



BRAIDEN ACOUSTICS LTD

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NOISE IMPACT ASSESSMENT - INDUSTRIAL NOISE BREAKOUT

Prepared For : NA Design

Date : 23 Apr 2026

Site : Unit 1, Buersil House, Exmouth St, Rochdale

Report No. : 11491

1 INTRODUCTION

Braiden Acoustics has been commissioned by NA Design to undertake an acoustic survey at the site of Unit 1, Buersil House, Exmouth St, Rochdale in order to support planning application PL/2026/0073 which proposes “Change of Use to a vehicle workshop / MOT testing station”.

1.1 PLANNING PERMISSION

The proposed site is a light industrial unit within a wider area call Buersil House & Works where there are two light industrial units within its curtilage.

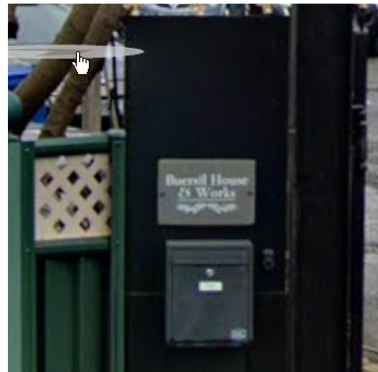


Figure 1
Buersil House & Works

The applicant has two buildings on site: a small unit used as a reception (which has been in situ since, at least, 2017) and larger unit (which has been in situ since 2020/21) which is used as a vehicle workshop, with the hope of becoming an MOT station.

It seems that this newer workshop building does not have planning permission, hence this retrospective application.

1.2 AIM

The aim of this report is to assess potential noise from the proposed workshop unit due to operations in relation to nearby residential dwellings.

All potential noise sources will be assessed in accordance with relevant standards and guidance and, where appropriate, mitigation measures will be recommended so that noise thresholds are not breached.

2 DESCRIPTION OF SITE

The proposed site is a double height light industrial unit that is used as a vehicle workshop. The previous tenant was Manchester Recovery Services who were a 24 hour roadside assistance & vehicle recovery breakdown assistance service.



Figure 2
Proposed mechanics unit

2.1 SITE LOCATION AND NEIGHBOURING USES

The overall site is shown in Figure 3 below known as Buersil House & Works. The commercial units on the western flank are now individual businesses.

Unit 1 is the proposed site (Code Red Auto Shop) and Unit 2 is a separate business called The Detail Centre which is a vehicle valeting service.



Figure 3
Site location showing monitoring location (ML)

The whole site is bounded by the rear of the houses on Oldham Road to the west, Sudden Brook to the north west with the rear of the houses on Charlotte Street to the north east and Exmouth Street to the south.

To the south of Exmouth Road, opposite the rear of Buersil House, is 4 Exmouth Street which accommodates two vehicle maintenance businesses:

- Panelworx Vehicle Repairs Unit 1, 4 Exmouth St,
- Ainsworth Garage DMIF LTD Unit 4 Exmouth St, Rochdale

The immediate surrounding area is residential.



2.2 PROPOSED USE

It is proposed to continue to use the unit as a vehicle mechanics.

2.2.1.1 Opening hours

Monday to Friday 10am to 5pm

Saturdays 11am to 3pm

3 ACOUSTIC CRITERIA AND METHODOLOGY

In order to assess 'industrial' noise it is common to use the British Standard BS 4142:2014. Recommended internal noise levels in offices (for example) are given in BS 8233:2014 [3].

As well as the British Standards, Council's usually have their own guidelines but they will invariably be based on the above Standards or their equivalents.

3.1 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).

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.”

3.1.1 Council Criteria

There no specific council criteria known at the time of writing, so the following criterion will be used in this assessment.

Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

3.2 BS 8233: 2014

British Standard BS 8233:2014 “Guidance on sound insulation and noise reduction for buildings” [3] gives guidance on, among other things, acceptable internal noise levels within offices. Table 6 within the Standard gives relevant internal noise levels for unoccupied open plan offices such as above the proposed site.

Criterion	Typical situations	Design range $L_{Aeq,T}$ dB
Reasonable acoustic privacy in shared spaces	Restaurant	40-55
	Open plan office	45-50
	Night club, public house	40-45
	Ball room, banquet hall	35-40
	Living room	35-40

Table 1
Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important (Table 6 from BS 8233)



Noise levels within the offices above should be 45 - 50 dB(A) when considering steady state noise sources, such as ventilation systems. The 'chatter' and general 'hub bub' from restaurant occupants and activities could also be non tonal as long as one noise source does not dominate. The sound systems will only provide background music during office hours.

4 MEASUREMENT DETAILS

In order to assess the internal noise levels at the proposed unit, internal noise levels have been measured over a 24 hour period.

Similarly, the background noise has been measured at the nearest third party residential property.

4.1 INTERNAL NOISE LEVELS

4.1.1 Overview

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

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

Weather: n/a

Date: Thursday 2nd April 2026.

The microphone was left unmanned but with audio recorded.

The microphone was calibrated before and after the noise monitoring with negligible drift (<0.1 dB).

4.1.2 Monitoring location

The monitoring location was within the existing vehicle workshop on a shelf away from a direct noise source, so to capture the reverberant noise levels.

The microphone was, at least, 1m from the side wall and, at least, 2m from any other reflecting surface. Even though the microphone was located near to the side wall, the data will give a worst case scenario due to elevated noise level caused by a nearby reflective surface¹.

4.1.3 Monitoring results

In order to determine a typical upper noise level due to operational activities, the 15-minute 'average' noise level has also been shown in the results.

¹ The unit is made from a profiled steel material so reflections would be reduced when compared to a flat surface.



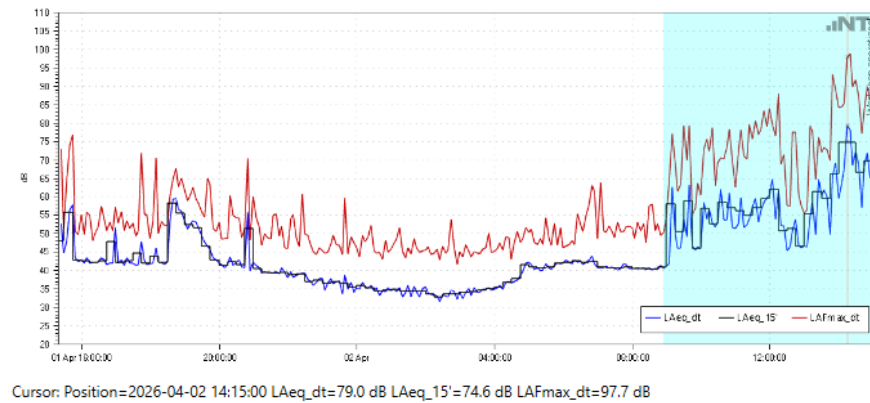


Figure 4
Measured internal noise levels

The noise levels in Figure 4 are continuous, so there are sections where the workshop was closed. However, noise levels have been highlighted when there was activity

The activity noise levels were due to typical activities associated with a vehicle workshop. It should be noted that there was an air compressor for pneumatic tools, such as drills, impact guns etc.

The upper typical 15-minute reverberant noise level within the workshop during times of activity was

75 dB L_{Aeq_15mins}

4.2 BACKGROUND NOISE LEVELS

The most sensitive receptor, in this case, is not the nearest residential property but the rear of the properties on Charlotte Street which approximately 29m away from the open doors of the workshop with direct line of sight of an opening.



Figure 5
NSR to nearest opening and monitoring location

4.3 OVERVIEW

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

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



Weather 4- 8degC, <5m/s wind, 40-60% cloud

Time / Date: Wednesday 1st April from 15:30 for almost 24 hours

The sound level meter was 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.

4.4 MONITORING LOCATION

The monitoring location was at least 2m from the ground in the location denoted in Figure 5

The monitoring location represented the noise level at the nearest sensitive receptor (NSR) on the other side of Sudden Brook.

4.5 MONITORING RESULTS

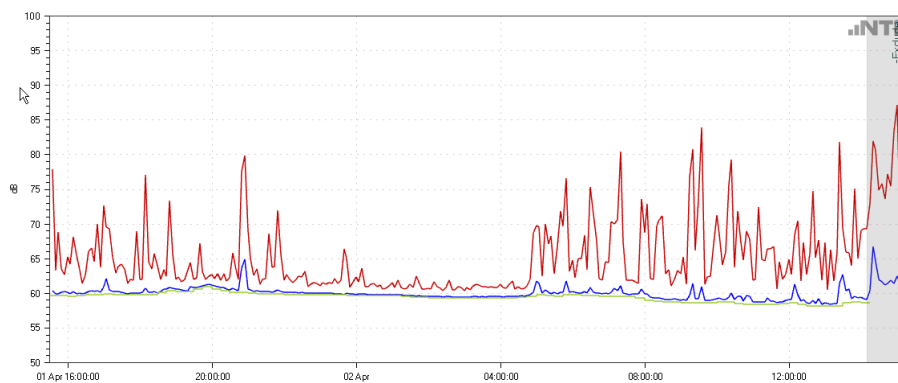


Figure 6
Time history

Noise from the running water of Sudden Brook was clearly audible at the monitoring location. This was evidenced by the fact that the Background Noise Level, L_{A90} stayed relatively constant throughout the day and night.

There were also vehicular movements on site that were attributed to the various uses on site.

A histogram was derived from the 15-minute Background Noise Levels, at the monitoring location during the proposed opening hours of the workshop.

Figure 7 shows that the typical BNL for opening hours, at the NSR, is **58 dB L_{A90}** .



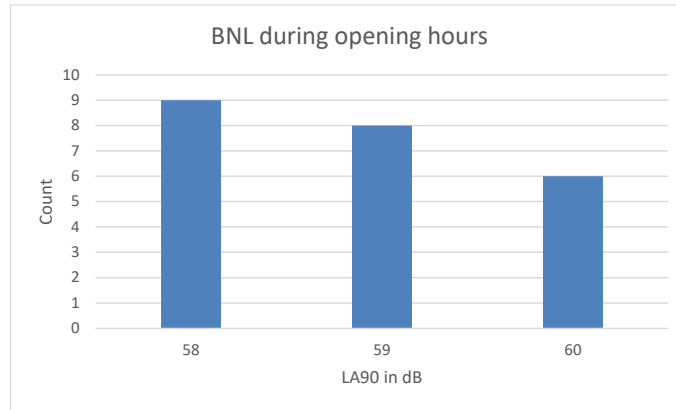


Figure 7
Histogram of BNLs

5 ACOUSTIC ASSESSMENT

Internal noise from the premises can be transmitted via the building fabric and potentially annoy local sensitive receptors, such as local residents.

5.1 BREAKOUT NOISE FROM UNITS

To assess the noise break out the following steps have been taken:

1. Determine the internal reverberant noise level with noise measurement from a similar site (see Section 4).
2. Calculate noise break out via the buildings' facade to the nearest resident and compare with typical background noise level.

5.1.1 Determine internal reverb noise level

The internal reverberant noise level is 75 dB.

5.1.2 Determine noise transmission to resident

Once the internal reverberant noise level has been determined then the noise transmission to the nearest resident is calculated using equation (1)

$$SPL_{res} = SPL_{rev} - SRI_{ave} + 10 \log S_p - 20 \log r - 14 \quad (1)$$

where SPL_{res} = sound pressure level at nearest resident

SRI_{ave} = average Sound Reduction Index of partition

S_p = area of partition

As a worst-case scenario, only the visible open area of the loading bay aperture was considered which gives an area of 33.5m².



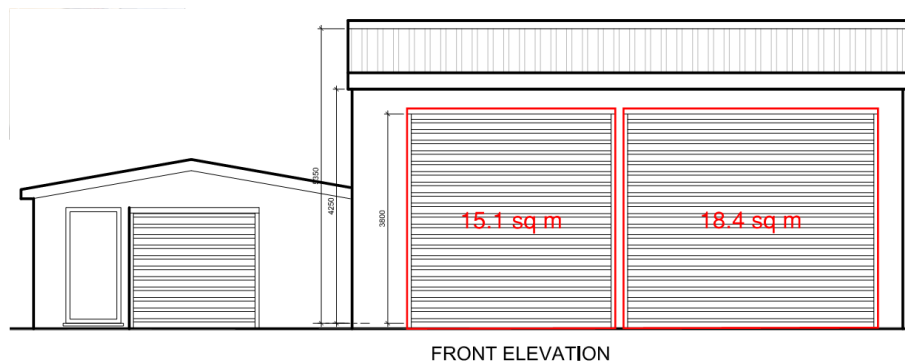


Figure 8

Front elevation showing areas of roller shutter doors

A BS4142 penalty of 3dB of intermittency was also added, as well as impulsivity (due to knocks, bangs and the like), as a worst case scenario.

Description	Value	Noise Level dB
SPL_internal		75
SRI of façade	open	0
Area of façade	33.5	15
Distance to resi (m)	29	-29
Correction		-14
Specific Noise Level @ res		47
BS 4141		
Tonality	0/2/4/6	0
Impulsivity	0/3/6/9	3
Intermittency	0/3	3
Rating Level @ res		53
Background Noise Level		58
Difference		-5

Table 2

Summary of noise calculations to nearest resident from A3 unit

The calculation in



Description	Value	Noise Level dB
SPL_internal		75
SRI of façade	open	0
Area of façade	33.5	15
Distance to resi (m)	29	-29
Correction		-14
Specific Noise Level @ res		47
BS 4141		
Tonality	0/2/4/6	0
Impulsivity	0/3/6/9	3
Intermittency	0/3	3
Rating Level @ res		53
Background Noise Level		58
Difference		-5

Table 2 shows that the Rating Level is 5dB below the typical Background Noise Level and, hence, of 'low impact'.

Therefore, no acoustic mitigation is required.

6 CONCLUSION

Acoustic survey has taken place at Unit 1, Buersil House, Exmouth St, Rochdale to determine if noise breakout would affect local residents.

The nearest potential sensitive receivers are 29m, across Sudden Brook, with direct line of sight of the of the open doors of the unit.

Internal noise measurements reveal typical daytime noise level of 75 dB(A).

A noise breakout calculation has been used to assess noise break-out at the nearest resident. When this is compared to the typical Background Noise Level, the result is -5 dB and therefore of low impact.

Therefore, no acoustic mitigation is required.

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.
- [3] BS 8233:2014
Guidance on sound insulation and noise reduction for buildings
British Standards Institute, 2014.



A1 DRAWING

PURPOSE OF ISSUE BUILDING CONTROL

Do not scale from this drawing. All information should be taken from the accompanying schedule of materials and specifications. Any discrepancies should be reported to the architect immediately. All rights are reserved and are not transferable. Unauthorised reproductions of this drawing are prohibited.

The architectural drawings include a detailed floor plan of the workshop ground floor, showing an office area, a toilet, and a large workshop space with dimensions. The front elevation shows the building's facade with a gabled roof and large windows. Photographs provide context, showing the building's exterior, parking area, and interior workspace with various equipment.

PROJECT
Buersil House, Exmouth
Street, Rochdale

CLIENT
Mr. W. Hussain

DRAWING TITLE
Floor Plan

JOB No
NA-P01

SCALE
1:100

DATE
Jan. 2026

DRAWN BY
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