Odour Control Report

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Author Note

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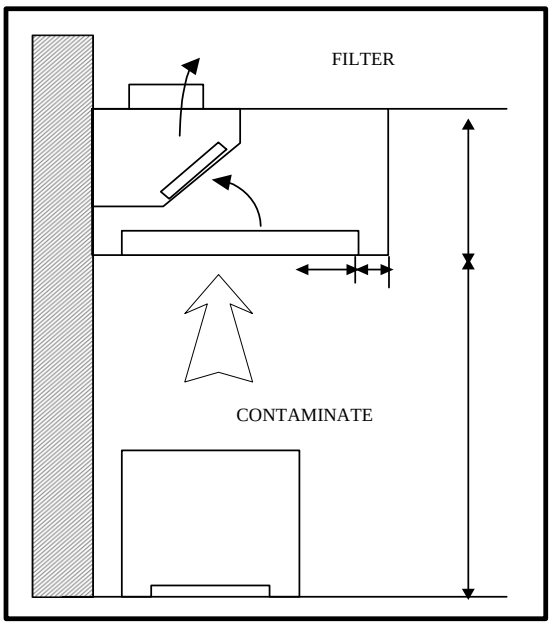
Abstract

This report considers the potential for annoyance due to kitchen odours from the proposed property 1 Grandale Street, Manchester M14 5WS, which to be named Dream Takeaway. Odours from the kitchen have the potential to impact on the amenity of residents at nearby properties. The assessment has been prepared in support of the planning application for the proposed development. 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set out in EMAQ guidance on Control of Odour and Noise from Commercial Kitchen Exhaust Systems, which updates the withdrawn Defra Guidance of the same name (Defra, 2005; EMAQ, 2018).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.

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Extraction System

The kitchen is to be installed at the front left-hand side of the entrance. With a 6-metre canopy hood and ducting exiting rear of the building. The ductwork to be painted black. The canopy will be a straight overhead wall mounted hood. Constructed of 430 grade stainless steel with ultrafine grains. The stainless steel will be designed with a plain polish. The extraction rate for the canopy will be heavy duty no less than 0.31-0.62 (m3/s)



Ductworks[1]

The ducting will start from the rear of the canopy hood (mid-point) exiting through the gable wall terminated 1mtere above the roof vertically. The external extractor fan and ductworks will be painted black. The ducting will be fire graded 1.2mm thickness low pressure class A and be in accordance with HVCA Specification number DW/144.

The ductworks will be sized at 500mm terminated 1meter above the eaves with a jet cowl, injecting the contaminated air vertically.

Extraction Fan

The extraction fan to be installed is a 500mm Compac Flaktwoods fan which has a speed (rpm) 2910 and a potential velocity of 7.0 m/s. Accompanied with anti-vibrations brackets. The extraction unit will be assisted with two 2D's attenuators on either side to reduce the noise level to 48 Db @ 3metres

Odour Risk Assessment

EMAQ guidance on the Control of Odour and Noise from Commercial KitchenExhaust 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.

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

- dispersion
- proximity of receptors
- size of kitchen
- cooking type

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.

Table 1: **Significance Score and Odour Control Requirement**

Impact Risk	Odour Control Requirement	Significance Score
Low to Medium	Low level of odour control	<20
High	High level of odour control	20 - 35
Very High	Very high level of odour control	>35

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.

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.
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.
Cooking Type (odour & grease Load)	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

Risk Assessment

Dispersion

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.

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The kitchen extract system will terminate through a high velocity cowl above the roof of the side of the building at a height above the eaves by at least 1 metre. Therefore, based on the information in Table 2, the risk rating for dispersion would be described as moderate

Proximity to Receptors

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.

Residential properties rear and sides to the commercial unit the application site will be within 20m from the flue; therefore, based on the information in Table 2, the risk rating for dispersion would be described as close.

Size of Kitchen

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.

The unit in question will operate as a takeaway only; therefore, based on the information in Table 2, the risk rating for the size of kitchen would be described as Small.

Cooking Type

The risk rating for cooking type relates to the type of food prepared in the kitchen, and the cooking methods used.

The takeaway will serve Grill food and kebabs; therefore, based on the information in Table 2, the risk rating for cooking type would be described as High.

Summary

A summary of the risk assessment and the total risk rating for the Takeaway 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.

Criteria	Rating	Significance Score	Comments
Dispersion	Moderate	10	Discharging 1 m above eaves at 10-15 m/s.
Proximity of Receptors	Close	10	Closest sensitive receptor less than 20 m from kitchen discharge.
Kitchen Size	Small	1	Less than 30 covers or small takeaway. a
Cooking Type	High	7	Kebabs
Overall Risk Rating	High	28	High

Odour Mitigation

The odour risk assessment has identified that the proposed Take away 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 0.4-0.8 second residence time); or

2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

The odour risk assessment has identified that the take away would have a High risk rating with regard to odour effects.

An odour abatement system consisting of fine filtration or an ESP followed by carbon filtration (with a 0.4-0.8 second residence time) or a UV ozone system is recommended.

It is judged that there will not be a significant risk of odour impacts from the proposed takeaway, 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 take away with regard to odour.

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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