



## **Kitchen Odour Risk Assessment**

45 Market Parade, Havant

May 2021

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Mark Hewett  
45 Market Parade  
Havant  
PO9 1PY

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# 1. Introduction

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- 1.1 Phlorum Limited has been commissioned by Mark Hewett to undertake a Kitchen Odour Risk Assessment (KORA) as part of a planning application (Reference: APP/20/01195) for a proposed change in land-use at 45 Market Parade, Havant, Hampshire (PO9 1PY) ("the premises"), from land-use class A1 (Shops) to A3 (Restaurants and cafés) within the administrative boundary of Havant Borough Council (HBC). The National Grid Reference for the centre of the premises is 471735, 106525.
- 1.2 The proposals comprise the development of a café (the "café") on the ground-floor of the existing three-storey building fronting Market Parade. The premises are located approximately 50m south of Havant Train Station in a predominantly commercial area with residential properties nearby. Ground-floor commercial units are situated to the north and south of the premises with residential flats located on the two floors above.
- 1.3 HBC's Pollution Team have been consulted regarding the proposed development and raised the following concern:

*"Taking into account the proximity of nearby residential neighbours and the proposal to restrict termination of the flue to ground floor level there is a high probability of people being affected by the odour. In order to reduce risk, the discharge from the flue should not be located less than 1m above the roof ridge of any building within 15m of the vent. Therefore, please can the applicant justify why they have not taken this approach."*

- 1.4 HBC's Pollution Team have also requested the following:

*"the applicant should provide a professional report detailing the exact plant to be used [...] and exactly what odour control measures will be used. The details in Appendices 2 to 4 of the following guidance document must be included, EMAQ (2018) Control of Noise and Odour from Commercial Kitchen Exhaust Systems."*

- 1.5 This KORA will identify whether odour emissions from the café's kitchen will likely have the potential to cause significant nuisance to nearby sensitive receptors, and whether such risks could be sufficiently reduced using odour control measures. This assessment also provides guidance on what an appropriate level of odour control might comprise.

## 2. Kitchen Odour Risk Assessment

### Consultation

- 2.1 HBC's Pollution Team were contacted on 4<sup>th</sup> March 2021 to discuss and agree the proposed use of the EMAQ+ guidance and scope of assessment. A response was received from HBC's Environmental Health Officer agreeing the proposed scope of assessment, stating the following:

*"I can confirm that the details of your email will be sufficient for an odour impact assessment. The client should be mindful that details of the plant for odour abatement are likely to be required to inform the noise impact assessment."*

### Methodology

- 2.2 Defra provides guidance<sup>1</sup> on the determination of the odour impact risk from commercial kitchens. The guidance also outlines the level of mitigation that might be required to reduce the risk to an acceptable level. Whilst this guidance has been withdrawn (due to the onus for provision of environmental guidance being shifted from the government to industry), it still provides a framework from which the likely odour risk can be determined. EMAQ+ have produced an update to this guidance<sup>2</sup> which has also been referred to in this KORA.
- 2.3 Across both guidance documents, the odour impact risks are determined as a function of:
-  The dispersion characteristics;
  -  The proximity of sensitive receptors;
  -  The cooking type; and
  -  The size of kitchen.
- 2.4 The odour risk assessment scoring matrix is set out in Table 2.1 below.

**Table 2.1: Odour Risk Assessment Scoring Matrix**

| Criteria   | Score     | Score | Details                                                                     |
|------------|-----------|-------|-----------------------------------------------------------------------------|
| Dispersion | Very poor | 20    | Low level discharge, discharge into courtyard or restriction on stack.      |
|            | Poor      | 15    | Not low level but below eaves, or discharge at below 10 m.s <sup>-1</sup> . |

1 Defra (2005). *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*

2 EMAQ+ (2018) Amendment to Defra (2005). *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*

| Criteria                                | Score     | Score | Details                                                                                                                          |
|-----------------------------------------|-----------|-------|----------------------------------------------------------------------------------------------------------------------------------|
|                                         | Moderate  | 10    | Discharging 1 m above eaves at 10-15m.s <sup>-1</sup> .                                                                          |
|                                         | Good      | 5     | Discharging 1 m above ridge at 15m.s <sup>-1</sup> .                                                                             |
| Proximity of receptors                  | Close     | 10    | Closest sensitive receptor less than 20m from Kitchen discharge.                                                                 |
|                                         | Medium    | 5     | Closest sensitive receptor between 20 and 100m from kitchen discharge.                                                           |
|                                         | Far       | 1     | Closest sensitive receptor more than 100m from kitchen discharge.                                                                |
| Size of kitchen                         | Large     | 5     | More than 100 covers or large sized take-away.                                                                                   |
|                                         | Medium    | 3     | Between 30 and 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, burgers, or fish & chips. Middle Eastern or any premises cooking with solid fuel. |
|                                         | High      | 7     | Vietnamese, Thai, Indian, Japanese, Chinese, Steakhouse.                                                                         |
|                                         | Medium    | 4     | Cantonese, Italian, French, Pizza (gas fired)                                                                                    |
|                                         | Low       | 1     | Most pubs (no fried food, mainly reheating and sandwiches etc, tea rooms.                                                        |

2.5 Once the total score has been determined, the odour impact risk, and the level of odour control required to mitigate that risk, can be identified from the matrix in Table 2.2, below.

**Table 2.2: Odour impact risk and control requirement level**

| Impact Risk   | Odour Control Requirement     | Significance Score |
|---------------|-------------------------------|--------------------|
| Low to Medium | Low level odour control       | Less than 20       |
| High          | High level odour control      | 20 to 35           |
| Very high     | Very high level odour control | more than 35       |

## Kitchen Odour Risk Assessment

- 2.6 The café will serve a range of food products including cooked breakfasts, roast dinners, sandwiches, and soups. Although it is not known exactly how many meals will be served per day, there will be no use of solid cooking fuels, which can be particularly odorous.
- 2.7 The Gross Internal Area (GIA) of the premises is 61.5m<sup>2</sup>. The dining area occupies an area of 49.9m<sup>2</sup>, and the kitchen occupies an area of 7.0m<sup>2</sup>. The dining area will comprise a maximum of 50 covers.
- 2.8 There will be no use of gas at the premises, and all food will be prepared and cooked using electrical cooking apparatus. The kitchen equipment includes the following:
- 🍳 Lincat single oven with hob;
  - 🍳 Lincat 700mm griddle
  - 🍳 Lincat double fryer; & 700mm griddle;
  - 🍲 Bain Marie (three-pot);
  - 🍷 Panini machine;
  - 🍞 Toaster; and
  - 📺 Microwave oven.
- 2.9 The café will operate from 07:30 to 16:30 Mondays to Saturdays and 08:00 to 16:00 on Sundays, with peak periods expected during lunchtime, from approximately 12:00 to 14:00.
- 2.10 High sensitivity residential receptors are located in residential units directly above the premises, and to the north and south. The balconies of residential properties are situated directly above the rear of the premises. Commercial receptors are also situated in the adjacent properties to the north and south.
- 2.11 The EMAQ+ guidance highlights the importance of professional judgement in the assessment of kitchen odour risks, with *Note 1* stating the following:
- "A planner may take a pragmatic view when assessing whether low risk kitchens require any odour abatement to be fitted. In reaching this decision the Planner may consider the nature of the food being cooked and/or the size of the kitchen and/or its location."*
- 2.12 Professional judgement has been used in determining the potential odour impact risks for the *Size of Kitchen* and *Cooking type (odour and grease loading)* categories of Table 2.3. Justification behind these judgements is included in the '*This Development*' section of the table.
- 2.13 The KORA for the Restaurant is set out in Table 2.3 below.

**Table 2.3: Odour impact risk for the Restaurant**

| Criteria                                       | Score     | Score | This Development                                                                                                                                                                                                                                                                                       |
|------------------------------------------------|-----------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Dispersion</i>                              | Very Poor | 20    | Kitchen extract will discharge horizontally through an external grille located at the rear of the premises, at a height of approximately 2.7m above ground level.                                                                                                                                      |
| <i>Proximity of receptors</i>                  | Close     | 10    | Residential receptors are located on the second and third floors, directly above and adjacent to the premises. The balconies of residential properties are situated directly above the kitchen extract discharge.                                                                                      |
| <i>Size of kitchen</i>                         | Small     | 1     | Although the cafe's maximum capacity is 50 covers, the kitchen is small, with an area of just 7.0m <sup>2</sup> . Furthermore, it can be reasonably expected that a significant proportion of the covers will be consuming uncooked or re-heated foods such as fresh and toasted sandwiches and soups. |
| <i>Cooking type (odour and grease loading)</i> | Medium    | 4     | The food served at the café will vary from cooked breakfasts, roast dinners, and soups to uncooked or re-heated or toasted products such as sandwiches, all of which have varying degrees of grease loading and odour production.                                                                      |
| <b>Score</b>                                   |           |       | <b>35</b>                                                                                                                                                                                                                                                                                              |

- 2.14 Based on the information provided, and following the EMAQ+ guidance, odour emissions from the commercial kitchen are considered to present a *High* impact odour risk, principally due to the low-level discharge and the proximity of nearby sensitive receptors. Therefore, following the EMAQ+ guidance, a *High level* of odour control is recommended for the kitchen extract system.

## Currently Proposed Extract System

- 2.15 The currently proposed kitchen extraction system comprises a stainless steel extraction canopy measuring 1,500mm × 900mm × 500mm and fitted with three 395mm × 495mm stainless steel grease-baffle filters for primary filtration.
- 2.16 The extract canopy will feed into ducting, linking to an *OC Innovations OC1* UV ozone system before entering a *Carbopleat Disposable Panel Filter* (carbon filter unit) with pre-mesh filter from the manufacturer Westbury Filtermation Limited.
- 2.17 After passing through the carbon filter unit, extract air will enter a TCBB355 cased fan which will increase extract velocity before being discharged horizontally through an external grille at a height of 2.7m above ground level situated at the rear of the premises.

- 2.18 There being residential units on the floors above the premises makes it difficult, if not impossible, for an extract system to be installed so that it discharges at 1m above the roof of the building. As such, a low-level extract system incorporating odour control measures seems to be the most suitable system for the café.

## Mitigation and Recommendations

- 2.19 With regards to reducing odour concentrations before they are released from the exhaust stack, the EMAQ+ guidance states that for a *High* impact odour risk, a *High* level of odour mitigation should be installed.
- 2.20 EMAQ+ provides guidance on what a *High* Level of odour mitigation might comprise. This includes the following:

*"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."*

Note: ESP = Electrostatic Precipitation, used to separate solid or liquid particles from the ventilation air.

- 2.21 The currently proposed kitchen extract system includes a UV ozone system and carbon filtration unit, which are components of *High* level odour control systems as specified in the EMAQ+ guidance. The guidance recommends that the carbon filters are rated with a 0.2-0.4 second residence time.
- 2.22 The EMAQ+ guidance also recommends appropriate maintenance of kitchen exhaust and odour mitigation equipment. It is recommended that for *Moderate use*, the cleaning interval for ductwork should be 6-12 months.
- 2.23 The EMAQ+ guidance also recommends that carbon filters are changed every 4 to 6 months for odour control systems employing carbon filtration.

### 3. Summary and Conclusions

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- 3.1 Phlorum Limited has been commissioned by Mark Hewett to undertake a Kitchen Odour Risk Assessment to assist in a planning application (Reference: APP/20/01195) for a change in land use from land use class A1 (Shop) to A3 (Café) at 45 Market Parade, in the administrative boundary of Havant Borough Council.
- 3.2 The Kitchen Odour Risk Assessment has been undertaken in line with EMAQ+ Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems and has identified that the proposed facility will likely require a *High* level of odour control. This is primarily due to the low level discharge of the current extract system and the proximity of nearby sensitive receptors.
- 3.3 Given the difficulties in creating a kitchen extract system which discharges above the roof of the building, the café will likely need some form of odour control measures to compensate for the low level of the emissions outlet. This will likely be required in order to protect the amenity of the nearby residential receptors.
- 3.4 The EMAQ+ guidance recommends that a combination of either fine filtration or ESP followed by carbon filtration, or UV ozone system would provide a *High* level of odour control.
- 3.5 However, it should be noted that alternative systems might be available that provide a similar or better level of odour control. It is recommended that the client discusses any such alternative options that might be suitable with an appropriately experienced and qualified kitchen ventilation specialist. Following discussions with an appropriate equipment supplier, a system has been proposed that will utilise a UV ozone system along with carbon filtration. These elements should result in a high level of odour control, as is recommended in the EMAQ+ guidance.
- 3.6 Following the implementation of the proposed odour control system, the proposed café at 45 Market Parade should comply with all relevant guidance and its operation would unlikely lead to significant impacts on the amenity of nearby sensitive receptors.



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