
- A Climate Change Risk Assessment (included at Appendix J);
- Documented structure and responsibilities for environmental management within the system manual and individual procedures;
- Identification of all applicable environmental legal requirements and the compliance status of the business. The site is subject to external audit as part of the ABF Group;
- Documented operating procedures for environmental operations that may have an adverse impact on the environment;
- A planned preventative maintenance regime and routine inspections of key plant and equipment (currently Shire although a new system, Agility, is to be implemented);
- Routine documented monitoring of key parameters including effluent discharge, energy and water use, waste arisings and raw materials use;
- Training programmes to ensure all staff and contractors are suitably inducted and trained in relevant environmental procedures;
- Procedures for the investigation of any potential complaints;
- Contingency plans to be used in the event of breakdowns of key plant and equipment or unplanned events such as extreme weather (Crisis Manual);
- An accident plan is present on site which includes any emergency procedures for environmental matters e.g. spillage;
- Regular review of Environmental performance by the management team against set improvement targets;
- Procedures are in place for all key operations including receipt and processing of raw materials;
- Audits of compliance against relevant procedures and all legal requirements are carried out periodically;
- Non-conformances are documented and appropriate corrective and preventive actions are taken – the operator plans to use the Alcumus system for this;
- Records are kept to demonstrate compliance with applicable legislation, as well as other relevant records including training, monitoring and maintenance.
- Documented procedures for change management including assessment of potential environmental impacts of any planned changes to the site.

Accident Management Plan

Table 6 Accident Management Plan

Incident/Abnormal Circumstance	Likelihood	Consequence	Prevention Measures	Mitigation Measures
Equipment breakdowns	Medium	Dependent on equipment: DAF breakdown/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 Odour abatement plant malfunction – release of fryer exhaust gases unabated – potential for odour.	Planned Preventative Maintenance of all equipment; Service contracts for boilers, refrigeration plant, compressors, effluent plant;	Some production could be diverted to another site if required; Effluent plant has 100,000 litre reception pit and 115,000 litre balance tank capacity 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, odour abatement plant and refrigeration plant; OMP in place.
Spillage during Tanker Loading/Offloading	Low	Spillage of acetic acid, oil or sludge from tanker/hose with potential to enter surface water course.	Site vehicle management e.g. speed limits, designated routes; Operators trained in delivery procedures; connection points within bunds;	Spill kits; Spill procedures; Bunding; If catastrophic spill overtops bund or spillage occurs from tanker outside of loading area, whole site containment plan deployed (Envirovalves activated to prevent release to brook)
Bulk vessel overfilling	Low	Spillage of acetic acid or oil from vessel with potential to enter surface water course.	Tank level checking prior to off-loading; Tank high level alarms; Bunding;	Bunding; Spill kits; Spill procedures; Whole site containment approach;
Spill from IBC or drum	Medium	Spillage of chemicals (acid/caustic or other treatment/hygiene chemicals), oil skimmings or other	Mobile bunds; all containers stored with lids and valves closed; Some containers stored in bulk storage container with integral	Bunding; Spill kits; Spill procedures; Whole site containment approach;

Incident/Abnormal Circumstance	Likelihood	Consequence	Prevention Measures	Mitigation Measures
		liquid/food waste with potential to enter surface water course.	bund; all storage away from traffic routes;	
Fire	Medium	Emission of smoke/dust to air	Site fire risk assessment; Fire detection systems; dedicated sprinkler system for fryers; Planned Preventative Maintenance of all equipment; Site permit to work system (hot works)	Fire response plan; Crisis Manual; battle boxes
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; Firewater could be pumped to effluent reception pit for containment prior to testing/release to sewer; Deployment of Envirovalves to prevent release to Westleigh Brook;
Release of out of specification effluent	Low	Potential impact at WWTW Breach of effluent consent	pH adjustment plant; DAF plant; Balance tank	Effluent recirculation if out of consent for pH; 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/Medium – parts of the perimeter of the yard are within a flood zone, but 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

Incident/Abnormal Circumstance	Likelihood	Consequence	Prevention Measures	Mitigation Measures
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 e.g. fuel supply or difficulties with workforce getting to work.	See site Risk Register and Crisis Manual for response to loss of suppliers or difficulties with workforce getting to work.

4. Monitoring

4a 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.

4b 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

6a Describe the basic measures for improving how energy efficient your activities are?

- Start-up and shut-down procedures are in place for all lines and hibernation settings are in place.
- The opportunity to use variable speed drives has been highlighted by an external contractor site survey and is being addressed by the operator e.g. on air handling units.
- All steam pipes are insulated.
- A leak survey or compressed air systems has been completed and leaks addressed.
- Condensate from boilers and cooking vessels returned to boiler hotwell.
- Refrigeration equipment is maintained by external contractor and optimised via regular maintenance.

Future plans for the site include investigating the possibility of CHP installation.

6b Provide a breakdown of any changes to the energy your activities use and create

Table 7 below shows energy use for the period October 2018 to end of September 2019.

Table 7 Energy Use

Period	Electricity (kWh)	Natural Gas (kWh)	Propane/ LPG (litres)	Production (tonnes)	Total Energy (kWh)	SEC (kWh/tonne)	Total Emissions (kgCO2e)
1	534,500	1,539,890	N/A	3,286	2,074,390	631	451,187
2	536,670	1,586,310		3,517	2,122,980	604	461,224
3	543,150	1,576,080		3,430	2,119,230	618	460,791
4	430,830	992,530		1,839	1,423,360	774	312,874
5	558,868	1,594,890		3,347	2,153,758	643	468,651
6	496,170	1,336,720		2,813	1,832,890	652	399,886
7	525,790	1,411,630		2,779	1,937,420	697	422,760
8	505,350	1,305,040		3,050	1,810,390	594	395,761
9	509,240	1,262,470		2,804	1,771,710	632	388,059
10	499,120	1,225,180		2,725	1,724,300	633	377,855
11	537,160	1,417,020		3,142	1,954,180	622	426,767
12	383,860	731,500		1,330	1,115,360	839	247,546
13	510,420	1,265,990		2,899	1,776,410	613	389,079

Table 8 Summary of Site Boilers

Boiler Type	Location	Associated Emission Point	Net Thermal Input (MW)
Cochran Steam Boiler 1	Boiler House	A1	3.6
Cochran Steam Boiler 2	Boiler House	A2	3.6
Wanson Thermal Oil Boiler 1	Fryer Boiler Room	A3	1.368
Wanson Thermal Oil Boiler 2	Fryer Boiler Room	A4	1.368

6c Have you entered into, or will you enter into, a climate change levy agreement?

Yes, the operator is part of the underlying climate change agreement for the food and drink sector, agreement identifier FDF1/T00447v2, Facility Identifier FDF1/F00499.

6d Tell us about, and justify your reasons for, the raw and other materials, other substances and water you will use

Water

Cooling water for the pasteurisers is returned to the cooling tower hotwell for reuse. Condensate from boilers and cooking vessels is returned to the boiler hotwell.

The production team review the production plan every week and challenge batch sizes/ changes. The high number of different products produced means that there are a high number of changeovers, however the operator is constantly looking for ways to minimise these and thereby save water, for example by combining recipes.

Water is metered in the cookhouse to closely monitor use of hoses. Table 9 below shows water use and effluent volume for the period October 2018 to end of September 2019.

Table 9 Water Management

Period (e.g. month)	Water Use (m3)	Effluent Volume (m3)
1	9,934	2,896
2	10,568	3,284
3	10,594	3,839
4	4,784	1,982
5	8,623	2,600
6	7,305	2,433
7	7,839	2,204
8	6,933	2,211
9	7,455	2,666
10	7,259	2,467
11	9,147	3,318
12	5,182	1,590
13	8,128	3,544

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. Work is ongoing to analyse inventory levels of raw materials to ensure alignment with production planning and efficient use of ingredients.

The operator uses Sedex and a supplier management tool to understand impacts in their supply chain.

6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

Pastes can sometimes be reworked but pasteurised sauces cannot be 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 runs a CI Programme. Current opportunities on the CI Tracker include minimising CIP water leaks; behavioural improvements to reduce water usage e.g. hoses; changes to packaging to reduce pack sizes and consequent reduction in transportation; investigating whether or not products can be run on different lines to reduce changeover/running times; challenging chemical use in the DAF plant; re-using fryer oil in drip-trays; adding a transformer to air compressors; re-use of lime juice in other recipes to prevent wastage to drain.

Table 10 below shows waste volumes and disposal routes for the period October 2018 to end of September 2019.

Table 10 Waste Streams and Disposal Routes

Waste Type	Source of Waste	State (e.g. solid/liquid)	Class (Haz or Non-Haz)	Storage Location	Disposal Route e.g. recycled, recovered, composted, landfilled etc	Annual Volume (tonnes or litres)
Food Waste - 2 x 240	Food Waste - 2 x 240	Solid	Non-Haz	Yard	Anaerobic Digestion	160 T
Waste Product - Glass IBC	Glass Jars from the lines	Solid	Non-Haz	Yard	Anaerobic Digestion	158.52T
Waste Product – Plastic IBC	Plastic Jars from the lines.	Solid	Non-Haz	Yard	Anaerobic Digestion	116.99T
Loose Food/Sauce/Spices IBCs & Barrels	Waste from Cookhouse	Solid	Non-Haz	Yard	Anaerobic Digestion	66.68 T
Flour	PRN of Flour	Solid	Non-Haz	Yard	Anaerobic Digestion	1T
Mixed Glass & Plastic IBC	Glass & Plastic jars from the lines	Solid	Non-Haz	Yard	Anaerobic Digestion	6.5T
IBCs of Clean Glass	Clean glass from Depal	Solid	Non-Haz	Yard	Anaerobic Digestion	9.13T
IBCS & Pallets of General Waste	General Factory waste in IBC	Solid	Non-Haz	Yard	Anaerobic Digestion	107.88T
Pallets of Sauce in Glass & Plastic	Pallets of Sauce in Glass & Plastic	Solid	Non-Haz	Yard	Anaerobic Digestion	9.2T
Sludge Effluent	From Effluent Plant	Solid	Non-Haz	Bulk Tank, Yard	Anaerobic Digestion	800.59T
IBCs of Sludge Effluent	From Effluent Plant	Solid	Non-Haz	Yard	Anaerobic Digestion	18.2T
Farmer Waste	Farmer Waste	Solid	Non-Haz	Yard	Land Spreading	142.82T
Pappadum Waste	Pappadum Waste	Solid	Non-Haz	Yard	Animal Feed	117.42T
General Dry Waste Bales	Baled Waste	Solid	Non-Haz	Yard	Thermal treatment with energy recovery	171T
Cardboard	Cardboard	Solid	Non-Haz	Yard	Recycled	200.04T
Clear Plastic 95/5	Clear Plastic 95/5	Solid	Non-Haz	Yard	Recycled	48.89T
Coloured/Mixed Plastic	Coloured/Mixed Plastic	Solid	Non-Haz	Yard	Recycled	40.86T
Cardboard Cores	Cardboard Cores	Solid	Non-Haz	Yard	Recycled	4.48T
Hard Plastics PP	Hard Plastics PP	Solid	Non-Haz	Yard	Recycled	86.87T
Wood Skip	Wood Skip	Solid	Non-Haz	Yard	Recycled	20.54T
Metal Skip	Metal Skip	Solid	Non-Haz	Yard	Recycled	129.14T
Old Oil	Old Oil	Solid	Non-Haz	Bulk Tanks, Yard	Recycled	29.48T
Effluent Pit Oil	Effluent Pit Oil	Solid	Non-Haz	Yard	Recycled	35.22T
40YD General Skip	40 YD General Skip	Solid	Non-Haz	Yard	Recycled	9.77T

FELS x 2 - Lavelles	FELS x 2 - Lavelles	Solid	Non-Haz	Yard	Recycled	138.46T
Hazardous Waste	Hazardous Waste	Solid	Haz	Yard	Hazardous Waste	10T
Light Tubes	Light Tubes	Solid	Haz	Yard	Hazardous Waste	260KG

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.

Sensitive Receptors

The following sensitive receptors have been identified as being potentially affected by operations at the site. Statutory and non-statutory ecological receptors have been identified within a 10km radius, using magic.gov.uk. Human receptors immediately surrounding the site which may be sensitive to nuisance from odour, dust, or noise from the site have also been identified. These are also shown in Drawings 5a, b and c.

Table 11

Name of Receptor (designation/distance/direction)	**Nature of Receptor**	**Emission which may impact on the receptor and their relevant pathways**
Ecological Receptors		
Westleigh Brook, site boundary 5mW	Surface Water; protected fish migratory route; water voles	Surface Water Emissions
Firs Park LWS, SBI 0.7km SW	Section 41 bird species	Air Emissions
Bickershaw Colliery LWS, SBI 0.7km W	Section 41 bird species	Air Emissions
Pickley Green Marsh SBI 0.8 km NE	Section 41 bird species	Air Emissions
Orchard Lane Wetland LWS, SBI 0.9km E	Section 41 bird species	Air Emissions, Surface Water Emissions
Atherton Wood LWS, SBI 1.5km E	Section 41 bird species	Air Emissions
Pennington Flash LNR 1.5km SW	The site is recognised nationally for its importance, with over 230 bird species having been recorded including the Black-Faced Bunting, Nightingale, Cattle Egret, Whiskered Tern and Leach's Petrel. Look out for water voles, dragonflies and damselflies; wildfowl and wetland birds such as Bittern, Gadwall, Great Crested Grebe, Tufted Duck, Kingfisher and Willow Tit. The spit remains the focus for much of the site's attention. This small strip of stone and shingle	Air Emissions, Surface Water Emissions

	continues to attract most of the site's scarce and rare birds.	
Bedford Wood LWS, SBI 1.6km E	Section 41 bird species	Air Emissions
Wetland & Scrub at Hindley Green LWS 2.2km NW	Section 41 bird species	Air Emissions, Surface Water Emissions
Eatock Lodge LNR 3.4km N	The site consists of open water, marsh, grassland, scrub and mixed woodland. Regional importance for its breeding Toad population as well as supporting good numbers of Frogs, Smooth Newts and freshwater invertebrates. Butterflies recorded include Holly Blue, Gatekeeper & Speckled Wood.	Air Emissions, Surface Water Emissions
Abram Flashes SSSI 3.4km W	The Abram Flashes lies adjacent to the Leeds and Liverpool canal along the Hey Brook and includes Lightshaw Meadows which forms part of a series of wetlands stretching for some 10 km between Wigan and Leigh, known as the Wigan Flashes. The site is underlain by tills and late-glacial flood gravels overlying Triassic sandstones of the Sherwood Sandstones Group. It supports the most outstanding assemblage of breeding birds associated with lowland open waters and wet grassland in Greater Manchester and Merseyside.	Air Emissions, Surface Water Emissions
Cunningham Clough Brook LNR 3.5km N	Habitats include woodland, grassland, brook, hedgerow and a pond.	Air Emissions, Surface Water Emissions
Hall Lee Bank Park LNR 3.9km N	Steep sided woodland clough with a brook running through which contains semi-natural broadleaved woodland, secondary woodland, running water, marsh grassland, scrub and acid grassland habitats. The site has recent records of Roe Deer, Grey Wagtail, Sparrow hawk, Goldcrest, Great Spotted Woodpecker and a number of warbler species.	Air Emissions, Surface Water Emissions
Pretoria Pit LNR 4.1km NE	Undulating broadleaf woodland on restored ground. Industrial heritage features of previous colliery. Habitats include ponds, woodland flora and bird life.	Air Emissions

Low Hall Park LNR 4.4km NW	It has a mixture of woodland and wetland and is rich in wildlife and habitats. The area is a haven for nesting birds in spring and summer including five RSPB red listed birds, as well as attracting large numbers of Damselflies and Dragonflies. The protected water vole is regularly recorded on site.	Air Emissions, Surface Water Emissions
Manchester Mosses SAC Three Sites 4.6km SE, 8.3km S, 9km S	Mossland formerly covered a very large part of low-lying Greater Manchester, Merseyside and Southern Lancashire, and provided a severe obstacle to industrial and agricultural expansion. While most has been converted to agriculture or lost to development, several examples have survived as degraded raised bog, such as Risley Moss, Astley & Bedford Mosses and Holcroft Moss on the Mersey floodplain. Their surfaces are now elevated above surrounding land due to shrinkage of the surrounding tilled land.	Air Emissions, Surface Water Emissions
Astley & Bedford Mosses SSSI 4.6 km SE	It represents one of the largest remaining fragments of Chat Moss, a lowland raised mire that developed over tills and late-glacial flood gravels overlying Triassic sandstones of the Sherwood Sandstones Group. Most of the Chat Moss has been drained and reclaimed for agriculture or cut over for peat.	Air Emissions
Hall Lee Brook 4.8km N	This winding and quaint little brook is sheltered by woodland and provides a great habitat for local wildlife.	Air Emissions
Borsdane Wood LNR 5km NW	The wood consists of mixed broadleaf trees such as oak, ash, birch, cherry, hazel, hawthorn, blackthorn and dog rose and is believed to have had woodland cover since around 1600AD. The woodland has been relatively unchanged for hundreds of years and is home to a wide variety of wildlife, including deer.	Air Emissions

Bryn Marsh & Ince Moss SSSI 5.4km W	Agricultural and industrial activity have had a profound effect on the vegetation of the area, resulting in a complex system of habitats dominated by open water and swamp but still retaining fragments of the original mossland. This site supports the best example of swamp and tall fen vegetation in Greater Manchester and Merseyside as well as important populations of dragonflies and breeding birds.	Air Emissions, Surface Water Emissions
Highfield Moss SSSI 6.2km SW	Highfield Moss is a lowland raised valley mire: a rare type of wetland for Manchester. Robert Stephenson dug a railway line right through the middle of this large peatland and left behind sandy banks of spoil bustling with insects. Marsh gentian, a rare trumpet-shaped flower can be found here.	Air Emissions, Surface Water Emissions
Wigan Flashes LNR 6.3km W	The reserve includes open water, reedbed, fen, grassland and wet woodland habitats. The area has an abundance of wildlife, including water vole, willow tit and the very rare and shy bittern.	Air Emissions, Surface Water Emissions
Three Sisters LNR 6.4km W	Wetland reserve that offers views of the Willow Tit, Jay, Chaffinch and Great Spotted Woodpecker.	Air Emissions, Surface Water Emissions
Kirkless LNR 6.6km NW	Kirkless is one of the important areas for willow tits, the UK's most endangered small bird. They thrive in the woodland around here, their networks protected from development in the nature reserve. Other small birds include blue tit, great tit and goldcrests which are often spotted in the woodland.	Air Emissions
Lostock Hall LNR 7.5km N	Habitats include broadleaf woodland, grassland, wetland, marshland and ponds.	Air Emissions, Surface Water Emissions
Holcroft Moss SSSI 8.3km SE	Holcroft Moss is a lowland raised bog and is thought to be the only known example in Cheshire that has never been cut for peat. Commercial peat extraction from the bog's immediate surroundings has however lowered the water table, and this subsequently damaged the hydrology of Holcroft Moss. During the summertime the bog is a favoured breeding and feeding site of yellowhammer – a UK BAP	Air Emissions, Surface Water Emissions

	species and is home to a small population of common lizard.	
Haslam Park LNR 8.4km NE	Open meadow areas, broadleaf woodland, views along Middlebrook Valley, ponds & wetlands, Middlebrook river.	Air Emissions
Red Moss SSSI 8.8km N	Wetland mossland that is a SSSI due to its biodiversity and undisturbed character. Work has been completed to block drainage ditches and raise water levels within the mossland to a level suitable for the growth of mossland species.	Air Emissions, Surface Water Emissions
Blackleach Country Park LNR 9km E	Habitats include open water, grasslands, scrub, woodlands and wetland. Wildlife includes tufted duck and pochard in winter, marsh marigolds in spring and swifts, swallows and northern marsh orchids in summer. One woodland is predominantly sycamore whilst the other is mainly willow and downy birch.	Air Emissions, Surface Water Emissions
Risley Moss SSSI 9km S	Main habitats mossland, mixed woodland and grass meadow. Marsh orchids and Snakes Head Fritillary are amongst the plants doing well. Three distinctly different ponds lie within the woodland and these support an important and diverse range of aquatic life which provide an excellent educational experience as well as supporting the occasional Mallard or Kingfisher.	Air Emissions
Doffcocker Lodge LNR 9.6km N	Common Tens have a successful time breeding here. The reed-bed at this site is so important because of the very rare and red listed Reed Bunting.	Air Emissions, Surface Water Emissions
Human Receptors within 1km		
11 schools within 1km radius of the site; closest school is 500m E	School	Odour, Noise, Air Emissions
Three parks within 1km radius of the site; closest is 280m SW	Recreation ground	Odour, Noise, Air Emissions
Two hospitals within 1km radius of the site; closest is 450m SE	Hospital	Odour, Noise, Air Emissions
Residential areas of Westleigh, Firs Lane S and Lilford E	Residential areas	Odour, Noise, Air Emissions

Impact of Emissions to Air

The principal emissions to atmosphere from the installation are identified in Table 2. This section presents the approach to the assessment of the impact of the emissions on the local receiving environment.

An H1 Assessment was undertaken to determine the impact of emissions from the installation (Appendix B).

Emissions monitoring was carried out on 11th and 15th November 2019, to provide an up to date data set of emissions from the existing site boilers and odour abatement plant. It was only possible to monitor one of the Wanson thermal oil boilers during the emissions monitoring exercise, and as such the data from one boiler has been used for the other as well.

H1 Assessment

Data from the emission monitoring exercise was used to conduct the H1 assessment. The stack heights were calculated using the formula in the guidance for stacks which are more than 3 metres above the building but less than 2.5 times the building height.

1. Take the actual height of release.
2. Subtract the height of the tallest building within a distance 5 times L (this can be the building where the emissions are coming from, if it's the tallest).
3. Multiply the figure that's left by 1.66.

For the Wanson boilers, the actual height of the release is 12 metres above ground and the tallest building within 5L is 11.25 metres (the other side of the factory). The effective height is therefore 12-11.25 x 1.66 = 1.245m. For the odour plant, the actual height of the release is 20.125 metres from the ground and the tallest building within 5L is the factory roof at 11.25 metres. The effective height is therefore 20.125-11.25 x 1.66 = 14.73 metres. For the steam boilers, the actual height of the release above ground is 13 metres and the tallest building within 5L is the factory roof at 11.25 metres. The effective height is therefore 13-11.25 x 1.66 = 2.9 metres.

For NOx emissions, 50% of the measured data was used for the short-term concentration. For VOC emissions, the complete speciation is unknown. Emissions from the fryers are likely to include a range of aldehydes, ketones and potentially other VOC's. Due to the lack of precise data formaldehyde has been used as a worst-case representative substance in H1. This will produce results far worse than the actual emissions which are likely to contain only a low level of formaldehyde, if any, among a range of other substances. For particulates, CO and VOC short term and long-term values were the same due to the absence of specific long-term and short-term data.

The steam boilers operate both at the same time, for 5 or 6 days a week, depending on production schedules, and automatically modulate between the two boilers. A blanket operational percentage of 70% was applied to both boilers on H1. The Wanson boilers operate one at a time, 24/6 with one

day a week shut down for cleaning. Each boiler was therefore inputted as being operational 50% of the time. The odour plant runs constantly and was inputted as 100%.

The information was inputted in the H1 tool (Appendix B) which produced the following results:

Table 12 H1 Assessment Results

Substance	Long Term EAL (ug/m3)	Short Term EAL (ug/m3)	Long Term PC (ug/m3)	% PC of EAL	>1% EAL?	Short Term PC (ug/m3)	% PC of EAL	>10% EAL?
PM10	-	50	1.21	-	-	24.2	48.4	Yes
NOx	40	200	23.4	58.3	Yes	481	240	Yes
CO	-	10000	15.5	-	-	569	5.7	No
Formaldehyde	5	100	7.12	142	Yes	143	143	Yes

The results show that emissions of CO are insignificant. Emissions of particulates are significant in the short term, and emissions of NOx and formaldehyde are significant in both the long and short term. The data was then compared to background emissions concentration data from Wigan Metropolitan Borough Council (2017 downloaded from https://uk-air.defra.gov.uk/data/laqm-background-home) for grid square 365500, 401500. Background data is available for NOx and particulates.

Table 13 Background Concentrations

Substance	Background Conc. (ug/m3)	PC (ug/m3)	% PC of headroom EAL-Bkgrd	PEC mg/m3	% PEC of EAL	% PEC of EAL > 70%?	PC ug/m3	% PC of headroom EAL-Bkgrd	% PC of headroom > 20%?
		Long term					Short Term		
PM10	11.54525	1.21	-	-	-	-	24.2	90	Yes
NOx	22.44361	23.4	133	45.8	114	Yes	481	310	Yes

The results show that the emissions are still significant and emissions modelling is required. It should be noted that all the existing emission points A1 – A5 would have been part of the background concentrations as measured in 2017 and as such the H1 assessment does not provide an accurate picture of the contribution of the site to local air quality.

On the basis of the above results, emissions modelling was commissioned (see Appendix I).

The report concludes that emissions are within guideline levels are will not have a significant impact on human or ecological receptors.

Point Source Emissions to Sewer, Surface Water and Groundwater

Sections 3b Fugitive Emissions and 3d 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 14. The operator has identified improvements required to ensure the

risk posed by a major spillage is acceptable. These include inspection and repairs as necessary of site curbing; and installation of Envirovalves which protect the surface water outfalls to the brook automatically, thereby minimising the response time in the event of an incident.

Odour

No odour complaints have been received in the last 3 years.

There is the potential for releases to air from the fryers to be odorous (A5). Processing buildings also operate air handling systems which vent from the building which have the potential to be odorous. In addition, there are potential sources of fugitive release of odour:

- Raw materials receipt and unloading
- Effluent Plant
- Effluent Sludge Tank Emptying
- 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 odour abatement plant. An Odour Management Plan is included at Appendix C which details the measures taken to prevent odour from the installation. No additional measures are considered necessary at this time.

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 – noise suppression is in place on compressors and grinding room. Tanker engines are switched off during loading and offloading for safety reasons and to minimise noise. Restrictions are in place on compactor use after 8pm. The site has never received any complaints of noise nuisance. No additional measures are considered necessary at this time.

Table 14 Environmental Risk Assessment

Hazard	Receptor	Pathway	Risk Management Technique	Probability of Exposure	Consequence (Severity)	Overall Residual Risk
Emissions to air – boilers emission points A1-A4	See Table 11	Air dispersion	Low NOx burners	High	Low	Low - See H1 assessment and Air Dispersion Model.
Emissions to air – odour emissions point A5	See Table 11	Air dispersion	Odour Abatement Plant	High	Low	Low - See H1 assessment and Air Dispersion Model.
Emissions of trade effluent to sewer from discharge point S1	Leigh Waste Water Treatment Works	Sewerage drainage system	Compliance with trade effluent discharge consent via use of pH adjustment and DAF plant.	High - Emissions during hours of operation	Low – compliant with consent	Low – site operates within existing consent levels.
Odour – processing activity	See Table 11 – Human Receptors	Air dispersion	See OMP; 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 11 – Human Receptors	Air dispersion	See OMP; Covered/enclosed containers; regular uplifts	Medium	Low	Low – controls in place will be adequate to minimise potential for odour nuisance complaints.
Odour – sludge removal	See Table 11 – Human Receptors	Air dispersion	See OMP; Enclosed drainage system	Medium	Low	Low – no complaints received.
Noise – processing activity	See Table 11 – Human Receptors	Airbourne	PPM for all equipment; Housing for noisy equipment;	Medium - Emissions during hours of operation; restrictions on vehicle movements	Low	Low – no complaints received.

			Engines switched off during loading/unloading; Enclosed loading bay	at unsociable hours.		
Pests	See Table 11 – Human Receptors	Airbourne; overground	Pest Control Programme	Medium	Low	Low – no complaints received.
Fugitive Emissions to Air – dust, litter etc.	See Table 11	Air dispersion	Yard inspections	Low – no dusty wastes	Low	Low – no complaints received.
Fugitive emissions to air – processing e.g. refrigerants	See Table 11	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	Westleigh Brook; Waste Water Treatment Works	Drainage system; overground;	Tank integrity checks; High level alarms; Delivery procedures; Spill procedures and training; Surface water system envirovalves improvement (whole site containment approach)	Low – no records of reported non-conformances	Medium – minor impacts with no pollution occurring	Medium – minor leaks and spills routinely cleared up with no impact.
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – effluent tanks	Westleigh Brook; Waste Water Treatment Works	Drainage system; overground;	Tank integrity checks; High level alarms; Spill procedures and training;	Low – no records of this occurring	Medium – minor impacts with no pollution occurring	Medium
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks	Westleigh Brook; Waste Water Treatment Works	Drainage system; overground;	Tank integrity checks; High level alarms; Delivery point in a bunded area; Spill	Low – sludge tank emptied approximately weekly but no incidents reported	Low – minor impacts with no pollution occurring	Low

and spills – sludge tank and emptying			procedures and training;			
Fugitive Emissions to surface water, sewer and groundwater – accidental minor leaks and spills – effluent treatment chemicals	Westleigh; Waste Water Treatment Works	Drainage system; overground;	IBC storage on mobile bunds; Delivery procedures; Spill procedures; Surface water system envirovalves improvement (whole site containment approach)	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	Westleigh Brook; Waste Water Treatment Works	Drainage system; overground;	IBC/Drum storage within bunded container; Delivery procedures; Spill procedures; Surface water system envirovalves improvement (whole site containment approach)	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	Westleigh; Waste Water Treatment Works	Drainage system; overground;	IBC storage on mobile bunds; Spill procedures; Surface water system envirovalves improvement (whole site containment approach)	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 –	Westleigh Brook; Waste Water Treatment Works	Drainage system; overground;	Tank integrity checks; Bunding and bund inspections; High level alarms;	Low	High – whole site containment system requires improvement to provide sufficient	Medium - Risk considered very unlikely however improvement plans in place to increase site

bulk oil or acetic acid tanks			Delivery procedures; traffic management; Spill procedures and training; Surface water system envirovalves improvement (whole site containment approach)		containment capacity.	containment capacity through installation of envirovalve system to enable remote activation to block surface water outfalls.

Appendices

Appendix A – Site Plans

i) Drawing 1 Installation Location and Boundary

ii) Drawing 2 Site Layout and Emission Points

iii) Drawing 3 Tank Inventory and Raw Materials Storage Areas

iv) Drawing 4a Drainage Plan – Sewer and 4b Drainage Plan – Surface Water

v) Drawing 5a, b, c Sensitive Receptors

Appendix B – H1 Assessment

Appendix C – Odour Management Plan

Appendix D – BAT Assessment

BAT Assessment against Food, Drink and Milk Industries BREF, 2006

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

Appendix E – Site Condition Report

Appendix F – Habitats Screening

Appendix G – Air Dispersion Modelling

Appendix H – Climate Change Agreement

Appendix I – Discharge Consent

Appendix J – Climate Change Risk Assessment