



Odour Risk Assessment	
Burton Road, Manchester	
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1 Introduction

- 1.1.1 This report considers the potential for annoyance due to kitchen odours from the proposed Boiler Room restaurant at 222 Burton Road, Manchester M20 2LW (location shown in **Figure 2**). Odours from the kitchen have the potential to impact on the amenity of residents at nearby properties.
- 1.1.2 This report includes an odour risk assessment that follows the methodology set out in Defra's Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (Defra, 2005). The guidance was withdrawn on 15th September 2017; however, the risk assessment methodology has been used to determine the level of odour abatement that will be required, and whether the installed kitchen extract system will provide an adequate level of odour control.
- 1.1.3 The assessment has been undertaken on behalf of Mr Colin Lowes by Air Quality Assessments Ltd (AQA).
- 1.1.4 The references used in this assessment are shown in **Section 6**.

2 Odour Risk Assessment

2.1. Introduction

2.1.1 Defra 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 (Defra, 2005). 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 sections;

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

2.1.3 A risk rating is scored for each section and the total risk rating, i.e. the sum of the risk rating for each section, 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.

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.

2.2. Risk Assessment

Dispersion

2.2.1 The risk rating for dispersion relates to the location of the kitchen extraction system discharge flue, and the flow rate of the exhaust air at the point of discharge. Details of the risk ratings for dispersion are shown in **Table 2**.

Table 2: Risk Ratings for Dispersion

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.

- 2.2.2 The installed kitchen extract system terminates through a high velocity cowl to the rear of the building at a height above the roof ridge (see **Figure 1**). Therefore, based on the information in **Table 2**, the risk rating for dispersion would be described as **Good**.



Figure 1: Installed Kitchen Extract

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 and medium sensitivity receptors, as set out in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Odour for Planning (IAQM, 2014), include residential dwellings, places of work and commercial/retail premises. Details of the risk ratings for the proximity of receptors are shown in **Table 3**.
- 2.2.4 The extract discharge is located within 20m of residential dwellings located on Arley Avenue to the west and northwest of the application site (see **Figure 2**). Therefore, based on the information in **Table 3**, the risk rating for dispersion would be described as **Close**.

Table 3: Risk Ratings for the Proximity of Receptors

Criteria	Rating	Score	Details
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.

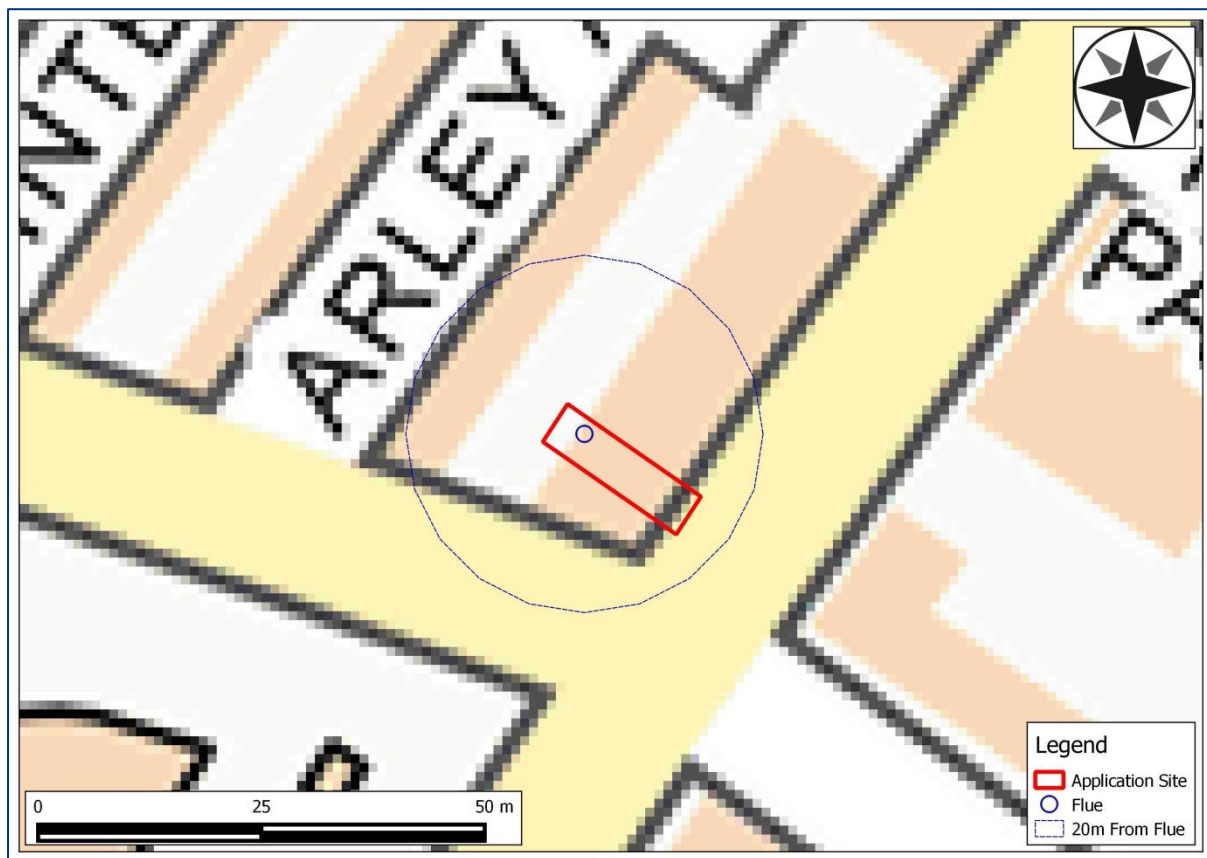


Figure 2: Location of Flue

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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. Details of the risk ratings for the size of kitchen are shown in **Table 4**.
- 2.2.6 The restaurant will have seating for around 54 customers and will serve lunch and dinner; therefore, based on the information in **Table 4**, and to provide a conservative assessment, the risk rating for the size of kitchen would be described as **Large**.

Table 4: Risk Ratings for the Size of Kitchen

Criteria	Rating	Score	Details
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

2.2.7 The risk rating for cooking type relates to the type of food prepared in the kitchen, and the cooking methods used. Details of the risk ratings for cooking type are shown in **Table 5**.

Table 5: Risk Ratings for Cooking Type

Criteria	Rating	Score	Details
Cooking Type (Odour and Grease Loading)	Very High	10	Pub (high level of fried food), fried chicken, burgers or fish & chips.
	High	7	Kebab, Vietnamese, Thai or Indian.
	Medium	4	Cantonese, Japanese or Chinese.
	Low	1	Most pubs, Italian, French, pizza or steakhouse.

2.2.8 The restaurant will provide a range of hot meals, salads and sandwiches. A sample of the menu is shown in **Appendix A2**. There will not be a high level of fried food, nor could the menu be described as providing highly spiced food; therefore, based on the information in **Table 5**, the risk rating for cooking type would be described as **Low**.

Summary

2.2.9 A summary of the risk assessment and the total risk rating for the takeaway is shown in **Table 6**. With regard to the significance scores set out in **Table 1**, the overall risk rating for the takeaway 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 6: Odour Risk Assessment Summary

Criteria	Rating	Significance Score	Details	Comments
Dispersion	Good	5	Discharging 1 m above ridge at 15 m/s.	The kitchen extract discharges at a height above the roof ridge and will be fitted with a high velocity cowl.
Proximity of Receptors	Close	10	Closest sensitive receptor less than 20 m from kitchen discharge.	The kitchen extract is discharged within 20m of residential receptors to the west.
Size of Kitchen	Large	5	More than 100 covers or large sized takeaway.	To provide a conservative assessment, potentially over 100 covers.
Cooking Type (Odour and Grease Loading)	Low	1	Most pubs, Italian, French, pizza or steakhouse.	Not a high level of fried or highly spiced food.
Overall Risk Rating	High	21	High level of odour control required.	

3 Proposed Odour Abatement

3.1. Introduction

- 3.1.1 Details of the installed odour abatement have been provided by Mr Colin Lowes, and are set out below.

3.2. Odour Abatement

Coarse Filtration

- 3.2.1 A ceiling mounted stainless steel canopy is fitted above the cooking equipment. The extract canopy is fitted with washable baffle type grease filters. Grease laden air passing through the filter deposits grease on the baffles. Baffle filters typically have a grease removal efficiency of 65-80%. The installed battle filter is shown in **Figure 3**.



Figure 3: Baffle Filter

Fine Filtration

- 3.2.2 The coarse filtration provided by the baffle filters is followed by a fibrous pleated filter system. In optimum conditions, the pleated filter panels will remove up to 95% of grease particles.

Activated Carbon Filtration

- 3.2.3 The fibrous pleated filter protects the following modular activated carbon filtration stage from grease contamination. The activated carbon removes gas phase odorous components from the ventilation air through adsorption, but also has a typical particle removal efficiency of up to 95% under optimum conditions.

Extract System Flue

- 3.2.4 The final stage of odour abatement is the discharge of the ventilation air via a flue. The kitchen extraction flue is located to the rear of the building at a height above the roof ridge of the building. The flue is fitted with a high velocity cowl to ensure optimum dispersion.

4 Odour Mitigation

- 4.1.1 The odour risk assessment has identified that the restaurant will require a high level of odour control (see **Table 6**). However, the Defra guidance also explains that the overall performance of the odour abatement system represents a balance of odour control and stack dispersion.
- 4.1.2 The Defra guidance outlines that the discharge stack shall:
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 1 m 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.
- 4.1.3 The proposed flue discharges at a height above the roof ridge of all the buildings within 20m of the flue.
- 4.1.4 The Defra guidance includes minimum requirements to achieve a high level of odour control as follows:
1. Fine filtration or electrostatic precipitator (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.
- 4.1.5 The installed odour abatement includes fine filtration followed by carbon filtration and would meet the requirements for a high level of odour control.
- 4.1.6 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

- 4.1.7 The ventilation system has been designed and installed by a suitably qualified and experienced engineer.
- 4.1.8 Regular maintenance of the ventilation system is essential to ensure that it operates effectively, and continues to provide adequate mitigation against odour nuisance. The Defra guidance provides recommended cleaning schedules for ventilation systems as follows:
- cooker hoods should be cleaned daily;
 - the minimum cleaning period for baffle filters should be weekly;
 - ductwork (moderate use – 6-12 hours/day) should be cleaned every six months;

- fine filters should be changed every two weeks, and
- carbon filters should be changed every 4 to 6 months.

4.1.9 Periodic 'deep hygiene cleaning' of the entire ventilation system should be undertaken by a specialist contractor.

5 Conclusions

- 5.1.1 The odour risk assessment has identified that the restaurant would have a high risk rating with regard to odour effects.
- 5.1.2 The proposed ventilation and odour abatement system consists of coarse and fine particle filter and an activated carbon filter for removal of gas phase odours. The system discharges at a high level through a high velocity cowl and meets the requirements for a high level of odour control; therefore, no further odour abatement should be required.
- 5.1.3 It is judged that there will not be a significant risk of odour effects from the restaurant. The installed odour mitigation provides the high level of odour control required and there should be no constraints to the use of the site as a restaurant with regard to odour.

6 References

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

IAQM (2014) *Guidance on the Assessment of Odour for Planning*.

7 Appendices

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A1 Professional Experience

Bob Thomas, BSc (Hons) PgDip PGCE MSc MIAQM MEnvSc CSci

Bob Thomas is a Director at AQA, with over ten 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 Sample Menu

The Boiler Room Sample Menu

SMALL PLATES

Classic Garlic prawns with bread shards
Chef's Daily Soup - seasoned ciabatta bread
Pesto hummus - ciabatta and crudities
Mini Chicken skewers with satay dip
Halloumi skewers with cucumber ribbons
Goats cheese wrapped in parma ham with caramelised onion jam - leaves
House marinated olives & warm sourdough

SUPERFOOD SALAD BOWLS

Ultimate Boiler Room House Salad Burrata - puy lentils - basil -
seasoned crouton - truffle oil
Shredded cabbage carrot and apple slaw with walnuts - raisins -
mild curry yoghurt dressing
Greek - feta - red onions - tomatoes - olives
Cauliflower - feta - pomegranate seeds & tahini drizzle
Chicken Caesar
Salmon Caesar

TO SHARE

Roast peppers - marinated olives - roast sweet potato - halloumi -
houmous & red slaw
Chefs seasonal selection of cured meats and cheese - served with
oat cakes and breads

The Boiler Room

BIG PLATES

Flat iron steak - aioli OR bearnaise sauce - OR peppercorn butter
with hasselback sweet potatoes & watercress salad
Parmesan crumbed chicken schnitzel with green beans - garlic & chilli
- crushed new potatoes
Hanging kebabs choice of Chicken & chorizo OR Salmon & prawn
OR Seasonal Vegetables served with choice of sauce
either Sweet chilli OR Garlic butter served with chefs rice
Chefs fish cake - sauted spinach - hollandaise sauce on the side
Tuna steak au poivre - sweet potato mash & watercress salad
Baked sea bass - new potatoes - black olives - capers
Prawn linguine with courgette & chilli
Great Northern Pie Company's award winning Cheese & onion Pie
with walnuts - sauted potatoes OR sweet potato mash
Chefs home made Fish pie
Spinach & ricotta cannelloni

SANDWICHES AND WRAPS

served on either toasted white sourdough, or brown or tortilla wrap
with mixed leaves - house coleslaw

Gluten free bread & wraps available please ask one of our team

The Boiler Room Club - Lobster - avocado - tomato -
leaves - toasted sourdough

Chicken - mango chutney and leaves

Smoked salmon - dill cream cheese & cucumber ribbons

Goats cheese wrap- grilled peppers - pesto drizzle

Ultimate “BB” Boiler Breakfast

Love at first bite - Flavours to cherish

Ricotta hotcakes (mini pancakes) with sliced banana - honeycomb butter

Full Breakfast - 2 sausages - bacon - black pudding - egg - mushrooms
& tomato served with toasted sourdough

Sourdough toast rack - 2 slices with butter & jam

Slow roast tomatoes and crushed advocado on toasted sourdough
with eggs your way
(add smoked salmon)

Smoked salmon and creme cheese bagel

Warm porridge oats with berries of the season