Non-Technical Summary

Bakkavor Boston, Installation Permit Application

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1. Introduction

Bakkavor Meals Boston (the site hereafter) is a food manufacturing company, specialising in Italian prepared foods, including meals, supplying major grocery retailers in the United Kingdom. The site operates 24 hours, seven days a week and has approximately 700 employees, including agency staff. Bakkavor were acquired by Greencore in January 2026. The site has an Effluent Treatment Plant (ETP) managed by Alpheus, which discharges a blend of treated effluent and treated foul effluent into a dyke which runs along the edge of the site boundary.

There is an environmental permit in place regulated by the Environment Agency (EA) to allow the site to discharge the blended treated effluent from the treatment plant into the nearby dyke (reference: PRNNF18564) (see 'BMB 2 Environmental Permit Discharges to Surface Water'). They also have written permission from the Drainage Board to discharge into their assets.

The site has a production capacity of approximately 110 tonnes per day, with the percentage of animal matter varying from 8.4% to 53% depending on the product.

The site is looking to apply for an Installation permit, under the Environmental Permitting (England and Wales) Regulations 2016, for the following activities:

- Section 6.8 Part A(1)(d)(iii)(aa) 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 75,
- Section 5.4 Part A(1)(a)(i) Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day involving biological treatment.

The EA asked the site to verify whether or not they required a permit, and the site completed and provided the form, 'BMB 2.1a Food Drink Sector Questionnaire', confirming a permit was required.

2. Site Location

The site is located on Chapel Road, Old Leake, Boston, Lincolnshire, PE22 9PN. The surrounding area comprises agricultural fields extending more than 500m in all directions with scattered residential properties. See Figure 1 for the location of the site.



Figure 1 Site location

See Figure 2 and Table 1 for the locations of nearby sensitive receptors.



Figure 2 Sensitive receptors

Table 1 Sensitive receptors

Reference	Description	Approximate distance (m) and direction
R1	Residential property – Chapel Road	Adjacent, north
R2	Agricultural units	20m, south
R3	Residential property – Chapel Road	20m, north
R4	Residential property off Fold Hill Road	30m, east
R5	Several residential properties off Chapel Road	40m, east

R6	Several Residential properties – Chapel Road	70m, north
R7	Residential property – Fellands Gate	90m, north west
R8	Residential property – Fellands Gate	140m, north west
R9	Residential property – Fold Hill Road	180m, west
R10	Residential property - Cowbroads Lane	330, south west

The site is not located within an Air Quality Management Area (AQMA). There are none of the following designations within 2km of the site:

- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- National Nature Reserve (NNR)
- Local Nature Reserve (LNR)
- Ramsar
- Area of Outstanding Natural Beauty (AONB).

The nearest Ramsar, SAC and SPA is 5.7 km south-west of the site, called The Wash.

3. Proposed Activities and Processes

The production flow for the site is as follows:

- Raw materials intake (“goods in” areas)
- Cooking facilities connected to the main production building
- High care chilled production and storage for “work in progress” ingredients
- Segregation of low risk vs. high care areas to maintain hygiene standards
- Packing and dispatch operations for finished meals.

The process flows for the factory can be found in ‘BMB 2.5a7 HACCP Process Flow Diagram’, with process areas emissions shown in red.

The ETP on-site treats trade effluent from the factory. The process flows for the ETP can be found in ‘BMB 2.5a4 ETP Process Flow Diagram Sheet 1’, ‘BMB 2.5a5 ETP Process Flow Diagram Sheet 2’ and ‘BMB 2.5a6

Effluent flow diagram'. The discharge outlet associated with the ETP is located at NGR TF 3980 5147. See 'BMB 6.10j Discharge Outlet' for the location.

Operating procedures for the ETP can be found in 'BMB 6.7 Effluent Treatment Plant Procedures'. Foul effluent is treated through the ETP, however, this is not linked to the main regulated activity ordirectly associated activities. For this reason, questions 4 and 7d of Form B6 have not been completed. In Form B6, question 2a, 'as soon as possible' has been selected as the start date, however, the discharge is currently taking place under an existing permit.

Directly associated activities can be found in 'BMB 3.1a Directly Associated Activities'. There are three Liquid Petroleum Gas (LPG)-fuelled boilers on site, which power the ovens as part of the regulated activity. The details of these boilers can be found in 'BMB 2.5 MCP-generator-list-template-v4.4'. Only two boilers run at a time. The operating hours provided in 'BMB 2.5 MCP-generator-list-template-v4.4' are based on the operating hours for each boiler in 2025. Boilers 1 and 2 were installed and first put into operation on site in 2005. Boiler 3 was first put into operation at a separate site in 2004 and brought to Bakkavor Boston for use in 2015. Section 1b of Form 2.5 has not been completed as the MWth for each boiler is under 5. See 'BMB 3.2 Point Source Emissions' for the location of each boiler stack.

The site has an energy centre containing ammonia chillers used for the refrigeration of products. Air conditioning units containing fluorinated gas are used for the main office building, which are not directly associated with the regulated activity, and a sauce chilling area not currently connected to the ammonia system.

The internal site layout of the site, showing the manufacturing lines and boilers, can be found in 'BMB 2.5a2 Site Layout'. The site layout and ETP location can be found in 'BMB 2.5a3 Site Drawing'.

The drainage plan for the site can be found in 'BMB 2.5a1 Main Survey Drawing'.

4. Capacity and Resource Efficiency

Capacity figures associated with the regulated activities can be found in 'BMB 3.12 Capacity Figures'. The maximum factory production capacity is 110 tonnes per day. This is calculated based on the peak production capacity of 102 tonnes per day (from week 2 of 2026) (see 'BMB 3.13 Week 2 Production Weight 2026'). The site is not able to exceed the production capacity of 110 tonnes per day, as this is linked to the amount of sauce on site; a greater amount of sauce on site cannot be used due to the physical size of the factory.

The ETP is designed to treat 700m3 per day, but at a maximum can treat 850m3 per day. On average, the ETP treats 770m3 per day. The maximum discharge volume is 750m3 per day, this consists of 700m3/day of treated effluent (it is the peak design flowrate of the treated effluent plant) and 50 m3/day allowance for the foul effluent from the factory. See 'BMB 6.3 Calculations' for more details.

A map showing the LPG and key chemical storage areas and their capacity can be found in 'BMB 2.5a9 Bulk Storage Plan (Jan 2026)'. See 'BMB 3.3m Chemical Usage Doc - Diversey' for a list of key chemicals used on

site (excluding the LPG and chemicals linked to the ETP), and the quantities delivered to the site between October 2024 and February 2026.

The amount of water, LPG and electricity consumed on site in 2025 can be found in 'BMB 3.6a 2025 Energy Use Report'.

The operator holds a climate change levy agreement; CCA2 agreement dated 10 December 2025 (see 'BMB 3.6c1 CCA2 Underlying Agreement') and CCA3 agreement dated 01 January 2026 (see 'BMB 3.6c2 CCA3 Underlying Agreement').

Justification of the use of raw materials on site can be found in 'BMB 3.6 Resource Efficiency', along with examples of water and energy efficiency measures on site.

5. Emissions and Monitoring

Monitoring of the discharge from the ETP into the dyke, is carried out in line with the existing discharge permit with the EA (reference: PRNNF18564). Monitoring is carried out by a company called Alpheus, which also operates the ETP. 'BMB 3.2 Discharge Results' contains monitoring results associated with the ETP and release of discharge into the dyke, showing the discharge is within the existing permitted limits. These results have been extracted from the Alpheus monitoring system. Biological Oxygen Demand (BOD) is sent to a UKAS-accredited laboratory for testing (see 'BMB 3.2a BOD Results' and 'BMB 3.2b BOD Results').

The nearest sewage system is Old Leake treatment works; the NGR is TF 40570 50720. Section 5b1 of Form B6 has not been completed as the treatment of sewage from the facility is not a regulated activity.

For Form B6, the answer to questions 8a to 8c is no. The explanation for this is as follows: The ETP treats raw effluent arising from the factory food production processes and cleaning food production areas. The waste is a mixture of food residuals, water and cleaning chemicals (the factory can provide information on the products and concentrations used). There are online probes measuring pH and temperature. Treated effluent is tested onsite daily for pH, Total Suspended Solids (TSS), Chemical Oxygen Demand (COD) and Ammonia, and weekly in an accredited laboratory for BOD as per Alpheus's contract with the client. Alpheus's contract includes sample testing of the foul effluent from the Klargester units which treat sewage from the site.

The ETP consists of a screen, Dissolved Air Flotation (DAF) unit, membrane bioreactor (ultrafiltration), reverse osmosis and disinfection by means of Ultraviolet (UV). The disinfected water, known as recycled water, is then blended with mains water and returned as process water to the factory. A large portion of the effluent treated at the ETP is returned to the factory. The remainder is stored in a tank for discharge to the environment. Various known treatment process chemicals are used as required at the ETP. The discharge to the environment is a blend of treated effluent and foul effluent. These two effluent streams are stored in separate tanks, tested and blended as required to meet the discharge consent.

The temperature of the discharge is expected to be ambient, however, it is not monitored, therefore, questions 8e and 8f in Part 6 have not been completed.

Stack testing on the three boilers was carried out on 29 April 2026. The applicable emission reports, showing emission concentrations for Oxides of Nitrogen (NO_2) and Carbon Monoxide (CO) can be found in 'BMB H1 Stack Testing Monitoring Reports'.

Regarding Form B3, some questions in section 4 have been answered no. This was due to existing ports on site being used to carry out emissions monitoring. The standards followed during the monitoring can be found on page 5 of the monitoring reports. See 'BMB H1 Stack Testing Monitoring Reports'.

Monitoring measures for odour and noise can be found in 'BMB 3.4a Monitoring Measures'.

6. Environmental Risk Assessment

The environmental risk assessment carried out for the site can be found in 'BMB 2.6 Environmental Risk Assessment'.

7. Screening of Emissions

The installation is outside of the minimum screening distance to habitats, however, in Form B2.5, yes has been ticked for 2d, 'Does your MCP require an air emissions risk assessment to assess the risk to habitats', due to an H1 risk assessment being required as part of the Installation permit application. This section will explain emissions information input into the H1 risk assessment (see 'BMB H1TOOL_2.78').

7.1 Air Emissions – Data input

Flow, velocity, and concentrations for Oxides of Nitrogen (NO_2) and Carbon Monoxide (CO) were taken from monitoring carried out on the boilers, see 'BMB H1 Stack Testing Monitoring Reports'.

The operating mode for boilers has been calculated as a percentage based on their annual operating hours for 2025: 8,736 for boiler 1, 2,112 for boiler 2, and 6,628 for boiler 3.

The boiler stack estimated heights from the ground, and the roof can be found in Table 2. The nearby building is taller than the boiler stacks. See Figure 3 for a photo of the boiler stacks, and Figure 4 for the view of the boiler stacks from the nearby building.

Table 2 Stack heights

Boiler	Height from the roof	Height from the ground
Boiler 1	1.2m	6.6m

Boiler 2	2.8m	8m
Boiler 3	1m	6.6m



Figure 3 Boiler stacks



Figure 4 View of boiler stacks from nearby building

As the stack heights are less than 3m from the roof, and the nearby building is taller, the effective heights have been set to 0 in the H1 risk assessment.

7.2 Air Emissions – Output

The H1 risk assessment ('BMB H1TOOL_2.78') showed that Nitrogen Dioxide (NO2) did not screen out and therefore failed Test 1. As a result, Test 2 had to be carried out for NO2 which involved considering the background concentrations in the area. A background concentration for NO2 of 5.7ug/m3 was taken as an average from DEFRA's 'Background Mapping data for local authorities' for 2025 for the Boston local authority. NO2 did not screen out of Test 2, therefore, air dispersion modelling is required to determine if the emissions are likely to have a significant impact on the environment.

7.3 Water Discharge – Data Input

The mean effluent flow rate input into the H1 risk assessment has been converted from 4.93m3/hour. The maximum effluent flow rate input into the assessment has been converted from 8.68l/s. See 'BMB 6.3 Calculations' for the maximum effluent flow rate.

Ammonia concentrations and pH have been taken from monitoring carried out on site, see 'BMB 3.2 Discharge Results'.

The Q95 flow data was taken from the nearest sampling station, Lymn at Partney Mill, which is approximately 16km away from the site.

The temperature of the discharge is expected to be ambient, however, it is not monitored, therefore, questions 8e and 8f in Part 6 have not been completed, and the 'Water temperature' tab in the H1 Risk assessment has not been completed.

7.4 Water Discharge – Output

The H1 risk assessment ('BMB H1TOOL_2.78') showed that for ammonia, Test 1 was N/A.

8. Results of Air Dispersion Modelling

The H1 risk assessment identified that air dispersion modelling is required to determine if the emissions are likely to have a significant impact on the environment. An 'Air Quality Assessment' (see 'BMB 2.5c3 Air Quality Assessment') has been carried out for the site, which includes dispersion modelling to predict pollutant concentrations at sensitive locations as a result of emissions from the site. The assessment concluded that *"The results indicated that impacts on pollutant concentrations at any human or ecological location were predicted to be not significant."*

9. Noise Impact Assessment

A 'BMB 3.3b1i Noise Advisory Tool' was completed for the site, which identified that a noise impact assessment was required. A noise assessment was conducted in March 2026, which included a noise survey, an identification of noise-sensitive receptors and significant noise contributions, and recommended noise control measures. The assessment can be found here 'BMB 3.3b1a Noise Survey'. A 'Noise Management Plan', utilising information from the assessment, can be found here 'BMB 3.3b1b Greencore Meals Boston Noise Management Plan'.

10. Odour Management Plan

An 'Odour Management Plan' has been produced for the site and can be found in 'BMB 3.3b1 Odour Management Plan'. Odour is not an issue for the site, and the site has not received any odour complaints in the past five years.

11. Climate Change Adaptation Plan

A 'Climate Change Adaptation Plan' and 'Climate Change Risk Assessment' have been produced for the site. See 'BMB 2.5c1 Greencore Boston Meals Climate Change Adaptation Plan' and 'BMB 2.5c2 Boston Meals CCA Risk Assessment and Action Plan'.

12. Site Condition

A site condition report was created for the site to assess the risk of land contamination (see 'BMB 2.5b1 Site Condition Report'). The associated H5 form has been completed (see 'BMB 2.5b2 H5 Form').

13. Best Available Technique (BAT) Assessment

A BAT assessment has been carried out against the European BAT Reference (BREF) document for the food, drink and milk industries, and can be found in 'BMB 3.3 Bakkavor Boston Best Available Techniques Assessment'.

14. Environmental Management System

A summary of the site's Environmental Management System can be found in 'BMB 2.3d EMS Summary'.