

ODOUR CONTROL ASSESSMENT

For

48 Princess Street Manchester M1 6HR



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PURPOSE OF THIS REPORT

PLANNING CONSTRAINTS

This report is intended to provide information collected and produced as part of the design of the ventilation systems which will be included in the restaurant within the basement of 48 Princess street, located at the corner of the Harter street and Princess street junction, Manchester.

The following information should provide a planning officer with information that is suitable to allow the sign off any planning conditions relating to the risk of nuisance odour production in the vicinity of the building.

METHODOLOGY

This report will highlight the regulatory and industry best practice guidance and the related documentation and work through the assessment methodology included within.

SITE SPECIFIC DETAILS

LOCATION

The commercial kitchen is located in the basement level of the building, with the restaurant situated below residential apartments on the upper floors.

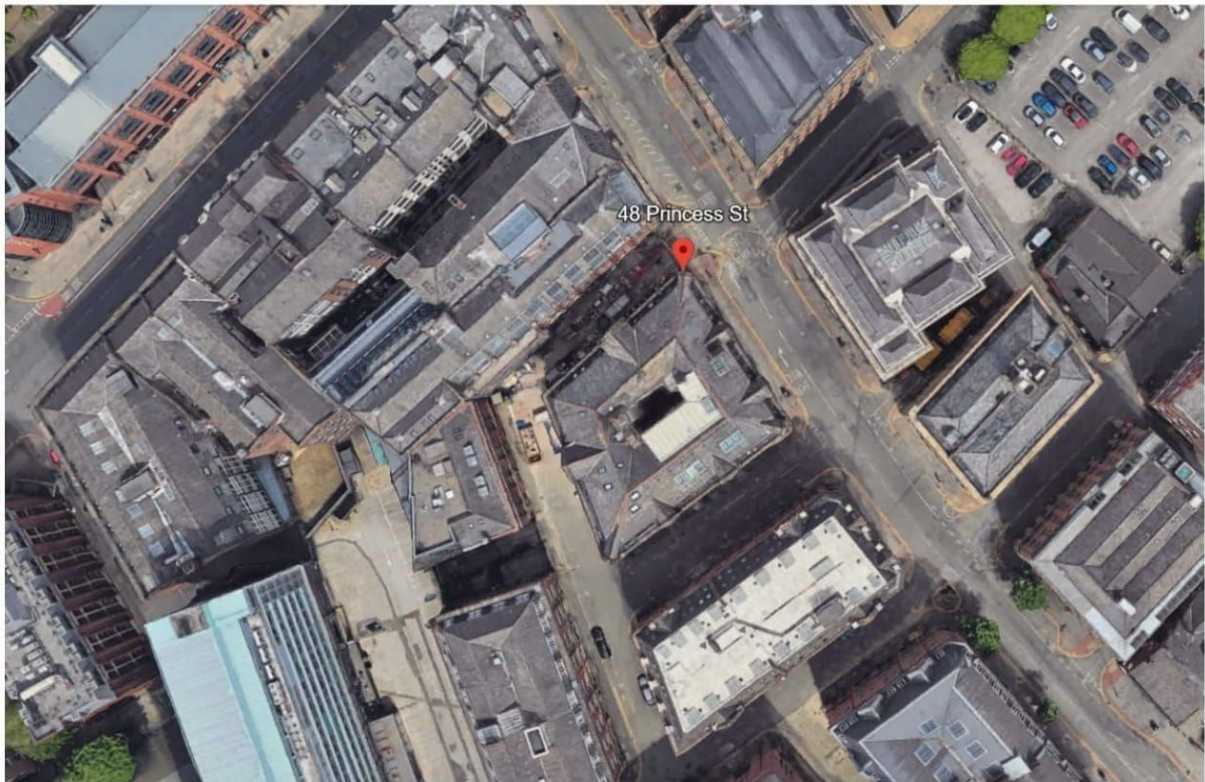


Fig 1. – Aerial Photograph of the site area.

A site location plan has been included in the appendices.

ASSESSMENT CRITERIA

The following score methodology derived from defined standardised risk levels is suggested in the original DEFRA report and is unchanged in the new EMAQ+ version as a means of determining odour control requirements using a simple risk assessment approach.

The total 'significance score' is used to determine the recommended odour control measures and techniques to be applied according to the severity of risk.

The risk schedule carries the following sub-note:

'Note 1: 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.'

TABLE: Odour Risk Severity Assessment

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

* Based on the sum of contributions from dispersion, the proximity of receptors, size of kitchen and cooking type.

The Defra and EMAQ+ Guides on the 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' contain an assessment procedure for identifying the potential risk of odour impacts from commercial kitchen operations. The results of this risk assessment can 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 parts:

- dispersion;
- proximity to receptors;
- size of kitchen; and
- cooking type and grease loading.

Each part is given a risk rating score and the total risk rating denotes the level of odour abatement which is likely to be required to prevent the kitchen from causing odour impacts.

The following sections of this report outline each part of the risk assessment in relation to the proposed Restaurant.

ODOUR CONTROL ASSESSMENT

DISPERSION

The risk rating for dispersion relates to the conditions under which kitchen extraction emissions are discharged. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses.

- VERY POOR (20) – Low level discharge, discharge into courtyard, or restriction on stack;
- POOR (15) – Discharge not low level, but below eaves, or discharge rate below 10 m/s;
- MODERATE (10) – Discharging 1 m above eaves at a rate of 10-15 m/s;
- GOOD (5) – Discharging 1 m above ridge at a rate of 15 m/s or more

At the proposed restaurant, the kitchen air extraction system will have a very poor dispersion rating due to the constraints of the building. As a Grade II listed building, there are strict limitations on alterations, including restrictions on the installation of high-level discharge stacks. Consequently, the extraction emissions will be discharged at HIGH level, potentially onto Eaves level resulting in a risk rating of Moderate. according to the assessment criteria.

The elevational drawings in Appendices show the existing VE vent and the proposed vent locations.

PROXIMITY OF RECEPTORS

The risk rating for proximity to receptors relates to the distance between the point of discharge of kitchen emissions and the nearest sensitive receptor locations. Sensitive receptor locations may be residential properties, commercial premises or frequently used public open spaces. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses

- CLOSE (10) – Closest sensitive receptor is less than 20m from kitchen discharge;
- MEDIUM (5) – Closest sensitive receptor is between 20 and 100m from kitchen discharge;
- FAR (1) – Closest sensitive receptor is more than 100m from kitchen discharge.

The closest sensitive receptors are the apartments on the upper floors of the building, with windows that are frequently open. As these are less than 20m from the kitchen discharge point, the proximity risk rating is **CLOSE** according to the assessment criteria.

SIZE OF KITCHEN

The risk rating for size of kitchen relates to the volume of food prepared by the kitchen and is described in terms of the capacity of the restaurant or take-away. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses

- LARGE (5) – More than 100 covers or a large-sized take-away;
- MEDIUM (3) – Between 30 and 100 covers or a medium-sized take-away;
- SMALL (1) – Less than 30 covers or a small take-away.

This restaurant has covers between 30 and 100, classing it as a **MEDIUM** sized kitchen.

COOKING TYPE

The risk rating for cooking type and grease loading relates to the type of cooking methods employed in the kitchen and the type of food prepared. The relevant risk ratings described in the guidance are shown below. The risk score is shown in parentheses.

- VERY HIGH (10) – Pubs (those serving a high level of fried food), fried chicken, burgers or fish and chips;
- HIGH (7) – Kebab, Vietnamese, Thai or Indian;
- MEDIUM (4) – Cantonese, Japanese or Chinese;
- LOW (1) – Most pubs, Italian, French, Pizza or Steakhouse.

The proposed restaurant is a Chinese restaurant, which classifies it as a **MEDIUM** cooking type based on the assessment criteria.

ODOUR RISK ASSESSMENT

The Defra/EMAQ+ Guides state:

'Odour control must be designed to prevent odour nuisance in a given situation. The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach. The odour control requirements considered here are consistent with the performance requirements listed in this report.'

Criteria	Rating	Score	Details
Dispersion	Very poor	20	Low-level discharge, discharge into courtyard or restriction on the stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s
	Moderate	10	Discharging 1m above eaves at 10-15 m/s
	Good	5	Discharging 1m above ridge at 15 m/s
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 (several vendors)
	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 and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, pizza or steakhouse
		27	

CONCLUSIONS

Based on the odour control assessment, the total significance score for the proposed restaurant is **27**, which falls into the **high risk** category. The key contributing factors include the **moderate** dispersion due to building restrictions, the close proximity of sensitive receptors (apartments less than 20m away), and the medium-sized kitchen with a medium cooking type. Given this, very high-level odour control measures will be required to mitigate the impact and prevent odour issues affecting the surrounding area.

RECOMMENDED ODOUR ABATEMENT MEASURES

The Guides define a number of recognised odour abatement measures, to be used individually or in combinations to achieve levels of abatement rated 'None', 'High' or 'Very High', depending on configuration and on sizing and selection.

Abatement Type	Level of Odour Abatement
Panel and Bag	None
Panel, Bag and HEPA	None
Pre, Fine and Carbon Filter	High
Panel, Bag, HEPA and Carbon Filter. (Note: 'Very High' is the minimum level recommended for fried foods and concentrated cooking of burgers)	High - 0.1 to 0.2 Seconds dwell Very High - 0.2 to 0.4 Seconds dwell Extreme - 0.3 to 0.8 Seconds dwell
Panel, Bag, HEPA and Carbon Filter (As above)	High to Very High (As above)
ESP and Carbon Filter (As above)	High to Very High (As above)
ESP and Counteractant	Medium to High
ESP and UV/Ozone	High

EMAQ+ Guide Abatement Classifications

In addition to the above, whilst the exhaust location is factored into the point scoring assessment method, the guidance additionally states that the discharge should:

1. Discharge the extracted air not less than 1 m above the roof ridge of any building within 20 m 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 1m 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

Thus, if the flue cannot be extended to a height of 1m above the tallest building within 20m, then additional odour abatement may be required.

ODOUR CONTROL MEASURES

CONTEXT

This section of the report describes the proposed odour control measures for this restaurant with the particular site specific odour risk factors, using the assessment and control techniques from the Guides, to minimise the risk of odour impacts giving cause for complaint at surrounding properties.

Based on the recommendations and approaches identified in this report, the following combination of odour abatement measures have been selected as the most appropriate solution for this situation.

The kitchen extract drawings in the appendix shows the arrangement of the proposed grease and odour control system.

Canopy Filtration

Each item of cooking equipment is arranged in a linear layout, with fume extraction provided by a wall-mounted canopy positioned above them. The extract canopy is fitted with baffle filters, made of stainless steel, which are removable and cleanable. These baffle filters are designed to effectively capture grease particles from the air, ensuring efficient grease filtration. By preventing grease buildup within the extraction system, the filters reduce the risk of blockages and help maintain the cleanliness of the system, minimizing grease emissions before the air is discharged.

Odour & Grease Treatment

To address odour and grease treatment, the proposed system incorporates ESP (Electrostatic Precipitator) and OC3 technology. The ESP will efficiently remove particulate matter, including fine grease particles, ensuring that the extracted air meets high cleanliness standards. The OC3 treatment further improves the system's capacity to neutralise odours, providing an added layer of protection against any residual smells. Together, these technologies will achieve a high to very high level of odour control, meeting the necessary abatement standards for commercial kitchens with medium to high grease loading.

Discharge Arrangement

A common ducted extraction system is connected to a centrifugal fan of suitable capacity, which discharges air through vents to the centralized light well at the eaves level.

the risk of odour impact on nearby properties, especially as emissions are released directly onto

roof Eave Level. Given these constraints, high-level odour control measures such as high-efficiency filters OR ozone treatment, and electrostatic precipitators (ESP) are essential to effectively manage odour and grease emissions, reducing their impact on the surrounding area.

Kitchen Extract drawings have been included in the appendices.

MAINTENANCE

Standard arrangement for maintenance is for quarterly changing of supply air system filters and six-monthly servicing.

Kitchen extract duct cleaning is carried out in accordance with Building & Engineering Services Association Guide To Good Practice – Internal Cleanliness of Ventilation Systems TR19.

Access doors are provided in the exact ductwork at minimum 1200mm intervals for cleaning purposes.

Intervals for filter changing and duct cleaning may be increased or decreased depending on the particular store characteristics when they are apparent.

CONCLUSIONS

The proposed odour control system for the restaurant has been designed to address site-specific odour risks. Given the high-level discharge from the kitchen extraction system, high-efficiency measures, including baffle filters, ESP technology, and OC3 treatment, ensure very high levels of odour control. These measures will effectively manage grease and odour emissions, mitigating their impact on nearby properties.

Although the discharge point is at roof level, the combination of advanced filtration and treatment technologies will meet the necessary standards for commercial kitchens. Regular maintenance and cleaning of the system will ensure its ongoing effectiveness and compliance with odour control requirements.

In light of the odour control guidelines and EMAQ+ standards, the proposed system aligns with the required abatement measures, offering an appropriate solution for the site's specific conditions.

APPENDIX 1 – SITE PLAN & LOCATION DRAWING

SITE LOCATION PLAN
AREA 2 HA
SCALE 1:1250 on A4
CENTRE COORDINATES: 384179, 397811



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