

Odour Control Report

Mr Jahangir Ahmed Bsc

Catering Gas Safe Engineer

Author Note

Cater Safe Limited has completed this report based on the information provided by the client, and the agreed scope of work. Cater Safe Limited does not accept liability for any matters arising outside the agreed scope of work, or for changes that may be required due to omissions in the information provided

Abstract

This report considers the potential for annoyance due to kitchen odours from the proposed property 41 – 43 Well Gate Clitheroe BB7. 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set out in EMAQ guidance on Control of Odour and Noise from Commercial Kitchen Exhaust Systems, which updates the withdrawn Defra Guidance of the same name (Defra, 2005; EMAQ, 2018).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.

Odour Control Report

Odour Risk Assessment

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.

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 Assumption

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.

The kitchen extraction system, and the flow rate of the exhaust air at the point of discharge.

Termination is at least 1 metre above the ridge, based on the information in Table 2, the risk rating for dispersion would be described as Good.

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 is within 20m from the kitchen discharge, therefore, based on the information in Table 2, the risk rating for dispersion would be described as Close.

Size of Kitchen Assumption

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 the venue, or the size of the kitchen area.

The venue has less than 30 seating capacity.

Therefore, based on the information in Table 2, the risk rating for the size of kitchen would be described as Small.

Cooking Type Assumption

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

The venue will be cooking Cantonese foods, based on the information in Table 2, the risk rating for cooking type would be described as Medium.

Summary

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

Criteria	Rating	Significance Score	Comments
Dispersion	Good	5	1m Above the Ridge
Proximity of Receptors	Close	10	Closest sensitive receptor within 20 m from kitchen discharge.
Kitchen Size	Small	1	Less than 30 seating
Cooking Type	Medium	4	Cantonese cuisine
Overall Risk Rating	Low	20	Low

Odour Mitigation

The odour risk assessment has identified that the proposed restaurant would require a Low 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 Low level of odour control may include:

1. Fine filtration (Carbon) or electrostatic precipitator (ESP) Low level; or
2. Fine filtration (Carbon) or ESP followed by UV ozone system to achieve the same level of control

Ductworks

The ductworks will be sized at 315mm terminated 1meter above the eaves with a jet cowl, injecting the contaminated air vertically.

Extraction Fan

The extraction fan to be installed is a 315mm Flaktwoods fan which has a speed (rpm) 1420 and a potential velocity of 4.2 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 outbreak** to 23 Db @ 3metres (Manufactures specification Appendix A).

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).

Bob Thomas: Publisher Name Air quality assessments

Appendix A



Northern Fan Supplies Ltd

Technical Data Sheet

JM Aerofoil

Quotation Number	:	F
Project Name	:	C
Item Reference:	:	C
Fan Code	31JM/16/4/5/34	
Fan Diameter / Size	315 Size / mm	
Blades	5	
Fan Speed	1420 rpm	
Velocity	4.2 m/s	
Blade Angle	34°	
Installation Type / Form of Running	D / B	
Fan Casing	Long	
Requested Duty	0.33m³/s @ 94 Pa (static)	
Outlet Dynamic Pressure	11 Pa	
Duty Shaft Power	0.069 kW	
Max Shaft Power	0.070 kW	
Total Efficiency	50.3 %	
Pitch Angle Range	28° - 34°	
Motor Frame	BT5 (Sized at 1.2kg/m³ Air Density)	T
Motor Grade	IE1	d
Motor Rating	0.075 kW	
Full Load Current	0.53 A	
Starting Current	1.45 A	
Motor Mounting	Pad	
Electrical Supply	220-240 Volts 50 Hz 1 Phase	
Start Type	DOL	
Motor Winding	Standard	
Enclosure	Standard All	
ErP [FMEG] Rating	Not in Scope	
SFP value	0.34 W/(l/s)	
Energy Consumption	226 kWh (2000 h/year)	
Running Cost / Year	£20	
Air Density	1.2 kg/m³ / 20 °C / 0 m / 50% RH	
Smoke Venting	Non Smoke Venting	
Product Number	EJ321460	

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m**
Inlet*	90	87	84	82	77	73	68	64	93	63
Outlet*	91	89	84	82	78	75	70	66	94	63
Breakout*	81	75	64	62	54	46	44	42	82	43

* Lw dB re 10⁻¹² W** dBA re 2x10⁻⁵ Pa

Performance data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with ISO 5801 and is specifically applicable for Ducted installations. When an electronic controller is incorporated, enhanced motor noise can occur - particularly when the operating speed is well below maximum. FWL therefore recommend using an auto transformer speed controller for noise sensitive applications.

Acoustic data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with BS 848 Pt 2, 1985 / BS EN ISO 5136 under Ducted conditions. The single figure provided is the overall Inlet sound pressure level at the specified distance, under spherical, free field conditions. Breakout levels stated are estimated from induct sound power levels and are provided for guidance.

