



Odour Risk Assessment	
King's Cross Road, Camden	
Job number:	J0309
Document number:	J0309/1/F1
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Date:	04 April 2019

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1 Introduction

- 1.1.1 This report considers the potential for annoyance due to kitchen odours from the proposed commercial kitchen at 111 King's Cross Road, London, WC1X 9LR. The ground floor of the existing building will be refurbished to provide a new fish and chip restaurant. Odours from the kitchen have the potential to impact on the amenity of residents at nearby properties, including the flats above the proposed restaurant. The assessment has been prepared in support of the planning application for the proposed development.
- 1.1.2 This report includes an odour risk assessment that follows the methodology set out in EMAQ guidance on Control of Odour and Noise from Commercial Kitchen Exhaust Systems, which updates the withdrawn Defra Guidance of the same name (Defra, 2005; EMAQ, 2018). The risk assessment methodology has been used to determine the level of odour abatement that will be required.
- 1.1.3 The assessment has been undertaken on behalf of Projection Architects Ltd by Air Quality Assessments Ltd (AQA).
- 1.1.4 The references used in this assessment are shown in **Section 5**.

2 Odour Risk Assessment

2.1. Introduction

2.1.1 EMAQ guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems includes a risk assessment methodology for identifying the potential risk of odour impacts from commercial kitchen operations. The results of the risk assessment may then be used to determine a suitable level of odour abatement to be installed into a commercial kitchen.

2.1.2 The risk assessment for odours is split into the following four categories;

- dispersion;
- proximity of receptors;
- size of kitchen; and
- cooking type (odour and grease loading).

2.1.3 A risk rating is scored for each category and the total risk rating, i.e. the sum of the risk rating for each category, is compared with the significance score in **Table 1**. The level of odour control which is likely to be required to prevent the kitchen from causing odour nuisance impacts can then be determined. The risk ratings for each category are shown in **Table 2**.

Table 1: Significance Score and Odour Control Requirement

Impact Risk	Odour Control Requirement	Significance Score ^a
Low to Medium	Low level of odour control	Less than 20
High	High level of odour control	20 to 35
Very High	Very high level of odour control	More than 35

a based on the sum of scores from dispersion, proximity to receptors, size of kitchen and cooking type.

Table 2: Risk Ratings

Criteria	Rating	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.
	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 kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100 m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100 m from kitchen discharge. ^a
Size of Kitchen	Large	5	More than 100 covers or large sized takeaway.
	Medium	3	Between 30 and 100 covers or medium sized takeaway.
	Small	1	Less than 30 covers or small takeaway. ^a
Cooking Type (Odour and Grease Loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. Turkish, Middle Eastern or any premises cooking with solid fuel.
	High	7	Kebab, Vietnamese, Thai, Indian, Japanese, Chinese or Steakhouse.
	Medium	4	Cantonese, Italian, French or Pizza (gas fired).
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches etc.), or Tea Rooms. ^a

^a A planner may take a pragmatic view when assessing whether certain 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 kitchen and/or its location.

2.2. Risk Assessment

Dispersion

- 2.2.1 The risk rating for dispersion relates to the location of the discharge flue of the kitchen extraction system, and the flow rate of the exhaust air at the point of discharge.
- 2.2.2 The proposed kitchen extract system will be fitted with a high velocity cowl and will terminate at a height of 1m above the height of the roof ridge, as shown in **Appendix A2**. Therefore, based on the information in **Table 2**, the risk rating for dispersion would be described as **Good**.

Proximity to Receptors

- 2.2.3 The risk rating for proximity to receptors relates to the distance from the point of discharge of the kitchen extraction system to the nearest sensitive receptor. Examples of high sensitivity receptors, as set out in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Odour for Planning (IAQM, 2018), include residential dwellings.
- 2.2.4 Residential properties above the commercial units to the north and south of the application site on King's Cross Road and the flats above the restaurant will be within 20m from the flue discharge; therefore, based on the information in **Table 2**, the risk rating for dispersion would be described as **Close**.

Size of Kitchen

- 2.2.5 The risk rating for the size of kitchen relates to the volume of food prepared by the kitchen, as described by the number of covers of a restaurant, or the size of a takeaway.
- 2.2.6 The proposed restaurant will have seating for around 16 people; therefore, based on the information in **Table 2**, the risk rating for the size of kitchen would be described as **Small**.

Cooking Type

- 2.2.7 The risk rating for cooking type relates to the type of food prepared in the kitchen, and the cooking methods used.
- 2.2.8 The restaurant will serve fish and chips; therefore, based on the information in **Table 2**, the risk rating for cooking type would be described as **Very High**.

Summary

- 2.2.9 A summary of the risk assessment and the total risk rating for the restaurant is shown in **Table 3**. With regard to the significance scores set out in **Table 1**, the overall risk rating for the restaurant is **High**; therefore, the extraction system would require a high level of odour control to mitigate the potential odour impacts at local sensitive receptors.

Table 3: Odour Risk Assessment Summary

Criteria	Rating	Significance Score	Comments
Dispersion	Good	5	The kitchen extract will be fitted with a high velocity cowl and will discharge above the roof ridge.
Proximity of Receptors	Close	10	The kitchen extract is discharged within 20m of dwellings neighbouring the proposed development and within the proposed development itself.
Size of Kitchen	Small	1	The restaurant will have 16 covers.
Cooking Type (Odour and Grease Loading)	Very High	10	The kitchen will serve fish and chips.
Overall Risk Rating	High	26	High level of odour control required.

3 Odour Mitigation

- 3.1.1 The odour risk assessment has identified that the proposed kitchen would require a high level of odour control (see **Table 3**). The EMAQ guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems outlines that abatement systems offering a high level of odour control may include:
1. Fine filtration or electrostatic precipitator (ESP) followed by carbon filtration (carbon filters rated with a 0.2-0.4 second residence time); or
 2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.
- 3.1.2 The current plans for the proposed development show that the following odour controls will be implemented at the restaurant, with details of the proposed extract system provided in **Appendix A2**:
- High level flue terminating above the roof ridge;
 - Grease filter within the canopy hood;
 - ESP; and
 - Activated carbon filters.
- 3.1.3 The odour controls shown in the current plans would provide a high level of odour control and no further mitigation should be required.
- 3.1.4 The extract flow rate of the system should be sufficient to ensure a capture velocity at the extract canopy appropriate to the type of cooking to be undertaken. An adequate capture velocity will also help prevent untreated odour emissions due to leakage from the building, i.e. through doors and windows. Any adjustments to the flow rate of the ventilation air will need to take account of the residence time requirements of the carbon filtration system.

Installation and Maintenance

- 3.1.5 A suitably qualified and experienced ventilation systems engineer should design and install the ventilation system.
- 3.1.6 Regular maintenance of the ventilation system is essential to ensure that it operates effectively, and continues to provide adequate mitigation against odour nuisance. The EMAQ guidance provides recommended cleaning schedules for extract systems as follows:
- the minimum cleaning period for baffle filters should be once each week;
 - ductwork (moderate use – 6-12 hours/day) should be cleaned every 6-12 months;
 - carbon filters should be changed every 6 to 12 months (when used with ESP); and
 - ESP system cleaned and sump emptied every 4 weeks.
- 3.1.7 Periodic 'deep hygiene cleaning' of the entire ventilation system should be undertaken by a specialist contractor.

4 Conclusions

- 4.1.1 The odour risk assessment has identified that the restaurant would have a high risk rating with regard to odour effects.
- 4.1.2 An odour abatement system consisting of an ESP followed by carbon filtration (with a 0.2-0.4 second residence time) or a UV ozone system is recommended. The current plans show a system that would provide a high level of odour control, and further mitigation should not be required.
- 4.1.3 It is judged that there will not be a significant risk of odour impacts from the proposed kitchen, provided that the extract system is installed, as specified, to provide a high level of odour control. There should be no constraints to the development of the site as a restaurant with regard to odour.

5 References

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

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

IAQM (2018) *Guidance on the Assessment of Odour for Planning (v1.1)*.

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A1 Professional Experience

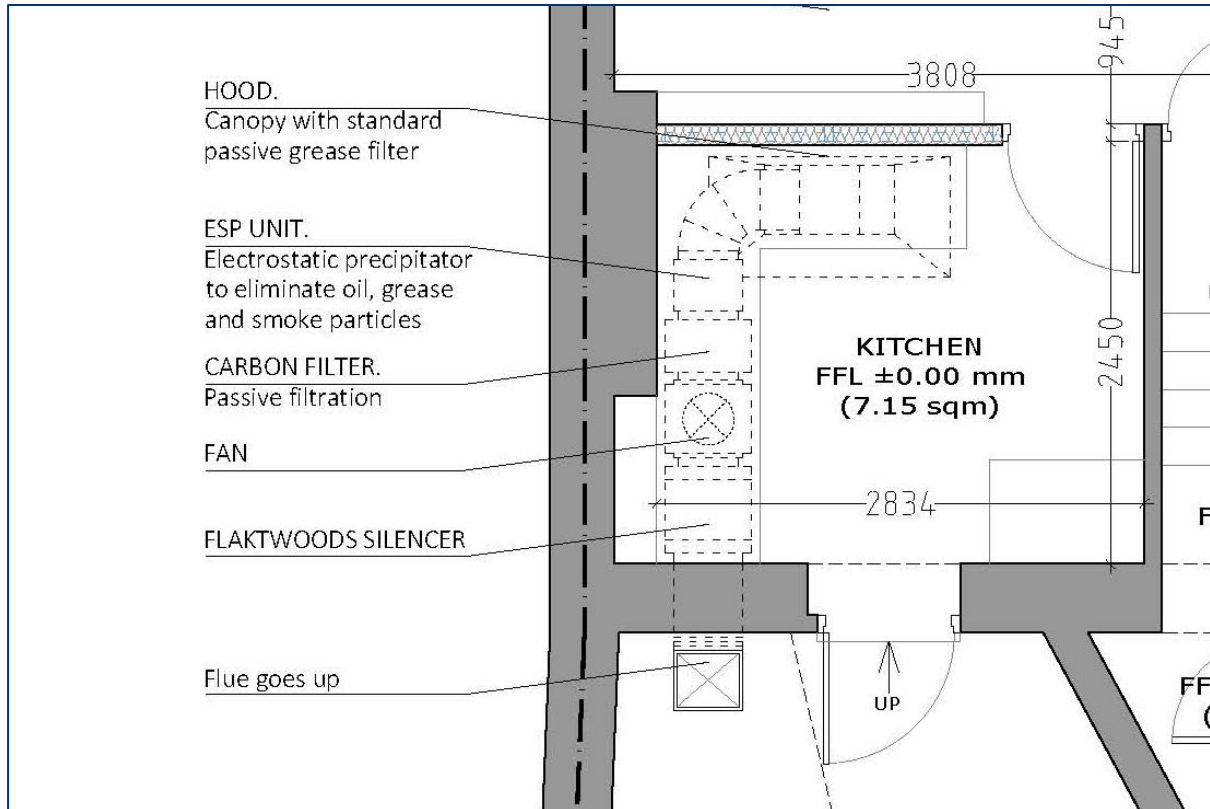
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Bob Thomas is a Director at AQA, with over eleven years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM₁₀, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at <http://aqassessments.co.uk/about>

A2 Proposed Odour Controls

A2.1. Ventilation System Overview



A2.2. Extract Flue

