



## Odour Risk Assessment for Installation of extract system at 62 Harwoods Road, Watford

**Date of report 5 July 2021**

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### **Silsoe Odours Ltd.**

Silsoe Odours Ltd. operates the independent odour measurement service with the first odour laboratory to gain UKAS accreditation since in October 2005.

We are a specialist odour consultancy with a passion for delivering independent, innovative research excellence and technical expertise. Our highly skilled team bring decades of experience in odour management, odour measurement, and consultancy to their work with clients across a range of sectors, including food, industry, planning and commercial. Our aim is to deliver excellent service for each one of our clients and, through doing so, to become leading influencers in the ways in which odour pollution is perceived and dealt with in the UK.



## 1. Introduction and Site Details

### 1.1. Introduction

This odour risk assessment has been carried out in response to instructions provided by Harwoods Catering following conditional planning refusal by Watford Borough Council for the installation of new extract duct.

The response from Watford Borough Council included this comment,

*The application has failed to demonstrate that the proposed extractor and ducting flue, motors and systems would not unacceptably harm the amenities of adjoining and surrounding residential occupiers. The systems and housing for the extractor and ducting, to serve the enhanced commercial activity at the site, have the potential to create unreasonable disturbance to the amenities of nearby residential occupiers. The information provided with the application has been insufficient to demonstrate that the potential noise and odour of the development would not unacceptably harm the amenities of residential occupiers. The development is therefore contrary to the 'saved' policies S11 and SE22 of the Watford District Plan 2000 and policies SS1 and UD1 of the Watford Local Plan, Part 1- Core Strategy 2006-31.*

Silsoe Odours Ltd have been engaged to complete an odour risk report.

## 1.1. Site Details

The site of the proposed development is situated on the Harwoods Road, Watford. The area is a residential location with a large cemetery to the rear of the property.

The address of the site is:  
62 Harwoods Road  
Watford  
WD24 5BJ

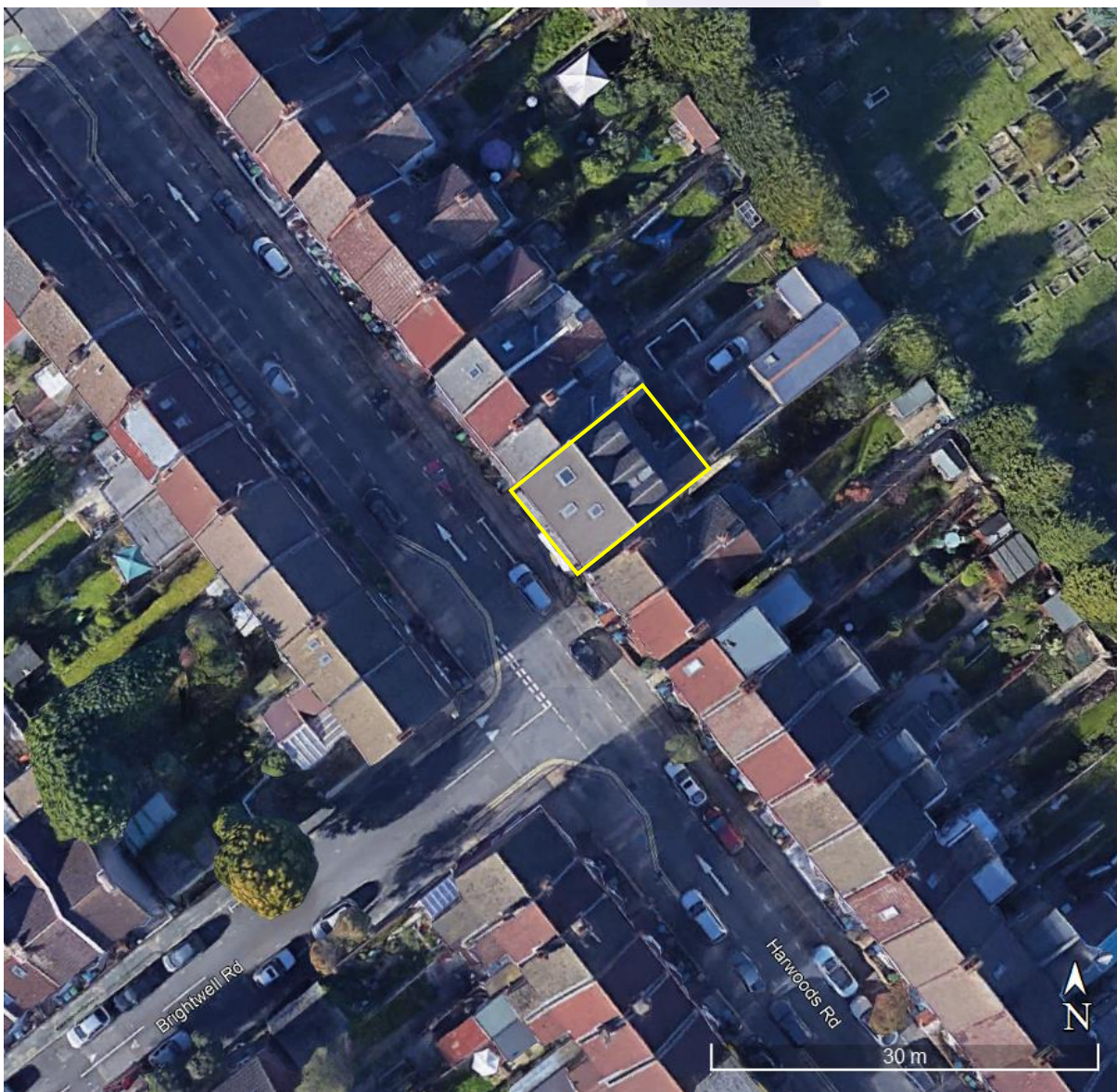


Figure 1: Location plan (62 Harwoods Road outlined in yellow)

## 2. Guidance and policy

The following legislation and guidance have been used in this assessment:

- EMAQ, (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems, an amendment of the original DEFRA document published in 2005, deals specifically with the control of kitchen odours.
- Guidance on the Assessment of Odour for Planning, Version 1.1 Institute of Air Quality Management (IAQM), 2018. The IAQM published the 'Guidance on the Assessment of Odour for Planning' document in July 2018. This guidance specifically deals with assessing odour impacts for planning purposes, namely potential effects on amenity.

The magnitude of odour impact depends on a number of factors and the potential for adverse impacts varies due to the subjective nature of odour perception. The FIDOL acronym is a useful reminder of the factors that can be used to help determine the degree of odour pollution:

- **F**requency of detection - frequent odour incidents are more likely to result in adverse impacts;
- **I**ntensity as perceived - intense odour incidents are more likely to result in adverse impacts;
- **D**uration of exposure - prolonged exposure is more likely to result in adverse impacts;
- **O**ffensiveness - more offensive odours have a higher risk of resulting in adverse impacts; and,
- **R**eceptor sensitivity - (The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor.)

It is important to note that even infrequent emissions of odours may cause loss of amenity if odours are perceived to be particularly intense or offensive.

## 3. Assessment Methodology

### 3.1. Baseline Survey

A desktop survey has been undertaken to review the plans, including the proposed ventilation system and the potential impact on the surrounding properties. This assessment has been carried out using EMAQ (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems.

1. 62 Harwoods Road is currently a takeaway sandwich shop.
2. The property is surrounded by residential properties to the North West, South-East and South West and a large cemetery to the North-East.
3. Plans include the installation of a kitchen extract system comprising of a kitchen canopy extracting through a Contra Foil TCBBX2/4-450 fan discharging through a jet cowl at a height of approximately 1 metre above the ridge of the roof at the "Proposed Kitchen Extraction Exhaust" shown in figure 2.



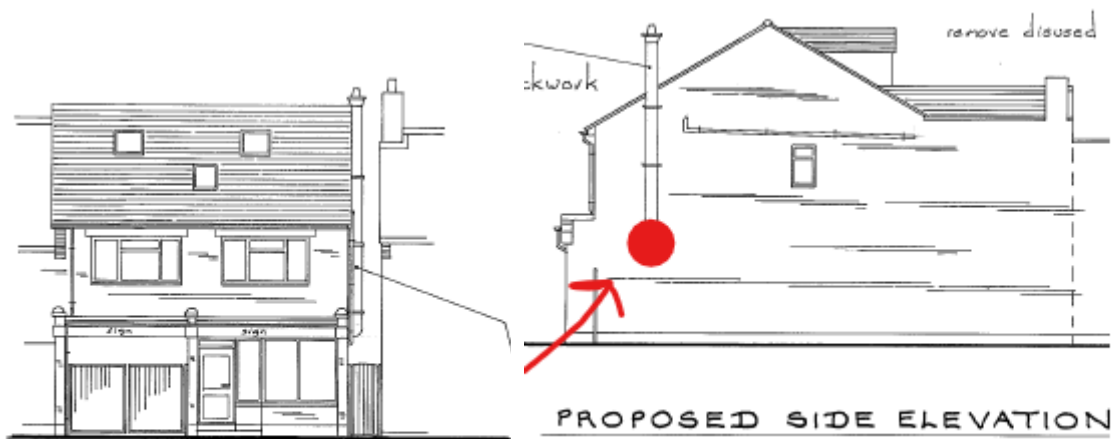
4. The Contra Foil TCBBX2/4-450 fan through 300mm outlet will provide a discharge velocity of approximately 22.8m/s based on volume air flow of 7430m<sup>3</sup>/h from the fan extracting from the kitchen.

Calculations as follows:

$$m^3/s = \frac{7430m^3/h}{3600} = 2.06m^3/s$$

Area of 300mm square duct/Jet cowl = 0.09m<sup>2</sup>

$$Discharge\ Velocity = \frac{volumetric\ air\ flow\ (m^3/s)}{Area\ (m^2)} = \frac{2.06m^3/s}{0.09m^2} = 22.8m/s$$



**PROPOSED FRONT ELEVATION**

• Kitchen extract duct, duct to be fitted provide anti-vibrational sleeves & anti-vibrators & jet cowl outlet. Paint duct brown to

Figure 2: Proposed front and side elevation, showing ductwork



### 3.2. Assessment criteria of planned kitchen extract vent.

From the available information contained in the plans, the risk of odour impact on nearby receptors has been assessed using the guidance in the EMAQ, (2018) Control of Odour and Noise from Commercial Kitchen Exhaust Systems as referred to in the IAQM.

1. Dispersion; If the vent from the kitchen discharges vertically at 22.8 m/s and is located at least 1m above the ridge height of the building dispersion will good. Suggesting a score of 5 in the EMAQ criteria.
2. Proximity of receptors; The receptors in the accommodation surrounding the exhaust will be less than 20m from the discharge so at a close distance. Suggesting a score of 10 in the EMAQ criteria.
3. Size of kitchen; the kitchen will cater for up to 12 covers is categorized as a small kitchen suggesting a score of 1 in the EMAQ criteria.
4. Cooking type (odour -grease loading); The types of meals to be prepared include but not limited to fresh baked breads, fresh baked cakes, fresh baked pizza, pasta, grilled foods and burgers with weekly specials of curry and fish and chips. This variety of food types means that the cooking type score ranges from Low (breads and cakes) to Very High (burgers, fish and chips) in the EMAQ criteria. Taking the worst case scenario into account the score for cooking type is 10 (very high).

Criteria	Score	Score	details
Dispersion	Good	5	Discharging 1m above ridge at 14 m/s
Proximity of receptors	Close	10	Closest receptors are less than 20m from the discharge point.
Size of kitchen	Small	1	12 covers or small sized take away.
Cooking type (odour - grease loading)	Very High	10	Food types range from low (cakes) to very high (burgers and fish and chips)
<b>Total Score</b>		<b>26</b>	<b>High level of odour control needed</b>

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

Therefore, a High Level of odour control is required.

This can be provided by incorporating fine filtration and carbon filter in the system as outlined in section 3.3.

### 3.3. Odour Control Recommendations

The risk assessment suggests that a **High level** of odour control is needed in order to reduce the risk of odour impact on the nearby receptors.

The EMAQ recommends minimum requirements for odour control as follows:

- Discharge stack shall discharge the extracted air not less than 1m above the roof ridge of any building within 15m of the vent serving the commercial kitchen.
- If this cannot be complied with for planning reasons, then extracted air shall be discharged not less than 1m above the roof eaves of the building housing the commercial kitchen. In this case, the stack will discharge 1m above the roof of the building housing the kitchen.

High level odour control may include fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 second residence time).

Based on the technical specifications from the suppliers of the fan the following is recommended for the kitchen:

- **Canopy with grease filters**
- **Fine filtration – such as a panel filter, this will remove grease particles not removed by the canopy filter and protect the carbon.**
- **Carbon Filter Block(s) with 0.2 second residence time**
- **Contra Foil TCBBX2/4-450 fan**
- **Duct work to extend 1m above the ridge/roof of the nearest building.**
- **Discharging vertically at a minimum of 15m/s**

Installation of this equipment along with the fan and ductwork as planned constitutes as a high level of odour control. This High-Level odour control system outlined above meets the EMAQ criteria and will result in little to no odour discharging from the stack.

The system will need to be maintained and the carbon regularly changed according to the manufacturers recommendations to ensure consistent performance.





## 4. Conclusions

This odour risk assessment has been carried out in response to instructions provided by Harwoods Catering following conditional planning refusal by Watford Borough Council for the installation of new extract duct.

The risk of odour impact on nearby receptors has been assessed using the guidance in the EMAQ (2018) *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*. Considering the dispersion, proximity of receptors, food type (using the worst case scenario for high odour and high grease-loading) and kitchen size, without the installation of odour abatement equipment, the risk assessment score is 26. This suggests that a high level of odour control is needed in the proposed kitchen in order to reduce the risk of odour impact on the nearby receptors.

The planned kitchen ventilation system, with a Contra Foil TCBBX2/4-450 fan and 300mm ductwork, including jet cowl, discharging at 22.8m/s, 1 metre above the ridge of the roof along with fine filtration and carbon filters outlined in section 3.3, would provide a high level of odour control. This High Level odour control system outlined above meets the EMAQ criteria and will result in little to no odour discharging from the stack.

Provided the recommendations in section 3.3 are installed and maintained, this complies with the EMAQ *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems* best practice to prevent unacceptable harm to the amenity of adjacent and surrounding residential receptors.

## References

EMAQ, (2018) *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*  
Institute of Air Quality Management, (2018) *Guidance on the Assessment of Odour for Planning, Version 1.1*

## Appendix 1

Risk assessment for odour from EMAQ, (2018) Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems

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.

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, proximity of receptors, size of kitchen and cooking type:

Criteria	Score	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 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 <sup>1</sup> .
Size of kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away <sup>1</sup> .
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. <i>Turkish, Middle Eastern or any premises cooking with solid fuel</i>
	High	7	<i>Vietnamese, Thai, Indian, Japanese, Chinese, steakhouse</i>
	Medium	4	<i>Cantonese, Italian, French, Pizza (gas fired),</i>
	Low	1	<i>Most pubs (no fried food, mainly reheating and sandwiches etc), Tea rooms<sup>1</sup></i>