Management and Operating Techniques

Wrexham Breakfast Cereals - Environmental Permit Variation Application

Kellogg Company of Great Britain Limited

Prepared by:

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Basis of Report

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by Kellogg Company of Great Britain Ltd (Kellogg's) to prepare a Management and Operating Techniques document in support of an environmental permit variation application for its Wrexham Breakfast Cereals Site, Bryn Lane, Wrexham Industrial Estate, Wrexham, LL13 9UT.

This Management and Operating Techniques document describes how the facility will be managed and operated to prevent or where that is not possible to minimise impact upon the environment. It should be read in conjunction with the Non-Technical Summary (NTS) and Best Available Techniques (BAT) Assessment, provided in Sections 2 and 6 of the environmental permit variation application.

2.0 MANAGEMENT

2.1 Management

Kellogg's are committed to managing and continually improving environmental performance and have an existing EMS which covers all existing Site operations and change management. The EMS will be updated to incorporate modifications to the Site associated with the introduction of the new production lines and all associated infrastructure, activities, and emissions points.

The management system operated by Kellogg's ensures that;

- the risks that the activities pose to the environment are identified;
- the measures that are required to minimise the risks are identified;
- the activities are managed in accordance with the management system;
- performance against the management system is audited at regular intervals; and
- the Environmental Permit (EP) is complied with.

In particular, Kellogg's have reviewed the relevant sections of their EMS to ensure all environmental impacts of the proposed changes have been considered, including the construction, maintenance, operation, and decommissioning stages.

A summary of the Environmental Management System is included as Appendix A.

2.2 Management Structure and Responsibilities

The Plant Director is responsible for day to day operations and compliance with the EP and is also responsible for the day to day operations on Site.

The Site is manned by at least one member of staff who is suitably trained and fully conversant with the requirements of the permit incident response and the notification procedure.

2.3 Site Security

In order to prevent unauthorised access, the Site is fenced and provided with access gates and manned by security guards. Only authorised personnel have access to the Site. All visitors to the Site are required to sign in and out.

The Site is inspected daily by Security. Any defects or damage which compromise the integrity of the fencing or access gates are made secure by temporary repair by the end of the working day. Permanent repairs are affected as soon as practicable.

2.4 Display of Environmental Permit

An electronic copy of the EP is kept available for reference by all staff whose work may have an impact on the environment..

2.5 Managing Documentation and Records

Controls are in place to ensure that all EMS documents are issued, revised, maintained and trained out in a consistent fashion. The relevant documents will be updated to incorporate the changes associated with this EP variation application.

2.6 Reporting Non-Compliance and Taking Corrective Action

Any non-compliances highlighted (either internally as part of audits, investigation of complaints or from external audits) are investigated, recorded and where necessary reported in accordance with WX-EMS-0015-EMP.

2.7 Auditing and Legal Compliance

An internal auditing system is in place to ensure compliance with regulations and internal procedures. These audits will include the new production lines once they are operational.

2.8 Environmental Performance Indicators

As part of the EMS environmental performance is reviewed regularly. This includes monitoring the facility's environmental performance and addressing any necessary actions to minimise environmental impacts from the Site. The proposed production lines will included in these reviews.

2.9 Operational Control, Preventative Maintenance and Calibration

The EMS contains operational procedures that ensure effective control of Site operations, the use of approved suppliers and contract services, the maintenance of operational equipment and the calibration of monitoring equipment. These procedures will be amended to include the proposed production lines.

All new plant and equipment will be subject to a programme of planned preventative maintenance which will follow the inspection and maintenance schedule recommended by the manufacturer.

2.10 Design and Construction Quality Assurance

All new elements of the Site will be designed in accordance with recognised standards, methodologies, and practices.

A competent and suitably qualified person will supervise the construction activities.

2.11 Incident Management

Kellogg's recognise the importance of the prevention of incidents that may have environmental consequences and that it is crucial to limit those consequences.

The Site's Accident Management Plan will be updated and implemented to ensure that risks associated with the revisions to existing process lines and replacement process lines is considered and mitigation measures applied to reduce risk of accidents from operation of the production lines. The Accident Management Plan is reviewed as soon as practicable after an incident with changes made accordingly to minimise the risk of occurrence.

Kellogg's will maintain written procedures for handling, investigating, communicating and reporting:

- actual or potential non-compliance with operating procedures or emission limits;
- environmental complaints and implementation of appropriate actions; and
- incidents (and near misses), including identifying suitable corrective action and following up.

2.11.1 Action to Minimise the Potential Causes and Consequences of Environmental Incidents

Action will continue to taken at the Site to minimise the potential causes and consequences of environmental incidents. These actions are documented in the Accident Management Plan, Odour Management Plan and Noise Management Plans. These documents will be reviewed and updated where necessary to incorporate the modifications on site.

Equipment associated with the proposed changes to Site will be integrated into the automated process control system serving the Site which is backed up with manual supervision.

2.12 Energy Efficiency

Kellogg's are committed to managing and continually improving environmental performance and energy efficiency across the Site.

Energy efficiency is considered regularly at the facility. The facility produces environmental reports in which energy usage is compared against targets. Where there are any anomalies in relation to notable increases in energy use these will be investigated and measures put in place to improve energy consumption, as appropriate.

ESOS assessments are undertaken every 4 years; the assessments identify energy efficiency improvement opportunities which are considered by the facility for implementation.

Energy efficiency techniques employed at the facility include the following:

- burner regulation and control
- energy efficient motors
- use of variable speed drives
- heat recovery with heat exchangers
- during refurbishment or new build projects lighting is replaced with energy efficient lighting
- minimising boiler blowdown
- optimising steam distribution systems
- steam from the process is supplied to Portable Foods, which is located on the Kellogg's site.
- preheating feed water (including the use of economisers)
- automated process controls are in place for elements of the manufacturing process, this ensures the optimum use of energy
- reducing compressed air leaks
- insulation to prevent heat loss

All of these aspects will continue after the modifications are completed on site. New motors will be installed in line with BAT.

2.13 Efficient Use of Raw Materials and Water

Kellogg's have considered opportunities for the recycling or reuse of water as part of the upgrades to the Site. The revisions to production on site will employ the following techniques to ensure the efficient use of raw materials and water. For example while water cannot currently be recycled / reused at the Site due to food hygiene regulations, the facility will employ techniques across the process lines to ensure the most efficient use of water, such as automatic control valves to optimise water flow, use of water nozzles and hoses and dry cleaning processes.

In accordance with the EMS and company objectives and targets, the facility monitors water, energy and raw material consumption, wastewater, waste, and waste gas stream generation.

Raw materials consumption for the proposed production lines will be monitored on a daily basis via a Production Execution process, using standard recipe settings. On a weekly basis each material will be stock checked to ensure that the quantities consumed have been correctly accounted for. Over / under consumption will be monitored and investigated if necessary.

2.14 Avoidance, Recovery and Disposal of Wastes

The following methods are in place at the Site across the process lines, to prevent the unnecessary production of waste generated:

- Waste is segregated on site to allow for disposal of different streams separately
- Food produced as a by-product, that is unable to be used in the human food chain, is used for animal feed
- Daily (Energy 8) audits are carried out to assess opportunities to reduce energy, water usage, waste produced, highlight compressed air leaks.

No changes are proposed that will affect existing disposal and recovery routes for wastes generated on Site.

3.0 OPERATIONS

3.1 Operating Techniques

All new plant will consist of control systems to monitor and optimise efficient use of raw materials and resources and ensure it is operated so that it doesn't interfere with hygiene conditions and to reduce the production of waste. This will include temperature and level measurement to reduce the potential for increase in waste production as a result of out of spec product and overflow of storage or processing tanks.

3.2 Process Control

Product losses are currently tracked at the Site, and these techniques will continue to be used to track any product and raw material losses for the proposed new production lines.

Product losses are monitored on a daily basis and reviewed regularly. Losses will be compared to benchmark figures across Kellogg's production plants, to identify if there are areas at the Site requiring improvement.

The following appropriate measures will continue to be implemented place across the site where relevant to ensure high quality process control is maintained:

- Storage and processing vessels, tanks and transfer lines will be temperature monitored to reduce the deterioration of materials;
- Storage and processing tanks and vessels will be fitted with level sensors where appropriate to prevent overfilling;
- Transfer lines for raw materials within the process will be monitored accordingly to ensure the correct loading of materials at all times;
- Flow will be measured within the boiler to ensure steam supply is consistent and that the boiler maintains correct operating temperature;
- Existing monitoring program in place for the Waste Water Treatment Plant (WWTP) and balancing ponds will continue.
- Cleaning systems will be controlled to optimise water use and minimise effluent generation; and
- Flow rates will be controlled to the on-Site WWTP.

3.3 Raw Materials Storage

The proposed production lines will require both dry and liquid raw materials and storage. Dry bulk materials are typically stored in silos and transferred to each production line.

Bulk liquid materials will be stored within specially designed tanks before being transferred to the point of use.

3.4 Heat Processing Using Steam or Water

Two new coating dryers will be introduced as a result of the proposed changes. Both of these will use direct flame heating by natural gas, designed in line with BAT and serviced regularly. The exhaust will be via an appropriately sized abatement system

3.5 Cooling, Chilling, Freezing and Freeze-Drying

The changes to production processes do not include introduction of chilling, freezing of freeze-drying processes.

Various products being introduced as part of the modifications on site require temperature control to maintain product quality. These systems will be recirculating water or refrigerant systems designed to comply with BAT. The new refrigerant room cooling systems will have automatic closing doors and be insulated. The water recirculating systems will use existing site cooling tower infrastructure. Small localised refrigerant cooling units will also be installed for process cooling applications.

3.6 Cleaning and Sanitation

There is a high quality of cleaning and sanitation already maintained at the Site. These cleaning systems will continue to applied, and all equipment associated with the process lines will be incorporated into the existing cleaning procedures.

Ease of cleaning will be considered when ordering the new equipment required. Equipment will be chosen which does not cause excessive spillage of material onto the floor. Before cleaning, dry methods will be employed to remove dry product. Cleaning in Place (CIP) systems will be optimised to maximise efficiency from a water and energy use perspective.

4.0 EMISSIONS AND MONITORING

4.1 Point Source Emissions

4.1.1 Point Source Emissions to Air

The following table (Table 9) outlines the proposed changes to Table S3.1 Point source emissions to air from the facility, including proposed monitoring standards, frequencies and emission limits. No emission limits or ongoing requirements for stack emissions monitoring is proposed associated with the new point source emissions to air proposed, aligned with monitoring requirements specified in the Food and Drink Best Available Techniques Reference document. One round of monitoring will be undertaken post-commencement of operations however to validate assumptions made in the Air Emissions Risk Assessment with respect to emissions performance and characteristics such as flow volume, velocity and temperature.

Table 1 – Revised Table S3.1 Point Source Emissions to Air

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Emission Point 106 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	West Stack – Boiler 1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	No limit set	Periodic	Every 3 years	EN 14792
A2 [Emission Point 106 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	West Stack – Boiler 2	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	No limit set	Periodic	Every 3 years	EN 14792
A3 [Emission Point 106 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	West Stack – Boiler 3	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	No limit set	Periodic	Every 3 years	EN 14792
A4 [Emission Point 107 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	East Stack – Boiler 4	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	No limit set	Periodic	Every 6 months	EN 14792
A9 [Emission Point 55 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 2 – Jet Zone Extraction	No parameters set	-	-	-	-
A10 [Emission Point 56 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 2 – Jet Zone Bleed	No parameters set	-	-	-	-
A11 [Emission Point 57 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Jet Zone Extraction	No parameters set	-	-	-	-
A12 [Emission Point 58 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Jet Zone Bleed	No parameters set	-	-	-	-
A13 [Emission Point 60 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Jet Zone Bleed	No parameters set	-	-	-	-
A15 [Emission Point 93 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 4 – Jet Zone Bleeds Oven 1	No parameters set	-	-	-	-
A16 [Emission Point 94 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 4 – Jet Zone Bleed Oven 2	No parameters set	-	-	-	-
A23 [Emission Point 111 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 4 – rotoclone coating & cooling	No parameters set	-	-	-	-
A24 [Emission Point 118 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 2 – Apron Feeder	No parameters set	-	-	-	-
A26 [Emission Point 120 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 1 – dry dust collector extruders & conveyors	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID
A27 [Emission Point 121 as shown on drawing W-Bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 1 – wet dust collection cooling dryers	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A28 [Emission Point 122 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 1 - – wet dust collection system from base dryer & conveyors	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID
A29 [Emission Point 73 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 1 – packing lines	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID
A30 [Emission Point 123 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 2 – dryer heat extraction	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID
A31 [Emission Point 124 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Seven Sisters Feed Extraction System	Total particulate	50 mg/m^3	Hourly average	Annual	BS EN 13284-1 and MID
A32 [Emission Point 25 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Flavour Plant – Malt Dust Filter	Total particulate	5 mg/Nm^3 Note 1	Periodic	Annual	EN 13824-1
A33 [Emission Point 26 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Flavour Plant – Corn Alpine Mill	Total particulate	5 mg/Nm^3 Note 1	Periodic	Annual	EN 13284-1
A34 [Emission Point 27 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Flavour Plant – Malt Kelk Mill	Total particulate	5 mg/Nm^3 Note 1	Periodic	Annual	EN 13284-1
A35 [Emission Point 125 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 5 – Wet dust collection system serving process & packing	No parameters set	-	-	-	-
A36 [Emission Point 126 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Wet dust collection system serving cookers	No parameters set	-	-	-	-
A37 [Emission Point 127 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Wet dust collection system serving coating dryer	No parameters set	-	-	-	-
A38 [Emission Point 128 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Wet dust collection system serving transfer lines	No parameters set	-	-	-	-
A39 [Emission Point 129 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Dry dust collector serving big bag area	No parameters set	-	-	-	-
A40 [Emission Point 130 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Dry dust collector serving flour transport	No parameters set	-	-	-	-
A41 [Emission Point 131 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Dry dust collector serving salt and flour receivers	No parameters set	-	-	-	-
A42 [Emission Point 132 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 3 – Cyclone serving toaster cooler	No parameters set	-	-	-	-

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A43 [Emission Point 133 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Syrup Centre No 1	No parameters set	-	-	-	-
A44 [Emission Point 134 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Syrup Centre No 2	No parameters set	-	-	-	-
A45 [Emission Point 135 as shown on drawing W-bl-303r20 submitted as part of application EPR/BV8016ID/V009]	Process 4 – Wet Dust collection system	No parameters set	-	-	-	-

Note 1: Emission limit value expressed as mass of emitted substances per volume of waste gas under the following conditions: dry gas at a temperature of 273.15 K and a pressure of 101.3 kPa without correction for oxygen content.

4.1.2 Point Source Emissions to Water

4.1.2.1 Process Effluent

Process effluent is discharged under consent to municipal sewer following treatment in the on-site WWTP. The effluent quality is monitored in accordance with the requirements of the Dŵr Cymru effluent discharge consent (consent reference E590: Direction No. 2).

Effluent from production will continue to be sent to the existing on-Site WWTP, before being discharged to sewer. The sewer discharge from the Site already exists for the existing operations at the facility. Emissions to sewer will be maintained within currently permitted and assessed limits.

Raw materials will be prevented from entering the wastewater system on Site as much as practically possible through implementation of techniques such as:

- Dry cleaning will be used where possible;
- Grease traps and oil traps will be fitted where appropriate; and
- Liquid wastes contained and disposed of via a separate route.

4.1.2.2 Surface water

Surface water runoff from impermeable surfaces (for example building roof, roads and car park areas) are discharged to the East and West Balance Ponds. No changes are proposed to the Site's surface water management arrangements.

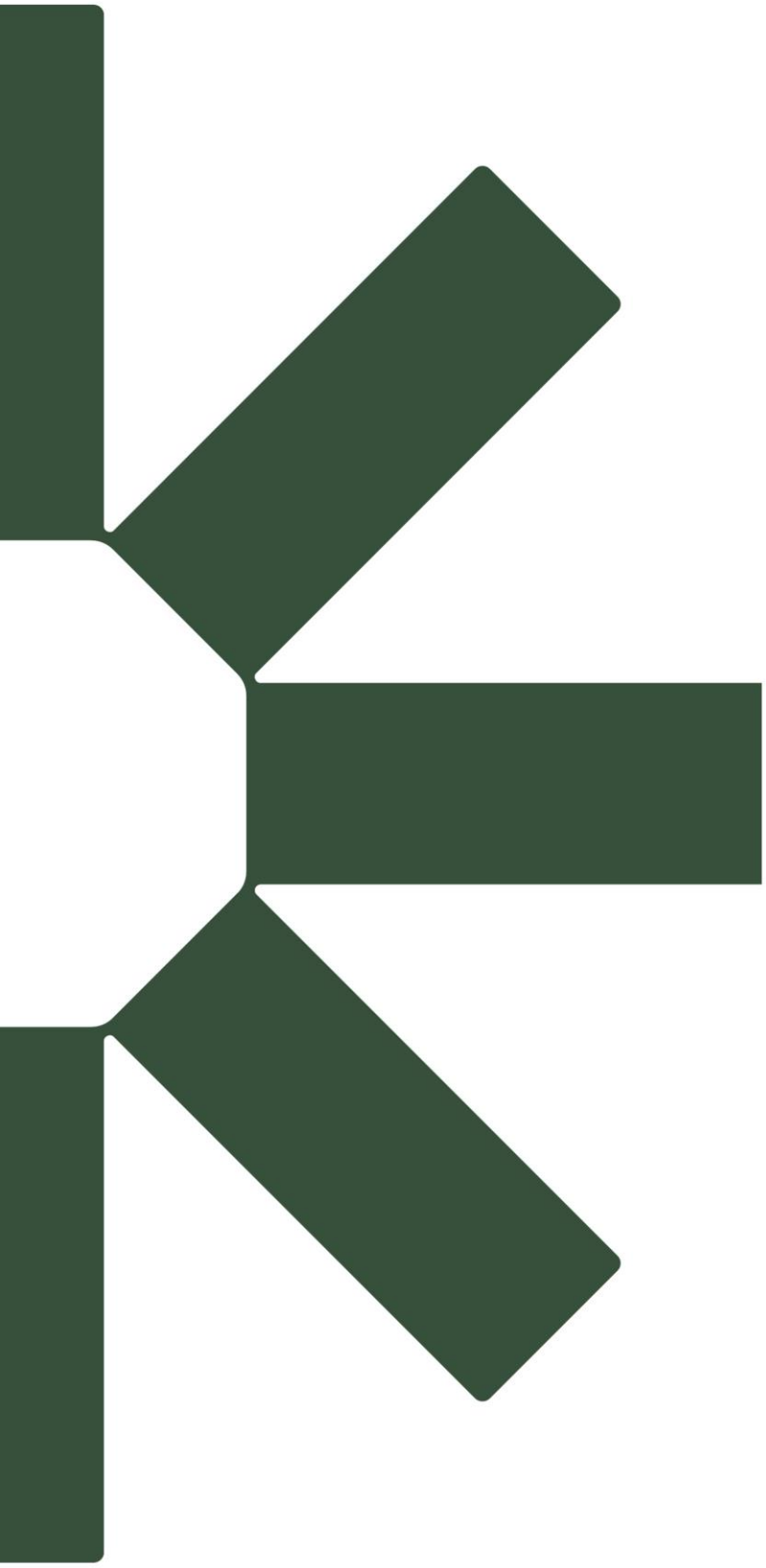
4.2 Fugitive Emissions

All refrigerant systems on site are maintained to the F-Gas Standards. Kellogg's maintenance records include:

- Quantity of refrigerant and oil added to or removed from the systems;
- Leakage testing results; and
- Location and details of specific leakage incidents.

4.3 Odour

The Site has no history of issues with offsite odour. Nonetheless, best practice is incorporated into the design of the improvements to minimise emissions of odour.



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