

**SONIC STAR
PROPERTIES
LIMITED**

**27-32 MARKET
PLACE AND 173-175
FRIAR STREET
READING**

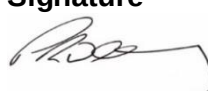
**ODOUR
ASSESSMENT**

DECEMBER 2020

FINAL REPORT

2211W-SEC-00003-02

SONIC STAR PROPERTIES LIMITED
27-32 MARKET PLACE AND 173-175 FRIAR STREET READING
ODOUR ASSESSMENT
FINAL REPORT
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1. INTRODUCTION

1.1 Background

- 1.1.1 Southdowns Environmental Consultants Ltd (Southdowns) was commissioned by Sonic Star Properties Limited (Sonic) in August 2020 to produce an odour assessment for a proposed mixed-use development at 27-32 Market Place and 173-175 Friar Street, Reading.
- 1.1.2 This assessment has been prepared to determine any odour controls needed for the commercial kitchen associated with the proposed hotel at 173-175 Friar Street, in order to avoid loss of amenity or statutory nuisance to existing and introduced receptors, to accompany a planning application by Sonic Star Properties.
- 1.1.3 This document has been prepared in accordance with the principles and requirements of Defra guidance, '*Control of Odour and Noise from Commercial Kitchen Exhaust Systems*' [1]. The Defra guidance was withdrawn in 2017, but has not yet been replaced and is still commonly used in assessments.

1.2 Report Structure

- 1.2.1 Details of the site and the proposed scheme are presented in the following section of this report. Relevant air quality policy and guidance are outlined in Section 3 and the assessment methodology is detailed in Section 4. The risk of odour impacts is assessed in Section 5 and appropriate mitigation measures are discussed in Section 6 and conclusions presented in Section 7. Figures and Tables are presented separately in Appendix A and B, respectively.



2. SITE DETAILS

2.1 Site Description

- 2.1.1 The development site is located in Reading town centre, adjoined to the immediate south and west by a mixture of commercial and retail buildings. The development site is bounded by Friar Street and the Town Hall Square to the north and Market Place to the east. Reading train station is approximately 350 m to the north and the A33 is approximately 500 m to the west of the development site.
- 2.1.2 The development site comprises two separate buildings, 173-175 Friar Street (the former Bristol and West Arcade/ Brook Henderson House), to the south of Town Hall Square, and 27-32 Market Place, to the west of Market Place.

2.2 Proposed Development

- 2.2.1 The proposed development involves the demolition of the existing 173-175 Friar Street unit and construction of a 182 room hotel. 27-32 Market Place will undergo refurbishment and remodelling and will comprise retail and residential space.
- 2.2.2 The proposed hotel development comprises eight stories plus basement level. The basement level will include a plant room, offices, changing rooms, toilets and a staff cafeteria. The ground floor will include refuse space, offices, foyer, toilets, a kitchen and a dining area. The hotel rooms will be situated on the first to seventh floors.
- 2.2.3 On the ground floor, the kitchen will be located to the west of the development which backs onto commercial properties such as Marks and Spencer.
- 2.2.4 The development location is shown in Figure A1 of Appendix A and the proposed ground floor plan showing the location of the kitchen is shown in Figure A2 of Appendix A.

2.3 Receptors

- 2.3.1 The nearest existing receptors are commercial and retail businesses. The possible presence of residential receptors within 20 m of the site, on the higher floors of the adjacent buildings, cannot be excluded.
- 2.3.2 The commercial building adjoined to the west façade of the development where the kitchen is located, Marks and Spencer, is four storeys in height. Other surrounding buildings vary from four to five storeys.
- 2.3.3 27-32 Market Place will introduce residential and commercial receptors and 173-175 Friar Street will introduce commercial receptors.



3. AIR QUALITY POLICY, GUIDANCE AND CRITERIA

3.1 Odour Effects

- 3.1.1 As identified in Defra guidance [1], odour is perceived by our brains in response to chemicals present in the air we breathe. Odour is the effect that those chemicals have upon us. Humans have a sensitive sense of smell that can detect odour even when chemicals are present in very low concentrations. Most odours are a mixture of many chemicals that interact to produce what we detect as an odour. Different life experiences and natural variation in the population can result in different sensations and emotional responses by individuals to the same odorous compounds. Because the response to odour is synthesised in our brains, other senses such as sight and taste, and even our upbringing, can influence our perception of odour and whether we find it acceptable, objectionable or offensive.
- 3.1.2 An odour assessment for kitchens is required to understand the level of mitigation required to avoid a significant loss of amenity or statutory nuisance.

3.2 Relevant National Policy and Guidance

- 3.2.1 The Environmental Protection Act 1990 (EPA) [2] deals with statutory nuisance. Nuisance caused by odour is regulated by the statutory nuisance provisions under Part III and is defined in s.79(1)(d) as: *“Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance”*.
- 3.2.2 Statutory nuisance is not intended to secure a high level of amenity but rather to act as a basic safeguard on emissions. The perpetrator of any alleged nuisance has a defence of best practicable means (BPM), which provides a basis for balancing the interests of the site and residents.
- 3.2.3 There are no UK standards or statutory guidance relating to nuisance.
- 3.2.4 The National Planning Policy Framework (NPPF) was first published in 2012 and subsequently updated in July 2018 and February 2019 [3]. It contains policies on air quality, but does not refer directly to odour.
- 3.2.5 The National Planning Practice Guidance (NPPG) [4] provides guiding principles on how planning can take into account of the impact of new development on air quality. On odour, it states, *“Odour and dust can also be a planning concern, for example, because of the effect on local amenity”*.
- 3.2.6 Defra's *Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust systems (2005)* [1] 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 due to obsolete information, however this guidance is still widely used and considered applicable when assessing odour from a commercial kitchen.
- 3.2.7 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.
- 3.2.8 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.



3.3 Local Policy and Guidance

- 3.3.1 Reading's Local Plan [5] was adopted in November 2019 and replaces previous development plans including the Core Strategy adopted in 2008 and amended in 2015. There are no policies directly relevant to odour from commercial kitchens.

3.4 Non-Statutory Guidance

- 3.4.1 The Institute of Air Quality Management published the current version of its '*Guidance on the Assessment of Odour for Planning*' [6] in 2018. It is primarily aimed at assessing schemes where odour may require modelling or monitoring, but also includes information on qualitative, risk-based assessments.



4. ASSESSMENT METHODOLOGY

4.1 Assessment Approach

4.1.1 This air quality assessment has been produced using information available and takes on the following aspects:

- i. consultation with RBC (emailed 13/10/20) to agree the methodology to be used in this assessment;
- ii. classification of odour and grease content;
- iii. a qualitative odour impact risk assessment in line with Defra guidance, taking into account:
 - odour and grease content;
 - the height and position of any proposed flue;
 - the recommended exit velocity from the flue; and
 - the distance between the proposed flue and the potential odorous emissions and the distance to the receptors; and
- iv. identification of appropriate mitigation.

4.2 Risk Assessment Methodology

4.2.1 A qualitative risk assessment of the odour impacts has been undertaken in line with the method outlined in Annex C of Defra's 'Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust systems' [1].

4.2.2 The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach.

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

- dispersion - where the extract vents to atmosphere are in relation to the building to which the vent is attached;
- 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.

4.2.4 Tables B1 and B2 of Appendix B, taken from Defra guidance, show typical odour, grease, moisture and smoke characteristics from different commercial kitchens and cooking appliances. These tables were used to inform the odour and grease loading.

4.2.5 Table B3 of Appendix B, taken from Defra guidance, gives indicative scores for the four criteria above. Table B4 of Appendix B, also taken from Defra guidance, gives assessed impact risk and odour control requirements for a given 'significance score'. The 'significance score' for the proposed kitchen was determined using Table B3 and the impact risk and level of odour control required was determined using Table B4. Based on these findings, appropriate mitigation has been identified.



5. ODOUR RISK ASSESSMENT

5.1 Odour Risk

	Descriptor	Score	Impact risk	Odour Control Requirement
Dispersion	Good	5	High	High Level Odour Control
Proximity of Receptors	Close	10		
Size of Kitchen/food cooking area	Large	5		
Cooking type (Odour and grease loading)	Very high	10		
TOTAL		30		

TABLE 5.1: ODOUR RISK ASSESSMENT SCORING

- 5.1.2 The proposed flue will be at the roof level, one metre above the ridge, and is expected to be between 12 and 15 m/s. The surrounding buildings are four to five storeys in height, whereas the hotel is proposed to have eight floors, resulting in better dispersion than if surrounding buildings were at a similar height. Dispersion has been classed as Good.
- 5.1.3 The nearest existing receptors are commercial and retail businesses. However, the possible presence of residential receptors within 20m of the site, on the higher floors of the adjacent buildings, cannot be excluded. These cannot be confirmed through interrogation of street mapping. Therefore, the worst case has been used and has resulted in a descriptor of Close and score of 10.
- 5.1.4 The proposed number of covers is expected to be around 1,000 per day and therefore the kitchen has been classed as Large in the risk assessment. Hours of operation will be: breakfast 06.30-10.30h; lunch 12.00-15.00h; and dinner 17.00-23.00h.
- 5.1.5 The menu is expected to comprise mainly traditional British dishes. This is expected to involve baking, broiling, frying, microwaving and roasting. The odour content is expected to be Light to Medium and the moisture content Heavy. The odour and grease content is expected to be High.
- 5.1.6 The results of the assessment give a 'significance score' of 30 and an impact risk of High. A high level of odour control is therefore recommended.



6. MITIGATION

6.1 Mitigation and Extraction System

- 6.1.1 Based on the 'High' risk level of potential nuisance, a high level of odour mitigation is recommended.
- 6.1.2 High level odour control may include:
1. Fine filtration or electrostatic precipitator (ESP) followed by carbon filtration (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.
- 6.1.3 The proposed extraction system includes a primary and secondary grease filter, a final bag filter and odour control which could be in the form of a carbon filter or UV ozone system. A typical set-up is presented in Figure A3 of Appendix A. The discharge velocity is expected to be 12-15 m/s. The final design of the extraction system need not necessarily comprise these exact elements, but will need to offer a similarly high level of odour control.
- 6.1.4 The kitchen extraction system will be specified at the detailed design stage to ensure compliance with Defra guidance.
- 6.1.5 It is recommended that the proposed extraction system is properly maintained in line with manufacturer recommendations.



7. CONCLUSIONS

- 7.1.1 Although dispersion at the site will be good, the likely proximity of receptors, size of kitchen and type of cooking, means that the risk assessment for kitchen odour has found a High impact risk. Therefore, a high level of odour control is recommended.
- 7.1.2 Proposed mitigation includes a primary and secondary grease filter, a bag filter and a carbon filter or UV ozone system. It is important that regular maintenance is undertaken, in accordance with manufacturer recommendations.
- 7.1.3 Provided that the final flue design incorporates suitable mitigation and maintenance, then it is considered that the proposed development will not harm the amenity at nearby receptors or at receptors introduced by the proposed development.



8. REFERENCES

1. Netcen on behalf of Department for Environment Food and Rural Affairs (Defra). Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems. January 2005. Withdrawn on 15 September 2017.
2. 1990 c.43. Environmental Protection Act. HMSO.
3. Ministry of Housing, Communities and Local Government. National Planning Policy Framework. February 2019.
4. Ministry of Housing, Communities and Local Government. 2019. Planning Practice Guidance: Air Quality. [online] <https://www.gov.uk/guidance/air-quality--3>. Accessed October 2020.
5. Reading Borough Council. 2019. Reading Borough Local Plan. Adopted November 2019.
6. Institute of Air Quality Management (IAQM). Guidance on the assessment of odour for planning. Version 1.1. July 2018.

APPENDIX A: FIGURES

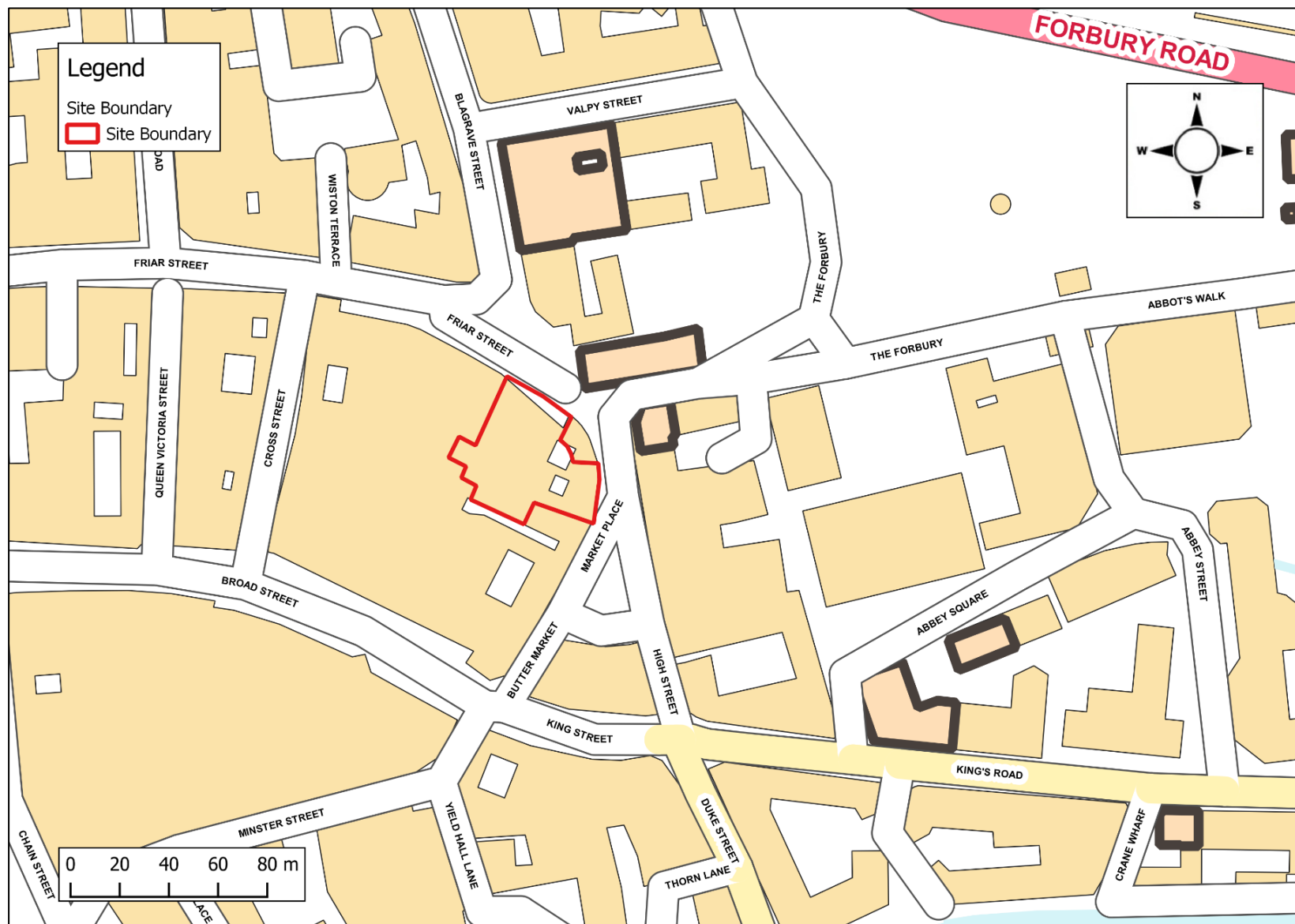


FIGURE A1: SITE LOCATION



FIGURE A2: 173-175 FRIAR STREET PROPOSED FLOOR PLANS – GROUND FLOOR

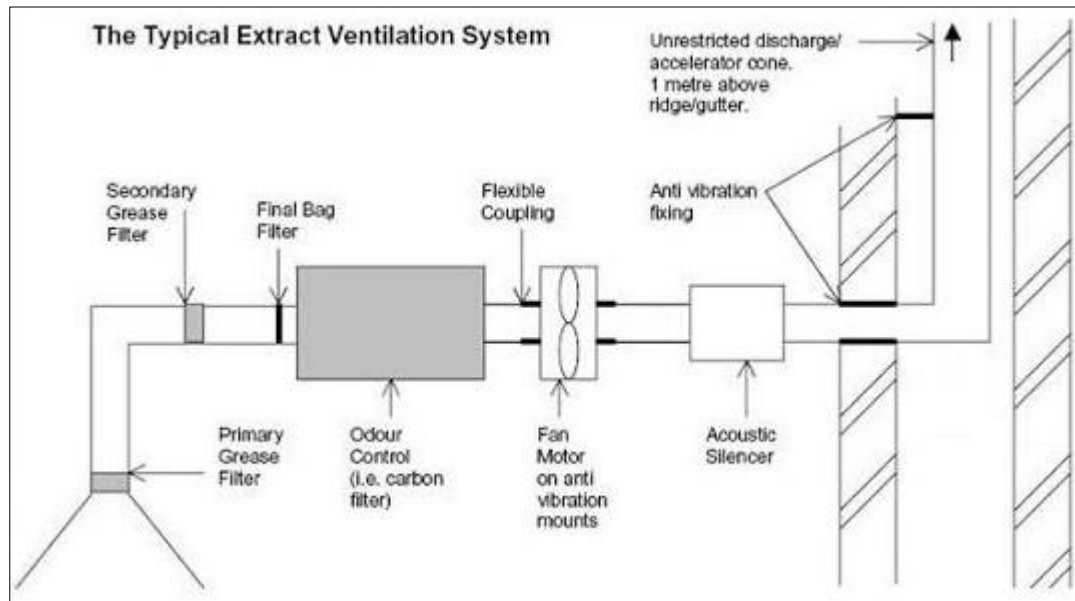


FIGURE A3: PROPOSED EXTRACT VENTILATION SYSTEM

APPENDIX B: TABLES

Catering establishment	Description	Odour content				Grease content			
		Low	Moderate	High	Very high	Low	Moderate	High	Very high
Tea shop									
Pizza restaurant	Herb								
Steakhouses	Fat								
French	Herbs/garlic								
Italian	Herbs/garlic								
Most pubs	Fat								
Chinese	Ginger, spices, oil								
Japanese	Spices, oil								
Cantonese	Spices, oil								
Indian	Spices, oil								
Thai	Spices, oil								
Vietnamese	Spices, oil								
Kebab	Fat cooking meat								
Fried Chicken	Oil, cooking meat								
Pubs (fried)	Oil, cooking meat								
Fish & chip	Oil								
Fast food, burger	Oil, cooking meat								

TABLE B1: GREASE AND ODOUR CONTENT OF VARIOUS TYPES OF FOOD [1]

Cooking appliance	Grease loading			Moisture content		
	Light	Medium	Heavy	Light	Medium	Heavy
Cooking pots						
Bains Marie						
Steam ovens						
Pizza ovens						
Bratt pans						
Oven ranges						
Flat top grills						
Chip fryers						
Salamanders						
Charcoal						
Gas fired open grills						
Char boilers						
Chinese wok ranges						

TABLE B2: GREASE & MOISTURE CONTENT OF VARIOUS COOKING APPLIANCES [1]

Criteria	Descriptor	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 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/s
	Good	5	Discharging 1m above ridge at 15m/s
Proximity of receptors	Close	10	Closest sensitive receptor less than 20 m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20-100m from kitchen discharge
	Far	1	Closest sensitive receptor greater than 100m from kitchen discharge
Size of kitchen	Large	5	More than 100 covers or large sized restaurant
	Medium	3	Between 30-100 covers or medium sized restaurant
	Small	1	Less than 30 covers or small restaurant
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish and chips
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, pizza or steakhouse

TABLE B3: SCORING CRITERIA [1]

Impact Risk	Odour Control Requirement	Significance Score*
Low to medium	Low level odour control	<20
High	High level odour control	20-35
Very high	Very high level odour control	>35

TABLE B4: IMPACT RISK [1]