



BRAIDEN ACOUSTICS LTD

Innovation Forum // 51 Frederick Road // Salford // Manchester // M6 6FP

NOISE IMPACT ASSESSMENT

Prepared For : Studio Tashkeel Architecture

Date : 6 Mar 2025

Site : 134-136 Rochdale Rd, Bury

Report No. : 11051revA

1 INTRODUCTION

Braiden Acoustics has been commissioned by Studio Tashkeel Architecture to undertake an acoustic survey at the site of the 134-136 Rochdale Rd, Bury in order to support a planning application which proposes:

Change of use of existing restaurant and ancillary storage space (Class E) to 2x restaurants (Class E) New external staircase

1.1 AIM

This report will assess potential noise impact on nearby residential uses and recommend acoustic mitigation where and if necessary.

2 DESCRIPTION OF SITE

The application site is the first floor of a former church and an ancillary building to the left, over two floors. Currently there is a convenience store on the ground floor of the former church and the other ancillary building to the right of the church.



Figure 1
Proposed site street view

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2.1 SITE LOCATION AND SURROUNDING AREA

The site is flanked by commercial uses, both at the front and rear of the building. The site faces onto Rochdale Road to the north, which is an arterial route into Bury

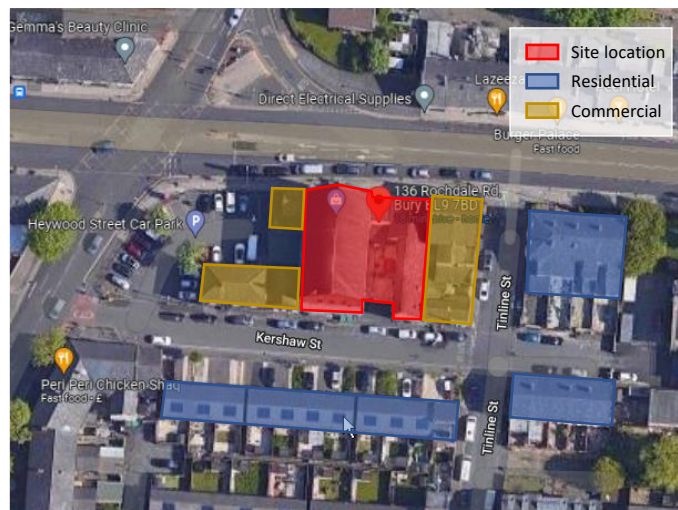


Figure 2
Site location and surrounding uses

To the rear of the property is Kershaw Street with residential properties further south. There are also houses further to the east and south east of the site, as shown in Figure 2.

2.1.1 Nearest sensitive receptor

The nearest sensitive receiver (NSR) is the residential property directly south of the site, on Kershaw Street.

2.2 PROPOSED USE

Figure 4 shows the first-floor layout with 'Restaurant 01' in the left-hand building and 'Restaurant 02' in the former church, with the two restaurants connected by a stairwell at the front of the building (bottom of Figure 4).

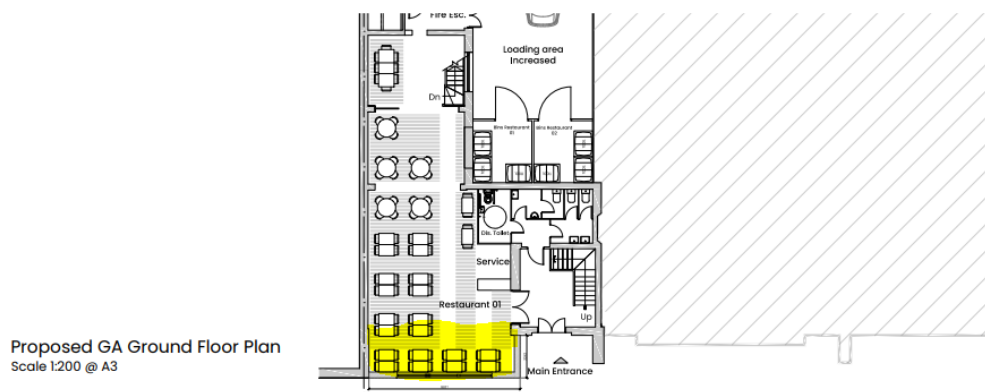


Figure 3
Ground floor layout



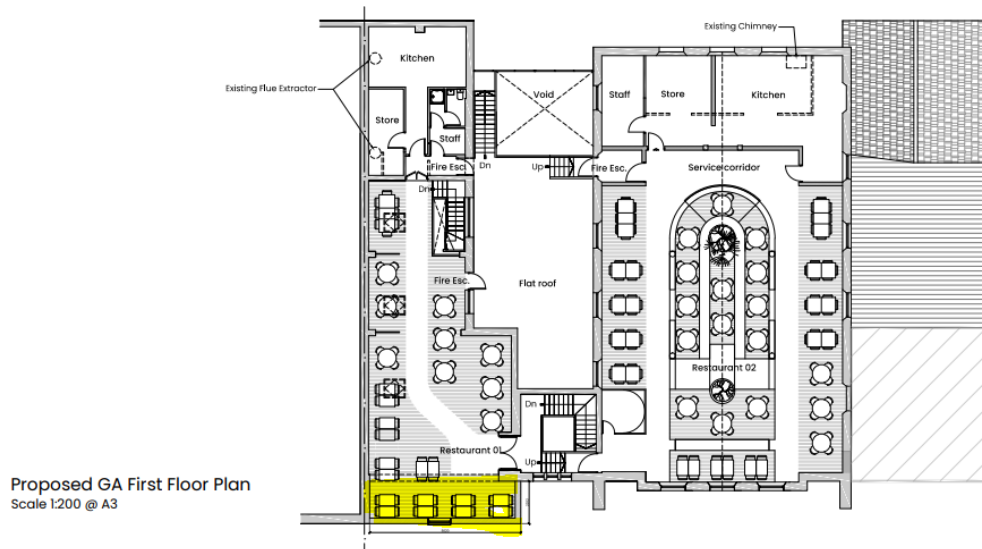


Figure 4
Proposed first floor layout

There will be a kitchen in both restaurants toward the rear of the buildings towards Kershaw Street. The extract flues will be installed within existing chimneys, as shown as green boxes in Figure 5.

2.2.1 Building services

The external plant will, minimally, comprise of an extract fan for each of the two restaurants. Condensers units for air conditioning, for example, are not yet known.

2.2.1.1 Extract ventilation

The following extract flue and silencer have been assumed for each restaurant:

Kitchen Extract

Fan: MUB/T 062 560

Silencer: Acoustica R02 - 4 – 1500 (Mel)

The location of the two extract flues will be within the existing chimneys shown in Figure 5.



Figure 5
Rear of former church showing existing chimneys

2.2.1.2 Condenser unit

The number and type of external condenser units, if any, are not known at the time of writing.



2.2.2 Opening hours

The proposed opening hours are:

11:00 – 23:00 Daily.

3 ACOUSTIC CRITERIA AND METHODOLOGY

Potential mitigation measures are determined by recommended indoor noise levels from BS 8233 “Sound insulation and noise reduction for buildings” [i] which, in turn, takes guidance from the research-based World Health Organisation “Guidelines for Community Noise”.

Noise level thresholds are usually given for the night-time – 2300-0700 hrs and daytime – 0700-2300 hrs.

3.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework is the current document for planning guidance. Paragraph 180 of the revised NPPF states:

180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

Paragraph 180 refers to the Noise Policy Statement for England which shall be briefly discussed in the next Section.

3.2 NOISE POLICY STATEMENT FOR ENGLAND

The main aim of the Noise Policy Statement is to:

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

Therefore, the NPSE is mainly concerned with environmental noise.

The document sets out categories in order to help distinguish if there is an adverse effect due to noise and if there is, how significant it is.

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur

It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase



our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.

3.3 BS 4142

BS 4142:1999 “Method for rating industrial noise affecting mixed residential and industrial areas” [ii] assesses industrial noise with regards to nearby residential dwellings. The guidance is commonly used to compare the equivalent noise from an industrial source only (specific noise level), L_{Aeq} , to the background noise level, L_{A90} , at the nearest sensitive receptor (NSR).

This Standard has been recently updated, BS 4142:2014 “Methods for rating and assessing industrial and commercial sound” [iii]. Whereas the old standard added 5dB ‘penalty’ to the Specific Noise Level (SNL) if the noise source has a ‘character’ that can draw attention that may be described as tonal, intermittent or impulsive, the new standard gives clearer guidance on noise ‘character’. Furthermore, the previous Standard gave only one 5 dB penalty whereas the new Standard may not. When added to the specific noise level it forms the rating level. The new Standard gives the guidance for the following types of noise character:

Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed.

Correct the specific sound level if a tone, impulse or other characteristic occurs, or is expected to be present, for new or modified sound sources.

NOTE 1 The prominence of tonal or impulsive sound from a source can be masked by residual sound. In many cases the amount of masking varies as the residual sound changes in level and possibly character. The source’s tonal and/or impulsive characteristics could also vary with time.

Consider the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention.

Tonality

For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible.

Impulsivity

A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible and 9 dB where it is highly perceptible.

Other sound characteristics

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.

NOTE 2 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, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in



combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

Once a penalty for noise character is added to the Specific Noise Level then this is termed the Rating Level.

The background level is then compared to the rating level. It is usual that the rating level due to the source should be below the background noise level at the nearest sensitive receptor; indeed BS 4142 states:

“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.”

3.4 BS 8233:2014

The British Standard BS 8233:2014 “Guidance on sound insulation and noise reduction for buildings” gives guidance on recommended indoor ambient noise levels for residential dwellings.

Room	Criterion	$L_{Aeq,T}$	
		night	day
Bedroom	Sleeping	30	35
Dining Room/Area	Dining	--	40
Living Room	Resting	--	35

Table 1

Recommending indoor ambient noise level thresholds from anonymous noise (taken from Table 4, BS 8233:2014)

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

3.4.1 Noise levels in external living areas

For external living areas such as gardens and balconies, BS 8233:2014 § 7.7.3.2 recommends an upper limit of 55dB $L_{Aeq,day}$ although there is a caveat:

However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.4.2 Maximum noise levels

In the 2014 edition of the Standard, the criterion of 45dB L_{AFMax} inside bedrooms has been removed although there is Note 4:

NOTE 4 regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,P}$ depending on the character and number of events per night. Sporadic noise events could require separate values.



3.5 COUNCIL CRITERIA

3.5.1 Residential noise levels

The noise criteria from condition 8 are as follows:

- 35dB LAeq (16hr) from 0700 to 2300 within living rooms
- 30dB LAeq (8hr) from 2300 to 0700 within bedrooms
- 45dB LAFmax (individual noise events shall not exceed 45 dB LAmax,F by more than 15 times) within bedrooms
- 50dB LAeq (16hr) from 0700 to 2300 for outdoor living areas

3.5.2 Industrial noise levels

A usual and reasonable noise criterion for external plant is as follows:

Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

4 MONITORING DETAILS

4.1 OVERVIEW

Noise monitoring was undertaken at the rear of the site that was away from any existing external plant so that the location represented the noise climate at the residential properties on the other side of Kershaw Street. The time of the noise monitoring was over a 24 period on a typical weekday.

4.1.1 Monitoring details

Personnel: John Braiden, BSc & MSc Acoustics, MIOA.

Weather: 6-13-°C temperature; ~5ms⁻¹ wind; ~20-40% cloud;

Equipment: NTi XL2 integrated real time analyser & B&K 4231 calibrator.

Date: Wednesday 13th July 2022.

The sound level meter was calibrated before after the measurements with no significant drift reported.

Monitoring was unmanned with audio recorded.

4.1.2 Monitoring locations

Monitoring took place one metre from a first-floor roof-light, away from any external plant and shielded from Rochdale Road, as shown in Figure 5.



4.1.3 Results

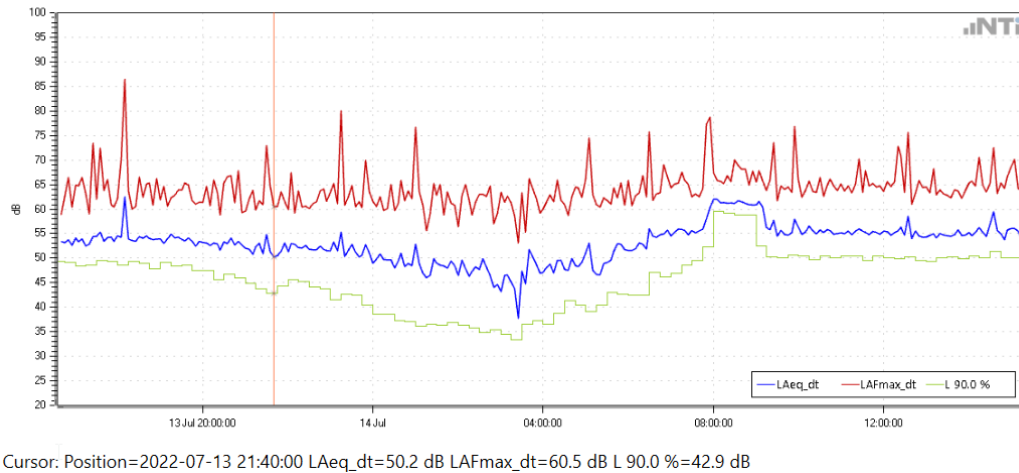


Figure 6
Time history at location 1

The lowest background level, when the restaurants would be open, is 42.9 dB L_{A90} .

5 ACOUSTIC ASSESSMENT

5.1 BS4142 ASSESSMENT

5.1.1 Extract fans

Duct noise calculations have included the fans' sound power level, type and length of duct, bends, attenuators and end reflection.

Noise propagation has taken account for distance, barrier attenuation due to any shielding and directivity, where appropriate.

The minimal distance, from either chimney to the nearest residence is 20m, as shown in Figure 7.

It is assumed that the nearest habitable window is 100deg off vertical axis to the chimneys, as the top of the chimneys are higher than the first-floor bedroom window of the NSR on Kershaw Street.

There is no barrier effect as there is direct line of sight between the nearest resident and the chimneys.



Figure 7
Distance from chimney to nearest resident



The assessment location is the nearest residential window to the chimney top.

The same fan and silencer are used for both extract flues.

Full noise propagation calculations are shown in the Appendix.

BS 4142 Noise Assessment EXTRACT x 2	Value	dB
Total Specific Noise Level @ NSR		21
BS 4141		
Tonality	0/2/4/4	0
Impulsivity	0/3/6/9	0
Intermittency	0/3	3
Rating Noise Level		24
LAF90_day		42
Rating minus Background		-18
Target Met?		✓

Table 2
BS4142 assessment – Extract

The BS4142 assessment shows that the Rating Level of the two extract ducts, at the nearest resident, is 18 dB less than the Background Level and hence well within the 5dB below limit.

5.1.2 Condenser unit(s)

TBC

5.2 INTERNAL NOISE TRANSFER

There are no sensitive receivers adjoining the two restaurants so there is no issue of internal noise transfer.

6 CONCLUSION

An acoustic survey has taken place at the 134-136 Rochdale Rd, Bury to support a planning application for the conversion to 2no. restaurants.

Background noise measurements have been taken on-site to ascertain the existing baseline noise climate at the nearest residents.

The full details of the external plant are not yet known; however, minimally there will be extract fans for each of the two restaurants where the flues will rise within two separate existing chimneys.

Typical fans for the size of restaurants, along with a suitable silencer for extract flues (Melinex lined) have been chosen for the assessment:

Kitchen Extract x 2

Fan: MUB/T 062 560

Silencer: Acoustica R02 - 4 – 1500 (Mel)

A BS 4142 assessment has shown that the Rating Level of the combination of the two extract flues is 18 dB less than the lowest Background Level, when the restaurants would be open. Therefore, the initial noise impact assessment shows that external plant noise from the site will have 'low impact', if any; thus ensuring the amenity of existing nearby residents.



7 REFERENCES

- [i] BS8233: 2014
Sound Insulation and noise reduction for buildings – Code of Practice,
British Standards Institute, 2014.
- [ii] BS 4142: 1997
Method for Rating industrial noise affecting mixed residential and industrial areas
British Standards Institute, 1997.
- [iii] BS 4142: 2014
Methods for rating and assessing industrial and commercial sound
British Standards Institute, 2014.



Appendix

A1 EXTRACT FAN DATA

Acoustic Information

	63	125	250	500	1k	2k	4k	8k	Total	dB(A)@3m
Inlet	70	72	67	66	65	65	64	56	76	56
Outlet	70	72	67	66	65	65	64	56	76	56
Breakout	-	-	-	-	-	-	-	-	-	-

Sound Power Level Spectra dB (re: 10^{-12} Watts) shown @ free air.

Electrical Information

Watts	290
Supply Voltage:	220-240V/1/50Hz
Full Load Current:	1.45 A
Starting Current:	2.4 A
Starting Method:	D.O.L
Motor Poles:	4
Insulation:	F
Motor IP Rating:	IP54
Speed Controllable:	Yes

