Compliance 4 Buildings Ltd

Odour Assessment V2.1

Technical Report Reference: 20222938M938C/2v2

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Client: Amit Patel

Site: 4 Pebble Lane, Wellingborough, NN81AS

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Client:	Amit Patel
Submitted To:	North Northamptonshire Council
Submitted By:	Harley Parfitt
Date:	28th April 2023

QA CONTROL:

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Approved By	Harley Parfitt	Air Quality Consultant		28th April 2023

REVISION HISTORY:

REVISION	DESCRIPTION	DATE	PREPARED	APPROVED
V1	For client comment	17/11/2022	Harley Parfitt	Harley Parfitt
V2	Revised design	28/04/2023	Harley Parfitt	Harley Parfitt

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TABLE OF CONTENTS.

1.0 INTRODUCTION

1.1 Background

1.1.1 Compliance4Buildings Ltd (C4B) has been commissioned by Amit Patel to provide odour consultancy services for an application for the change of use of a E class former high street office to a "Fireway" Pizza Restaurant (Sui Generis Hot Food), at 4 Pebble Lane, Wellingborough, NN8 1AS.

1.1.2 During pre-application discussion, the local planning authority, North Northamptonshire Council (NCC), raised concerns about odorous emissions from the restaurant, stating:

> *"The proposed location of the ventilation grille is a concern, as this is located beneath the library glazing which incorporates glass louvres. We are concerned that this will not comply with Building Regulations: ventilation is typically required to be above openable windows; in addition, the louvres – even when closed – will not be tightly sealed like a typical window, so the potential for fumes / smells to enter the library is high in our opinion. Therefore, we require the tenant to demonstrate how the proposed arrangement will comply with all relevant regulations before we can recommend it for approval to the Council."*

1.1.3 As such, C4B provided an odour risk assessment and recommended an appropriate level of mitigation, in line with best practice EMAQ+ guidance on the *Control of Odour and Noise from Commercial Kitchen Exhaust Systems.* Efforts were made to agree the scope of assessment with NNC in advance of planning submission.

1.1.4 NNC's Environmental Health Officer (EHO), however, objected to the proposed solution stating:

> *"I am not satisfied that odour from the restaurant's low-level extraction can be sufficiently mitigated and prevent an adverse impact on the amenities of the nearest sensitive receptors."*
>
> and
>
> *"Any odour control systems implemented will require regular checking, cleaning and maintenance. Failure to do so would render the odour control system ineffective.*

1.1.5 The EHO's full objection is included in Appendix B. The EHO was primarily concerned about the potential for odours to ingress through the library window louvres. As a result of the objection, the client has agreed to revise the design so that the flue will now discharge above the louvres of the library. The proposed elevation plan, reproduced in Appendix A, displays the location of the extract point, relative to the library louvres.

1.1.6 Land use in the immediate vicinity of the application site is non-residential (commercial properties and library). According to best practice Institute of Air Quality Management (IAQM) *'Guidance on the assessment of odour for planning'*[1] commercial uses are considered to be of medium sensitivity to odour, and 'Education' facilities such as schools to be high sensitivity. A public library is considered to be between high and medium sensitivity to odours.

[1] IAQM (2018) Guidance on the assessment of odour for planning

1.1.7 The library opening hours are 09:00 to 18:00 Monday to Friday and 09:00 to 17:00 on Saturday. The library is closed on Sundays. Opening hours of the proposed 'Fireway' restaurant would be from 11:00 to 23:00 every day. The client anticipates that peak times would be from 18:00 to 21:00, outside the libraries normal opening hours.

1.1.8 This odour assessment (a kitchen odour risk assessment) has been undertaken in line with guidance from Defra/ EMAQ + to assess whether odours from the proposed development, with a flue discharging above the louvres, have the potential to cause a significant loss of amenity to local sensitive receptors, including the public library, recommending mitigation where necessary.

2.0 KITCHEN ODOUR RISK ASSESSMENT METHODOLOGY

2.1 Consultation

2.1.1 The proposed scope of work was sent to NNC's EHO, on the 14th of November 2022 asking for comment/ confirmation that a kitchen odour risk assessment was a suitable assessment method. The email stated that we:

> "*propose to recommend an odour abatement system in line with Defra/EMAQ+ guidance on the control of noise and odour from commercial kitchens. Can you please confirm this would meet your requirements for planning?"*

2.1.2 NNC's EHO, confirmed receipt of the email on the 18th of November stating:

> *"I assume this is for a planning application. I will take a look but do you by any chance know what the planning reference is? "*

2.1.3 However, no further response was received until the objection, which set out that NNC considered the level of mitigation insufficient.

2.2 Methodology

2.2.1 The kitchen odour risk assessment (KORA) methodology included in Defra's withdrawn guidance on the *Control of Odour and Noise from Commercial Kitchen Exhaust Systems*[2] was followed in this assessment. EMAQ+ have produced an update[3,] to this guidance which has also been followed.

2.2.2 The guidance set out that odour risk from a commercial kitchen is a function of the:

- characteristics of the kitchen extract (e.g. height and velocity);
- proximity of receptors;
- cooking type, and
- the size of kitchen.

2.2.3 To identify the odour risk from a commercial kitchen, a proposal is assessed against each of the points above using the scoring matrix in Table 1.

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

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

Table 1: Odour Risk Assessment Scoring Matrix

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 below10 $m.s^{-1}$.
	Moderate	10	Discharging 1 m above eaves at 10-15$m.s^{-1}$
	Good	5	Discharging 1 m above ridge at 15m. s^{-1}
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 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.
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers, or fish & chips. Middle Eastern or any premises cooking with solid fuel.
	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.

2.2.4 The combined score from each of the criteria in Table 1 is then used to assign the scheme's odour impact risk and the level of odour control to negate that risk. Table 2 below sets out the scores which correspond to the odour impact risk.

Table 2: Odour impact risk and control requirement level

IMPACT RISK	ODOUR CONTROL REQUIREMENT	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

2.2.5 It should be stressed that the KORA methodology is highly prescriptive and does not consider other factors which might influence how odour is experienced in the local area (such as the frequency of cooking or the offensiveness of odours). As such, the KORA guidance recognises that planners and other decision makers *"may take a pragmatic view when assessing whether certain low risk kitchens require any odour abatement to be fitted".*

3.0 KITCHEN ODOUR RISK ASSESSMENT

3.1 Risk Assessment

3.1.1 A “Fireway” Pizza Restaurant would occupy the address. Opening hours would be from 11:00 to 23:00 every day. The client anticipates that peak times would be from 18:00 to 21:00.

3.1.2 There are 16 covers in the restaurant. However, the client anticipates that deliveries would account for the majority (circa 90%) of orders. The pizza oven has a capacity which can exceed 160 pizzas / hour.

3.1.3 The following appliances would be installed:

- 1no. gas fired pizza oven.

3.1.4 EMAQ+ guidance states that emissions from gas pizza ovens have a medium loading of grease & smoke. The restaurant would not use any solid fuels, which have a high potential for smoke release.

3.1.5 The site plans, including the location of the exhaust point, are provided in Appendix A.

3.1.6 The KORA for the Fireway Restaurant is set out below.

Table 3: Odour impact risk for Takeaway unit.

CRITERIA	SCORE	SCORE	EXPLANATION
Dispersion	Moderate	10	The kitchen extract will discharge 1m above the eaves of the library, above the louvres.
Proximity of high sensitivity receptors	Close	10	The nearest residential dwellings are located between 20m and 100m from the site; however, the louvres of the public library are located within 20m of the extract point.
Size of kitchen	Medium	3	The kitchen is ‘Small’ given that there is only one piece of cooking equipment; however, based on the number of covers, and anticipated number of deliveries the restaurant/takeaway is considered of ‘Medium’ size.
Cooking type (odour and grease loading)	Medium	4	The restaurant will be a pizza restaurant, using gas fired equipment.
		Score	27

3.1.7 A score of 27 suggests a high risk of odour impacts, in the absence of mitigation. As such, the assessment suggests that at least a high level of odour mitigation would be required. It should however be noted that this assessment does not fully consider that the anticipated peak times for the restaurant would be outside the opening hours for the public library, which would decrease the risk of odour effects.

3.2 Mitigation and Recommendations

3.2.1 Defra and EMAQ+ guidance provide examples of what a *high* level of odour mitigation might include. These examples are reproduced below:

"A high level of odour control may include:

1. Fine Filtration or Electrostatic precipitation (ESP) followed by carbon filtration (carbon filters rated with a 0.2 -0.4 second residence time); or

2. Fine Filtration or ESP followed by UV ozone system to achieve the same level of control as 11.

3.2.2 As the extract is at height, either solution would be appropriate from an odour perspective. The ESP or fine filtration system would remove emissions of grease, smoke and oil and the carbon filtration system and/or UV ozone would remove gaseous odours. The second stage carbon filtration system would also remove any residual greases or smoke.

3.2.3 A jet cowl should be installed on the discharge point, and a fan should be installed to achieve an exhaust velocity of at least 10m/s.

3.2.4 The recommended mitigation would represent a *high* level of odour abatement, with respect to Defra/ EMAQ+ guidance.

3.2.5 Any installed equipment should, however, be tested, balanced, and commissioned prior to use by a suitably qualified person, to ensure it is operating as designed.

3.2.6 All equipment and ductwork should also be maintained and cleaned in accordance with the manufacturer's requirements to ensure no drop off in odour abatement efficiency. This might be achieved with a service contract from a suitable provider.

3.2.7 The maintenance of the odour control system is dependent on what system (fine filtration or ESP followed by carbon filtration, or fine filtration or ESP followed by UV ozone) is installed.

3.2.8 EMAQ+ provides the following recommendations for odour control systems:

Recommendations for maintenance of odour control system include:

- System employing fine filtration and carbon filtration
  - Change fine filters every two weeks
  - Change carbon filters every 4 to 6 months
- Use a system employing ESP and other in line abatement, typically
  - *ESP systems cleaned, and sump emptied on a four weekly basis.*
  - *UV-C systems used in line, cleaned on a four weekly basis*
  - *Side Stream UV-C systems, cleaned every 3 to 6 months.*
  - *Carbon filters with ESP pre-treatment change carbon filter every 6 to 12 months.*

These time frames may increase or reduce for extreme or very light applications.

3.2.9 The odour control system should initially be maintained in line with the above guidelines. The time between the maintenance of the odour control systems can then be adjusted according to the engineer's recommendation.

3.2.10 EMAQ+ guidance recommends a cleaning interval of 6-12 months for sites with a moderate grease loading. It is therefore recommended that, initially, maintenance/ cleaning of ductwork occurs every 26 weeks. The time between maintenance can then be adjusted according to the engineer's recommendation.

3.2.11 A visual inspection of the ventilation system should however be carried out at least once a week, to ensure that there is no accumulation of grease or dirt.

4.0 CONCLUSION

4.1.1 Compliance4Buildings Ltd (C4B) has been commissioned by Amit Patel to provide a revised odour assessment in association with an application for the change of use of a E class former high street office to a "Fireway" Pizza Restaurant (Sui Generis Hot Food).

4.1.2 A revised odour assessment was required following an objection by the EHO and a subsequent change to design.

4.1.3 The KORA has been undertaken in line with Defra's and EMAQ+ *Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems* and has identified that in the absence of mitigation, the proposed commercial kitchen presents a *high risk* of odour impact. A high level of odour abatement has, therefore, been recommended.

4.1.4 The recommended odour abatement system meets the requirements of Defra and EMAQ+ guidance and would minimise emissions of grease, smoke, and gaseous odours. After the incorporation of the recommended mitigation, it is considered that the proposed development would include an appropriate level of odour mitigation to negate any significant risk of amenity loss to nearby receptors, including the library.

4.1.5 Considering the above, it is concluded that the proposed development would not have a significantly adverse impact on the amenity of local sensitive receptors, with respect to odour. Odour should not, therefore, present any significant obstacle to the planning application.

4.1.6 As an appropriate level of odour abatement can almost always be recommended, we suggest that in the event of any further objections, these be dealt with via a suitably worded condition requesting a detailed odour management plan.

APPENDIX A: PLANS SHOWING LOCATION OF FLU AND LIBRARY LOUVRES