



THE KEEN PARTNERSHIP

23-24 MARKET PLACE, READING

ODOUR ASSESSMENT

TECHNICAL REPORT: RFE-0515-23-01-02 AQ FINAL

DATE: JULY 2023



PROJECT TITLE: 23-24 MARKET PLACE, READING

REPORT REF: RFE-0515-23-01-02-AQ FINAL

DATE: JULY 2023

	Name	Position	Signature	Date
Prepared By	Kerrie Baggs	Air Quality Consultant		03/07/2023
Reviewed By	Richard Fenton	Director		04/07/2023
Approved By	Richard Fenton	Director		17/07/2023

DOCUMENT HISTORY		
Status	Description	Date
01	Draft report for client comment	04/07/2023
02	Final report for issue	17/07/2023

Notice: This report has been prepared by RF Environmental with all reasonable skill, care and diligence. RF Environmental Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works. This report is issued in confidence to the Client and RF Environmental Ltd has no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk. Unless specifically assigned or transferred within the terms of the agreement, RF Environmental Ltd retains all copyright and other intellectual property rights, on and over the report and its contents.



23-24 MARKET PLACE, READING ODOUR ASSESSMENT

CONTENTS

1	INTRODUCTION	4
1.1	Proposed Development	4
2	POLICY AND GUIDANCE	5
2.1	Planning Policy	5
2.2	Guidance	5
3	ASSESSMENT METHOD	6
3.1	Assessment Approach.....	6
4	ODOUR RISK ASSESSMENT	7
4.1	Odour Risk.....	7
5	MITIGATION	8
6	CONCLUSIONS	9
	Appendix A: Figures	10



1 INTRODUCTION

RF Environmental Ltd (RFE) has been commissioned to undertake an odour assessment in support of a planning application at 23-24 Market Place, within the administrative boundary of Reading Borough Council (RBC). The assessment will assist The Keen Partnership in addressing the EHO's below comment:

"Given the vent is at such a low level it has the potential to cause odour issues for future occupiers of the flats above. An odour assessment is therefore required to demonstrate that future occupiers would not be unduly impact by odour or the location of the vent outlet would need to be changed."

The report assesses the odour emissions associated with the existing restaurant located on the ground floor, and the impact it may have on the proposed residential development.

The report can be reviewed together with the air quality assessment¹ supporting the planning application, referenced 221880.

1.1 Proposed Development

The proposed development is to convert floors 1 to 3 from office space to residential use.

The ground floor is not a part of the planning proposals and currently comprises a restaurant.

The elevation plan is presented in Figure A1 in Appendix A.

¹ RF Environmental Ltd. Air Quality Assessment. December 2022. Available from: https://iaaw-corp-live.reading.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DC&FOLDER1_REF=221880.



2 POLICY AND GUIDANCE

2.1 Planning Policy

2.1.1 National Policies

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) (2021)² sets out the government's planning policies for England, but does not refer directly to odour.

2.1.2 Local Policy

RBC's Local Plan³ was adopted on 4th November 2019. There are no policies directly relating to odour from commercial kitchens.

2.2 Guidance

National Planning Practice Guidance

The government has revised and updated the national planning practice guidance⁴ to support the NPPF in order to make it more accessible. The guidance mentions that odour and dust can also be a planning concern, because of the effect on local amenity.

Defra's Guidance

Defra's Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust systems (2005)⁵ provides guidance on a risk assessment procedure and provides best practice for the design and operation of commercial kitchen ventilation systems and the control of grease, odour and noise emissions. The guidance was withdrawn in September 2017, however this guidance is still widely used and considered applicable when assessing odour from a commercial kitchen.

As indicated in the Defra document, the level of odour nuisance from a kitchen extraction system is related to: the size of the cooking facility; the type of food prepared; and the type of cooking appliances.

This approach considers the location, scale and nature of the commercial kitchen, the location and operating parameters of the extraction system, and the sensitivity of the local area to determine the risk of odour effects.

² Ministry of Housing, Communities and Local Government. National Planning Policy Framework. July 2021.

³ Reading Borough Council. Reading Borough Local Plan 2019.

⁴ Ministry of Housing, Communities and Local Government. 2019. Planning Practice Guidance: Air Quality. Available from: <https://www.gov.uk/guidance/air-quality--3> (Accessed 28/06/2023)

⁵ Department for Environment, Food and Rural Affairs, 2005. Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust systems.



3 ASSESSMENT METHOD

3.1 Assessment Approach

A qualitative risk assessment of the odour impacts has been undertaken in line with the method outlined in Annex C of Defra's document 'Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust systems'.

The guidance provides a method of assessing the risk by scoring the below four criteria:

- dispersion – the height and velocity of the final discharge in relation to surrounding buildings;
- proximity of receptors - the location of the nearest residents;
- kitchen size - number of covers, i.e. level of activity; and
- cooking type – grease and odour loading.

The number of covers determines the kitchen size and the cooking type signifies the level of odour and grease loading.

Defra's guidance gives indicative scores for the four criteria above.

The sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type provides a 'significance score'. The 'significance score' for the proposed kitchen determines the impact risk and hence the level of odour control required. Based on these findings, appropriate mitigation has been identified.

In the absence of direct information from the restaurant, the available data has been obtained from the odour assessment⁶ conducted to support the restaurant's planning application in 2021, referenced 211961⁷. The specification for the kitchen extraction system, taken from Purified Air's report, is presented in Figure A2 of Appendix A.

⁶ Purified Air. Specification for EMAQ/DEFRA Report. 03/12/2021. Available from: https://iaw-corp-live.reading.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DC&FOLDER1_REF=211961

⁷ Reading Borough Council. Application for full planning permission. Application No. 211961. 13/07/2022.

4 ODOUR RISK ASSESSMENT

4.1 Odour Risk

The odour risk assessment is set out below in Table 4.1. The assessment is based on the previous odour assessment used to support the planning application for the restaurant, and does not consider any implemented control measures.

	Descriptor	Score	Impact risk	Odour Control Requirement
Dispersion	Very Poor	20	Very High	Very High level of odour control
Proximity of receptors	Close	10		
Size of kitchen/food cooking area	Medium*	3*		
Cooking type (Odour and grease loading)	Very High*	10*		
Total		43		

TABLE 4.1 ODOUR RISK ASSESSMENT SCORING

*Descriptor and score is derived from the previous odour assessment.

The extraction fan is located at the ground floor level. The proposed residential flats will be directly above the extraction. Prior to the implementation of odour control measures, the dispersion has been classed as 'Very Poor'.

The proposed residential receptors will be located within the same building as the restaurant, on the first, second and third floors. The proximity of receptors has been classed as 'Close'.

The size of the kitchen has been based on the previous odour assessment, which was classed as 'Medium' in the risk assessment.

The cooking type has been based on the previous odour assessment, which was classed as 'Very high'.

The results of the assessment give a 'significance score' of 43 and an impact risk of 'Very high'. A very high level of odour control would therefore be required to mitigate the impact of the odour risk.



5 MITIGATION

Based on the 'Very high' risk level, a high level of odour mitigation is required to mitigate the impact of the odour risk. The level of odour control required would be reduced with improvement in stack dispersion.

Defra guidance states that a 'Very high' level of odour control comprises fine filtration or ESP, followed by carbon filtration (carbon filters rated with a 0.4 –0.8 second residence time).

In the odour assessment conducted in 2021, a 'Very high' level of odour control was recommended to support the planning application for the restaurant.

The proposed commercial kitchen extraction system proposed by Purified Air following their initial risk assessment, includes two phases;

The first phase comprised two electrostatic precipitator ESP4500 units in a double pass for total smoke removal. The manufacturer, Purified Air Ltd, stated that the Electrostatic Precipitator (ESP) is a very efficient means for separating the particulate phase; operating efficiency when clean can be as high as 98% at particle sizes down to 0.01 micron.

The second phase of odour control proposed, includes the use of a carbon filter. The proposed Sitesafe carbon filters use panels of activated carbon and measure 594x196x597mm, three panels combining to 594x594x597. The carbon filters were recommended to be fitted after the ESP and sized to achieve a minimum 0.4 second dwell time. Carbon filtration units are an efficient way of controlling grease, smoke and odour emissions. The proposed Sitesafe carbon filters are presented in Figure A3 of Appendix A.

Maintenance measures in line with manufacturer requirements were recommended, and included a service of the system every 12 weeks to start with.

The odour abatement system recommended in the original odour assessment constitutes a 'very high' level of odour control in line with the Defra guidance. The planning permission granted on July 13th 2022, under reference number 211961⁸, included a planning condition that ensured the installation of the kitchen extraction system. Condition 4 stated that:

"Within one month of the date of this planning permission the kitchen extract/ventilation system shall have been installed in accordance with the approved plans and specifications and thereafter the extract/ventilation systems shall be permanently retained and maintained in accordance with the approved specifications."

As a result, with the above control measures in place, the impact of the odour risk is mitigated and removes the requirement for additional mitigation measures.

⁸ Reading Borough Council. Application for full planning permission. Application No. 211961. 13/07/2022.



6 CONCLUSIONS

The risk assessment for kitchen odour has found a 'Very high' impact risk, matching the conclusion of the odour assessment carried out in support of the planning application for the restaurant in 2021. An odour abatement system was recommended as a part of the original assessment, which constitutes a 'Very high' level of odour control in line with the Defra guidance.

Condition 4, which is part of the planning consent granted for the restaurant, ensures the implementation of the recommended odour control measures. As a result, there is no requirement for additional mitigation measures, therefore addressing the concerns raised by the Environmental Health Officer (EHO).



Appendix A: Figures

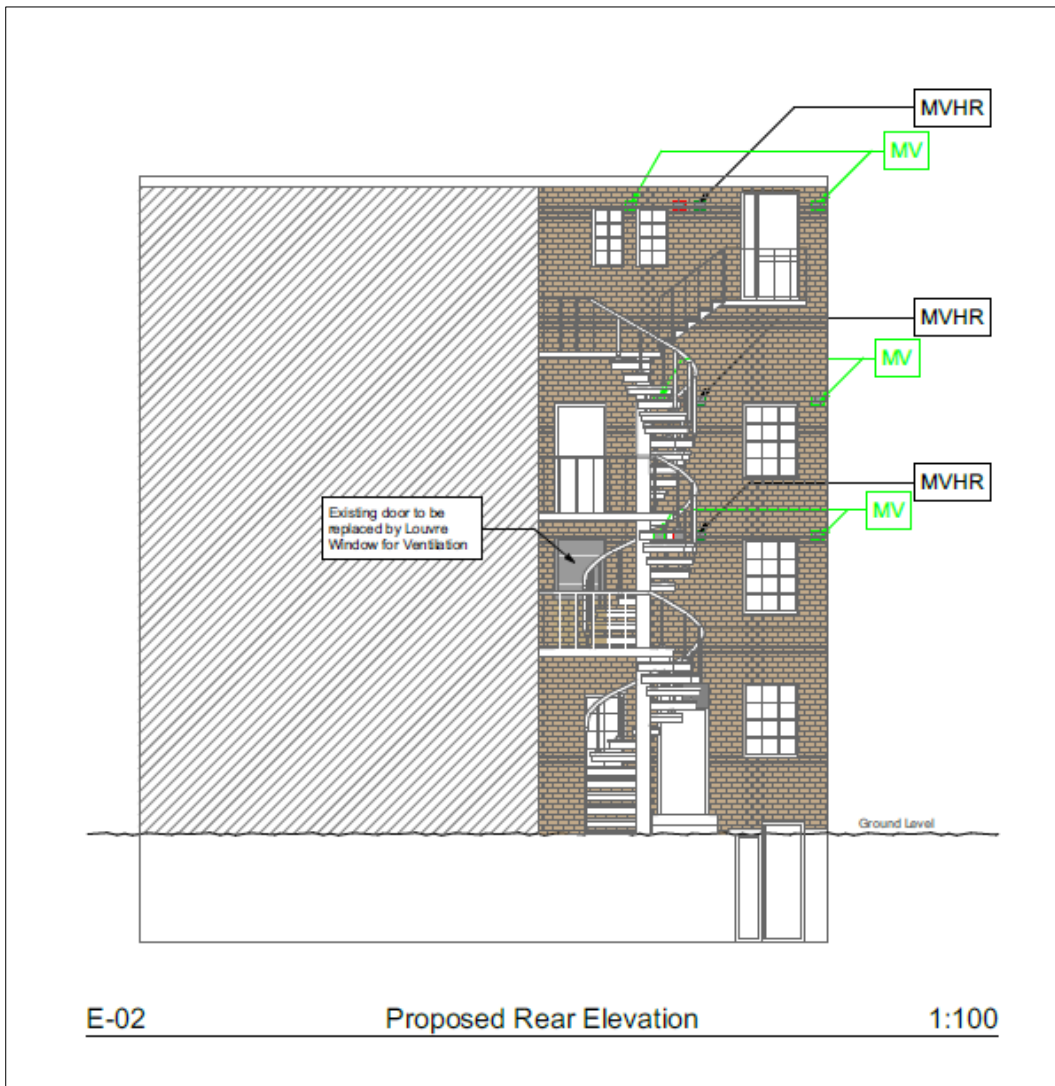


FIGURE A1: REAR ELEVATION PLAN



Specification

2 No. ESP4500E Units in a double pass for total smoke removal.

Specification per unit

Air Volume Max*	2.1m ³ /s
Electrical Supply	220/240V 50Hz 1ph
Power Consumption	50 W
Weight each	118kg
Min/Max Working Temperature	4/56°C
Max Relative Humidity	75%

Carbon Filter System providing a minimum 0.4 second dwell/residence time.

24 No. 594 x 196 x 597 Site Safe Carbon Filters.

Side access casing measuring 1200 high x 1200 wide x 1500 in direction of airflow.

FIGURE A2: PURIFIED AIR COMMERCIAL KITCHEN FILTRATION SPECIFICATION



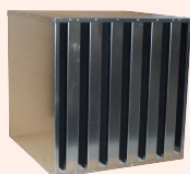
Sitesafe Carbon Filters

We manufacture Sitesafe carbon filters, these innovative carbon units measure 594x196x597mm, three combining to 594x594x597mm, directly replacing our original carbon blocks whilst providing exactly the same filter performance as an existing full size cell.

Their advantage is that they only weigh 18kg each against the 68kg of our original blocks. This takes the strain out of fitting and servicing, allowing only one engineer to complete the task where two had been previously required.

Our Sitesafe carbon filters use panels of activated carbon to remove the malodorous gases within the commercial kitchen extract duct through the process of chemical adsorption. By installing our ESP units before our Sitesafe filters, the carbon life span is greatly increased, allowing it to nullify malodours at optimum efficiency for much longer.

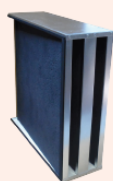
Will require two people plus lifting gear to carry and install.



Carbon PA242424

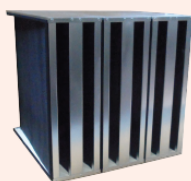
Size 594x594x597
Gross Weight 68.20kg
Carbon Weight 50.00kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

Safe for one person to carry. No special lifting gear required.



Sitesafe PA240824

Size 594x196x597
Gross Weight 17.95kg
Carbon Weight 16.6kg
Rated Airflow 1200m³/hr*
Pressure Drop 120Pa



Sitesafe 3 x PA240824

Size 594x594x597
Gross Weight 53.85kg
Carbon Weight 50.00kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

Please see below for the recommended minimum dwell times required for different applications and scale up accordingly.

It should be noted that filtration performance will be improved by increasing the dwell times applied.

Application	Recommended Dwell Time	Grade
Cooking - Low Odour, Tea Shop, Canteens	0.1 to 0.2 Seconds	Carbon grade Enhanced for improved performance for light catering odours
Cooking - Moderate Odour: Pizza, Steak House, French, Italian, Pubs, Chinese, Japanese, Cantonese	0.2 to 0.4 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Cooking High Odour, Indian, Thai, Vietnamese, Kebab	0.4-0.6 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Cooking Very High Odour: Fried Chicken, Pubs with large fried food turnover, Fish and Chip Shops, Fast Food / Burgers	0.4-0.8 Seconds	Enhanced Carbon grade suitable for many applications 65% Minimum CTC
Reduction of Kerosene Exhaust fumes	0.1 to 0.2 Seconds	General Purpose Activated Carbon
Reduction of Ozone	0.1 to 0.2 Seconds	General Purpose Activated Carbon
Reduction of Diesel Fumes, including H ₂ S, SO ₂ , NO _x , HCl	0.2 Seconds	Carbon Museum/Archive, Café Directive: SO ₂ SOX NO ₂ NOX Removal
Museum and Archives	0.2 Seconds	Carbon Museum/Archive, Café Directive: SO ₂ SOX NO ₂ NOX Removal

The cooking odour classes above are as classified by DEFRA in **Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, PB10527**

FIGURE A3: PURIFIED AIR CARBON FILTER

