

AVAL



Odour Assessment

Site: Unit 5A, The Village 19/23 King Street reading RG1 2HG

Client

Mr. H Chatli

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1 Introduction

1.1 Overview

Mr H. Chatli is seeking consent for change of use from a restaurant (Class A3) to mixed restaurant and shisha lounge use (Class A3/Sui Generis), with various external alterations at Unit 5A, The Village 19/23 King Street reading RG1 2HG (hereafter referred to as the 'proposed development').

AVAL Consulting Limited was instructed by the client to produce an Odour Impact Assessment to accompany the planning application to the Reading Borough Council for consent to undertake the proposed work.

Proposed site location, design drawings and plans are presented in Appendix B.

The assessment was carried out in accordance with the Institute of Air Quality Management's (IAQM) "Guidance on the Assessment of Odour for Planning" (2018)¹ and the updated guidance of Control of Odour and Noise from Commercial Kitchen Exhaust Systems (2018)².

1.2 Site Description

The nearest sensitive receptor has been identified as the neighbouring commercial businesses. The site is located within a large commercial area with no private residential properties within close proximity. The nearest potential sensitive users are considered to be the Ibis Hotel buildings (Figure 1.1).

1.3 Development Proposal

The proposal is for both internal and external changes. The changes include the main restaurant sitting area to be reduced in terms of floor space, in order to accommodate more outdoor balcony sitting spaces.

The development benefits from existing planning permission for a kitchen extract system from previous restaurant use as shown in figure 1.2. No changes to the existing commercial kitchen extract system is proposed. It is understood that the kitchen extract is being serviced and maintained as per the manufacturer's guidance.

The type of cooking will include fusion English/continental food, and no changes are proposed.

Therefore, the odour impact of the kitchen extract system can be scoped out as no changes to the existing kitchen extract system or the external flue is proposed. This is based on the understanding that the kitchen extract will be serviced and the carbon filter will be changed in accordance with the manufacturer recommended frequency.

¹ IAQM (2018): 'Guidance on the Assessment of Odour for Planning'

² Ricardo AEA (2018): Control of Odour and Noise from Commercial Kitchen Systems (This document is an amendment of the original document prepared by AEA Technology/NETCEN for Defra Published in 2005)

The remaining potential odour impact is from the outdoor shisha lounge within an additional sitting area. This has been considered further within this assessment.

As discussed above, the impact of commercial kitchen extract has been scoped out as no changes to the existing extract system is proposed. The existing site uses currently includes an outdoor sitting area, as shown in figure 1.3. It should be noted that there are no windows facing the proposed development.

Figure 1.4 demonstrates the sitting area in relation to the solid residential wall to confirm no direct path for odour propagation. The height of the release point, coupled with the distance from the sitting area and the predominant direction of the wind (please see figure 1.5), it is considered that the odour will disperse in the air before reaching the receptor window.

The development will be designed to comply with the smokefree legislation. This requires that any structure used for smoking in public or workplace is not less than 50% open to the air (where it has a roof or ceiling). In essence, this legislation legalises smoking in compliant structures, but, beneficially, reduces the health risk from smoke for nonsmokers in the immediate vicinity.

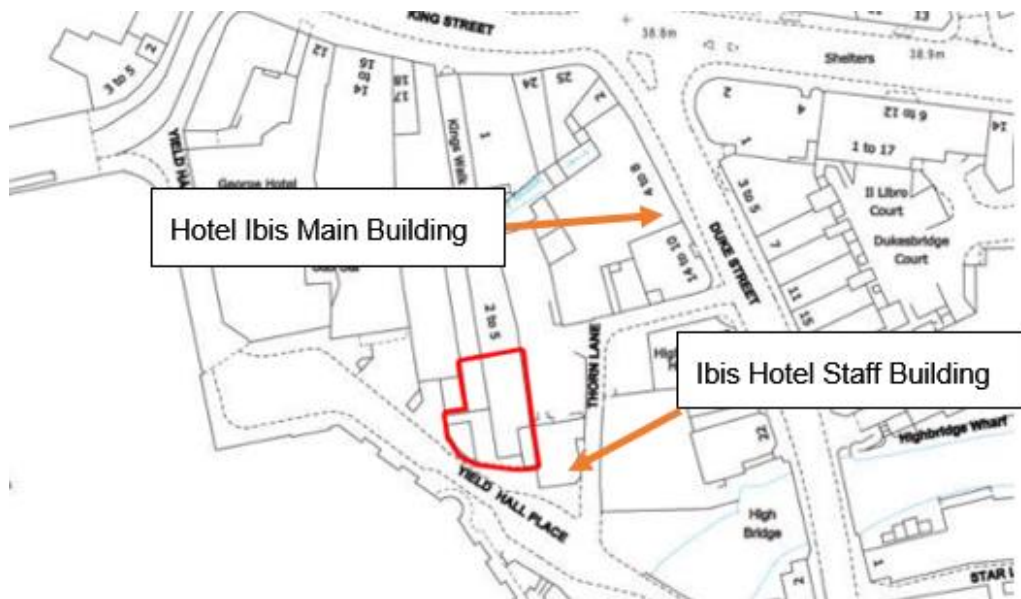


Figure 1.1: Site Location, Source: Extract from a Client Drawing



Figure 1.2: Existing Kitchen Extract



Figure 1.3: Existing Outdoor Sitting Area

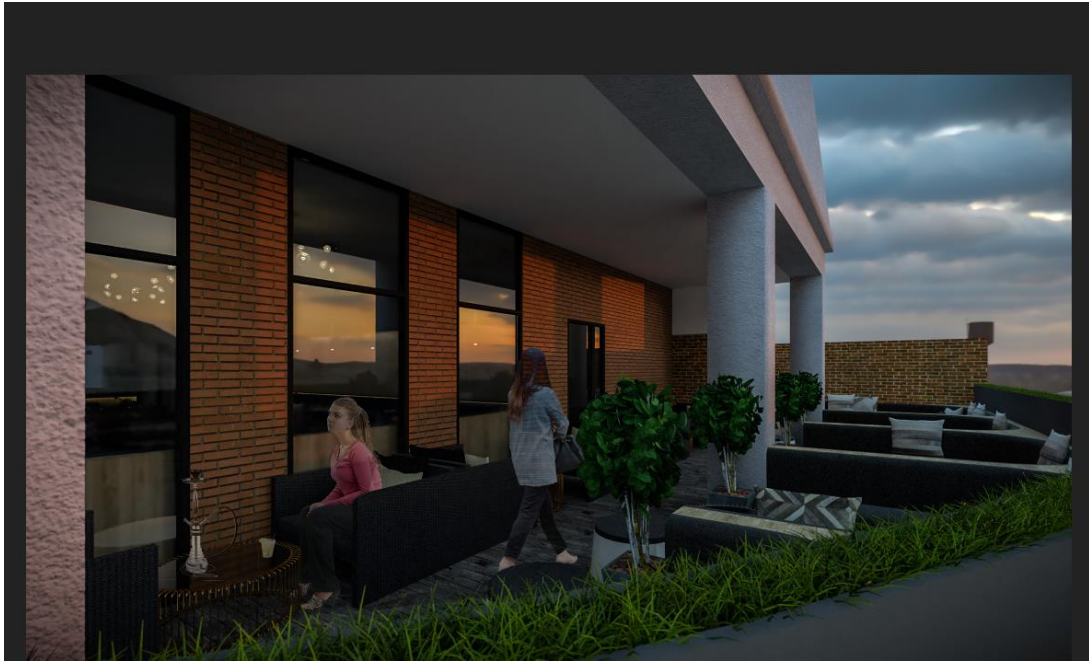


Figure 1.4: Rendered view of the proposed development in relation to the adjacent residential wall

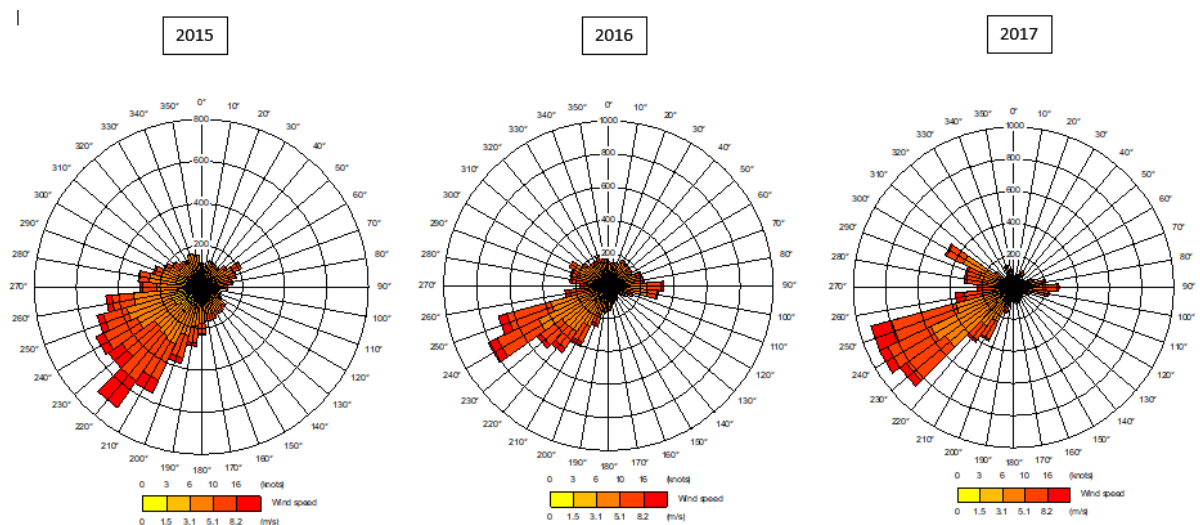


Figure 1.5: Typical wind rose figure for the region (Taken from Farnborough Airport Station)

1.4 Key Pollutant – Odour

IAQM guidance defines odour as a mixture of many chemicals which interact to produce a 'smell'. While odour-free air refers to air containing no odorous chemicals, fresh air is usually perceived as air containing no chemicals or contaminants that could be 'unpleasant'.

While the odour is not strictly speaking an air pollutant, certain combinations of chemicals can affect the human olfactory response (perception followed by

psychological appraisal) and cause a loss of amenity. Perception of an odour can be subjective to the individual whether it is found as acceptable, objectionable or offensive.

Odour can be produced from a number of industries including food outlets, production, recycling, waste handling, vehicle respraying, power plants, traffic emissions, agriculture etc.

Factors that influence control of odour from commercial kitchens include³:

- Size of the cooking facility- This influences the intensity of the odour and volume of ventilation air to be handled;
- Type of food prepared – This affects the chemical constituents within the ventilation air; and
- Types of cooking appliances used: This dictates the level of fat, water droplets and temperature within the ventilation air.

The odour, grease and smoke characteristics from a range of commercial kitchen types are summarised in Table 1 in Appendix C.

³ Ricardo AEA (2018): Control of Odour and Noise from Commercial Kitchen Systems (This document is an amendment of the original document prepared by AEA Technology/NETCEN for Defra Published in 2005)

2 Methodology

2.1 Overview

The local authority requested that an odour assessment to be carried out for the proposed development. Hence an odour assessment has been carried out using the latest guidance produced by the IAQM.

2.2 IAQM Guidance

IAQM guidance is limited to assessing the effect of odour on amenity and not on human health. For exposure to odour to occur, there must be an emission source to the atmosphere, a pathway for the odour to travel and a receptor that could experience adverse effects. Therefore, the IAQM guidance is based upon Defra's *Green Leaves guidance*⁴ which presents the Source-Pathway-Receptor (S-P-R) concept. The S-P-R concept presents the hypothetical relationship between the source (S) of the odour, the pathway (P) by which exposure might occur, and the receptor (R) that could be adversely affected.

An example framework for conducting odour assessments is laid out in Appendix A of IAQM guidance and has been followed for this assessment.

It is recognised that in order to assess the magnitude of odour effects from a site it is necessary to estimate the odour generating potential of the site activity. The source odour potential takes into account the scale of the odour release (magnitude), how inherently odorous the emission is and the relative pleasantness/unpleasantness of the odour (its hedonic tone). Using Table A1 (Appendix A) the source odour potential can be categorised as small, medium or large.

Secondly, the effectiveness of the pollutant pathway for odour through the air versus the dilution/dispersion of the odorous emissions in the atmosphere needs to be estimated. Factors which may increase dilution and/or dispersion of the odour through the pathway will reduce the odour concentration at the receptor, thereby reducing exposure. Factors which need to be considered in this step are presented in Table A1 (Appendix A). The pollutant pathway can be categorised as ineffective, moderately effective or highly effective using Table A1 (Appendix A).

From this, IAQM guidance suggests that the risk of odour exposure (impact) for each receptor may be evaluated by combining the source odour potential and the pathway effectiveness using Table A2 (Appendix A).

IAQM guidance recommends classifying each receptor in terms of its sensitivity. Indicative examples of low, medium, and high sensitivity receptors are given in Table A1 (Appendix A), and should be used in combination with professional judgement to assess the sensitivity of receptors to odour.

Justification needs to be given for the selected categorisation of the source odour potential, pathway effectiveness, and receptor sensitivity. This typically involves

⁴ Defra (2011): Guidelines for Environmental Risk Assessment and Management (Green Leaves 111)

some degree of quantitative assessment supplemented by the professional judgement of the air quality practitioner.

The likely magnitude of odour effect at specific receptor locations may be determined by combining the risk of odour exposure with the specific receptor sensitivity, as in Table A3 (Appendix A). The likely magnitude of odour effects may be classed as 'negligible', 'slight adverse', 'moderate adverse' or 'substantial adverse'.

The final step for most assessments is to estimate the overall odour effect on the surrounding area as a result of the site, development or process. This assessment must take into account the different magnitude of effects at different receptors, and the total number of receptors that experience these different effects. IAQM guidance recommend the suggested descriptors for the total magnitude of odour effects, as reproduced in Table A3 (Appendix A). IAQM guidance suggest that "where the overall effect is greater than 'slight adverse', the effect is likely to be considered significant."

3 Odour Impact Assessment

3.1 Overview

As discussed above, the odour impact assessment has been carried out following the IAQM guidance. Key information from the guidance is presented in Appendix A. The assessment has been divided into sub-sections to explain the outcome of each part of the assessment and how it was determined.

3.2 Potential Receptors

The proposed site is surrounded by other commercial businesses including other restaurants. No private residential property is identified within close proximity to the proposed development. There are a number of potential commercial receptors that could be susceptible to odour emissions. The existing surrounding commercial use receptors are considered to be 'medium' sensitive to odours emission based on the criteria presented in Table A1 in Appendix A. While the road and paths will be used by members of the public, these are considered to have a 'Low' sensitivity to odorous emissions as exposure will only be for a limited amount of time.

The Ibis hotel residential uses is considered 'high' sensitive to odour emission.

3.3 Source Odour Potential

Based on the Table A1 in Appendix A, it is assumed that the outdoor shisha lounge is likely to fall below Part B and therefore will have 'Small' source odour potential.

3.4 Pathway Effectiveness

There are a number of other buildings in the immediate vicinity of the site which has the potential to impact the dispersion of pollution from the balcony. Hence, the pathway effectiveness is considered to be 'Moderately Effective' based on Table A1 in Appendix A.

The impact of the kitchen extract system has already been scoped out within section 1.2 as no changes to the existing system is proposed. This is based on the understanding that the kitchen extract will be serviced and the carbon filter will be changed in accordance with the manufacturer recommended frequency.

3.5 Odour Exposure

The risk of odour exposure is calculated using the IAQM criteria summarised in Appendix A: Table A2. As stated above, the source odour potential was considered to be 'Small' and the pathway effectiveness was considered to be 'Moderately Effective'. Based on IAQM guidance, the odour exposure at the nearest commercial receptors is considered to be 'Negligible Risk'.

3.6 Likely Odour Effect

Table 3.1: Summary of likely odour effects at existing sensitive receptors

Receptor Details and Location	Source Odour Potential	Pathway Effectiveness	Odour Exposure	Receptor Sensitivity	Likely Odour Effect
Nearest 'medium' sensitive commercial receptors	Low	Moderately Effective	Negligible Risk	Low	Negligible Effect
Nearest 'High' sensitive receptors of Ibis Hotel buildings	Low	Moderately Effective	Negligible Risk	High	Negligible Effect

Based on the results above and the criteria in Table A2, the odour exposure is considered to be 'Negligible Risk' for existing commercial receptors. No sensitive residential receptors are within close proximity of the development.

Based on the IAQM guidance, the likely odour effect from the proposed development is considered to be of 'Negligible Effect'.

Therefore, based on IAQM guidance, the overall impact is considered to be 'not significant'.

3.7 Proposed Mitigation Measures

No additional mitigation measures are considered required based on the risk assessment outcome.

3.8 Conclusions

This report provides an assessment of the potential odour impact during the operations phase of the development

A qualitative assessment of the odour effects has been undertaken for the proposed scheme. Based on the results presented in section 4.6, the residual odour impact is not considered significant.

It can, therefore, be concluded that the proposed development is not considered to conflict with any national, regional, or local planning policy in relation to operational phase odour impact on existing receptors.

Appendix A: Relevant extract from IAQM Guidance

Table A1: Examples of risk factors for odour source, pathway and receptor sensitivity based on IAQM (2018)

Source Odour Potential	Pathway Effectiveness	Receptor
Factors affecting the source odour potential include: • The magnitude of the odour release (taking into account odour-control measures) • How inherently odorous the compounds are, • The unpleasantness of the odour.	Factors affecting the odour flux to the receptor are: • Distance from source to receptor • The frequency (%) of winds from the source to receptor (or, qualitatively, the direction of receptors from source with respect to prevailing wind) • The effectiveness of any mitigation/control in reducing flux to the receptor • The effectiveness of dispersion/ dilution in reducing the odour flux to the receptor topography and terrain.	For the sensitivity of people to odour, the IAQM recommends that the air quality practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the following general principles:
Large Source Odour Potential Magnitude – Larger Permitted processes of odorous nature or large STWs; materials usage hundreds of thousands of tonnes/m³ per year; area sources of thousands of m². The compounds involved are very odorous (e.g. mercaptans), having very low Odour Detection Thresholds (ODTs) where known. • Unpleasantness – processes classed as “Most offensive” in Table 5; or (where known) compounds/odours having unpleasant (-2) to very unpleasant (-4) hedonic score. • Mitigation/control – open air operation with no containment, reliance solely on good management techniques and best practice.	Highly Effective Pathway for Odour Flux to Receptor • Distance – receptor is adjacent to the source/site; distance well below any official set-back distances. • Direction – high frequency (%) of winds from source to receptor (or, qualitatively, receptors downwind of source with respect to prevailing wind). • Effectiveness of dispersion/dilution – open processes with low-level releases, e.g. lagoons, uncovered effluent treatment plant, landfilling of putrescible wastes.	High Sensitivity Receptor - Surrounding land where: • Users can reasonably expect enjoyment of a high level of amenity; and • The people would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples may include residential dwellings, hospitals, schools/education and tourist/cultural.

Source Odour Potential	Pathway Effectiveness	Receptor
Medium Source Odour Potential • Magnitude – smaller Permitted processes or small Sewage Treatment Works (STWs); materials usage thou- sands of tonnes/m³ per year; area sources of hundreds of m². • The compounds involved are moderately odorous. • Unpleasantness – processes classed in H4 as “Moderately offensive”; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score. Mitigation/control – some mitigation measures in place, but significant residual odour remains.	Moderately Effective Pathway for Odour Flux to Receptor • Distance – receptor is local to the source. Where mitigation relies on dispersion/dilution – releases are elevated, but compromised by building effects.	Medium Sensitivity Receptor– Surrounding land where: • Users would expect to enjoy a reasonable level of amenity, but wouldn’t reasonably expect to enjoy the same level of amenity as in their home; or • People wouldn’t reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial/retail premises and
Small Source Odour Potential • Magnitude – falls below Part B threshold; materials usage hundreds of tonnes/m³ per year; area sources of tens m². • The compounds involved are only mildly odorous, having relatively high ODTs where known. • Unpleasantness – processes classed as “Less offensive” in H4; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score. • Mitigation/control – effective, tangible mitigation measures in place (e.g. BAT, BPM) leading to little or no residual odour.	Ineffective Pathway for Odour Flux to Receptor • Distance – receptor is remote from the source; distance exceeds any official set-back distances. • Direction – low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind). • Where mitigation relies on dispersion/ dilution – releases are from high level (e.g. stacks, or roof vents >3m above ridge height) and are not compromised by surrounding buildings.	Low Sensitivity Receptor– surrounding land where: • The enjoyment of amenity would not reasonably be expected; or • There is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial, farms, footpaths and roads.

Table A2: Risk of odour exposure (impact) at the specific receptor location based on IAQM (2018)

		Source Odour Potential		
		Small	Medium	Large
Pathway Effectiveness	Highly Effective Pathway	Low Risk	Medium Risk	High Risk
	Moderately Effective Pathway	Negligible Risk	Low Risk	Medium Risk
	Ineffective Pathway	Negligible Risk	Negligible Risk	Low Risk

Table A3: Likely magnitude of odour effect at the specific receptor location based on IAQM (2018)

Risk of Odour Exposure	Receptor Sensitivity		
	Low	Medium	High
High Risk of Odour Exposure	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
Medium Risk of Odour Exposure	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
Low Risk of Odour Exposure	Negligible Effect	Negligible Effect	Slight Adverse Effect
Negligible Risk of Odour Exposure	Negligible Effect	Negligible Effect	Negligible Effect

Appendix B: Drawings

Please see the planning portal for the most update date drawings.