



Finer By Nature Limited

TECHNICAL DOCUMENT TO SUPPORT THE PERMIT APPLICATION FOR FINER BY NATURE LIMITED,

Odour Assessment

Project No.: 444728-01 (00)

MARCH 2022





RSK GENERAL NOTES







Project No.: 444728-01 (00)

Title: TECHNICAL DOCUMENT TO SUPPORT THE PERMIT APPLICATION FOR FINER BY NATURE LIMITED

Client: Finer By Nature Limited

Date: 1st March 2022

Status: Final

Author	 	Technical reviewer	 
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Date:	<u>1st March 2022</u>	Date:	<u>1st March 2022</u>

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This work has been undertaken in accordance with the quality management system of RSK Group Limited.

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1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) was commissioned to prepare a Technical Submission including an air quality and odour assessment to support the application by Finer By Nature Limited for an Environmental Permit under Section 6 Part B of The Environmental Permitting (England and Wales) Regulations, 2016 (as amended).

Finer By Nature manufactures natural dog treats, chews and food at their premises at Unit 1, Whitestone Business Park, Whitestone near Hereford and following investigation of complaints about odours, the local authority, Herefordshire Council (HC), has advised that the process falls within the definition of an 'installation for the processing, storing or drying by the application of heat the whole or part of any dead animal or any vegetable matter' and therefore a permit is required under section 6 Part B of The Environmental Permitting (England and Wales) Regulations, 2016 (as amended).

Process Guidance Note 6/24(13) Statutory guidance for pet food manufacturing sets out expectations for measures likely to be considered appropriate to control emissions from such activities.

2 LEGISLATION & GUIDANCE

2.1.1 The Environmental Permitting Regulations, 2018

The Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2018 amend the Environmental Permitting (England and Wales) Regulations 2016 to ensure that, on the United Kingdom's ("UK") exit from the European Union ("EU"), they remain fully operable.

Specified activities listed in Schedule 1 are regulated by an Environmental Permit issued by the Environment Agency (EA) (for Part A1 activities) or the local authority (Part A2 or Part B activities), with conditions requiring the use of Best Available Techniques (BAT) to minimise emissions.

2.1.2 Process Guidance Note 6/24(13)

Process Guidance Note 6/24(13) Statutory guidance for pet food manufacturing sets out expectations for measures likely to be considered appropriate to control emissions from such activities.

2.1.3 The Environmental Protection Act 1990

The Environmental Protection Act 1990 is used to regulate 'statutory nuisance', including odour nuisance. Section 3 requires local authorities to issue abatement notices where a nuisance *"unreasonably and substantially interfere[s] with the use or enjoyment of a home or other premises"* or where it could *"injure health or be likely to injure health."*

2.1.4 Environment Agency Guidance Environmental permitting: H4 odour management

This guidance document is aimed at operators of installations regulated by the EA under the Environmental Permitting Regulations (EPR), which require the control of pollution including odour.

3 SITE, PROCESS AND EMISSIONS

3.1 Site Location and Layout

Finer By Nature manufactures natural dog treats, chews and food at their premises at Unit 1, Whitestone Business Park, Herefordshire, HR1 3SE. The location of the site is illustrated in Figure 1, below. The site boundary is shown as a red line.

The layout of the process area is shown at Figure 2, below. The freezer area and warehouse area are not shown but are located to either side of the process area.

The front of the premises is a retail store selling dog related items and accessories including products prepared on the premises, and raw material delivery receipt, processing, packing and storage are carried out in 'back of house' areas.

Figure 1: Location Plan Showing Boundary

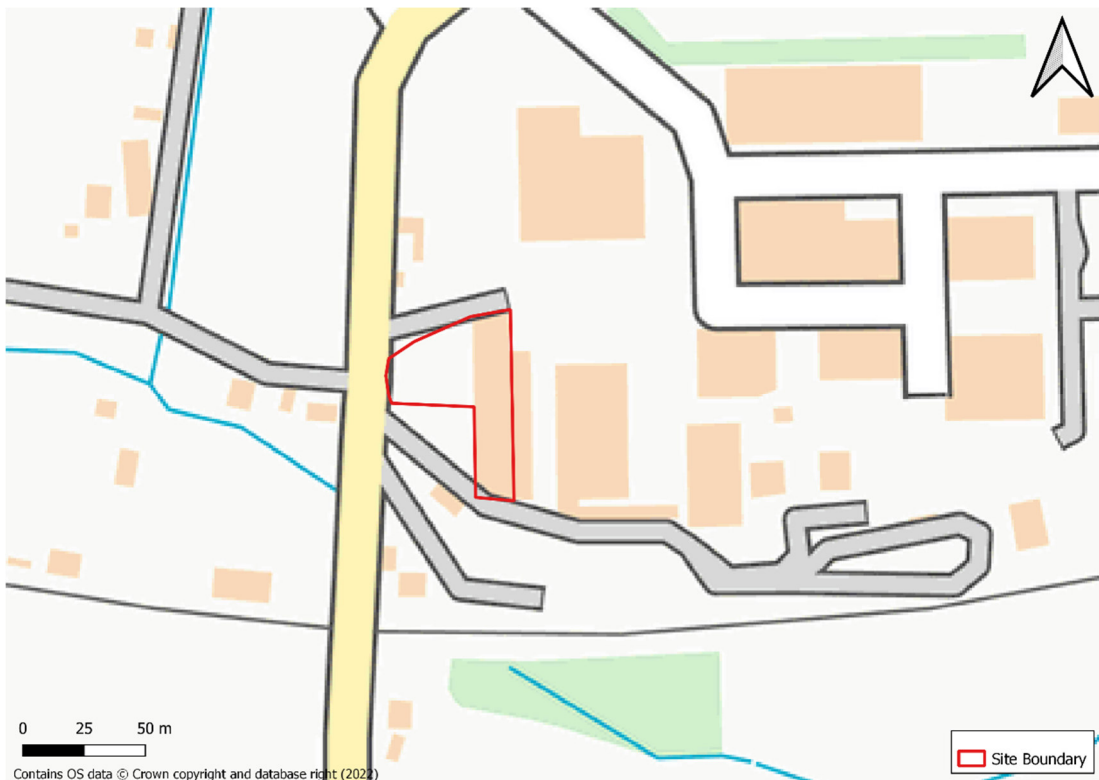
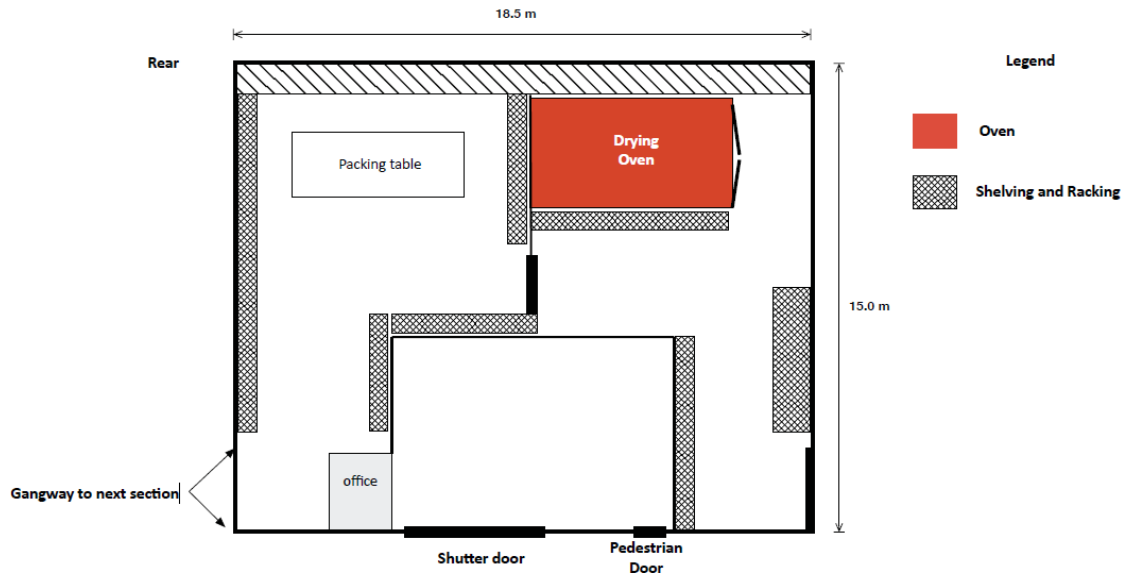


Figure 2: Process Unit Layout Plan (

HACCP Unit 1B Layout v 0.1

Unit 1B



3.2 Process Description

The production of dried dog treats involves the receipt from abattoirs of raw, packaged frozen animal parts such as chicken breasts, chicken hearts, lambs' ears or horses' hooves. These materials are delivered by temperature-controlled transport, packaged and frozen on pallets,

The quantities and frequencies of materials processed are approximately as follows:

- Chicken breasts, approximately 500kg, every 6 to 8 weeks and a total of around 36 hours drying;
- Chicken livers, approximately 500kg every 3 or 4 months, 36 hours to dry;
- Rabbit ears, around 1000kg every 6 months, drying time around 24 hours;
- Hooves, approximately 500kg weekly or every 2 weeks. Drying time 12 hours;
- Beef steak & kidney, approximately 300kg infrequently, drying time around 36 hours;
- Chicken hearts, approximately 500kg, monthly.

Overall, drying is typically carried out for two to three days per month, with a maximum of twice weekly.

Following receipt, the frozen materials are stored in a large 'walk-in' freezer until processing. The receipt and storage of frozen materials is not a significant source of odour.

The raw petfood process involves the mincing, apportioning, bagging and re-freezing of material which is then stored frozen prior to distribution.

The receipt of materials and processing takes place in an enclosed building, with concrete floors, which are cleaned at the end of every shift, the washings discharged to sewer. A high standard of house-keeping is maintained.

The production area has no air extraction system and is not maintained at 'negative pressure'. However it is enclosed and this is considered to proportionate to the risk and therefore to meet the BAT threshold.

The dog treat drying process involves the frozen animal parts being unpacked, manually separated and laid out on trays to defrost. The trays are then placed in a large oven where they are dried at around 30°C to 40 °C by a flow of heated air for two to three days, followed by a 'pathogen kill' treatment step where the temperature of the treats is increased to 90°C for around one hour at the end of the process.

The oven does not involve direct combustion of fuel, but air is heated electrically and the warm air blown through the oven and discharged through an unabated 'stack' approximately 9m tall. The stack is currently fitted with a cowl which is likely to restrict the upwards discharge from the stack and hence the dispersion.

Following drying, the material is packaged in sealed plastic bags and stored in the warehouse for dispatch.

The process does not generate significant quantities of waste, but small quantities are disposed of via a commercial waste service.

3.3 Potentially Significant Environmental Effects

The drying oven is heated electrically, and there is no significant combustion plant on site.

Materials are received and processed frozen or wet and no potentially dusty materials are used or stored on site.

The dog treat oven drying process has the potential to generate odours which could affect amenity at nearby receptors.

3.4 Identification Of Receptors

A review of DEFRA's Magic Map website indicates that there are no sites of special scientific interest (SSSI) within 0.5km of the site.



The site is located in a commercial setting on the Whitestone Business Park. A number of commercial premises are present nearby to the east. A small number of residential properties are located approximately 50m to the northwest, west and southwest.

4 ODOUR IMPACT ASSESSMENT

4.1 Overall Approach

The assessment comprised a review of the Finer By Nature premises and surroundings and odour dispersion modelling based on measured odour emissions rates and an assessment of the potential impact on surrounding receptors.

An assessment of possible mitigation options using dispersion modelling has also been carried out.

Field olfactometric assessments or 'sniff-tests' were carried out to attempt to corroborate the modelling.

4.2 Odour Dispersion Modelling

4.2.1 *In Situ* Emission Rates Sampling

The Finer By Nature facility is fitted with one emission stack. Odour sampling was undertaken by RSK at the Finer By Nature site on 8th February 2022.

As described in Section 3.2, the drying process is split into two periods, where the first, longer drying process is drying at 30°C, followed by a shorter period of drying at 90°C. Therefore, the following two periods were sampled:

- Inside the oven stack during drying at 30°C; and
- Inside the oven stack during drying at 90°C.

Sampling was carried out during drying of chicken hearts, because these are considered both one of the most odorous materials handled, and are also processed in the greatest quantity.

Samples of air inside the stack were collected in nalophan bags in triplicate and transported to a United Kingdom Accreditation Service (UKAS) accredited specialist odour laboratory for the determination of odour concentration in accordance with the British Standard for Olfactometry BSEN13725: 2003. Odour concentration results were expressed in European odour units per cubic metre (ou_E/m^3), which equates to the number of dilutions to the detection threshold.

The laboratory report on the odour sampling and analysis is presented in Appendix D. The results are summarised in Table 1, below.

4.2.2 Model Inputs Used in Dispersion Modelling

The details of the odour source and emission rates used in the dispersion model are summarised in Table 1, below.

Table 1: 'Stack' Dispersion Modelling Input Parameters

Process	Stack Height	Diameter (m)	Temp	Velocity (m/s)	Flow rate (m ³ /s)	Geometric mean of sampled Odour Concentration (ouE/m ³)	Odour Emission rate (ouE/s)
Drying, 30°C	9.5	0.20	32.8	8	0.26	10,520	2,743
Drying, 90°C	9.5	0.20	83.5	8	0.26	29,613	7,722

In the dispersion modelling, it was assumed that both the 30°C and 90°C processes operate continuously. It is acknowledged that this is a conservative assumption, however it is considered the most appropriate approach to capture the 'worst case' meteorological conditions.

4.2.3 Modelling Software

The assessment was undertaken using BREEZE AERMOD with a Geographical Information System (GIS) capability (Version 10.0.0.15).

The American Meteorological Society/United States Environmental Protection Agency (US EPA) Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of-the-art modelling concepts into the EPA's air quality models. Through AERMIC, a modelling system, AERMOD (American Meteorological Society (AMS)/United States Environmental Protection Agency (EPA) Regulatory Model), was introduced incorporating air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD is widely used for regulatory purposes.

4.2.4 Meteorological data

Five years (2017 to 2021) of hourly sequential meteorological data for the Hereford weather station was used in the modelling. This meteorological station is located approximately 11k west of the dispersion site and is considered to be representative of conditions at the modelling site. Annual wind roses are presented in Appendix A.

4.2.5 Model Output Grid and Receptors

The 98th percentile of hourly odour concentrations were predicted on a 500mx500m cartesian grid with 10m spacing centred over the site.

4.2.6 Assessment Criteria

The technique of odour dispersion modelling has become well established as a means of assessing the off-site odour impact of a very wide range of odorous activities. Odour

impact benchmark levels have been developed as a matter of “custom and practice” and have been used in numerous planning applications and appeals.

The widely accepted convention in the UK is that odour impacts are expressed as the 98th percentile (%-ile) of hourly means, and these standards have been based on “dose-response” relationships which take account of normal temporal and metrological variations in downwind/off-site odour impacts.

The Chartered Institution of Water and Environmental Management (CIWEM) prepared a position statement on odour impact assessments, which was finalised in February 2011. The CIWEM document concludes:

‘Given the differing odour impact criteria available, the selection of the most appropriate criterion should be determined by the objective of the assessment (whether this be against a standard of avoidance of nuisance or ‘significant pollution’) and the nature of the odour under assessment.

It is, therefore, the view of CIWEM that these and other odour impact criteria should be regarded as indicative guidelines and cannot be applied as over-arching statutory numerical standards. CIWEM considers that the following framework is the most reliable that can be defined on the basis of the limited research undertaken in the UK at the time of writing:

- *$C_{98, 1-hour} > 10 \text{ou}_E/\text{m}^3$ - complaints are highly likely and odour exposure at these levels represents an actionable nuisance;*
- *$C_{98, 1-hour} > 5 \text{ou}_E/\text{m}^3$ - complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance;*
- *$C_{98, 1-hour} < 3 \text{ou}_E/\text{m}^3$ - complaints are unlikely to occur and exposures below this level are unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature.’*

The CIWEM guidance suggests that odour exposures of $C_{98, 1-hour} 3 \text{ou}_E/\text{m}^3$ or less are appropriate where the objective is the protection of amenity, unless the area is particularly sensitive, or the odour is highly unpleasant in nature.

Environment Agency H4 guidance suggests indicative benchmark criteria based on the modelled 98th percentile of hourly average concentrations of odour over a year, as follows:

- 1.5 odour units/ m^3 for most offensive odours, e.g. processes involving decaying animal or fish remains, septic effluent or sludge;
- 3 odour units/ m^3 for moderately offensive odours e.g. intensive livestock rearing, composting, fat frying, food processing;
- 6 odour units/ m^3 for less offensive odours e.g. baking, coffee roasting.

The activities carried out at Finer By Nature do not involve decaying animal remains or septic sludges, and could be characterised as ‘food processing’ (although the materials are not for human consumption) for which the $3 \text{ou}_E/\text{m}^3$ criterion would ordinarily be

appropriate. There is some history of complaints relating to odour attributed to Finer By Nature, and some complainants have described the odour as highly offensive, therefore it could be argued it may be prudent to apply the 1.5 ou_E/m³ criterion.

However the surrounding land uses are other commercial buildings, yard areas and roads and would be likely to be considered 'medium' sensitivity, therefore an odour exposure (98th percentile) of up to 3.0 ou_E/m³ would not be likely to result in a significant effect in areas where a lower level of amenity may be expected, such as commercial buildings and yard areas.

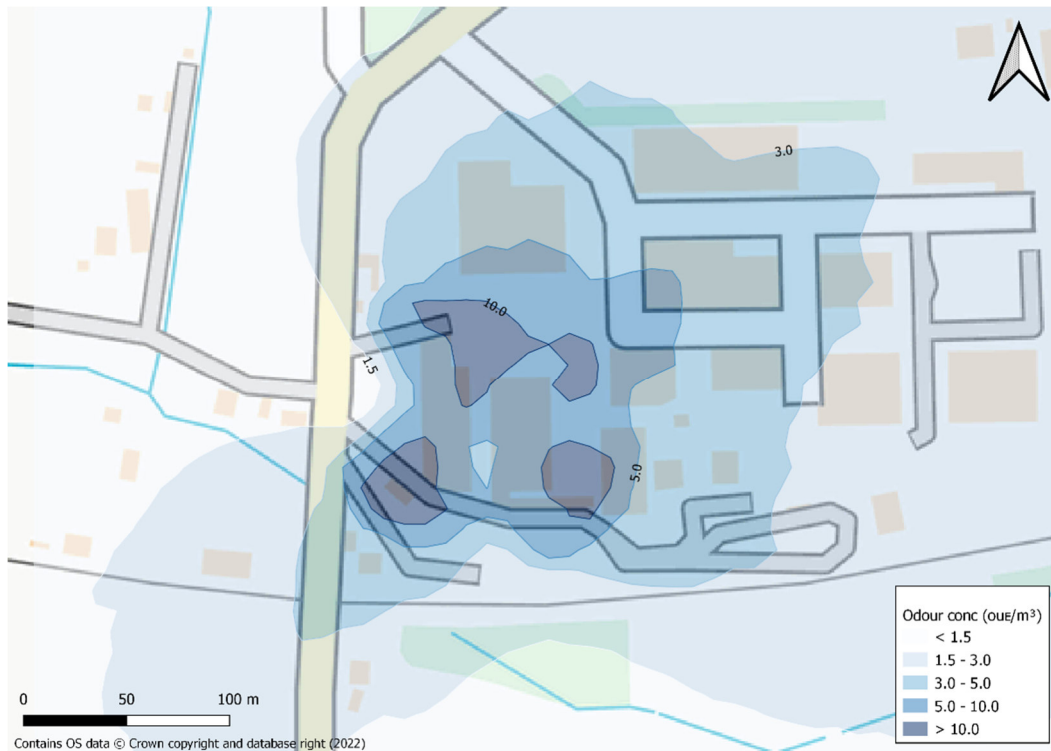
4.2.7 Results: Current Scenario

The results, expressed as isopleth plots of 98th percentile hourly odours are summarised in Figures 3 and 4 below. The results suggest 98th percentile concentrations greater than the 1.5 odour units/m³ benchmark criterion, therefore mitigation is likely to be required.

Figure 3: 98th Percentile Hourly Odour, 30°C Drying, Chicken Hearts



Figure 4: 98th Percentile Hourly Odour, 90°C Drying, Chicken Hearts



4.3 ‘Sniff Test’ Odour Assessment

4.3.1 Methods

Subjective odour assessment or ‘sniff testing’ was carried out on 8th February 2022, during the drying of chicken hearts first at 30°C and later at 90°C by an experienced assessor of known (tested) acuity to odour, in accordance with the protocol suggested in Environment Agency Guidance How To Comply With Your Permit - H4 Odour Management. The H4 assessment protocol was used as this was considered to be the most relevant guidance for a permitted installation.

Odour intensity was assessed by reference to a scale reproduced in Table 1, below. Wind measurements were made using an anemometer.

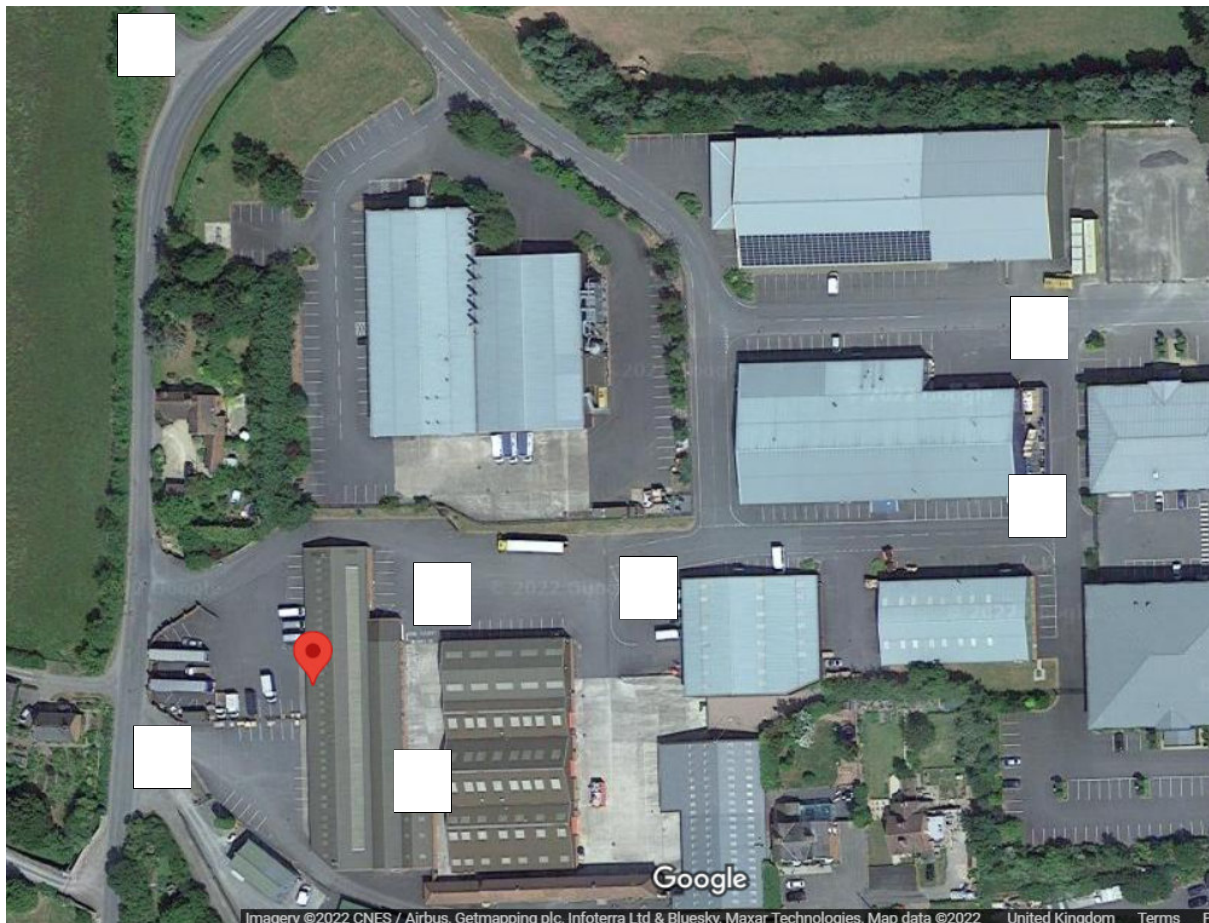
Table 2: Odour Intensity Scale Reproduced from Environment Agency How To Comply With Your Permit -H4 Odour Management

Odour Strength	Intensity level	Comments
No odour/not perceptible	0	No odour.
Very faint odour	1	There is probably some doubt as to whether the odour is present.

Faint odour	2	The odour is present but cannot be described using precise words or terms.
Distinct	3	The odour character is barely recognisable.
Strong	4	The odour character is easily recognisable.
Very strong	5	The odour is offensive. Exposure to this level would be considered undesirable.
Extremely strong	6	The odour is offensive. An instinctive reaction would be to mitigate against further exposure.

The assessment locations are illustrated in Figure 5, below.

Figure 5: Sniff Test Locations, 8th February 2022



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4.3.2 'Sniff' Survey Results

The results are tabulated at Appendix B.

A number of different odours described as reminiscent of 'sawdust/wood', 'solvent/glue' and 'straw' were experienced at the different locations.

Odour described as reminiscent of 'food or cooking' and attributed to the Finer By Nature drying process were experienced **intermittently** at **very faint** or **faint** intensities at locations at locations 6 and 7 only during the 30°C drying stage. Intermittent odours at these intensities may not be likely to lead to a significant impact on medium sensitivity receptors.

Similar odours were experienced but at intensities ranging from 'very faint' to 'very strong' at locations 5 and 6 during the 90°C drying stage. Odours at these intensities are likely to result in a significant impact.

4.4 Overall Odour Impacts

During the 30°C drying, the dispersion modelling predicts maximum off-site odours in the range 5 to 10 ou_E/m^3 . Though these are limited in extent, they exceed the EA H4 benchmark criterion of 3 ou_E/m^3 and the CIWEM guidance suggests '*complaints may occur*'. The sniff survey detected odour in approximately the areas predicted by the model, but only intermittent and at very faint or faint intensities. The area is commercial in nature and other odours were experienced at greater intensities in the survey, suggesting a significant impact is unlikely.

During the 90°C stage, the modelling predicts maximum off-site odours in excess of 10 ou_E/m^3 , substantially exceeding the EA H4 benchmark criterion of 3 ou_E/m^3 and according to the CIWEM guidance, suggesting '*complaints are highly likely*'. The sniff survey detected odour in approximately the areas predicted by the model, at intensities ranging from 'very faint' to 'very strong'.

There is some history of complaints regarding odour from the activities, and it is thought that these are overwhelmingly due to the 90°C stage, and the modelling and sniff test results would be consistent with this.

5 MITIGATION MEASURES & RESIDUAL IMPACTS

5.1 Mitigation Measures

5.1.1 Remove stack cap

The existing oven 'stack' is fitted with a weather cowl/cap. Process Guidance Note PG6/24(13) advises that these can impair dispersion and should not be used. The modelling suggested that removal of the cap would have a minor beneficial impact on predicted ground level odour concentrations, as shown in the isopleth plots in Figures 6 and 7 below.

Figure 6 : 98th Percentile Hourly Odour, 30°C Drying, Chicken Hearts (No cap)



Figure 7 :98th Percentile Hourly Odour, 90°C Drying, Chicken Hearts (No cap)



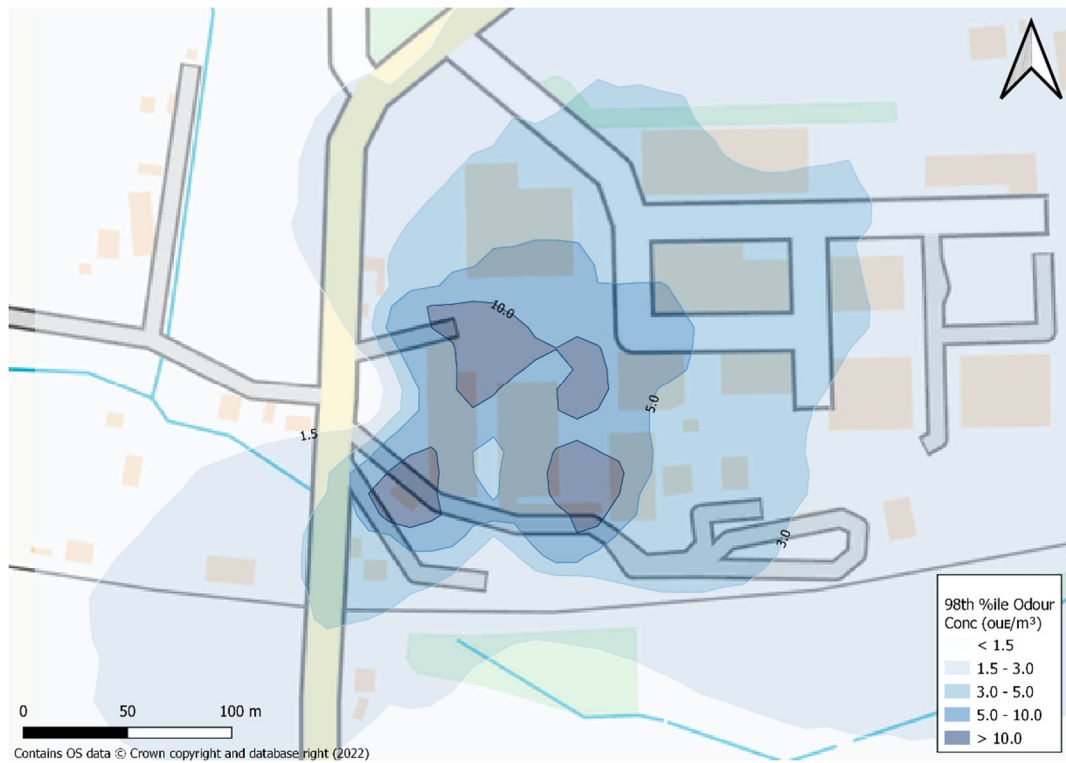
5.1.2 Cone to increase Discharge Velocity to 15m/s

The discharge velocity was measured at approximately 8m/s. Process Guidance Note PG6/24(13) advises that the target velocity should be 15m/s under normal operating conditions. The modelling suggested that increasing the discharge velocity to 15m/s using a cone would have a minor beneficial impact on predicted ground level odour concentrations, as shown in the isopleth plots in Figures 8 and 9 below.

Figure 8: 98th Percentile Hourly Odour, 30°C Drying, Chicken Hearts (Increased velocity)



Figure 9: 98th Percentile Hourly Odour, 90°C Drying, Chicken Hearts (Increased velocity)



5.1.3 Stack Height Assessment

The model was used to carry out an assessment of optimum stack height to control ground level odours to the required standard. All current model inputs except stack height were kept the same, to assess the impact of increased stack height on maximum predicted odour concentration. The results are summarised in Figure 10 and Figure 11 below.

The results suggest an incremental reduction in ground level maximum odour concentrations with increasing discharge height, and at stack heights over:

- 17m from ground level during 30°C drying, and 19m during the 90°C stage, the maximum predicted odour concentration is below 3ou_E/m³;and
- 19m from ground level during 30°C drying, and 20m during the 90°C stage, the maximum predicted odour concentration is below 1.5ou_E/m³.

Figure 10: Stack Height Assessment, 30°C Drying, Chicken Hearts

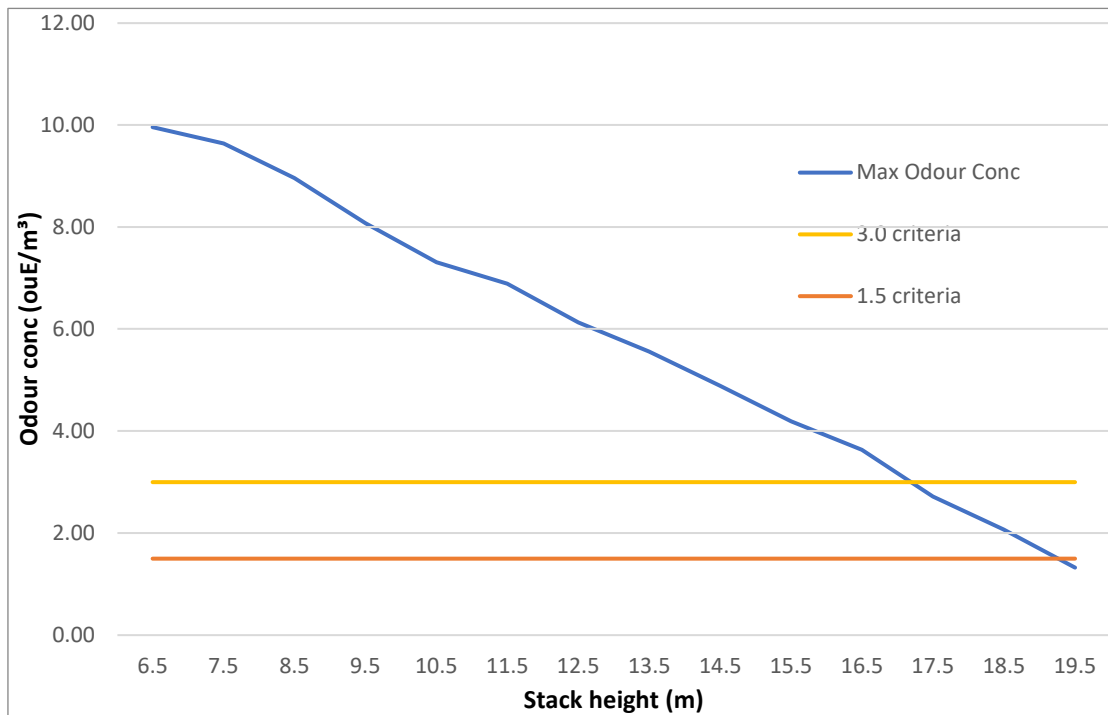
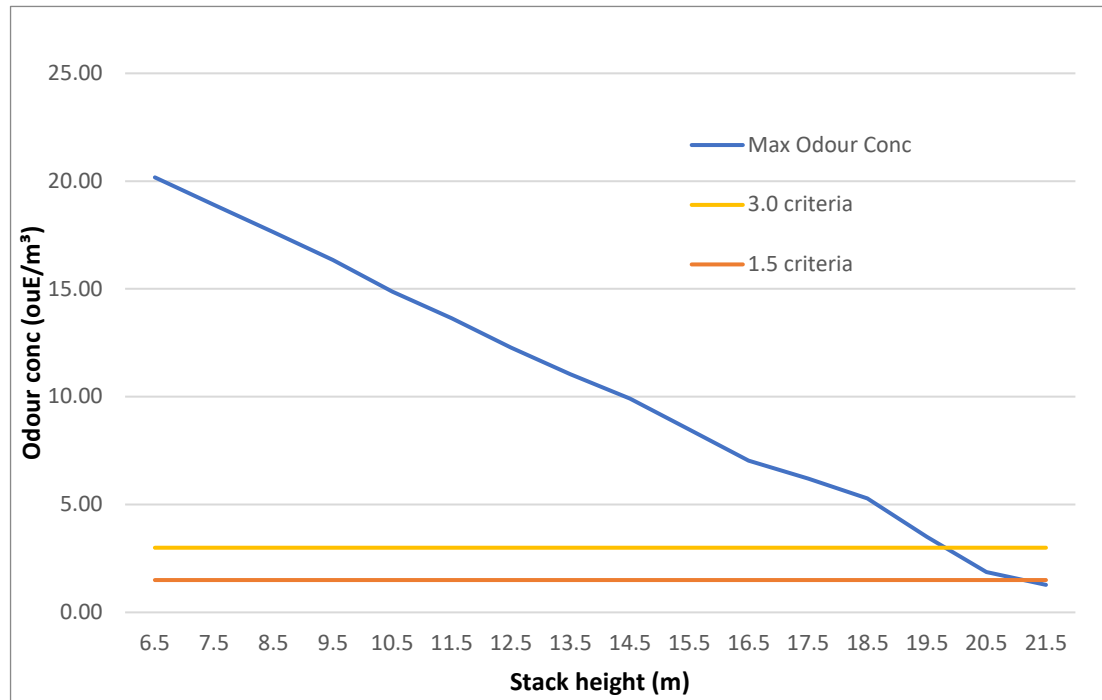


Figure 11: Stack Height Assessment, 90°C Drying, Chicken Hearts



5.1.4 Odour Management Plan

The receptors predicted to impacts greater than 1.5 ouE/m³ at the 98th percentile during the 90°C drying stage are the commercial properties to the east of the site, on the Whitestone Industrial Estate. These premises are likely to be occupied in the main during conventional trading hours therefore it may be possible to control these impacts effectively by carrying out the process when these units are unoccupied, during the night-time, and/or when meteorological conditions favourable to dispersion are likely.

This could be controlled by an Odour Management Plan, secured by a condition attached to the permit.

The Odour Management Plan should also cover any activities with the potential to result in fugitive off-site odours, such as raw materials management, waste management, housekeeping and arrangements for maintenance.

5.1.5 Odour Abatement

Odour impacts could be controlled by fitting abatement plant to the drying oven discharge stack. A detailed specification of abatement plant is beyond the scope of this assessment, but for example an activated carbon based treatment system may be appropriate. Activated carbon however decreases in effectiveness at temperatures greater than 40°C, so dilution air may be required to reduce the temperature of the airstream during the 90°C

stage in order to protect the activated carbon. Other abatement options can also be considered.

Table 4.1 of Process Guidance Note PG6/24(13) suggests that '*where installed, any odour arrestment plant installed on high intensity emissions.....should have an odour removal efficiency of not less than 95%*'. This should be considered if mitigation is subsequently deemed to be required.

5.2 Odour Response Plan

A draft, outline Odour Response Plan is presented at Appendix C. The plan does not include matters relating to any abatement plant as this has yet to be specified.

The plan should be reviewed regularly and following any change to the process, such as the fitting of abatement plant.

6 CONCLUSIONS & RECOMMENDATIONS

Field odour assessment dispersion modelling and the history of complaints suggest that off-site odour impacts have occurred and are likely under current operating conditions.

Although the modelling suggests odours impacts may be experienced during the 30°C drying stage, by far the greatest impacts are predicted during the 90°C drying stage, and this is consistent with the sniff test survey and complaints history. The area is commercial in nature and other odours were experienced at greater intensities in the sniff survey, than odours attributed to the 30°C process.

The model was used to carry out a 'stack height assessment' suggesting an incremental reduction in ground level maximum odour concentrations with increasing discharge height, and at stack heights over:

- 17m from ground level during 30°C drying, and 19m during the 90°C stage, the maximum predicted odour concentration is below 3ou_E/m³; and
- 19m from ground level during 30°C drying, and 20m during the 90°C stage, the maximum predicted odour concentration is below 1.5ou_E/m³.

The odours are similar to those of human food cooking and it could be argued they should be considered 'moderately offensive', in which case a stack height of over 17m would be required to reduce the maximum predicted odour concentration to below the EA's benchmark criterion for 'moderately offensive odours' of 3 ou_E/m³ during the 30°C drying stage, and over 19m during the 90 °C drying stage.

The modelling was also used to explore other mitigation options including increasing velocity and removal of the cowl/ cap from the stack, resulting in predicted minor beneficial impacts.

The 90°C drying stage which is thought to be the main driver of complaints is relatively short and therefore it may be possible to control these impacts effectively by carrying out the process when these units are unoccupied, during the night-time, which could be controlled by an Odour Management Plan, secured by a condition attached to the permit.

It is therefore recommended that:

- The cowl/cap on the stack is likely to impair dispersion and is advised against in PG6/24(13). This should be removed.
- The discharge velocity should be increased to 15m/s, as recommended in PG6/24(13). This could be achieved by increasing the fan speed or by fitting a cone to the top of the stack and would increase dispersion and reduce ground level impacts;
- Consideration should be given to the feasibility of increasing the stack height;
- An odour management plan should be prepared limiting the times/conditions when the 90°C drying stage takes place to minimise impacts.

The draft Odour Response Plan and the Odour Management Plan could usefully be combined and would include a requirement to record and investigate any odour complaint, but also to pro-actively assess odours during drying processes and this would provide a means to monitor the effectiveness of these measures.

If above measures do not sufficiently reduce impacts, consideration should be given to abatement of the stack discharge. The detailed specification of abatement plant is beyond the scope of this assessment, but an activated carbon based treatment system may be appropriate. Dilution air could be used during the 90°C drying stage only to reduce the temperature of the airstream to within the effective range of activated carbon. Further evaluation of this potential option would be required.

Appendix A Windroses

Figure A-1: Hereford Windrose 2017

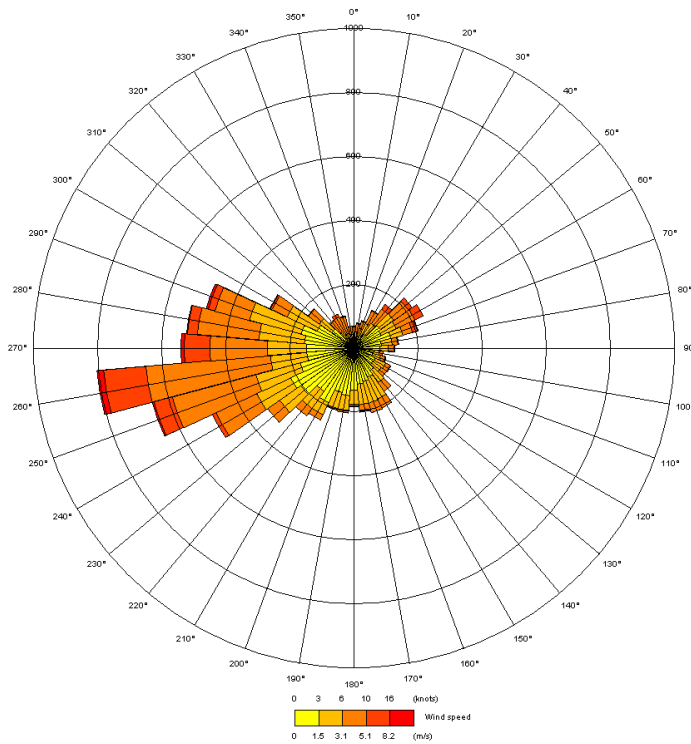


Figure A-2: Hereford Windrose 2018

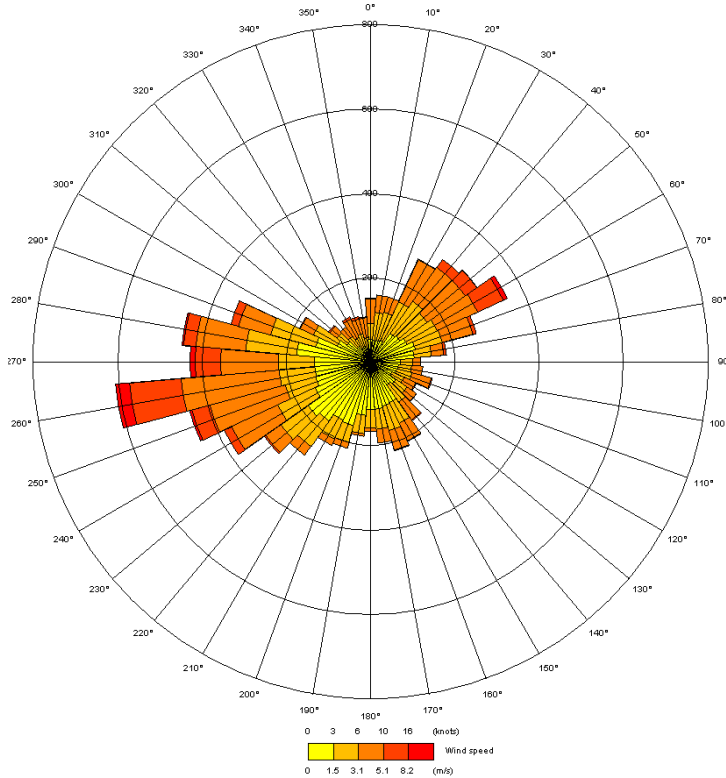


Figure A-3: Hereford Windrose 2019

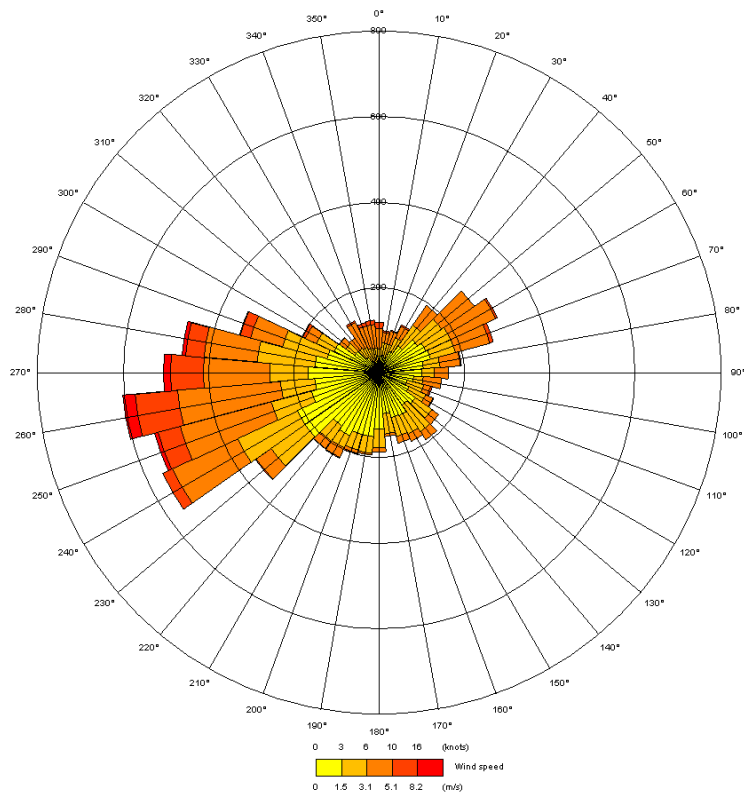


Figure A-4: Hereford Windrose 2020

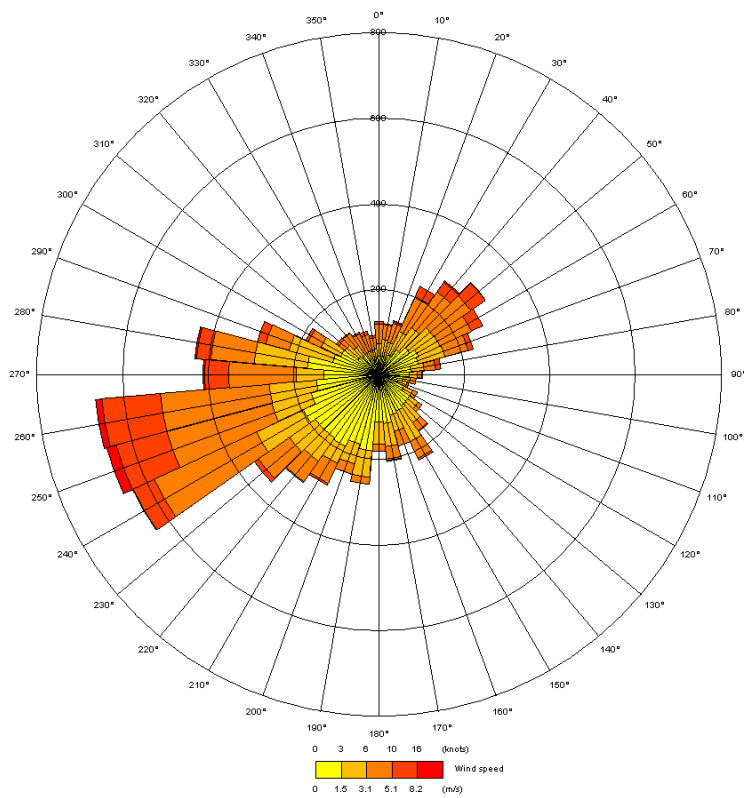
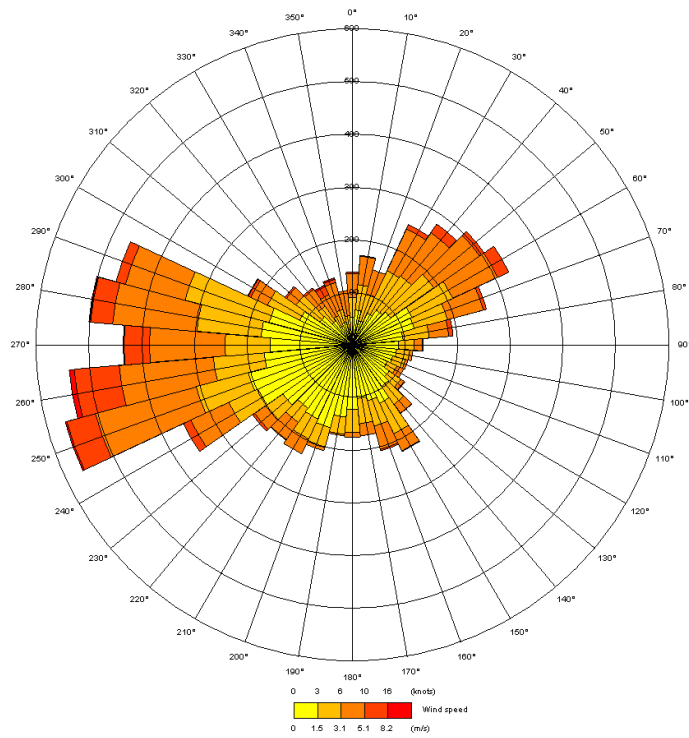


Figure A-5: Hereford Windrose 2021



Appendix B: Sniff Test Results



Table B1: Olfactometric 'sniff survey' Results, 8th February 2021, 'Baseline'

Location (see plan)	1	2	3	4	5	6	7
Time	10:00	10:08	10:17	10:24	10:32	10:40	10:46
Weather	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Temperature	10°C	10°C	10°C	10°C	10°C	10°C	10°C
Wind speed, m/s	2	2	5	5	7	7	5
Wind direction	west	South-west	South-west	southwest	West southwest	West southwest	West southwest
Odour intensity	0	2	2-4	1-2	0-4	0-2	0-3
Duration of Test	5 minutes	5 minutes	5 minutes	5 minutes	5 minutes	5 minutes	5 minutes
Constant or Intermittent?	-	Int.	Int	Int	Int	Int	Int
Description	-	Creosote?	Wood/glue/solve nt	Straw, perfume, soap	Straw, bonfire	Wood, straw	Straw, bonfire
Receptor Sensitivity	-	medium	medium	medium	medium	medium	medium
Source evident?	-	No	No	No	No	No	No
Other Comments	-	-	-	-	-	-	-



Table B2: Olfactometric 'sniff survey' Results, 8th February 2021, During 30°C Drying

Location (see plan)	1	2	3	4	5	6	7
Time	11:55	12:06	12:15	12:21	12:27	12:33	12:39
Weather	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Temperature	10°C	10°C	10°C	10°C	10°C	10°C	10°C
Wind speed, m/s	4	8	7	9	5	5	5
Wind direction	Southwest	Southwest	West-southwest	West-southwest	West-southwest	West-southwest	West-southwest
Odour intensity	-	0-3	3-4	0-4	0-1	0-3	0-3
Duration of Test	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes
Constant or Intermittent?		Int	Con	Int	Int	Int	Int
Description		Lorry exhaust	Wood/timber	Perfume, solvent,	Straw	Food	Food, bonfire
Receptor Sensitivity		Medium	Medium	Medium	Medium	Medium	Medium
Source evident?		Yes	Yes	Yes	Yes	Yes	Yes
Other Comments		-	-	-	-	-	-



Table B1: Olfactometric 'sniff survey' Results, 8th February 2021, During 90°C Drying

Location (see plan)	1	2	3	4	5	6	7
Time	16:48	16:42	16:55	17:01	17:07	17:14	17:19
Weather	Overcast	Overcast	Overcast	Overcast	Overcast	Overcast	Overcast
Temperature	10°C	10°C	10°C	10°C	10°C	10°C	10°C
Wind speed, m/s	5	2-8	5	5	5	5	5
Wind direction	Southwest	Southwest	Southwest	West-Southwest	West-Southwest	West Southwest	West-Southwest
Odour intensity	0	0-3	2-4	0-3	2-4	2-5	0
Duration of Test	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes	5-minutes
Constant or Intermittent?	-	Int	Int	Int	Int	Int	-
Description	-	Traffic, bonfire	Wood	Bonfire	Straw, food,	Food	-
Receptor Sensitivity	-	Medium	Medium	Medium	Medium	Medium	-
Source evident?	-	Yes	Yes	Yes	Yes	Yes	-
Other Comments	-	-	-	-	-	-	-

Appendix C: Draft Outline Odour Response Plan

A record of any complaints received by whatever route will be kept, and made available to the Regulator, on request. Complaints shall be investigated and records kept of any remedial measures taken.

Installation of a weather station may be of help in the investigation of complaints, and it is recommended that consideration be given to this.

Daily off-site odour assessment shall be carried out and documented by trained staff at appropriate downwind locations when oven drying is being carried out. The assessment will be carried out in accordance with the protocol suggested in Your Permit - H4 Odour Management.

Weather observations, including wind speed and direction shall be recorded during the odour assessment.

Where any significant odours likely to be related to the drying processes are detected, the incident shall be recorded as a 'complaint' and the cause will be investigated, and remedial action taken and recorded.

The drying oven discharge 'stack' is currently unabated, therefore plant failures with the potential to affect off-site odours are likely to be limited to stack integrity and discharge velocity, however feedstock variation/condition should also be investigated.

The plan should be regarded as a 'working document' and should be reviewed regularly and following any change to the process, such as the fitting of abatement plant.



Appendix D: Laboratory Olfactometric Analysis Report

Olfactometric measurements

Silsoe Odours Limited

Client: RSK

Location: Finer by Nature

Measurement Date: 09 February 2022



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Contract report number:	CR/SO2352/22/RSK125
Customer reference:	RSK Finer by Nature
Measurements carried out by:	[REDACTED]
1. Contact:	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
2. Odour source:	Dog Food
3. Sampler: *	[REDACTED]
4. Sampling date: *	08 February 2022
5. Laboratory temperature and CO ₂	22.4°C; 504ppm;
6. Measurement date	09 February 2021
7. Presentation mode:	Forced choice
8. Olfactometer:	Olfasense GmbH TO-Evolution
9. Pre-Dilution Gas Meter:	Durecom KG-2 2018-001659
10. Reference odorant/accepted reference value	n-butanol. 60 ppm / 40ppb
11. Calibration Status of Laboratory	A _{od} = 0.05; r = 0.23
12. Method:	Following Odour Lab Procedure OL2 which incorporates BSEN13725 "Air quality – Determination of odour concentration measurement by dynamic olfactometry".
13. Special remarks:	Nalophan NA bags 25µm thick
14. Approved by	Compiled by

[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

"This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF communiqué dated April 2017)"

Olfactometric measurements

Silsoe Odours Limited

Client: RSK

Location: Finer by Nature

Measurement Date: 09 February 2022



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Results:

Table 1: Results for RSK – Finer by Nature odour samples analysed on 09 February 2022

Samples collected 08/02/22 at:	Samples analysed 09/02/22 at:	Sample No.	Sample Source and Position	S. O. H ₂ S ppm	Odour Panel Threshold, ou _E m ⁻³	Lab. Pre-dilution factor	Odour concentration of sample, ou _E m ⁻³ (including laboratory pre-dilution)
1434-1439	13:27	20220209 FN1	S1	0.056	11,604	None	11,604
1440-1445	13:35	20220209 FN2	S2	0.031	9,641	None	9,641
1446-1451	13:45	20220209 FN3	S3	0.042	10,408	None	10,408
1733-1738	13:56	20220209 FN4	S4	0.11	26,830	None	26,830
1740-1745	14:05	20220209 FN5	S5	0.11	32,268	None	32,268
1748-1753	14:13	20220209 FN6	S6	0.091	29,995	None	29,995

Deviation from the standard:

None

The following data is not covered by our UKAS Accreditation:

S. O. H₂S measurements are not accredited