Odour Management Plan

Bakkavor Spalding

Spalding

July 2021

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Document History

No.	Date	Section	Amendments
1.0	19/07/2021	-	First issue

1 Introduction

1.1 Purpose

Bakkavor Spalding (BS) hereafter shall operate and maintain this Odour Management Plan in order to prevent, or where this is not possible, minimise the nuisance potential of odour emissions from the West Marsh Rd. Spalding site. The location of the site is such that potentially sensitive receptors lie within 1m of the site boundary.

1.2 Scope and Exclusions

This document is applicable to all site activities including those carried out by employees and sub-contractors working on-site.

The OMP is a working document with the specific aim of ensuring that:

- Odour impact is considered as part of routine inspections.
- Odour is primarily controlled at source by good operational practices, including management control measures; and
- All appropriate measures are taken to prevent or, where that is not reasonably practicable, to reduce odorous emissions to air from the factory at nearby receptors

It is not considered necessary to undertake a formal environmental impact assessment for odour as there have been no odour complaints received over the past 5 years; and those that have been received in the past are of a sporadic and temporary nature.

1.3 Definitions

Bakkavor Spalding shall be known as **BS** throughout the remainder of this document.

Competent person is someone who has received the necessary training or has a recognised qualification and/or skill to carry out the task correctly.

1.4 Responsibilities

BS Environmental Management Team

- Responsible for overall delivery of the environmental commitments of the factory whilst undertaking normal business operations and related activities
- Liaison with environmental regulators such as the EA and other regulatory bodies in the event of an emergency.
- Assess and plan measures to minimise potential odours escaping site.
- Monitors site activities and ensures control measures are in place, including odour control.

All Staff

- Responsible for ensuring that good housekeeping measures are implemented at all time.
- Report any unexpected odours on site.

1.5 Training

Relevant staff will be trained as part of the site's EMS in odour identification and sniff testing procedure.

All staff responsible for waste management, effluent and external activities will also be trained in odour management, how to complete sniff tests and reporting odour complaints.

2 Odour Assessment

2.1 Site Location

BS is located on an industrial estate at West Marsh Road, Spalding , PE11 2BB – National Grid Reference TF 2541 2393 , as illustrated on the site location - Figure 1.

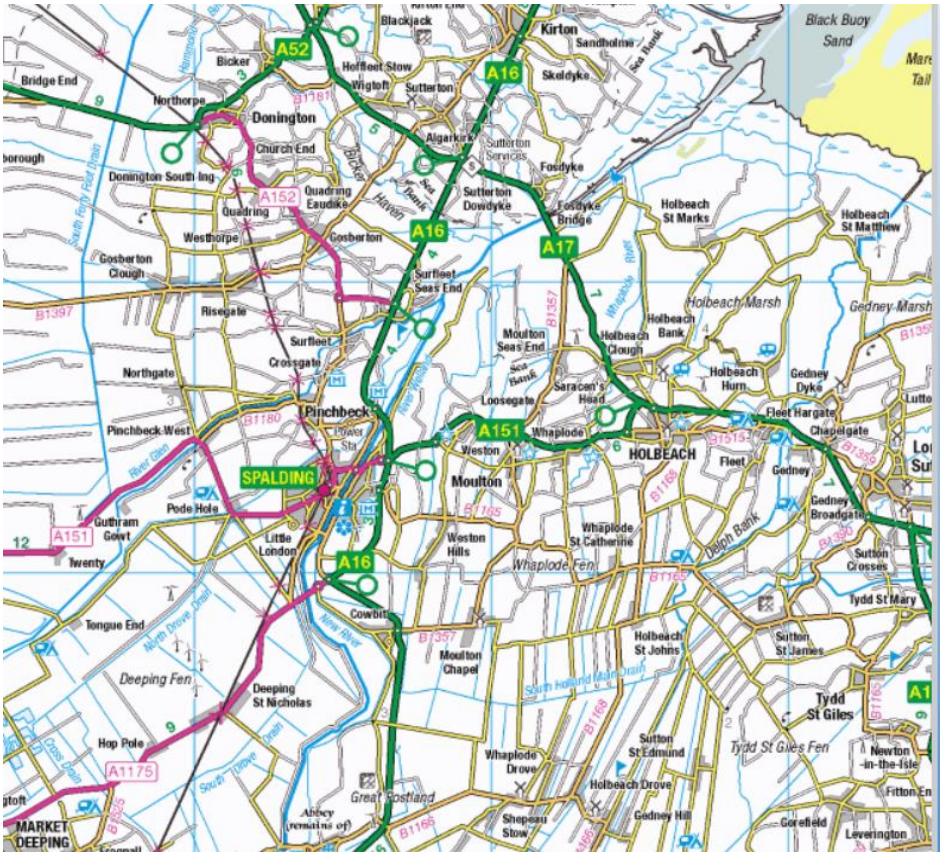


Figure 1 –Site location

The site covers 60 acres and consists of three distinct factories, located across three separate buildings:

- Delicatessen – this is situated in Building A and products include wraps and pasta salads;
- Soups and Sauces – Situated in Building B and products include soups, sauces and custard;
- Cerberus – this is situated in Building G and products include single and multi-pack dips.

Other activities include:

- Effluent Treatment Plant

- Waste Compound
- F-Gas Compound

Also refer to document BSPB205i Site Layout.

The site is surrounded by other industrial, commercials and residential properties. The closest residential property is located about 200m Southwest of the site.

The site is located with in the River Welland Catchment and The River Welland is 321m East of the site and Vernatt's Drain is less than 200m from the site boundary North of the site.

BS site is located in a nitrate vulnerable zone to the South and West of the site. There is also Vernatts Local Nature Reserve to the west of the site.

Sensitive receptors within approximately 2km radius of the site are listed in Table 1 below. The receptors are also marked on the receptor locations plan – Appendix 1.

2.2 Identification of Nearby Sensitive Receptors and Local Wind / Weather Conditions

Some receptors are generally more sensitive than others to odour. Domestic residences, leisure facilities, offices, schools or hospitals can be highly sensitive to odour potential and will generally be more sensitive than industrial or commercial operations. Additionally, some individuals will be less tolerant of odours than others due to heightened sensitivity, through for example, a medical condition, or exposure experience, e.g. recognising odours or experiencing regular exposure. To date the site has received no historic odour complaints.

Table 1 provides a list of potential sensitive receptors near to the BS site.

Table 1 - Sensitive Receptors

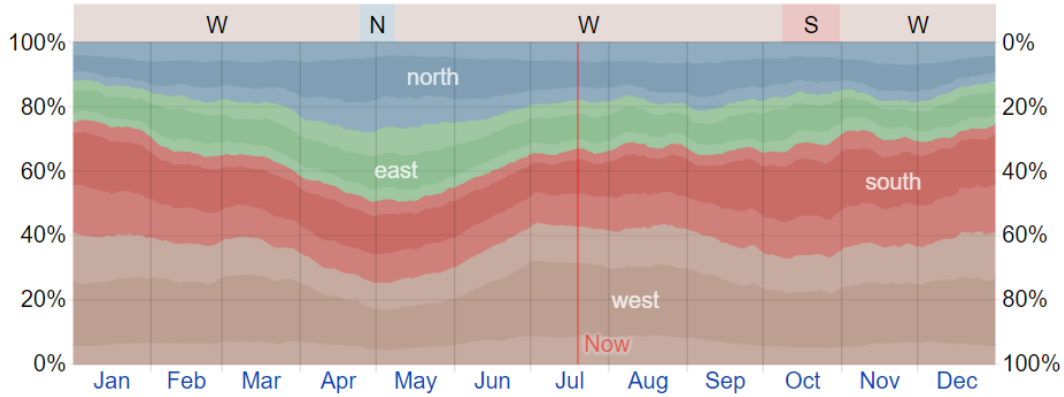
Receptor Reference (Appendix 1)	Receptor name	Potential Sensitivity	Grid Reference	Approximate Distance from Site (m)	General Direction from site
1	Elsoms	High	TF 24814 23839	370	West
2	Johnson Community Hospital	High	TF 24819 24309	415	North West
3	Stephenson Way Industrial Estate	Low	TF 25111 24307	300	North West
4	Vernatt's Drain	Low	TF 25208 24221	100	North
5	Fowler Welch	Medium	TF 25538 24175	32	North East
6	XPO Logistics	Medium	TF 25795 24137	160	North East
7	Welland Print	Medium	TF 25736 23997	160	East
8	River Welland	Low	TF 25717 23875	321	East
9	Residential	High	TF 25793 23916	804	East
10	Residential	High	TF 25867 23872	804	East
11	Residential	High	TF 25677 23631	804	South East
12	St Paul's Community Primary School	High	TF 25950 23454	1126	South East
13	Residential	High	TF 25331 23673	321	South West
14	Residential	High	TF 25103 23855	200	South West

Local topography can affect the pattern of wind flow and distribution, however the site is located on a largely flat area of land, evidenced by the presence of the River Welland to the East of the site.

Although the wind speed and direction are the most significant, climatic conditions likely to affect the dispersion of odours, the effects of temperature and precipitation should also be considered. Higher ambient temperatures may increase the odour potential during the processes which use temperature. Generally, the effect of rainfall on the potential for odour emissions from the site can be positive, with the effects of wet deposition helping to reduce the distance that solid or gaseous particles can travel in the air. Natural dispersion and therefore dilution of odour in the air, reduces the impact of any odour with distance from the source.

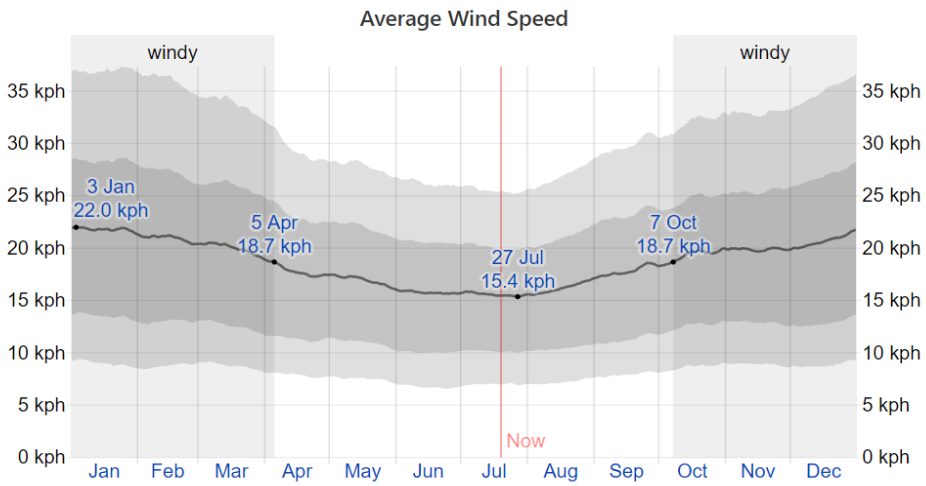
Taking both the prevailing wind direction (Figure 3) (West) and the generally localised nature of the odour into account, it is anticipated that, although any local receptor or individual could be affected by an odour release from the site operations the most likely impacted receptors would be 7, 9, 10 and 11 on 'Table 1' as they are either very close or in the prevailing winds path to the North, East and South East of the site. Although the majority of these locations are residential the likelihood of the odour causing a nuisance is low. The ETP and waste compound are the most likely sources of odours to be generated and are located to the West of the site. Any odours that are present are likely to have dispersed by the time they reach these receptors, due to the large footprint of the site (60 acres). This is backed up by the fact that there are no historic complaints to the site.

Figure 3 - Predominant average hourly wind direction - Spalding



Meteorological information in Figure 4 shows the windier part of the year lasts for 5.9 months, from 7 October to 5 April, with average wind speeds of more than 18.7 kilometres per hour. The calmer time of year lasts for 6.1 months, from 5 April to 7 October.

Figure 4 - Predominant average hourly wind speed - Spalding



This information also tells us that, more offensive odours, such as from the ETP will be less likely to escape from site as the windier parts of the year are also the cooler months. Due to the nature of the site's wastes and effluent, the cooler temperature will mean that the odour is less potent.

2.3 Odour Identification / Source

The potential for malodours are considered to be fairly low from BS. The processes are contained within existing buildings and there are very little or no areas where either the raw material or product is not under cover or in an enclosed space. An investigation into the sources of potential odours was carried out and outlined in Table 2.

Raw material being delivered to the site is a combination of wet and dry in nature (i.e. raw vegetables, fruit, rice, pasta, dairy, raw meat and fresh herbs), therefore odours generated from this are considered to be minimal. The key raw materials comprise of the following: meat, dairy (i.e. powdered and liquid milks, cream, yogurt, cheese (i.e. cheddar) vegetables and fruit. The majority of the production process is carried out with dry raw materials including chopping, peeling, cutting and mixing. The production process that potentially gives rise to odours is the cooking which is carried out in an industrial oven. Associated odours may arise from ancillary activities such as waste management and effluent treatment.

Table 2 below highlights the potential odour sources, odour likely to arise and it's nature.

Table 2 - Potential sources of odour

Source	Odour	Nature	Containment	Pattern of Release
Intake and handling of raw materials	No discernable odour	Less Offensive	The majority of raw materials delivered to site are dry and in bulk so as to never be out in the open.	Throughout the day and night but intermittent based on delivery vehicles.
Storage of raw materials	No discernable odour	Less Offensive	Inside process building	N/A
Raw Material Preparation (cutting peeling, chopping, mixing, blanching, pasteurization)	No discernable odour	Less Offensive	Inside process building	Expected throughout the day although not particularly odorous process
Operation of commercial oven	Cooking of vegetables	Less Offensive	Inside process building	Expected throughout the day although not particularly odorous process
Food waste (including CAT 3) storage	Rotting vegetables, cooked meats, dairy	Moderately Offensive	Food waste is stored in colour bins within the factory All food waste (including CAT 3) containers stored at the waste compound are kept in sealed skips and trailers	Expected to peak in hot weather. Food waste is generated daily and is transported to external skips and trailers Waste compound cleaned daily across all shifts Food waste (including CAT 3) collected from authorised waste contractor daily
Effluent treatment	Sludge and screenings	Most Offensive	6 x balance tanks and sludge tankering collection point are located outside the effluent building DAF plant is housed inside the effluent building	Expected to peak in hot weather. Constant process and waste sludge is collected 4-5 times per week and screenings daily
Transfer of finished products	No discernable odour	Less Offensive	Refrigeration	Throughout the day and night but intermittent based on collection vehicles.

Although the processes are limited to being contained within the building, there are several extraction points located around the building that could potentially contribute to odour (listed below).

- A1a Stack: Location: TF 25293 23770 Building A - Gas Fired Oven (Burner Flue)
- A1b Stack: Location: TF 25293 23770 Building A - Gas Fired Oven (Extraction Flue)
- MEP 1 Extraction: Location: TF 25370 24147 - Cerberus MEK Plant
- MEP 2 Extraction: Location: TF 25571 23834 - Soups MEK Plant
- MEP 3 Extraction: Location: TF 25372 23848 - Deli MEK Plant

Material tonnage has been assessed. The following is a breakdown of the potential maximum tonnage of materials in each process. It must be noted that the factories do not currently run on maximum capacity.

Intake for raw materials

- SDC Intake: Zero, distribution only.
- Cerberus Intake: One Lorry at a time (15 Tonne)
- Deli Intake: One Lorry at a time (15 Tonne)
- Soups & Sauces Intake: One Lorry at a time (15 Tonne),
- Support & Additives (CIP (Caustic, IBC's Items for example) : One Lorry at a time (15 Tonne)

Process lines for each factory - (I.e. weighing, mixing at any one time)

- Soups & Sauces : Tonnage In Operation: 74 Tonnes per Day.
- Deli : Tonnage In Operation: 35 Tonnes Per Day
- Cerberus Tonnage In Operation: 45 Tonnes Per Day

Factory combined **154** Tonnes Per Day.

Production Capacity

- Soups & Sauces : Production Capacity : 130 Tonnes per Day
- Deli : Production Capacity: 75 Tonnes per Day
- Cerberus : Production Capacity: 75 Tonnes per Day

Factory Combined can produce **280** Tonnes per day

Dispatch from SDC

- Bulking Out Loading (SDC) 2 Lorries at a time (30 Tonne)

2.4 Pathway

In the event of failures of odour mitigation measures on site, it is possible that odour could be transported from the source to target receptors via the atmosphere. The level of dispersion is dependent on:

- Atmospheric stability;
- Wind Speed; and
- Wind Direction.

The greatest frequency of events involving poor odour dispersal and odour impact thus tends to occur on cool calm days and nights, when the temperature inversions block vertical dispersion. This is not to say, however, that odour impacts may not occur in other weather conditions.

2.5 Receptor

Malodours can a have a number of effects on sensitive receptors, including:

- General annoyance
- Increased levels of stress
- Loss of amenity
- Loss of appetite and/or sleep
- Spoiling of social activities
- Increased awareness of perceived health effects; and
- Potential for loss of value to property and assets.

Receptors in the immediate vicinity of BS are a mixture of residential, commercial and industrial in nature as stated in section 2.2.

2.6 Impacts

Table 3 contains an assessment of the source, pathway, receptor potential of the site.

Table 3 - Source, pathway, receptor

Source	Pathway	Receptor	Probability of Exposure	Potential consequence of not managing odour	Overall risk
Intake and handling of raw materials	Air Transport then inhalation	Local Industry / commercial / residential	Negligible	Negative impact on business and residential activities, Spoiling of amenities	Low
Storage of raw materials	Air Transport then inhalation	Local Industry / commercial / residential	Low	Negative impact on business and residential activities, Spoiling of amenities	Low
Raw Material Preparation (cutting peeling, chopping, mixing, blanching, pasteurization)	Air Transport then inhalation	Local Industry / commercial / residential	Low	Negative impact on business and residential activities, Spoiling of amenities	Low

Source	Pathway	Receptor	Probability of Exposure	Potential consequence of not managing odour	Overall risk
Operation of commercial oven	Air Transport then inhalation	Local Industry / commercial / residential	Medium	Negative impact on business and residential activities, Spoiling of amenities	Low
Food waste storage (including CAT 3)	Air Transport then inhalation	Local Industry / commercial / residential	Medium	Cause annoyance, negative view of BS	Low
Effluent treatment	Air Transport then inhalation	Local Industry / commercial / residential	Medium	Cause annoyance, negative view of BS	Low
Transfer of finished products	Air Transport then inhalation	Local Industry / commercial / residential	Negligible	Negative impact on business and residential activities, Spoiling of amenities	Low

3 Complaints and Monitoring

The aim of the BS is to achieve no odorous emissions beyond the site boundary. Where this is not possible, this Odour Management Plan aims to ensure that odours escaping the site boundary are kept to a minimum and do not cause an unacceptable level of nuisance to nearby receptors.

3.1 Complaints

No historic complaints have been received in the past regarding odour. However, where this has been the case, complainants have reported directly to BS, generally via phone calls and emails. These calls as well as those received from the EA or local council will always be directed through the main security gate operational 24/7. This process is in line with BS procedure EN009 - Environmental communications Section 4.3 9refer to document: BSPB311b EN009 - Environmental communications.

The following process applies at all times for receiving and actioning complaints:

Any odour complaint, irrespective of source and any odour issue is fully investigated, using the Odour Complaints Report Form in Appendix 3.

The investigation would also include visiting the area from where the complaint came (if known) and a check on the weather conditions at the time of the complaint, generally by the use of local weather station reporting. The investigation would include checks on all process activities at the time including intake, cooking, waste management and effluent treatment. All factory activities are recorded both on manual records and by computerised records and traceability through the factory process control system.

Following odour complaints or issues the level of odour monitoring would be increased, particularly in the area where the complaint originated and recorded om the Sniff Test Record (refer to document reference; BSPB311a Example Sniff Test Record and Monitoring Locations). Investigation will be carried out and suitable response implemented in accordance with Procedure EN014 Corrective Actions.

3.2 Monitoring

Due to the lack of any historic complaints being received, odour assessment "sniff testing" is carried out on a monthly basis as part of the general site environmental inspection using the Odour Sniff Test Record and odour monitoring points at the site boundary (refer to document BSPB311a Example Sniff Test Record and Monitoring Locations). This would be increased after complaints have been received. The requirement to follow up complaints ensures compliance with future permit conditions.

The introduction of the EMS (Environmental Management System) has led to improved on site monitoring of emissions, including checks for visible signs of emissions from external emission points. The EMS is based on the principals of ISO 14001.

3.2.1 On site checks

Regular inspections are carried out across the site which include environmental factors including odour and litter picking. The ETP and waste compound are checked daily.

Any abnormal findings would be reported and immediately investigated.

3.2.2 Off site checks

Investigations would be based around any complaints received using the Odour Complaint Report Form in Appendix 3 and would also be reported using the Schedule 1 Form from the Permit. In the event of any abnormal finding, the level of odour checking would be increased using the Odour Sniff Test Record (refer to document BSPB311a Example Sniff Test Record and Monitoring Locations).

Odour assessments may also be carried out by the Environment Agency upon receipt of complaints to the local officer. CAR forms would then be received by BS and investigated thoroughly.

4 Odour Control Procedure

Odour emissions from the factory are categorised as "Less Offensive". This category has been determined from H4 Odour management EA guidelines.

The risk of odour issues can be vastly reduced or eliminated due to the following control measures being in place or are adhered to:

Table 4 – Odour Control Measures

Source	Control Measures
Intake and handling of raw materials	• The majority of raw materials delivered to site are dry and in bulk so as to never be out in the open. • All raw materials are stored within the confines of the Factory. • The lorries are all enclosed and ensure the whole rear of the lorry is situated within the intake booth. through the plastic curtains before unloading. • All deliveries are supervised by a competent member of BS staff.

Storage of raw materials	• Raw materials in batches are stored and moved inside the factories. • Pumping systems used to transfer raw materials to factories (i.e. oils, vinegar.
Raw Material Preparation (cutting peeling, chopping, mixing, blanching, pasteurization) **Operation of commercial oven**	• All production activities take place within the confines of the Factory. • Extraction equipment is an integrated part of the factory process control system and are subject to regular maintenance. • Automated level measurement to prevent overflow and wastage of raw materials. • Flow measurement to prevent excessive use of raw materials
Operation of commercial oven	• Extraction equipment is an integrated part of the factory process control system and are subject to regular maintenance.
Food waste storage (including CAT 3)	• Food waste products transported from the factory to the waste compound throughout the day and are stored within a sound container free from leaks and are processed and disposed of into food waste (CAT 3) trailers straight away. • Food waste is collected daily from site by an authorised waste contractor • Food waste is stored in covered trailers at the waste compound • Yard areas, waste compound, equipment, bins etc. are kept clean and tidy at all times. • Plant is maintained as per the maintenance schedule and fully operational at all working times. • Leaks and spills are dealt with according to Emergency Spillage procedure.
Effluent treatment	• The Effluent Treatment Plant undergoes regular maintenance • DAF plant is housed inside the effluent building • An on-site operative is permanently stationed at the ETP in order to monitor the process and deal with any issues before they become serious. • All waste effluent sludge is collected 4 -5 times per week during standard working hours (i.e. 9am-5pm) so as to minimise the potential impact of residential property enjoyment. • Leaks and spills are dealt with according to Emergency Spillage procedure. • There are emergency procedures in place should the plant fail. • Any odour issues that are present are localised to the ETP. The 6 x balance tanks are located in an open area to the west of the site, with shelter from the waste compound and effluent plant to the North and North East of the site and buildings B and C to the East of the site (refer to document BSPB205i Site Layout). • The prevailing wind path is to the North, East and South East of the site and any odour would be dispersed before it reaches a sensitive receptor due to the size of the site .
Transfer of finished products	• The lorries are all enclosed and ensure the whole rear of the lorry is situated within the intake booth. through the plastic curtains before loading.

- Doors to buildings will be kept shut during unloading and loading operations and at all other times that access isn't required.

In addition to these the following general control measures are in place on site:

- The ETP balance tanks are kept to below 25% of their capacity during normal operations and are emptied regularly to prevent sludge build up;
- The effluent drainage system is enclosed and manhole covers only lifted for inspection or maintenance; Regular visual checks are undertaken of the drainage channels and any blockages cleared as soon as is reasonably practicable;
- Routine odour monitoring carried out results recorded. This should be carried out by someone who does not have high exposure to the Factory processes, as they can become complacent to odours if exposed regularly.
- All complaints taken seriously and investigated to the best of BS ability and reported to the Environment Agency where applicable.
- A bespoke Environmental Management system is in place and is based on the principals of ISO14001. The SHE department will be responsible for ensuring that odour control measures outlined are adhered to.
- Investigations are based around checklists located in Appendix 3. On receipt of a complaint the residential area would be visited and assessed immediately or if this was not possible then on a day with the same weather conditions and approximately same time as far as reasonably practicable.

4.1 Abnormal Operations

Abnormal situations may arise at the site during a breakdown or period of unplanned maintenance. However, the factory has a planned maintenance regime within their Environmental Management System which covers the whole plant as well as using external specialists and an onsite maintenance team. This minimises the probability of a breakdown through good management practice. Abnormal or emergency situations to be considered include:

- Abnormal meteorological conditions.
- Breakdown of process equipment and plant;
- Staffing issues;
- Power failure; and
- Vandalism.

The odour control procedure outlined in Section 4 is to be adhered to if an odour is released from the Factory with potential to cause a nuisance to sensitive receptors, the Environment Agency should be contacted and informed.

Consideration of odour and the need to control emissions commences prior to raw materials being accepted onto site. Any new raw material is assessed, and a decision made if this will contribute or increase odour emissions.

5 Document Control and Review

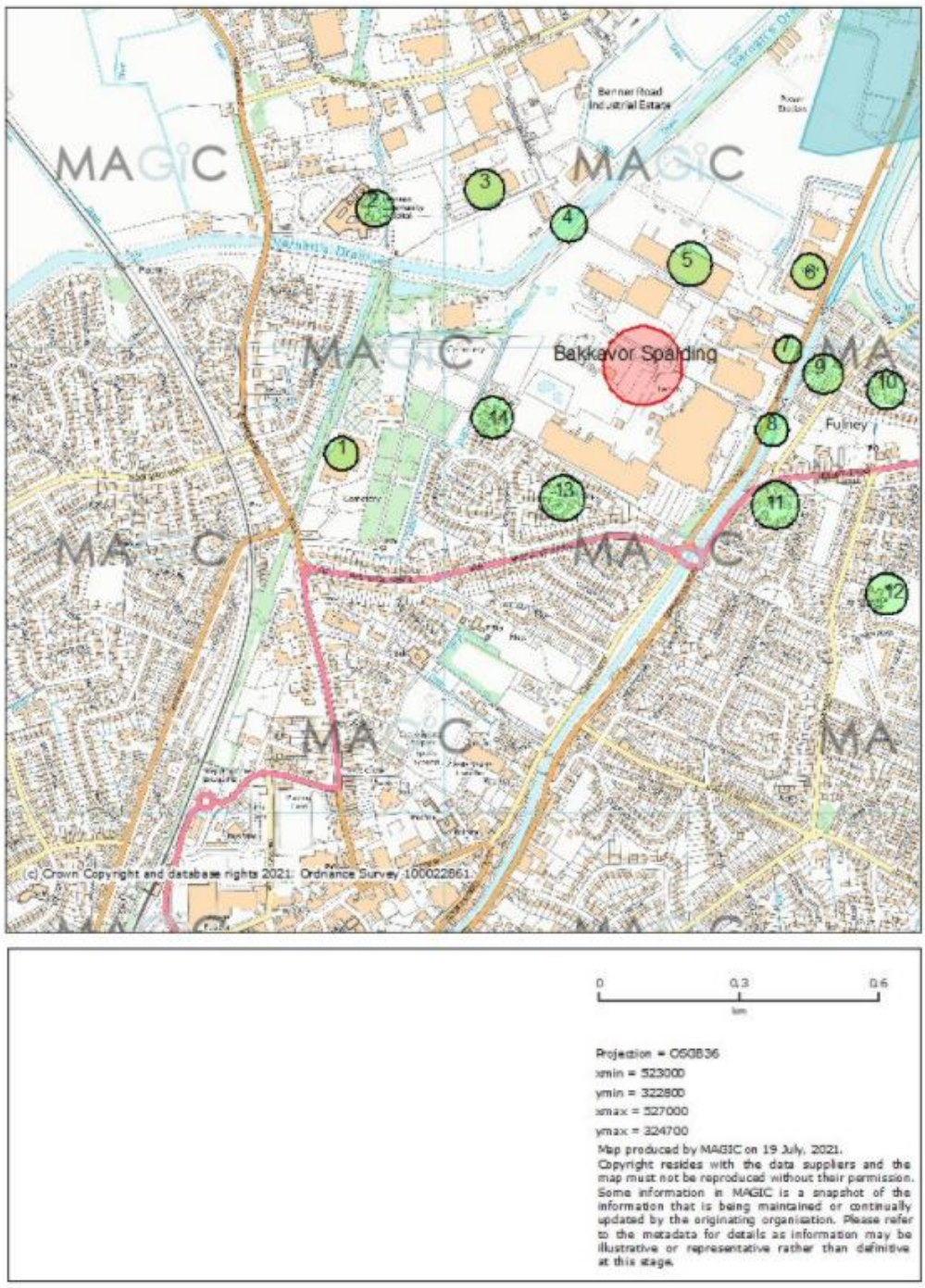
This document is a working document that will be reviewed at least every two years to ensure that it remains relevant to site operations and to determine whether further controls or improvements can be implemented.

The plan will be reviewed in the event of any substantiated odour complaints, or in the event that a significant emission is known to have occurred (identified by olfactory monitoring).

- Next review due by (24 months after the last review): July 2023

Appendix 1 Receptor Map

Figure 2 – Receptor Locations



Appendix 2 Complaints 2020/2021

The following table provides a summary of odour complaints received.

Date	Time	Location	Intensity	Notes	Wind Direction

Appendix 3 Odour Complaint Report Form

Odour Complaint Report Form

Time and date of complaint:	Name and address of complainant:
Telephone number of complainant:	

Date of odour:	
Time of odour:	
Location of odour, if not at above address:	
Weather conditions (i.e., dry, rain, fog, snow):	
Temperature (very warm, warm, mild, cold or degrees if known):	
Wind strength (none, light, steady, strong, gusting):	
Wind direction (eg from NE):	
Complainant's description of odour: ○ What does it smell like?	
○ Intensity (see below):	
○ Duration (time):	
○ Constant or intermittent in this period:	
○ Does the complainant have any other comments about the odour?	
Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure):	
Any other relevant information:	
Do you accept that odour likely to be from your activities?	
What was happening on site at the time the odour occurred?	
Operating conditions at time the odour occurred (eg flow rate, pressure at inlet and pressure at outlet):	
Actions taken:	

Form completed by:	Date	Signed

Intensity

0 No odour
1 Very faint odour
2 Faint odour
3 Distinct odour
4 Strong odour
5 Very strong odour
6 Extremely strong odour