

Permitting decisions

Refusal

We have decided to refuse the permit for Pets Choice.

The proposed facility location is; Pets Choice, Lower Philips Road, Whitebirk Industrial Estate, Blackburn, BB1 5UD.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements.

Purpose of this document

This decision document provides a record of the decision making process. It:

- highlights [key issues](#) in the determination
- gives reasons for refusal
- shows how all relevant factors have been taken into account
- shows how we have considered the [consultation responses](#)

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the refusal notice.

Key issues of the decision

1 Summary

- 1.1 The Environment Agency (“the Agency”) considers that Pets Choice Limited (“the Applicant”) has not demonstrated that they will apply the best available techniques (“BAT”) or take appropriate measures necessary to ensure that pet food production at Pets Choice, Lower Philips Road, Whitebirk Industrial Estate, Blackburn, BB1 5UD (“the Site”) is carried out without harming the environment or causing unacceptable odour pollution.
- 1.2 Under Schedule 7, paragraph 5(e) Environmental Permitting (England and Wales) Regulations 2016 (“EPR 2016”), the Agency are required to ensure that environmental permits contain all measures necessary to ensure operators of environmental permits apply BAT and all the appropriate measures are taken against pollution.
- 1.3 Consequently any permit the Agency would have issued for the Site would contain conditions requiring the Applicant to apply BAT and implement appropriate measures. As the Applicant has failed to demonstrate they will comply with the conditions, we have a duty under Schedule 5, Part 1, paragraph 13(2) EPR 2016, to refuse the application. It states:

The requirements are that the applicant for the grant of an environmental permit, or the proposed transferee, on the transfer of an environmental permit (in whole or in part), must –

- a) be the operator of the regulated facility, and*
- b) operate the regulated facility in accordance with the environmental permit.*

- 1.4 We have provided the Applicant with multiple opportunities to demonstrate that they would be able to comply with the requirements of a permit, including a face-to-face meeting. We have requested further information from the applicant by issuing four Schedule 5 notices under EPR 2016, three of which specifically focused on odour management. The Applicant was able to demonstrate an improvement through successive versions of their odour management plan, however, they have failed to satisfactorily demonstrate their ability to comply with the relevant requirements, specifically the ability to contain and abate odorous air.
- 1.5 Notices issued under Schedule 5 EPR 2016 requesting further information are legally binding notices issued by the regulator to an applicant where that information is essential to allow the application to be determined. Paragraphs 6.17 to 6.23 of the Department for Environment Food and Rural Affairs (“DEFRA”) *Environmental Permitting Guidance Core Guidance For the Environmental Permitting (England and Wales) Regulations 2010* (“Core Guidance”) provide assistance to the regulator and applicants in how a Schedule 5 notice should be issued and complied with. Paragraph 6.21 states:

The applicant must provide all the information specified in the notice. Omissions either in the range or detail of information may result in the regulator considering that the applicant has failed to provide the information.

- 1.6 It is therefore important that an applicant provides the requested information in order to demonstrate that appropriate measures, BAT and minimising environmental impacts will be achieved. We have provided numerous opportunities for the Applicant to meet the requirements of the Schedule 5 notices including approving the Applicant’s requests for further time to comply with the Schedule 5 notices.

2 Proposed regulated facility

- 2.1 The Applicant’s proposed installation would be located at Pets Choice, Lower Philips Road, Whitebirk Industrial Estate, Blackburn, BB1 5UD (grid reference SD 70253 29892). The Applicant applied for a regulated facility for the production of pet food from a mixture of animal and vegetable materials. The proposed regulated facility would include an *installation* comprising food production activities listed in Schedule 1, Part 2, Chapter 6, Section 6.8 of the EPR 2016:

Part A(1) (d) (iii)

Treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed (where the weight

for the finished product excludes packaging – animal and vegetable raw materials (other than milk only), both in combined and separate products, with a finished product production capacity in tonnes per day greater than (aa) 75 if A is equal to 10 or more (where ‘A’ is the portion of animal material in percent of weight of the finished product production capacity).

- 2.2 The effluent generated as a result of the cleaning and wash down processes at the site will be treated via an effluent treatment plant. The Applicant confirmed that the capacity of this plant will exceed the capacity level specified within the regulations. It is therefore also considered to be an installation activity listed in Schedule 1, Part 2, Chapter 5, Section 5.4 of the EPR 2016:

Part A(1) (a) (ii)

Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physico-chemical treatment.

- 2.3 Activities listed under Sections 6.8 and 5.4 of the EPR 2016 must only be operated when BAT are implemented. Article 3 of the Industrial Emissions Directive defines this as follows:

Best available techniques’ means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole.

- a) *‘techniques’ includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;*
- b) *‘available techniques’ means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;*
- c) *‘best’ means most effective in achieving a high general level of protection of the environment as a whole*

- 2.4 Guidance on the relevant BAT for food and drink sites is available under the *European Commission’s Integrated Pollution Prevention Control Reference Document on the Best Available Techniques in the Food, Drink and Milk Industries*. We have developed domestic guidance which include the requirements of the Best Available Techniques reference documents (“BREFs”) in the Agency’s: *How to comply with your environmental permit. Additional guidance for the Food and Drink Sector* (EPR 6.10). In addition, guidance for appropriate measures for minimising odour emissions are available under the Agency’s *Additional guidance for H4 Odour Management. How to comply with your environmental permit* (H4).

3 Background

- 3.1 The raw materials proposed to be accepted onto site to produce pet food include inherently odorous materials; chicken carcasses, beef offal, lamb offal, meat meals and other protein materials. These would be accepted onto site in covered, impermeable containers and stored in freezers or within refrigerated storage areas depending on feedstock demand. Prior to cooking, the materials would be mixed, minced and ground using mechanical plant and then other vegetable based ingredients added. This process would be completed in a ventilated room. These mixes would then be pumped or transported to the various cooking plants to create the finished pet food products. Enclosed cooking vessels using steam from the boilers would be used to create the retort pouch (raw materials cooked in the pouch) and the Chub roll products. Other meat and vegetable mixes would be directed to the extruders and ovens to create treat products. This process would take place within a number of ovens. The Applicant has provided conflicting information on how many ovens are proposed (between six and ten ovens). Once cooled and dried, the treats will be packaged ready for despatch. Retort pouches and Chub rolls will be packed during the cooking process.
- 3.2 As a result of issuing three Schedule 5 notices for requests for information and the face-to-face meeting with the Applicant, the Applicant submitted several variations to their odour management plan (“OMP”). While this refusal is based upon achieving BAT and appropriate measures, the Applicant’s OMP, dated June 2018 and other associated documents, exhibited improvements towards meeting the requirements under H4 (Appendix 4).

- 3.3 Despite partially addressing the outstanding requirements of H4 (Appendix 4), the Applicant's draft OMPs, were not sufficient for us to accept. However, the Applicant demonstrated improvements to their previous draft OMPs in areas such as active odour control measures (for example refrigeration).
- 3.4 Despite the Applicant's positive steps in developing good control measures for the storage and processing of odorous raw materials, the Applicant's proposals for ventilation, extraction of odorous air and end-of-pipe abatement was not acceptable. As a crucial step in mitigating odorous emissions, the Environment Agency is unable to implement conditions for future development. In the sections below, we will outline the details and reasons why the Applicant will not meet the relevant BAT, permit conditions and have the potential to cause unacceptable odour pollution.
- 3.5 EPR 6.10 (Section 3.3) presents the following indicative BAT for end-of-pipe odour abatement:
2. *Design and operate abatement plant to cope with maximum loadings and volumes.*
 3. *Design extraction from odorous activities to minimise air flows to the abatement plant.*

H4 guidance, in relation to the permit conditions states:

Emissions from the activities shall be free from odour at levels likely to cause pollution outside of the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in an approved odour management plan, to prevent or where that is not practicable, to minimise odour.

- 3.6 EPR 2016 Regulation 2 includes in its definition of pollution means
Any emission as a result of human activity which may – (b) cause offence to a human sense.

4 Extraction systems

- 4.1 Air extraction is proposed for the odorous processes in the meat grinding and mixing rooms, in the Chub vessel cooking room, the retort tray filling room and extraction canopies above the retort cooking vessels. This is illustrated in the Applicant's site ventilation schematic (reference Q17/421/1 Rev P7). The Applicant has claimed that the extraction of air from rooms containing odorous processes are provided by negative pressure systems. Negative pressure must be created by balancing the room's ventilation systems so that more air is mechanically extracted from a room than is mechanically supplied. In the versions of the Applicant's draft OMP and other iterations of supporting documents, a clear understanding of the proposal or detailed design was not presented. In summary, it is proposed that air will be pulled via roof and wall mounted louvers to an air handling unit to discharge to atmosphere via an odour abatement system.

Discussion against relevant BAT

- 4.2 The Applicant has identified that negative pressure extraction will be achieved. They state that the air handling units are capable of achieving 3 air changes per hour and that automatically closing external doorways and air locks will prevent egress and a loss in pressure. They attempt to support this claim with a statement from a ventilation designer (Ductwork Design and Installation Limited, titled *Brief description of the mode of operation for the Ventilation Systems serving the 2 No prep areas*). The statement provided by the designer is a basic description on the materials, fans and ductwork for the mincing and grinding room and the retort and chub extraction rooms. The statement was supported by a covering letter (provided 14 December 2017) outlining the company's experience in designing ductwork and ventilation systems. It did not present why their systems would be appropriate for controlling odorous air in the pet food manufacturing industry.
- 4.3 As stated in the section above, BAT requires abatement and extraction systems to be designed to cope with maximum loadings and volumes and to minimise air flows to the abatement plant. The Applicant has not provided any information on whether these systems will achieve negative pressure.

BAT (Section 3.3) 2. Design and operate abatement plant to cope with maximum loadings and volumes.

- 4.4 Very little design details have been submitted in order to demonstrate the ability of the proposed systems. The Applicant states that the system is capable of achieving 3 air changes per hour for both areas. However, the statement from the designer indicates that only 2 air changes per hour could be

achieved. In addition, the statement does not indicate whether it would apply to the Chub production room. This BAT requirement indicates that it should be designed to cope with maximum loadings and volumes. No attempt was made to explain that the proposed air handling unit was capable of extracting the level of air necessary. In particular, there was no discussion of air volumes that need treating, how a system of 2 air changes an hour will be maintained, or how the correct pressure will be maintained. It should be noted that the Applicant will have fast acting roller shutter doors and proposed an air lock door for external vehicle entrances and exists. There was no discussion concerning how the containment using the air locks will interact with other doors and be capable of maintaining a steady negative pressure. In a response to the third Schedule 5 notice dated 21 February 2018, the Applicant states:

When doors are opened the negative pressure will drop for a short period of time to a nominal negative pressure as the volume temporarily increases.

No further discussion or explanation was provided.

- 4.5 In the fourth Schedule 5 notice dated 01 May 2018, the Applicants were again asked to justify the design of the negative pressure and process monitoring to ensure maintaining effective operation. The Applicants failed to provide a response to our question.

BAT (Section 3.3) 3. Design extraction from odorous activities to minimise air flows to the abatement plant.

- 4.6 The Environment Agency's H4 guidance recommends minimising the volumes of air to increase the effectiveness of the abatement plant. Operators should therefore seek to enclose odorous air within smaller spaces rather than attempting to extract and treat large volumes. The volume of air contained and extracted has an implication on the design of ductwork, fans and final size of the abatement plant. Optimum containment of odorous air is important in minimising the amount of air requiring abatement.
- 4.7 The Applicant proposes to extract and treat all of the air in each of the specified rooms. The dimensions and volumes of the individual rooms are not clearly specified, however, based on the scale in the ventilation schematic (reference Q17/421/1 Rev P7), the volume of mixing and grinding room is approximately 1,250m³. There has been no proposal to enclose these particular odour sources and minimise the level of air needed for treatment. No discussion was included in the statement from the ventilation designer as to why the Applicant has chosen to treat all of the air from each of the specified rooms.

Aspects the Environment Agency would expect in order to demonstrate BAT

- 4.8 Achieving true negative pressure containment is a difficult approach and requires an engineering solution with appropriate levels of professional input. Evidence of a detailed negative pressure solution was not supplied. Key difficulties associated with designing negative pressure systems include:
- Short circuit; where the integrity of the building is not robust and air which ingresses to the building is extracted and treated rather than the odorous air. This can be a symptom of attempting to extract large volumes of air.
 - Flow through; where wind influences on the building can cause the number of air changes per hour through the side of the building to be greater than that extracted to the abatement plant. Negative pressure containment relies on the internal building pressure being lower than the pressure on the downwind side of the building.
 - Door openings; where doors and hatches are opened for access and the pressure changes reduce extraction via the abatement system.
- 4.9 These issues highlight the need for the design to be approved or endorsed by a qualified engineer and who has assessed the complex air flow systems. No evidence has been submitted which demonstrates that these issues would be overcome or that the system design proposed is approved by a qualified engineer. The only evidence submitted related to a brief description of the design and proposal. No technical detail was submitted.
- 4.10 As stated in paragraph 4.6, in order to optimise odour abatement effectiveness, odorous sources should be isolated and locally contained. Extraction from contained areas rather than larger room

sources would have a greater chance to achieve true negative pressure and a higher rate of air changes per hour. This has not been explored by the Applicant.

- 4.11 An operator should be able to check that negative pressure is being maintained. We would therefore expect the operator to undertake a level of monitoring in order to demonstrate negative pressure is effective on an ongoing basis. For example, an operator should monitor the pressure of the inside of the building and compare the pressure against any changes to the environment, for example the pressure when doors are opened. The Applicant's OMP does not seek to implement the monitoring of pressure. In the Schedule 5 notices dated 21 February 2018 and 1 May 2018, we asked the Applicant to describe how they will monitor pressure in the building and relevant rooms. In the most recent response from the Applicant, the latest OMP only stated:

the building management system monitors temperature and pressure in all areas and will alarm should a failure occur.

No further information was submitted to explain how monitoring will take place.

Inconsistencies and contradictions

- 4.12 As outlined in the above paragraphs, the Applicant appears to be designing extraction based on whole room volumes, however, Section 7.1 of the OMP suggests that odorous sources will be subject to localised containment and then extracted to the abatement system. The section goes on to state:

This localised containment and treatment will reduce the overall odour from the process and reduce the level of concentration of odour that is then treated by the internal building ventilation abatement system.

The Applicant does not follow this consideration up and contradicts the extraction method proposed. It is not clear whether the Applicant will commit to more localised containment. This suggests the above statement would not be considered in practice.

Concluding summary

- 4.13 The above section shows that the BAT requirements of EPR 6.10 have not been met. In particular, the Applicant has not demonstrated that the design of the ventilation system would be designed effectively. The Applicant failed to submit a detailed design or evidence that negative pressure will be achieved. In addition, the OMP is unclear as to whether it will provide localised containment or the extraction from the entire room space. Therefore, we do not have enough information which demonstrates that the proposed ventilation system will meet BAT.

5 Abatement technology – Carbon adsorption

- 5.1 The Applicant is proposing that extracted air from the rooms outlined above is ducted to an air handling unit equipped with an evaporator and carbon filter. It is claimed that there will be an odour removal efficiency of 60%. The Applicant submitted an options appraisal against other potential abatement systems to attempt to demonstrate that a carbon filter system is the most suitable technique to abate the extracted air from these room sources. The ventilation schematic (reference Q17/421/1 Rev P7), shows that there will be 3 air handling units equipped with evaporators and carbon filter abatement. Each filter system is fed by 3 sets of ductwork in line with the extraction locations outlined in the sections above. The treated air would then be discharged via a vertical discharge riser on the south east side of the building.
- 5.2 Over the course of the determination and the Schedule 5 notices, we have received little detail on the proposed abatement apart from a data sheet on the carbon filter bag, brief descriptions from the supplier (same document referred to in paragraph 4.2), the odour modelling report and brief descriptions in the OMP. The paragraphs below will outline how the Applicant has not considered BAT, the environmental impact and why the proposed system cannot be accepted.

Discussion against relevant BAT

- 5.3 Similarly to the information provided in support of the negative pressure claim, there is no evidence which demonstrates that the carbon filters will sufficiently abate the odours generated from the processes. As per paragraph 5.2 above, the information submitted is generally vague and assumes that a best case of 60% odour removal efficiency can be achieved. There is no attempt to justify the suitability of these systems. It must be noted however, that the options appraisal does consider a number of techniques. However, the factors for finalising the chosen technology are based only on a scoring criteria on; floor area, capital and operating cost, energy consumption, life expectancy, flow capacity, ease of operation and odour reduction. While this appears comprehensive, the information to support the choice is not detailed enough to show how this would suit the specific requirements of the proposal.

BAT (Section 3.3) 2. Design and operate abatement plant to cope with maximum loadings and volumes.

- 5.4 In response to the Agency's requests for information via the Schedule 5 notices the Applicant has over the course of time, made attempts to develop their proposal of a carbon filter and has engaged with the ventilation designers for initial descriptions of a design. Despite this, there has been no attempt to show that the BAT specified above will be achieved. Table 7 in guidance EPR 6.10 indicates that adsorption for sterilisation for retorts, is an appropriate technology, whereas evaporation for Chub cooking adsorption, is not considered appropriate.
- 5.5 Adsorption can be described as the process whereby gas molecules are physically trapped by pore openings in the filter medium and accumulate over time until the medium saturates and cannot hold any more. Different types of media can be used in adsorption including charcoal, activated carbon and hydrous oxides for example, silica gel and zeolite. The key aspects of the effectiveness of adsorption is the need for low relative humidity and lower temperatures. Humid airstreams can saturate the carbon medium preventing adsorption. Furthermore, the size of the filter system depends on the type and concentration of the volatile organic compounds ("VOC") extracted, the retention capacity of the carbon bed and the volumetric flow rate of the odorous streams. In addition, the pore diameter of the carbon media should be as close to the chemical molecule subject to adsorption.

EPR 6.10 describes the suitability of adsorption in the food and drink sector;

The humid nature of many food waste streams counts against carbon adsorption as a technology because the polar nature of the common adsorbents will preferentially adsorb water vapour.

- 5.6 Very little detail has been submitted as to the type of carbon media, filter technology and design parameters. Within the *Carbon Filter Bag* data sheet provided from the supplier, there are no details on the particle size of the media and there is no breakdown of the VOC particles present in the odour stream. There is therefore, no clear understanding that the carbon media pore spaces will be appropriate.
- 5.7 As indicated above, temperature and humidity are key parameters of the air streams. The Applicant has not described the expected parameters and how they would be appropriate for carbon adsorption. An evaporator is proposed for each air handling unit, however, no details are provided which demonstrate a reduction in the relative humidity of the air stream or a calculation of the final humidity levels and whether the airstream would remain treatable by carbon adsorption. Reduction in the hot and humid air stream through this 'condensation scrubbing' could be effective. However, queries on how the Applicant would deal with humid air streams were raised consistently in three of Schedule 5 notices. The points were never addressed.
- 5.8 When considering the extraction rate of the air stream through the carbon filter system, the Applicant has provided a number of expected volumetric flow rates of the air streams. These are presented within the ventilation schematic (reference *Q17/421/1 Rev P7*). Despite the provision of these expected rates, they are not presented in any context relevant to why the chosen media is appropriate. In addition, it's not clear whether the carbon media is a standard carbon or whether it is impregnated with an agent. No justification is submitted outlining why their chosen carbon media is appropriate for the odorous chemicals in the gas stream. Furthermore, there has been no attempt to identify the types of odorous chemical which will be treated by the abatement system. As with

temperature and humidity, we have requested this information in the Schedule 5 notices dated 21 February 2018 and 01 May 2018.

- 5.9 The Applicant's ventilation consultant has indicated that the proposed air flow dwell time will be up to 0.2 seconds. Aside from justification of the key parameters of temperature and humidity, there is no discussion which justifies why the residence time of the airstream will achieve effective abatement or why dwell time is a useful parameter for activated carbon systems.

Aspects the Environment Agency would expect in order to demonstrate BAT

- 5.10 Carbon adsorption techniques need to be subjected to an effective inspection and maintenance procedure as this abatement systems can be subject to multiple problems. These can include short-circuiting, saturation and degradation of the media over time and the need for procedures for changing spent media. We would expect an operator to consider these risks when evaluating the appropriateness of carbon filtration as a chosen abatement system. These risks are outlined below.

- 5.11 *Short circuiting* can occur where filter media is not installed appropriately or gases are not trapped in the media pore spaces. This can result in untreated air being emitted.

- 5.12 *Saturation* is the point at which the accumulation of the gas molecules in the media pore spaces cannot hold anymore. This results in the breakthrough of the untreated air, passing through the spent media without molecules being caught in the pore spaces. As the media approaches this saturation point, there is a loss of carbon adsorption activity therefore an incomplete capture of the odorous air which means unacceptable pollution could occur even before saturation. Depending on the composition of the air stream, the time to this point could be very variable, potentially over a very short period.

- 5.13 When the media is saturated, the media will require replacing. This often entails a period of downtime while the new media is installed. Extracted air will pass through dedicated ductwork and piping to the air handling unit ("AHU"), for example, extracted odour from the mixing room will have separate ductwork to that of the Chub tank cooking area. Each set of pipework then connects to the dedicated AHUs. This means that only one carbon filter system will serve each extraction source. When the Applicant would need to replace the media in one of the AHUs, there would be no back-up carbon filter, nor would there exist the ability in the design to divert air to one of the other AHUs. In the Schedule 5 notice response dated, 5 January 2018, the Applicant stated that *the lifespan of the bed will be assessed through routine sampling (every 2 months) of the media and comparison against virgin material*. It's not clear why sampling every 2 months would be effective as there is no discussion on the expected time to saturation of the filter media. Furthermore, the Applicant has not addressed what will happen to the extracted air during this period of maintenance. It cannot be presumed that all extraction will cease in these areas until the carbon filters are once more installed.

- 5.14 These key operational issues have not been addressed by the Applicant. Aspects are alluded to within the revised odour management plan, however, there is no comprehensive plan to deal with these issues. The Applicant is reliant on this abatement technique to ensure that unacceptable pollution does not occur at sensitive receptor locations. However, an acceptable procedure has not been proposed. In section 5.6 of the revised OMP, the Applicant indicates that the system will also be managed by the building management system. According to the Applicant, this would:

Measure the pressure drop across the filter media and will alarm when the pressure drop has reduced to a level advised by the manufacturer as a point where the filter requires replacing.

The Applicant has failed to provide any further details regarding how this system would operate in practice.

- 5.15 We agree that pressure is an effective measure for monitoring the filter media. However, monitoring back pressure as proposed above may not be effective. Saturation of a carbon filter may occur before any restriction which causes increased back pressure. Differential pressure transmitters should be provided to determine changes in pressure (calibrated in Pascals). The Applicant should be able to identify normal operating pressure and the pressure indicating potential increasing saturation and short circuiting. This was not developed by the Applicant, however, there are other parameters which can be monitored, including; specified VOC concentrations, (inlet and outlet levels), gas flow, temperature and moisture content. An applicant should identify the most

appropriate parameters to monitor and propose monitoring procedures to the Environment Agency to show that the abatement system operates effectively.

- 5.16 As highlighted in paragraph 5.5 above, humidity is a key parameter to manage whether carbon adsorption will be effective. The Applicant proposes to install an evaporator as part of the air handling units to reduce humidity. No monitoring of humidity is proposed, the OMP only states:

The first part of the AHU [air handling unit] is an evaporator to remove excess moisture from the air.

The Applicant should have included monitoring proposals to demonstrate that appropriate levels of humidity are recorded when proceeding through the abatement system.

Inconsistencies and contradictions

- 5.17 In the Schedule 5 notice dated 1 May 2018, we requested that the Applicant submit an odour impact assessment supported with odour modelling. We then requested that the results of this process inform a cost-benefit analysis of the most appropriate abatement options for the odour emission points, including the extracted air and ovens. Section 7 of this permitting decisions document looks at the odour model in greater detail. This section will consider the inconsistencies and unclear method in determining why carbon filters should be used. Section 5 of the OMP and an appending document, *Odour Control Feasibility Study, 16th January 2012* 'Options Appraisal' provide the Applicant's reasoning for carbon filters.

- 5.18 The OMP and supporting appendix consider a number of odour abatement options; high level dispersion, ozone reactor via a stack, biological or chemical scrubber, biofiltration, activated carbon, thermal oxidisation and recirculation systems. Via a study of capital cost, operating cost, physical footprint, energy consumption, life expectancy, ease of operation and odour reduction, the Applicant produces a decision table in the OMP which selects activated carbon as the chosen abatement system. This table seems to have been replicated from the Options Appraisal mentioned above. Upon closer inspection, the two tables contain different figures and different systems. The inspection highlighted significant contradictory issues namely:

- The appendix study does not contain an assessment of the feasibility of activated carbon.
- The scores for activated carbon seem to have been inserted without any justification (in the table in the OMP, Appendix 2).
- In the appendix study, it concludes that a stack with an ozone (plasma) reactor should be the chosen abatement system. Activated carbon abatement is not mentioned.
- The benefits presented in the appendix study for the ozone, plasma reactor, have been directly copied into the OMP as benefits for an activated carbon abatement system. The Applicant has failed to provide an explanation as to why this is an appropriate step to do.
- The Applicant has also copied the expected downtime period of the ozone (plasma) reactor and stated that this is the expected downtime of the carbon filter system. Linked to the above, the downtime and replacement of media is crucial in maintaining effective abatement. Alongside the other copied benefits, this demonstrates that the Applicant does not understand how the abatement system should be operated.
- In section 5 of the OMP, when the options appraisal of other abatement measures are extracted from the appendix study it is unclear where the details on activated carbon systems have been derived from.

- 5.19 Within the OMP, the Applicant refers to an odour removal efficiency of 60%. The Applicant should demonstrate how a 60% removal efficiency can be achieved within their design. Furthermore, the Applicant has not demonstrated why a 60% removal efficiency would be sufficient for potentially high odour concentrations. The Schedule 5 notice dated 21 February 2018 asked the Applicant to explain what the odour removal efficiency would be. The only information provided in within the OMP which states:

The efficiency of this system is expected to be a minimum of 60%. This means that 60% of the odours will be removed from the air.

The Applicant provides no more justification for this level of efficiency.

Concluding summary

- 5.20 As with the discussion for the ventilation system, the Applicant has not justified that the chosen abatement system will be effective. Key operating parameters such as humidity and temperature was not considered in the design. Furthermore, the expected odour removal efficiency proposed (60%) is not supported by any evidence. Finally, there is a number of inconsistencies with the options appraisal as discussed in section 5.18. We cannot therefore conclude that the chosen odour abatement system would meet the BAT requirements of EPR 6.10.

6 Oven emissions – Odour risk

- 6.1 There will be 10 oven emission points as a result of the baking of meat mixes to produce dry pet food treats. Throughout the Applicant's proposal, there has been no plan to abate odorous emissions from the ovens. Abating these emissions were considered in the Applicant's odour modelling where they propose potential *ionisation odour control technologies*. We have queried the Applicant's lack of abatement for the oven emissions in the Schedule 5 notices dated 21 February 2018 and 1 May 2018.
- 6.2 The Applicant's odour modelling report assessed the potential impacts of odour from the oven sources. This permitting decisions document will consider the Applicant's odour model in greater detail in Section 7, however, the report indicates that the *ionisation control technologies* will achieve an 80% odour removal efficiency. The odour model report (*Odour Impact Assessment. Pets Choice Limited, Lower Philips Road, Blackburn. Reference JAP10460*), offers the following justification for the odour removal efficiency; *80% value taken from promotional literature for ionisation odour control technologies used on pet food facilities*. The promotional literature was not submitted nor was an evaluation of the odorous air stream and exhaust conditions in order to demonstrate whether this abatement technology could be feasible.
- 6.3 The process of oven baking via extrusion can be a significant odour source. Therefore, with little information on the abatement technology proposed, we cannot agree with the Applicant that the ten oven emission points will not be a significant source of odour. There is no justification that the chosen abatement will be sufficient. We are unable to agree that the Applicant is capable of meeting BAT.

Discussion against relevant BAT

2. *Design and operate abatement plant to cope with maximum loadings and volumes.*
3. *Design extraction from odorous activities to minimise air flows to the abatement plant.*

- 6.4 As stated above in paragraph 6.3, the Applicant has not attempted to show how the *ionisation control technologies* will meet BAT points 2 and 3 above. Furthermore, there is no description of the chosen technology to even consider whether this could be considered to be an appropriate technology.

Aspects the Environment Agency would expect in order to demonstrate BAT

- 6.5 In addition to the requirements above, the Environment Agency's H4 guidance provides precautionary advice when relying on single or multiple abatement systems to provide mitigation against odour. For example, in *Appendix 4 – What we are looking for in an odour management plan*, it indicates that where appropriate, control measures should be supported by detailed design and *professional engineering assessments*. In essence, the Environment Agency seeks confidence in an Applicant's proposal through evidence and clear design. The Applicant's vague references to an abatement system do not provide this reassurance.

Inconsistencies and confusing statements

- 6.6 The key issue with this chosen abatement approach has been outlined in the above paragraphs. There is no description of the technology or explanation of how the system would be appropriate for the proposed 10 oven emissions.
- 6.7 Contradictory information was submitted in relation to the oven emissions. These will be addressed within Section 7 below as it relates to the odour modelling assessment.

Concluding summary

- 6.8 While the decision to choose carbon adsorption as the appropriate abatement technology for the extracted odorous air was supported by some background discussion, the Applicant's oven abatement proposal received no justification. There was no description of the technology, what the system would seek to achieve and there was no attempt to address how BAT in EPR 6.10 would be achieved. We cannot accept that the Applicant's proposal for odour *ionisation control technologies* will be BAT.

7 Odour assessment

- 7.1 The Applicant submitted an odour modelling assessment on 20 June 2018 in response to the Schedule 5 notice dated 1 May 2018. We requested the Applicant perform detailed odour modelling for the following reasons:

- Previous to the meeting with the Applicant on 30 April 2018 no odour abatement for the oven emissions were proposed.
- To assist in performing a cost-benefit analysis (CBA) demonstrating BAT for the chosen abatement systems for ovens and extracted air emissions.
- To contribute towards substantiating the claim that the odour risk from directly venting oven emissions to atmosphere would be low.
- To compare how different abatement systems would minimise odour impacts at sensitive receptors.
- The Environment Agency's experience that odour emissions from pet food manufacturing sites can be significant.

- 7.2 The Applicant's report explores the impact of odour on sensitive receptors which considers scenarios including: (a) no abatement, (b) abatement on room exhausts only (carbon filters) and (c) abatement on room exhausts and oven emission points (carbon filters and *odour ionisation technologies*). Their results show that abatement on the room exhausts is required but no abatement is necessary on the ovens. This is on the basis that their odour model predictions are lower than their chosen odour benchmark (3.5 OU_E/m³) for scenario (c). Furthermore, this uses the odour removal efficiencies for the abatement systems discussed in the paragraphs above.

Odour benchmark value

- 7.3 One of the issues relating to the odour assessment was the choice in odour impact benchmark level. The H4 guidance states that benchmark levels are:

Based on the 98th percentile of hourly average concentrations of odour modelled over a year at the site/installation boundary: The benchmarks are:

- 1.5 odour units for most offensive odours
- 3 odour units for moderately offensive odours
- 6 odour units for less offensive odours

H4 contextualises these benchmarks through non-exhaustive examples such as *processes involving decaying animal or fish remains* as most offensive and *fat frying (food production)* as moderately offensive. The proposed processes from the Applicant cannot be easily characterised as either of these. However, using our judgement and experience in regulating installations in this industrial sector, it can be argued that an appropriate benchmark should be 1.5 OU_E/m³ for most offensive odours.

- 7.4 Without more evidence to support the use of a particular benchmark, and coupled with inherent uncertainties related to odour modelling, we cannot rely on this aspect of the Applicant's assessment to refuse the permit in isolation. However, from the points in H4 referred to above, the Applicant's justification for assigning a benchmark of 3.5 OU_E/m³ is insufficient. Their explanation for the benchmark states:

Odours from the Application Site operating normally would generally be expected to be 'moderately offensive'. Meat intake at the facility will generally be fresh meat or category 3 material (less than 24 hours from kill) and will be frozen/chilled to allow for a lower odour potential.

This does not take into account the inherent odour of the feedstock material (offal and category 3 animal by-products) or the impact that cooking would have. The offal or 'meat' undergoing cooking in the ovens and other heat processes can alter the hedonic tone. From the statement above, it is clear that the Applicant has not considered how hedonic tone can change through the different processes. Therefore, we have not received sufficient justification in line with our guidance that the benchmark of 1.5 OU_E/m³ should not be applied.

- 7.5 In addition to the choice of benchmark, H4 suggests applying a reduction of 0.5 OU_E/m³ where local factors may influence the impact. For example, the local population may already have become sensitised, therefore recommends reducing the benchmark. We consider that the Applicant has misinterpreted the H4 guidance. The Applicant states that sensitisation from odours would warrant adding 0.5 OU_E/m³ to the benchmark (3.5 OU_E/m³) based on its industrial setting. However, we believe that since this is a new installation, it is unlikely that receptors had become sensitised to odour and would reduce the benchmark further. Therefore, the use of the 0.5 OU_E/m³ adjustment is not appropriate.

Environment Agency audit of the model

- 7.6 We have concluded that based on our audit of the odour modelling assessment, we do not agree with the Applicant's conclusions. Our checks indicate that odour concentrations can be above the benchmark level we consider to be appropriate for the proposed process, as mentioned in points 7.3 to 7.5 above.
- 7.7 We find that odour releases for the abated scenario would go above the benchmark levels of 1.5 and 3 OU_E/m³ and therefore do not agree with Applicant's conclusion. Our conclusions are based on the following:
- The inclusion of four oven sources that were not in the Applicant's odour assessment. The Applicant has specified that there will be 10 oven emission points, however, only 6 were modelled.
 - Potential peak odour emission concentrations from their submitted monitoring reports. The Applicant's choice in modelled oven odour concentrations was not appropriately justified.
 - Terrain effects, which have a significant impact on predicted ground level concentrations.
 - Efficiencies of the abatement as proposed by the applicant (i.e. 60% for the carbon filters of the room exhausts and 80% for the ionisation techniques of the oven exhausts).
 - Both benchmarks are exceeded at industrial and commercial receptor locations.

Concluding summary

- 7.8 We acknowledge that the odour modelling alone cannot be used as the reason to refuse this permit application. However, the Applicant's model itself has a number of issues that makes it less reliable and cannot be used to sufficiently demonstrate that there will be no significant impact at nearby sensitive receptors. Therefore, the model could not be used to demonstrate that the abatement proposed would be effective.

8 The Odour Management Plan

- 8.1 The Applicant submitted an OMP with their application and submitted various revisions to their plan throughout our determination of the application. As outlined in paragraphs 4.2 and 4.3, we acknowledge that these revisions exhibited improvements, however fundamental aspects such as the proposed end-of-pipe abatement and ventilation systems explored in detail above are not acceptable. As part of this refusal decision, we will acknowledge the sections of the OMP which were sufficient and the sections which do not meet the requirements of BAT and H4 guidance.
- 8.2 Appendix 4 of the H4 guidance outlines the objectives for an OMP and highlights the key sections needed for an effective OMP. These are:
- Source materials – An odour inventory with descriptions and details of the odorous materials stored on site across a range of operating conditions. This section should demonstrate the

Applicant's understanding of the nature and extent of the odorous materials and should form the starting place to identify the odour management of these materials.

- Releases – Management of containment, ventilation and abatement. This section should demonstrate the Applicant's ability to aid dispersion or the timing of releases through the management of activities before there is an impact on people.
- Impacts – Minimising the impact on the surrounding community. This section should demonstrate the Applicant's understanding of the sensitivity of nearby receptors (industrial, commercial or residential) and how the odours from the site could affect the exposed community.
- General – Low tech or standard measures which make a significant contribution to the overall reduction in the impact from odorous activities. These would comprise a mixture of simple active techniques such as *keep odorous materials on site to a minimum, rotating stock where appropriate*. This section should show how control measures mitigate specific odorous sources during normal operations. In addition, where there are more complicated control measures such as ventilation, abatement and containment, professional engineering assessments should be submitted.
- Monitoring – Appropriate monitoring should be undertaken for every stage of the control process (i.e. emissions, dispersion and impacts). This section should demonstrate the Applicant can assess the impacts of odour and interpret monitoring with appropriate trigger levels for implementing contingency measures.
- Process – Monitoring the process to determine whether the processes on site are under control and to maintain control.
- Emissions – Methods to demonstrate that emissions from stacks or vents are monitored to demonstrate that control measures are working.
- Dispersion – The OMP should demonstrate how the Applicant understands when dispersion conditions are poor in order to enact odour contingencies to prevent unacceptable odour emissions.
- Exposure and impact – The OMP should include a section which addresses how the Applicant deals with complaints comprehensively, with procedures to enable complaints to be received and steps to act on them.
- Contingencies – The OMP should show that where trigger levels (informed by monitoring) are exceeded, what the relevant effective short and long term contingencies will be employed. This should identify backstop contingencies where standard contingency approaches are not effective. Contingencies should also be monitored to determine when operations can return to normal.
- Incidents and emergencies – The OMP should identify and plan for incidents and emergencies which might 'adversely affect the control of odour pollution'. The OMP should contain measures to deal with these eventualities. Incidents not necessarily associated with odour do not need addressing.

This section will deal with each aspect of the OMP in turn in line with the above, to evaluate how effective the OMP would be in managing potential odour impacts.

Source materials

- 8.3 Table 2 in the Applicant's OMP describes the feedstock materials at the site, their age, temperature at receipt, shelf life at delivery, indicative odour characteristics, level of risk, feedstock description and storage conditions. However, the Applicant refers to the feedstock as 'meat' throughout most of its documentation. It is likely that the hedonic tone of meat and offal would be different. Offal having a higher potential to cause offensive odours. While the Applicant describes the feedstock, more detail on the level of offensiveness of the offal would provide more clarity in categorising the overall odour risk from the proposed operations.

Releases

- 8.4 We consider that the Applicant has not adequately demonstrated how they will extract, abate and discharge odorous air. Sections 4, 5, 6 and 7 address this part of H4 and show why odour and dispersion modelling cannot be used to justify the impact from the point source emissions. We are not satisfied the Applicant has met this aspect of H4 in their OMP.

Impacts

- 8.5 The Applicant included a description and a brief assessment of the sensitivity of the adjacent and nearby receptors. While the Applicant has considered sensitivity in relation to the different types of

receptor, the OMP is not clear in showing why certain receptors are less sensitive. For example, in the table 'Locality and receptors' it describes the sensitivity of commercial businesses located within 200m of the site, *Mostly office based activity so relatively low impact*. This description does not show how the receptor's activity influences their sensitivity or how odours from the site would affect this particular receptor. We are therefore not satisfied that the Applicant has sufficiently considered how their activities will impact the receptors or addressed how sensitive some sites will be in relation to the emissions. This section of H4 has therefore not sufficiently been met.

General

- 8.6 In the Applicant's latest version of the OMP, they provided clear control measures for each stage of the process. It provides continuous in process odour control measures to minimise the risk of fugitive emissions on site. For example, lidded containers, chilling and freezing of feedstock and specified times for storage and processing of feedstock. The Applicant specifies control measures for each odour source identified in their risk assessment. Therefore, we are satisfied that general control measures are appropriate. Despite this, control measures including containment of air, ventilation system and abatement are not described and justified sufficiently. As described in Sections 4, 5, 6 and 7 outline why these control measures are not sufficient. Furthermore, H4 indicates professional engineering assessments and good design is required to justify the use of more complex technologies. Therefore, we cannot agree that the Applicant has demonstrated in full that control measures are satisfactory.

Monitoring

- 8.7 The Applicant's proposed monitoring regime of odour emissions from site is not proportionate to the nature of the risk posed. Daily monitoring is described as checking equipment and plant is working appropriately (refrigeration plant), temperature and pressure and spillages. The Applicant then indicates that on a weekly basis, 'externally performed' sniff testing will be completed. It's not clear who this person will be (a QA manager is mentioned in supporting documents), why a weekly regime would be an appropriate frequency and no indication of specific trigger levels to initiate remedial actions (in relation to the monitoring score for odour intensity (1 – 6)).
- 8.8 In the Schedule 5 notice dated 1 May 2018, we required the applicant to provide a monitoring procedure which fully addressed section 5 of H4, in particular considering the aspects of Section 5.1 of H4 which outlines the aspects which make a monitoring plan effective. There is no evidence that this was comprehensively done. References are briefly made to monitoring locations. Further considerations to other types of monitoring are not addressed. In addition, there is no evaluation explaining how sniff testing will be appropriate. Section 5.4 of H4 outlines how sniff testing can be limited and should have been referred to when discussing the appropriateness of their methodology. We do not consider the Applicant's monitoring of odour to be in line with H4.

Process

- 8.9 The Applicant specifies in their active control measures that operating plant and refrigeration units will be monitored daily, alongside the condition of the incoming material. They state that all refrigeration and doors will be on the computerised preventative maintenance system. Some detailed indicators are outlined in their OMP supporting documentation. For example, operation of the blast freezer, their documentation states: *The blast freezer, freezer and chilled storage areas are on an externally monitored alarm system. Should the area go over temperature for longer than 30 minutes (defrost time) then an engineer will be immediately called.*
- 8.10 Despite this, the sections 4, 5 and 6 show that for specific odour control technology, no such process monitoring is specified.

Emissions

- 8.11 Sections 5 and 6 discuss in detail the Environment Agency's concerns with the point source emissions. There is no proposal to monitor for emissions from the exhausts or stacks and there is no discussion on this subject. For example, monitoring for surrogate substances as an indicator for odour. More reliable would be a demonstration of how abatement systems are monitored to ensure their operational effectiveness. As stated in paragraphs 6.14 to 6.16, there is insufficient information on how the Applicant would conduct such monitoring. In addition, there is no discussion for monitoring of the potential abatement system of *odour ionisation technologies*.

Dispersion

- 8.12 Monitoring of meteorological conditions is not proposed, however, as discussed in section 7 above, odour and dispersion modelling was conducted. We concluded that the model cannot be used to justify acceptable impacts and the dispersion model itself is subject to high levels of uncertainty. We also noted that as stacks are only 0.5m and 1m taller than the building height, there will likely be poor dispersion due to the influence of downwash effects. There is no discussion in the OMP for understanding poor dispersion conditions and how they could be dealt with.

Exposure and impact

- 8.13 Complaints procedures are included in the OMP with avenues for the Applicant to receive comments and complaints from members of the public. However, there is no evidence in the OMP that the Applicant has considered how to monitor complaints and develop a relationship with the community and nearby sensitive receptors. Despite this, their procedure does indicate that complaints will be investigated immediately. The Applicant has considered how to deal with complaints but has not proposed any pro-active measures to develop relations with the community. We can acknowledge that this aspect of the OMP has been partially addressed.

Contingency control measures

- 8.14 As stated in paragraph 8.7 above, trigger levels based on monitoring of odours are not specified. However, immediate short term contingency strategies are clearly identified in the supporting information with the OMP. In particular, there are clear steps the Applicant would take in the event of cooking plant or processing equipment breakdown. For example, feedstock mixes will be removed back to fridges and freezers. They also identify backstop contingencies of shutting down the process, keeping feedstock in storage until the odour issue is resolved.
- 8.15 Despite the above contingency examples, the Applicant has failed to provide key contingency measures in relation to the cooking and abatement process, for example, failure of abatement system and high odour intensity recorded by sniff tests. Furthermore, all contingencies should be initiated by very clear triggers which can comprehensively followed. In addition, H4 clearly requires a methodology of understanding when contingency measures are no longer needed. No information is stated on how the Applicant will track the effectiveness of a contingency measure. The Schedule 5 notice issued on 1 May 2018 clearly referred to the requirements of H4 and this specific section on contingency measures. The Applicant has only supplied clear contingency measures for certain sources and scenarios with no follow up monitoring to clarify the effectiveness of the specified measure.

Incidents and Emergencies

- 8.16 The OMP considers potential incidents including floods, fire, accidents, breakdowns and power failure. Also appended to the OMP is the Applicant's Incident Management Plan.

Additional points

- 8.17 The OMP identified that effluent generated will be stored in holding day tanks for dosing prior to discharge to sewer. While in the effluent tanks, displaced air will be vented to atmosphere. The OMP states that this vented air will be abated by carbon filters. No further description, maintenance procedures or a justification for this abatement is presented. While the vented odours from the effluent may have a lower odour impact than the cooking emissions and vented air, the Applicant should clearly show why this system is acceptable.

9 Conclusions

- 9.1 The Environment Agency's determination shows that the Applicant's installation proposal has the potential to cause significant odour pollution. We therefore have a duty under Schedule 5, Part 1, paragraph 13 EPR 2016 to refuse the application. In summary, the key aspects for refusal are based on the Applicant's inability to demonstrate BAT in line with the requirements of Environment Agency guidance EPR 6.10 and appropriate measures in H4 Odour Management. Furthermore, we consider that the Applicant would not be capable of complying with the relevant permit conditions. An environmental permit would include standard condition 3.3.1 requiring the following from an operator:

Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

- 9.2 This decision document outlines why we consider the Applicant will not be able to operate a permit in line with the conditions. In particular, the Applicant has not demonstrated that abatement systems will be designed and operated to cope with the level of odorous air generated. Furthermore, the Applicant has not demonstrated that ventilation systems will be appropriately designed to enable the abatement of odorous air. The applicant attempted to demonstrate through modelling that the choice of carbon adsorption and *odour ionisation technologies* would be effective odour abatement and that any impacts caused by odorous air would not be significant. In reality, our audit of the modelled assessment concluded that there was insufficient information to support the conclusion in the applicant's assessment. While we cannot base our refusal decision solely on the outcomes of the potential impacts in the model, the modelling nevertheless compliments our conclusion that the Applicant has failed to meet the Best Available Techniques.

Consultation

The following summarises the responses to consultation with other organisations and our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from
Blackburn with Darwen Council. Environmental Health
Brief summary of issues raised
<p>The respondent highlighted that their main concerns arising from the application was from odorous emissions. They raised the following specific concerns in relation to the odour management plan:</p> <ul style="list-style-type: none">• Identified that there was no odour modelling submitted with the application and that there didn't seem to be involvement from an external odour consultant.• Concerned that the Applicant was not proposing a specific odour abatement system without adequate justification.• A lack of specific control measures which are necessary to meet BAT requirements.• Recommended more information be requested to support the odour management plan's claims.
Summary of actions taken or show how this has been covered
<p>The Environment Agency are refusing this application. Information received from the Applicant included odour modelling and greater development of their control measures. However, due to the fundamental issues outlined in the above sections in the decision document, we do not consider the Applicant has met BAT.</p>

Response received from
Public Health England (PHE)
Brief summary of issues raised
<p>The respondent raised concerns of the impact from odour on nearby sensitive receptors, particularly highlighting the proximity of residential receptors 200m away. Despite this, based on the information in the application, PHE had no significant concerns provided all appropriate measures are implemented in accordance with the relevant sector technical guidance.</p>
Summary of actions taken or show how this has been covered
<p>The Environment Agency are refusing this application. Information received from the Applicant included odour modelling and greater development of their control measures. However, due to the fundamental issues outlined in the above sections in the decision document, we do not consider the Applicant has met BAT.</p>

No representations were made from members of the public when the application documents were published on GOV.UK.