



Proposed Class E(b) Uses at Pendewey Farm, Bodmin

Odour Assessment for Planning

8th December 2023

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Authored By	Antony Best BSc (Hons)		
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1. INTRODUCTION

1.1. Overview

inacoustic has been commissioned to assess the impact of odour arising from the proposed Change of Use from a Class E(g) Micro Brewery, to allow for Class E(b) uses, for the sale of goods associated with the Micro Brewery and for the provision of food ('the Proposed Development') at Pendewey Farm, Bodmin ('the Site').

This report considers the proposals, assesses the potential for odour nuisance to occur and sets out appropriate odour control measures which will be installed and adequately maintained within the kitchen facilities to prevent odour at adjacent properties.

1.2. Scope and Objectives

The scope of the odour assessment can be summarised as follows:

- A review of the proposed layout plans and kitchen ventilation system;
- An assessment of odour effects from kitchen extract system in accordance with the Control of Odour from Commercial Kitchens guidance document published by EMAQ+ in September 2018¹; and
- Recommendation of appropriate filtration to be incorporated within kitchen extract system and odour mitigation plan based on the risk of odour effects.

¹ EMAQ (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems

2. LEGISLATION, POLICY AND GUIDANCE

The development proposals for the Site are guided by the following policy directives and guidance:

2.1. National Policy

2.1.1. National Planning Policy Framework, 2023

The *National Planning Policy Framework* (NPPF)² sets out the Government's planning policies for England. Planning policy requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise.

The NPPF is also a material consideration in planning decisions. It sets out the Government's requirements for the planning system and how these are expected to be addressed.

Under Section 15; *Conserving and Enhancing the Natural Environment*, in Paragraph 174, the following is stated:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability".*

2.1.2. Environmental Protection Act 1990

Part III of the Environmental Protection Act (1990)³ contains the main legislation on statutory nuisance and allows local authorities and individuals to take action to prevent statutory nuisance. Section 79 of the Act defines, amongst other things, dust, steam, smell or other effluvia emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance. Statutory nuisance is defined as:

'fumes or gases emitted from a premises so as to be prejudicial to health or a nuisance; and any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance.

Statutory nuisance is not intended to secure a high level of amenity but rather to act as a basic safeguard standard that is intended to deal with excessive emissions. The test for considering whether a process presents a statutory nuisance relies upon considering a range of factors including the character of the locality, the frequency, duration and intensity of the impact.

Local Authority Environmental Health have a duty to inspect their districts from time to time for statutory nuisance. They also have a duty to investigate any complaint of an alleged dust nuisance from the public. Once the authorised officer has formed the view that a statutory nuisance exists,

² Ministry of Housing, Communities and Local Government (MHCLG), July 2021. National Planning Policy Framework. HMSO. London.

³ Secretary of State, The Environment Act 1990 HMSO

the Local Authority has a statutory duty to serve an abatement notice on those responsible for the nuisance, requiring the nuisance to be abated.

Failure to comply with an abatement notice is an offence and if necessary, the Local Authority may abate the nuisance and recover expenses.

2.2. Other Relevant Guidance

2.2.1. Odour Guidance for Local Authorities

The Defra Odour Guidance for Local Authorities⁴ provides guidance on preventing, investigating and managing odours. Guidance on odour assessment and control for facilities regulated under the Environmental Permitting Regulations 2010 is contained in the relevant Sector and Process Specific Guidance Notes and Horizontal Guidance documents. However, there are many other activities that fall outside these specific environmental regimes and 'odour' from these premises are 'regulated' by local authorities under the statutory nuisance provisions of Part III of the Environmental Protection Act (EPA) 1990. The aim of this guidance document is to provide a toolkit for local authorities to assist them in providing a consistent, effective and fair approach to their regulatory duties with regard to odours and therefore endeavours to:

- explain the basic properties of odour;
- explain the legal and regulatory framework for preventing and controlling odours;
- identify the most common sources of odour and the methods that can be used to investigate and assess them; and
- explain the administrative and practical control measures available to local authorities and to provide guidance on how best to implement the service.

2.2.2. IAQM Odour Guidance

In July 2018 the Institute of Air Quality Management (IAQM) released updated guidance on the assessment of odour for planning⁵.

The guidance is for assessing odour impacts for planning purposes. It provides background information relating to requirements for odour impact assessments and suitable impact criteria and draws from other sources of information such as that described in EPR H4 horizontal odour guidance. It also sets out guidance on undertaking and reporting sniff tests to assess ambient odour levels arising from an identified source.

⁴ Defra (2010) Odour Guidance for Local Authorities

⁵ IAQM (2018) Guidance on the Assessment of Odour for Planning

2.2.3. Guidance on the Control of Odour from Commercial Kitchen Exhaust Systems

Problems associated with nuisance odour from commercial kitchen exhausts are a common issue, particularly in urban areas where housing may be adjacent to a catering premises. The Control of Odour from Commercial Kitchens⁶ guidance document published by EMAQ+ in September 2018 and which updates the 2005 DEFRA guidance, provides best practice techniques to minimise odour from kitchen exhaust systems.

The guidance provides a background into odour, the potential sources and effects of odour from kitchens and the regulatory roles is assessing and controlling odour. The document also sets out the best practice for the design and operation of commercial ventilation systems and the control of grease odour and noise emissions.

Appendix 3 of the Guidance sets out a risk assessment that can be used to identify the likelihood of odour nuisance occurring from a commercial kitchen facility and to assist in determining appropriate odour control requirements based on the operations carried out at the selected premises.

⁶ EMAQ (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems

3. SITE DESCRIPTION

3.1. Site and Surrounding Area

The Proposed Development site currently comprises a Class E(g) Micro Brewery, which is proposed to change use to allow for Class E(b) uses, for the sale of goods associated with the Micro Brewery and for the provision of food, and is located at Pendewey farm. The approximate Proposed Development area can be seen in Figure 1, in red.

The closest receptors to the site comprise the allocated housing site associated with Policy Bd-UE3 St Lawrence's Urban Extension, immediately to the south side of Stony Lane.

FIGURE 1: PROPOSED DEVELOPMENT SITE AND SURROUNDING AREA



3.2. Proposed Development Overview

The existing Micro Brewery is seeking to extend its provision by selling its products, as well as for the provision of food. The proposal seeks to install an extraction system to a kitchen, to allow for the provision of food.

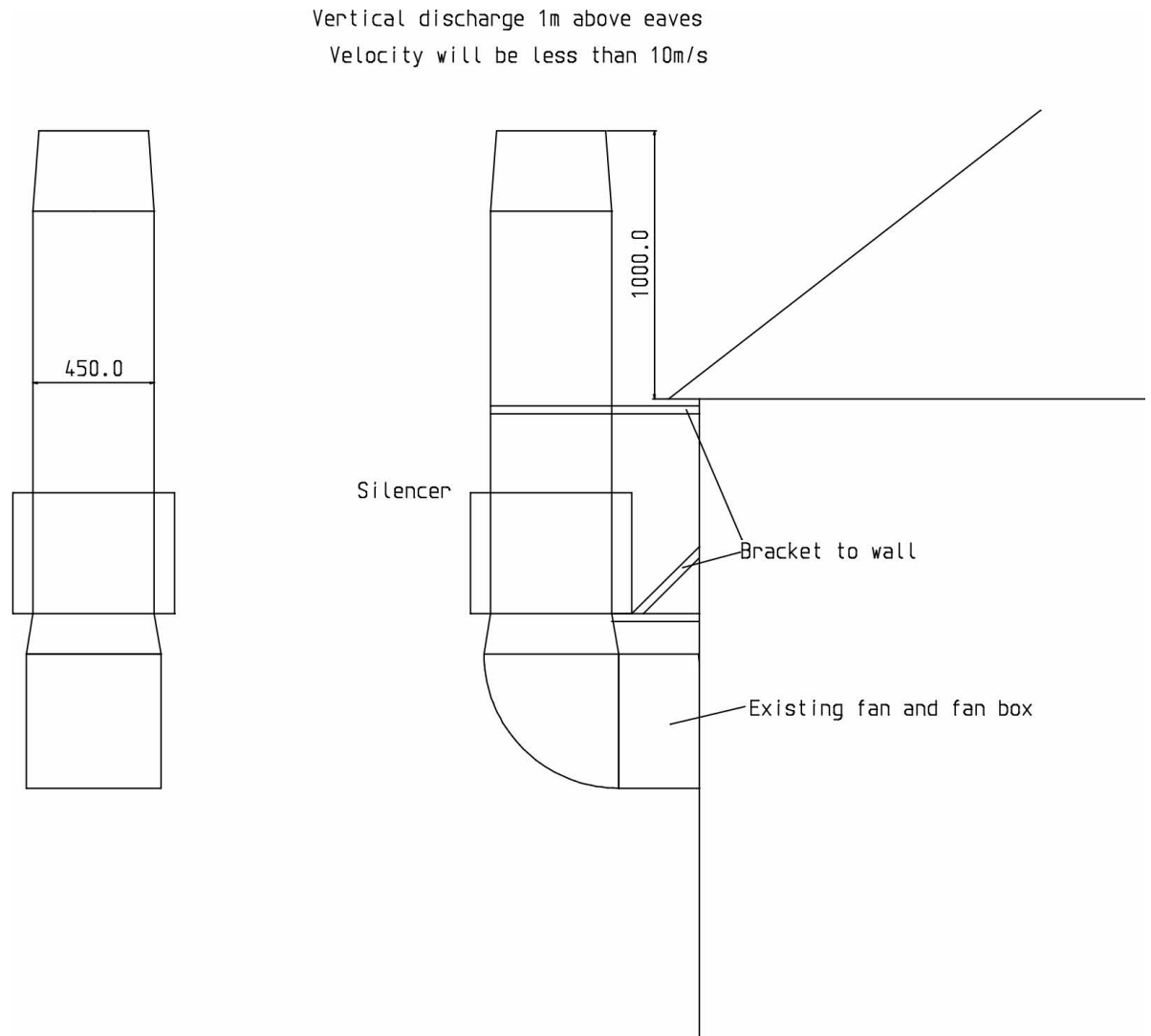
The proposals are shown in Figure 2.

FIGURE 2: ELEVATION PLAN



The proposed vertical discharge mechanical extraction system associated with the proposed kitchen can be seen in Figure 3, below.

FIGURE 3: VERTICAL DISCHARGE MECHANICAL EXTRACTION SYSTEM



4. METHODOLOGY

4.1. Introduction

A risk assessment of the activities that will be carried out at the proposed extraction system has been carried to identify the likely potential for odour to arise from the Site during operation.

Unlike other air pollutants, odour impacts cannot be easily monitored either at the point of emission or at the point of impact. Furthermore, odour impacts are highly subjective; a level of odour which can lead to complaints from one resident may be acceptable to a neighbouring resident. This makes it less straight forward to determine what level of emission is acceptable or what constitutes a significant impact. However, current guidance has been used to undertake the risk assessment and a level of professional judgement used to determine whether the proposed extract system is likely to cause a significant impact at neighbouring properties.

4.2. Methodology

4.2.1. Odour Risk Assessment (EMAO Guidance)

An odour risk assessment of the on-site catering facilities has been carried out according to the methodology given in the EMAQ+ guidance, as recommended in the Defra Odour Guidance for Local Authorities. A simple risk assessment has been undertaken using the criteria set out in Appendix 3 of the guidance, which is reproduced in Table 1 below. This provides an indication of the level of odour likely to occur from the on-site kitchen facilities and allows a significance score to be calculated based on the identified level of risk of odour impacts at adjacent receptors.

The significance score is used to identify the Impact Risk as set out in Table 2. The identified risk has been used to ascertain the best practice design for the proposed ventilation system to prevent odour effects at nearby receptors. The proposed extract system has subsequently been assessed against the Best Practice Design measures set out within the EMAQ+ guidance to determine whether it will adequately prevent significant odour effects at the adjacent residential properties.

TABLE 1: RISK ASSESSMENT FOR ODOUR FROM ON-SITE KITCHEN FACILITIES

Criteria	Descriptive Score	Significance Score	Details
Dispersion	Very Poor	20	Low level discharge, discharge into courtyard c restriction on stack
	Poor	15	Not low level but below eaves, or discharge below 10 m/s
	Moderate	10	Discharging 1 m above eaves at 10-15 m/s
	Good	5	Discharging 1 m above ridge at 15 m/s
Proximity of Receptors	Close	10	Closest sensitive receptor less than 20 m from kitc discharge
	Medium	5	Closest sensitive receptor between 20-100 m from kitchen discharge
	Far	1	Closest sensitive receptor more than 100 m from kitchen discharge

Size of Kitchen	Large	5	More than 100 covers or large sized take away
	Medium	3	Between 30 to 100 covers or medium sized take away
	Small	1	Less than 30 covers or small take away
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burge fish & chips
	High	7	Kebab, Vietnamese, Thai, Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, Pizza or steakhouse

TABLE 2: ODOUR IMPACT RISK AND LEVEL OF CONTROL

Impact Risk	Odour Control Requirement	Significance Score ¹
Low to Medium	Low Level Odour Control	Less than 20
High	High Level Odour Control	20 to 35
Very High	Very High Level of Odour Control	More than 35

¹based on the sum of contributions from dispersion, proximity of receptors, size of kitch cooking type as set out in Table 1

5. ODOUR RISK ASSESSMENT

It is anticipated that the Proposed Development should be considered as likely serving a small number of covers.

As discussed in Section 3.2, the kitchen extract system will terminate at a point 1 m above eave levels, approximately 60 m from the external amenity areas of the proposed residential properties at the nearest points.

A risk assessment of the potential for odour to occur from the proposed kitchen facilities, carried out in accordance with the EMAQ+ guidance, is provided below in Table 3.

TABLE 3: RISK ASSESSMENT FOR ODOUR FROM KITCHEN FACILITY

Criteria	Descriptive Score	Significance Score	Details
Dispersion	Moderate	10	Discharging 1 m above eaves at 10 m/s
Proximity of receptors	Medium	5	External amenity areas of nearest residential properties within 20m
Size of Kitchen	Small	1	Less than 30 covers
Cooking type	Low	1	Most pubs, Italian, French, Pizza or steakhous
Total Score	Low to Medium	17	Overall score indicates a Low to Medium Risk of odour at adjacent receptors

Based on the risk assessment criteria in Table 1, the proposed kitchen facility is identified as having a Low to Medium Risk of producing odour impacts at adjacent receptors.

6. MITIGATION OF ODOUR

The potential for odour to occur from the proposed kitchen facilities has been identified as Low to Medium Risk following the EMAQ+ guidance.

As detailed in the EMAQ+ guidance commercial kitchen ventilation systems should meet certain minimum requirements to ensure they meet best practice design. Details of these criteria are set out in Appendix B, including those relating specifically to odour control. Where a low level of odour control is required the extract system should be fitted with fine filtration or ESP following by carbon filtration (carbon filters rated with a 0.1 second residence time).

It is also recommended that the extract system meets the best practice design requirements set out in Appendix B for minimum ventilation rates, canopy and duct work.

It is also important to ensure that any ventilation and extraction system is maintained in good working order to ensure effective odour removal through the filtration system.

The following measures are therefore proposed as part of an odour management plan for the site:

- the canopy filter will be cleaned on a daily basis;
- grease filters will be changed every two weeks and regularly maintained to ensure the system is working effectively and at the correct air flow rate;
- Cleaning of duct work will be carried out at least every 6 months, more regularly depending on usage; and
- Fine filtration or ESP will be changed on a regular basis according to the manufacturer's recommendations.

Following installation of the extract system detailed above and implementation of the odour management plan measures there will be a low risk of odour effects at adjacent receptors.

7. CONCLUSION

inacoustic was commissioned to assess the impact of odour arising from the proposed Change of Use from a Class E(g) Micro Brewery, to allow for Class E(b) uses, for the sale of goods associated with the Micro Brewery and for the provision of food at Pendewey Farm, Bodmin.

An assessment of odour from the proposed facility has been undertaken using the EMAQ+ Guidance on the Control of Odours and Noise from Commercial Kitchen Exhaust Systems.

Based on the risk assessment criteria, the proposed kitchen facility is identified as having a Low to Medium Risk, of producing odour impacts at adjacent receptors.

Where a low level of odour control is required the extract system should be fitted with fine filtration or ESP following by carbon filtration (carbon filters rated with a 0.1 second residence time). The extraction and filtering system meets the best practice design requirements of the EMAQ+ guidance for odour mitigation for those sites identified as requiring a high level of odour control.

It is also important to ensure that any ventilation and extraction system is maintained in good working order to ensure effective odour removal through the filtration system.

The following measures are therefore proposed as part of an odour management plan for the site:

- the canopy filter will be cleaned on a daily basis;
- grease filters will be changed every two weeks and regularly maintained to ensure the system is working effectively and at the correct air flow rate;
- Cleaning of duct work will be carried out at least every 6 months, more regularly depending on usage;
- Fine filtration or ESP will be changed on a regular basis according to the manufacturer's recommendations.

Following installation of the extract system detailed above and implementation of the odour management plan measures there will be a low risk of odour effects at adjacent receptors. As such, it is recommended that odour should not be considered a constraint to the approval of this planning application.

8. APPENDICES

8.1. Appendix A – Odour Mitigation

Best Practice for Design and Operation of Commercial Kitchen Ventilation Systems:

Minimum Ventilation Rates

An internal ambient air temperature of 28oC maximum.
 Maximum humidity levels of 70%.
 Internal noise level should be between NR40 – NR50.
 Dedicated make up air system to be approximately 85% of the extract flow rate.
 Minimum air change rate of 40 per hour (bases on canopy and general room extraction).

Minimum Requirements for Canopy

Velocity requirements

- o Light loading – 0.25 m/s (applies to steaming ovens, boiling pans, bains marie and stock-pot stoves).
- o Medium loading – 0.35 m/s (applies to deep fat fryers, bratt pans solid and open top ranges and griddles).
- o Heavy loading – 0.5 m/s (applies to chargrills, mesquite and specialist broiler units).

Material of construction

- o A material that would comply with the food hygiene requirement is stainless steel.

Grease filtration

- o Have a minimum performance the same as a baffle filter.
- o Be easy to clean.

Minimum Requirements for Duct Work

All ductworks should be Low Pressure Class 'A' and constructed in accordance with HVCA Specification DW/144[1] with a minimum thickness of 0.8mm.

Duct velocities should be as follows:

Supply (m/s)	Extract (m/s)	
Main runs	6-8	6-9
Branch runs	4-6	5-7
Spigots	3-5	5-7

All internal surfaces of the ductwork should be accessible for cleaning and inspection. Access panels should be installed at 3.0m centres and should be grease tight using a heat proof gasket or sealant.

Duct work should not pass through fire barriers.

Where it is not possible to immediately discharge the captured air, fire rated ductwork may be required.

Minimum Requirements for Fans

Fans must be capable of dealing with the operating static pressure within the duct work and should be designed with a minimum 10% pressure margin [note operating static pressure will increase throughout a maintenance cycle.

Backward curved centrifugal, mixed flow or axial flow impellers are preferred as they are less prone to imbalance and are more easily maintained/cleaned due to their open construction. Fixed or adjustable metal impellers with a robust and open construction should be used.

Fan motors should be rated to IP55 with no need to mount the motor outside of the air stream. For fans that have motors within the air stream and are ventilating cooking equipment that produces high levels of temperature and humidity the specification for the motor should be upgraded to withstand more onerous conditions.

Drainage should be provided.

Minimum Requirements for Odour Control

Objectives

for new premises or premises covered by planning conditions restricting the impact of odour the system shall be designed to prevent harm to the amenity.
for existing premises not covered by planning conditions restricting the impact of odour, the system shall be designed to avoid statutory nuisance and shall comply with the principles of Best Practical Means.

To achieve these objectives the odour control system shall include an adequate level of:

1. odour control; and
2. stack dispersion.

The overall performance of the odour abatement system will represent a balance of 1 and 2.

Discharge Stack

The discharge stack shall:

1. Discharge the extracted air not less than 1 m above the roof ridge of any building within 20m of the building housing the commercial kitchen.
2. If 1 cannot be complied with for planning reasons, then the extracted air shall be discharged not less than 1 m above the roof eaves or dormer window of the building housing the commercial kitchen. Additional odour control measures may be required.
3. If 1 or 2 cannot be complied with for planning reasons, then an exceptionally high level of odour control will be required.

Odour Arrestment Plant Performance

Low to medium level control may include:

1. Fine filtration or ESP following by carbon filtration (carbon filters rated with a 0.1 second residence time).
2. Fine filtration followed by counteractant/neutralising system to achieve the same level of control as 1.

High level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2-0.4 second residence time).
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

Very high level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 –0.8 second residence time).
2. Fine filtration or ESP followed by carbon filtration and by counteractant/neutralising system to achieve the same level of control as 1.
3. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.
4. Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as 1.

Maintenance must be carried out to ensure these performance levels are always achieved.

Maintenance

Proprietors of commercial kitchens have a duty to ensure that the ventilation system serving the respective premises are maintained and operated effectively. Good maintenance is a prerequisite for ensuring that a system complies with Best Practicable Means under statutory nuisance provision and will form a key element of any scheme designed to minimise harm to the amenity under planning regulation. Good maintenance is required by the food hygiene regulations and will also minimise the risk of fire. The recommended cleaning period for extract ductwork is:

Heavy Use 12-16 Hours Per Day 3 Monthly
Moderate Use 6-12 Hours Per Day 6 Monthly
Light Use 2-6 Hours Per Day Annually

Recommendations for maintenance of odour control system include:

- System employing fine filtration and carbon filtration.
 - o Change fine filters every two weeks.
 - o Change carbon filters every 4 to 6 months.
- Use a system employing ESP and other in line abatement.
 - o Clean every 2-6 months

inacoustic | truro

Unit 4, The Dry, Mount Wellington Mine, Chacewater, Truro, Cornwall, TR4 8RJ

01872 672400 | www.inacoustic.co.uk | [REDACTED]

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