



Pizza Restaurant
45 Church Street West
Radcliffe
M26 2SP

NOISE IMPACT ASSESSMENT

Report by
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Ref: E18347
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Signed:

A handwritten signature in blue ink, appearing to read 'S. B. Mellor', written over a light blue rectangular background.

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1.0 INTRODUCTION

On the instructions of Mr. D. Szafranski, SBM Safety Solutions Ltd completed this noise impact assessment to accompany an application to operate a “pizza restaurant” on the ground floor of the building located at 45 Church Street West, Radcliffe, M26 2SP. There are existing residential flats to the first floor.

The assessment would refer to both the existing noise climate at this location and also sources of noise which are to be introduced with this proposed restaurant and any potential impact.

It is understood that the restaurant opening hours will be:

Tuesday – Thursday: 5pm to 9pm

Friday – Saturday: 12pm to 4pm and 5pm to 10pm

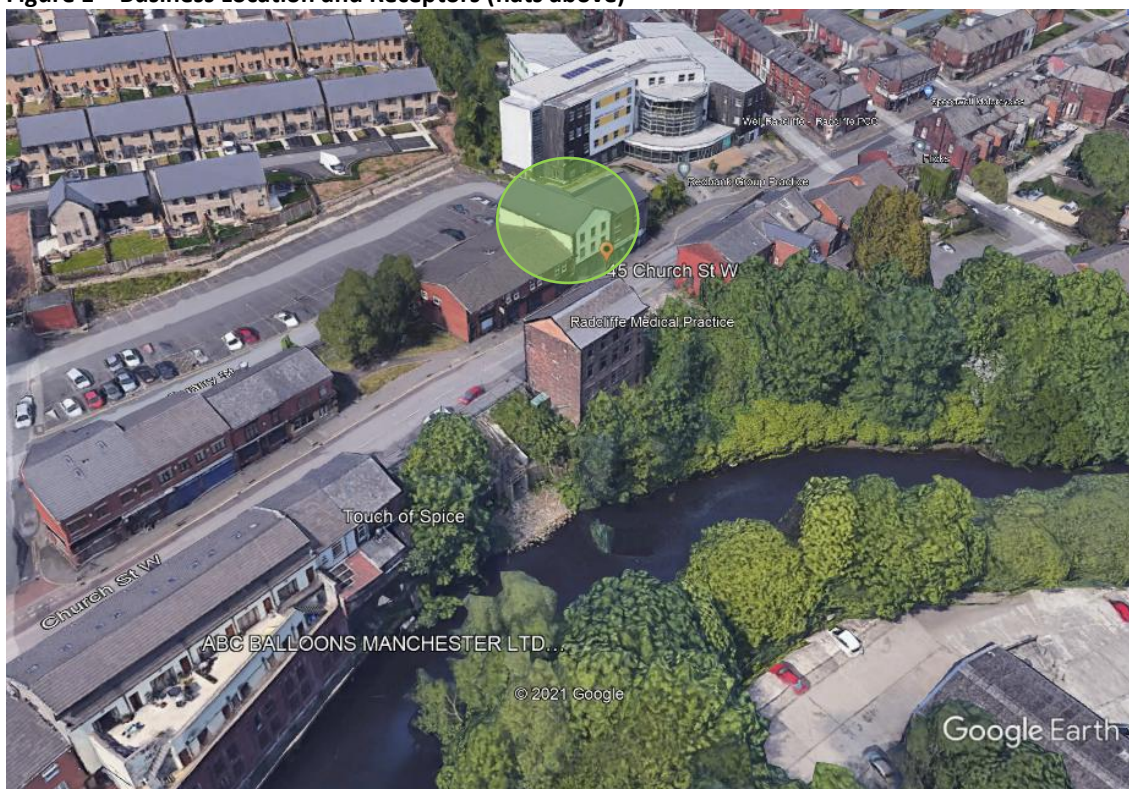
There will be occasional opening on Sundays for private functions.

Acoustic terminology is explained at Appendix 1 of this report; the author’s qualifications and experience are described in Appendix 2; and images of the location at Appendix 3.

2.0 SITE DESCRIPTION

The Business is to be located on Church Street West in Radcliffe as shown below. The building is located amongst other restaurants and take-aways such as a “Touch of Spice” and “Chilli Pepper” at 35m and 20m to the west of the building respectively. There is also a medical centre to the east of the building. There are existing houses and apartments around the building location too.

Figure 1 – Business Location and Receptors (flats above)



3.0 NOISE CRITERION

As the noise is “commercial” in nature we will refer to BS4142:2014 (described below).

3.1 BS4142:2014 – Rating Industrial Noise Affecting Mixed Residential and Industrial Areas

BS4142:2014 states, “Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic.

The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood...This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature”.

This British Standard describes a method for assessing whether a specific sound may have an adverse impact. The Standard requires that the ambient noise (***totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far***) including the “specific” sound from the source in question is measured in

terms of the equivalent continuous sound level LAeq [see Appendix 1 for acoustic terms], which is then corrected for the residual sound (total LAeq excluding the “specific” sound).

A correction for character is made if **“a tone, impulse or other characteristic occurs”**. For tonality, a correction of between +2dB and 6dB is considered acceptable and for impulsivity between 3 and 9dB. See Table below.

Table 1

Character	Just Perceptible	Clearly Perceptible	Highly Perceptible
Tonality	+2dB	+4dB	+6dB
Impulsivity	+3dB	+6dB	+9dB

Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied. Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, then it might be appropriate to apply a single correction.

Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.

Intermittency

“When the specific sound has identifiable on/off conditions...if the

intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied”.

The final figure, including any character correction is known as the Rating level. This Rating Level is then compared with the measured background [LA90] level. The greater this difference the greater the likelihood of “adverse impact” (See Notes 1 & 2 from BS4142:2014 below).

NOTE 1

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

NOTE 2

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

3.2 National Planning Practice Guidance the National Planning Practice Guidance (PPG)

This web-based resource was launched by the Department for

Communities and Local Government (DCLG) to support the NPPF¹ and make it more accessible and advises on how planning can manage potential noise impacts in new development. A summary of the effects of noise exposure (in terms of health and quality of life) associated with both noise generating developments and noise sensitive developments is presented within the PPG and reproduced in the Table below.

Table 2

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No Specific Measures Required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect (NOEL)	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Observed Adverse Effect	Prevent

PPG does not provide numerical values for the different effect levels,

¹ National Planning Policy Framework NPPF was published in March 2012 and sets out the Government's planning policies for England and how these are expected to be applied.

instead recognising that ‘the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation’. It therefore remains for local authorities to consider the PPG noise exposure hierarchy and seek to align it with significance criteria, having regard to British Standards, World Health Organisation guidance and other relevant sources of information.

4.0 ASSESSMENT PROCEDURE

The site was attended on Thursday 30th September 2021 and equipment installed externally to the front and rear (there was no access to the existing flats) Measurements were taken later on in the evening which would be a more sensitive time and also for the observer to try and reduce the influence from passing vehicles – it was difficult at times to pause them out of the measurements. Measurements were taken at the front, off Church Street West and also at the rear of the building (car park).

The measurements were made on Thursday 30th September for 15-minute sample periods to gain a picture of the existing noise climate before the restaurant is introduced, especially in the later periods in the late evening around 10pm.

The existing noise monitoring data detailed below has been used to calculate the resultant noise levels from the proposed restaurant activities at these receptors, in comparison with the existing background (BS4142) and desirable external / internal levels (BS8233).

5.0 MONITORING DATA

5.1 Survey Data

Table 3 – Existing Ambient and Background L90 – Church Street West dBA

Position	Start date & time	Duration	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	L01	L10	L50	L90	L95
Front	30/09/2021 22:00:42.500	00:15:00.000	70.8	88.4	45.3	81.6	75.1	62.3	50.2	48.4
Rear	30/09/2021 22:16:36.800	00:15:00.000	51.2	70.2	42.2	59.6	54.3	48.4	44.3	43.8
Front	30/09/2021 22:54:08.016	00:15:00.000	58.6	78.4	43.0	74.1	61.6	49.3	45.9	45.1
Rear	30/09/2021 22:54:25.016	00:15:00.000	51.1	72.6	41.5	60.9	52.8	47.1	44.3	43.8

Therefore, the likely background range for this location as derived from the above would be between 46dB and 44dB for front and rear respectively (LA90).

6.0 OBSERVATIONS

On observing the surrounding areas, Church Road West appears to have relatively heavy volumes of traffic during the day at all times based. As noted above, there are also existing food businesses in the close vicinity. The extraction system at the rear of “Chilli Pepper” was quiet and only just about audible to the observer very close to.

See image below. Chilli Pepper is open from 5pm until 11.30pm, therefore the extraction system, patrons arriving and leaving and any associated transport for deliveries will occur after the pizza restaurant has closed for the evening.

Figure 2 – Extraction at Chilli Pepper



7.0 ASSESSMENT OF RESULTS

7.1 Noise Levels from the Restaurant, Associated Plant and Activities

The number of patrons arriving or leaving the restaurant is not anticipated to be more than 4 at any time. The principal sources of noise are likely to be from any kitchen extraction systems, patron voices (externally) and cars picking up or taking food for delivery.

Table 3

Plant / Activity	Source of Noise	Details	Noise level (dBA)
Patrons Ordering Food and Seated	Chatting, raised voices, laughter	Up 4 persons	See data below
Extraction System	Fans	TBC	System specifications to be informed by background levels
Cars – Delivery	Engines idling, revving, car doors shutting	Minimal deliveries after	Below existing traffic noise levels

There is a car park located at the rear of the building that is already accessed for other uses in the town and so there is not likely to be an issue with single cars arriving at different times. It is understood that there will only be background level music inside the restaurant if at all, so that patrons can converse without raising their voices and so there is not likely to a problem from noise “breakout” of any music.

7.2 Patron Noise

Background levels (LA90) later into the evening for this restaurant are anticipated to be between **44dB to 46dB as noted above.**

Noise from patrons visiting the restaurant will most likely be due to their conversation and raised voices.

The table below shows the level for normal voices at 60dBA at 1m².

² ISO 9921 [2] male speaker

Table 4

Vocal effort	^L S, A, 1m dB
Relaxed	54
Normal	60
Raised	66
Loud	72
Very loud	78

The distances to the nearest receptors are shown below and the anticipated noise reduction due to distance.

Table 5

Location	Distance (m)	Noise Reduction Distance - Raised Voices @1m	Resultant Level dBA
Flats above – entrance door	6	-16	44
Houses at Rear	30	-30	30

A normal voice at 1m would equate to 30dBA at 30m (for the houses at the rear opposite the restaurant and car park) and 44dBA at the flats above the restaurant entrance. We have used a 6m distance for these flats, but the distance could be much greater from patrons accessing the restaurant or closer (up to 4m at the restaurant entrance).

Therefore, general conversation and the occasional raised voice is not likely to attract attention being within the range of background levels at the receptors i.e. LA90 44dB to the rear and LA90 46dB to the front.

Any raised, loud or very loud voices may be noticeable above the lowest background levels L90 (44dBA), but these incidents can be managed by the proprietors and are likely to be below existing L_Amax levels from road traffic.

7.3 Extraction

The specification for any extraction system has yet to be established, but anticipated background levels L_A90 dB levels can be used to inform the specification.

L_A90 46dB to the front and 44dB to the rear

Therefore, depending on the final position of external extraction plant noise levels propagating from the plant should not exceed these background levels to ensure that there is no adverse impact – also considering any noticeable tones e.g. “hums” or “whines”. We will consider the lowest background level L_A90 to be 44dB to the rear and 46dB to the front.

Table 6

Location	Distance from Extraction System (metres)	Max level for plant dBA @2m to achieve 5dBA below background
Flats above – front	2m (presumed)	39
Flats above – rear	2m (presumed)	37

Therefore, for example, if the plant (extraction ducting) was located to the rear the noise levels from the system should not exceed 37dBA at 2m to avoid adverse impact (after adjusting for the reduction in noise due to distance i.e. 5dBA below the existing background level and +2dB penalty for “tone”). Road noise is likely to mask the extraction system for much of the time if located at the front.

7.4 BS4142 Calculation

Table 7: BS4142:2014

BS4142 – Extraction	At Receptors
L _{Aeq} , T dB Levels	37
Impulsive Sound Characteristics (impact sounds)	0
Tonal Sound Characteristics	2
Other Sound Characteristics	0
Intermittency Correction	0
Rating Level	39
Background Noise Level L ₉₀ (Typical Range)	44
Excess over Background [Rating – Background]	-5dB

+2dB added for tonality in respect to the extraction system to err on the side of caution – it may not be audible at all in operation.

7.5 Uncertainty

The following factors have a bearing on the uncertainty of the assessment:

- The BS4142 assessment above has included correction for tonal noise from the extraction system. This may overestimate the potential for impact if the sound is rendered inaudible once installed.

- The background measurements were taken during only one visit, but this was later into the evening at a time that would be considered more sensitive.
- There may be some local screening which may reduce noise levels (to a degree) e.g. where the sources of noise are only partially visible then noise may be reduced by 5dBA.

Overall, it is considered that the assessment is sufficiently robust.

8.0 CONCLUSION

8.1 BS4142

“Low Impact” depending on context.

8.2 LOAEL / SOAEL

It is likely that there will be **“No Observed Adverse Effect (NOEL)”**

8.3 Noise Management

- Doors and windows at the restaurant should be kept closed where possible.
- Staff should be instructed to keep noise levels to a minimum in respect of nearby residents as part of their induction.

- Visiting patrons should also be instructed to keep noise to a minimum in respect of nearby residents – signage can be used as a reminder at the exit “please respect our neighbours”.
- The extraction system should be specified so that noise levels do not exceed those as noted in Table 6 at 2m (dependent on which receptor may be affected and if the equipment is screened).

APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus, most people cannot distinguish between, say 30 and 31 dB(A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time, then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	30	Very Quiet
Quiet office	40	
Rural background noise	45	
Normal conversational level	60	
Busy restaurant	65	
Typewriter @ 1m	73	
Inside suburban electric train	76	
Alarm clock ringing @ .5m	80	
Hand clap @ 1m	80	
HGV accelerating @ 6m	92	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF M. S. MELLOR

My full name is Steven Brian Mellor. I am the principal consultant at the firm of SBM Safety Solutions Ltd, a consultancy company that specialises in health, safety and environmental services including noise assessment and control.

I hold a Master's degree in Health, Safety and Environmental Law, British Occupational Health Society (BOHS) M104 certificate in Noise and Vibration and Institute of Acoustics Certificate of Competence in Environmental Noise Measurement (Derby University), plus Diploma in Acoustics and Noise Control (Bristol University). I am member of the professional body for noise and vibration specialists, the Institute of Acoustics, MIOA.

I have some 19 years' experience of dealing with problems caused by noise and vibration, both regarding noise and vibration in the environment, the workplace, and the home. The firm of SBM Safety Solutions Ltd. was formed 17 years ago. During that time, we have advised many groups including employers, residents, and developers about the problems of noise and vibration in the workplace and environment.

APPENDIX 3

Location / Monitoring images

