



BRAIDEN ACOUSTICS LTD

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

NOISE IMPACT ASSESSMENT

Prepared For : Mohammad Malik

Date : 20 Mar 2025

Site : 152-154 Drake St, Rochdale

Report No. : 11388revA

1 INTRODUCTION

Braiden Acoustics has been commissioned by Mohammad Malik to undertake an acoustic survey at the site of 152-154 Drake St, Rochdale in order to support planning application 25/00104/PRA56 which proposes “Prior approval for change of use of part of ground floor of 152 Drake Street from surgery (Class E) to 1 bed apartment (Class C3) and change of use of 154 Drake Street from offices (Class E) to 6 1 bed apartments (Class C3) | 152 And 154 Drake Street, Rochdale OL16 1PX”.

As part of the planning application’s process, a Noise Impact Assessment is required to determine the glazing and ventilation strategy.

1.1 AIM

This report assesses external noise break-in to the proposed residential accommodation and suggest mitigation, where necessary, so the noise levels within the accommodation meets the council’s requirements.

2 DESCRIPTION OF SITE

The site are two terraced buildings over 3 stories.

They have previously been offices.



Figure 1
Site street view

NB The upper floors of 152 Drake Street are an existing HMO and are not part of the planning application.**

2.1 SITE LOCATION AND SURROUNDING AREA

The site is bounded by Back Drake Street to the north west, offices to the north east, Drake Street to the south east and a mixture of residential and commercial to the west. On the other side of Back Drake Street is a mixture of residential, offices and light industrial buildings (car mechanics, mostly). The car mechanics' units have access doors facing away from the rear of the site.



Figure 2
Site location and surrounding area

On the side of Drake Street, to the south, is mixture of commercial units and residential accommodation. To the east of Drake Street is the Metrolink tram.

2.2 PROPOSED USE

The proposal is to convert the buildings to residential accommodation. There is an exiting HMO on the upper floors of 152 Drake Street.



Figure 3
Proposed ground floor plan



3 ACOUSTIC CRITERIA AND METHODOLOGY

Below are relevant standards and guidance.

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” [1] 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).



When measuring the Background Noise Level, the Standard states:

Choose outdoor measurement locations that will give results that are representative of the ambient sound and residual sound at the assessment location(s). Make the measurement of the ambient sound level, the residual sound level and the background sound level at a height of 1.2 m to 1.5 m above the ground, unless there is a specific reason to use an alternative height (which should be justified), and under similar conditions, e.g. similar influence of reflections and measurement height above the ground. Where practical, minimize the influence of reflections by making the measurements at least 3.5 m from any reflecting surface other than the ground.

Where it is necessary to undertake measurements above ground floor level, choose a location which is approximately 1 m from the facade on the relevant floor of the building if it is not practical to make the measurements at least 3.5 m from the facade at this elevation. NOTE When measurements for distant sources are made at 1 m from a facade, the measured level can be adjusted to an equivalent free-field level by subtracting a 3 dB correction factor. For sources that are relatively close or not perpendicular to the facade the correction may be 1 dB or 2 dB, in which case the reasons for not using a correction of 3 dB ought to be explained.

Essentially, background noise measurement should be made free field. If measurements are made at the façade, then a correction should be made in order to represent the free field.

This Standard has been recently updated, BS 4142:2014 “Methods for rating and assessing industrial and commercial sound” [2]. 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)

3.5 COUNCIL NOISE CRITERIA

3.5.1 Residential noise criteria

For residential developments, the noise thresholds are taken from BS8233:

- Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events should not normally exceed 45 dB LAmax,F by more than 15 times)
- Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq
- Gardens and terraces (daytime) 55 dB LAeq

3.5.2 Industrial noise criteria

For external plant the noise criterion is as follows:

‘The development should be 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

Monitoring took place internally over a weekend, that included Friday rush hour.

Microphones were placed to the front and rear of property.

4.1 NOISE MONITORING

4.1.1 Overview

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

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

Weather 14- 18degC, <5m/s wind, 20-40% cloud

Time / Date: Friday 28/02/2025 at 15:00:00 for 48 hours.

The sound level meters were calibrated before after the measurements with no drift reported.

Monitoring was unmanned.

Background noise (L_{A90}), 'average' noise levels (L_{Aeq}) and maximum noise levels (L_{Amax}) were taken in 15-minute intervals.

4.1.1.1 Monitoring Locations

Internal noise monitoring took place within a front and rear bedroom.

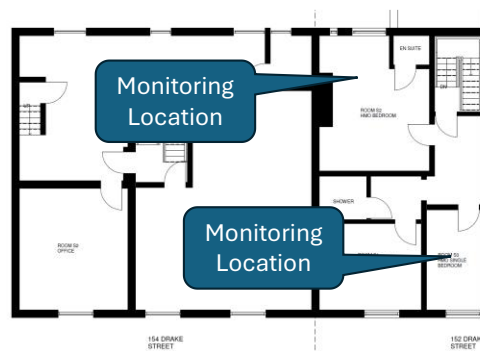


Figure 4
Monitoring Location in front and back bedroom

4.1.2 Front

The only real noise impacting the southern façade is road traffic noise from Drake Street.

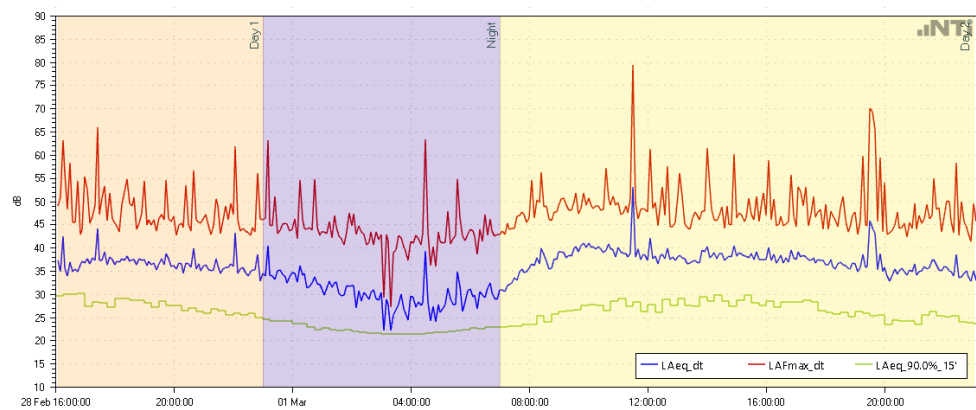


Figure 5
Time history - FRONT



A summary of the overall noise levels at the front is given in Table 2.

There were some sirens that were excluded from the data.

Day	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri 28/02/25	15:00:00	23:00:00	08:00:00	day	27.0	37.0	66.0
	23:00:00	07:00:00	08:00:00	night	21.7	31.6	63.4
	07:00:00	23:00:00	16:00:00	day	25.5	38.5	79.3

Table 2
Summary of noise monitoring results - internal FRONT

The overall internal noise levels are as follows:

L_{Aeq} (night) 32 dB

L_{Aeq} (day) 38 dB

The day and night levels reflect the ebb and flow of road traffic noise.

4.1.3 Rear

Noise at the rear of the property was modest in comparison to the front. The building itself acts as a barrier to road traffic noise and other noise from the south of the site.

There was no noticeable industrial noise at the rear of the property.

Day	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri 28/02/25	15:00:00	23:00:00	08:00:00	day	21.5	33.1	55.2
	23:00:00	07:00:00	08:00:00	night	20.7	24.8	46.8
	07:00:00	23:00:00	16:00:00	day	21.6	33.2	48.7

Table 3
Summary of noise monitoring results - internal REAR

The overall internal noise levels at the rear are as follows:

L_{Aeq} (night) 25 dB

L_{Aeq} (day) 33 dB

5 ACOUSTIC ASSESSMENT

5.1 ENVIRONMENTAL NOISE BREAK-IN

Given the internal noise levels, the initial glazing scheme can be suggested. However, it should be noted that this assumes windows closed in order to achieve the internal noise levels based on BS8233:2014.



The sound insulation of the open window is taken from Section G.1 in BS8233:2014:

If partially open windows were relied upon for background ventilation, the insulation would be reduced to approximately 15 dB

Furthermore, NOTE 7 of Table 4 “Indoor ambient noise levels for dwellings” states:

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.

Therefore, if ‘reasonable internal conditions’ can be achieved with open windows then there would be no need for acoustic ventilation.

5.1.1 BS 8233 assessment

The measured internal levels for the day and night periods, are as follows:

Front

L_{Aeq} (night) 32 dB

L_{Aeq} (day) 38 dB

Rear

L_{Aeq} (night) 25 dB

L_{Aeq} (day) 33 dB

Façade	period	room	Internal Levels measured / calc'd		Internal Levels recommended		Required acoustic ventilation>
			L_{Aeq} (dB)	L_{Aeq} window open (dB)	L_{Aeq} (dB)	L_{Aeq} window open (dB)	
FRONT	night	bedroom	32	47	30	35	YES
	day	lounge	38	53	35	40	YES
REAR	night	bedroom	25	40	30	35	YES
	day	lounge	33	48	35	40	YES

Table 4
Calculated SRI values and recommended glazing

Adequate internal noise level cannot be achieved with the current glazing at the front and there will need to be acoustic ventilation.

For the rear, adequate internal noise levels can be achieved with the current glazing, although, acoustics ventilation will be required.

5.1.2 Glazing

The glazing at the front needs an improvement of, at least, 3dB. A potential solution is:

6-(6-16)-4mm

5.1.3 Ventilation

Where appropriate, the preferred choice of ventilation is through the use of natural ventilation openings such as trickle vents, air bricks and passive ventilation devices. Such ventilators can be used to meet the



requirements of the Building Regulations Approved Document F for background ventilation. The future occupants then have the option of having the windows open or closed.

A possible solution would be the Titon Trimvent Select XS13 – 5000EA version.

Trimvent Select XS13		
Fits on the window, passive. Sizes: 4400EA or 5000EA.		
Ventilation Strategy: System 1 (extract fans and background ventilators) or System 3 (central mechanical extract with background ventilators).		
Sound Attenuation level:		
	Open	Closed
4400EA version (vent and canopy)	$D_{n,e,w} (C;Ctr) 32 (0;1)dB$	$D_{n,e,w} (C;Ctr) 41 (0;-1)dB$
5000EA version (vent and canopy)	$D_{n,e,w} (C;Ctr) 32 (-1;0)dB$	$D_{n,e,w} (C;Ctr) 35 (0;0)dB$

Figure 6
Ventilation specification and sound insulation performance

Even in the open position, the 5000EA version has a sound insulation of 32 dB $D_{n,e,w} + C_{tr}$ which is good enough for all glazing types in Table 4.

6 CONCLUSION

An acoustic survey has taken place at the 152-154 Drake St, Rochdale to support a planning application for the reformation of accommodation back to residential accommodation.

Environmental noise break-in assessment revealed the following current glazing, on the southern façade, is insufficient for internal noise levels when the windows are closed. Hence, 6-(6-16)-4mm glazing is recommended to the front.

The existing double glazing at the rear will suffice.

Habitable rooms on the southern and northern facades will require alternative acoustic trickle ventilators, such a unit is the Titon Trimvent Select XS13 – 5000EA version (for example).

Pending the recommendations above, the amenity of future residents will be safeguarded.

7 REFERENCES

- [1] BS 4142: 1997
Method for Rating industrial noise affecting mixed residential and industrial areas
British Standards Institute, 1997.
- [2] BS 4142: 2014
Methods for rating and assessing industrial and commercial sound
British Standards Institute, 2014.



Glazing type	Sound reduction index (dB)						
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 k Hz	R _w (C; C _{tr}) dB
Single panes (mm)							
3	14	19	25	29	33	25	28 (-1; -4)
4	17	20	26	32	33	26	29 (-2; -3)
5	19	22	29	33	29	31	30 (-1; -2)
6	18	23	30	35	27	32	31 (-2; -3)
8	20	24	29	34	29	37	32 (-2; -3)
10	23	26	32	31	32	39	33 (-2; -3)
12	27	29	31	32	38	47	34 (0; -2)
Laminated panes (mm) + plastic laminate (0,5 to 1) mm							
6+	20	23	29	34	32	38	32 (-1; -3)
8+	20	25	32	35	34	42	33 (-1; -3)
10+	24	26	33	33	35	44	34 (-1; -3)
Double pane units with single or laminated panes (mm); air filled cavity from (6 to 16) mm							
4-(6-16)-4	21	17	25	35	37	31	29 (-1; -4)
6-(6-16)-4	21	20	26	38	37	39	32 (-2; -4)
6-(6-16)-6	20	18	28	38	34	38	31 (-1; -4)
8-(6-16)-4	22	21	28	38	40	47	33 (-1; -4)
8-(6-16)-6	20	21	33	40	36	48	35 (-2; -6)
10-(6-16)-4	24	21	32	37	42	43	35 (-2; -5)
10-(6-16)-6	24	24	32	37	37	44	35 (-1; -3)
6-(6-16)-6+	20	19	30	39	37	46	33 (-2; -5)
6-(6-16)-10+	24	25	33	39	40	49	37 (-1; -5)

NOTE 1 This selection and the values are in accordance with prEN 12758-1. The single number ratings are deduced from results in 1/3-octave bands and therefore single number ratings deduced from the given octave band data might result in values which differ 1 dB at the most.

NOTE 2 Though it is known that for a given double pane unit the sound reduction increases with increasing cavity width, this effect has been found to be too small to take into account here for air filled cavities in the light of the inherent spread in results for nominally identical units.