

Kitchen Odour Risk Assessment

Jackson's Corner, Reading

March 2020

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1. Introduction

- 1.1 Phlorum Ltd has been commissioned by 1-9 Kings Road LLP ("the applicant") to undertake a kitchen odour risk assessment (KORA) to assist in the discharge of Condition 19 of the approved planning application (Reference: 171238) for a mixed-use development at Jackson's Corner, 1/9 King Street, Reading RG1 3AS.
- 1.2 The proposals include the retention and enlargement of three commercial units (land-use class A3) and conversion of upper floors to 18 residential units (land-use class C3), as well as demolition of existing commercial ancillary accommodation to the rear and construction of a new 5 storey residential block, comprising 15 units, plus creation of a central courtyard.
- 1.3 The proposed development has been granted Planning permission by Reading Borough Council (RBC), subject to conditions, including Condition 19 which states:

"No development, except for demolition, shall take place until an odour assessment has been carried and a detailed odour management plan to include scaled plans, odour control specification and a maintenance plan has been submitted and approved. Reference shall be made of the Defra Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (January 2005) when assessing potential odours and selecting appropriate odour control methods. Thereafter, the development shall not be carried out other than in accordance with the approved scheme unless the Local Planning Authority otherwise agrees in writing."

- 1.4 The commercial spaces are to be leased as empty units, and the fitting out of the spaces (including installation of odour control equipment) will be undertaken by the future occupiers (i.e. the restaurants). As such, this KORA does not set out 'scaled plans' nor a 'maintenance plan' associated with the specific equipment that is to be installed. Instead, this assessment provides guidance on what an appropriate level of mitigation might comprise in each commercial unit, based on the identified level of risk.
- 1.5 The applicant is in discussions with Busaba, a Thai restaurant, and Franco Manca, a pizzeria, regarding the occupancy of two of the three units.

2. Kitchen Odour Risk Assessment

Consultation

- 2.1 As mentioned, the future occupiers of the commercial units will fit out the spaces. As the commercial units are not yet leased, no specific equipment has been chosen and therefore, it has not been possible to provide all the information to fully discharge Condition 19 (e.g. the 'scaled plans' and 'a maintenance plan')
- 2.2 On the 27th February 2020, an email was sent to RBC's Senior Environmental Health Officer (EHO) setting out our proposed methodology to discharge/partially discharge Condition 19.
- 2.3 RBC's Senior EHO replied that our methodology, as set out below, was appropriate and stated:

"I cannot think of anything more that you can do if the equipment has not been chosen. It may be that this is not enough to fully discharge the condition, but we could accept the assessment pending further details to be submitted once the specific equipment has been chosen."

- 2.4 As such, it is likely that once the units are leased, the occupiers will need to provide further details to fully discharge Condition 19.

Methodology

- 2.5 Defra provides guidance¹ on the determination of the odour impact risk from commercial kitchens. The guidance also outlines the level of mitigation that might be required to reduce the risk to an acceptable level. Whilst this guidance has been withdrawn, it still provides a framework from which the likely odour risk can be determined. EMAQ+ have produced an amendment to this guidance² which has also been referred to in this KORA.
- 2.6 Across both guidance, the odour risk impact is determined as a function of:
- dispersion characteristics;
 - proximity of sensitive receptors;
 - cooking type, and

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

² EMAQ+ (2018) Amendment to Defra (2005). *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*

the size of kitchen.

2.7 The odour risk assessment scoring matrix is set out in Table 2.1 below.

Table 2.1: Odour Risk Assessment Scoring Matrix

Criteria	Score	Score	Details
<i>Dispersion</i>	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 ⁻¹ .
	Moderate	10	Discharging 1 m above eaves at 10-15m.s ⁻¹ .
	Good	5	Discharging 1 m above ridge at 15m.s ⁻¹ .
<i>Proximity of receptors</i>	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.
<i>Size of kitchen</i>	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.
<i>Cooking type (odour and grease loading)</i>	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. <i>Middle Eastern or any premises cooking with solid fuel.</i>
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese, Steakhouse.
	Medium	4	Cantonese, Italian, French, Pizza (gas fired)
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches etc, tea rooms.

2.8 Once the total score has been determined, the odour impact risk, and the level of odour control required to negate that risk, can be identified from the matrix in Table 2.2, below.

Table 2.2: Odour impact risk and control requirement level

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

Kitchen Odour Risk Assessment

- 2.9 It is understood that the restaurant chains Franco Manca and Busaba are likely to occupy Units 1 and 2, respectively. However, it is unknown at this stage what restaurant will occupy Unit 3; as such, it has been assumed that a restaurant with a particularly odorous cooking type will occupy unit 3, to ensure a worst-case approach.
- 2.10 As the commercial units have not yet been leased the number of covers that each restaurant will provide is unknown. As such, the number of covers in each unit has been estimated using a commonly used 'rules of thumb' associated with space planning in restaurants³. This guide suggests that 60% of total space should be set aside for the dining room and service area and that the remaining 40% should be set aside for the kitchen, storage and bathrooms. It then suggests that each cover in a full-service restaurant should require between 1.3sqm and 1.5sqm.
- 2.11 The KORAs for the three commercial units are set out below.

Unit 1 – Franco Manca (154.4 sqm)

Table 2.3: Odour impact risk for Franco Manca

Criteria	Score	Score	Franco Manca
<i>Dispersion</i>	Poor	15	The flues are located at roof level, 1m above the ridge. As the equipment has not yet been specified, it is unknown what speed the air will extract at. As such, dispersion could be poor.
	Moderate	10	
	Good	5	
<i>Proximity of receptors</i>	Close	10	Residential receptors are in the same building within 20m.
<i>Size of kitchen</i>	Medium	3	It has been estimated that the space would support up to 71 covers.
<i>Cooking type (odour)</i>	Very high	10	Franco Manca uses live fuel for cooking (wood-fired oven)

³ <https://www.figjamco.com/design/a-proven-guide-to-effective-space-planning-in-restaurants/>

Criteria	Score	Score	Franco Manca
and grease loading)			
Score			28-38

- 2.12 Based on the Defra guidance, either a *High level* or *Very High level* of odour abatement technology would be required for Unit 1. If the extract air discharges at above 10m.s^{-1} , a *High level* of odour abatement would be required. If the extract air discharges at below 10m.s^{-1} , a very high level of odour abatement would be required.

Unit 2 – Busaba (215 sqm)

Table 2.4: Odour impact risk for Busaba

Criteria	Score	Score	Busaba
Dispersion	Poor	15	The flues are located at roof level, 1m above the ridge. As the equipment has not yet been specified, it is unknown what speed the air will extract at. As such, dispersion could be poor.
	Moderate	10	
	Good	5	
Proximity of receptors	Close	10	Residential receptors are in the same building within 20m.
Size of kitchen	Medium	3	It has been estimated that the space would support 99 covers.
Cooking type (odour and grease loading)	High	7	The odour potential, grease loading and smoke content for Thai cuisine is High.
Score			25-35

- 2.13 Based on the Defra guidance, a *High level* of odour abatement technology would be required for Unit 2, regardless of the rate of discharge from the flue.

Unit 3 – Unknown Restaurant (302 sqm)

Table 2.5: Odour impact risk for Unit 3

Criteria	Score	Score	Unknown Restaurant
Dispersion	Poor	15	The flues are located at roof level, 1m above the ridge. As the equipment has not yet been specified, it is unknown what speed the air will extract at. As such, dispersion could be poor.
	Moderate	10	
	Good	5	
Proximity of receptors	Close	10	Residential receptors are in the same building within 20m.
Size of kitchen	Large	5	It has been estimated that the space would

Criteria	Score	Score	Unknown Restaurant
			support up to 139 covers
Cooking type (odour and grease loading)	Very high	10	It is unknown what type of restaurant will occupy the space. However, it is deemed highly unlikely that the cooking type would have a low potential for odour release. It has been assumed that a restaurant with a very high grease loading/ odour potential will occupy the site.
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese, Steakhouse.
	Medium	4	Cantonese, Italian, French, Pizza (gas fired)
Score			24-40

- 2.14 Based on Defra guidance, either a *High level* or *Very High level* of odour abatement technology would be required for Unit 3.
- 2.15 The level of odour abatement technology would depend on the characteristics of the stack. If the extract air discharges at above 10m.s^{-1} , a *High level* of odour abatement could be accommodated regardless of cooking type.
- 2.16 If the extract air discharges at below 10m.s^{-1} , a *Very High Level* of odour abatement would be required for a kitchen with a
- 2.17 Alternatively, a *High Level* of odour abatement could be incorporated If the extract air discharges below 10m.s^{-1} and the restaurant has a Medium or Low potential for odour emissions.

Mitigation and Recommendations

- 2.18 It is recommended that the kitchen extraction systems vents vertically at 15m.s^{-1} , or at least greater than 10m.s^{-1} . If this discharge rate can be achieved, a *High Level* of odour abatement would be required across all commercial units.
- 2.19 Defra provides guidance on what a *High Level* of odour mitigation might include:

"1. Fine Filtration of ESP followed by carbon filtrations (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."

2.20 If Unit 3 cannot accommodate a stack which discharges vertically at above 10m.s^{-1} , a *Very High Level* of odour control might be required (depending on occupant). Defra provides guidance on what a *Very High Level* of odour mitigation might include:

"1. Fine Filtration of ESP followed by carbon filtrations (carbon filters rated with a 0.4 -0.8 second residence time)

2. Fine Filtration of ESP followed by carbon filtrations and by counteractant/neutralising system to achieve the same level of control as 1.

3. Fine Filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

4. Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as 1"

3. Conclusion

- 3.1 Phlorum Ltd has been commissioned by 1-9 Kings Road LLP to undertake a kitchen odour risk assessment (KORA) to assist in the discharge of Condition 19 of the approved planning application (Reference: 171238) for a mixed-use development at Jackson's Corner, 1/9 King Street, Reading RG1 3AS.
- 3.2 The commercial spaces are to be leased as empty units and the fitting out of the spaces (including installation of odour control equipment) will be undertaken by the future occupiers (i.e. the restaurants). As such, this KORA cannot fully discharge Condition 19 as it does not set out 'scaled plans' nor a 'maintenance plan' associated with the specific equipment that is to be installed.
- 3.3 The KORA has been undertaken in line with Defra Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (January 2005) and has identified that each commercial unit will require a *High Level* of odour control, assuming that exhaust gas can discharge vertically at rates of at least 10m.s^{-1} . It is recommended that the kitchen extraction system vents vertically at 15m.s^{-1} .
- 3.4 Depending on the occupier, Unit 3 might require a *Very High Level* of odour control if the exhaust gas discharge rate is below 10m.s^{-1} .
- 3.5 This KORA provides the necessary information for partial discharge of Condition 19. It is anticipated that the occupiers of the commercial units will provide the 'scaled plans' and 'maintenance plans' to fully discharge Condition 19.



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