

15th August 2024



Ken Mills Engineering
New Street
Shawclough
Rochdale

NOISE IMPACT ASSESSMENT FOR PROPOSED DEVELOPMENT

PROPOSED RESIDENTIAL CHANGE OF USE TO CREATE A 5 BED PROPERTY, KEN MILLS ENGINEERING, NEW STREET, SHAWCLOUGH, ROCHDALE, OL12 6NS.

1.00 INTRODUCTION

1.01 Environmental Noise Solutions has been commissioned by JCA to carry out a noise impact assessment for a proposed development at KEN MILLS ENGINEERING, New Street, Shawclough, Rochdale, OL12 6NS. (hereafter referred to as the application site).

1.02 The objectives of the noise impact assessment were to:

- Determine the ambient noise climate at the application site during representative periods of the daytime and night time
- Assess the potential impact of the ambient noise climate on the proposed development with reference to relevant guidelines
- Provide recommendations for a scheme of sound attenuation works, as necessary

1.03 This report details the methodology and results of the assessment and provides recommendations for the building envelope (fenestration and ventilation) and any boundary treatments. It has been prepared to accompany a planning application to be submitted to Rochdale Borough Council for the proposed development.

1.04 This report has been prepared for JCA on behalf of the applicant for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult JCA as to the extent to which the findings may be appropriate for their use.

1.05 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

2.00 APPLICATION SITE SETTING AND PROPOSED DEVELOPMENT

2.01 The application site is mainly located in a residential setting in Shawclough, Rochdale, and consists of an existing / redundant former foundry works / commercial building with no further activity taking place within the building. (see Appendix 2 for a site layout).

2.02 Development proposals are for the development of 1No new dwelling, converting a section of the commercial building into a new dwelling over 3 floors of a small section of the existing building.

2.03 The noise environment at the application site is predominantly traffic from the main road (Shawclough Road) which is approx. 60m from the application site, this distance and the very low traffic noted on New Street is very much in favour of this noise survey since the sound emitted from the main road was very much reduced at the application site. Noise associated with the adjacent foundry workshop was subjectively silent due to its redundant use / nature and as such are insignificant within this report.

3.00 BASELINE NOISE SURVEY

3.01 In order to establish the ambient noise levels at the application site, a baseline noise survey was carried out on Monday 5th August 2024 through to Tuesday 6th August 2024.

3.02 For the purpose of the assessment, the following noise monitoring positions were adopted (the approximate location of the noise monitoring positions is contained in Appendix 2 for reference):

- MP1 was located outside the large roller shutter doors which is the front of the application site (adopted as a control position).
- MP2 was located approx. 30m down New Street towards the Junction with Shawclough Road (the mid point between the application site and the main noise source).

3.03 Noise measurements were undertaken at 1.5 metres above ground level using a Bruel & Kjaer 2250 Type 1 integrating sound level meter. The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end, using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration level was noted. Weather conditions throughout the survey were appropriate for monitoring.

3.04 Measurements consisted of A-weighted broadband parameters, together with linear octave and 1/3rd octave band Leq levels. Table 3.1 overleaf contains a summary of the measurement data for each measurement session, at each measurement position, rounded to the nearest decibel.

Table 3.1 – Summary of Noise Measurement Data

Position	Date	Time	LAeq (dB)	LA90 (dB)	LA10 (dB)	Comment
MP1	05/08/2024	1218 - 1303	48	39	52	Road traffic on Shawclough Road most dominant (circa 250 vehicles / Hour)
MP1	05/08/2024	1439 - 1531	42	37	49	
MP1	05/08/2024	2256 - 2349	38	36	45	Road traffic on the Shawclough Road dominant (Max. noise levels up to 57dB LAFMax)
Daytime ambient noise level 51 dB LAeq (0700-2300) based on CRTN methodology						
Night time ambient noise level circa 44 dB LAeq (2300-0700) based on TRL methodology						
Maximum noise levels up to 58 dB LAFMax during the night time						
MP2	16/11/2020	1455 - 1557	51	48	63	Road traffic on Shawclough Road dominant (Max. noise levels up to 66dB LAFMax)
MP2	17/11/2020	0004 - 0052	42	47	64	
Daytime ambient noise level 58 dB LAeq (0700-2300) based on CRTN methodology						
Night time ambient noise level circa 51 dB LAeq (2300-0700) based on TRL methodology						
Maximum noise levels up to 62 dB LAFMax during the night time						

3.05 The ambient noise climate at the application site is characterised (dominated) by road traffic on Shawclough Road, with no other significant noise sources noted.

3.06 For the prediction of daytime road traffic noise, the Department of Transport's Memorandum on the Calculation of Road Traffic Noise (CRTN) explains that the following shortened measurement procedure may be used. Measurements of LA10 are made over any three consecutive hours between 10:00 and 17:00 hours. Using LA10 (3 hour) as the arithmetic mean of the three consecutive values of hourly LA10, the LA10 (18 hour) can be calculated from the equation:

$$(i) \text{ LA10 (18 hour) = LA10 (3 hour) - 1 dB}$$

3.07 Although the measurement procedure was not strictly followed (with shorter measurement samples used), traffic flow was consistent and shortened measurements are considered representative of the LA10 (3 hour).

3.08 A study prepared by TRL Limited on behalf of the Department for Environment, Food and Rural Affairs (DEFRA) entitled 'Converting the UK Traffic Noise Index LA10 (18 hour) to EU Noise Indices for Noise Mapping' presents the following formula:

$$(ii) \text{ LAeq (0700-2300) } \approx 0.95 * \text{ LA10 (18 hour) } + 1.44 \text{ (for non-motorways)}$$

$$(iii) \text{ LAeq (2300-0700) } \approx 0.90 * \text{ LA10 (18 hour) } - 3.77 \text{ (for non-motorways)}$$

3.09 Based on the above formulae, the daytime and night time ambient noise levels at MP1 are calculated at **51 dB LAeq (0700-2300)** and **44 dB LAeq (2300-0700)** respectively.

3.09 Based on the above formulae, the daytime and night time ambient noise levels at MP2 are calculated at **58 dB LAeq (0700-2300)** and **51 dB LAeq (2300-0700)** respectively.

3.10 The adjacent former foundry mill was closed during the time of the survey. Although it is noted that the former foundry mill provides a small rear external working yard area, the level of noise is expected to be extremely low to none given that the mill and rear yard is no longer in use.

3.11 It is therefore considered that any potential noise associated with the foundry mill is very minimal to none given the operations of the mill are no longer in use. Traffic on New Street was noted at 2 vehicles per hour, during the day and night the average is assumed at 60 vehicle movements within a 24-hour period. The noted decibel level of a slow passing vehicle on New Street (small narrow Street max speed 10mph) was 72 dB approximately 2m from the instrument.

4.00 NOISE IMPACT ASSESSMENT CRITERIA

National Planning Policy Framework

4.01 The National Planning Policy Framework (NPPF) recent update sets out the Government's planning policies for England and how these are expected to be applied.

4.02 Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 170 where it states that planning policies and decisions should contribute to and enhance the natural and local environment by: *'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of.....noise pollution'*.

4.03 Paragraph 180 advises that:

'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.....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'.

4.04 With regard to extant community noise sources and the potential to affect proposed new developments, paragraph 182 states that:

'Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

4.05 The NPPF also refers to the DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF. Noise Policy Statement for England.

4.06 The Noise Policy Statement for England (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life.
- Mitigate and minimise adverse impacts on health and quality of life.
- Where possible, contribute to the improvement of health and quality of life.

4.07 NPSE describes the following levels at which noise impacts may be identified:

- 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.

Planning Practice Guidance – Noise

4.08 In December 2014, Planning Practice Guidance (PPG) was updated online which provides additional guidance and elaboration on the NPPF. It advises that the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur.

- Whether or not an adverse effect is occurring or likely to occur.
- Whether or not a good standard of amenity can be achieved.

4.09 In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges 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’.

4.10 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority’s administrative boundary, although it states that:

‘Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed’.

ProPG Planning and Noise: New Residential Development

4.11 ProPG Planning and Noise: New Residential Development (ProPG) was published in May 2017 by the Association of Noise Consultants, Institute of Acoustics and the Chartered Institute of Environmental Health.

4.12 Stage 2: Element 2 of ProPG sets indoor ambient noise levels for residential dwellings based on the guidance contained in British Standard 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’ (BS 8233) (see table below).

Activity	Location	Good Indoor Ambient Noise Levels	
Resting	Living Room	35 dB LAeq (0700–2300)	
Dining	Dining Area / Living	40 dB LAeq (0700–2300)	
Sleeping (daytime resting)	Bedroom	35 dB LAeq (0700–2300)	30 dB LAeq (2300–0700) 45 dB LAeq 2300–0700)

4.13 Note 4 to the above table states:

“A guideline value may be set in terms of SEL or LA_{max,F}, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB LA_{max,F} more than 10 times a night.’

4.14 Note 5 to the above table states:

‘Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal LAeq target levels should not normally be exceeded, subject to the further advice in Note 7’.

4.15 This is consistent with the guidance contained within the PPG, which states that:

'... consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations'.

4.16 On the basis of the above, the following criteria (with windows closed and an alternative means of ventilation provided) are considered appropriate for the application site:

- > 35 dB LAeq (0700-2300) in habitable rooms during the daytime
- > 30 dB LAeq (2300-0700) in bedrooms during the night time
- 45 dB LAFMax not regularly exceeded in bedrooms during the night time

5.00 SOUND ATTENUATION SCHEME PROPOSALS

5.01 Including a +2 dB correction for increased traffic flows, the design noise levels for the road fronting habitable rooms are as follows:

- **68 dB LAeq (0700–2300)** during the daytime
- **58 dB LAeq (2300–0700)** during the night time
- **75 dB LAFMax** during the night time

5.03 In order to calculate the sound insulation requirements of the building envelope for habitable rooms at the development, the Building Research Establishment (BRE) building envelope insulation calculation spreadsheet was used. This spreadsheet is based on the calculation methodology advocated in BS 8233. The spreadsheet allows input of external noise levels, room dimensions and reverberation time together with parameters for the various elements of the building envelope and calculates the internal noise level in terms of the external noise level metric (LAeq and LAFMax in this case).

5.04 For the purpose of the assessment, habitable rooms with the worst-case ratio of glazing area to room volume have been robustly adopted (see Appendix 4 for selected calculation spreadsheets).

5.05 Habitable rooms on the New Street front elevation should be fitted with glazing rated at least **32 dB Rw+Ctr** (such as 10 mm glass / 20 mm cavity / 6 mm glass) in conjunction with acoustic **wall** vents rated at least **41 dB Dn,e,w+Ctr** per 5000 mm² EA (vent open), such as the Ryton AAC125HP, or equivalent (1 unit required per habitable room).

5.06 Remaining habitable rooms (set back and/or screened from Shawclough Road or to the rear) should be fitted with standard glazing rated at least **25 dB Rw+Ctr** (such as 4 mm glass / 6–20 mm cavity / 4 mm glass) in conjunction with standard trickle vents rated at least **31 dB Dn,e,w+Ctr** per 5000 mm² EA (vent open), such as the Titon Trimvent Select Xtra S13 (5000 mm² EA version), or equivalent.

6.00 CONCLUSIONS

6.01 A noise impact assessment has been undertaken for a proposed development at KEN MILLS ENGINEERING, New Street, Shawclough, Rochdale, OL12 6NS.

6.02 The noise environment at the application site is dominated by road traffic on Shawclough Road, with no other significant noise sources.

6.03 A scheme of sound insulation works has been developed to protect the proposed residential development from the ambient noise climate. On this basis, the ambient noise climate is not considered to pose a constraint to the proposed residential development.

Appendix 1

Glossary of Acoustic Terms

Sound Pressure Level (Lp)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 µPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, LAeq, T

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time. LAeq, 16h (07:00 to 23:00 hours) and LAeq, 8h (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

LA10, T

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. LA10, 18h is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

LA90, T

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. LA90 is typically taken as representative of background noise.

LAF max

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Sound Exposure Level (SEL or LAE)

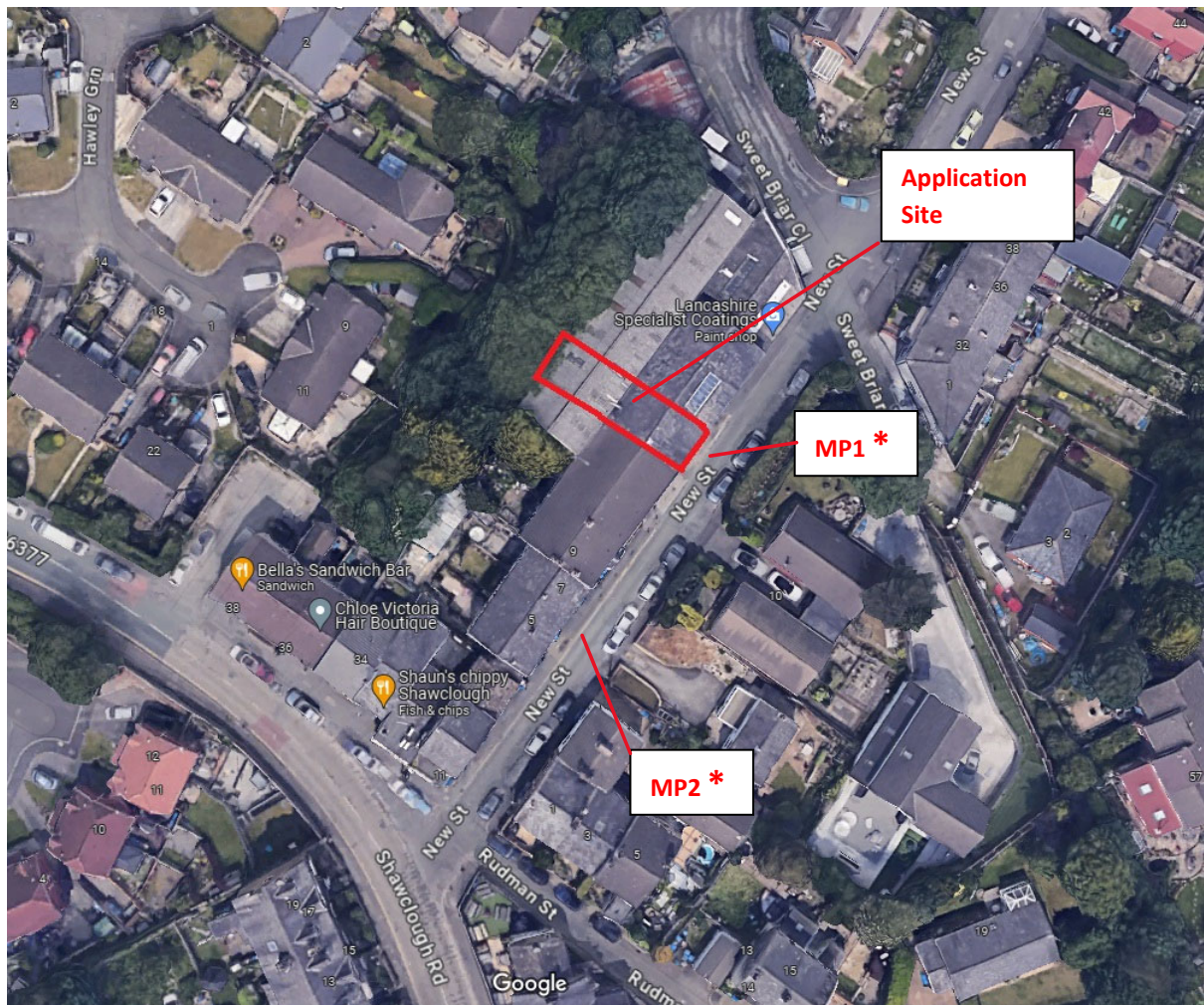
The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (RW)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (RW is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix 2

Drawings (Site Layout Plan / Approximate Noise Monitoring Positions)



Front Bedroom (Elevation) - Daytime Ambient Noise Level

BRE		Building Envelope Insulation		Switch to Reverberation Time Calculation																															
1) Enter room dimensions or volume ☐ Use dimensions x m y m z m Volume m ³ OR ☒ Use volume 23 m ³		2) Select elements of facade structure, and enter corresponding internal surface area in m ² OR enter number of vents. HELP		Surface area OR number of vents																															
		<table border="1"> <tr> <td>Wall 1</td> <td>Brick/block cavity</td> <td>13.5</td> <td>m²</td> </tr> <tr> <td>Wall 2</td> <td>None</td> <td></td> <td>m²</td> </tr> <tr> <td>Window 1</td> <td>10/ 12/6 double glazing</td> <td>1.54</td> <td>m²</td> </tr> <tr> <td>Window 2</td> <td>None</td> <td>1.21</td> <td>m²</td> </tr> <tr> <td>Door</td> <td>None</td> <td></td> <td>m²</td> </tr> <tr> <td>Roof/ Ceiling</td> <td>None</td> <td></td> <td>m²</td> </tr> <tr> <td>Vent 1</td> <td>Ryton AAC125HP</td> <td>1</td> <td></td> </tr> <tr> <td>Vent 2</td> <td>None</td> <td></td> <td></td> </tr> </table> View/Edit Data		Wall 1	Brick/block cavity	13.5	m ²	Wall 2	None		m ²	Window 1	10/ 12/6 double glazing	1.54	m ²	Window 2	None	1.21	m ²	Door	None		m ²	Roof/ Ceiling	None		m ²	Vent 1	Ryton AAC125HP	1		Vent 2	None		
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Vent 1	Ryton AAC125HP	1																																	
Vent 2	None																																		
		3) Enter reverberation time of the room. 0.5 seconds																																	
				4) Select exterior sound level type Option (A) ☒ User defined spectrum 67 dB LAeq (Day) View/Edit Data Option (B) ☐ Spectrum shape Select spectrum shape and enter free field exterior sound level, L_{Aeq} (considering only the octave bands between 125Hz and 2kHz) L_{Aeq} 67 dB ISO 717 - 1 (Ctr) View Data																															
				Internal sound level L_{Aeq} 34.6 dB																															

Front Bedroom (Elevation) – Night time Ambient Noise Level

BRE		Building Envelope Insulation		Switch to Reverberation Time Calculation																															
1) Enter room dimensions or volume ☐ Use dimensions x m y m z m Volume m ³ OR ☒ Use volume 23 m ³		2) Select elements of facade structure, and enter corresponding internal surface area in m ² OR enter number of vents. HELP		Surface area OR number of vents																															
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		3) Enter reverberation time of the room. 0.5 seconds																																	
				4) Select exterior sound level type Option (A) ☒ User defined spectrum 58 dB LAeq (Night) View/Edit Data Option (B) ☐ Spectrum shape Select spectrum shape and enter free field exterior sound level, L_{Aeq} (considering only the octave bands between 125Hz and 2kHz) L_{Aeq} 67 dB ISO 717 - 1 (Ctr) View Data																															
				Internal sound level L_{Aeq} 25.6 dB																															

Front Bedroom (Elevation) – Night time Maximum Noise Level

BRE		Building Envelope Insulation		Switch to Reverberation Time Calculation	
		1) Enter room dimensions or volume		2) Select elements of facade structure, and enter corresponding internal surface area in m ² OR enter number of vents.	
☐ Use dimensions x m y m z m Volume m ³ OR ☒ Use volume 23 m ³		HELP		75 dB LA FMax View/Edit Data	
		Surface area OR number of vents		Option (B) ☐ Spectrum shape Select spectrum shape and enter free field exterior sound level, L _{Aeq} (considering only the octave bands between 125Hz and 2kHz) L _{Aeq} 67 dB ISO 717 - 1 (Ctr) View Data	
		Wall 1 Brick/block cavity 13.5 m ² Wall 2 None m ² Window 1 10/12/6 double glazing 1.54 m ² Window 2 None 1.21 m ² Door None m ² Roof/Ceiling None m ² Vent 1 Ryton AAC125HP 1 Vent 2 None View/Edit Data		Internal sound level L _{Aeq} 42.9 dB	
		3) Enter reverberation time of the room. 0.5 seconds			